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 The fabulous story of Charlie Moore with Depth
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Moore, one-time machinist boomer, who in 1940 took over the Hendy Iron Works with fifty-three employees and today is manufacturing marine engines for one-third of our famous Liberty ships

MOORE builds

CE Moore 1/18/45

By Frank J. Taylor and John Patrie

EVERY third Liberty ship in the Maritime Commission's vast cargo fleet that carries food, weapons and munitions to our fighting men on thirty-two fronts, is propelled by a marine engine fabricated at Charles E. Moore's fabulous plant at Sunnyvale, forty miles south of San Francisco. If you ask lean, six-foot-four Charlie Moore, former machinery salesman, how in three short years he became marine engine builder Number One, he will point to an axiom painted in huge letters: "The difficult can be done immediately; the impossible takes a little longer."

Charlie Moore sets his sights on the impossible, then goads himself and inspires his fellow workers to exceed the goal. Three years ago Moore took over the antiquated Hendy Iron Works with fifty-three employees. Today he has every one of the original fifty-three, plus seven thousand others. His plants have swallowed forty acres of pear orchards and bean fields. Swept and vacuumed as clean as kitchens, they house the most spectacular plantful of men and machines for precision metal work west of the Rockies. Nearly every month they set new production records.



Moore the Miracle Man

"We're swapping engines for soldiers' lives; that's why we work fast," says Moore. "See that building? Six weeks after the tractors yanked out the pear trees, we were turning out engines. We built that big planer over there ourselves because we couldn't buy one. That engine they're assembling over here weighs 274,000 pounds; it's the biggest thing of its kind ever turned out in mass production. One goes out of this plant every day. Soon it'll be two. It takes us only ten days to convert scrap metal into engines."

The Iron Men of Hendy are swapping more than the mammoth Liberty reciprocating steam engines for soldiers' lives. They make intricate torpedo tube mounts for the Navy; they fabricate turbines so delicately balanced that pennies will stand on edge on them as they run at top speed, small ones by the hundreds to furnish electric power for ships, large 6,000 horsepower turbines by the dozens to propel the fast new Victory cargo ships. In other plants they make pumps for ships and war industries, motors and generators. They have finished their latest pride, a newly designed marine diesel engine that develops more power from less weight and less fuel. Half of one plant is devoted to high speed corvette steam engines; here the Iron Men of Hendy are producing half the power for the Navy's armada of fast anti-sub frigates.

In November, 1940, when Moore bought the eighty-seven-year-old concern established by Joshua Hendy during the gold rush to make machinery for miners, the superintendent mentioned that they had turned down a contract from the Navy to build torpedo tube mounts. Moore wanted to know why.

"Too difficult," said the superintendent. "Only the naval arsenals can handle that kind of precision work. Plants all over the country turned down that job."

"They did?" said Moore. "Well, we're going after it!"

With Navy backing, a new plant rose magically alongside the old red buildings. Into it Moore poured machines and men, the latter skilled, old-time machine tool operators. Some were white-haired and stoop-shouldered; but they were masters of the kind of machines that turned out precision work in tolerances of 1/10,000 of an inch.

"They're the greatest know-how team in the country," says Moore, with pride. "Hendy built ten engines in two years in World War I; we gave them fifty-three last month, in addition to twelve carloads of torpedo mounts. These old-timers are the men who made it possible."

BORN in San Bernardino, California, in 1894, Moore has been pitting his exuberance and self-confidence against the difficult and the impossible ever since he left home in his teens. His father died when Charlie was one year old. Charlie inherited the crusader's spirit from Eugenio Kincaid, his mother's missionary father. He followed an older brother, Chester, to Kansas, and worked in the Topeka railroad shops. Foremen soon discovered the kid's ability, bordering on genius; he could make a machine produce any kind of machine, whether he had ever seen one like it or not.

When the brothers decided to see the world, they "boomed" the Southwest, Charlie as the machinist, Chet as his helper. They rode freight trains, picking up odd jobs; sometimes even washed dishes when they were broke and needed a square meal.

"Charlie could turn out the work," recalls Chet proudly. "He wanted to be a machinery salesman. Once in Los Angeles he hit the head of a big machinery house for a sales job. The boss showed Charlie an algebraic equation for measuring the capacity of punch presses. Charlie couldn't read it. 'Son, you just aren't educated' (Continued on page 72)

Moore Builds for Victory

(Continued from page 28) enough to sell machinery," he said. That hit Charlie hard. The next day he went back to school."

Teachers in Los Angeles Polytechnic High School, where the gangling, twenty-two-year-old freshman towered above the younger pupils, gasped when Moore calmly proposed to swallow the usual four-year course in a one-year gulp.

"That's all the time I can spare," he explained.

TO support himself, Moore worked in a garage at night. To save money, he studied and slept there. At the end of the year he won his diploma—in time to become Private Moore in the U. S. Army. He heard of an entrance examination for officers' training camp. He sent an S.O.S. to Eugene H. Barker, his mathematics professor, who fired back a new higher mathematics text book he had just published. Private Moore devoured the book in a week-end, passed the exam. Soon he was a lieutenant in artillery.

At a post hop in Virginia he saw a girl dancing by in the arms of another officer. "I'm going to marry that girl," he said. His buddies laughed, but he hunted up his Commanding Officer, who introduced him to Anne Whittier of Boston. As they danced, he outlined the future; he was going to take her back to California as his wife. "You fancy yourself, don't you," she said haughtily. But she and Moore were married a few months later. They have two sons and two daughters.

Mustered out, Moore hurried back to Los Angeles to get that machinery salesman's job. But it was mechanics they

needed, not salesmen, so they put him to work assembling pumps. Moore assembled pumps with such efficiency that within six months he was in the front office—a salesman.

Shunning entertainment, he haunted factories, refineries, mills, construction jobs, figuring out schemes to make tools produce twice their customary output. When the machines he sold were installed, Moore was there in overalls to demonstrate their efficient use. Before long Moore launched his own machinery business in Los Angeles and San Francisco.

With the fantastic pre-war industrial expansion in California, Moore's sales soared into millions a month. His fame as a machinery efficiency expert spread. The War Production Board called him to Washington. The Harriman Mission dispatched him to England. Moore visited two hundred and fourteen British war plants in seventy-two days.

"You're asking us for tools and you're not using what you've got," he told them, outlining a reorganized factory procedure. "We need some of your tools back in the United States."

He got some of them himself; two huge planers from Sheffield, which are now working around the clock in the Hendy plant. Moore also brought back a letter from Lord Beaverbrook, British Minister of Supply, saying, "The Americans may gain much from your reports, but they will never know anything to equal the benefits which we will get here in Britain."

At the beginning of the war the U. S. Maritime Commission asked Moore for

Liberty engines. By the time the foundry had tooled up for the job, Admiral Emory S. Land, head of the commission, telephoned from Washington.

"Moore, you're building us a dozen engines in two years."

"That's correct," replied Moore.

"We want you to make it three dozen in two years," said Land.

"Hell, we can build a hundred just as well," Moore told him.

"You can?" shouted the admiral. "Then be here tomorrow and tell us how."

Moore's scheme for stepping up engine production, bottleneck of the stupendous ship construction program, was simple: tool up with jigs, fixtures and machines so that each experienced mechanic spreads his know-how over a dozen to a score of machines on which ex-salesmen, former farmers and housewives pull the levers.

Charlie Moore more than made good his promise. Early this year he delivered six engines in one day—four Liberties, a corvette and a turbine—a total of seventeen thousand horsepower, half as much as the plant achieved in two entire years in the last war! For more than a year the routine schedule has been a Liberty engine a day over and above the corvette and turbine output. By the end of 1943 the Hendy works had delivered over six hundred and fifty completed engines, enough to propel more than seven million tons of ships, more than the entire U. S. cargo fleet aggregated when Moore started work on the first engine.

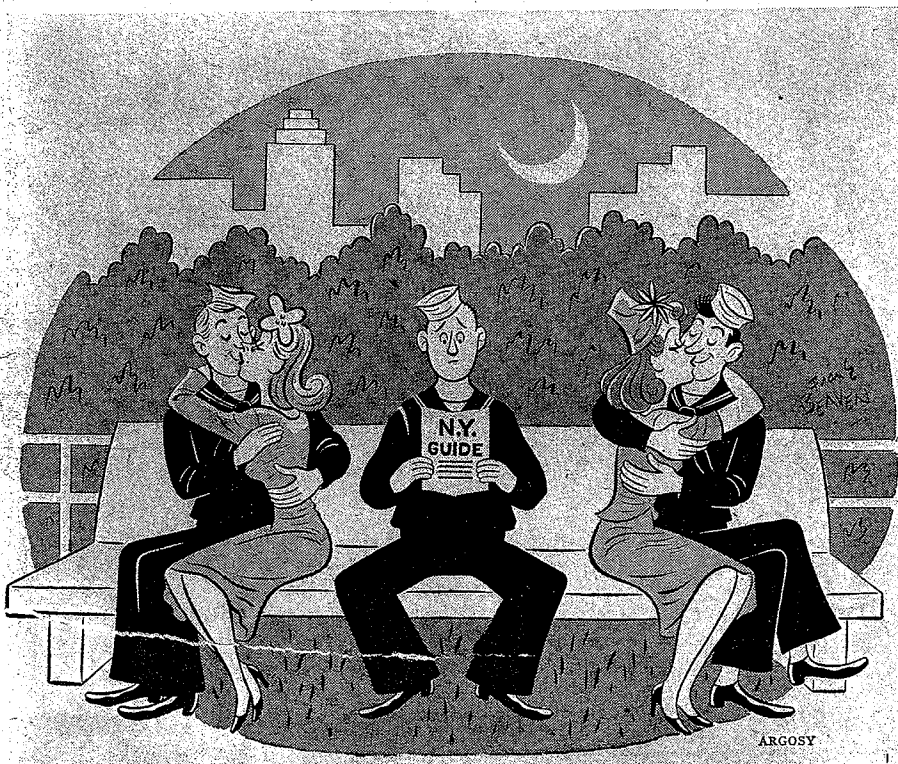
AS word spread that Moore was tooling up Hendy to make engines fast, skilled men by the hundreds turned up at Sunnyvale. Some, like George Gayer, turbine expert, were in their seventies and retired. Others closed their own shops to work for him. Nearly every one was an expert in his field, like Bert Poulsen, whose rigging feats are legend. To these veterans Moore is "Charlie"—Charlie Moore, the machinery salesman who could run any tool he sold.

"We're building engines that last. Isn't that so, Pete?" Moore asked a grimy mechanic tearing down a Liberty that had just been tested.

"It sure is, Charlie. This one's the best we've built, but tomorrow's will be still better."

All over the plant are signs, "One test is worth a thousand expert opinions." Tests are the business of two laboratories. One is an air-conditioned room in which the temperature is always fixed at sixty-eight degrees for checking measuring instruments to the thickness of a fifth of the diameter of a human hair; the other is an idea shop where a staff headed by Stanley Lynn tries anything—ideas for making metals harder, ideas for new alloys, for making light metals, for engine parts that can be run at red-hot temperatures without melting or fatiguing. Moore calls this "the nut shop."

Moore's genius for getting work out of



ARGOSY

machines is based on his skill at pulling the impossible out of men. When the Navy or the Maritime Commission hands him a really tough job he calls a meeting of the top men: thirty-two-year-old Harry Gunetti, plant manager; Al Browne, chief engineer, and key foremen.

One month Admiral Howard L. Vickery, vice chairman of the Maritime Commission, asked for eighteen engines when the Hendy plant timetable called for delivery of eight. "We're stuck," said Vickery. "We've got to have ten more engines, or ten ships are hulks."

At the staff meeting Charlie Moore stated the proposition, broke the job down, so many cylinders, so many extra crankshafts. "Sam, can you get out thirty extra cylinders?" he asked. Sam thought he could. "Bill, can you and your gang make thirty more pistons?" Bill Theller thought they could. One by one, every foreman committed his department.

"The last night," Gunetti recalled, "every shift worked the assembly line all night long. They drank forty gallons of coffee to keep awake, but they got the engines out. For good measure, we gave the admiral nineteen."

Much Moore time and energy has gone into the battle for machine tools, the tools he used to fight to sell. Corvette engine contracts piled on turbine orders so fast that the only way Hendy could meet the schedules was to extend buildings and fill them with machines. Construction crews rew up new buildings so fast that

the priorities authorities in Washington couldn't believe they were ready for the tools they'd been promised. Moore hired a photographer, made shots of the spots where the lathes or planers or hobbers should have been. The photos showed material on the floor ready to be machined, and workmen waiting to do the job. In the place of the absent machine tools were signs reading, "Gear Hobber Missing," "Vertical Mill Missing." Storming Washington with his album, Moore got the machines his men needed.

TODAY the Hendy plants are in total war production, but Charlie Moore fails to share the dread of some who expect to skeletonize their payrolls when war ends. He says, "That's when we'll hang out a sign, 'Hendy Needs Men.'"

Reciprocating steam engines for cargo ships and corvettes are wartime products only, but other Hendy engines are as useful in peacetime—steam turbines for fast cargo and passenger ships, auxiliary turbines for ships and industrial plants. Moore has a program for these compact little auxiliaries.

"We'll use the steam twice: first to generate electricity, then to make paper, sugar, chemicals, or wash the laundry," he explains. "That comes as close to being free power as you can find. We'll make mining machinery, equipment for irrigating systems."

When he and the iron men have completed the

twenty million dollars worth of steam turbines, diesels, torpedo tubes, motors, generators, pumps, Charlie Moore expects to maintain his one-hundred-ten-thousand-dollar-a-day payroll.

"We'll go into a little town," he predicts, "and say, 'Look, Little Town, we'll modernize you—put in a pumping plant, water system, a fire protection system, all Hendy products. We'll put in a turbine to generate your electricity and you can use the steam to heat your schools or city hall or run a laundry. We'll wrap it up in a package, send out experts here to train your men to operate the plant. We'll take your bonds in payment.'"

"After the war this country will have the greatest production and largest merchant fleet in the world. But we can't trade with other nations unless our ships can get into their harbors. So we'll go to South America or Asia or anywhere that people want to trade with us and offer them dredges to keep their rivers and harbors open. Dredges need engines and pumps and turbines and motors and diesels, all Hendy products. We're a war baby, eighty-seven years old, with a peacetime plant and peacetime products that the world needs. What's civilization's greatest drawback today? I'll tell you. It's limitation on thinking. We can do anything we can visualize. If we can tool up to make engines for war, we can tool up for engines of peace. We're going to keep our men and machines busy."