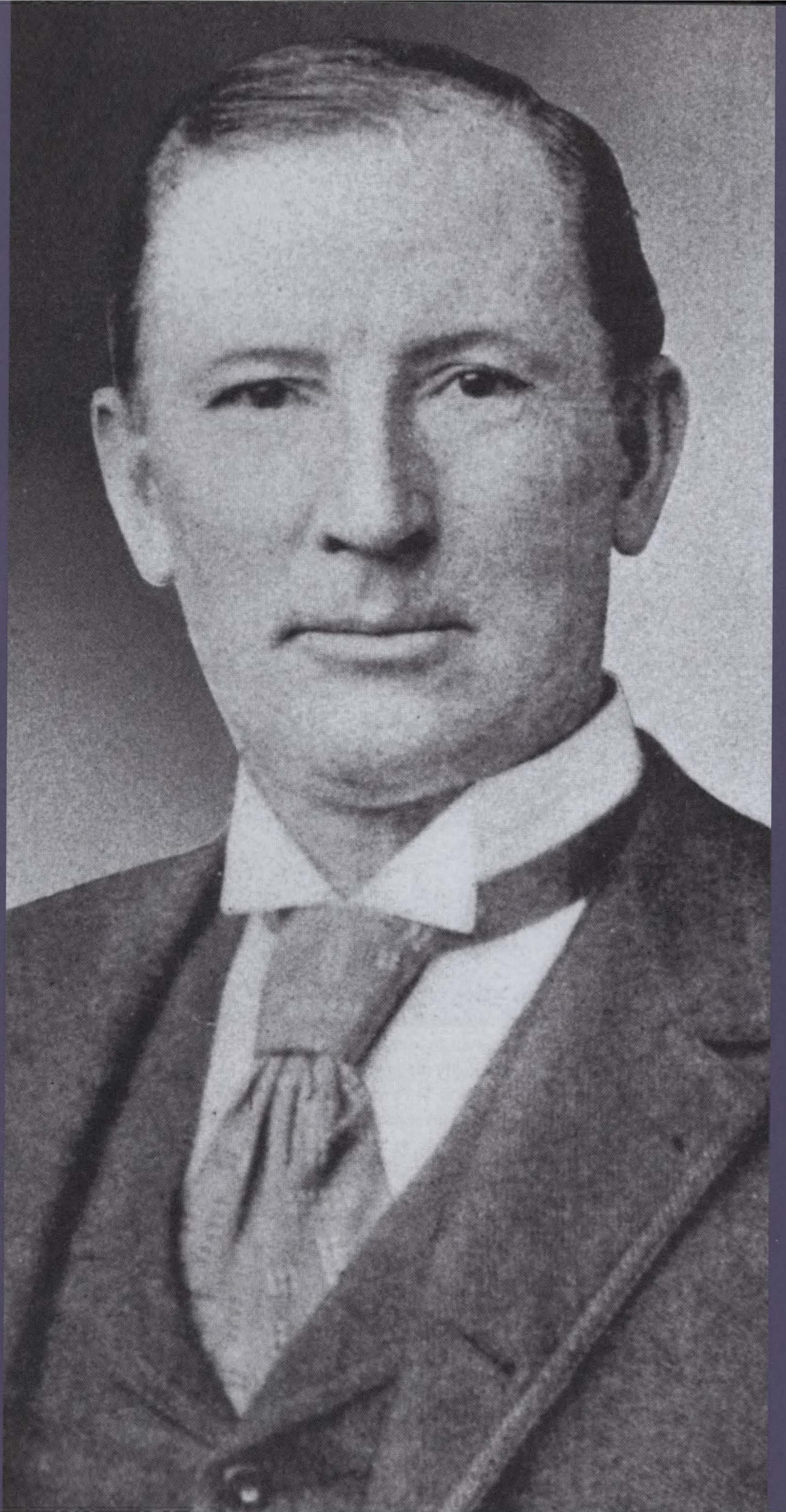


**Capt. William Jones**  
was a Carnegie plant  
superintendent whose  
technical innovations  
earned him a  
reputation as  
America's greatest  
man of steel.





# 'HANDS-ON, ALL-OVER': CAPTAIN BILL JONES

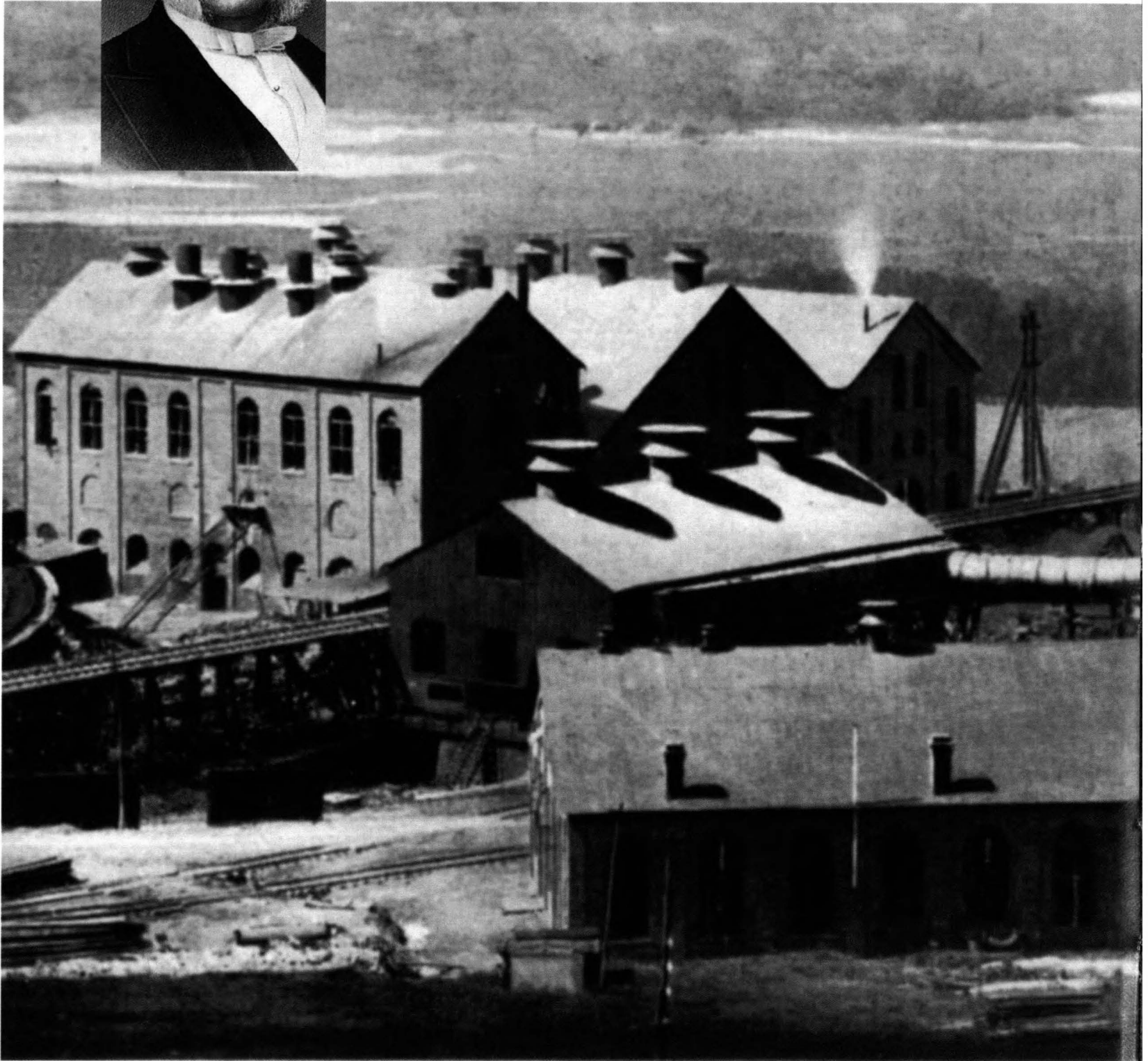
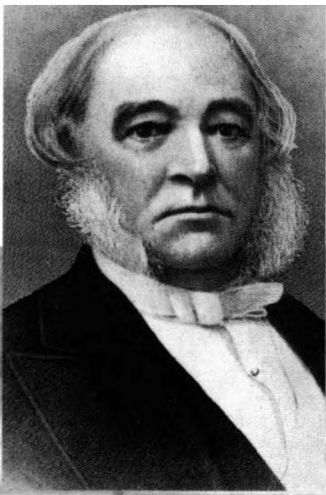
by Tom Gage

[T]his is the cradle of civilization. Here, in the Jones mixer, goes on the first of the processes by which is made the steel of locomotives, rails, and ships that link race to race throughout the world; of the engines of mines and factories; of the machines of thousands of mills; of the reapers and harvesters of farms; of the beams and angles and bars of which modern cities are largely built. Here rocking in this huge box are the springs of chronometers that keep pace with the progress of the stars; the needles that point the mariner's way; the tubes through which the astronomer watches the birth of worlds; the disks that talk through a thousand miles of space; and most of the other miracles that make the sum of modern civilization. To the intelligent onlooker there is as much poetry in Jones' box as there was in Pandora's; and even this does not contain all the wonders of the beautiful transformations which have given Pittsburgh a yellow crown of light." — *The Inside History of the Carnegie Steel Company*, by James H. Bridge (144)

WILLIAM JONES OCCUPIES a position in the history of industry that has few parallels. He is known foremost as the man who made the key technical decisions in the building and early operation of the Edgar Thomson Iron and Steel Works, the Braddock mill that was the linchpin in Andrew Carnegie's empire. Having worked in iron and steel since age 10, at "ET" he is said to have been "Hands-on, All-Over": leader of the labor force; designer of equipment using the newest technologies of the Industrial Revolution in each stage of steel production, including the "Jones Mixer," which allowed Carnegie, and eventually much of America's steel industry, to surpass all foreign competitors; experimenter with new ways for making work faster, less labor-intensive, easier, and safer; early crusader for the 8-hour work day; chief negotiator on production issues with the company's executives and board members; and even company representative at trade conventions and technical meetings.

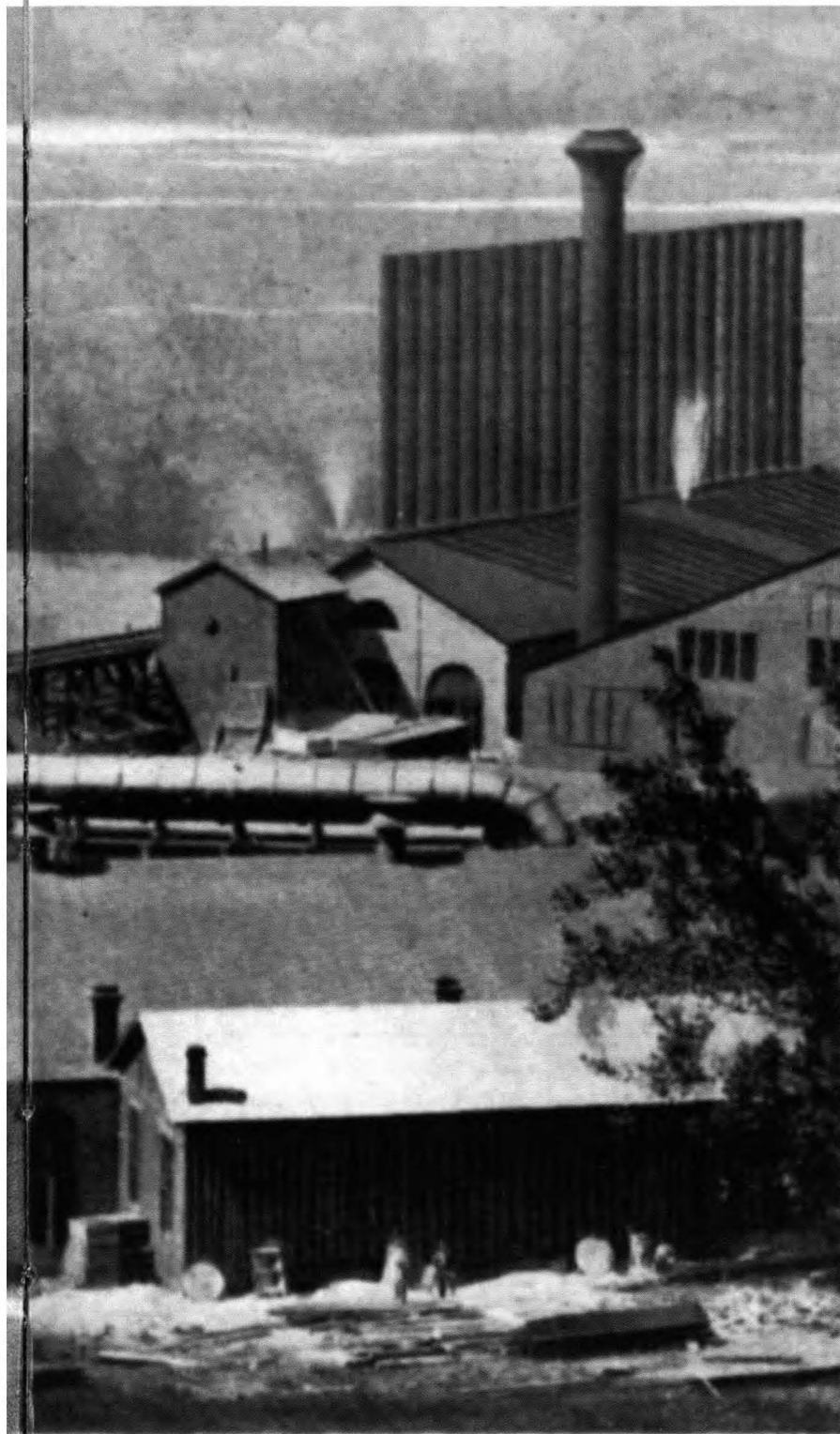
Thomas Gage is professor of English at Humboldt State University, Arcata, Calif. The author wishes to thank William Gaughan, of Pittsburgh, whose knowledge of the steel industry is encyclopedic, David Demarest of Carnegie Mellon University, and Mark Wood and Randy Harris of the Steel Industry Heritage Corporation.

Joining Carnegie after many years at Cambria Iron and Steel Co. in Johnstown, "Captain Bill," during 14 years at ET, solidified his reputation as a technical genius who commanded respect during most of his career from management and shop-floor alike. "I know of no young men associated" with Jones in those years, recalled Charles Schwab, the



The centerpiece of Jones' and Carnegie's success was the Edgar Thomson Works in Braddock (here right after completion, 1875). Carnegie named it for the president, *inset*, of the Pennsylvania Railroad; the PRR's demand for rails figured heavily in Carnegie's market-dominance.





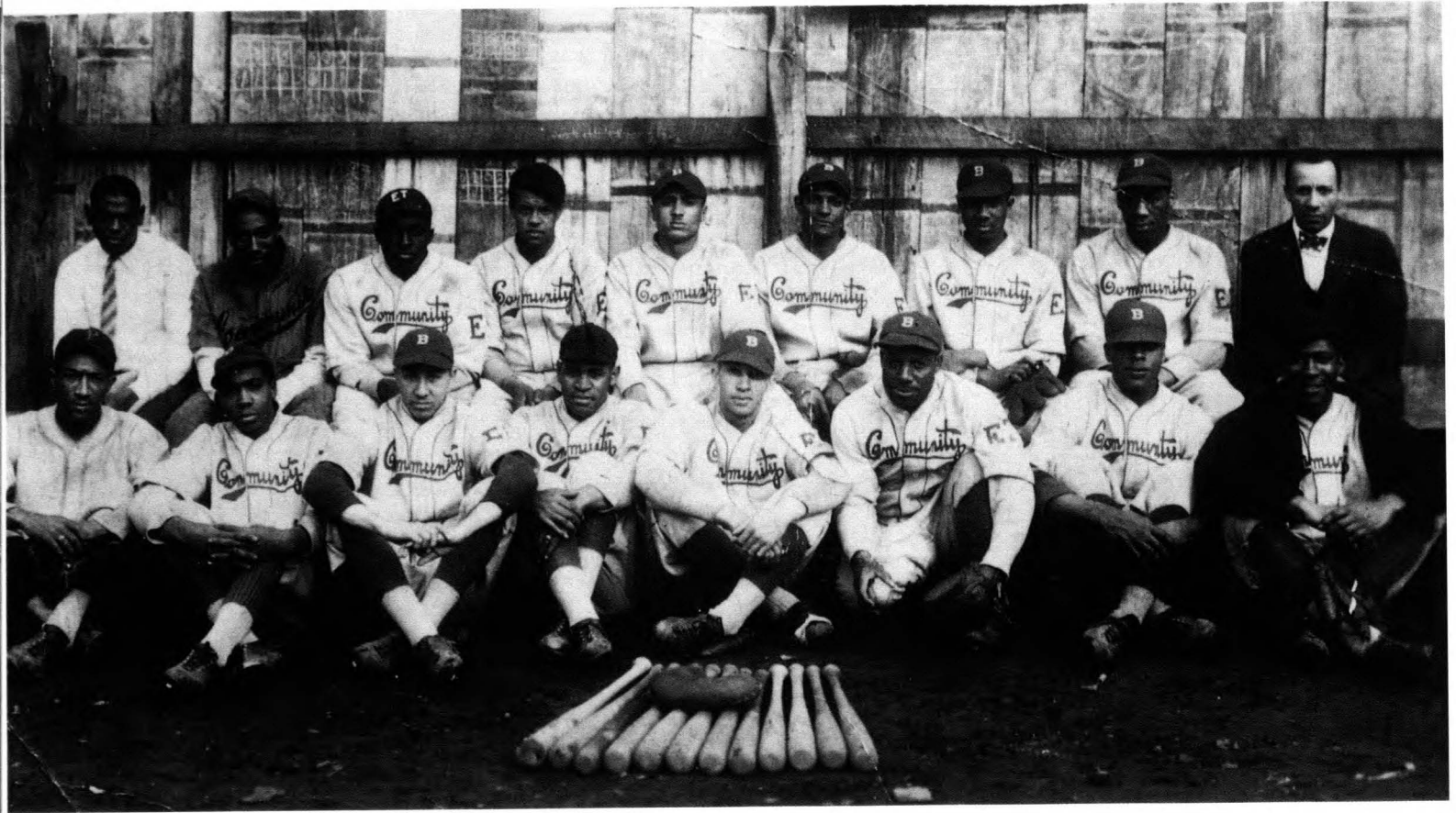
first president of U.S. Steel (now USX), “who would not use the same expression as I do regarding him — seemingly stern and harsh at times, but with a heart as soft and tender as a child’s.” Late in his tenure at ET, he became chief engineer for Carnegie Steel and also oversaw the work of hundreds of more men at another Carnegie jewel, the Homestead Works, just down the Monongahela River from Braddock. “Captain Jones,” says Schwab, “was a man that everybody not only liked, but loved, and the closer one’s association with him, the greater their love for him — a true man among men.”<sup>1</sup>

He was also a distinguished Civil War veteran, attaining the rank of captain after heeding Abraham Lincoln’s plea for volunteers, and a civic leader who early on cultivated baseball as the sport for industrial workers. He insisted that the company play an active part in community life around the Braddock mill. When he was killed in a furnace explosion at ET in 1889, more than 10,000 attended his funeral. He was buried in a cemetery off the Braddock street since named for him, and his pallbearers included, besides Schwab, who began his career with Jones at ET for \$1 a day,<sup>2</sup> several others who went on to distinguished careers in the industry that Jones, in large measure, had engineered. His life is the classic story of the self-assured craftsman — more in tune with the ethic hailed by Ralph Waldo Emerson earlier in the 19th century than with the *nouveau riche* of the Gilded Age — who is committed to a job well-done, rather than to acquisition or to posturing in the spotlight. If Andrew Carnegie was capitalism’s most acclaimed engine, Jones was its great technician, and it was the ingenuity and integrity of such people that Carnegie required for the first penny of his success. It was a picture of Captain Jones, in fact, that is the last thing Carnegie is said to have looked at before dying in his bedroom.<sup>3</sup>

Captain Bill was my great-grandfather (and Charles Schwab my grandmother’s piano teacher). For four generations in my family, the mythic figure of William Jones shadowed our lives. So enormous was his influence and the circumstances surrounding his prominence that a hundred years after his death, I decided I had to take the full measure of him. For many years, I collected information about Jones and his remarkable life, and in the last five years devoted several research trips to my search. I probed family memorabilia, US Steel collections, Andrew Carnegie’s papers in the Library of Congress and elsewhere, the archives and libraries of Kelham Island Museum in Sheffield, England, the British Museum, and the Ashmolean at Oxford. I interviewed dozens of people about Jones and the steel industry, read dozens more of their accounts, and have tried to assimilate a broad, working knowledge of the countless subjects connected to the history of steel. My great-grandfather’s story, however, must remain for me intensely personal, and for that I make no apologies.

Although Jones died at a young age, his career lasted nearly 40 years and his inventions punctuated each of the four stages of steelmaking. Another amazing feature of his life is that he maintained his loyalties to laboring men — and they to him — while he sustained the ambitions of Andrew Carnegie, and, once





**Jones believed baseball, especially, encouraged habits and skills vital to teamwork among workers. Mill employees played on the "Community" team in local leagues. This photo depicts the substantial number of African American steelworkers by the early 20th century. Opposite: Note the prominence and scale of human labor in these 1870s drawings of iron- and steel-making.**

Henry Clay Frick's stature in Carnegie's empire began to rise in the 1880s, met his demands as well. Jones was an American hero, I believe, and what happened to our family in his involvement with the industrial titans of his age is also a tragedy. Although we were related to a great industrialist of the modern age, we never enjoyed the largess from which most descendants of Pittsburgh geniuses benefitted.

My earliest memories emanate from the Veith Home in the early 1940s in Oakland, California. I lived in the family-run orphanage's upstairs corner room over the driveway on Grand Avenue. As a 4-year-old, I remember a friend of the Veiths' son burning to death. Working beneath a car to change the transmission, the friend was smoking a cigarette near a leaking gas tank. When the fire truck arrived, we children and stunned neighbors from both sides of Grand Avenue circled the smoldering car. The grisly scene is a powerful memory, and I suspect that this drama became linked in my psyche with what I could understand from the family lore of Captain Bill's violent death.

I lived at the Veith Home over a year, attending Lakeview School some 16 blocks down the city boulevard across from the Grand Lake Theater. Lakeview today stands like an island between the two spans of the MacArthur Freeway bisecting downtown Oakland. We were desperately poor with no assistance from my father. A divorced parent working at Carnation Milk Co. in West Oakland, my mother had placed me at the Vieth Home; she lived nearby at the top of steep Fairbanks Street with my 11-year-old brother Bill, named after the captain. At 5:30 each



afternoon, Mother got off the “C” bus at the Veiths’ to see me before walking up Fairbanks to the apartment.

I did not meet my father, Captain Jones’ grandson, until I was 21. Only once did I talk by telephone with my only living grandparent, Cora, Captain Jones’s daughter (who died in 1946). “You were just a tiny baby the last time I saw you,” Cora told me. She asked if I liked baseball. “Your great-grandfather started baseball in Pittsburgh,” she said. “He loved to play it, and he built a baseball diamond right inside the Edgar Thomson plant.”

All of my relatives, except my father’s brother, lived on the East Coast. Although Mother often predicted family genes would pull me through rough times, I learned only incrementally about Captain Jones’ fabulous life from her and my uncle. When he died, and still later, after my brother’s suicide in the 1980s (he had run away from home at age 15), I inherited books and documents from my great-grandfather, texts that led me to the present quest.

#### Smoke Screen (For Bill)

Remember the day you and Dean practiced  
With the .45 on Great-Grandfather’s  
1880 Encyclopedias,  
Seven stacked, back to back against the brick fireplace.  
1944, and I was seven.  
Roaring, the muzzle flashed, numbing eardrums.  
We traced singed pages through to Volume V  
And discovered that the Lipshitz-like slug  
Had shredded class and differentia  
Between Rangoon and Rangy. All morning,  
We three found new patterns and frayed nuggets.  
The room smelt like Lake Merritt on the 4th;  
It took two packs of Luckys to disguise  
The graver sin. When she came home at seven  
From Carnation Milk, she sensed the violence.  
No one found the executed knowledge.

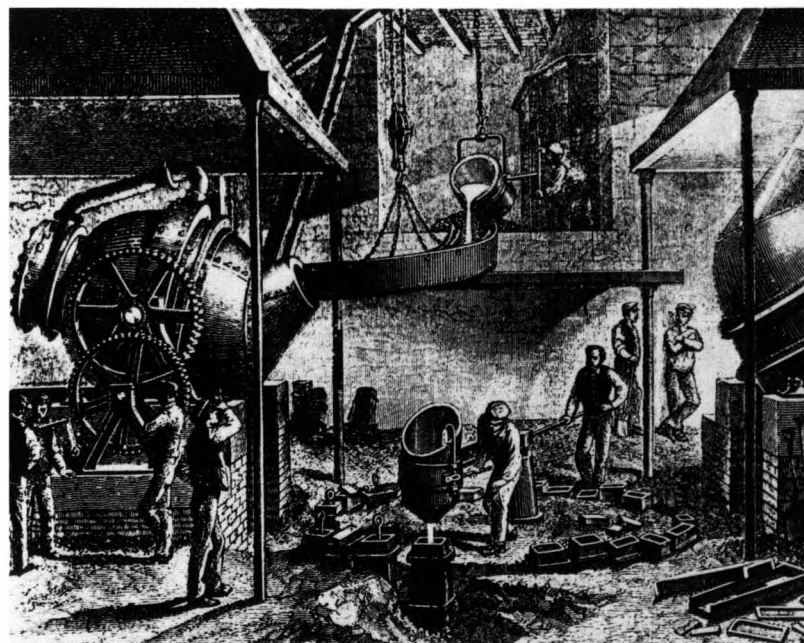
The encyclopedias were handed down through the family from a shadowy figure, Captain Jones, one of the Pittsburgh industrialists denied his fortune. Mother quoted Cora as saying we were cheated out of millions.

#### Jones’ Early Career

**M**y great-grandfather was born in 1839, in Luzerne County, Pa., seven years after his father, mother, and older brother and sisters had emigrated to the United States. His father, who arrived first in Pittsburgh but then moved the family back to the eastern side of the state, was a pattern-maker and a “Dissenting Welsh” nonconformist preacher in whose home were over 150 books. The Rev. John G. Jones came from the Brecknock Plateau in south Wales that descends to several valleys on the Bristol Channel, valleys from which cloth and iron mills had mushroomed before he had sailed to America. A vocal Chartist whose allegiances were divided between Tom

Paine and the Bible, Jones named his son after a cousin, William Jones of Llangadfan, a Jacobin whose revolutionary convictions echoed Voltaire’s comment about the French Revolution that “soon there will be only tyrants and slaves.”

John Jones was among the many vocal intellectuals in those green valleys who exhorted in pubs and chapels about the evils of English imperialism — capitalism founded upon the slave trade. The Welsh for centuries had reviled the English “triangle trade” (transporting rum in exchange for slaves from the New World.) They identified with those Africans expropriated from their land and deracinated of their names, language, and mythology. Centuries earlier, the Welsh had been pushed westward by Germanic tribes of Anglos and Saxons and Jutes to the very edge of what Shakespeare would call “other Eden, demi-paradise.” During the Industrial Revolution, many felt enslaved in coal mines owned by Englishmen, out of which came the coal to heat furnaces in which ore and limestone first produced iron.











**Many of the machine-tenders in the mills had begun their careers as skilled artisans (inset, J. Baumgardner, c. 1865, of Lyon, Shorb & Co., a Pittsburgh iron works), but by the 1890s, Bessemer steel machinery dwarfed workers and reinforced notions of humans as mere cogs. (The location for this Pittsburgh photo is unknown.)**



John Jones passed on a tradition of nonconformity that my great-grandfather never forgot. It influenced Captain Bill's dealings with Andrew Carnegie. He frequently turned down Carnegie's offers of partnership to avoid losing his independence.

Captain Jones also was influenced by his father-in-law William Lloyd (1805-1867). The two had met when Jones, having left his job in Johnstown, went to Chattanooga in 1860 to help build an iron furnace. Until 1848, my great-great-grandfather Lloyd had mongered iron in France, where he owned several patents. When the revolutionary forces overthrew King Louis Philip, the nationalists expropriated the property and the claims of many foreign entrepreneurs. Lloyd and his wife, Mary Bucknell Lloyd (1806-1891), and their 6-year-old daughter Harriet fled France for America. Like so many other Welsh Americans, Lloyd despised slavery and was vocal about it during the 13 futile years he worked to salvage an iron business in a Chattanooga torn by the Civil War.

The Lloyds introduced Jones to Harriet, who, though beautiful, suffered from ill health that would transform her into an invalid during the last 20 years of her life. Jones married Harriet four days before the outbreak of the war, then they returned north with her parents to Johnstown, where Jones resumed work at Cambria.

He worked there from 1859 to 1860 and from 1861 to 1873, with tours of duty during the Civil War from September 1862 to May 1863, and from November 1864 to July 1865. After several years as a skilled ironworker, he was promoted to assistant superintendent.<sup>4</sup>

Like Jones, the man who promoted him, George Fritz, favored high wages and incentives for workers, but Fritz warred with the general manager. When Fritz died in 1873, Jones expected promotion to Fritz's place as superintendent, but GM Daniel Morrell — like Frick many years later — pegged Jones as "soft on labor" and hired another man instead. So, my great-grandfather quit and joined Alexander Holley in New York City, whom he had met when Holley consulted at Cambria.<sup>5</sup> Holley was designing the Edgar Thomson Works for Carnegie. Thanks to Holley's good word, Carnegie hired Jones first as chief assistant, then later, in 1875, as superintendent.

Not long after that promotion, another major labor dispute broke out at Cambria. Alertly, Jones went to Johnstown and persuaded many of the most experienced workers in the plant's Bessemer steel department to leave, arguing that ET's owner was sympathetic to workers. The exact number Jones shanghaied ranges from 200 to 300<sup>6</sup> and included some who became prominent in steel history. A proud Pittsburgh "Steeler," Captain William Jones seems also to have been the first Pittsburgh "Pirate."

When I was 11 or 12, I could understand some of these events, but I had trouble synchronizing the splendid heritage with my job at Carnation Milk, where I emptied sour milk and cottage cheese into 5 gallon tanks destined for Yuba County pigs.

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*What is known is that by  
the time the men left, they  
had Harriet Jones' signature  
on papers that gave Carnegie  
control of patents to the  
Jones Mixer and more than  
50 other inventions.*

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## Steelmaking

**A**S MOST schoolchildren know, East met West at the opening of the transcontinental railroad in 1869 at Promontory Point, Utah. Stephen Gage, California senator and cousin to my great-great-grandfather on my father's side, stands in the foreground of the famous painting "The Driving of the Golden Spike," which hangs in the California state capitol in Sacramento. Thirteen years earlier, Henry Bessemer had discovered his "pneumatic" process of blowing cold air through molten iron for conversion to steel (though the U.S. patent for use of the process was not approved until 1866). Most of the rails linking East to West were iron, which lasted only about nine months.<sup>7</sup> When iron rails collapsed — "snaking," torquing and twisting under the pressure of railroad cars — an 18-foot-long scythe of iron could slice up through a car carrying passengers. The metal in steel rails, however, was bound together chemically to assure greater endurance and safety.

Only four years after Promontory Point, my great-grandfather joined Holley at ET. Jones made hundreds of practical innovations in the design, and eventually became captain of all aspects of the operation from blast furnace to rolling rails.<sup>8</sup> Patent letters he filed with the U.S. Department of the Interior reveal the full extent of his responsibilities at ET, where he patented more than 50 inventions, including:

- June 12, 1876, for drafting specifications for washes used on molds.
- December 12, 1876, for fashioning a device to operate ladles that moved hot iron from the blast furnace to the Jones Mixer; for catching blended molten iron from the mixer that ran by rail to the converter; and for ladles that collected molten steel for pouring ingots into molds.
- December 26, 1876, for designing fastenings for the Bessemer converter.
- August 7, 1877, for inventing a machine that cut the rails.
- September 1878, for inventing presses that compressed ingots and for other apparatuses related to the casting of ingots.
- October 1, 1878, for designing molds that simplified stripping in the rolling of steel (See "D" of Fig. 1).
- July 5, 1881, for engineering a journal supported by bearings for shafts and axles on the rolling mill during the cooling process.
- April 27, 1886, for designing appliances that enabled workers to feed ingots onto the rolling mill.
- May 4, 1886, for designing natural gas-powered boilers that produced the steam for driving cranes that fed ore, limestone, and coke into the blast furnaces and that lifted and guided the ladles full of iron or steel.
- October 12, 1886, for crafting a means of manufacturing railroad bars.
- April 10, 1887, for designing "hot beds" that bent and straightened newly shaped rails.
- May 15, 1888, for designing housing caps for rolls in the blooming mill.
- June 26, 1888, for creating an apparatus, cams, and shafts that lifted and removed rolls in the blooming and rail mill.



- January 1, 1889, for designing a steam-driven lance that removed ingots from molds.
- June 4, 1889, for engineering the Jones Mixer (the “Direct Process,” described by Bridge earlier).

James Gayley, the first vice president of US Steel, judged the sum of these contributions to steelmaking as “fully as much as Musket or Sir Henry Bessemer.”<sup>9</sup> Jones, in 1887, departed from all precedents in designing a new rail mill at ET, which, upon its completion was judged to be the most advanced in the world. It allowed the Carnegie interests to surge ahead of all rivals in supplying America’s exploding railroad industry: by 1890, the 2,500 workers at ET produced five miles of track each day. ET’s annual output could be laid from Washington, D.C., to San Francisco and back a good bit of the way.<sup>10</sup> America exceeded Europe in mileage of rails by 1885 and accounted for two-fifths of all track laid in the world; ET produced most of it.

Considering in some detail just one of Jones’ inventions — the Jones Mixer (1889) — documents his phenomenal impact on the industry. Before the mixer, molten iron was drained out into depressions made in a sand bed (“the sow”), which formed molds (“piglets”). After cooling, this “pig iron” was reheated in 20-foot-tall cupolas, which were the 8-foot diameter furnaces that prepared iron for making steel in the Bessemer converter. During this interim stage, the iron picked up sulphur and phosphorous, which are bad respectively for rolling and for steel later subjected to cold temperatures. Maintenance of cupolas was costly and time-consuming, with take-downs, repairs, and relining similar to the maintenance of blast furnaces.

Jones’ invention made cupolas unnecessary and improved the quality of Bessemer iron. By storing molten iron in the mixer, the pig iron phase was eliminated, and the mixer conserved the heat of the molten iron so effectively that it did not need to be reheated. This process also made uniform the sum of iron tapped from the various furnaces. The mixer’s capacity of 250 tons also allowed workers to draw off and blend iron, to control quality.

“He was an innovator, a problem-solver,” a modern-day authority says of Jones. “He was hands-on, all over.”<sup>11</sup> James Bridge calls Jones “probably the greatest mechanical genius that ever entered the Carnegie shops,” and adds that he “did more than any other man to give to America its primacy in steel.”<sup>12</sup> Carnegie biographer Wall echoes the oft-repeated pronouncement that Jones was “the greatest steelmaker in America”:

[Jones] had more patents to his credit than any other single individual in the history of steelmaking .... In Jones’s desk there were patent rights for a dozen other major inventions for the making, rolling, and cutting of steel, dating from 1877 to 1889. There were also hundreds of small improvements in the design, construction, and operation of the machinery which Jones had considered too trivial to patent but which had made significant contributions to the efficient operations of the Carnegie steel plants.

Jones had generally made available his patented inventions to all of Carnegie’s plants, exacting only a small royalty fee on their use. The full value of these inventions, which now belonged to his estate, could not be accurately appraised, but [Carnegie’s men]

*Lauder and Phipps, checking over Jones’s papers the day after his death, realized how important it was for the company to take possession of these patents.... The amount that the company ultimately realized from these patents rights can never be calculated....*<sup>13</sup>

Those emphases are not the biographer’s. They are mine. I shall return to the point later to place a value on one of those patents, but I think it is important first to provide some details about the fatal accident at ET in September 1889.

## The Death of Captain Jones

**D**URING THE summer of 1889, my great-grandfather was at a crucial turning point in his career. Having recently secured the patent for the “direct process” of heating iron, he also was thoroughly disillusioned with Carnegie. On June 1, Carnegie had reinstituted the 12-hour day and a wage-scale contract, reducing pay for most workers.

Coinciding with the events of mid-1889 was the great flood in Johnstown, which occurred after the South Fork Fishing and Hunting Club — Carnegie, Frick, and others on the board were members — refused to heed warnings about the safety of the dam at its recreational lake above the city.<sup>14</sup> When the dam’s failure caused the flood, Jones closed down ET and took some 300 workers to Johnstown, costing Carnegie \$15,000 a day. Commanding the first rescue party to arrive after the flood, which killed more than 2,200, Jones worked indefatigably for seven days to help restore sanitation and ensure medical assistance for the injured. Two other heroes of the flood relief effort, William Flinn and Gen. Daniel Hartman Hastings, became, respectively, state senator and governor of Pennsylvania. There was talk, as well, that Jones might be recruited to run for the Republican governorship, and Cambria management also negotiated with Jones to return to Johnstown to rebuild mills destroyed in the flood.<sup>15</sup>

Then, in the *Pittsburgh Post* of Friday, September 27, 1889:

### Fatal Furnace C

### A Shocking Accident at the Edgar Thomson Works

### Nine Men Enveloped in Flames

### Manager W. R. Jones in the List of Injured.

### One Workman Buried in the Ruins

### How the Mass of Molten Metal Was Let Loose.

### The Big Furnace Had Become Clogged.

### Some Distressing Scenes Witnessed.

### Shrieks of the Sufferers for Help.

### All Braddock Excited by the Distressing Casualty.

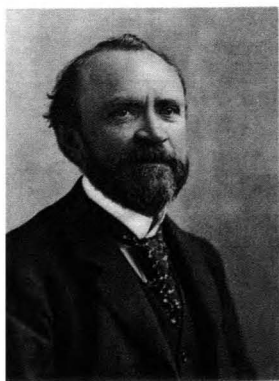
At 7 p.m. on September 26, my great-grandfather had tried to prevent a “chill” in Furnace C by dislodging a molten “hang” with

a tapping rod. (The furnace's tap hole was clogged.) Gases ignited and there was a terrible explosion. Jones, a Hungarian named Harrilla, and an Irishman named Finn took the full blast of 40 tons of fiery iron and were thrown 30 feet below. A score of others were present, including James Gayley, future vice president of US Steel. Ten were injured.

Harrilla was killed instantly when molten iron poured over him. Finn and Great-Grandfather were taken to the Homeopathic Hospital in Pittsburgh, where doctors predicted Jones' recovery, for he was conscious with burns on his arms and legs.<sup>16</sup> Reports about his death from a head wound three days later are contradictory. A witness quoted in a history of the Carnegie Veteran's Association stated Jones never regained consciousness; but the press and my family said he talked to his brother James, who had helped retrieve him from the cinders and who took him the eight miles to Pittsburgh from Braddock.

### Loss of Patents

**C**APTAIN JONES' widow, Harriet Jones, was an invalid largely confined to her bed for at least 12 years before her husband's death.<sup>17</sup> Either four or five days after the accident, Henry Clay Frick visited her at the family's home in Braddock. Frick left a note (still in my family's possession) expressing his condolences, and is said to have told the family that William Yost would stop by later to discuss business. And stop by Yost did, accompanied by Henry Phipps, Jr., and George "Dod" Lauder, a Carnegie cousin and operative.<sup>18</sup>



Henry Phipps, Jr.

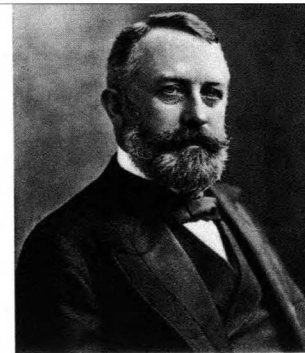
Great-Grandmother knew all of the men, and perhaps best of all Yost, who had come to his position as a chief corporate attorney for Carnegie through acquaintance with Captain Jones. Yost was, in fact, the Jones family lawyer.

It is, of course, impossible to fully reconstruct that afternoon's events, and the sequence passed along in my family is based primarily on the memory of daughter Cora Jones, who was 22 years old at the time. Cora (my mother's mother-in-law) insisted her entire life that Yost had seen to it that she and her brother, 25-year-old Will, were not at the

house when Carnegie's men arrived. What is known is that by the time the men left, they had Harriet Jones' signature on papers that gave Carnegie control of patents to the Jones Mixer and more than 50 other inventions. Corporate documents also show that within a month, and no later than October 24, 1889, Carnegie had rights to use the patents in the United States, Great Britain, France, Belgium, Germany, and Austria — essentially the industrialized world at the time.

Curiously, the last will and testament of Captain Jones was drafted on February 18, 1874, when his estate consisted of a Civil War sword and a gold watch given to him the year before by workers at Cambria. I say "curious" because it seems out of character that a man who went to considerable trouble to file so

many patent letters would have failed to update his will for 15 years; yet, that was the only will said to exist. Harriet was likely of little guidance on the matter: judging by descriptions, the illness which took her life seven years later was multiple sclerosis, and for many years it prevented her full participation in the family's legal and financial decisions.



Henry Clay Frick

Harriet Jones and others in my family, however, would surely have lived comfortably — considering the adage that "it takes a ton of steel to make a Cadillac" — if they had been able to collect a royalty of even 50 cents per ton of iron on the steel used in only the automobiles made in this century — excluding the rails, nails, boxcars, bridges, ships, guns, tanks, structural steel in the world's downtown skylines, the sheathing on US Steel's corporate headquarters in Pittsburgh ...

Instead, as a result of the "deal" the men struck with my incapacitated and grieving great-grandmother, my family received a single lump sum of \$35,000 for the patents. Certainly this was no small amount in 1889, and perhaps all who were able considered the amount fair. However, why the hurry? Completing the legal transfer of the patents so soon after the funeral cannot have been essential to the welfare of Harriet Jones or the family. Lauder would insist years later that the company and Captain Jones had an oral agreement about the value of the patents — difficult to believe, since Jones was continually securing new patents — and that the group who visited Harriet Jones was simply carrying out the captain's wishes. Again, events can never be known, but for less than a year-and-a-half's worth of Jones' salary, the firm gained patents valued at many millions.<sup>19</sup>

Ten years after Captain Jones' death, for example, Carnegie executives estimated savings accrued from the Jones Mixer — only one of the 50-odd patents they gained control of — at "\$150,000 to \$200,000" a year.<sup>20</sup> According to the company's board minutes of September 13, 1898, H.C. Frick stated that a recent court decision ensured that only Carnegie's mills would feature mixers developed by Jones. "Anybody using it will do so at their own risks, and will be prosecuted for infringement," crowed Frick.

As might be guessed, however, competitors could hardly have stood by. In a letter on January 31, 1889, four months after Frick's comments at the board meeting, Carnegie indicates that offers for use of the technology were rolling in. To Cousin Dod Lauder, Carnegie wrote<sup>21</sup>:

My Dear Dod

All right We can wait for fall for Mixer & for the windfall that's sure to come provided somebody doesnt bestow it upon other

I am dead opposed to settling now with anyone except to assure any intending builders that our Royalty will be reasonable not exceeding 50 cents per ton — and that we would not enjoin other building



That's all the length I'd go  
We shall get the verdict sure

YAC

Modern analysts confirm that the mixer's value was well-established, though its worth at the time of Jones' death is more difficult to assess (for reasons to be addressed later). One historian says that due to a U.S. Supreme Court decision settling the controversy, the Jones Mixer made US Steel stock an especially "good buy" when the company was formed in 1901. "The court," notes Stewart H. Holbrook, "held that US Steel alone had a right to use the Jones mixer, and it cracked down with a cease and desist order on Cambria Iron Works and other concerns that were no part of the trust, for using the device. Henceforth, the use of mixers was subject to the license rights of US Steel. The rights came high, too."<sup>22</sup>

Meanwhile, in my family, daughter Cora cared for her mother until her death in 1896. Then, that fall, Cora married the man who would become my grandfather, Daniel, and with an inheritance of \$44,000, they moved to the Golden State with hopes of a better life. A depressed economy dashed their investments in orange groves, however. Squeezed by taxes and a young son's medical bills, the family saw what was left of the estate dwindle. Son William, who would become my father, broke his leg twice as a child, and nearly died of blood poisoning; he was badly crippled all of his life.

Sometime in the early part of the century, Grandfather Gage learned of the great value of the Jones Mixer while he and his wife were dining in Los Angeles with his cousin, ex-California governor Henry Gage. The ex-governor told Grandfather about the lawsuits involving Cambria Iron for usurping the Jones Mixer. With medical bills looming, my grandparents decided to approach Carnegie about a fair return on the captain's contributions to his fortune.

Again, the exact sequence of events is lost to time, but Grandfather wrote to Carnegie, arranged a meeting with him, and the family travelled with their crippled son to New York. Dad told me on a number of occasions that he remembered sitting on Carnegie's lap during the visit — in fact I have a pencilled note to Dad from Carnegie, in which the steelmaster narrates a favorite story about Captain Jones that he had shared with Germany's Kaiser Wilhelm.

I also found in an archive a 1905 telegram from Carnegie's cousin, "Dod" Lauder. It was sent from Carnegie's home in Scotland<sup>23</sup>:

**Henry Schwab**



Aug. 31st 1905

Dear Sir:

In the matter of the Jones Mixer patent the facts are — Capt. Jones asked me as a personal favor to use my influence to have the Carnegie

Co. buy his interest, the Co. having already one half interest and [the] shop rightly having been at all the expense and risk of the preliminary experiments. The price thirty five thousand dollars was his own valuation and I believe that it was only by my pressing it that the officers of the Company agreed to take it.

As to Mrs. Jones being in any way wronged by signing the final papers, such an assertion is a gross ["great slander" crossed out] mistake. She only signed the formal transfer, which was in all points the terms arranged by the Capt. before his death. Mr. Frick was president at the time and saw to the carrying out of the sale.

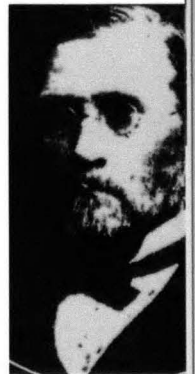
I should add that the patent itself was deemed to be of little value by all at that time as some prior patents had been unearthed that seemed to anticipate it, and as a matter of fact it took years of litigation and the expenditure of hundreds of thousands to establish its validity.

The money made from the patent is somewhat mythical, the last I heard from the office of the steel company was that they had not yet recovered a cent from the Cambria Iron Co — such is law's delay.

As all our competitors used the Mixer the advantage to the Company in money is problematical. I wish to add that personally all I did about the sale of the patent was at the Capt. request, and I considered that I was doing him a personal favor. I was not an officer of the Co. at the time.

Yours truly,

George Lauder



**George Lauder**

Cora and Grandfather would have known that Lauder's assertion that the mixer patent was of "little value" was untrue — Carnegie would not have spent "hundreds of thousands" protecting a worthless patent — but they probably didn't know the mixer functioned as a tollgate for all iron loaded into steel converters at the start of the 20th century.

A few years later, in 1912, a U.S. Superior Court judge valued the savings from the Jones Mixer at \$1.0925 per ton of iron.<sup>24</sup> That was the year the court ordered Cambria Iron to pay US Steel \$700,000 for "infringement of the Jones patent for the direct process of making Bessemer steel, ... from November 1, 1895 to October 31, 1898, and in that period it is charged that 520,188.55 tons of metal was converted into steel by this process."<sup>25</sup>

At some point in 1906, after Lauder's telegram, Carnegie sent a check to my family for \$1,000. That sum was a bit above the average that employers compensated dependents of married men who were killed in work accidents that year in Allegheny County.<sup>26</sup>

### Jones and Labor Policies

**N**O ONE has written a biography of Captain Bill Jones, so what I learned in my research about his theories on labor relations and their impact on industrialism



# ADMINISTRATION OF CAPTAIN WILLIAM R. JONES

(Excerpted from *The Unwritten History of Braddock's Field*, George H. Lamb, ed. [Braddock, Pa., 1917], 107-113. The original contains footnotes that add detail but not substance to the account, and they are not reproduced here.)

**H**ERE MUST have been a remarkable man. After a lapse of almost 30 years his aging employees still glow with pleasure at the mention of his name, and the most calm and philosophic of them flush with resentment at the suggestion that he could have had a fault. The whole world, in fact, seems leagued together to give this man a title of nobility "which it will forever defend."

Frankly admitted on all sides is the fact that Jones had a fiery temper. Beyond that... the conscientious historian can do nothing but record eulogy on eulogy.

His remarkable hold on the hearts of men originated in his physical and moral courage. Physically he was absolutely fearless, and morally he had the courage to give expression to every good impulse of his soul; to give freely and generously on every impulse, undeterred by fear of untoward consequences or accusations of partiality; likewise, he had the courage to confess his error when he was wrong, to apologize to the humblest of his men when he thought he had erred, and under any circumstances, to do or say whatever he thought at the moment to be right.

He was a great lover of sports, and in encouraging them established a tradition for his office which has ever since obtained. On the old race track (now the Union R.R. yard [adjoining the Edgar Thomson works]) he and [plant executive] C.C. Teeter and others often had horse races, and the Captain was himself a stockholder in the old Pittsburgh Base Ball Club.

One of the greatest mechanical geniuses of his time, and a born leader of men, he was a most fortunate head for the young plant to secure....

During that September [1875] the young plant put out 1,119 tons of rails, at a cost of \$57 per ton. The very first rails sold for \$80 a ton, but the average price for the month netted \$66.50..., making a profit for the firm of \$10,630.50 at the very start. By the end of the year the rail profits amounted to \$41,970. During 1876 they made \$181,000 and in 1877, \$190,379.

The profits of the young concern would have been even larger but for the steadily decreasing price brought by steel rails: —

1873.....	\$120 per ton
1874.....	100 per ton
1875.....	70 per ton
1876.....	58 per ton
1877.....	45 per ton
1878.....	42 per ton

With such a falling market, the ingenuity of Jones was taxed to the utmost, and the economy of Shinn and Phipps exerted to the full. It was at this time, in fact, that Wm. P. Shinn, General

Manager, introduced the exact cost keeping system, which, perfected by Phipps, had obtained ever since. Only by constant invention and improvement could Jones keep operating costs below the falling market prices, for you will note that the selling price of rails in 1877 was \$12 below the cost of producing those rails in 1875. As early as 1877, therefore, we find Jones making marked improvements at the mill, one of which was an automatic roller table, operated by a single man, to displace the hook and tong men at the stands.

The longest rail rolled in ordinary practice was 40 feet, although at the Centennial of 1876 the young plant had a 90-foot rail on exhibition.

We come now to the next great period of development at the plant. While blooms for the rail mill were secured sometimes from Cambria and occasionally even from England, most of the pig iron came from Lucy Furnaces [in nearby Rankin]. All of the Edgar Thomson firm were not interested in Lucy's welfare, and hence discussions arose as to the proper price Edgar Thomson should pay for pig iron. Furthermore, under the direction of Captain Jones, the plant was rapidly proving itself a most profitable venture, and the success of the Lucy Project was very enticing. From these considerations it was therefore decided to erect a blast furnace plant at Edgar Thomson, and the campaign started in 1879 under the supervision of Mr. Julian Kennedy. Andrew Kloman, one of the original partners, had failed, and a small charcoal furnace which he had built at Escanaba was purchased for \$16,000 or so and transported to Braddock, where it became the old 65 x 15 ft. Furnace "A." This furnace was blown in January 4, 1880, and on her first lining produced an average of 56 tons daily, with about 2,650 pounds coke to the ton of iron....

[Two more furnaces were added in 1880.]

Labor was cheap, and improvements came rapidly, and by 1881 the new plant had cleared \$2,690,157.57 and its prosperity remained unchecked. During that year the rapid growth of the steel industry justified further expansion.... In that year a Blooming Mill was erected, being enlarged to 36" size, followed in 1882 by a new converting works. Plans were also drawn for a new General Office building, and in the spring of 1882 the Captain at last took a well earned vacation and went to Europe, an experience which we may imagine he enjoyed to the full.

The corner stone of the present general office building was laid May 27, 1882, and from the papers found therein we learn that even at that early date the Amalgamated Association, a labor union, was having trouble with the manufacturers, although it did not develop into anything serious [until] years later.

In England, Captain Jones, who was a common, every-day, figure on Braddock streets, where he would stroll along eating peanuts (which often cost him 25 or 50 cents a package — "no change, thank you,"), — was greeted as a marvel and a genius. What he had accomplished in production had astonished the British



manufacturers and revolutionized the steel industry. The profits of the Braddock plant had rolled up enormously, and already repaid in full the original investment....

[Four new iron furnaces were added between 1882 and 1887, and 21 acres adjoining the plant were purchased in 1887 for an expansion.] ....

In September, 1888, Jones' greatest invention, the "Jones Mixer," 125 tons capacity, was placed in operation. The iron from all the furnaces is poured into this mixer, and thus uniform iron is supplied to the converters. The patent on this mixer was successfully defended by the Steel Corporation in 1905, and the idea has been used in all the steel plants of the world.

The plant up to this time [1888] had been under the control of labor organizations. The Amalgamated Association broke up in 1884, only to be succeeded by the Knights of Labor. The plant had been run on an eight-hour basis, and when the company attempted to inaugurate a twelve-hour basis in 1887, trouble ensued. The men refused to sign the annual agreement, and a strike followed December 31, 1887, which continued until May 12, 1888, the plant being entirely shut down except for the mechanical department. When the men finally surrendered and signed the sliding scale inaugurated at that time (by which their pay, in many cases, varied with the selling price of the product), also accepting the 12-hour day, the backbone of Union labor was broken in the Edgar Thompson mills....

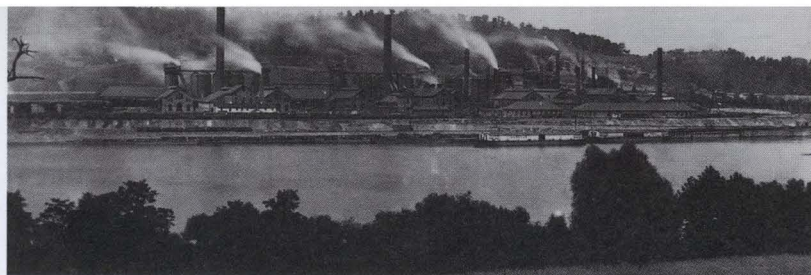
Captain Jones had often told the officials of the company that if they would only give him the chance he would build them a rail mill that was worthy of the name and would far surpass the old one that they had, and in 1887 he got his chance....

Needless to say, the new mill was fully up to expectations, and in 1889 the annual output of the plant in rails leaped to 277,401 tons.

In that year, the last one of his life, the Captain placed a capstone on a life of charity and benevolence by his humane and vigorous efforts on the occasion of the Johnstown flood. As soon as word was received of this terrible disaster (May 30, 1889), he dispatched a trusted messenger to investigate, and ... shortly assumed command of the Pennsylvania Railroad workmen sent to Johnstown, and did heroic work in alleviation of the suffering of that devastated district.

We come now to the close of this remarkable administration. Jones had taken a new and untried plant, built up an efficient organization, and made a name for the firm all over the commercial world. Just as he had erected the old G.A.R. monument on the hill above Braddock, so did he put Braddock itself on the world's map.

On the night of September 26, 1889... a workman was engaged in striking a bar inserted in the tapping hole, to open the furnace up, when Jones, dissatisfied with his efforts, said, "Let me do it," as was his habitual expression. Seizing the sledge he struck the bar, and at the same moment the furnace burst, its contents splashing over his head and shoulders. Springing quickly backward, the Captain struck his head, in falling, upon a modock cinder car.... \*



**ET in 1896, nine years after Jones' redesign of the rail mill — Carnegie's "cash cow."**

cannot be measured against any complete study of his ideas and accomplishments. I am neither an historian nor an authority on labor relations, but it seems that Jones was one important figure in the late 19th century who had attitudes about work and workers out of step with his time — among peers in management, at least, and also among leaders of the dominant labor unions of the day. Perhaps it is mainly for this reason that his life and achievements are easily misunderstood. Perhaps it is for this reason also that Jones does not figure prominently in scholarly accounts of struggles over the 8-hour day.

Some historians — Paul Krause, for instance — have implied that Jones was a lackey of capitalists who disregarded the needs of workers,<sup>27</sup> and it is true through the early 1880s that Carnegie generally supported Jones' management practices at ET. The works was an industrial Mecca, attracting steel titans from around the world to see "how to do it best"; Jones left a powerful stamp not only on technology at the mill but also on the way humans were organized to operate the impressive new machines.

Carnegie biographer Wall, and Krause, write that as superintendent, Jones was peerless as a mechanical genius and as a manager of departments and employees. My argument below sheds new light on the Jones who maintained a buffer between labor and management, and who frequently appears to have switched allegiances. He ascended the career ladder during the most tumultuous and competitive years to that date in the steel industry, and he did it by behaving more like a coach, fostering a rivalry among workers that he believed was healthy competition, and by using bonuses and other incentives to spur people on. But he was not a slave driver, nor a stooge for management.

Krause, for instance, ignores Jones' start as a laborer at Cambria; only in his last two years there was he an assistant superintendent.<sup>28</sup> Jones actively opposed Daniel Morrell's hard-handed labor policies, which most likely dashed his chances for appointment to superintendent. (Morrell, several years later in a tour of ET with Carnegie, was heard to bemoan his failure to promote Jones.<sup>29</sup>) Carnegie, in turn, appointed Jones as ET's superintendent.<sup>30</sup> When the labor dispute broke out at Cambria in 1875, it seems obvious that it was his fellowship with the Cambria men, and their belief that conditions at ET would be better, that can explain why they came to work for him.

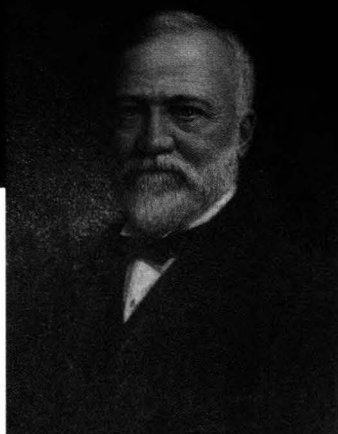
Yet, despite such allegiances, Jones was not a sweetheart of the union aristocracy. He broke ranks with the union many times: he hired African Americans and men from other ethnic groups<sup>31</sup> for many years, for instance, while the Amalgamated Association of Iron and Steel Workers denied membership to "coloreds."<sup>32</sup> Coincidentally, only after Jones' widely publicized 1881 speech in favor of a what we today would call a "multicultural" work force





Finishing a rail at the  
Thomson Works, c. 1903.  
Inset, Andrew Carnegie  
portrait (original in color).





that included African Americans,<sup>33</sup> did the Amalgamated allow blacks to join. Jones did not relegate Irish laborers to the iron furnaces or the Welsh to the rolling mills, as was the custom in his day, but instead routinely allowed workers to hold positions at their level of competence, regardless of ethnicity.<sup>34</sup> Team competition, he believed, nullified balkanization in the mill. By mounting iron brooms to designate the production records broken, and by forming baseball teams within and outside the works, he tried to encourage a healthy, cooperative, and productive work force.<sup>35</sup>

Unions during this period organized chiefly along craft lines, representing workers trying to prevent new technology and less skilled laborers from diminishing their profession. Puddlers, for example, filled the ranks of the Sons of Vulcan wing of the Amalgamated, and stood among the most honored and experienced workers in the mills. The process of hand-kneading molten metal to produce pig iron was handed down from generation to generation, and father to son. Previously, many puddlers had been semi-independent craftsmen contractors whom a small manufacturer hired by "the heat," and in turn puddlers paid assistants who were learning the craft.<sup>36</sup> But the huge machines and steam power of steel production during the Industrial Revolution rapidly reduced the influence of puddlers. Although Jones saw himself as an ally of the working man, he frequently clashed with the Sons of Vulcan, which perceived his drive for technical proficiency as a threat and as a club for management. Jones often said he preferred more broadly representative "company" unions, and he criticized the craft associations for nepotism and for racial and ethnic discrimination.

As mills became increasingly complex, with more and more semi-skilled workers and laborers, more employers adopted hourly or day wages as the mode of remuneration. In most mills, this change jeopardized the autonomy of craft workers, while the number of people employed continued to increase. At ET, the workforce steadily increased from a few hundred to more than 2,500 by 1890.<sup>37</sup> A former machinist and puddler at Cambria,<sup>38</sup> Jones understood that new technology caused anxiety and tried to educate workers about its benefits. In a letter to Carnegie, he explains how he introduced new shears for cutting huge steel slabs, at first alarming workers who later acknowledged the advantage of the "Black Sheep":

We started new shears on last Thursday. At first things worked awkwardly, and our labor agitators were in high glee that the new [shears] after all would not save labor. I took matters easy, altering such things that were not strictly right, and allowed the full crew of four men to a turn to run the new shear for the balance of the week. Sunday evening I went down to the works and plainly told all hands that they had had their full share of fun over the "Black Sheep," the name they apply to new shears, and now it was my turn to have a little fun. The result is that the new shears are being successfully run by two men who candidly admit that the work is now far easier than on the old shears with four men, and we now save fourteen dollars per day by using new shears.<sup>39</sup>

One current authority, historian Kenneth Warren, the recent author of a business biography of Henry Clay Frick, describes Jones as a “ruthless competitor, willing to drive both the men and himself, developing and exploiting the feelings of his subordinates for rivalry with other plants or one gang of men against another — yet also concerned not to push them to the breaking point.” Warren, like so many others, considers Jones “outstanding as a steelmaker and leader of men” but adds that he also was “a very human figure of mixed talents, qualities and defects, all of them on an heroic scale and suffused by a colorful personality.”<sup>40</sup>

In one case, the Knights of Labor called a strike of laundry workers in downtown Pittsburgh. Two non-union replacement workers were daughters of a veteran employee at ET. The union demanded Jones fire the father, but Jones refused, so the union went to Carnegie, who did the firing.<sup>41</sup> When he could, Jones eased the work load on employees and battled Carnegie for fair wages.<sup>42</sup> But the union also fought to exert authority, insisting, for instance, on the right to recruit its own workers. Several times in the mid-1880s, Jones threatened to resign over the issue, but Tom Carnegie (Andrew’s brother and longtime chairman of the company board) interceded, and often sided with Jones.<sup>43</sup>

### Jones and Work Conditions at the Mill

JONES OFTEN demonstrated concern for the health and safety of workers — he installed ventilation, for instance, to relieve the heat of the furnace and converter during the summer months<sup>44</sup> — but perhaps no other issue succinctly symbolizes his attitudes about the workplace better than the debate over the 8-hour shift. At the invitation of the social Darwinist Herbert Spencer, who met Jones while touring ET, the captain in 1881 addressed the British Iron and Steel Institute in Birmingham. His themes were maintaining a work force of varied ethnicity and using competitive spirit and the 8-hour day to increase production.

Jones had gone to work as a child of 10 years old, and in addition to his positions in the steel industry, had toiled as a lumberjack and farm worker. He knew hard, physical work. He had begun his career with Carnegie driving crews on 12-hour shifts, even on Sunday, but progressively came to believe such schedules were inhumane and unsustainable over the long run because of the heightened danger posed by exhaustion and its negative effect on the workforce’s morale. After his appearance before European industrialists in 1881, he recounts in the lead article of Europe’s most prominent trade journal how his experiences at ET transformed his views on the 8-hour day:

In increasing the output of these works, I soon discovered it was entirely out of the question to expect human flesh and blood to labor incessantly for twelve hours, and therefore it was decided to put on three turns, reducing the hours of labor to eight. This proved to be of immense advantage to both the company and the workmen ....<sup>45</sup>

He believed nearly half the accidents in the mill were preventable by combining technology that reduced the danger of the most difficult work with the 8-hour shift, so that fatigue was less likely to cause carelessness. Shorter shifts also favored the company, he

reasoned, because less fatigue meant less wasted time, while fewer accidents meant less “down time” due to injured workers and damaged machinery.<sup>46</sup>

The 8-hour day was hotly contested for at least five decades, flaring most famously when strikes at 11,000 businesses nationwide on May 1, 1886, ended with the Haymarket massacre in Chicago (commemorated today as the International Labor Day). Unionized workers’ umbrella, the Federation of Organized Trades and Labor, agitated for the 8-hour day in the years leading up to the Haymarket incident, but the commitment varied among unions and their industries.<sup>47</sup> Puddlers, whose influence dominated the Amalgamated, preferred the 12-hour day through most of the 1870s and ‘80s.<sup>48</sup> Since puddlers and their crews traditionally were compensated by the ton, the more hours they worked, the more they could produce; so, they saw the mandatory 8-hour day as a direct restriction of their earnings. Puddlers also insisted that breaking the day into 8-hour blocks was inefficient, because “heats” of molten iron could not be regulated by the clock.

The iron produced in these furnace heats was loaded into a second furnace, inside a cupola, to be reheated; then the iron was dumped from the cupola with other ingredients into the Bessemer converter, which took about 20 minutes to produce 25 tons of steel. Jones’ mixer cut out the cupola heating stage altogether. Because machines, rather than humans, did more of the work in the “steel end” of the factory — consequently raising the risks for those who ran the huge machines in the Bessemer departments — crews tending the converters could come and go in 8-hour shifts without production suffering.

While steelworkers and iron puddlers disagreed on the best schedule, puddlers were more active in the union and outnumbered steelworkers throughout the important decade of the 1870s, when the steel industry was new and when standards and the majority of company work rules were established. Although the 8-hour day was the official policy at ET as early as 1879, through 1888, it is unclear which workers besides puddlers — steel pourers, vesselmen, rollers, hookers, coolers — objected to the policy, or even how long they worked each day during the period. Such details remain very sketchy in the historical record.

The 8-hour policy continued until Henry Clay Frick succeeded Tom Carnegie as chairman of the board at the company. Then, in 1888, claiming that low rail prices had reduced profits, Andrew Carnegie enticed the union to accept a contract that called for a sliding scale of wages — one based on company profits but also requiring a 12-hour work day.<sup>49</sup> Ironically, his own success at reducing costs, which in turn enabled him to lower his prices below the others, was at least partly responsible for the poor profits about which he complained. When the Amalgamated ratified the contract, Jones was torn between a Carnegie now favoring Frick’s more ruthless labor policy and a shortsighted union seeking to protect its most influential constituency.

Jones was bitter to be left hanging in the wind. But he also was busy designing and filing patents for the iron mixer and other devices that increased production while improving safety for most workers — at the expense, it seems clear, especially of puddlers.



Mechanized iron production in giant primary furnaces — technology related to the Jones Mixer in many respects — would eventually make puddling obsolete.

Not until 1924 did U.S. Steel institute the 8-hour shift in every department, and then only after tremendous pressure that resulted from the bitter nationwide steel strike of 1919. The 8-hour shift is of course standard today in most businesses, large and small.<sup>50</sup>

Jones also was well ahead of his time in establishing bonus systems, in which workers at nearly every level were rewarded for production records, decreasing “seconds” or inferior rails, and for adherence to work procedures (all concepts praised today, most notably in the Japanese approach to workplace organization). The captain also backed up his philosophy with deeds, practicing charity freely in his community and without fanfare. There is some evidence, in fact, that it was Jones who encouraged Carnegie to fund his first library — in Braddock, dedicated in 1889.<sup>51</sup>

Perhaps Jones appreciated the stamina and commitment needed by the men who did the hardest, most dangerous work in the mill because he began his working life so young. But the Civil War likely had a profound impact also. He was a veteran of Antietam, Chancellorsville, the Second Battle of Bull Run, and the carnage before Marye’s Heights at Fredericksburg, where Jones was in the first assault column that suffered 55 percent casualties. (Commentators such as historian Shelby Foote have called the charge the “singular incident of valor” among either Northern or Southern combatants.) The Union Army lost 12,600 men at Fredericksburg, and the experience must certainly have influenced Jones thereafter, as seen in his insistence on disciplined team effort, team competition, and interdependence in the workplace.

The most significant events in my great-grandfather’s life reveal his empathy for workers less fortunate than himself, and this is a theme I repeatedly heard from my mother, father, aunt, and uncle. He gave up a fortune in stock plans and partnership with Carnegie because, according to Schwab, “he didn’t want the men to think he was sharing the profits of the company.”<sup>52</sup> He delivered a bombshell in 1881 by calling for the 8-hour day in a speech cited as one of seven major events that year in the *Chronicle of Iron and Steel*. He died at the hands of the steelmaking system which sustained his family and career, but he also died assisting two of the laborers whose rights and livelihood he fought for.

The comments a few days after his death by the *National Labor Tribune*, the organ of the Amalgamated union, are carefully chosen and seem uncommonly representative of an “official position” on Captain William Jones.

[H]e was a man of big heart, very popular, very successful in his calling, and a manager in whom personal energy and method were remarkably notable.... [I]n those industries in which there is ambitious competition as to the quality of output, and consequent straining of the strength of plants, the occurrence of accidents may be expected at any time. Such competition, the motive of which is a combination of reputa-

tion and profit, exists probably more in the Bessemer and the relative steel plants than in any other of the industries.<sup>53</sup>

The 1880s, in particular, were years in which monumental changes in technology and the unstable labor relations that ensued proved disastrous to many mill owners. Carnegie was able to benefit from these conditions as much as he suffered, many argue. He added to his holdings during those years state-of-the-art mills at Homestead (1883) and Duquesne (1890) in large part because prior owners had failed to establish profitable yet humane relationships with employees.

Carnegie persistently needled Jones about wages during the decade, but Jones did not budge. To Carnegie’s craving for lower costs and more productivity, Jones urged him to see that “an enlightened labor policy was good business practice.”<sup>54</sup>

The reader may better understand the assertion by savoring the tone of this 1878 Jones letter to

Carnegie:

Dr Sir

Your favor of 3rd to hand. One thing you mention in your letter, that I do not like, is a prospective reduction of wages. I most earnestly say, let us leave good enough alone. Dont think of any further reductions. Our men are working hard and faithfully, believing that hard pan has been reached. Let them once get the notion in their heads that their wages are to be further reduced and we will lose heavily.

I am or have promised rewards, if we accomplish certain output. It looks as if what I am aiming at will be accomplished. So of all things, dont think of reducing wages.

Now mark what I tell you. Our labor is the cheapest in the country. Our men have “Esprit de Corps,” and our cost of maintenance is way under that of any other works. Low wages does not always imply cheap labor. Good wages & good workmen I know to be the cheapest labor. Our men are taking good care of our property and are pulling with us so heartily that I even cant dream of again attacking them.<sup>55</sup>

I recall my uncle quoting his mother saying that William Jones did not trust Carnegie, and Carnegie’s biographer even cites an explanation. “I don’t particularly like Frick, nor do I admire him,” Jones once remarked, but at least with Frick “you always know where you stand .... [W]ith Carnegie, it is a different matter, he is a side-stepper.”<sup>56</sup>

### Examples to Avoid & the Full Meaning of Partnership

**E**ARLY IN his career at Edgar Thomson, Jones had an experience that likely helped guide his dealings with Carnegie forever afterward.

William P. Shinn was general manager at ET in the late 1870s. When his relationship with his employer soured over



**The William Jones family home (1997) on Kirkpatrick Street in North Braddock.**

issues of managerial autonomy, Shinn accused Carnegie of using the company stock he had bought to try to enslave him. Then, when Shinn found a new position with a rival St. Louis firm and decided to sell his shares, Carnegie insisted on paying Shinn only the book value of the stock, instead of its much higher market value. (Shinn subsequently sued for \$200,000 and won.<sup>57</sup>) He urged Jones to defect with him, and Jones considered it, even traveling to St. Louis to see Shinn's operation.

In the end, Jones took over many of Shinn's duties at ET, and throughout his career with Carnegie preferred to remain an independent employee with, as he often said, "a hell of a salary." In light of his increased responsibilities as plant superintendent after Shinn's exodus, Jones asked for \$15,000 a year and Carnegie gave him \$25,000 — the same compensation as the president of the United States.<sup>58</sup>

There were other human examples that proved instructive. As a young man at Cambria in 1859, Jones worked with William Kelly, who as early as 1847 discovered the pneumatic process for converting iron to steel — a decade before Henry Bessemer made similar breakthroughs and named his "discovery." Kelly's work

was ridiculed; his father-in-law recommended he be placed in an asylum. Kelly's U.S. patent encountered legal obstacles that were never resolved in his favor, and Bessemer's name, of course, won out. Kelly continued his experimentation in Johnstown, working with Jones until the captain left for Pittsburgh.

I speculate that Jones understood Kelly's bitter-

ness and, during his years of working for Carnegie, patented his inventions to avoid Kelly's fate. This is a bitterly ironic twist considering what happened after his death.

I have delved into many archives in search of correspondence between Jones and Carnegie. Of the 80 letters found, only two were written in the crucial period between 1885 and September 1889. Files in all the archives that should contain letters touching on his inventions or, for instance, his ideas about labor relations during the bitter strike of 1887 — an event that marked Frick's ascendancy in the company, the start of agitations to re-institute the 12-hour work day, and the sliding wage scale — have been picked clean. (In other years — 1878, for example — archives reveal that Jones wrote Carnegie sometimes twice a day.)

Jones' patents and refusals of partnership must have worried Carnegie. He probably feared that Jones would follow Shinn's example. Carnegie's brother, Tom, a beloved friend of my great-grandfather's who became his boss after Shinn's departure, interceded between his older brother and Jones on many occasions. After Tom Carnegie's death in the fall of 1886, Frick's stature began to grow — in fits and starts, as ownership of the

coke magnate's firm and the steel magnate's holdings became intermixed — until he took over in January 1889 for Henry Phipps as general manager of Carnegie Bros. & Co.<sup>59</sup> With the consolidations and plant purchases that greatly increased the size of Carnegie's empire during those years, the general manager's authority increased accordingly.

Carnegie biographer Wall points out that as the years wore on, Carnegie came to believe that cutting costs was the key to prosperity. It was also perhaps the only middle ground for Frick, Jones, and Carnegie. But while Carnegie sometimes targeted railroad fees as the greatest source of unnecessary expense, Frick could be counted on always to see labor and unionism as the culprit. And certainly Carnegie was the master at switching his allegiances. Just 27 days before Jones' death, Carnegie wrote to Frick: "Let me express the relief I feel in knowing that the important departments of our extended business are in the hands of a competent manager. Phipps and I exchanged congratulations upon this point. Now I only want to know how your hand can be strengthened."<sup>60</sup>

Jones and Carnegie, and Jones and Frick, must have clashed many times over labor policy once Frick was at the helm, and after the strike of 1887, Jones filed patents with the U.S. Department of the Interior at an increased rate: six between May 15, 1888, and June 4, 1889.<sup>61</sup> But documentary correspondence among the men is largely missing, or is unobtainable.<sup>62</sup>

## A Lasting Legacy

**I** COUNT 24 of the 51 names of the Carnegie Veterans Association who worked under my great-grandfather. Most notable are Charles Schwab, first president of US Steel and then of Bethlehem Steel; Alva Dinkey, president of Carnegie Steel; James Gayley, first vice president of US Steel; and William Ellis Cory, second president of US Steel.

Then there is John Potter. He advanced to the superintendency at the Homestead works and weathered the great Strike of 1892, but left a mark of a different sort.

My grandparents once rented an apartment in a Los Angeles home that, coincidentally, was owned by Potter. He designed the 32-inch universal slabbing mill at ET and eventually became superintendent at Homestead when Schwab left the position to assume my great-grandfather's job after his death. According to my uncle, Potter "shared the captain's attitude toward the rights and welfare of the working man."<sup>63</sup> He took much of the blame for Carnegie and Frick's inept handling of the strike, and was "kicked upstairs" in the company but then quit on November 1, 1893, after testifying before a congressional committee investigating the strike.<sup>64</sup> Embittered, he lived 20 years in Latin America, before returning in 1914 to build a 16-room home in Los Angeles. In 1920, he remodeled the home into two apartments; my grandparents, uncle, and father rented the upper floor.

Five years passed until Potter, having received an invitation to attend what was that year the 21st annual meeting of the "Carnegie veterans" in New York City, walked three blocks from his home to the corner of Carnegie Street and shot himself in the head on



**Jones' mausoleum in Braddock's Ironore Cemetery sits near the entrance, with ET's belching stacks in view.**



December 18, 1925 — the day the meeting began in New York.

My father and grandfather identified the body to save Mrs. Potter any additional agony.<sup>65</sup>

At the dawn of the 21st century, we may benefit from listening to the echo of my great-grandfather's ideas. Although William Jones is nearly unknown today, in 1923 David Lloyd George bridged his appeal for support for the League of Nations with an extensive accolade about Jones as a Pittsburgh icon.<sup>66</sup> Novelist John Steinbeck also pondered Jones' attempts at industrial democracy.<sup>67</sup> Congress noted his passing. Charles Schwab's autobiography begins and ends with tributes to him.

In his personal and professional life alike, my great-grandfather preferred fair play, healthy competitiveness, and giving when you have got enough for yourself rather than hoarding all. As different as the two men were, perhaps it was Carnegie, as I noted at the outset, who kept his image of William Jones the closest at hand. ☀

## Notes

<sup>1</sup> *The Royal Blue Book* (Pittsburgh, 1915), 92.

<sup>2</sup> R. Hessen, *Steel Titan: The Life of Charles Schwab* (New York, 1975), 19.

<sup>3</sup> B.J. Hendrick, *The Life of Andrew Carnegie* (Garden City, 1932), v. II, 383.

<sup>4</sup> P.F. Paskoff, *Iron and Steel in the Nineteenth Century: Encyclopedia of American Business History of Biography* (New York, 1989), 206.

<sup>5</sup> J. McHugh, *Alexander Holley and the Makers of Steel* (Baltimore, 1980), 219.

<sup>6</sup> J. Wall, *Andrew Carnegie* (New York, 1970), 316.

<sup>7</sup> William R. Jones, letter to "To William P. Shinn," 5 Aug. 1876, property of William J. Gaughan, Pittsburgh.

<sup>8</sup> A. Holley and L. Smith, "The Works of the Edgar Thomson Steel Company" *Engineering* (London, 1878), 3, 4, 6, 7.

<sup>9</sup> *The Royal Blue Book* (Pittsburgh, 1913), 88.

<sup>10</sup> Hendrick, *The Life of Andrew Carnegie* (Garden City, 1932), v. I, 309.

<sup>11</sup> William J. Gaughan, interview, Pittsburgh, 18 June 1994.

<sup>12</sup> J. Bridge, *Millionaires and Grub Street* (Freeport, 1931), 19.

<sup>13</sup> Wall, 532-33.

<sup>14</sup> D. McCullough, *The Johnstown Flood* (New York, 1968).

<sup>15</sup> J. Butler, Jr., *Fifty Years of Iron and Steel* (Cleveland, 1918), 56.

<sup>16</sup> "A Shocking Accident at the Edgar Thomson Works," *Pittsburgh Post*, 27 Sept. 1889 (morning ed.).

<sup>17</sup> William R. Jones, "To Andrew Carnegie," 18 Nov. 1877. This letter is the earliest to document Harriet Jones' illness. Jones Letterbox, Annandale Archives, Boyer, Pa.

<sup>18</sup> Frick's note to Harriet Jones is in the author's possession. It is unclear from the note whether the group came to the house on Sept. 30 or Oct. 1; Dr. Daniel D. Gage, Jr., "To Joseph Frazier Wall," 11 March 1972, in author's possession.

<sup>19</sup> Wall, 533.

<sup>20</sup> Andrew Carnegie to Leishman, 1 Aug. 1895, Andrew Carnegie Papers, Library of Congress, v. 32.

<sup>21</sup> A.C. To Lauder, 1 Jan., 1899 Andrew Carnegie Papers, Library of Congress, 11918.

<sup>22</sup> S. Holbrook, *The Age of the Moguls* (Doubleday, 1954), 347.

<sup>23</sup> George Lauder, "To D.D. Gage," 31 Aug. 1905, Andrew Carnegie Papers, Library of Congress.

<sup>24</sup> "Cambria Iron Co. vs. The Carnegie Steel Co.," Case Number 334 (U.S. District Court of Appeal, 1912).

<sup>25</sup> Two newspaper clippings, undated in Daniel Gage's file on Capt. Jones, in author's possession.

<sup>26</sup> J.A. Fitch, *The Steel Workers* (Pittsburgh, 1989 [reprinted edition]), 196.

<sup>27</sup> P. Krause, *The Battle of Homestead* (Pittsburgh, 1992), 143.

<sup>28</sup> P. Paskoff, *Iron and Steel in the Nineteenth Century: Encyclopedia of American Business History of Biography* (New York, 1989), 206.

<sup>29</sup> H. Casson, *The Romance of Steel* (New York, 1907), 27.

<sup>30</sup> McHugh, 234-243.

<sup>31</sup> J. Bridge, *The Inside History of the Carnegie Steel Company* (New York, 1903), 110.

<sup>32</sup> J. Robinson, *The Amalgamated Association of Iron, Steel and Tin Workers* (Baltimore, 1920), 47.

<sup>33</sup> Captain W.R. Jones, "On the Manufacture of Bessemer Steel and Steel Rails in the United States," address, Birmingham, England, 1881.

<sup>34</sup> H. Livesay, *Andrew Carnegie and the Rise of Big Business* (Boston, 1975), 132-35.

<sup>35</sup> G. Lamb, ed., (History Committee for Celebration of Golden Jubilee of Braddock), *The Unwritten History of Braddock's Field* (Braddock, 1917), 107.

<sup>36</sup> C. Walker, *Steel: The Diary of A Furnace Worker* (Boston, 1922).

<sup>37</sup> Carnegie Brothers & Co., Ltd., *The Edgar Thomson Steel Works and Blast Furnaces* (1890).

<sup>38</sup> Paskoff, 205.

<sup>39</sup> William R. Jones, "To Andrew Carnegie," 17 Feb. 1884, Andrew Carnegie Papers, Library of Congress.

<sup>40</sup> K. Warren, "To Tom Gage," Sept. 1994, in author's possession. Warren's book is *Triumphant Capitalism: Henry Clay Frick and the Industrial Transformation of America* (Pittsburgh, 1996).

<sup>41</sup> Bridge, 188.

<sup>42</sup> Livesay, 133.

<sup>43</sup> Fitch, 88.

<sup>44</sup> William Jones, "To Andrew Carnegie," 17 July 1880, Jones Letterbox, Annandale Archives.

<sup>45</sup> Bridge, 110.

<sup>46</sup> McHugh, 256.

<sup>47</sup> Fitch, 116.

<sup>48</sup> Fitch, 95.

<sup>49</sup> Wall, 527.

<sup>50</sup> *Chronicle of Iron and Steel*, 241.

<sup>51</sup> Manuscript under "E" (Edgar Thomson Works) in Jones Letterbox 34, Annandale Archives.

<sup>52</sup> Gage to Wall, 11 March 1972; C. Schwab, *Succeeding With What you Have* (New York, 1917), 54.

<sup>53</sup> *National Labor Tribune*, 5 Oct. 1889.

<sup>54</sup> Wall, 522.

<sup>55</sup> William R. Jones, "To Andrew Carnegie," 6 May 1878, Jones Letterbox, Annandale Archives.

<sup>56</sup> Ibid.

<sup>57</sup> Shinn v. Carnegie, transcripts in the Jones Letterbox, Annandale Archives.

<sup>58</sup> Wall, 359. Jones for a few years received incentives based on production at ET which, according to company documents, varied considerably from year to year but once brought him an additional \$25,000.

<sup>59</sup> Wall, 490-93.

<sup>60</sup> Henry Clay Frick, "To Andrew Carnegie," 3 Sept. 1889, printed in J. Winkler, *Incredible Carnegie* (Garden City, 1931), 181.

<sup>61</sup> U.S. Dept. Of Interior documents, in author's possession.

<sup>62</sup> The one remaining possible source of correspondence is the Frick Art and Historical Center in Pittsburgh, but after describing the purposes of my research to staff, requests for personal inspection of the correspondence files were repeatedly denied. It was said the archives are not open to the public, though historian Kenneth Warren used the correspondence files extensively for his *Triumphant Capitalism* (see note 40).

Carnegie's biographer, Joseph Wall, "wondered too why there was almost no correspondence between Capt. Bill & AC in the Carnegie papers. Carnegie was very meticulous in keeping his correspondence, so either they did not write each other and kept their correspondence limited to conversation when AC visited Pittsburgh, as Jones was the one person AC was always eager to see when he came to the mills, or else — and this seems somewhat unlikely — AC deliberately destroyed Jones' letters lest they might be used against him and the company in the event of any suit over patents." J. Wall to author, 30 Jan. 1995.

<sup>63</sup> Gage to Wall, 11 March 1972.

<sup>64</sup> D. Demarest, ed., *The River Ran Red* (Pittsburgh, 1992), 52.

<sup>65</sup> Gage to Wall, 11 March 1972.

<sup>66</sup> "Lloyd George Urges Peace of Conciliation," *Gazette Times*, 25 Oct. 1923.

<sup>67</sup> John Steinbeck, "To Bill Gage," 1 Dec. 1939, in author's possession.