

# THE JOSHUA HENDY IRON WORKS

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## TABLE OF CONTENTS

| Chapter |                             | Page |
|---------|-----------------------------|------|
| I.      | Welcome Back Old Friend     | 1    |
| II.     | In The Beginning            | 3    |
| III.    | Hendy Ascending             | 6    |
| IV.     | Sunnyvale Calling           | 8    |
| V.      | World War I                 | 11   |
| VI.     | The Depression              | 12   |
| VII.    | Charlie Moore To The Rescue | 14   |
| VIII.   | America Calling             | 16   |
| IX.     | Tarawa Avenged              | 19   |
| X.      | After The War               | 22   |
| XI.     | Westinghouse, The New Hendy | 23   |
| XII.    | Gone But Not Forgotten      | 24   |

## PREFACE

Day by day, week by week, year by year, the rich history of the Santa Clara Valley is being shoved aside and buried in a rush to worship and at the altar of the computer. In the minds of many its as if our Valley's history started a mere 25 years ago! It seems almost criminal that the our schools don't put more emphasis on local history.

It is my hope, that with greater effort by people like myself, the good word can be spread. The following essay is just a start. The story of the Hendy Iron Works of Sunnyvale replenishes our thirst for intimate knowledge of what has come before.

If we falter in our duty and mission to reestablish Santa Clara Valley's history as a necessary priority, then the sands of time will render it obscure at best, irrelevant at worst. Lost civilizations are reduced to dry recital of meaningless conjecture. Vigilance on our part will keep our history alive, vital, accessible. Long live The Hendy Iron Works! Long live the Santa Clara Valley!

## CHAPTER I

The legacy of the magnificent history left by the Joshua Hendy Iron Works, appears sadly lost in the present version of the Santa Clara Valley. Tucked away in a corner of the City of Sunnyvale, the Hendy Iron Works were, at one time, the Valley's largest manufacturing facility. Its output was measured in tons. Its employment measured by the thousands. "7,500 employees sometimes working twenty-four hour shifts every other day".(1) "Gigantic marine steam engines, each weighing 140 tons and standing close to 25 feet tall", (2) were churned out during World War II. The sprawling facilities contained "1,250,000 feet under roof".(3)

This writer finds the intoxicating lure of this story difficult to resist. It seems almost criminal that so few know the tale of such a fabled piece of Santa Clara Valley history. Overshadowed by the Apples, Intels, and Hewlett-Packards, the Joshua Hendy Iron Works story stands alone as testament to the original meaning of hard work. No pagers, cell phones, pocket protectors, or lap top computers for the Iron Men of Hendy. The effete trappings of modern Santa Clara Valley life would have been out of place. Screen savers and mouse pads are out. Oily coveralls and well worn work boots are in. Strong, sinewy, intense men. Men of muscle and sweat. Callused hands working ponderously large pieces of machinery. Prodding,

pushing, conjuring, bidding the beasts to perform with even greater force. Muscular medieval Merlins, sorcerers of metallic alchemy forging machines for gold mining, damming wild rivers, and fighting world wars. No faceless, nameless office cubicles for the Iron Men of Hendy. Gifted with the power of Vulcan, Blacksmith to the Gods, their companions were the anvil, blast furnace, and welding torch.

## CHAPTER II

The founder, Joshua Hendy, had originally come to California like thousands of others drawn by the Gold Rush. Born in England in 1822, he arrived in California in 1849. "There is no record of his having dug so much as a shovelful of earth"(4). Instead, like Sam Brannan, he found that working in industries associated with the Gold Rush he could turn a profit.

Hendy started one of California's first redwood lumber mills, which he located in Benicia. Finding success, his holdings grew to several lumber mills and mining property in California, Alaska, and Mexico. These ventures were eventually parlayed into Hendy International. This enterprise was a line of steamships, freighters, ore carriers and tankers which plied the waters between San Francisco and Alaska.

The raging desperation of the Gold Rush, still mired in the laborious pick and pan of placer mining, brought on the use of hydraulicking which required more complicated machinery. The heavy machines needed were only available from the East coast. Seizing the initiative, Joshua Hendy, "bought property in San Francisco in 1856 and founded the Joshua Hendy Iron Works."(5)

Success begat success and Hendy Iron Works quickly became an industry leader in large scale mining equipment. The Hendy standard for

innovation would become its trademark for the next 90 years. Among Hendy products that were internationally distributed were "the Hydraulic Giant Monitor, the Hurdy Gurdy, Tangential Water Wheel, the Hendy Ore Concentrator, Challenge Ore Feeder, and the Hendy Hydraulic Gravel Elevator".(6)

As business increased due to the mass application of hydraulicking, which blasted away whole hillsides under enormous torrents of water pressure, the Hendy Company grew from one shop to three. No longer having to wait months for machinery to be shipped around the Horn from the East Coast, mining companies were able, with the Hendy touch to increase yields tremendously. "The peak yield in the 1870's amounted to approximately eleven to thirteen million dollars annually."(7)

However, the destruction rendered unto rivers and streams by this method of mining was devastating. "In 1880 alone, detritus washed by hydraulic operations into the Sacramento and tributary rivers amounted to forty-six million cubic yards. The quantity discharged into the Yuba River during an 18 month period alone would have filled the Erie Canal."(8) Eventually, the Hydraulic Giant Monitor, a prized Hendy invention would practically be outlawed in this country. Regardless, the quality, integrity and practicality of Hendy Iron Works creations had been embraced by the

national and international markets. Its first chapter was coming to a close.

### CHAPTER III

Having coddled, cajoled, and nursed his infant business through its early stages, Joshua Hendy's Iron Works were well established when he passed away in 1891. The mantle then fell to the able shoulders of Samuel and John Hendy, Joshua's two nephews. Determined to expand the already thriving venture, they erected a new modern machine shop and a bigger cast iron foundry. By 1895 Hendy was turning out, in addition to its mining equipment, machines "used in dam construction and in building the Panama Canal." (9) Other products were "the iron arches which spanned San Francisco's Fillmore Street, the ornamental lamp standards in Chinatown, and many of the city water plugs still in service." (10)

At 5:14 on the morning of April 18th 1906, an event occurred that would change forever the future of the Joshua Hendy Iron Works. The devastation caused by the San Francisco Earthquake/Fire are beyond comprehension by today's standards. Fifty separate fires were started immediately by gas connections breaking and stoves and chimneys overturning. Broken water mains compounded the problem and left fire fighters frustrated and helpless. The fires merged into one giant incinerating fire storm consuming all life and property in its path. 3 days and 2 nights of hell on earth resulting in thousands dead or dying, with

close to a billion dollars in property loss.

Though built with the strength of mighty Atlas, "all three San Francisco buildings of the Hendy Iron Works were destroyed by fire and Samuel Hendy lost his life." (11) The equipment, tools and machines were lost, destruction was total. But like a Phoenix rising from smoldering ruins, Hendys would be given new life by a most unlikely source 50 miles to the south of San Francisco.

#### CHAPTER IV

The City of Sunnyvale in the early 1900's, was primarily wide open orchard and farmland. Apricot and prune trees spreading out in all directions. Blossoms blowing in spring winds looked like snow drifts. The fragrance of the blossoms smelled like sweet ambrosia. As if playful Pan had spread a heady nectar across the landscape for mortal consumption.

Most of the Sunnyvale land was owned by the descendants of early pioneer Martin Murphy Jr. "who were busy with their own lives and careers and who displayed little interest in expending the time and money to maintain the 4,800 acres that was theirs collectively."(12)

Walter Crossman, an enterprising wheeler dealer businessman, began purchasing several hundred acres from the Murphy heirs. Crossman's idea was to lay out lots for houses then invite businesses to locate in Sunnyvale. The employees they brought would settle in the same city as they worked, on land that Crossman owned. Ever the opportunist, Crossman set about courting prospective suitors, offering free land to companies willing to locate to Sunnyvale from earthquake stricken San Francisco.

The Hendy Iron Works were offered 32 acres of free land adjacent to the Southern Pacific main line running through Sunnyvale. The lure was too attractive to resist. "Proximity to San Francisco Bay provided excellent

transportation, and the fact Mrs. John Hendy's mother lived in San Jose" sealed the deal.(13)

Hendy Iron Works wasted no time in setting up a most prodigious new plant which became fully operational by 1907. Instead of three separate shops, all operations were combined into one impressive facility, with an original floor space of 153,185 square feet. The main building, a machine shop, and assembly room were an eighth of a mile long. The foundry just by itself was close to 50,000 square feet. "Three traveling cranes of fifteen, twenty, and thirty tons capacity", were called upon to hoist gigantic amounts of tonnage.(14) "A carpenter shop, lumber yards, pattern shop, pattern store, yard crane, general store room, car shop, blacksmith and plate shop," were all under the Hendy domain.(15) The Phoenix had risen!

Sunnyvale brought a new vitality to the Hendy Iron Works. Once an ailing patient, Hendy had been renewed, refreshed, and rejuvenated. With new found virility and vigor Hendy branched out from its core mining business to new avenues of profit. Giant hydraulic gates and valves installed on flood control and irrigation systems. Specialty valves for a sundry of power projects. Gold dredges, water wheels and turbines the size of school buses. The restored energy of the Iron Men of Hendy flowed from

sweat drenched brows into their work. The design, assembly and manufacturing know how emanating from their kingdom became legend the world over. "Orders flowed in from Russia, the Dutch East Indies, the Philippines, China and Japan."(16)

Contrary to popular belief, size does matter. For the Hendy Iron Works size was everything. At times the jobs were so big the assembly had to be done outside. Giant projects of enormous dimensions required the same qualities in the tools used to create them. Boring, drilling, cutting crushing, milling and planing machines, were the tools of the steel surgeons. "40 foot long lathes, and planers so large they could accommodate a full army tank."(17) Massive gear cutters able to cut gears with an exactness in solid steel up to twelve feet in diameter.

## CHAPTER V

America's entry into World War I signaled the next chapter in the Hendy story. America called and the Iron Men of Hendy answered. The Navy needed propulsion engines to power cargo vessels. Was Hendy up to the task? All hands were on deck. By running two shifts of 500 men during the day and another 400 men at night Hendy built eleven of the "triple expansion marine engines weighing 124 tons each and having 2,800 horsepower. One single casting weighed fifteen and one-half tons."(18)

The engines after assembly would be broken down, laid on open railcars, transported to the shipyards then reassembled. A sleeping giant had been awakened. The Joshua Hendy Iron Works had answered America's call to arms. It wouldn't be the last time.

With the allies victorious and the war concluded, Hendy returned to its prewar core businesses with a few new additions including, the Hendy Auto Crane, a freight car wheel puller, water wheels, dredges and diesel engines. A tractor was built for a time, but discontinued. John Hendy, company president and nephew of the founder Joshua Hendy passed away in May of 1920.

## CHAPTER VI

Work at Hendy stayed consistent through out the 1920's, with ownership passing to Fredrick Bennerman. Then the 1929 Depression hit like a ton of bricks. A nation reeled and staggered under the crushing physical and emotional weight of catastrophic proportions. Manufacturers of heavy equipment suffered. The Joshua Hendy Iron Works was no exception. "Less and less business was recorded on the books, and fewer and fewer employees were needed.'(19)

An infusion of New Deal money into large scale construction projects enabled Hendy to produce huge gates and valves for the Boulder and Grand Coulee Dams. But crumbs were not enough to keep the fires hot enough at Hendy.

"Bennerman lost the Iron Works to the Bank of California in the late 1930's, but the bank kept the operation running until it was purchased in 1940."(20) Employment totals now measured only 250 men. The daunting shadow of the Depression had cast its pale over the entire American landscape. Even the Iron Men of Hendy couldn't escape. The deserted shops spoke volumes of the slow death overtaking the once proud company. A barely breathing carcass, Hendy was fighting for its life. The cacophony of men molding white hot steel, had been reduced to a whisper.

But Hendy would rise again! Like a slumbering Phoenix, the Iron Works only lay dormant. A sleeping volcano waiting for the slightest provocation to explode with rage and fury! But first a dash of serendipity was needed, for Madame Fate is a fickle mistress, destiny and coincidence are her paramours. Hendy Iron Works, meet Charlie Moore.

## CHAPTER VII

Charles 'Charlie' Moore, headed the Moore Machinery Company. A construction cartel including Moore, Felix Kahn, K.K. Bechtel, Henry Kaiser, and John McCone (who later headed the CIA), had built the Boulder Dam. Hendy valves had been installed, so a business association had already been established.

Charlie Moore knew Hendy was owned by the Bank of California. His idea was to buy all of the Works then disembowel it. Sell off all the machinery, steel and property. The parts were greater than the whole. Scatter the pieces to the wind, net a tidy profit and be done with it. "The cartel bought Hendy Iron Works for \$320,000 from the Bank of California." (21) Charlie Moore owned 35 percent and the controlling interest.

However, events at the time occurring thousands of miles away in Europe, would have a profound impact on Charlie Moore, and in turn, the Joshua Hendy Iron Works. The winds of war had begun to blow across the fruited plains, Germany had seen to that. America sat and watched as German Panzer divisions overran Europe. Blitzkrieg in the East, Sitzkrieg in the West.

Acting on a tip from Henry Kaiser, Moore and Kahn flew back to

Washington to meet with Navy officials. The Navy needed torpedo tube mounts and other armaments. Moore implied that he could meet other Navy needs as they arose. The lend lease program gave certain programs the green light, while others simmered on the back burner. "Four days later they were back with 10 million dollars in Navy contracts and an additional \$1.3 million for new facilities." (22) It goes without saying all plans to strip the flesh from Hendy's bones were quickly forgotten.

Charlie Moore is representative of the men who made Hendy such a dynamic company during wartime. "He was proud, tall, and athletic. A vigorous westerner who valued experience over education. Even when he owned Hendy, Moore remained a machinist at heart. There wasn't a tool on the shop floor that Moore couldn't operate, at times peeling off his coat and tie and step up to a milling machine." (23)

He only had an eighth grade education, but he became a highly skilled machinist. Then he became the owner of a financially successful machine tool dealership, and finally the organizing force in the purchase of the Hendy plant. Standing six foot, four inches and given to taste in western style suits and hats, he towered over most gatherings. He owned and rode horses. Joshua Hendy would have been proud.

## CHAPTER VIII

In 1940 Britain was being blockaded by German U-boats. British ships were being sunk faster than British ship yards could build them. "German submarines had sent 150 ships to the bottom of the Atlantic in the first nine months of the conflict. By 1941 German submarines were sinking twice as many ships as America and Britain combined could produce." (24) "During all of 1942 the allies lost a total of 1,664 ships." (25)

Thousands of lives were being lost. The icy waters of the Atlantic reaching out again and again to fill the lungs of another young sailor with frigid liquid death. Others, surviving the sinking of their ship, treading water on a moonless pitch black night, tossed about on rough seas, slowly freezing. Death, beckoning as the only comfort, refuge against the inevitable onslaught of ravenous sharks, picking off fellow seamen one by one. Another mother left without a son, another brother taken from a sister, another wife, now a widow.

With the rage of an avenging angel, the Joshua Hendy Iron Works flew into action! Henry Kaiser's Liberty ships were ready to be churned out by the dozens. What was needed was an engine of incredible speed, strength, precision and durability. Hendys success making ship engines during World War I, more than qualified them for the new challenge. All

hands were on deck.

Farm land, full of pear trees surrounding the Hendy plant were swallowed up. Sixty new acres were needed. Huge new buildings supported with gigantic wooden beams went up. 146,000 square feet grew to 1,250,000. 60 employees soon became 7,500 working 24 hour shifts. "Their slogan, 'What America needs, Hendy can build', served to inspire all the workers. It became like a little city, producing 'Iron Men' magazine, and developing its own police and fire departments. Even a full time barber was hired." (26)

The EC-2 engine was chosen to power Kaiser's Liberty Ships. Hulking like a Farnese Hercules, they stood close to 25 feet tall, and weighed over 100 tons. Pulsating up and down, forceful, powerful, throbbing, pure savage strength. It was if Poseidon himself was helping, pushing the allies to victory.

The 'Hendy method', of using multiple machines rigged for repetitive tasks was put to work. This helped refine the process of breaking down a complicated job. This allowed Hendy "to cut the final assembly time from 4,500 to 1,800 man hours and become the nations fastest producer." (27)

The Joshua Hendy Iron Works at the peak of its power. Hundreds of machines humming in rhythm to the boisterous industry of thousands of

men. Tons of quivering molten steel conquered, beckoned to a higher calling. "Hendy went on to build 754 of the \$100,000 Liberty Ship engines in 3 1/2 years. It was an extraordinary achievement that helped beat the German blockade, and save the British."(28)

## CHAPTER IX

The allied cause in the European theater of battle was not the only area that Hendy contributed to during World War II. The South Pacific provided possibly the biggest challenge Hendy would face.

The U.S. had gone on the counter offensive against Japan in late 1943, Vicious, bitter fighting was taking place, as the U.S. reclaimed the South Pacific from Japan one island at a time. The taking of Tarawa in the Gilbert Islands had been especially heinous. "Reports of 980 Marines killed in just seventy hours coupled with pictures of dead Marines in the surf, shocked the nation."(29)

980 young Americans just reaching the prime of their life had been snuffed out. Shrapnel ripping through intestines, bullets splintering skulls, limbs blown off bodies. The cries of the dying, screaming out for their parents, wives or children. Comrades holding the fallen in their arms, so alive just seconds before. In America's hour of need Hendy was turned to again.

In December of 1943, the Navy contacted the Hendy Iron Works with an urgent message. They needed 252 portable rocket launchers right away. They would be used in the coming invasion of Kwajalein in the Marshall Islands. Each launcher was to have the force of heavy artillery. All Marine

landing barges were to be equipped with the launchers for close in firepower.

The Marines had to have them. America had to have them. However, a big obstacle stood in the way. The Navy needed them in seven days! But this was the Joshua Hendy Iron Works. There would be no repeat of Tarawa if they had any say.

Hendy became a wild bull in heat. Welding flames burned hotter then ever. Molten steel spewed forth, giving no quarter. Air grinders and heavy cranes took on a take no prisoners, scorched earth attitude.

It was as if Odin had cast a spell on the Iron Men of Hendy. "They tossed out the time clock and its place tacked up a calendar. Men forgot about shifts. There was no quitting time, no starting time. A man carried on until he was ready to drop, then dunked his head in cold water and carried on some more. Job definitions meant nothing. When a man became so exhausted he saw nothing but a blur, he curled up in a car in the parking lot for an hour."(30)

The deadline was met. As the last launcher was completed at one minute before midnight, "a great cheer swelled. The last weapon was completed. Lift truck operators honked their horns. Machinists clanked metal on metal. Teary eyed superintendents hugged begrimmed and teary eyed workers."(31)

With the Hendy rocket launcher in hand, the American forces successfully captured Kwajalein. "The Japanese lost more than 7,800 soldiers, whereas U.S. forces suffered 372 men killed. This was in stark contrast to the costly Tarawa campaign." (32) The deep water harbor and strategic airfields located on the island, would prove invaluable as staging areas for further Pacific theater advances by the U.S.

The Navy officials who had spoken to the Hendy shop superintendent had stressed the urgency of the order by saying, "we need these (launchers) worse than anything we have ever asked for." (33) The Iron Men of Hendy, infused with the strength of Thor, had pushed beyond normal human endurance to complete a Herculean task. Like so many other times, a challenge had been met and conquered.

In addition to ship engines and rocket launchers, Hendy also helped develop and build the Skysweeper. The Kamikaze suicide planes were being used against U.S. Naval forces with deadly success. They needed to be knocked down before they could damage American ships. The Skysweeper would be the solution. A three inch diameter, 70 caliber, double barreled, deck mounted machine gun, which could blast several thousand rounds a minute. When America called, Hendy answered.

## CHAPTER X

After atomic bombs were dropped on Nagasaki and Hiroshima, Japan finally surrendered. August of 1945 brought the need for continued frenzied war production to a screeching halt. "At Sunnyvale's Hendy Iron Works almost eight thousand workers were let go." (34)

Once again, Hendy was forced to diversify its product line in the face of the post war drop off in orders. Gas turbines to drive oil pumps for ARAMCO, the Arab American oil company. A diesel electrical plant for the Saudi Arabian King. High Speed color printing presses for Life and Time magazines, and the Richmond-Chase prune packaging machine. All noble ventures, but well beneath the prodigious capabilities of a facility designed for far greater tasks.

In the spring of 1947, Charlie Moore sold his controlling interest in Hendy to the other six investors. Times were tough at Hendy. War time contracts had dried up. An air of doom prevailed once more. But once again this fabulous Phoenix would be given new life. Hendy, much like a cat, seemed to have nine lives.

## CHAPTER XI

The Westinghouse Corporation needed a presence on the West Coast. General Electric had the major share of the electrical utility business to itself. The Pacific Gas and Electric Company would only buy its electrical equipment from a West Coast supplier, who was part of their system.

Buying the Hendy Iron Works in 1947 allowed Westinghouse to establish itself as a major player in the post war construction boom going on in California. It also gave Westinghouse a front row seat for the massive Cold War defense build up that was starting to expanding ten fold. With Westinghouse, Stanford, Berkeley, Moffet Field, FMC, and eventually Lockheed, the Bay Area was poised to cash in on future Defense Department contracts.

“By 1969 Westinghouse employed 3,000 men and women, involved in the design and building of missile launch tubes for the Polaris, Poseidon, and Trident nuclear submarines. Up the road, Lockheed employed 21,000 workers building the Polaris and Poseidon missiles.”(35)

Eventually Westinghouse Marine was bought out by the Northrup Grumman Corporation, where the ‘can do’ tradition started by Hendy is still carried on.

## CHAPTER XII

In 1978 the Joshua Hendy Iron Works was declared a National Historic Engineering Landmark by the American Society of Mechanical Engineers. Bronze plaques have been installed in front of Hendy's famous main building honoring its many technical accomplishments.

Like so many magnificent structures and stories that are held within the womb of the Santa Clara Valley, Hendy's is often forgotten in the manic rush and crush of contemporary Valley life. So much Santa Clara Valley history is left unappreciated and unknown.

If Hendy's buildings could talk, they would have much to say about what has gone on before. The depth and breadth of human experiences, and the lessons that were learned. The shallow, self absorbed computer culture of the Santa Clara Valley could learn a great deal. For those who ignore history, and the lessons it teaches us are doomed to repeat them.

The Joshua Hendy Iron Works and the Iron Men of Hendy have earned their place in the Pantheon of historic legends. An earth bound hammer of the gods, its fury still echoes in the vaunted halls of Asgard. Creations forged with the precision and strength of Excalibur.

A sign hanging on the wall of the Hendy stated, 'The difficult things can be done right away; The impossible will take a little longer.'

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