

## Mass production

### Learning objectives

In this chapter you will learn about:

- key features of mass production
- effects of mass production
- the importance of the Ford motor industry.

Mass production was one of the important factors behind the economic boom. Mass production meant goods could be made more quickly and more cheaply. The pioneer of mass production was Henry Ford, who applied the system to car manufacture just before the war.

### Mass producing a Ford

This is how the Ford motor works applied the principles of mass production.

- They made just one kind of car, so the parts were a standard size and shape. This saved on money, storage and time. Standardisation also saved on labour, as workers only had to learn how to deal with one set of parts.
- They introduced division of labour. Instead of one or two workers building a whole car, the work was split up into a series of jobs, with one worker doing the same job over and over on lots of cars. They found splitting up the jobs into lots of steps made assembly faster.
- In 1914, they introduced a moving assembly line. Each worker stayed in one place and the job came to them on a moving line. Using an assembly line and breaking the jobs into smaller steps to suit the line meant that the time taken to produce a car dropped from 12 hours to 1 hour and 33 minutes.

### Not just cars

Once Ford had shown how effective mass production was, many other businesses began to apply mass-production methods in their factories. The assembly-line system was especially suitable for newer industries that produced finished goods such as radios and fridges.

In April 1913, we experimented with an assembly line, just on the magneto. We try everything in a little way first – we'll rip out anything once we find a better way, but we must be certain the new way will be better before doing anything drastic.

One workman could make one magneto in 20 minutes. Dividing his job into 29 steps cut the assembly time to 13 minutes, 10 seconds. Then we raised the height of the line 8 inches. This cut the time to 7 minutes. Changing the speed of the line cut the time down to 5 minutes.

**Source A:** From *My Life and Work*, Henry Ford's autobiography, first published in 1922.

### Did you know?

Ford began by experimenting with a number of different models of car. In 1909, he decided to manufacture just one design, the Model T, and to make it in just one colour – black. This was because black paint was the quickest to dry.

The Model T led to the weaving of the first highways, then freeways and the interstate. Beginning in the early 1920s, people who had never taken a holiday beyond the nearest lake or mountain could explore the whole United States. Most of all, the Model T gave to the farmer and rancher, miles from anywhere, a new pair of legs.

**Source B:** From *America*, written by Alistair Cooke in 1976.

# How important was the car industry?

The car industry played a very important role in the boom of the 1920s, often leading the way in technological change as well as stimulating the growth of other industries.

## HENRY FORD

Henry Ford was an electrical engineer who built his first car in a rented brick shed. In 1909 he founded the Ford Motor Company in Detroit. In the same year he introduced his Model T Ford, which was nicknamed the 'tin lizzie'. Existing car manufacturers built several different models in a range of colours. Ford showed the benefits (and reduced costs) of manufacturing one standard model which was 'any colour as long as it was black'.



## Henry Ford and the motor car industry

- The motor car industry started in the early 1900s.
- The greatest figure in the growth of the car industry was Henry Ford who set up the Ford Motor Company in 1903.
- By 1908 Ford had developed the first 'Model T', a car designed for the masses and not just the rich.
- From 1913 the Model T was manufactured using an assembly line. Before this one worker would carry out a range of jobs in the making of a car.
- With an assembly line workers would do just one job - say, bolting in a seat, as the car moved along the line.
- This meant large numbers of cars could be built more quickly and cheaply than ever before.
- The price of a Model T fell from \$850 in 1908 to \$260 in 1924. This meant that even ordinary people could afford to buy one.
- Ford stopped making the Model T in 1927, by which time 15 million had been sold.

By 1929 half a million people were employed in making cars, more than any other industry. At this time there were 27 million cars in use in the USA.

The three biggest car firms were Ford, General Motors and Chrysler.

Many more were employed in 'spin-off' industries such as firms making car parts, the oil industry and road building. Hotels and restaurants also sprang up across the USA, as people were able to travel about much more.

## SOURCE B

### BOSS OF THE ROAD THE LATEST AND BEST



The FORDMOBILE with detachable tonneau

THIS new light touring car fills the demand for an automobile between a runabout and a heavy touring car. It is positively the most perfect machine on the market, having overcome all drawbacks such as smell, noise, jolt, etc., common to all other makes of Auto Carriages. It is so simple that a boy of 15 can run it.

For beauty of finish it is unequalled, and we promise **IMMEDIATE DELIVERY**. We haven't space enough to enter into its mechanical detail, but if you are interested in the **NEWEST** and **MOST ADVANCED** AUTO manufactured to-day write us for particulars.

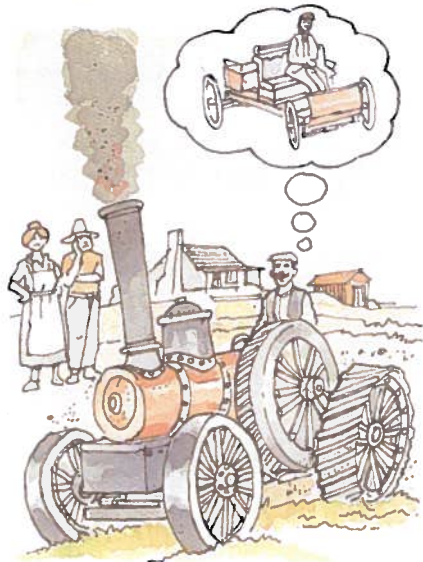
**FORD MOTOR COMPANY**  
691 MACK AVENUE, DETROIT, MICH.

An advertisement for an early Model T Ford.



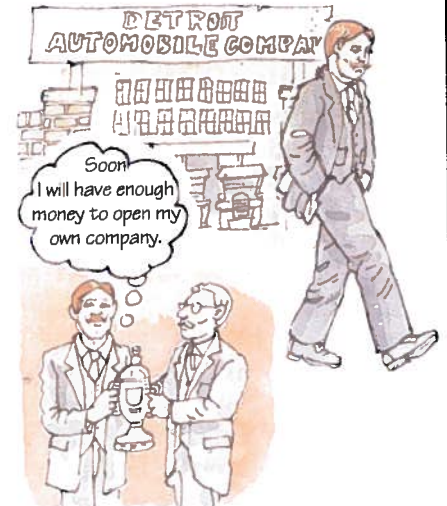
# How did Henry Ford make the Ford Motor Company the most successful in the world in the 1920s?

Henry Ford's parents were farmers near Detroit. They wanted Henry to be a farmer too, but he had other plans. Henry was more interested in making tools and machines.



Ford wanted to make his own 'horseless carriage'. He read about petrol engines in a science magazine and in 1896 he made his first vehicle.

In 1899 Ford became superintendent of the Detroit Automobile Company. He built twenty cars in two years but the company failed because other firms made sturdier and simpler cars. Ford was bitterly disappointed. He did not intend to fail again.

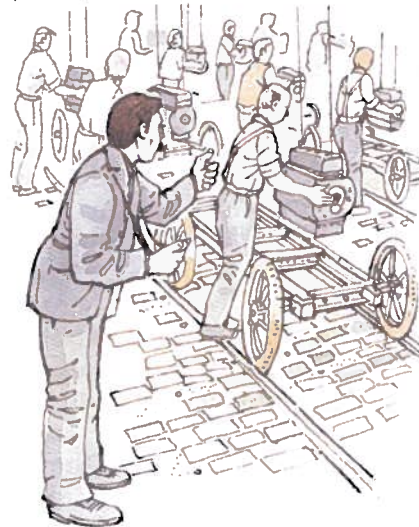


Ford built a powerful but lightweight racing car. When he began to win races, it gave him the reputation he needed to raise money to start his own firm.

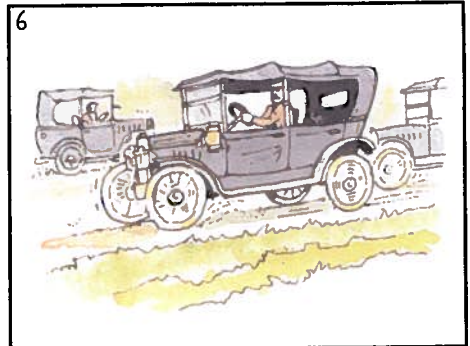


1903: The Henry Ford Motor Company was born. This time Ford did not fail. In five years he successfully made and sold eight different models. His factory expanded five-fold and he was building 100 cars a day.

In 1911 Ford announced that he would make a car for the ordinary man, not a big car, but large enough for a family. It was to be built from the best materials using new mass-production methods. It would be cheap to buy and to run. He called it the Model T.



One minute to make a whole car!

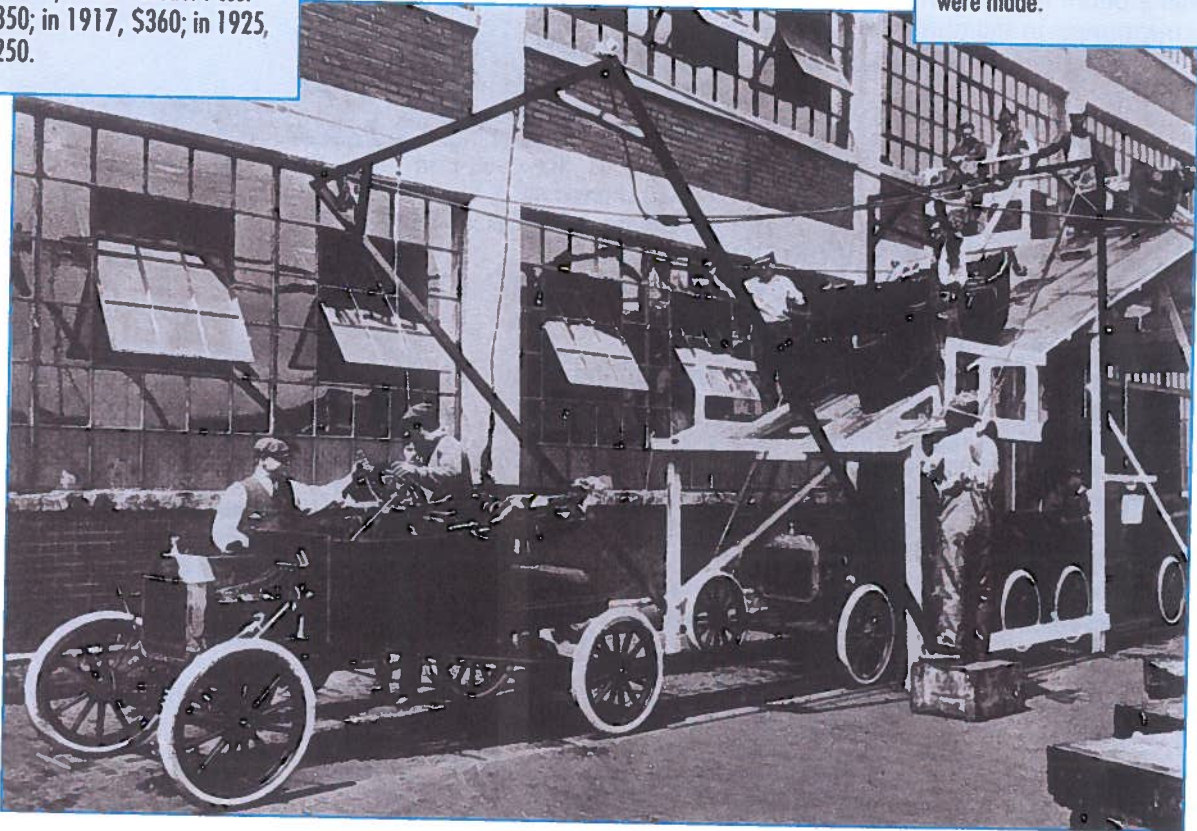


The Model T was the right product at the right price at the right time. It was a very basic car. You could have only one colour - black. But it was sturdy, extremely reliable and built with interchangeable parts. The Model T was a phenomenal success. In its first year 10,000 were sold. By the mid-1920s one out of every two cars sold was a Model T, and Ford was fabulously wealthy.



In 1908, a basic Model T cost \$850; in 1917, \$360; in 1925, \$250.

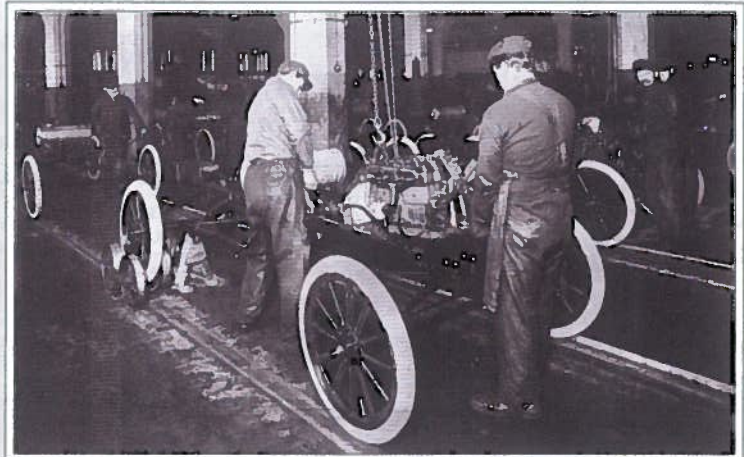
The Ford Model T was produced from 1908 to 1927: 15 million were made.



**7.3 Henry Ford's assembly-line.** *The bodywork is just about to be slid on to the chassis.*

### THE ASSEMBLY LINE

Ford introduced a much more efficient method of producing the cars – assembly line, or ‘magic belt’. He had seen how efficiently this system was used in meat-packing factories and slaughterhouses. An electric conveyor belt carried the partly assembled car at a regular speed past workers who stood in the same spot and did one job, such as fitting on the wheels or doors. The worker did not have to waste time walking around fetching tools and equipment; tools and equipment were brought to him. As a result, a great deal of time was saved. In 1913 the Ford factory in Detroit was producing one car every three minutes. By 1920 the same factory was producing the same car model every ten seconds.

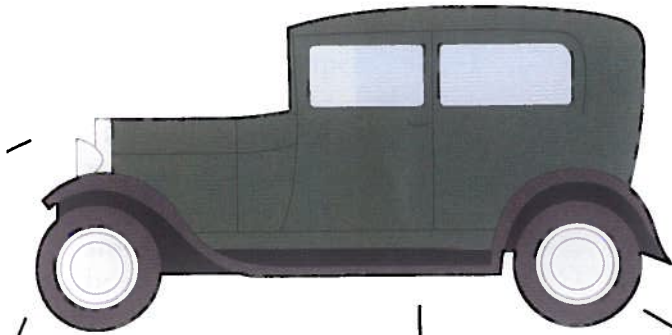


#### Source A: Henry Ford describes an assembly line in the mid-1920s

*In the chassis assembly line there are 45 separate operations. Some men do only two small operations, others do more. The man who places the part does not fasten it. The man who puts the bolt in does not put the nut on and the man who puts the nut on does not tighten it. On operation 34 the motor gets its petrol. On operation 44 the radiator is filled with water and on operation 45 the car drives onto the road.*

## WORKFORCE

Ford believed in hard work. He would walk round his factory each day, encouraging his workers to do their job properly. However, he had quite a turnover of workers who found the assembly line boring and monotonous. Therefore, in 1914 Ford announced that he would double workers' wages to \$5 – far more than any other employer paid for the equivalent job. Workers rushed to Detroit to work for him. He also reduced the length of the working day to eight hours and introduced a third shift, so that the factory was operating a three-shift system and operating 24 hours each day.



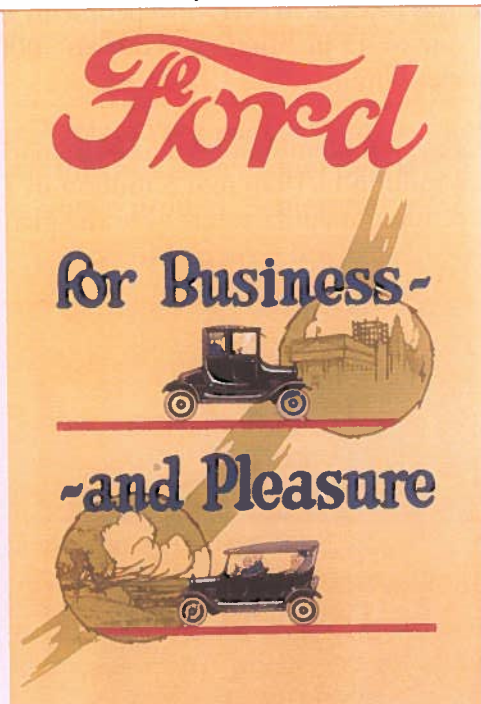
## AFFORDABLE CARS

Ford's business methods and new technology allowed him to bring down the price of cars and thus make them affordable for many more Americans. In 1914 a Model T cost \$850. By 1926 the price had dropped to \$295. Ford also led the way in introducing hire purchase as a method of credit.

## ADVERTISING

Ford was also prepared to use modern advertising techniques to sell his cars. For example, he realised the value of using attractive women in adverts, not only because it would encourage men to buy his cars, but also to promote the idea of female drivers.

**Source B: A Ford poster advert. 1923**



**Source C: Henry Ford, speaking in 1921**

*It is better to sell a large number of cars at a reasonable small margin than to sell fewer cars at a larger margin of profit. I hold this because it enables a larger number of people to buy and enjoy the use of a car and because it gives a larger number of men employment at good wages.*



## The impact of the Model T

Source D: Model Ts on a high street in the USA in the mid-1920s



Ford, more than anyone else, started an enormous growth in car ownership. By 1925 half the world's cars were Model Ts. In 1927 work was completed on a new Ford factory, the River Rouge complex, in Dearborn, Michigan. It became the biggest factory complex in the world and employed around 80,000 workers. By the late 1920s, Ford had established plants in Asia, Australia, Canada, South Africa and South America. His techniques were so effective that they were adopted by other US car manufacturers, as well as by Citroen and Renault in France and Morris and Austin in England.

### Other benefits of the car industry

The car industry revolutionised American industry. Indeed it revolutionised American society:

- The car industry used so much steel, wood, petrol, rubber and leather that it provided jobs for more than five million people. By the late 1920s, cars and the car industry were using 90 per cent of the petrol, 80 per cent of the rubber and 75 per cent of the plate glass produced in the USA.
- Buying habits were transformed; hire purchase became a way of life for most Americans because it enabled an average family to buy a car.
- The car industry promoted road building and travel, and there was a knock-on effect on the leisure industry: hotels and restaurants were built in places that had been considered out of the way.

- It opened up the suburbs to more and more people who were now able to use the car to travel further to their place of work.
- Car ownership also benefited rural areas; the farmer, for example, could get to the local town in less than half an hour, and his wife no longer felt isolated in the farmhouse.
- Owning a car was no longer just a rich person's privilege, as it was in Europe in the mid-1920s. There was one car to every five people in the USA, one to 43 in Britain and one to 7000 in the Soviet Union.

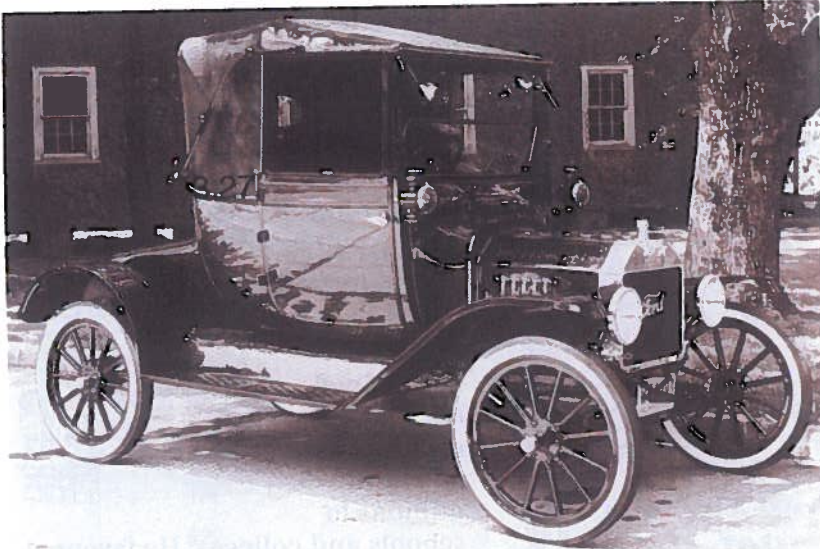
The production of automobiles rose dramatically, from 1.9 million in 1920 to 4.5 million in 1929. The three main manufacturers were the giant firms of Ford, Chrysler and General Motors.

### Tasks

5. What does Source D suggest about the impact of the Model T?
6. Explain why the car industry benefited the USA in the 1920s.

## Extra information

The most important of these new booming industries was the motor-car industry. The motor car had only been developed in the 1890s. The first cars were built by blacksmiths and other skilled craftsmen. They took a long time to make and were very expensive. In 1900 only 4000 cars were made. Car production was revolutionised by Henry Ford. In 1913 he set up the first moving production line in the world, in a giant shed in Detroit. Each worker on the line had one or two small jobs to do as the skeleton of the car moved past him. At the beginning of the line, a skeleton car went in; at the end of the line was a new car. The most famous of these was the Model T. More than 15 million were produced between 1908 and 1925. In 1927 they came off the production line at a rate of one every ten seconds. In 1929, 4.8 million cars were made.



**SOURCE 4** The Model T was standardised to the last degree. Ford realised that if cars could be produced more cheaply, more people would be able to buy them; and, as demand rose and the company sold more cars, he could make them even cheaper. The price of the Model T fell continuously throughout the 1920s

## Social Impact

**SOURCE 6** A farmer's wife in 1918 wrote to Henry Ford

*“ You know, Henry, your car has lifted us out of the mud. It brought joy to our lives. We loved every rattle in its bones. ”*

**SOURCE 7** Alastair Cooke, America, 1973

*“ It is staggering to consider what the Model T was to lead to in both industry and folkways. It certainly wove the first network of paved highways . . . Beginning in the early 1920s, people who had never taken a holiday beyond the nearest lake or mountain could now explore the South, New England, even the West, and in time the whole horizon of the United States. Most of all, the Model T gave to the farmer and the rancher, miles from anywhere, a new pair of legs. ”*

**SOURCE 5** Henry Ford

*“ It is better to sell a large number of cars at a reasonable small margin than to sell fewer cars at a larger margin of profit. I hold this because it enables a large number of people to buy and enjoy the use of a car and because it gives a larger number of men employment at good wages. ”*

**SOURCE 8** Daniel Snowman, USA, the Twenties to Vietnam, 1968

*“ As the first great mass-producer of automobiles, Ford might be said to have done more than any other person to alter out of all recognition the society into which he had been born. ”*