#18

English 3P Research Synthesis Essay

Directions: The prompt that follows is based on the seven accompanying sources. This essay requires you to integrate at least five of these sources into a well-written research essay. At least two of the sources you use must be books. Refer to the sources using direct quotations, paraphrase or summary and correct parenthetical citation. You must also include your commentary on the information that you integrate from the sources. Finally, complete a Works Cited to document the sources you use and attach it as the last page of your essay.

Introduction: Henry Ford revolutionized the automobile industry with his creation of the assembly line and the Ford Model T. The first Model T was assembled in Detroit in 1908. It was considered a "car for the masses"(Showroom). The Model T was produced from 1908-1927 with very little change in its design. Thus, it was one of the main cars driven during the "Roaring 20s".

Assignment: Read the following sources carefully. Then in an essay that synthesizes at least four of the sources for support, discuss the aspects of Henry Ford's character that led him to develop the assembly line and the Model T, the elements of the Model T that made it such a revolutionary and enduring vehicle, and the effect that Ford and his vehicle had on American society in the 1920s. In your conclusion, include a comment regarding how Henry Ford and his contributions to the automotive world have affected current society.

Source 1

F Volume 7

Source 1

The World Book Encyclopedia

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Source 1

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Source 1

Source 1

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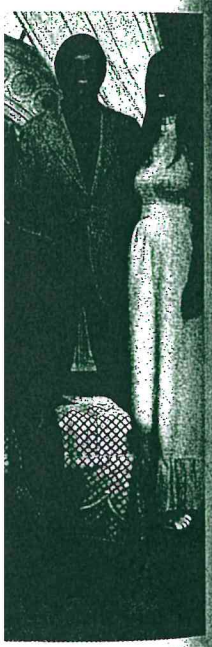


Gerald R. Ford Librar

White House. Behind Pres
aughter Susan, sons Ste
wife, Gayle.

ion nominated Senator Robert J. Dole of Kansas for President. Their Democratic opponents were former Governor Jimmy Carter of Georgia and Senator Walter F. Mondale of Minnesota.

During his campaign against Carter, Ford pledged to continue policies that he believed had brought about economic recovery and the slowdown in the inflation rate. Carter charged that Ford had mismanaged the economy. He argued that Ford's policies had contributed to the continuing high rate of unemployment. The campaign included the second series of nationally televised debates between presidential candidates in U.S. history. The first series took place in 1960 between John Kennedy, the Democratic candidate, and Nixon, then Republican nominee. In the 1976 election, Carter defeated Ford by 1,678,069 popular votes out of over 81½ million. Ford carried 27 states, while Carter carried 23 states and the District of Columbia. But Carter got 297 electoral votes compared to Ford's 240. Reagan received one electoral vote. See **Electoral College** (table).

Later years

After Ford left the White House, he served on the board of directors of several companies. He also spent much time lecturing at colleges and universities and speaking to organizations. In 1979, he published his autobiography, *A Time to Heal.* He handled some assignments for Ronald Reagan after Reagan became President in 1981. Also in 1981, the Gerald R. Ford Museum opened in Grand Rapids and the Gerald R. Ford Library opened in Ann Arbor, Michigan.

In 1982, Betty Ford helped found the Betty Ford Center in Rancho Mirage, California. The center treats alcoholism and drug abuse. She helped open the center after seeking treatment in 1978 for her own addiction to alcohol and prescription drugs.

J. F. terHorst

Related articles in *World Book* include:

Agnew, Spiro T.
Constitution of the United States (Amendment 25)
Nixon, Richard M.
President of the U.S.
Presidential succession
Republican Party
Rockefeller, Nelson A.
United States, History of the
Vice President of the U.S.
Watergate

Outline

I. **Early life**
  A. Family background
  B. Boyhood
  C. College student
II. **Grand Rapids lawyer**
  A. Naval officer
  B. Entry into politics
  C. Marriage
III. **Career in Congress**
  A. Rise to power
  B. House minority leader
  C. The resignation of Agnew
IV. **Vice President (1973-1974)**
  A. Speaking tour
  B. The resignation of Nixon
V. **Ford's Administration (1974-1977)**
  A. Early problems
  B. The national scene
  C. Foreign affairs
  D. Life in the White House
  E. The 1976 election
VI. **Later years**

Questions

Who first encouraged Ford to seek public office?
What national problems did Ford face when he became President?
What high honor did Ford earn as a Boy Scout?
What influence did football have on Ford's life?
What new approach did Ford develop for the Republicans in the House after he became minority leader?
Under what provision of the United States Constitution did Ford become Vice President?
Why was Ford's succession to the presidency unique?
What action severely hurt Ford's early popularity?
What recreational activities did Ford enjoy?
What was the "Ev and Jerry Show"?

Additional resources

Cannon, James. *Time and Chance: Gerald Ford's Appointment with History.* HarperCollins, 1994.
Collins, David R. *Gerald R. Ford.* Garrett Educational, 1990. Younger readers.
Firestone, Bernard J., and Ugrinsky, Alexej, eds. *Gerald R. Ford and the Politics of Post-Watergate America.* Greenwood, 1992.
Greene, John R. *The Limits of Power: The Nixon and Ford Administrations.* Univ. of Indiana Pr., 1992. *The Presidency of Gerald R. Ford.* Univ. Pr. of Kans., 1995.

Ford, Hannibal Choate (1877-1955), an American inventor and engineer, developed equipment to control the range and accuracy of gunfire. He perfected the method that allowed guns to aim accurately from the rolling decks of a ship at sea.

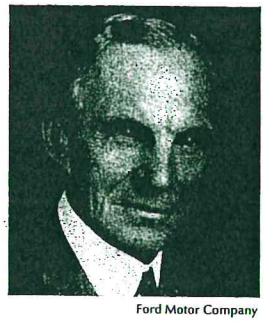
Ford formed the Ford Instrument Company in 1915 and became its first president. Later, the company became a division of the Sperry Rand Corporation (now part of Unisys Corporation). He helped make many improvements on typewriters and also invented an automatic bombsight. Ford was born in Dryden, New York.

Jack Sweetman

Ford, Henry (1863-1947), was the leading manufacturer of American automobiles in the early 1900's. He established the Ford Motor Company, which revolutionized the automobile industry with its assembly line method of production. The savings from this technique helped Ford sell automobiles at a lower price than anyone had before. From 1908 to 1927, more than half the cars sold in the United States were Fords.

Early life. Ford was born on a farm in what is now Dearborn, Mich. He became a machinist at the age of 16 and later worked as an engineer at a Detroit electric company. As a young man, Ford became interested in automobiles, which were then a new invention. He built his first successful gasoline engine in 1893 and his first automobile in 1896.

Industrial accomplishments. In 1903, Ford organized the Ford Motor Company. At first, the company produced only expensive cars, as its competitors did. However, Ford soon began working to make a simple, sturdy car that large numbers of people would be able to afford. He achieved one of the first such cars with the Model T, which appeared in 1908. In 1909, Ford decided to produce only Model T's.



Ford Motor Company

Henry Ford

The original price of $825 for a Model T touring car was too high for many customers. To lower the price, Ford and his executives tried new ways to reduce production costs. For example, the company created an assembly line meth-

Source 1

od in which conveyor belts brought automobile parts to workers. Each worker performed a particular task, such as adding or tightening a part. This system helped reduce the assembly time of a Ford automobile from about 12 $\frac{1}{2}$ worker-hours in 1912 to about 1 $\frac{1}{2}$ worker-hours in 1914.

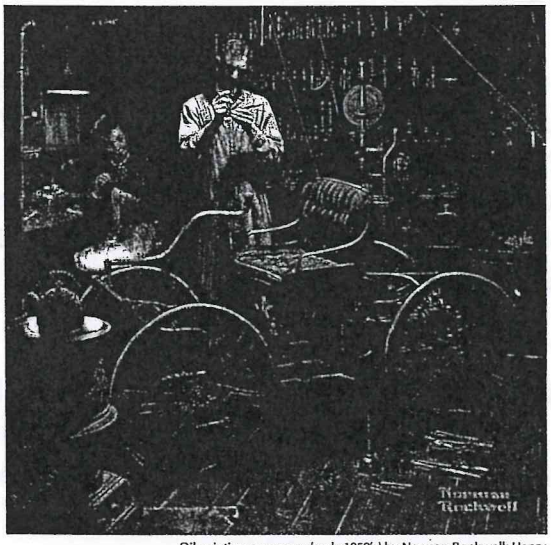
Ford Motor Company began to produce its own parts instead of buying them from independent suppliers at a higher price. Ford also shipped automobile parts, rather than assembled automobiles, to market areas, where assembly plants put the parts together. Parts cost less to ship than whole automobiles did. In addition, the company began to make its own glass and steel.

As the company's production costs fell, Ford passed much of the savings on to his customers. The price of a Model T touring car dropped to $550 in 1913, $440 in 1915, and $290 in 1924, putting the automobile within reach of the average family.

In 1914, Ford raised the minimum wage to $5 a day for his employees 22 years of age and over. This rate was more than twice what most wage earners received. Ford also reduced the workday from 9 to 8 hours. Workers flocked to Ford plants seeking jobs, and Ford could choose the hardest-working and smartest ones. To encourage productivity, Ford introduced a profit-sharing plan, which set aside part of the company's profits for its employees.

During the mid-1920's, Ford continued to produce the Model T even though its popularity had declined. Meanwhile, the General Motors Corporation (GM) gained an increasing share of the U.S. automobile market. GM offered a wide variety of models equipped with many luxuries. GM also introduced new designs yearly and advertised its cars as symbols of wealth and taste. Ford, however, continued to offer only basic transportation at a low cost. The Model T changed little from year to year, and, from 1914 to 1925, it came in only one color, black.

Ford finally introduced a new design, the Model A, in 1927, after more than 15 million Model T's had been sold. In 1932, Ford introduced the first low-priced car with a *V-8 engine,* a powerful engine that had eight cylinders arranged in a V. By that time, however, GM had taken the lead from Ford Motor in U.S. auto sales. Ford Motor declined throughout the 1930's, and some people began to question Henry Ford's management skills. In 1945, Henry Ford II, one of Ford's grandsons, took over the company.



Oil painting on canvas (early 1950's) by Norman Rockwell; Henry Ford Museum and Greenfield Village, Dearborn, Mich.

Henry Ford's first automobile was built in a workshop in Detroit. The automobile, completed in 1896, is now on display at the Henry Ford Museum in Dearborn, Michigan.

Political and charitable activities. Ford had long taken an interest in political affairs. In 1915, during World War I, he and about 170 other people traveled to Europe at his expense to seek peace. The group, which lacked approval by the U.S. government, failed to persuade the warring nations to settle their differences.

In 1918, the year the war ended, Ford ran as a Democrat for a Senate seat from Michigan. He lost the election and did not seek public office again, but he continued to speak out on political issues. He made many statements critical of Jews. He also opposed labor unions. He fought attempts by the United Automobile Workers (UAW) to organize his employees.

Ford devoted much time and money to educational and charitable works. He established Greenfield Village and the Henry Ford Museum, both in Dearborn. The village is a group of restored historical buildings. The museum includes exhibits in science, industry, and art. In 1936, Ford and his son, Edsel, set up the Ford Foundation, one of the world's largest foundations, which gives grants for education, research, and development.

Ford wrote four books with author Samuel Crowther. They are *My Life and Work* (1922), *Today and Tomorrow* (1926), *Edison As I Know Him* (1930), and *Moving Forward* (1931). Robert Sobel

See also **Automobile** (Henry Ford); **Ford, Henry, II; Ford Foundation; Ford Motor Company; Greenfield Village.**

Additional resources

Batchelor, Ray. *Henry Ford, Mass Production, Modernism and Design.* Manchester Univ. Pr., 1994.

Kent, Zachary. *The Story of Henry Ford and the Automobile.* Childrens Pr., 1990. Younger readers.

Lacey, Robert. *Ford: The Men and the Machine.* 1986. Reprint. Ballantine, 1987.

Nevins, Allan, and Hill, F. E. *Ford.* 3 vols. Scribner, 1954-1963.

Ford, Henry, II (1917-1987), was an American automobile manufacturer who reorganized the Ford Motor Company during the 1940's and rescued it from near bankruptcy. He was a grandson of Henry Ford, who organized the company in 1903.

Henry Ford II was born in Detroit. During World War II (1939-1945), he served in the United States Navy at Great Lakes Naval Training Center. In 1943, he was released from the Navy to help Ford Motor, which produced military vehicles and other supplies.

Ford became vice president of the company in 1943 and took over the presidency from his grandfather in 1945. At that time, the company was losing about $9 million a month. Ford hired a team of expert managers to help him reorganize the company. He also introduced new marketing methods and automobile designs to meet the changing tastes of the American public. In 1949, after the reorganization, the company earned about $177 million.

Source 2

AmericanProfile.com

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Henry Ford the Man Who Changed America

Henry Ford's ingenuity and acumen left a legacy that reaches far beyond the Model T's driver's seat.

by Carol Davis

Henry Ford's ingenuity and acumen left a legacy that reaches far beyond the Model T's driver's seat. In pioneering a car affordable to nearly everyone, Ford increased the minimum daily wage of his time, essentially creating a middle class, and changed forever the way the automotive industry produced and distributed cars. His stunning success didn't occur because of a masterful business sense; he was more of an entrepreneur—an idea man. But his unconventional ways took his company to the top.

In the Beginning

Ford was born into a farm family in 1863 near Dearborn, Mich., and showed an early interest in mechanics. He fixed neighbors' watches and built his first steam engine at 15.

He tinkered constantly, and as America's first automobiles emerged, Ford focused on internal combustion engines. John W. Lambert invented the nation's first gasoline-powered automobile in 1891; just five years later, Ford unveiled his own "horseless carriage," which he named the "Quadricycle," because it ran on four bicycle tires. The Quadricycle, which steered with a tiller much like a boat, had just two speeds with no reverse.

Ford at the time was chief engineer at Thomas Edison's thriving Edison Illuminating Company, but his venturesome spirit led him to strike out on his own to try his hand at automotive engineering. Ford left with the encouragement of Edison, who later became one of his closest friends.

"He was always willing to take risks," says Bob Casey, curator of transportation at the Henry Ford Museum in Dearborn.

"In 1901, when his first company went belly up, he built this race car and literally risked his life in a race to raise the public perception of him that (he) knew how to build these newfangled machines," Casey says.

Source 2

"It was a pretty gutsy thing to do."

With 11 other investors and $28,000 in capital, Ford founded the Ford Motor Company on June 16, 1903. A little more than a month later, the company sold its first car, to a Detroit doctor.

But Ford, unlike his competitors, began to envision automobiles as affordable to anyone, not just playthings for the rich.

Cars for the Common Man

"Ford's great stroke of genius was recognizing that with the right techniques, cars could be made affordable for the general public—and that the general public would want them," according to Ford Motor Company's published history. In determining what sort of car America needed, Ford went to his roots.

"He had been a farmer and thought, 'What would farmers buy? Something cheap, reliable, easy to maintain, with high ground clearance.' And that's a Model T," Casey says.

Ford didn't invent the assembly line; when he started out, he didn't even have the assembly line in mind. "The (question) was how to make an automobile more rapidly at a lower cost, and they stumbled across the assembly line idea," Casey says. "Of course, they leaped on it and rode it."

Ford priced his first Model Ts at $850, a far cry from the $2,000 cost of most early cars. "It was one of the first cars aimed at the common man," says John Anderson of Temple, Maine, (pop. 572), who presides over the Model T Club of America. By the early 1920s, that price came down to just under $300.

Such affordability caused an explosion in sales, and by 1918 half of all cars in America were Model Ts, and Ford's company was the largest automobile maker in the world. Between 1908 and 1927, Ford Motor Company built 15 million Model Ts.

"The Model T," Anderson declares, "was his masterpiece."

One of Ford's most astonishing moves, to combat high turnover and absenteeism caused by assembly line monotony, was to double the minimum daily wage to $5 and cut daily working hours from nine to eight. His employees rejoiced, and the high turnover disappeared almost overnight. The industrial world was shocked, and other car makers condemned Ford's move as cutting into profits—but followed

suit.

Lasting Legacy

Ford's unprecedented production system, based on low skills and high wages, allowed for a huge expansion of the middle class, which could readily afford the cars the company was building. The Model T fostered a movement from farms to urban manufacturing jobs, and ultimately into the suburbs. It also allowed for faster delivery of goods and services because doctors, mail carriers, and small businesses owners could afford these horseless carriages, Anderson says.

Henry Ford's triumph indirectly helped win World War II, Casey says. "Given the fact that the production methods Ford pioneered spread throughout the industry, by World War II, all industries were using those methods to turn out massive amounts of material," he says. "The U.S. could crank out everything from shell casings to combat boots at rates that neither the Germans nor the Japanese thought would ever be possible ... we could build ships faster than they could be sunk."

The same notion of an "everyman's car" led to the Ford Mustang's explosive popularity after it debuted in 1964, propelled the Ford Falcon into so many drivers' hands, and today helps make the Ford Focus one of the most popular cars in the world.

Reliability was central to Ford's dream right from the start, and Joyce Shierlow of Manchaca, Texas (pop. 1,200), can tell you all about that. She and her husband, Charles, took their 1923 Model T touring car on the trip of a lifetime.

"In 1995, he and I drove out of our driveway in central Texas and drove to the Arctic Circle," she says. Towing a small trailer to hold their clothing, the Shierlows drove their Model T more than 10,000 miles on that trip.

The Shierlows often join members of their Model T club on 800-mile treks around the country, where the classic cars draw attention wherever they stop.

"People love us," Shierlow says. "They come up and ask questions and want to know if they can take pictures of the cars."

And with good reason, she adds. "These cars are 80 and 90 years old, and they're still running."

Ford's Model T may have had worldwide impact, but some, such as

Source 2

Anderson, simply appreciate the little car's craftsmanship and connection to their family.

"Everybody owned one," Anderson says. "Most have some history of it in their family somewhere. Everybody's grandfather or great-grandfather owned them."

The Model T is favored by Anderson and other collectors today because, as in its heyday, the car easily can be repaired, Anderson says. "If we break down on (auto) tours, we can fix it beside the road," he says.

Just like his grandfather did.

Descendants of the Model T

The Model T was just the first of many Ford accomplishments—cars and trucks that became household names and fixtures on the American landscape. The first Ford truck came in 1917, the Model A 10 years later.

Other classics and innovations followed—the first single-cast V-8 engine in 1932; the Lincoln Continental in 1939, which architect Frank Lloyd Wright called "the most beautiful car ever made;" the first F series pickup trucks in 1948. And the two-seater Thunderbird in 1955—sleek and classy, it redefined America's notion of what a sports car could be.

One of Ford's most famous cars—and certainly one of its most popular—was the Mustang, introduced in 1964. Quick, fun, and affordable, it won America's heart and still enthralls collectors, as well as new car drivers.

But there were others: the Falcon in 1959; the family-oriented Fairlane in 1961; the 1986 Taurus, which became one of the most popular models in U.S. automotive history; the "Ford Tough" trucks; and, in 1990, the Ford Explorer—the best-selling SUV in the world.

Through it all, Henry Ford's spirit and readiness to innovate prevailed—leading the company in October 1996 to its 250 millionth vehicle. It may be that Henry Ford's greatest masterpiece was the Model T, the car that revolutionized a nation. But ever since the last one rolled off the line in 1927, the company that bears his name has demonstrated that it still can build cars and trucks in a way that alters the American scene.

Carol Davis is a Nashville, Tenn., writer.

Source 2

Source 2

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Source 3

Contents

a kind of formalized white derivative of jazz. White musicians took jazz, smoothed it out, and made big money. Harry James, the Dorsey brothers, Glenn Miller, Benny Goodman, Woody Herman all were excellent musicians, and they made good music, music for records and the radio. Underneath it black music continued. Some black bands (Jimmie Lunceford, Jimmy Rushing, Louis Armstrong, Duke Ellington) made it into the big band world and continued to do brilliant and innovative things, Ellington especially, but many of the great black jazzmen were reduced to working as day laborers or playing for tips in small jazz clubs. The end of Prohibition was a mayor blow to jazz. Speakeasies disappeared, and there were far fewer places to play.

Source 3

Source 3

Automobiles Fuel the Transportation Revolution

Fon W. Boardman Jr.

Transportation boomed during the 1920s. Railroads blanketed the country, ships steamed along both coasts, on rivers, and across the high seas, and aircraft made the skies accessible. The most dramatic impact upon society, though, came from the automobile, which provided Americans an increased freedom to leave the home and move about the country.

Historian Fon W. Boardman Jr., an expert in U.S. history in the 1900s, explains the transportation revolution that altered the face of American society.

The nation's railroads, whose thousands of miles of tracks had done so much to link the far-flung parts of the continent together, were the basic transportation system of the United States. This was clearly shown when the country entered World War I. Within months the many independent operating lines proved unable to provide the coordinated and unified transportation of goods and people necessary for the war effort to succeed. At the end of 1917 the Federal government took over the lines by Presidential proclamation and in March, 1918, Congress passed a law spelling out the terms of Federal operation.

Under William G. McAdoo as director general, govern-

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ment management was a great success, so that when the war ended there was some sentiment that the government should continue to operate the railroads and should take over ownership from the private companies. The railway labor unions favored this, but the owners wanted their property back, plus payment for wear and tear on equipment. The Transportation Act of 1920 abandoned the idea of government ownership but placed more power than previously in the hands of the Interstate Commerce Commission. Whereas in the past the general antitrust atmosphere had worked against the merging of railroads, the Commission was now instructed to help formulate consolidation plans that would bring about more efficient regional groupings of rail lines. In practice, though, nothing much came of this. The act also set up a Railroad Labor Board but since it had no power to enforce its decisions it was not effective. Another Railway Labor Act in 1926 did not prove any more practical.

The return of the railroads to their owners and the subsequent attempts to deal with their postwar problems came at a time when the railways were facing their first serious competition in almost a century. The automobile was beginning to cut heavily into rail passenger traffic, which declined by about a third by 1927. Transportation of freight by truck had been given a boost by the war, and the number and size of trucks continued to increase rapidly. At the same time pipe lines began to carry more and more liquid products. More and better highways were being built out of public funds while the railways had to use their own money for roadbeds and equipment. Even commercial aviation began to be a threat to the dominance of the railroads.

As in other areas, technological advances helped railways to compete. Automatic train controls were installed on a good deal of track mileage and centralized traffic control increased the capacity of the roads. Diesel locomotives appeared in the twenties in the form of small switching engines but it was the next decade before the large diesels came in.

 Source 3

A Shipbuilding Boom

The war, with its need for shipping millions of tons of goods across the oceans and its enormous loss of ships to German submarines, caused the government to enter the shipbuilding business. In the three years 1918–20 the United States launched about 8,500,000 tons of merchant shipping and by the end of the war had many more tons of shipping in relation to the British than in 1914. Nevertheless, when peace came and the demand for shipping space fell off, American merchantmen were once more unable to compete with British and other foreign operators whose costs were much lower.

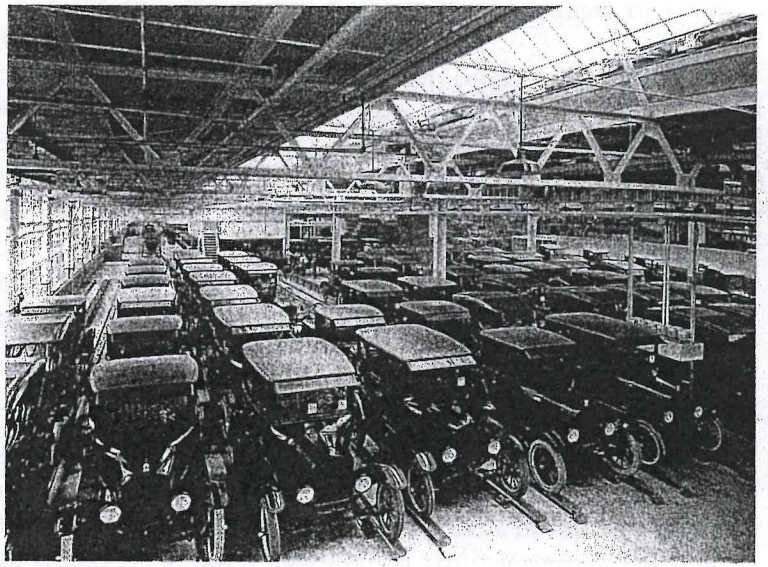
There was considerable support for keeping up a substantial American merchant marine so that in case of another war the nation would not be dependent on other countries' ships. The controlling sentiment favored the government's getting out of the shipping business and turning it over to private interests. By mid-1920 the Shipping Board had about 1,500 ships which had been built at a cost of $3,000,000,000. The Merchant Marine Act of 1920 instructed the Board to sell its ships to American companies as soon as possible. Although sponsors of the legislation thought government ownership and operation was socialism, they did not mind subsidizing the private operators in various ways, such as exemption from certain taxes, generous payments for carrying the mail, and loans. In 1928 another law, the Jones-White Act, increased the mail subsidies and authorized another $250,000,000 of construction loans. Despite these efforts the American merchant fleet did not prosper.

In shipbuilding the main technological advance was the use of diesel engines in large vessels in place of steam power. In 1922 the United States Navy acquired its first aircraft carrier when it converted a collier into the U.S.S. *Langley.*

The Automobile Makes Its Mark

The significant transportation revolution of the decade took place on land where the automobile, its merits amply

demonstrated by wartime use, rapidly changed from a rich man's toy to a necessity for millions. As recently as 1910 there had been only 458,000 cars in the entire United States. In ten years the number of passenger cars and trucks grew to nearly 9,250,000 and by the end of the 1920's the total had reached the astounding figure of just over 26,500,000. This meant that the whole population of the United States could go for an automobile ride at the same time.



Automobiles roll off the assembly line at the Ford factory in 1925. The automobile changed the way Americans traveled and spent their leisure time.

The automobile industry became a key factor in the economic life of the nation. By 1929 the value of its product was one-eighth of all manufactured goods. Without it such industries as steel, rubber, glass, and others could not prosper. About one million persons had jobs directly concerned with the motor vehicle industry while three times as many were indirectly dependent upon it. At the beginning of auto manufacturing in the early years of the century nearly two hundred persons or companies entered this very competi-

Source 3.

 Source 3

tive field. By 1929, as a result of mergers and failures, only eleven survived. General Motors and Ford were already the two giants of the industry, with Chrysler third. There were still a few well-known smaller companies, such as Nash, Hudson, Packard, and Studebaker—the latter having ceased in 1920 to produce any more horse-drawn wagons, for which it had been well known for many years.

Ford was the best-known name and Henry Ford and his Model T auto became a part of American folklore. By the time he abandoned the Tin Lizzie [nickname for Model T] he had made fifteen million of them and in some single years his plants had turned out as many as two million. Ford consistently brought down the prices of his cars so that by the middle of the decade one could purchase a Model T for under $300. When he introduced an entirely new car in 1928—the Model A—it was somewhat more expensive, but it was the biggest news story of the year and more than half a million people signed up to buy one before they ever saw it. Ford was a lone wolf who would have nothing to do with Eastern bankers. Nor would he deal with labor unions, and he forced his retail dealers to try to sell more and more cars. But along with this he paid comparatively high wages and was one of the first leaders of industry to recognize that if mass production was to be successful there would have to be enough money paid out in wages and salaries so that there also could be mass consumption.

These vehicles that were transforming America were considerably different from their present-day descendants. At the start of the decade most passenger autos were open touring cars. Only about 10 per cent were closed. The proportion went up rapidly, partly because some highways were now kept open in winter so it was no longer necessary to lay up the family car for the season. One of the standard jokes about Henry Ford was that he said his customers could have his Model T in any color they wished so long as it was black. In 1925 other manufacturers began to offer a variety of colors, and so did Ford when he unveiled the Model A. Balloon tires came in about this time. Cars were

getting more comfortable, but the average horsepower of passenger cars was only twenty.

Change Follows the Automobile

The automobile was changing American life in several ways. It became a status symbol as important as one's house or one's style of living. In fact some people preferred to have a modest house with a garage and a car than to have a more expensive dwelling. One sociological survey of a typical Middle Western city found that a number of families who did not have bathtubs owned autos, and one woman admitted she would go without meals before cutting down on buying gasoline to run the family car. The boy who could not borrow the family car to take his girl to a dance was soon dateless. In fact, in no area did the automobile bring about more change than in that of dating and courtship. Previously young couples had spent many hours in the home parlor; now the automobile became a parlor on wheels, taking them to more exciting places and away from parental supervision. Farmers were no longer isolated from the towns and cities. Entire families could take vacation trips to parts of the nation they might never otherwise see. This new and constant traveling in turn caused other changes. Service stations and roadside restaurants sprang up at every crossroad and before long the gas station and the garage for repairing autos were major businesses. Tourist cabins, the forerunners of today's plush motels, were built on what had been farm land.

The increasing number of owners and drivers of autos demanded more and better-paved highways—and the more roads that were built, the more incentive there was for still more people to buy and drive autos. Thus the coming of the motor vehicle also made the road construction industry and its suppliers, such as asphalt, cement, and machinery manufacturers, big business. During the 1920's the nation spent nearly $2,000,000,000 a year on its highways and streets. By 1927 there were fifty thousand miles of concrete roads, and by 1928 a man could drive from New York to

Kansas on paved highways. However, it was not advisable to try to go much farther west during the rainy season or in the winter.

The amazing increase in the number of cars also meant traffic problems in the cities, a need for new types of highways, and calls for more bridges and tunnels. The first traffic signals, manually operated, were used in New York City about 1920. Later, overhead red and green electrically operated signals, adapted from the railroad signal system, began to be used. The first parkway was the Bronx River Parkway in Westchester County, New York, which was opened in 1923. Parkways on Long Island and the Merritt Parkway in Connecticut also date from the twenties. Wacker Drive in Chicago, constructed between 1921 and 1925, made use of double-decking to carry traffic, while the first cloverleaf intersection was opened in New Jersey in 1928. The first long underwater tunnel designed specifically for motor vehicles was the Holland Tunnel under the Hudson River, which was built between 1920 and 1927. In Pittsburgh the Liberty tunnels for autos were cut through rock and opened in 1924. The George Washington Bridge over the Hudson River between New Jersey and New York City was started in 1927 and at the time was the longest suspension bridge in the world, with a span of 3,500 feet.

Aviation Joins the Fray

An even newer method of transportation than the auto was the airplane; and, as with the automobile, World War I provided a strong stimulus. The "aces," flying alone in their fragile fighter planes, were the romantic heroes of the war. More practical was the money and effort spent on making planes stronger and more powerful. Commercial airline companies began to try to turn aviation into a business, but progress was slow. As late as 1927 the airlines carried fewer than 10,000 passengers a year, but a new era was about to begin, for by the end of the 1920's the annual number of passengers had already risen to over 150,000.

A major source of encouragement to aviation was the

Source 4 Reprinted on BNET

The car that changed America: how Henry Ford's 1908 Model T, the first mass-produced and affordable cars, sparked the growth of highways, surburbs, and the middle class itself

New York Times Upfront, Feb 11, 2008 by Monica Davey

It all began a century ago in a factory on Piquette Avenue in Detroit.

In a secret back room on the third floor, Henry Ford, who by then had been building cars for several years, drew up plans for a new one. While he had already produced models he named, simply, for letters of the alphabet--B, C, E K, etc.--it was the Model T that would change everything.

The lightweight but sturdy Model T was the first affordable car. Mass produced along an assembly line, it not only spurred the growth of the auto industry and led the way to the adoption of mass production for industry as a whole, it also sowed the seeds of America's middle class and much of American life as we know it today.

Cars had been built in the U.S. since the 1890s, but in 1908 they were a luxury--a bit of an oddity, in fact. They were used not so much for getting around as for sport; wealthy auto enthusiasts toured the bumpy, gravel and dirt roads from one part of the country to another, with newspapers following their journeys. In fact, there were fewer than 200,000 cars on the road when Ford built his Model T.

ASSEMBLY LINES

Ford grew up on his family's farm in Michigan but was always more interested in machines than crops. He was working as an engineer for the Edison Illuminating company in Detroit when he began building his first cars. With the encouragement of Thomas Edison himself, he founded the Ford Motor Company in 1903.

The first Model Ts, built one by one, sold for about $800 (more than $18,000 in 2008 dollars)--out of reach for most Americans. But then came Ford's biggest innovation: the moving assembly line, which allowed a worker to complete a task, then watch as the car moved on to the next worker and the next task.

Source 4

Source 4

The assembly-line concept had been used in slaughterhouses and for simple products like tin cans, but rarely with products as complicated as cars. The assembly line lowered Ford's cost so much that he could slash the Model T's price to as little as $260--a price that, for the first time, ordinary Americans could afford.

"If there's anything about Henry Ford that we could call genius, it was that he could imagine millions of people buying his automobile and driving it," says Charles Hyde, an automotive historian at Wayne State University in Detroit. "At the time, people thought that was crazy."

The shift was rapid. Sales of the Model T boomed. In coverage of a 1910 auto show in New York, The New York Times noted a 50 percent increase in sales of the Model T from a year earlier.

"The transportation problem s gradually being simplified by the practical use of the motor vehicle," The Times reported. According to the article, one man who looked over the exhibit of new vehicles said, "'The poor faithful old horse hasn't a chance in the world any more.'"

MIDDLE CLASS

Ripples from the Model T were enormous. With the cars came a nation that traveled more than ever before, that moved away from home, that built an elaborate road system.

The Model T also ended up spurring the growth of America's middle class. Because assembly line work was so tedious, Ford found it impossible to keep workers. So he boosted wages to at least $5 a day--significantly higher than what other manufacturing workers were making at the time.

Workers flocked back to the Model T plant. But as other industrial wages rose to keep pace with Ford's, more and more workers made enough money to buy cars for themselves. By the late 1920s, 15 million Model Ts had been sold: Ford had not only created a revolutionary product, he had created, in effect, the market for it as well.

In the 1930s, as New Deal legislation gave labor unions greater legal standing, the United Autoworkers became one of the largest and most powerful unions--despite Ford's strong, sometimes violent opposition. Unions not only negotiated higher wages and benefits, they also began to have influence in Washington, where they successfully lobbied for a federal minimum wage and a 40-hour work week that still shape most Americans' lives today. In their heyday 50 years ago, unions counted 35 percent of the American workforce as members (versus 12 percent today).

By the 1950s, cars were also transforming the nation's once-rural landscape. To many people, it seemed as if America was being planted over with highways and strip malls, fast-food outlets, and sprawling suburbs outside every city.

Source 4

"It's hard to find any other piece of technology that had a greater impact than Model T Fords did in the 20th century," says Hyde, the car historian. "In their own way, they helped promote the growth of suburbs, distant shopping centers, freeways. It's hard to imagine now how they changed people's lives."

THE NEW CONSUMER

The car that started it all eventually met its demise. Ford may have dreamed up the first car for the masses, but he didn't realize that he had also created a new, more demanding consumer who would soon be searching for the next model and the newest look. Ford's biggest competitors, General Motors and Chrysler, adapted his revolutionary production methods, but they went a step further and began offering new styles, colors, and features.

Source J

Henry Ford

A GREAT LIFE IN BRIEF

BY

Roger Burlingame

New York ALFRED A. KNOPF 1961

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TO MY WIFE

Keith Sward, writing of the early 1900's in *The Legend of Henry Ford*, says:

> In this day the rich themselves thought of the automobile as a luxury reserved for the few. . . . It was understood at the same time that the plain people of the country were to function as the tenders and repairers of the motor car. Guided by such a conviction, the Detroit *Saturday Night* said in 1909 that the best chauffeurs were to be recruited from the ranks of former coachmen. Such drivers, observed the *Saturday Night*, were dutiful members of the "servant class" who could be counted on to know "exactly what is expected of them by their masters."

Whatever may have been Henry Ford's motives during his company's experimental period, we may be sure that such statements as this must have exasperated him. Above all else, this man suspected and despised the rich and shied away from anything that smacked of luxury. It would have been wholly out of character for him to favor the production of expensive cars except for technical purposes. It must, therefore, have been a satisfaction to him that there was a sharp decline of sales when his $2,500 Model K was introduced and a quick up-curve when the cheaper Model N went on the market. It was obvious by 1907, though no suggestion of a "universal car" had yet engaged the public fancy, that the name of Ford was popularly associated with low-priced automobiles.

We may put our finger precisely on 1907 as the year in which revolution came. It seems, looking back

on it, as if fate played then into Ford's hands—as if it were a wind of destiny that shook the stock market in March, brought the most hopeful securities to the ground, and sowed the seeds of October panic. The rich were hard hit. Low-priced cars were more than ever sought after. In the course of the year Ford production jumped to about eighty-five hundred, five times that of the previous year; and the great bulk of it consisted of the latest experimental light cars—Models N, R, and S, all selling for less than $1,000.

Watching these things, keeping careful track of costs, thinking of the future in terms of expansion beyond all dreams of the time in this first adolescence of the industry, Henry Ford evolved his great concept. It was in the light of this vision that he felt too confined in the Piquette-Beaubien plant, to which the company had moved when Strelow's Mack Avenue shop would no longer hold it. He planned for the purchase of the sixty-acre Highland Park race track, where he talked of building "the largest automobile factory in the world."

Various employees of the Ford Motor Company have claimed credit for the revolutionary idea. It has been said that it was not one man's brainstorm, but the result of the focusing of many minds. It is undoubtedly true that others contributed details of design and, especially, production methods. But no one can examine the records or analyze the reminiscences of Ford workers of the period without knowing beyond question not only that Henry Ford's was the

Source 5

Source 5

master mind but that the whole of the broad project originated with him. Indeed, we find evidence of discontented and sometimes angry rumblings throughout the time when the plan was taking shape and, indeed, of the disgusted exit of two of the most important production men in the plant. And with Ford's contemplation of the new gigantic installations at Highland Park—to be financed entirely by the plowing back of profits—the waves of unrest spread out to the stockholders. So the project had far from unanimous support.

The project was Model T.

The way for the realization of Model T was now open. If the idea had occurred to Henry Ford before —as it probably had—there were difficulties to be overcome. He had not had full control. Malcomson, with whom he had shared equally the majority stockholding, was opposed to concentrating on a low-priced car. But here too the gods were conniving. Malcomson had sold out to Ford. Speculating in other directions, he had needed cash and, as the stock for which he had originally paid $12,000 was now worth $175,000, he was content. Albert Strelow and three minor stockholders had followed Malcomson's exit. Ford bought all of these shares. Those who like to play the game known as "the if's of history" enjoy speculating on the millions these men might have made had they remained aboard. Yet if they had stuck, perhaps there would have been no Model T. Poor

Strelow put the $25,000 he received into a gold mine, which almost immediately turned out to be barren, and he was later reported standing in line for a lowly job with the company he had once partly owned.

By 1907, then, 58½ shares of stock in the Ford Motor Company had been acquired by Henry Ford, giving him full power in the management of the company. In these fateful years some valuable technical assets had also arrived. To make crankshafts for Model N, Ford had hired a great, brawny, uncouth ox of a man named Walter Flanders, who, nevertheless, was original, ingenious, and highly versed in mass-production techniques. Also, working creatively in the company since 1904, another giant, physically and mentally, was a Dane named Charles Sorensen or "Cast-iron Charlie." This man, whose later contributions to the moving assembly were perhaps without equal anywhere, was an old friend of Henry's going back to the days of the Edison company. A third was the brilliant mechanic, P. Edward ("Pete") Martin.

These men and others picked by the chief's almost infallible instinct must, by the methods of economy and speed they installed—rearranging machinery, devising jigs and fixtures for accurate machine-tool work, dividing labor, and insisting on interchangeability—have led Ford over the months into his large, over-all view of the most adaptable product for full mass production. He was constantly moving through all the departments, watching every man and every ma-

Source 5

chine. Like Frederick Taylor, the great inventor of scientific management, Ford had a passion for simplifying operations, for economy of time and materials, for eliminating little waste motions from each worker's performance.

It is remarkable how close all this came to the carefully worked-out plans of Taylor, because Ford had certainly not read Taylor's treatises. It must be assumed that the efficiency patterns came into the Ford plant with the factory men he hired, but in the use of them Ford exercised a critical judgment and creative force that everyone acknowledged. His power lay in an instant recognition of what was right and what was wrong in any new method. The reminiscences of the workers taken, after Ford's death, on tape recordings testify to the master's almost constant pressure, walking over miles of factory floor, stopping at every work center to watch or speak, to say no, to nod approval, to berate—perhaps fire on the spot—an inflexible, perverse, or skeptical worker. A man in these times who hinted, even by the expression of his face, that he thought one of the master's schemes impossible was doomed.

Mr. Ford [Charles Sorensen recalls] never caught me saying that an idea he had couldn't be done. If I had the least idea that it couldn't be done, I wouldn't announce myself on it to him. . . . I always felt the thing would prove itself.

Walter Flanders thought the Model T project was impossible. He did not think the Model T itself was

impossible. He was willing to try that. But he thought the *project* would be fatal to the company. He thought Ford was crazy to pursue it and said so. He then walked out before Ford had a chance to invite his departure.

It was not Ford's determination to produce Model T—a simple, sturdy, utilitarian, low-priced job—that worried Flanders. It was his determination *to produce nothing but.* It was a profound obsession in the industry that no manufacturer could survive concentrating on a single model—that he must offer a choice and make annual changes. Today we may sympathize with this view. The industrialists of 1907 were merely thinking twenty years ahead of their time. Mass production of this highly complex machine had to be established first—not only technically but economically as well. We know now that a Model T project had to be injected into American society before the universal market and the universal desire could become facts. The *flexible* mass production that engineers are dreaming of in the 1950's will probably follow more flexible tastes of the future. But *inflexible* mass production had to precede it: neither the techniques nor the popular demand of the years immediately following 1907 would have permitted anything else. That was the fact: but of all the eager folk who were then engaged in pushing the horse off the American road, only Henry Ford knew it.

Source 5

Source 5

Ford himself described the main assembly line, on which there were forty-five operations:

> The first men fasten four mudguard brackets to the chassis frame; the motor arrives on the tenth operation and so on in detail. Some men do only one or two operations, others do more. The man who places a part does not fasten it—the part may not be fully in place until after several operations later. The man who puts in a bolt does not put on the nut; the man who puts on the nut does not tighten it. On operation number thirty-four the budding motor gets its gasoline . . . on operation number forty-four the radiator is filled with water, and on operation number forty-five the car drives out. . . .

To carry out all of this plan it was necessary to arrange machines in new sequences. Before, similar machines had been grouped together: drills in one place, borers in another, millers in another, and so on. Ford changed all this. If a sequence of operations called for it, a miller would stand next a drill press and even an annealing oven would be injected into a line of machine tools. This called for radical innovations in the application of power—greatly simplified

when individual electric motors replaced cumbersome shafts and belting.

For some time before 1910 Ford had concentrated more and more manufacture in his own shop. He did not believe in this, but he found it necessary. The ideal, he thought, was to have parts made by different plants all over the country and contracted for by the assembler—the system, in short, with which he had begun. But he had found that outside companies were far behind him in concepts of economy, that their materials were inferior, their deliveries uncertain. So by 1910 most of the Model T was made at home, but bought parts like tires were unpacked, put on overhead conveyors, and carried to the main assembly along with the parts Ford's own machines had made.

The result of all this mechanization and minute division of labor was, of course, that scarcely any real skill was required in the making of a Model T except among the top engineers who designed the processes.

> As to machinists, [wrote Arnold and Faurote in their classic volume, *Ford Methods and Ford Shops*] old time, all-round men, perish the thought! The Ford Company has no use for experience, in the working ranks anyway. It desires and prefers machine-tool operators who have nothing to unlearn, who . . . will simply do as they are told to do, over and over again, from bell-time to bell-time. . . .

As mechanization became more and more complete, howls of protest arose over the "stultifying"

Source 5

monotony of the endless repetition in the work. It is probable that the complaints came more frequently from shocked sociologists than from the assembly-line workers, but, with the general spreading of the horror that sensitive human beings with eternal souls should be put to such slow torture, Ford employees began to drop off at an alarming rate—many of them finding work among rival automobile companies in Detroit, the city that was rapidly becoming the automotive center of the world. This happened after the moving assembly was working in 1913. On the fifth of January, 1914, Henry Ford made a gesture that brought him into the headlines of newspapers all over the world. It became for weeks almost the only topic of conversation among businessmen. Clergymen preached of it on Sundays. There was wide speculation as to whether Ford was a saint or insane. It was unheard of, unprecedented. It was the beginning of industrial disaster—or the start of millennium.

In fact, it was neither unheard of nor unprecedented—except, perhaps, in degree. Observers of the industrial scene had talked about the monotony of repetition ever since Adam Smith, and it had increased with every stage of mechanized quantity production. It had simply been carried to an "unprecedented" extreme in the Ford plant. Henry Ford's sudden act of compensation was by no means unheard of. In his *Principles of Scientific Management,* published in 1911, Frederick Winslow Taylor had written:

> The *management* must also recognize the broad fact that workmen will not submit to this more rigid standardization . . . unless they receive extra pay for doing it.

Yet when Henry Ford announced on January 5, 1914, that he was establishing throughout his plant a minimum wage of five dollars a day he became overnight a hero and a villain.

It is true that in the "taylorized" industries the pay rise had been more gradual. It is true that a good many industrialists had repudiated "taylorization" and called Taylor a crackpot. It is also true that, though his plan had been widely adopted, it had not become "news."

By 1914, however, "Tin Lizzie" had carried Ford's name far and wide. For Model T alone he was regarded as something of a benefactor—especially as the price had dropped from $950 in 1909 to $600 in 1913. Now, with the announcement that he had *more than doubled* the minimum wage in his factory, it was natural that the newspaper make-up men picked their largest type to blazon it to the world.

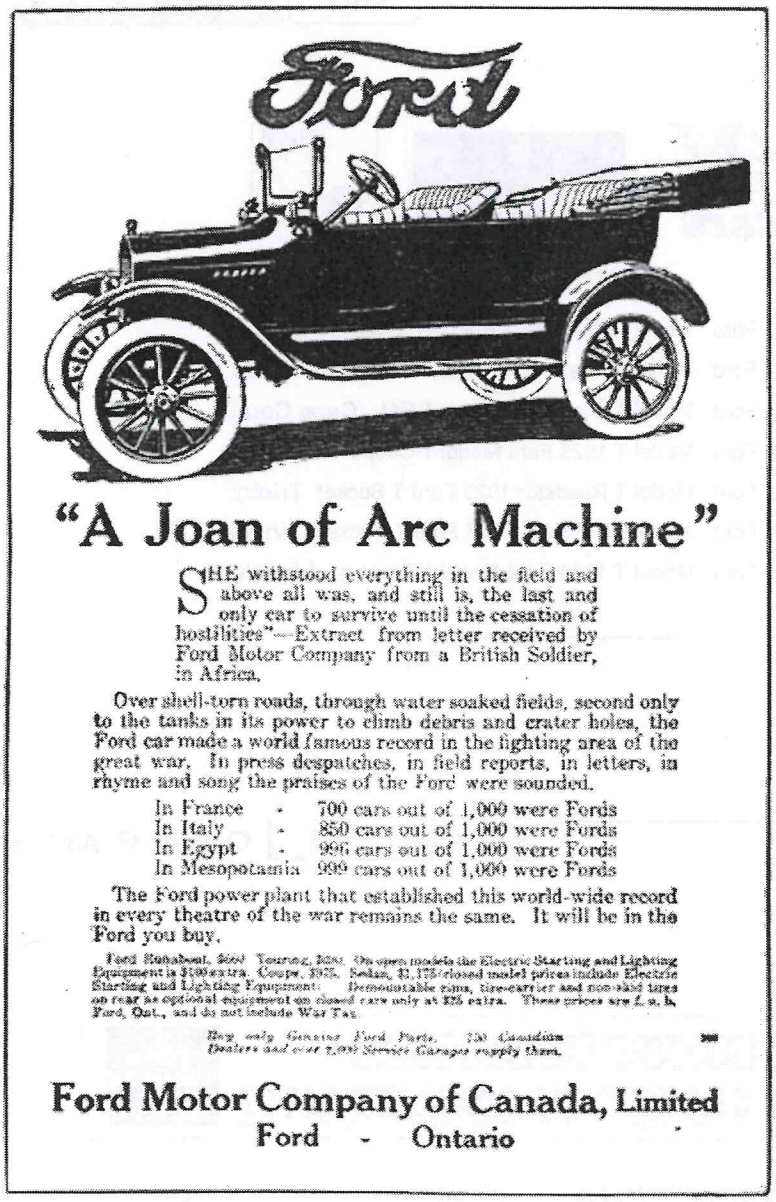
Ford was given full credit for the idea. Businessmen said that none of his subordinates would be mad enough to think of such a thing: that here was another demonstration of the kind of independence of sound business judgment that would eventually wreck him.

Source 5—

Source 6

Everytruman's World for October, 1919

Everytruman's World for October, 1919



1919 Ford Open Touring Sedan Original vintage advertisement.

Source 6

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$3,550	Ford : Model T 1925 ford t roadster	**Lakeland**
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$5,750	Ford : Model T 1926 Ford Model T Coupe	**Mojave**
$12,100	Ford : Model T Roadster 1923 Ford T Bucket	**Trinity**
$2,551	Ford : Model T T Bucket 1923 Ford T Bucket	**Viola**
$7,755	Ford : Model T 1924 Ford Model T Touring	**Lincoln**

model t cars

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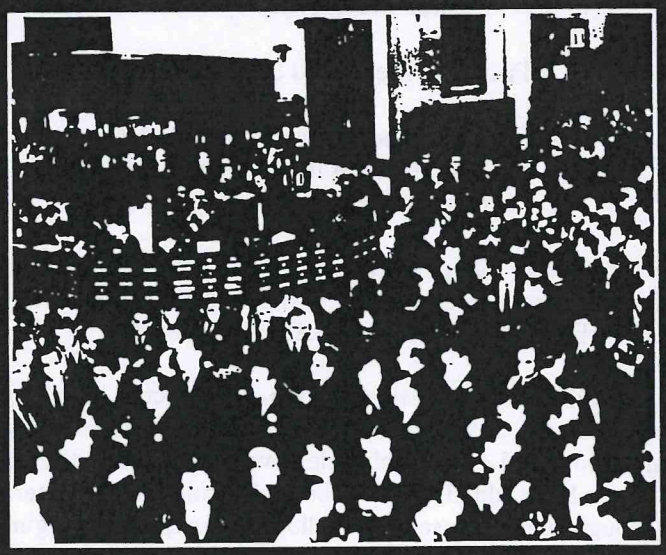
Source 7

AMERICAN DECADES

1920-1929



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Source 7

AMERICAN DECADES
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Matthew J. Bruccoli and Richard Layman, *Editorial Directors*

Karen L. Rood, *Senior Editor*

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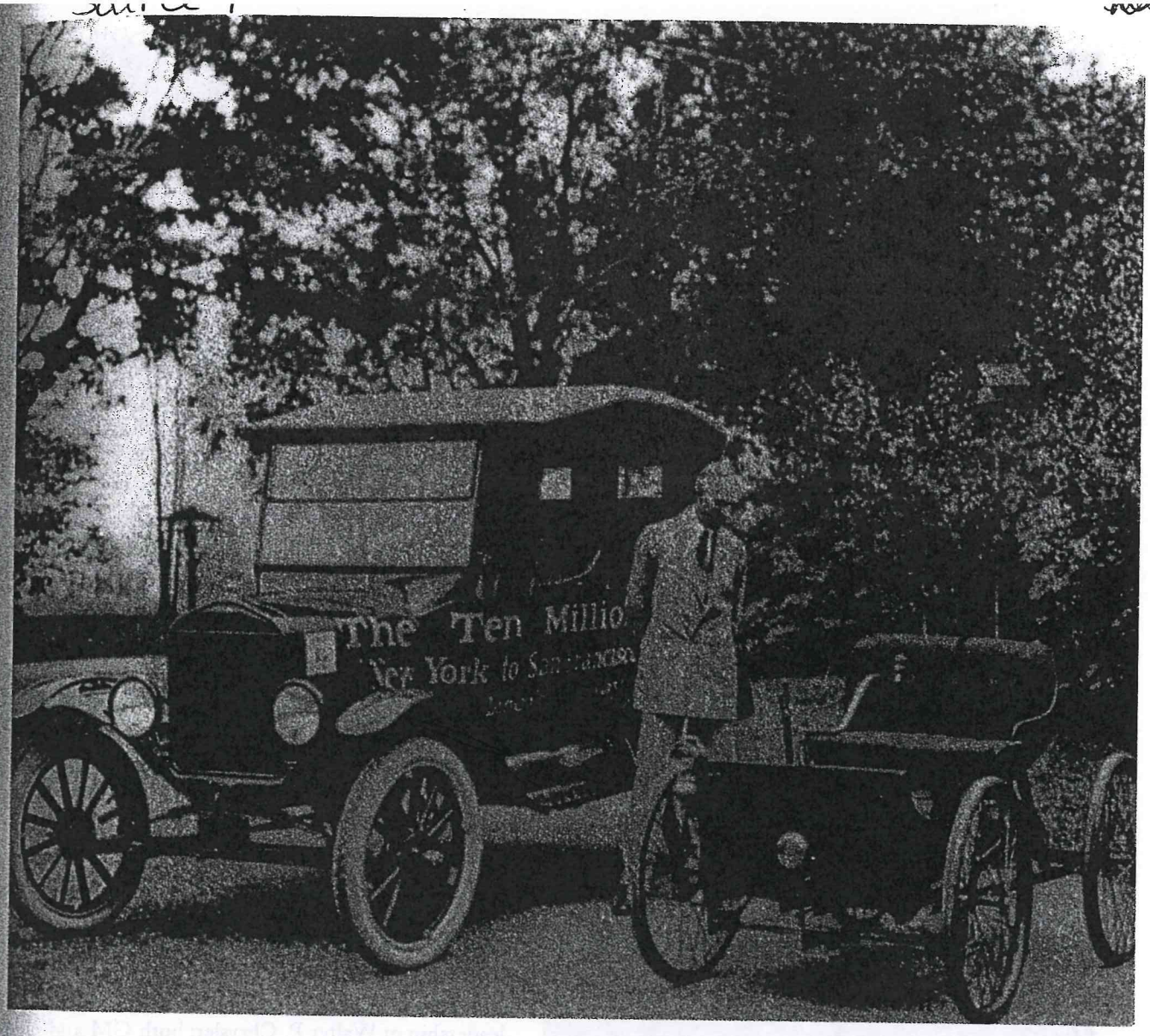

Henry Ford with his first car and his ten millionth, a Model T

Conclusions. From almost a backyard hobby operating on a shoestring, the production of aircraft had developed by 1930 into a major industry, and by 1940 it would be one of the nation's largest industries and the greatest producer of aircraft for the world market. The industry had essentially been created through the demand of fledgling airlines for suitable aircraft, which, in turn, had come into existence through the airmail subsidy, wisely used to stimulate the carriers to make provisions for passenger traffic. One might argue that these developments would ultimately have taken place anyway. No doubt they would have; but it was fortunate that by the beginning of the 1940s, with war on the horizon, the aircraft industry could capitalize on the foundations laid during the 1920s.

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INDUSTRY: THE AUTOMOBILE

Model T. In 1908, when Henry Ford was forty-five years old and the president of the Ford Motor Company, he had an idea that must have made both his associates and competitors think he had taken leave of his senses. The Ford organization, following conventional wisdom, had been manufacturing the Ford Model N, a large, popular car. Auto producers generally believed that the car demanded by the public would be large and expensive, since by definition the auto attracted only those in the upper-income groups and would never be produced for the average man who could not afford it. But now Henry Ford wanted to manufacture a small car to sell to a mass

THE DAY THE NEW CARS ARRIVED IN TOWN

Interest in the automobile during the 1920s was immense, perhaps because there was no television or because in those days the various makes were quite distinctive. The introduction of new models in the local dealers' showrooms was a major event.

September and October were the magic months. In small communities new Fords, Chevrolets, Plymouths, and other makes would begin arriving at the local freight yard to be unloaded and driven to the nearest dealer, the process supervised by small boys and hangers-on. And when the cars reached the showroom, everyone came to see them. Brochures illustrating the new models were stacked on tables, and, in some cases, passed rather sparingly to those who gave some appearance of being likely customers (small boys not included).

Loud, sometimes heated discussions would get under way over the advantages of hydraulic brakes, "free wheeling," the "turret top," "knee action," "synchro-mesh" transmission, and so on.

Salesmen boosted the youngsters into front seats, opened hoods, pointed out improvements, and suggested trial spins. Serious negotiations began when a prospective customer and a salesman stepped outside to look over the trade-in.

The scene at the high-priced auto showrooms was a bit different from that at the Ford or GM dealerships. Packard, Cadillac, and Lincoln customers were older and clearly more affluent, the salesmen more restrained. The automobile brochures for upscale cars were more attractive and often expensively produced. Later they would become collectors' items.

GREENFIELD VILLAGE

Henry Ford had many interests — farming, social issues, food fads, politics, and pacifism among them. During a legal proceeding he once said that history was "bunk," but around 1919 he began to re-create history on his property near Dearborn in the neighborhood of his River Rouge plant. Greenfield Village became over the next twenty years a potpourri of American history: a somewhat unstructured living museum filled with tradesmen's and workers' shops and historic buildings of various kinds (including Thomas Edison's laboratory moved from New Jersey and rebuilt on the Greenfield Village site). Ford and members of his family spent some $37 million on the project, far more than they put into their other philanthropic endeavors, such as the Ford Hospital and the Berry Schools.

Source: William S. Adams, *Henry Ford and Greenfield Village* (New York: Stokes, 1938).

market at a low price — less than $1,000 — an invitation to bankruptcy, the industry thought. Before the Model T went out of production, nearly twenty years later, the lowest-priced model was sold for $260. While his associates had predicted disaster, by 1920 Ford was the most famous figure in the industry, and his Model T the best-known car in the world, seventeen million having been sold.

The Industry. The industry was in great flux during the decade. Dozens of small firms merged with others or ultimately left the automobile field completely; from 1900 to 1930 some two thousand or more auto manufacturers were in business for at least some period of time. Such well-known smaller companies as Packard, Reo, Nash, Velie, Hudson, Franklin, Duesenberg, Chandler, Pierce-Arrow, and Rickenbacker enjoyed a reasonable share of the market, though many of them ultimately failed. Generally these smaller firms concentrated on the high-price/high-quality end of the market.

The "Big Three." Yet the smaller companies were of course overshadowed by the giant auto manufacturers. Founded in 1908 by William C. Durant, General Motors rose during the 1920s to the top of the industry, followed later in the decade by the Chrysler Corporation under the leadership of Walter P. Chrysler; both GM and Chrysler were amalgamations of other companies. The "big three" — GM, Chrysler, and Ford — accounted for well over 70 percent of the auto market, GM controlling about 40 percent of the market, and Ford and Chrysler dividing roughly 30 percent, though, as the decade passed, Ford began to lose its market share to the other two major firms. The greatest area of competition took place in the low end of the market occupied by Ford's Model T and, later, Model A; GM's Chevrolet; and Chrysler's Plymouth — the three most widely sold cars.

Evolving Structure. By middecade the industry had begun to change in structure and emphasis. The number of makes in autos had substantially declined, and while emphasis was still put on stylistic innovation and mechanical developments, increased attention was being given to management and the business side of the industry. The major figure of this era was Alfred P. Sloan Jr., who became the dominant personality in General Motors after the departure of Durant. Unlike many of the early giants of the industry, Sloan was a professional engineer, a graduate of MIT. Under Sloan, GM became a model of

MR. QUALITY

Henry M. Leland (1843–1932) was one of the great figures in the development of the automobile during the first two decades of this century. Beginning as a toolmaker, he rose to executive positions in several corporations, and in 1908 he won the Dewar trophy for automotive excellence. He had reassembled three knocked-down Cadillac automobiles that had interchangeable parts, and all ran successfully for five hundred miles or more.

After he sold Cadillac to General Motors in 1909, Leland and his son continued to operate the Cadillac division, where they introduced many technical improvements. In 1917 he left GM to manufacture Liberty airplane engines, and in 1920 he began to produce the Lincoln.

At first the Lincoln was well received, largely on the basis of Leland's reputation for high-quality work. But although the car was superbly engineered, it was poorly styled, and its production was slowed by Leland's insistence on quality and by the economic decline in the early 1920s. The car was soon in difficulty.

In 1922 the Lincoln passed to the control of the Ford Motor Company. Henry Ford and Leland were both strong-willed men. The Lelands, who had been slated to manage Lincoln production under Ford direction, soon left. Edsel Ford had the automobile restyled in the late 1920s and in the late 1930s produced the Lincoln Continental, a superb car. Henry M. Leland is remembered as the man who created the top cars of both the GM line (Cadillac) and the Ford line (Lincoln Continental).

Sources: Ottile M. Leland and Minnie M. Millbrook, *Master of Precision: Henry M. Leland* (Detroit: Wayne State University Press, 1966);

Allan Nevins and Frank E. Hill, *Ford: Expansion and Challenge, 1915–1933* (New York: McGraw-Hill, 1957).

the modern corporation, just as Ford earlier had become the symbol of mass production and low prices.

Related Industries and Social Phenomena. The auto industry produced a vast network of related industries and generated significant social phenomena. Among the related businesses were car dealerships; parts and supplies manufacturers and retailers; petroleum-products developers; service stations and garages. Highways were built linking almost every city, town, and village in the nation. As automobile ownership made distances easier to cover, schools were consolidated, and factories moved to the countryside. The suburbs mushroomed well beyond the limits of the electric interurban system, which had fueled the original exodus to the suburbs. Investments in motel-like tourist courts, gas stations, and other auto-support facilities rose to enormous levels by the end of the decade.

Profits. In the middle and later parts of the decade the auto industry was hugely profitable almost across the board but especially noticeably in the largest firms. When Henry Ford introduced his Model A (put on the market in November 1927 but generally unavailable to the public until 1928), the company took in more than fifty thousand orders (with cash deposits) before the model had entered production or many buyers had even seen the car. In the same year, GM declared a $65,250,000 dividend on its 17.4 million shares, the largest dividend in any firm to that date. Dealers throughout the nation prospered. And while most attention was fixed on the big three's low-priced entrants, demand was substantial and increasing, as the market boomed at the high-priced end of the market: Packard, Pierce-Arrow, Cadillac. In large cities some imported models, such as Rolls-Royce and Bentley, were seen. Other than these extremely expensive autos, the imported auto was unusual, and the idea that Japan would someday be a major supplier of U.S. cars would have been laughable.

Automania. Public interest in the automobile was intense. During the tooling-up period for the Model A, for example, rumors swept the country about what it would look like and how much it would cost. Newspapers ran pictures purporting to show the new car. On the day the Model A was introduced, Ford ran full-page ads in every paper in the country, and its introduction attracted worldwide attention. Crowds in showrooms were immense. In New York the major dealer had planned a show in the Waldorf Hotel lobby but had to shift to Madison Square Garden instead. In small towns the status symbol over the next few months was to own a new Model A. Although the old Model T was being phased out, it actually remained in production for months to fill orders, and Model T replacement parts were manufactured for years. Yet a new day had dawned. No longer would a standard model remain in production for twenty years, as the Model T had done, and, in fact, the Model A, of which about a million units were produced a year, was replaced by Ford in 1932.

Strength of the Industry. The auto industry would soon become the largest industry in the nation. In 1926, 4.2 million units were produced, and by 1930 the figure rose to 5.3 million. It has been estimated that by 1927 Americans owned 39 percent of all the autos in the world. Yet Ford and GM were also very strong in Europe where, during the 1920s, they established branch plants or bought interests in European firms. Even later, in the depth of the Depression, the demand for autos remained amazingly strong, partly because of the availability of used cars and partly because auto producers were among the first industries to adopt installment-buying plans.

Source 1

DISTRIBUTORSHIPS, DEALERSHIPS, AND AGENCIES

The structure of the automobile industry in the 1920s was built on the needs of the market at the time. High-priced cars sold poorly in small towns and rural areas, where incomes tended to be low. The Packard, with its $1,200 price tag, was beyond the reach of the lower-income groups, and in a small town or rural community there might be only three or four Packard owners. Ford, Chevrolet, and Plymouth, on the other hand, were popular in these markets, and it was a small town, indeed, that lacked dealers in these lines.

General Motors, Ford, and Chrysler produced makes of cars to fit most budgets, but the independents — Packard, Reo, and Pierce-Arrow, for example — found it impossible to maintain dealerships in small towns. These manufacturers relied instead on distributorships that were located in large cities and supplied cars to small-town "dealers," often local service stations or garages that sold on order only.

Dealers, in contrast, held franchises and maintained inventories of automobiles. The market was sliced up by the individual manufacturers into segments; a medium-sized town might have dealerships that sold two lines of cars only: Chevrolet/Oldsmobile or Buick/Cadillac or Buick/Pontiac, for instance. Chrysler might match up Dodge/Plymouth or Chrysler/Plymouth or Dodge trucks/Dodge cars or De Soto/Plymouth. Ford, since it had so many dealers and sold so many Ford cars and trucks compared to smaller companies, generally preferred dealers to offer the full line of Ford vehicles, although it was clear that few Lincolns would be sold in small communities. Only in the largest cities would one find dealers selling luxury cars and, only in the very largest, dealers in Rolls-Royce, Mercedes-Benz, and other costly European cars.

Source: Charles E. Edwards, *Dynamics of the United States Automobile Industry* (Columbia: University of South Carolina Press, 1965).

Source:
Alfred D. Chandler Jr., *Giant Enterprise: Ford, General Motors and the Automobile Industry* (New York: Harcourt, Brace & World, 1964).

INDUSTRY: RADIO AND BROADCASTING

Beginnings. The development of radio and radio broadcasting caught the public fancy. During the *Titanic* disaster in 1912, the radios on the sinking ship and the various rescue boats played such a significant role in communicating events that David Sarnoff, a young New York telegraph operator handling the incoming signals, as well as other listeners, had visions of commercial radio being used for information and entertainment. In 1920 KDKA in Pittsburgh became the first radio station to enter commercial broadcasting; Sarnoff would, in the 1920s, give form to the Radio Corporation of America, which would become a star performer on the New York Stock Exchange.

Costs. Like the auto and the airplane, early radio was a crude affair, expensive and thought to be a toy of the rich; yet one of the attractions of the radio-broadcasting industry was that it could, in fact, be entered with a relatively small amount of money. A radio station complete with transmitter and a small building could be provided for a modest sum — perhaps $20,000 — an amount roughly equal to the cost of a small retail store. The greatest expense in broadcasting was for the technical expertise required to operate and maintain the equipment. It was clearly an advantage to operate as powerful a station as possible to increase the area covered by the signal.

Mission. The industry required some time to discover just what its mission was. Many of the early entrants were ham operators or former employees of the early wireless operators who envisioned the radio primarily as a means for conveying news and other general information. The idea that the radio might be used as a medium for entertainment or advertising had not yet taken hold. By the end of the decade, however, radio networks were vying with motion pictures as entertainment vehicles and had become major competitors with daily newspapers for the advertising dollar. From 1921 to 1929 the value of radios owned in the nation rose from $10.6 million to $411 million, a clear indication that the medium was fulfilling its mission of conveying news, entertainment, and advertisements throughout the United States.

Issues. Radio encountered all manner of issues not faced by other industries. Almost as soon as broadcasting became widespread, operators discovered that they needed to avoid trespassing on each other's frequencies lest the broadcasts become a mishmash of overlapping programs; with the encouragement of Herbert Hoover, who had established a bureau in his Department of Commerce to assist the pioneer industry, broadcasters embraced federal regulation as a means of eliminating congestion of the airways. Moreover, operators realized that if the radio were effectively to cover either general news or special national events such as presidential inaugurations, it needed to be coordinated through the development of networks. These networks would help in the dispersal not only of news stories but also of advertising. In addition, the radio industry understood that it must deal with such First Amendment issues as those raised by political or religious broadcasts.