



David Gray and Henry Ford seated in the 1905 Ford Model N runabout at the back entrance of the Ford plant on Piquette Ave.

One-of-a-Kind

# Henry Ford

By perfecting the assembly line, he made cars available to all

BY LAUREN GLENN



# In this time

of economic downturn, much has been made of those companies and individuals who make millions, even billions, of dollars, but produce no tangible product or results. Then there are the issues of fair trade and outsourcing, with politicians and average citizens alike concerned with the loss of manufacturing jobs that were once the foundation of America's blue-collar middle class—many of which have been transferred overseas, where workers are willing to do the same amount of labor for considerably less money.

Indeed, today's industrial reality is a far cry from when Henry Ford first ventured into the world of engineering and manufacturing more than a century ago. From his early beginnings as a machinist and engineer, Ford envisioned a world where international trade, industry and manufacturing, if carefully developed and cultivated, could benefit the whole of society through high-quality goods produced by well-paid workers.

"Ford redefined the relationship between skill and compensation," says Bob Casey, curator of transportation for the Henry Ford Museum in Detroit. "The assembly line spread to all sorts of manufacturing operations, and they wound up paying higher wages to lower skilled people."

The influence of Ford—possibly the nation's most important industrialist—still permeates the industrial world today, 65 years after his death. Whether as a farmer, machinist, engineer, or finally as founder of Ford Motor Co., Ford, by all accounts, was dedicated to a belief that high-quality products could be affordable to all by being produced en masse.

## A Tinkerer

From the beginning, Henry Ford was a tinkerer, interested not only in making things, but in understanding how things—machines in particular—worked.

Born to William and Mary Ford on a farm just outside of Detroit, on July 30, 1863, Henry was the eldest of five children. Even as a young boy he enjoyed taking things apart and reassembling them—a fascination that continued into his teenage years, when he dismantled and reassembled a watch given to him by his father. Soon he was repairing the watches of his friends and family, which earned him a reputation as a watch repairman, and perhaps sparked his interest in manufacturing and his early career as a machinist.

In 1879, with little more than a grammar school education, Ford left his parents' home to work as an apprentice machinist in Detroit. Equipped with new knowledge, he returned home to the farm and

became a skilled operator of the family's Westinghouse portable steam engine. Ford was so skilled, in fact, that Westinghouse Electric and Manufacturing Corp. hired him to demonstrate and operate the engine on farms. On April 11, 1888, Ford married Clara Jane Bryant and started a family (the two had one child, Edsel), which he supported by farming and running a sawmill. Meanwhile, he also studied



**"A business that makes nothing but money is a poor business."**

bookkeeping at a business college in Detroit.

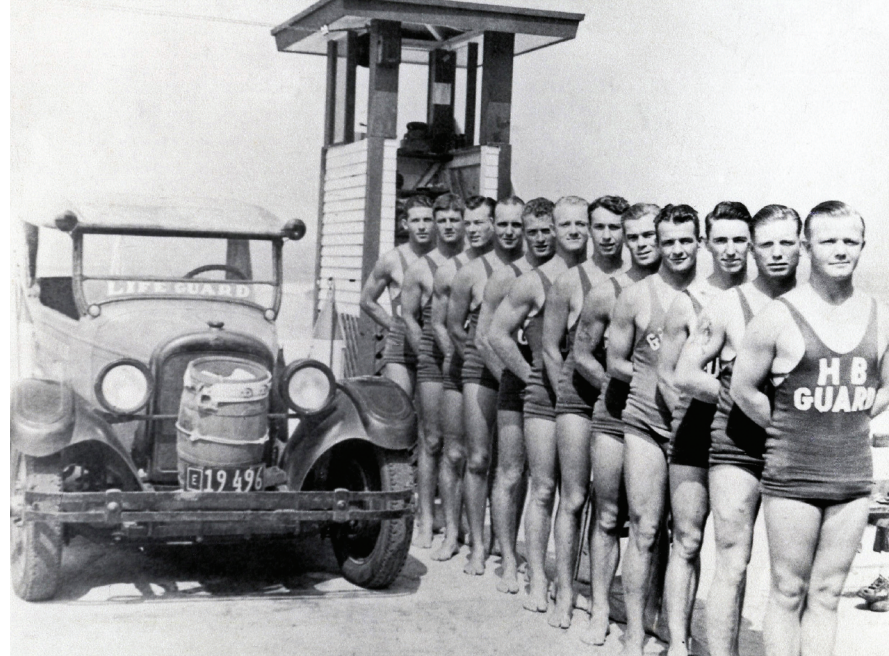
Although he disliked farming, Ford was fascinated by electricity and believed that machinery could eventually replace farm animals for labor. Armed with that conviction, he spent much of his free time tinkering and trying to build a better, lighter steam engine. "One man with a machine, which perhaps he himself has helped to build, will do in a day as much as five men now do with their

teams of horses,” Ford once said. “Horses on a farm are wasteful.”

### Edison, Cadillac, Ford

If, as many say, Henry Ford was the father of modern mass production, then Thomas Edison might perhaps be considered its favorite uncle. Indeed, if there was anyone who inspired Ford, it was Edison, whose career Ford had followed for years, well before he was hired as an engineer by Edison Illuminating Co. in 1891. Two years later, despite little formal training in the field, Ford was promoted to chief engineer. The promotion brought with it an increase in income and free time, which Ford devoted to experimenting with gasoline engines.

In 1896, those experiments resulted in the successful creation of the Ford Quadricycle, a self-propelled vehicle that, after some improvements, he had the opportunity to demonstrate for Edison himself. Edison not only approved of Ford’s experimentation, he encouraged it. Three years later, backed by money from local lumber baron William H. Murphy, Detroit Mayor



building another automotive company. In 1903, his efforts paid off, when, in partnership with a Detroit coal dealer and John and Horace Dodge (of Dodge automotive fame) he established the Ford Motor Co.

Many people know what came next: the Model T, the Model A and, in general, the transformation of the automobile from a rich man’s plaything to a relative necessity—which remains a defining aspect of Ford’s legacy. In his

perfect, or at least improve, the assembly line process—an innovation that helped lead to the then-revolutionary “\$5 workday.” Those efforts culminated in 1913, when Ford married interchangeable parts with standard work and moving conveyance to launch the first moving assembly line ever used in large-scale production. The development allowed labor to be divided into smaller portions and essentially brought perfectly fitting components to workers as they stood in

## “Nothing is particularly hard if you divide it into small jobs.”

William Maybury and U.S. Senator Thomas Palmer, Ford left Edison and started Detroit Automobile Co. It didn’t take long for disillusionment to set in. Believing the company to be driven by profit rather than innovation, Ford felt that the cars being produced were too pricey and of low quality. Two years later, in 1901, the company folded.

That same year, Ford and an associate, Childe Harold Wills, designed, built and raced a 26-horsepower automobile. Its success encouraged former Detroit Automobile stockholders to back Ford once more, and the Henry Ford Co. was formed, with Ford as chief engineer. When Ford left amid tension in 1902, the company was renamed Cadillac Automobile Co.

But Ford kept pushing. In addition to working with other automotive enthusiasts to build better cars, he also began racing them, hoping that would attract investors to support him in

biography, *My Life and Work*, Ford wrote: “I will build a car for the great multitude. It will be large enough for the family, but small enough for the individual to run and care for. It will be constructed of the best materials, by the best men to be hired, after the simplest designs that modern engineering can devise. But it will be so low in price that no man making a good salary will be unable to own one—and enjoy with his family the blessings of hours of pleasure in God’s great open spaces.”

While his automotive achievements are, perhaps, the most well-known and enduring aspect of Ford’s legacy, what made that success possible was his dedication to overhauling the manufacturing process—an achievement that allowed Ford Motor Co. to develop and produce cars with such speed and at such a low cost that Ford was soon turning them out at a record pace.

Most notably, Ford worked to per-

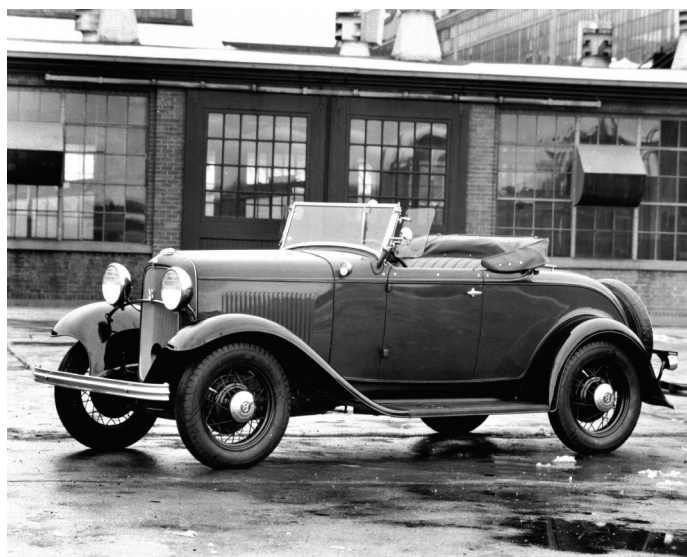
place, allowing them to save time and produce more, by eliminating the tinkering that had previously been required to make parts fit. “Nothing,” Ford would say, “is particularly hard if you divide it into small jobs.”

But this particular innovation came at a cost: high turnover.

“In developing the assembly line,” explains Ford Museum curator Casey, “Ford discovered that people didn’t want to work on it. It was boring and arduous. If it’d been easy, that would have been different. But it was hard work, and people wouldn’t stay. He ultimately came to the conclusion that if you pay people enough, they’ll do almost anything. Effectively, [Ford] more than doubled the wage. Now, unskilled workers could make so much money that they stayed and put up with the problems.”

In addition to increasing output, the assembly line also decreased cost,





Clockwise: A Ford hits the beach. Henry Ford whispers to longtime friend Thomas Edison. The Highland Park Plant, where the moving assembly line became operational in 1913. A 1932 Ford Roadster. Assembling a car at the Ford factory in 1903.

allowing Ford to sell cars at a historically low price, which placed automobiles in the hands of average consumers—including his own employees, who with their new higher wages were able to enjoy a higher quality of life than had ever been available to unskilled laborers. “He transformed the car from a device that was essentially a toy for upper-middle-class and wealthy people into something that could be owned by almost everyone,” Casey says. “For most people now, life without a car is highly inconvenient. That was not the case before he introduced the Model T.”

What ultimately emerged was mass production on a grander scale than the world had ever known. By 1914, the price of a Model T had dropped from \$850 (the cost of the first model sold in 1908) to \$290 (\$6,544 today), and it took only 93 minutes to assemble. Ford built 15 million Model T’s between 1908 and 1927.

Sales began to wane as customers clamored for more customized automobiles with additional options. Though Ford was initially resistant to meeting those demands—famously saying, “Any customer can have a car painted any color that he wants so long as it is black”—he eventually relented under pressure from stakeholders, including his son, Edsel, with whom he ran the company. In 1927, the Ford Motor Co. introduced the Model A, which offered multiple models, safety options and other features.

Ford’s impact on the industry was far-reaching, says Casey, including not only the assembly line but also the concept of a highly organized factory where production is carefully orchestrated and choreographed. Other automobile manufacturers followed suit, turning Detroit into a Mecca for all things automotive.

### The Ford Legacy

Despite its success, Ford Motor Co.’s years under Ford were not without problems. In the late 1930s, Henry Ford experienced a series of strokes that compromised his health. He gradually became more of a figurehead, as other executives began making decisions in his name—including Edsel, with whom he ran the company until Edsel’s death from stomach cancer in 1943. Upon Edsel’s death, Henry Ford resumed control of the company, but his mental strength was fading fast, and, as the company began to falter, bankruptcy became a serious risk. In 1945, two years before Henry Ford’s death, Edsel’s widow led his ouster; his grandson, Henry Ford II, was installed as president.

Over time, the industrial production model that made Ford so successful—including the idea of high wages for unskilled workers—declined as well.



"It turns out that the relationship Ford established wouldn't last forever," Casey says. "The days when you could go into the auto plant with a high school education or less, stay for 30 years, and wind up with a house, two cars, a boat and two kids is no longer."

But while the paradigm that Ford established is perhaps less influential today, Ford himself remains a symbol of modern manufacturing and mass production. "We still use assembly lines and mass production," Casey says. "But we have also modified those processes in ways that allow a lot more variation in a product. At his peak, Ford made nearly 2 million Model T's per year. Today, no one makes anywhere near that number of just one model in a year."

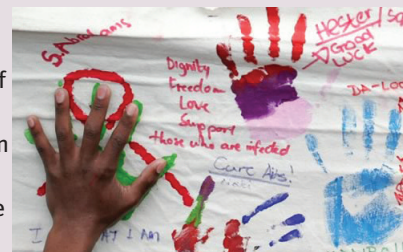
"Instead, we've taken those processes and techniques he developed, which were designed to make millions of the same thing, and modified them to be much more flexible," Casey says. "You still get the economies of assembly line, but no longer in only one color." ■

## Ford Philanthropy

Some 65 years after Henry Ford's death, his legacy lives on in the form of the Ford Foundation, a philanthropic organization first established with an initial gift from his son, Edsel Ford, in 1936. Unlike most other such organizations of the day, which funneled funds toward solving challenges within a particular field, the Ford Foundation cast a much broader net, aiming to address humankind's most pressing problems.

The foundation, initially based in Detroit, moved to its permanent headquarters in New York City in 1953, when, under the direction of Henry Ford II (Edsel's oldest son), its trustees broadened the organization's scope to take on a national and global mission: promoting peace, freedom and education throughout the world. Over the ensuing decades, Ford Foundation grants have launched and supported a broad array of far-reaching ventures. Among them: the Public Broadcasting Service (PBS); the Grameen Bank (which offers small loans to the rural poor of Bangladesh); anti-AIDS initiatives around the world; and the International Fellowships Program, which brings students from marginalized countries to the U.S. to pursue graduate studies.

Today, the Ford Foundation, with 10 regional offices around the world, supports programs in more than 50 countries. In 2011, the foundation reported some \$10.3 billion in assets, ranking it second (to the Bill & Melinda Gates Foundation) among United States grant-making foundations.



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