

LOUIS HOW

JAMES B.

EADS

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PREFACE

I must mention with particular gratitude several books that were invaluable in preparing this sketch, in supplementing the usual biographical dictionaries and naval histories. These are: Captain Mahan's "The Gulf and Inland Waters;" Boynton's picturesque "History of the American Navy during the Great Rebellion;" Mr. Fiske's "Mississippi Valley in the Civil War;" Snead's "The Fight for Missouri;" Mr. C. M. Woodward's "History of the St. Louis Bridge;" Mr. Estill McHenry's edition of Eads's "Papers and Addresses," with a biography; two memoirs by Señores Francisco de Garay and Ignacio Garfias, of the Mexican Association of Civil Engineers; and, above all, several memoirs and addresses and the history of the Jetties by Mr. Elmer L. Corthell, C. E., without which I could scarcely have written this Life.

I must also cordially thank for kind personal aid and advice Chancellor Chaplin (of Washington University), Dr. William Taussig, Mr. Albert Bushnell Hart, Major George Montague Wheeler of the Engineer Corps (retired), Messrs. Winston Churchill, William L. Wright, C. Donovan, E. L. Corthell (who was as obliging as he was helpful), Estill McHenry and John A. Ubsdell, Mrs. Susan F. Stevens, and especially my mother—to whose help and encouragement this Life of her father is due.

L. H.

Rockport, Mass., July 30, 1900.

JAMES B. EADS

I EARLY TRAINING

James Buchanan Eads was born in Lawrenceburg, Indiana, May 23, 1820. Both the Eads family, who came from Maryland, and his mother's people, the Buchanans, who were originally Irish, were gentlefolk; but James's father never was very prosperous. The son, however, went to school, and he showed early a very special love for machinery, observing with great interest everything of that kind that he came upon. For a while the family lived in Cincinnati; from there they removed in 1829 to Louisville. In those days, when steamboats were the best of conveyances, the Ohio River formed a natural highway between the two towns. On the trip the small boy of nine hung around the engine of the boat, considering it with so much wonder and admiration that finally the engineer, who found him an apt pupil, explained the various parts of the mechanism to him.

He really had understood his lesson well, for two years later, in the little workshop that his father had fitted up for him, he made a small engine which ran by steam. Besides he made models of sawmills, fire-engines, steamboats, and electrotyping machines. Except such chance instruction as that which he found on the boat, he had had no teaching in mechanics, but worked with the ingenuity of many a bright boy; for he is by no means the only one who ever took apart and put together the family clock, or even a lever-watch, with no other tool than a penknife. One of his inventions, which shows not so much his talent as his true boyishness, was a small box-wagon, open only underneath and with a hole in front, which, suddenly produced before his mother and sisters, ran mysteriously across the room. The motive power concealed within this agreeable toy was found to be a live rat.

So much is often said of the precocity of youthful geniuses, that it is good to know that young Eads was after all a real flesh-and-blood boy, a boy so mischievous that, as he was the only son, his father hired a neighbor boy to come and play with him. Certainly he was very clever; but that he had even better qualities than cleverness is shown by his first actions on his arrival at Saint Louis.

His father, deciding to move farther west, had sent ahead the mother, the two daughters just grown, and the lad of thirteen, intending to follow with supplies for opening a shop. Again the route was by river. Arrived at Saint Louis, the boat caught fire; and early on a cold morning the family set foot, scarcely clothed, not only in the city of which the young boy was to be one day the leading citizen, but on the very spot, it is said, where he was afterwards to base one pier of his great bridge. On that bleak morning, however, none of them foresaw a bright future, or indeed anything but a distressful present. Some ladies of the old French families of the town were very kind to the forlorn women; and once on her feet Mrs. Eads set about supporting herself and her children. In those days, when sometimes a letter took a week to go a couple of hundred miles, she was not the one to wait for help from her husband; so she immediately rented a house and took boarders. The boy, as resourceful and self-reliant as his mother, now showed his energy as well as his devotion by doing the first thing he found to help her. In going along the street he saw some apples for sale, and, buying as many of them as he could afford, he peddled them to the passers-by.

That, of course, was no permanent occupation for a well-bred boy, whose associations and abilities were both high. Nevertheless his family could no longer afford to have him at school, and it was necessary for him to do some sort of work. One of his mother's boarders, a Mr. Barrett Williams, offered him a position in his mercantile house. Before long this gentleman discovered his young employee's aptitude and overwhelming love for mechanics, and kindly allowed the lad the use of his own library. Studying at night the scientific books which he found there, Eads acquired his first

theoretical knowledge of engineering. In this way, without teachers, he began, in a time when there was no free higher education, to educate himself; and both then and ever after he was a constant reader not only of scientific works, but of all kinds of books. This practical experience in helping to support his family and in getting his own education, while he was still so young a lad, was the school in which he learned self-reliance. It is pleasant to know that the earnestness of life did not take all of his boyishness away from him, for it must have been while he was hard at work that he built a real steamboat, six feet long, and navigated it on Chouteau's Pond.

For five years he was a clerk in the dry-goods house. At the end of that time, probably because he was in poor health, he left that position for one that would take him more into the open air. Though his health was not strong, he was by no means an invalid; for at nineteen his muscles were solid and his fund of nervous energy was inexhaustible. So, with the natural taste of a boy for a more exciting life, he took a position as clerk on a Mississippi River steamboat. While he had nothing to do with actually running the boat, he certainly kept his eyes open to everything going on both on board and in the river; and began then to make an acquaintance with the stream which was later to be the scene of his greatest labors. If ever Nature played a prominent part in the life of a man, the Mississippi did in that of Eads; for it became the opportunity for three of his chief works, and from it he learned perhaps more of the laws of science than from all the books he ever read. To understand his life, one must have some idea of the huge river, which seems to flow sluggishly or rapidly through his whole career.

The Mississippi River, with its branches, drains the larger part of the whole United States,—that is, from the Alleghanies on the east to the Rockies on the west. The main stream, 4200 miles long, and in some places over a mile wide, flows along with tremendous force, ceaselessly eating away its yellow clay banks. The water, full of sediment, is of a thick dull brown color. The clay that it washes off in the bends it deposits on the juts of land, thus forming greater and greater curves; so that often the distance between two points is very much less by land than by water. Sometimes there are only a few yards across the neck of a peninsula, around which the channel distance is many miles; and on one side the level of the river is several feet higher than on the other. Gradually the water keeps eating its way, until it forces a passage through the neck, and then the torrent rushes through in a cascade, with a roar that can be heard for miles. The banks dissolve like sugar, and the next day steamboats can cross where the day before were fields and may be houses. Besides this, the current is constantly washing away and building up not only hidden bars on the river bottom, but even islands above its surface. In the fall and in the spring it rises with such terrifying rapidity that some years it quickly overflows its banks in certain reaches till it is sixty miles wide. Houses and trees torn from their places, and wrecks of boats, float or protrude from the bottom of this brown lake. And when the flood subsides, the current often chooses a new and changed channel. Amid the ever-varying dangers of such a river the only safety for steamboats is in a race of pilots so learned and so alert as to have the shifting bars and courses always in their minds. In 1839, when steamboats were the only means of rapid transit in the West, when there were more of them in the harbor of the little town of Saint Louis than to-day when it is a great city, this class of pilots was a large and a very respectable one. Much of their knowledge of the river was what young Eads learned while he was a clerk among them; and as time went on, he came to realize that although the Mississippi seems so capricious in its terrible games that one would think them the result of chance, yet in truth, they "are controlled by laws as immutable as the Creator."

Despite all care that could be used, steamboats were every week sunk and wrecked, and with their valuable engines, boilers, and cargoes were often left where they lay in the ceaseless brown current. After he had been for three years on the river, Eads gave up his clerkship to go into the business of raising these boats, their machinery, and their freight. In 1842, at the age of twenty-two, he formed a partnership with Case & Nelson, boat-builders. His first appearance in the new business was an experience that well shows his quick inventive genius, his persistency, and his courage. While his diving-bell boat was building, a barge loaded with pig-lead sank in the rapids at Keokuk, 212 miles

from Saint Louis. A contract having been made with its owners, Eads hurried up there to rescue the freight from fifteen feet of water. He had no knowledge himself of diving-armor; but he had engaged a skilled diver from the Great Lakes, who brought his own apparatus. They set out in a barge and anchored over the wreck; but, once there, they soon discovered that the current was so exceedingly rapid that the diver could do nothing in it. Eads at once returned to Keokuk, and, buying a forty-gallon whiskey hogshead, took it out to the wreck; and having knocked out one head, he slung pigs of lead round his improvised diving-bell, made a seat inside it, rigged it to his derrick and air-pumps, and then asked the diver to go down in it. The diver having very naturally refused, Eads on the spot set himself a precedent which, during his after life, he never broke,—saying that he would not ask an employee to go where he would not trust himself, he got inside his hogshead and was lowered into the river. His assistants were unused to managing diving-bells, and when they came to haul him up the derrick got out of order. By main force they were able to raise the hogshead to the surface, but not above it. As the air-pump continued to work all the while, Eads, though wondering what was amiss, sat patiently in his place, till finally he saw a hand appear under the rim of the hogshead. Seizing this, he ducked under and got out. Although the rough diving-bell worked thus awkwardly at first, it served well enough, and finally all of the lost freight was saved.

A young man so fearless, so energetic, and so able to invent mechanical devices at sudden need, was bound to succeed in a business like this. And young Eads did succeed. "Fortune," he believed, "favors the brave;" and his motto was, "Drive on!"

The insurance companies were willing to give the wreckers a large interest, sometimes as much as a half, of the rescued cargoes; and there was a law by which a vessel or freight that had been wrecked for five years belonged to whoever could get it up. Eads and his partners worked up and down the river for hundreds of miles. The first diving-bell boat was followed by a larger one, provided with machinery for pumping out sand, and for raising whole hulls. While in this hazardous business Eads invented many new appliances for use in its various branches. Because he was in charge of a boat people began to call the young wrecker Captain Eads, and that was the only reason for a title which clung to him always. He grew now to know the river as few have ever known it,—his operations extended from Galena, Illinois, to the Balize at the river's very mouth, and even into the tributaries of the Mississippi,—and he used to say that there was not a stretch of fifty miles in the twelve hundred between Saint Louis and New Orleans in which he had not stood on the bottom under his diving-bell.

With the same devotion to his parents as when he peddled the apples in the street, Eads now bought them a farm in Iowa, and provided in every way he could for their comfort. But beyond the ordinary desire of making a fortune for them, for himself, and for a new interest that was coming into his life, it does not appear that there were in his mind any unusual ambitions, any of the dreams of genius. As yet he was only a hard-working, earnest young man, extraordinarily clever to be sure, but founding on that cleverness no visions of great renown in the future. Perhaps this was because he had enough to dream of in the present, enough hopes of purely domestic happiness to look towards. For he had fallen in love with a Miss Martha Dillon, a young lady of about his own age, daughter of a rich man in Saint Louis. The father disapproved of the match, not only because he thought the suitor too young, too poor, too unknown, but because he wished to keep his daughter with him, and for other less reasonable causes.

The letters between the engaged couple show Eads at twenty-five as a keen, experienced, and yet an unsophisticated young man; generous, proud, brave, and courteous; a lover of Nature, of poetry, of people, and of good books; an inveterate early riser; reverend in religion, and yet, while nominally a Catholic, really a free-thinker; sentimental in his feelings almost as if he had lived a century sooner, and at the same time controlling his true and deep emotions, and showing his strong love only to those he loved.

At last Eads and Miss Dillon were married, he being over twenty-five at the time, she nearly twenty-four. Eads then sold out his wrecking business and left the river. He probably made this change

because he hoped thereby not only to be more with his wife, but also to support her in the comfort she had been used to, and to show her father that he could do so. The new enterprise, into which at least one of his old partners entered with him, and into which he put all his money, was the manufacture of glass; and they built the first glass factory west of the Ohio River. He had to go to Pittsburg—then a long journey by boat, stage, and rail—to get trained workmen and to learn the process himself. Almost all of the necessary ingredients and apparatus had to be sent for to Pittsburg, to Cleveland, or to New York; and they were often slow in arriving and thereby made matters drag considerably. Still there was always something to do, and Eads, the only one of the partners who understood the trade, was forced to work extraordinarily hard. With his usual persistence he stuck to it pluckily, often staying up late into the night and rising the next day before dawn to oversee operations. He was also indispensable for his faculty of managing men; and a letter to his wife written on his twenty-seventh birthday (1847) shows how strong the man already was in that power of getting the most from a workman, which was afterwards to count for so much in his best work. An employer, he says, must "have constant control of his temper, and be able to speak pleasantly to one man the next moment after having spoken in the harshest manner to another, and even to give the same man a pleasant reply a few minutes after having corrected him. Self must be left out of the matter entirely, and a man or boy spoken to only as concerns his conduct; and the authority which the controller has over the controlled, used only when absolutely necessary, and then with the utmost promptness."

However, despite all his firmness and perseverance, the difficulties of the glassworks became greater and greater; and at last, after having been run two years, they were shut down. Eads was left with debts of \$25,000. The very unusual action of his creditors in this crisis shows what confidence they had in his integrity and in his ability; for they advanced him \$1500 with which to go back into the wrecking business, and he at once rejoined his former partners. He now worked harder, if possible, than ever; for he felt, as he wrote to his wife, that "with a man in debt it cannot be said that his time is his own." Powerful as he was physically, his health was not good, but even in sickness he scarcely ceased to toil during the first year or two; and at the end of ten years, not only had all his debts been long since paid, but his firm was worth half a million dollars.

Work, however, was to him only a means to an end. The real dignity of character he knew to lie in culture. To a small boy he sends, in one of his letters, the message that he should "be a good boy and study hard, as that is the only way to be respected when he is grown." Even in his amusements his mind sought occupation: we find him at night on the diving-bell boat playing chess, and in later years he had become unusually adept at that game.

The wrecking business was full of life and action. Here and there, up and down the river, and into its branches, wherever a boat was wrecked or burned or run aground, the Submarine hurried off to reach the spot before other wreckers. Under their bell the divers got at the engines, boilers, and freight, while the pumps, worked from above, cleared away the sand; and sometimes by means of great chains and derricks the very hull itself would be lifted and towed ashore. But on that huge river, which at times would suddenly rise three feet in a single night, and whose strong current played such giant pranks as turning over a wreck in the chains that were raising it, there was need of eternal vigilance and agility. However, Eads was more on his own ground on the river than on the shore, and his business so increased that he was soon running four diving-bell boats. In 1849 twenty-nine boats were burned at the levee in Saint Louis in one big fire, and most of their remains were removed by him. Winter as well as summer the work went on; and the task of cutting out a vessel wrecked in an ice-gorge, or of raising one from beneath the ice, must have been as trying as walking the river bottom in search of a wreck. Eads himself, years later, thus describes one of his many experiences: "Five miles below Cairo, I searched the river bottom for the wreck of the Neptune, for more than sixty days, and in a distance of three miles. My boat was held by a long anchor line, and was swung from side to side of the channel, over a distance of 500 feet, by side anchor lines, while I walked on the river bottom under the bell across the channel. The boat was then dropped twenty feet farther

down stream, and I then walked back again as she was hauled towards the other shore. In this way I walked on the bottom four hours at least, every day (Sundays excepted) during that time." For a day's work the city of Saint Louis gave him \$80, out of which he paid his own workmen. He was so prosperous that, as he wrote to his wife, there was no need for him to join the rush to California to get gold; and his success caused much envy among his rivals. He began to clear the channel of the Mississippi from some of its obstructions and to improve the harbor of Saint Louis.

In 1856 he knew his work so well that he went to Washington and proposed to Congress to remove all the snags and wrecks from the Western rivers,—the Mississippi, the Missouri, the Arkansas, and the Ohio,—and to keep their channels open for a term of years. A bill to that purpose passed the House, but in the Senate it was defeated by Jefferson Davis and others. The next year, on account of poor health, Eads retired from business, but he carried with him a fortune. He had not succeeded in his purpose at Washington, but his name was known there and remembered.

Meanwhile his wife had died, and two years later he had married the widow of a first cousin. With his second wife he made his first trip to Europe,—the first of very many he was destined to make. In 1857, being thirty-seven years old, he retired, as I have said, from business.

His youthful hopes, the ordinary ambitions of men, were realized. He had been a poor boy: at only thirty-seven he was rich,—very rich for the times and for the place. From his proposals to the government, we may imagine that he now had broader dreams of usefulness. But his first proposition toward river improvement had been checked. He had bought a large house and grounds. He made for himself a rose-arbor, and for four years he was as much unoccupied as his lively mind permitted. He was at any rate what is called a man of leisure.

Then, four years being passed, he received from Washington, from his friend Attorney-General Bates, a letter written three days after the surrender of Fort Sumter, which said: "Be not surprised if you are called here suddenly by telegram. If called, come instantly. In a certain contingency it will be necessary to have the aid of the most thorough knowledge of our Western rivers, and the use of steam on them, and in that event I advised that you should be consulted."

The government was thinking of placing gunboats to occupy and to defend the Western waters.

II THE GUNBOATS

At the beginning of the Civil War the State of Missouri and the city of Saint Louis were in a very confused condition. A border slave State, Missouri contained a great many persons of Southern birth and Southern sympathies; and besides a good many strong Northern men, Saint Louis had also a considerable German population, all staunch Unionists. But excepting the Germans and one or two dauntless clear-seeing men, who read the future, few persons in either party wished to fight if fighting could possibly be avoided. The governor, a Southern man, while hesitating at actual secession, wished and tried to control the power of the State so that at need it might help the South; and while professing loyalty, he did all he could to prove his disloyalty to the Union. The legislature, however, would not pass a bill to arm the State, thereby, says an historian, causing the South to sustain "a defeat more disastrous to its independence than any which thereafter befell its arms, down to the fall of Vicksburg." In response to Lincoln's call for troops, the governor refused to send any from Missouri. An extraordinary state convention, called in this crisis, voted against secession. Seeing that the governor, notwithstanding this, was covertly aiming at throwing himself and the State, so far as he could, in with the Confederacy, young Frank Blair and General Nathaniel Lyon, carrying things with a high hand, seized and dispersed the state militia encamped in Saint Louis, got control of almost all the Federal arms in the State, and with outside aid and help from the regular army, chased the governor from the capital, and held him at bay long enough for the convention to depose him and the General Assembly, and to establish a state government loyal to the Union.

During all these lively events Saint Louis was in confusion. There were many minds in the town—secessionists, conditional and unconditional unionists, submissionists: some who wanted war, some who wanted only to preserve peace so that they might keep their homes and fortunes safe, even on condition of abandoning slavery.

James B. Eads did not own a slave, nor did he approve of slavery, but among his friends and associates there were many who did own them, and many secessionists. It is curious to observe how little a difference of opinion on these points, that had become so vital, was able to put personal enmity among men who were true friends. Of course, among mere acquaintances there were many instances of bitterness and taunting. Through it all, Eads, with his rare tact and his exquisite manners, steered without collision, offending none of those who were not on his side. And yet we are presently to see what a deep interest his side had for him, and how much he was able and willing to do for it.

Between the election and the inauguration of Lincoln, Eads and three other prominent citizens of Saint Louis wrote a letter to him, expressing their fears that an attempt at secession would be made, and urging the policy of having a secretary of state from one of the slave States. And they recommended, for "purity of character, stern integrity, exalted patriotism, and enlightened statesmanship," Edward Bates, born in Virginia, married into a South Carolina family, and long resident in Missouri. A first draught of this letter is in Eads's handwriting. When the new cabinet was formed, Bates, a personal friend of Lincoln's as well as of Eads's, was given a position in it, that of attorney-general. It was he who, three days after Sumter was fired on, wrote the letter, already quoted, telling Eads to expect a telegram calling him to Washington for consultation on the best method of defending and occupying the Western rivers. Eads himself was by this time no believer in a defensive policy for the government. After Sumter he had already written to Bates advocating determined and vigorous measures. So, when the telegram soon followed the letter, he was glad to hasten to Washington in order to be of use. There he was introduced to the Secretary and to the Assistant Secretary of the Navy.

The importance of controlling the Mississippi River was well seen by the great strategist, Lincoln, who called it "the backbone of the rebellion"—"the key to the whole situation." If it could

be held by the government, the Confederacy could neither move its troops up and down it, nor—thus cut in half—could it bring over from Texas and Arkansas the many men and the quantities of food greatly needed by its armies east of the river. Realizing this, the Confederacy was already beginning to fortify the Mississippi and the Ohio with its branches. To dislodge the rebels Bates proposed a fleet of gunboats. The Secretary of War, however, thinking this idea of gunboats either useless or impracticable, showed at first no interest in the plan. But at the request of the Secretary of the Navy, who realized the importance of the subject, Eads prepared a statement of his views, embodying Bates's project. In it he also suggested, besides the best kind of boats for the service, batteries, to be erected at several points. Commodore Paulding, on reading this statement, at once reported in favor of it. Suddenly, the Secretary of War, when he saw that the scheme was coming to something, claimed jurisdiction over the whole matter, but finally he agreed to order the same officer already appointed for the purpose by the Navy to go west with Eads and purchase vessels to be armed. All necessary approvals having been made, the two went to Cairo, where they examined the Benton, one of the former snag-boat fleet. Afterwards Eads proposed the strong and swift Missouri River steamboats. But neither of these suited his colleague, who at last went to Cincinnati, and buying three boats there, armed them himself: and very useful boats they were.

The gunboat scheme had been first proposed in April; it was now June, and excepting these three wooden boats, nothing seemed to have come of it. So in July the quartermaster-general advertised for bids for ironclad gunboats. In 1861 ironclads were a rather new thing. France and England had a few of them, but at the time the Merrimac was begun no ironclad had been finished in America. On August 5, when the bids were opened, that of Eads was found not only to be the lowest, but to promise the quickest work. On August 7 the contract was signed for seven gunboats to be delivered at Cairo on October 10,—sixty-four days later. This contract, it has been said, would under ordinary circumstances have been thought by most men impossible to fulfill. And the circumstances then were anything but ordinary: it was a time of great financial distress; in the border slave States the pursuits of peace were interrupted; all was in turmoil and confusion; rolling-mills, machine-shops, foundries, forges, and sawmills were all idle, and many of the mechanics had gone to the war. The timber for the boats was still growing in the forests; the iron was not yet manufactured. And so short was the time that two or three factories alone, no matter how well equipped they might be, were not to be depended upon. Yet Eads had undertaken to start up the factories, to gather the materials, and to build his boats in two months. Never were the self-reliance and the energy of the man better exhibited; but his keen business sense might have hesitated, had not his patriotism shown him that the Union needed the boats quickly.

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