

# The front man

Andre Citroën risked — and lost — everything on producing a car that became a French institution. Jonathan Wood recalls the man and his machine

Front-wheel drive has been around for almost as long as the motor car but it wasn't until 1934 that a major manufacturer proved that front-wheel drive was a mass production reality. In that year Citroën, France's leading car maker, announced its fabled *Traction Avant* (front-wheel drive) model. Here, in essence, was the world's first truly modern car. Its roadholding was outstanding by contemporary standards and the stylish four-door monocoque saloon bristled with individuality. Power came from an unburstable overhead valve wet-liner engine, and suspension was by torsion bars.

None of these features was new in itself yet they were brought together in one unique package, albeit one which bankrupted Andre Citroën's company, which had seldom enjoyed robust financial health. The *Traction Avant* marked an immense technological leap forward in car design — probably the greatest ever made — but it

resulted in Citroën losing control of his company and was probably a factor in his own untimely death.

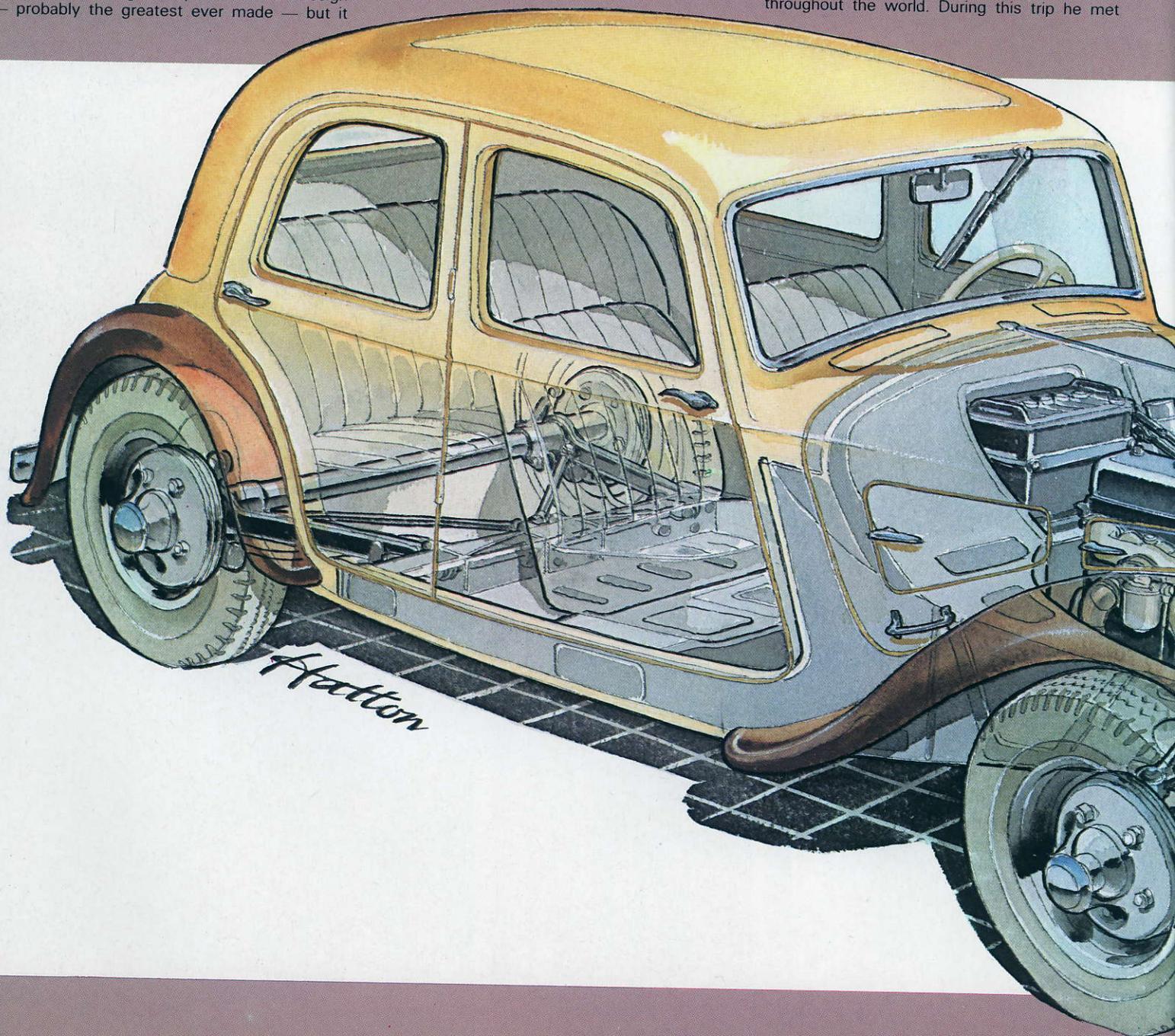
Just how did this extraordinary gamble come about? To examine the circumstances of the *Traction Avant's* creation let's first consider the origins and personality of Andre Citroën and the firm he created.

Citroën was born in Paris in 1878, the son of a Jewish diamond merchant, who had moved to the French capital from Amsterdam. But tragedy struck the family when Andre was six. His father was a victim of a cruel financial scandle and was so distraught by the affair that he killed himself by jumping from an upper window. Young Citroën attended a school only a few hundred yards from his home. One of the fascinating twists of history is that Louis Renault also attended Lycee Condor-

cet and it is possible that France's motoring magnates of the inter-war years knew one another from their school days. But unlike Renault, Citroën displayed early academic prowess and at the age of 16 he went to the elitist Ecole Polytechnique in Paris. However, this promise was not maintained and when he graduated at the age of 20 he was placed 159th in a class of 200.

Citroën undoubtedly possessed a flair for mechanical matters for on a trip to Poland to visit relations of his mother he noticed a pile of wooden double-helical, or chevron pattern, gear wheels stacked behind a workshop. To Citroën it was a natural progression to reproduce this layout in metal and he proceeded to establish a gear cutting shop with Jacques Hinstin in Paris for this purpose. The business proved a profitable one with Citroën in due course supplying steering gear for ocean liners of which the *Titanic* was one. His involvement with the motor industry began in about 1905 when his firm built 500 engines for the Paris based Sizaire et Naudin company. Soon afterwards, in 1907, Citroën became involved in the affairs of the troubled Mors concern and succeeded in saving the car firm. Yet a return to complete profitability eluded him.

In 1912 Citroën made a visit to America to investigate mass production techniques that were soon to revolutionise car manufacture throughout the world. During this trip he met



Henry Ford, for whom he had a great admiration, and it is no surprise to find that on his return he introduced some of the production methods he had witnessed in Detroit to the Mors company.

But it was the outbreak of the First World War in 1914 that saw Citroën attain national prominence. As a captain in the French reserves he soon found himself at the front but he didn't remain there long. France, like Britain, was suffering from an acute shortage of shells during the early years of the war and Citroën returned to Paris where he acquired 30 acres of market gardens in the capital's Quai de Javel. Using the mass production methods he had seen in America, Citroën was soon turning out shells in enormous quantities. He even employed some of Mors' machine tools and paid the firm a royalty on each shell manufactured. The car company was, at last, profitable!

When the war came to an end, Citroën had a large, well equipped factory geared to mass production and with a car hungry Europe on his doorstep it was perhaps inevitable that he should join the ranks of the car manufacturers. His first vehicle, the Model A of 1919, was a simple 1327cc four-cylinder car which proudly displayed the double helical gear chevron as its badge. The new company was soon challenging and overhauling the older Renault and Peugeot concerns Citroën continued to keep a watchful eye on American technological developments and in 1925 he became the first European manufacturer to adopt Budd's all-steel bodywork. Citroën also

possessed a flair for publicity that was seldom challenged. In 1925 he succeeded in illuminating the four sides of the Eifel Tower with the Citroën legends and double chevrons, a sight that was to become a regular feature of Paris by night.

For all its outward success, Citroën's car company was notorious for its financial instability, a state of affairs that was undoubtedly due to the mercurial temperament of its owner. Citroën was an inveterate gambler who delighted in spending hours at the gaming tables and race tracks. But this alarming trait was coupled with an expansive eloquence and in pre-war days his linguistic abilities were compared with the inspired oratory of Socialist Jean Jaures who was, by all accounts, no mean performer.

Fortunately for the Citroën company its products were robust, reliable and uncomplicated which kept development costs to a minimum. But this unadventurous image from a design standpoint was due to be swept away; in the late Twenties Andre Citroën began to interest himself in cars that were driven by their front wheels. At this time front-wheel drive was largely looked upon as an eccentricity. J. Walter Christie's American experiments of 1904/10 had fizzled out, though in 1924 Jimmy Murphy had ordered a front-wheel drive Miller for Indianapolis.

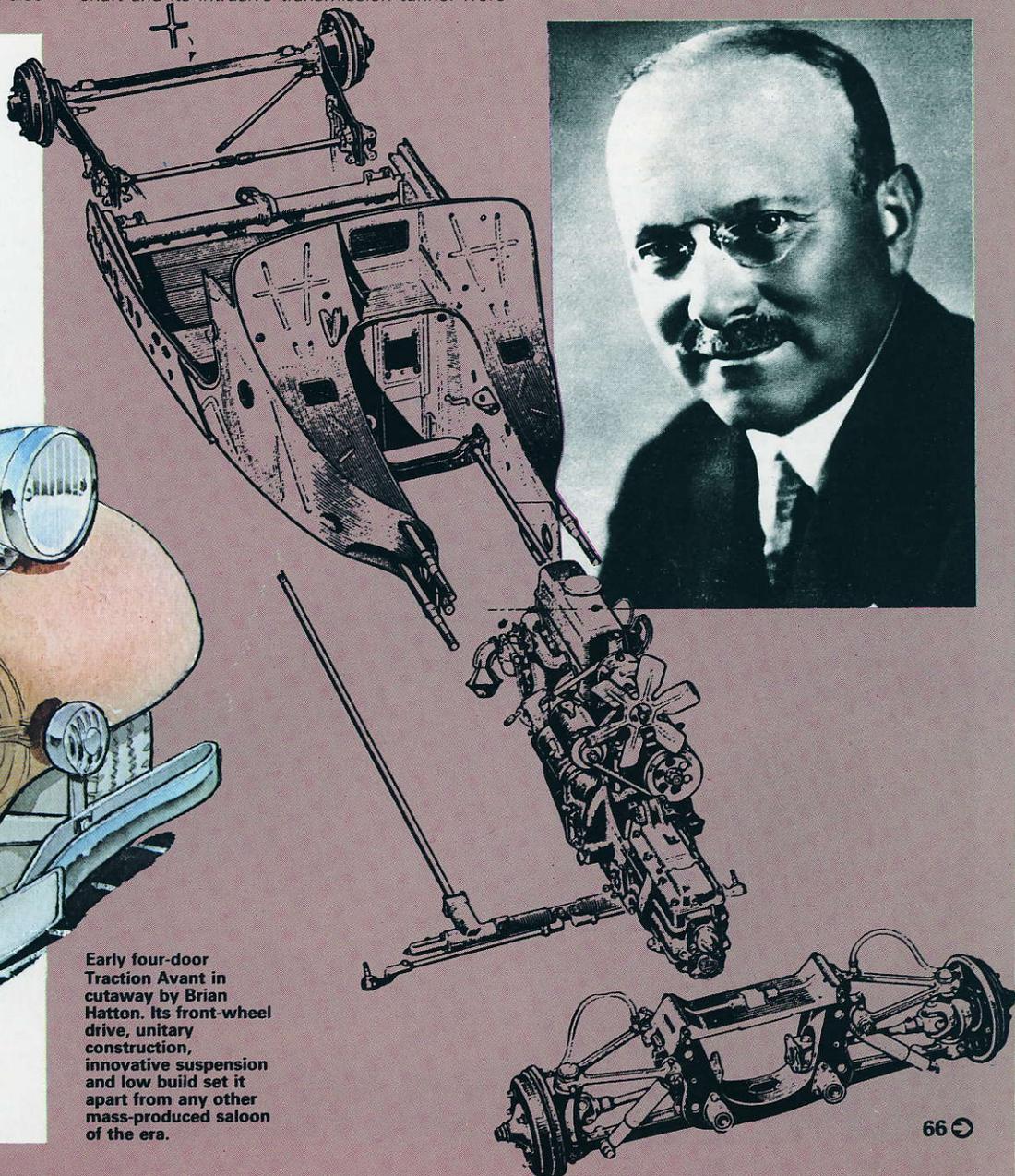
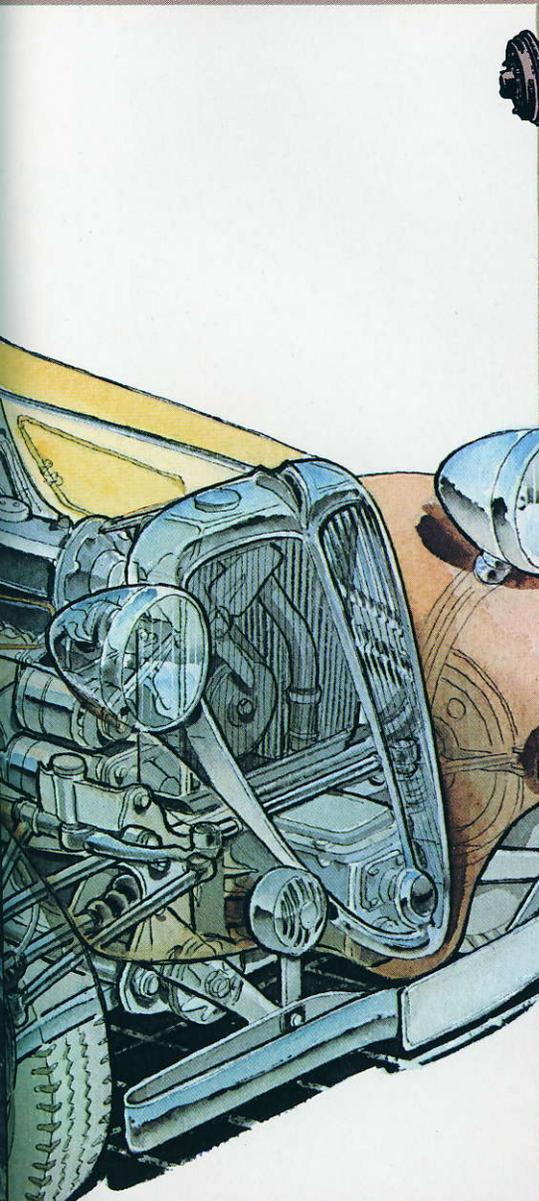
Of much greater impact were the L-29 Cord and Ruxton cars of 1929 when both displayed low, stylish profiles which displayed the visual advantages of front-wheel drive as the propeller shaft and its intrusive transmission tunnel were

dispensed with. Alas, both makes coincided with the Wall Street crash.

Europe, by contrast, was rather more successful with its front-wheel drive experiments. In 1926 they gained a toe hold largely through the efforts of Jean-Albert Gregoire. His low-built Tracta, announced that year, gained much publicity and the car undoubtedly benefited from the use of constant velocity joints invented by his friend Pierre Fenaille. The Tracta used a conventionally mounted north/south engine but the German front-wheel drive DKW of 1929 was a rather more adventurous offering, powered by a transversely mounted two-cylinder motor, a layout that anticipated the illustrious Mini Minor by exactly 30 years. This two-stroke was well geared to a bleak economic climate and the F1 and its derivatives sold well in the following decade.

But this is to anticipate our story somewhat for when, in 1928, William J. Muller, of the Budd Corporation, who had been involved in the creation of the aforementioned Ruxton, visited Citroën in Paris he found him eager to talk of a front-wheel drive car *and* unitary body construction. Just when Andre Citroën decided to go ahead with his own *Traction Avant* is unclear but it is recorded that he wanted to create what he called "an entirely new concept in motoring". It should rival the Ford Model T for longevity and would be capable of 100kph (about 60mph) and seat four passengers in comfort and safety.

In 1931 Citroën went back to America. He



Early four-door Traction Avant in cutaway by Brian Hatton. Its front-wheel drive, unitary construction, innovative suspension and low build set it apart from any other mass-produced saloon of the era.



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visited President Hoover at the White House and then journeyed to the Budd headquarters in Philadelphia. There he had the opportunity of studying a front-wheel drive prototype created by Budd and designed by experimental engineer Joseph Ledwinka and William Muller. It was a small car by American standards but this four-door saloon was of unitary construction. Power was provided by an aluminium V8 engine. Citroën was to draw heavily on Budd expertise during the development of his front-wheel drive car. He rounded off his American visit with a trip to see Henry Ford. Citroën, it should be noted, was a fluent English speaker.

Details of the *Traction Avant's* evolution are, unfortunately, sketchy. But what must be certain is that by 1932 work was well underway on the new car. An impressive array of engineering talent was soon assembled at a Citroën design office in Paris's Rue de Theatre. The moving design spirit of the project seems to have been Andre Lefebvre, a talented engineer who had previously worked with that eccentric visionary Gabriel Voisin. Inevitably Voisin got into financial deep water in the economically bleak Thirties and Lefebvre left Issy-les-Moulineaux and joined Renault. He only remained there eight days, finding the atmosphere "stultifying" and joined Andre Citroën. Lefebvre brought with him flair, individuality and front-wheel drive expertise, for Voisin had been involved with his own *Traction Avant* before he was overtaken by financial misfortune.

Another talented engineer in Citroën's design team was Maurice Sainturat who was responsible for engine design. He had joined Citroën in 1929 having worked for such illustrious French concerns as Hotchkiss, Donnets and Delage. He was also accountable for liaising with the Budd works in America. Suspension layout was the responsibility of Maurice Jullien while Flaminio Bertoni, Daininos and Cuinot looked after the car's styling.

The model was developed against the background of Citroën's increasingly chaotic financial affairs. Things were made even worse by Andre's decision to rebuild much of his Quai de Javel factory to cope with an expected output of 1000 cars a day. Much time was also wasted with the development of an automatic gearbox which had

to be dispensed with at the eleventh hour and a conventional three-speed manual unit was fitted in its place.

It wasn't until March 3, 1934 that the new Citroën made its public debut. The model range is set down in the accompanying chart. At a stroke it succeeded in making most of France's (and certainly Britain's) cars look positively antiquated. But there was a sting in the tail for the Citroën company was in financial ruins and in 1935 it was taken over by Michelin, its largest creditor. A broken-hearted Citroën died the same year. He had lost his greatest gamble.

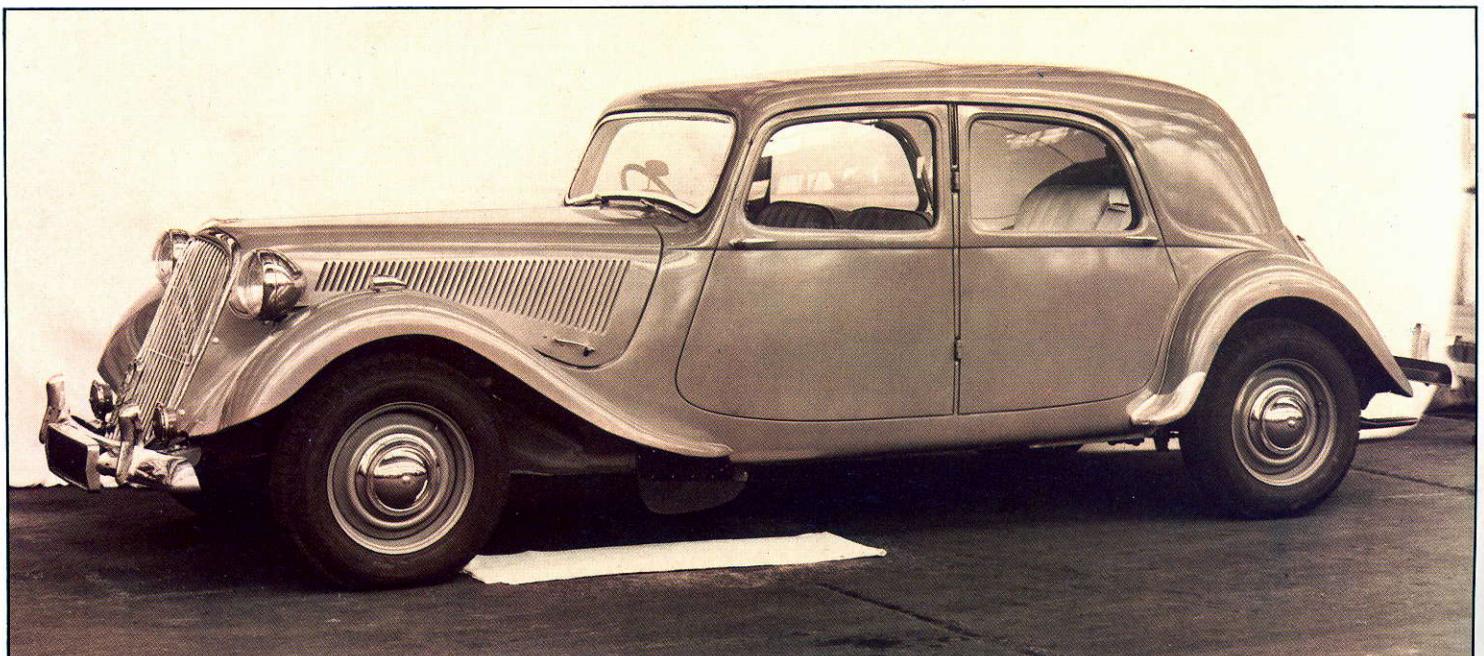
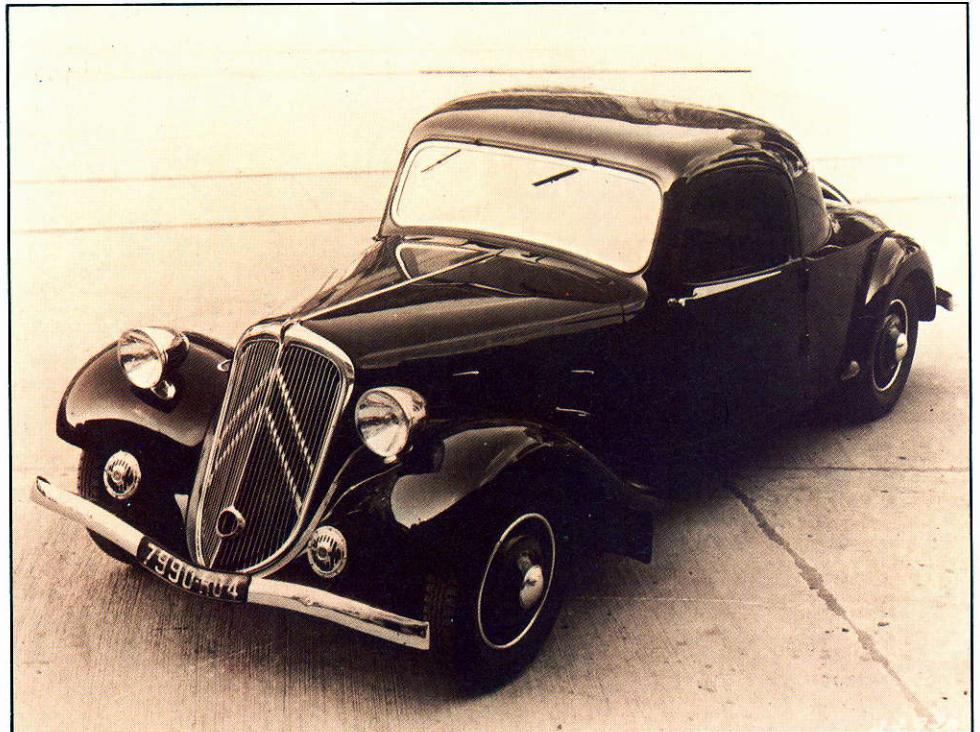
So what was so revolutionary about the *Traction Avant*? Undoubtedly its most striking visual feature was that long, low look made possible by front-wheel drive. The four-door saloon was just 4ft 11in high and was of monocoque construction, the first mass-produced car in the world to adopt the process. Although the car had been styled inside and out in France, Budd in America had produced the tooling and unitary construction reflected their pioneering work in this area.

Suspension was by torsion bars, longitudinal at the front in conjunction with an independent

wishbone layout, and transverse at the rear along with a dead rear axle. Ferdinand Porsche had patented torsion bar suspension in 1931 and the official Porsche history refers to "project 45 — Citroën, France, torsion bar suspension front axle". How much of the *Traction Avant's* suspension was the work of the Porsche Design Office or the Citroën team is difficult to determine. Hydraulic brakes by Lockheed was another progressive feature.

Maurice Sainturat's four-cylinder engine also sparkled with individuality. For ease of production the cylinder block resembled a metal box which was then fitted with detachable cylinder liners. Overhead valves were also unusual for a mass-produced European car.

After initial teething troubles, the *Traction Avant* Citroën soon established itself as nothing short of a French institution. In 1936 the already impressive handling was improved by the introduction of rack and pinion steering and a six-cylinder model complimented the four-cylinder range for the 1939 season. On the debit side the cars were noisy and although immensely strong were prone to rust while maintenance demands

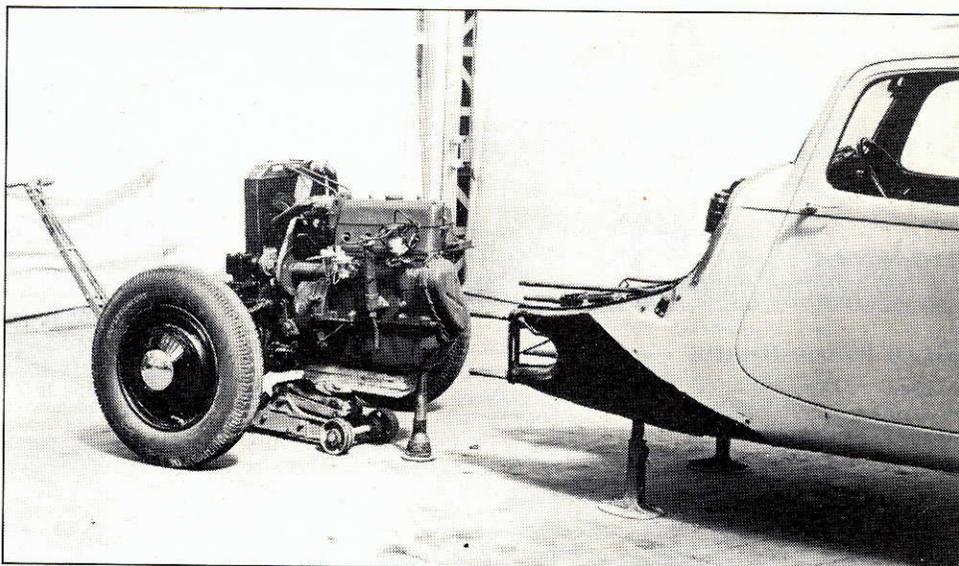


were alarming to say the least. But despite these drawbacks, Citroën was France's best selling make by the outbreak of the Second World War. French and German front-wheel drive commitment meant that by 1939 one in four continental cars were driven by their front wheels. A trickle of Tractions was manufactured during hostilities and after the war, output continued until 1957 by which time over 730,000 had been built. With a 23-year production run much of Andre Citroën's thinking had been vindicated.

Since then most of the world's car manufacturers have followed in Citroën's wheel tracks. Britain was rather slower to take up the front-wheel drive theme even though in the Thirties many manufacturers purchased *Traction Avants* for examination. But even if they didn't exactly go overboard for front-wheel drive, the car's wish-bone and torsion bar independent front suspension proved a great source of inspiration. Riley, Lea-Francis and Jaguar were just three manufacturers of the post-war years inspired by the Citroën layout and there was the added incentive that Porsche's torsion bar royalty payments were invalidated by Germany's unconditional surrender.

Nowadays we can respect the *Traction Avant* for its innovation, ingenuity and aesthetics. Yet it represents a warning that design evolution should be a step-by-step philosophy. Andre Citroën gambled everything on taking one enormous bound and paid the price of failure. But what a glorious one it was ...

**Below, the Citroën range for 1935 pictured in the entrance hall of the Citroën works at Quai de Javel. Below left, a later six-cylinder version of the Traction. Left, the fixed head coupe version of the 7CV of 1934. The French called them 'faux-cabriolet' (false cabriolets). Prototypes were built by coachbuilder Henri Chapron.**



**Above, a 7CV model awaiting fitment of the engine/gearbox/suspension unit, a layout that considerably speeded the manufacturing process.**

Model years	French designation	British	Capacity	Cylinders	Bore/Stroke	Remarks
1934 only	7A	12	1303	4	72 x 80	Saloon only
1934-1935	7B	—	1529	4	78 x 80	As above but with fixed and drophead coupe bodies
1934 only	7 Sport	—	1911	4	78 x 100	Replaced by Light 11
1935-1936	Light 11	Sports 12	1911	4	78 x 100	Same dimensions as 7 Sport
1935-1936	11	15	1911	4	78 x 100	Longer and wider than 7
1935	22	—	3822	8	78 x 100	Legendary V8. Prototypes only
1935-1938	7C	12	1628	4	72 x 100	Replaced by Economy model
1937-1946	11BL	Light 15	1911	4	78 x 100	Replaced Light 11
1937-1941	11B	Big 15	1911	4	78 x 100	Replaced 11
1939-1947	15 Six G	—	2867	6	78 x 100	Replaced by 15 Six D
1939-1941	7C Economy	—	1628	4	72 x 100	Redesigned inlet manifold

*In the post-war era the 1947-1953 range was the Light 11, longer wheelbase Normale and 15 Six D. The 15 Six H with hydropneumatic rear suspension was produced in 1954-55 but discontinued with the arrival of the DS19. The Six was dropped in 1955 and the two versions of the 11 continued until 1957.*

