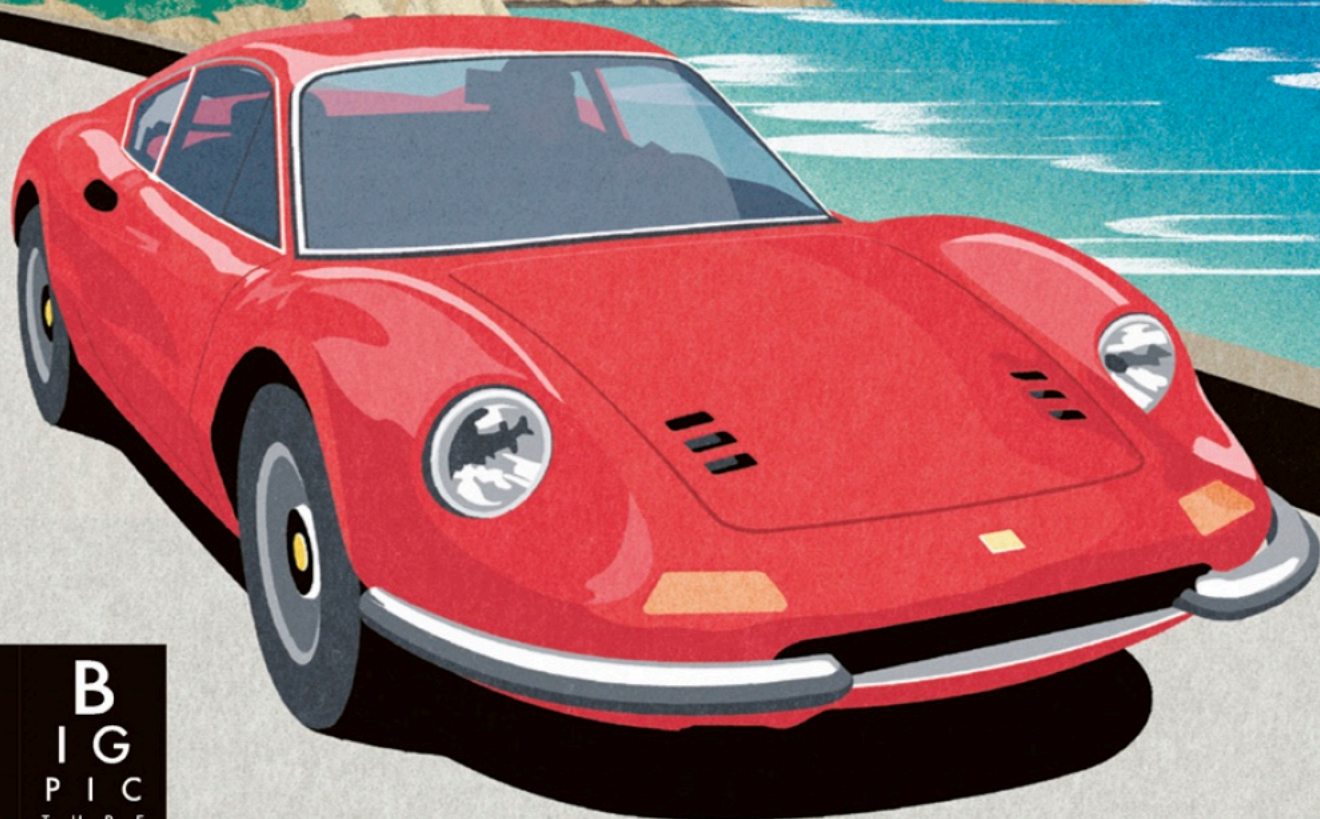


MATT RALPHS

RYO TAKEMASA

# AUTOMOTIVE

A VISUAL HISTORY OF AUTOMOBILES

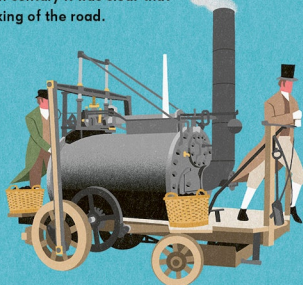


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# STEAM AND ELECTRIC AUTOMOBILES

Since their invention in the early 1800s, steam locomotives revolutionised the way people and freight were transported. However, some travellers wanted a more convenient vehicle that they didn't have to share and could use whenever they wanted. Some engineers created small, steam-powered road vehicles, while others decided to try electric battery automobiles. Many designs were created, but by the early 20th century it was clear that the internal combustion engine was going to be king of the road.

The first steam-powered road vehicle was designed by English inventor Richard Trevithick. Using a high-pressure boiler for more power, his Puffing Devil set off with six passengers in 1801 at a speed described by one witness as 'faster than I could walk' (about 8km/h). Unfortunately, only a few days after this historic journey, the boiler caught fire and Puffing Devil was destroyed.



Electric cars were very popular in Europe and the USA from the late 1800s to the early 1900s. They were quieter and smoother, didn't produce smoke and were easier to use than steam-powered automobiles. One of the first successful models was the Flocken Elektrowagen. Designed in Germany in 1888, its 1hp electric motor drove the back wheels and could reach around 15km/h.



One of the last and most advanced steam automobiles was the Doble steam car. Designed in 1924, the Doble Model E only required 30 seconds to boil the water needed to drive the engine, was easy to control and could reach speeds as high as 120km/h.



# EARLY ENGINES

The age of the automobile really began with the invention of the internal combustion engine. When fuels such as petrol, diesel or kerosene are burned (or 'combusted') inside the engine (using an oxydizer such as air), they produce kinetic energy, which makes the vehicle move. Internal combustion engines are more fuel-efficient than steam engines, and proved far easier and more convenient to start-up, operate and maintain.

German inventor Karl Benz developed the first automobile powered by an internal combustion engine in 1885. His revolutionary Motorwagen had a 3hp petrol engine, three-spoked wheels with solid rubber tyres and one forward gear. Its top speed was around 16km/h.



The first mass-produced car was the Oldsmobile Model R Curved Dash; 19,000 were built between 1901 and 1907. It was more affordable than most other cars at the time, had a 5hp engine, 2 forward and 1 reverse gear and came as either a 2-seater 'runabout' or a 4-seater family car.



Created in 1901 by German engineers Paul Daimler and Wilhelm Maybach as a racing car, the Mercedes 35 HP was a huge step forward in automobile design. It had a powerful petrol engine mounted at the front that drove the back wheels, a hand brake and a foot brake, 4 forward gears and 1 reverse gear.



# SAFETY FIRST

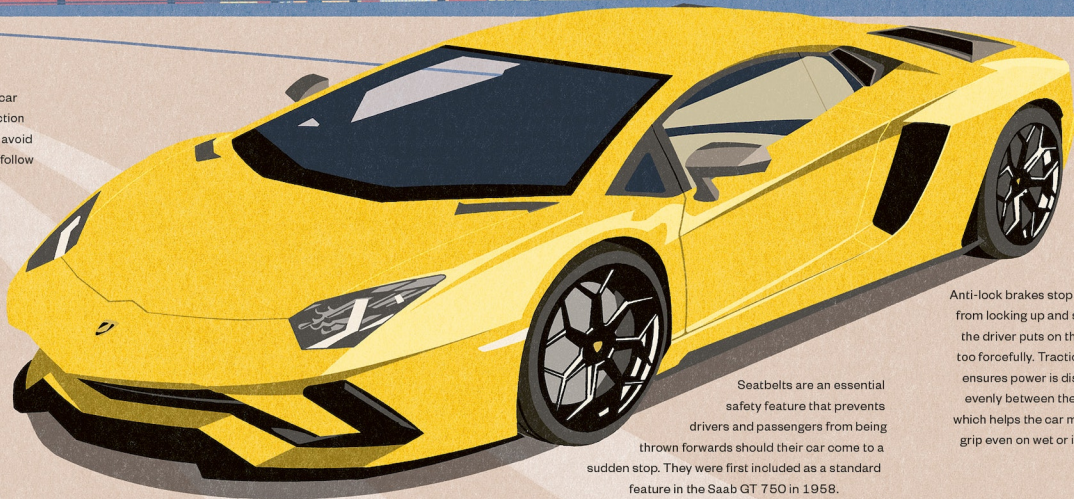
A tragic piece of history was made in 1869 when an Irish woman called Mary Ward became the first person killed by an automobile. While riding in an experimental open-top, steam-driven car, she fell out and was killed. Since then, designers have tried to make cars safer and easier to drive. Here are just some of the safety features found on modern automobiles.

Many modern cars come with satnav (satellite navigation) fitted as standard. Satnav provides the driver with their real-time location and route, spoken directions and up-to-date traffic information.

Sitting in a comfortable environment allows the driver to concentrate on the road. Air conditioning controls the temperature, and heated seats add extra luxury.

When adaptive headlights sense a car approaching from the opposite direction they automatically dip their beams to avoid blinding the driver. They also move to follow upcoming bends in the road.

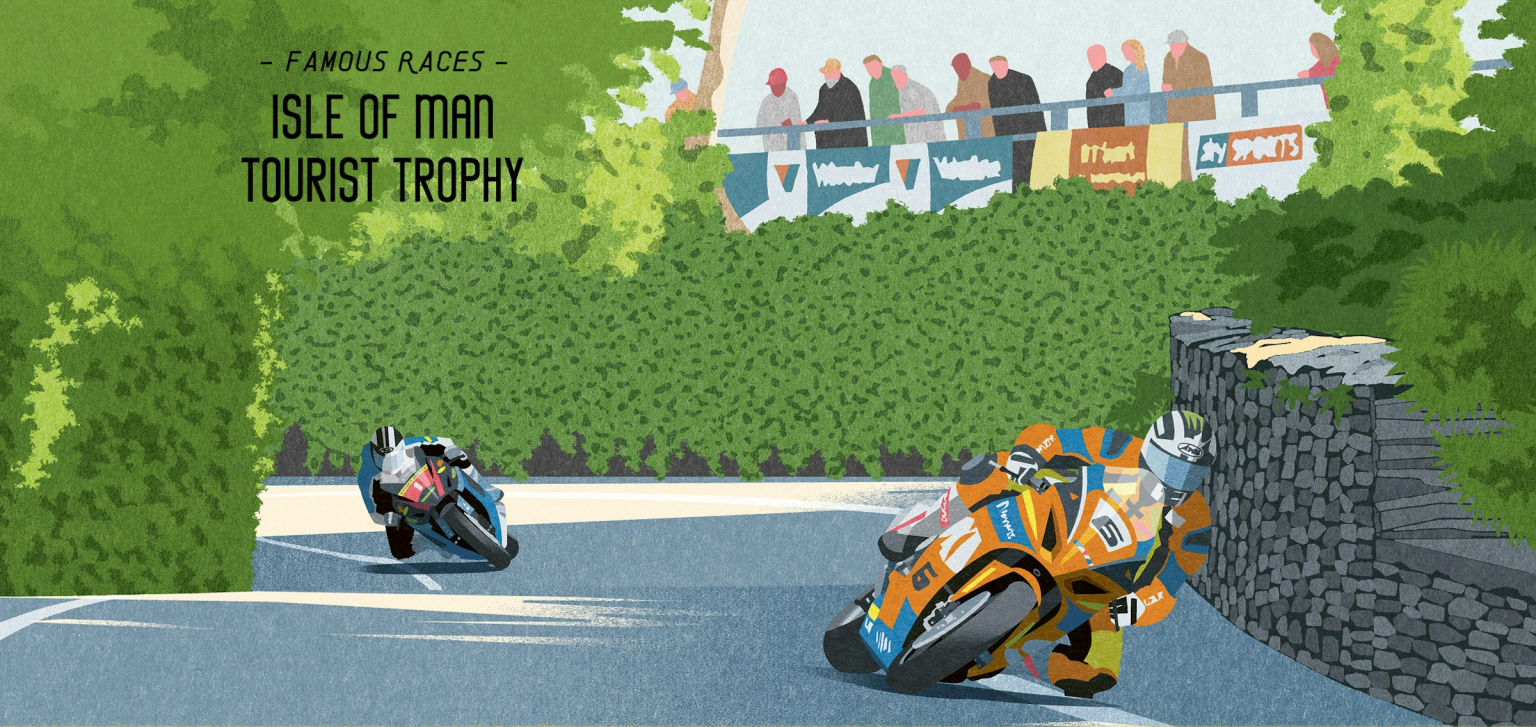
Sensors in the front of the car monitor the path ahead. If they detect an obstacle, such as a suddenly braking vehicle or a pedestrian stepping into the road, the automatic braking system activates and slows down the car.



Seatbelts are an essential safety feature that prevents drivers and passengers from being thrown forwards should their car come to a sudden stop. They were first included as a standard feature in the Saab GT 750 in 1958.

Anti-lock brakes stop the wheels from locking up and skidding if the driver puts on the brakes too forcefully. Traction control ensures power is distributed evenly between the wheels, which helps the car maintain its grip even on wet or icy roads.

- FAMOUS RACES -  
ISLE OF MAN  
TOURIST TROPHY



Every summer, the Isle of Man hosts one of the most amazing, and exceptionally dangerous, motorsport events in the world: the Tourist Trophy, better known simply as the 'TT'. Unlike other motorbike races, the TT runs entirely on closed-off public roads, and riders from all over the world take their lives in their hands to speed, swoop and swerve their superfast vehicles around the famous 60.72km-long Mountain Course.

The TT has changed a lot since it started in 1907, with different routes and motorbike types used over the years. These days, the first week is given over to practice sessions and time trials, and the second to the actual races. Thrill-seeking spectators line the roads as motorbikes streak past, reaching well over 200km/h, their

riders using all their skill to gain the quickest lap time. And there is a world of difference between travelling speeds like that around a dedicated racing track to the natural contours, dips and rises found on the Isle of Man. Riders must negotiate narrow, twisting roads lined with buildings, walls, ditches and trees. This demands steel nerves and unwavering concentration. One mistake, one misjudged jump, one poorly timed turn can lead to serious injury – or worse. Since 1907, there have been around 260 riders killed. For competitors this danger is a vital part of the TT experience, allowing them to become part of an elite group, brave enough to take on the toughest motorbike race in the world. However, recent changes – including reducing the number of competitors, introducing better safety equipment and warm-up laps before the race – have made the event safer.

# TRUCKS

With their grumbling diesel engines and 18 heavy-duty wheels, trucks are the workhorses of the road. There's nothing they can't haul: from food to furniture, petrol to paper, tree trunks to televisions. Without trucks and the people who drive them, our factories wouldn't function, our shops would be empty and our deliveries wouldn't be made.

People quickly realised how useful a freight vehicle powered by an internal combustion engine would be, and in 1895 a German mechanical engineer called Karl Benz invented the first truck (he was also the inventor of the first car – see page 9). Rolling on four iron wheels and powered by a rear-mounted petrol engine, it looked like a cart without the horses. More designs followed, but it took several decades of development before trucks began to take over from the centuries-old horse and cart. These days, trucks transport billions of tons of freight every year.

The average American long-haul truck driver will spend up to 300 days per year on the road, travelling over 160,000km per year, or around 600km per day. That's a long time to sit, and many drivers customise their moving homes to make them more comfortable.

This is the Peterbilt 389. It's a Class 8 truck – the biggest available on the highways of the USA. Its long nose, which houses the engine, means it's a 'conventional' truck; flat-nosed trucks where the driver sits over the engine are called 'cab-over engines' (COEs). Peterbilts are highly customisable, allowing owners to have shiny chrome exhaust pipes, air intakes, wheel hubs and front grilles, and choose from a wide variety of colours and decorative art options.

The proper name for a truck that pulls a separate trailer is actually 'tractor'. The trailer is attached to the tractor using a device called the 'fifth wheel', which is located behind the cab where the driver sits.

Long-haul truckers have a tough life, motoring along highways and motorways on journeys that can take days. Many trucks have a sleeper compartment behind the cab, complete with bed, storage space, fridge, heater and cooking facilities.



Trucks haul extremely heavy loads – sometimes several linked trailers at once – so they need powerful engines and plenty of gears (the maximum is 18 forward gears and four reverse) to keep them motoring along even up long hills.