

ONE

PROLOGUE

PARIS, SPRING 1946

“What a handsome man,” thought Monique Hebert. She was heading for the Gare de l’Est in the Métro, observing the couple opposite her. They were deeply engaged in a serious discussion and did not look at her at all.

When at the Gare de l’Est she boarded her train, she discovered that they shared the same compartment and were again sitting face-to-face. But this time he was alone and his grey eyes, shining like polished steel, were staring at her. Like every well-bred French girl she had learned from her mother always to avoid eye contact with strange men. But this time she could not avert her own gaze and soon he took the initiative and began the sort of conversation that strangers have on trains to pass the time.

However, before they knew it they were exchanging confidences as if they had known each other for years. Both had had their share of good and sad experiences. He told her that he worked at Citroën and was a widower; four years ago he had lost his second wife, who had died after a long illness. Now his cousin Annemarie, a stepsister of his mother, took care of his housekeeping. That was the lady she had seen in the Métro.

He made her laugh and she made him feel fully alive again. They were so absorbed in their animated conversation that they hardly noticed that their train had arrived at its destination. At the station – helping her out of the carriage onto the platform – he persuaded her to have dinner with him. It was what the French call a ‘coup de foudre’ – love at first sight. Four months later they were Monsieur et Madame André Lefebvre.

Being born on August 19, 1894, André Lefebvre belonged to a generation that grew up with the first motorcars and the first airplanes. His generation also witnessed the horrors of two world wars and great social changes.

During the last years of the 19th century motorcars were still a rare sight on the roads. But in France the ‘automobile’ caught the fancy of the wealthy and adventurous rather early. In July 1894, Pierre Giffard, the farsighted editor of the *Petit Journal*, although no auto fan himself, organised the Paris-Rouen run. It was the first official competition for mechanically-powered vehicles. The participants came with three- and four-wheelers, powered by steam, electric motors or petrol engines. Of the twenty-five starters, fifteen reached the finish. However, the publicity around this event set many wheels in motion.

André Lefebvre spent his earliest years in Louvres. Today, this village is one of the more affluent commuter suburbs north of Paris, situated in the pleasant rolling countryside of the Val d’Oise. In around 1900, however, Louvres was a small and somewhat isolated

community, and France was still very much an agricultural nation, although the industrial age was well under way.

When Alfred Lefebvre, André's father, was promoted to the position of Chef de la Comptabilité et du Personnel (CFO today) at one of the leading Parisian manufacturers of ladies corsets, the family moved to the Rue Stephenson in the 18th arrondissement in Paris, not far from the Gare du Nord. André's mother was a trained midwife and also a knowledgeable herbalist.

The company Lefebvre senior worked for did very well. During the early years of the twentieth century, corsets were big business, and every self-respecting woman – especially those from the middle and upper classes – bought several each year – and they were not cheap.

André's mother, Clémence, supplemented the family income with her paramedical practice, and so the Lefebvres were in a position, financially, to give their children a good education. They stimulated their interests and allowed them to study the subjects they liked: André's sister, Jeanne, became a dental surgeon, whilst André had, even as a youngster, shown an outspoken talent for solving technical problems. He was very intelligent, but also a keen and practical tinkerer, and, like many French boys of his age, he was fascinated by those 'wonderful flying machines.'

THE 'ÉCOLE SUPÉRIEURE DE L'AÉRONAUTIQUE'

When André was accepted at the Ecole Supérieure de l'Aéronautique et de Construction Mécanique (Supaéro) in the rue de Clignancourt in Montmartre in 1911, the whole Lefebvre family was happy.

Colonel Jean-Baptiste Roche, a director of the Ecole du Génie at Versailles, who had spotted the need for qualified technicians in the young aviation industry, had founded the Supaéro college in 1909. As aviation was still in its infancy and most airplanes were constructed from steel wire, wooden slats and fabric, the curriculum covered a wide range of subjects, from theoretical lessons about the principles of flight, aerodynamics, thermodynamics, the mechanics of fluids, the properties of various materials – plus a lot of mathematics – to practical work on combustion engines, the construction of cells for wings, fuselages and balloons, and the use of small machine tools. In the course of two years its pupils were trained to become fully-fledged aeronautical engineers.

The rue de Clignancourt was within walking distance of André's parental home, but at that time Montmartre was a fascinating 'quartier' for a young student, one of the

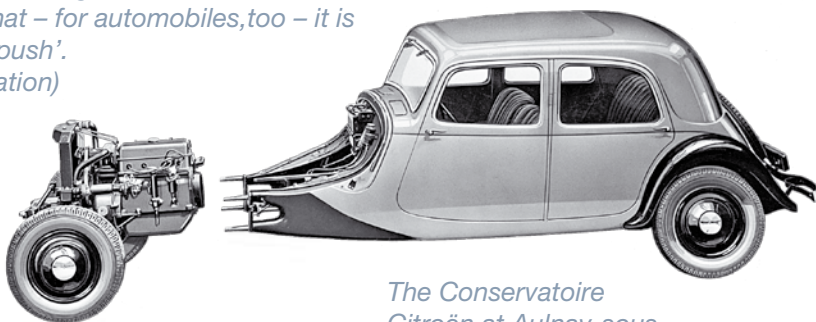
Portrait of a youthful André by the French painter Vincent La Varenne.

The following portrait gallery spans a lifetime of challenges and opportunities, joys and deceptions, and some very daring and innovative automobile engineering. (Courtesy Collection family Lefebvre, Straza Photo Reportage, Citroën Communication & Ministère de la Culture – Médiathèque du Patrimoine, Dist. RMN)

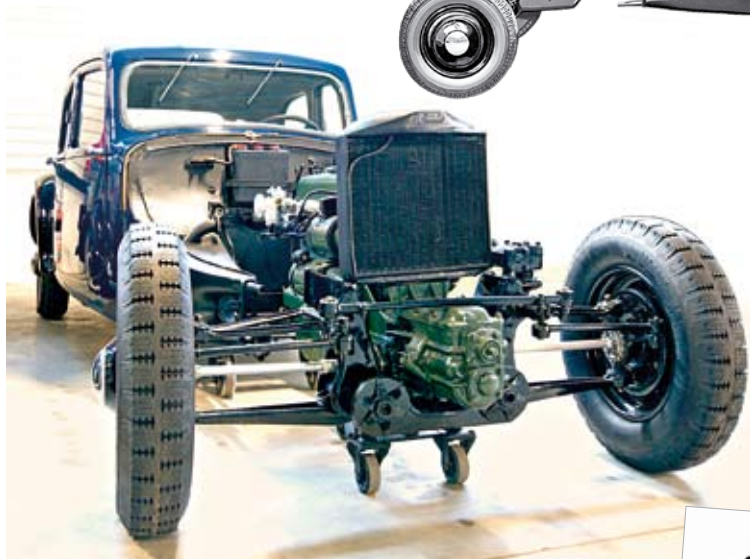


A well-known publicity photo from 1934 shows that the new Citroën Traction Avant had the 'horse' (engine and transmission) in front of the 'carriage' (body). As horse-drawn vehicles were then still a common sight in rural France, this was a very clever way to explain that – for automobiles, too – it is more logical to 'pull' than to 'push'.

(Courtesy Citroën Communication)



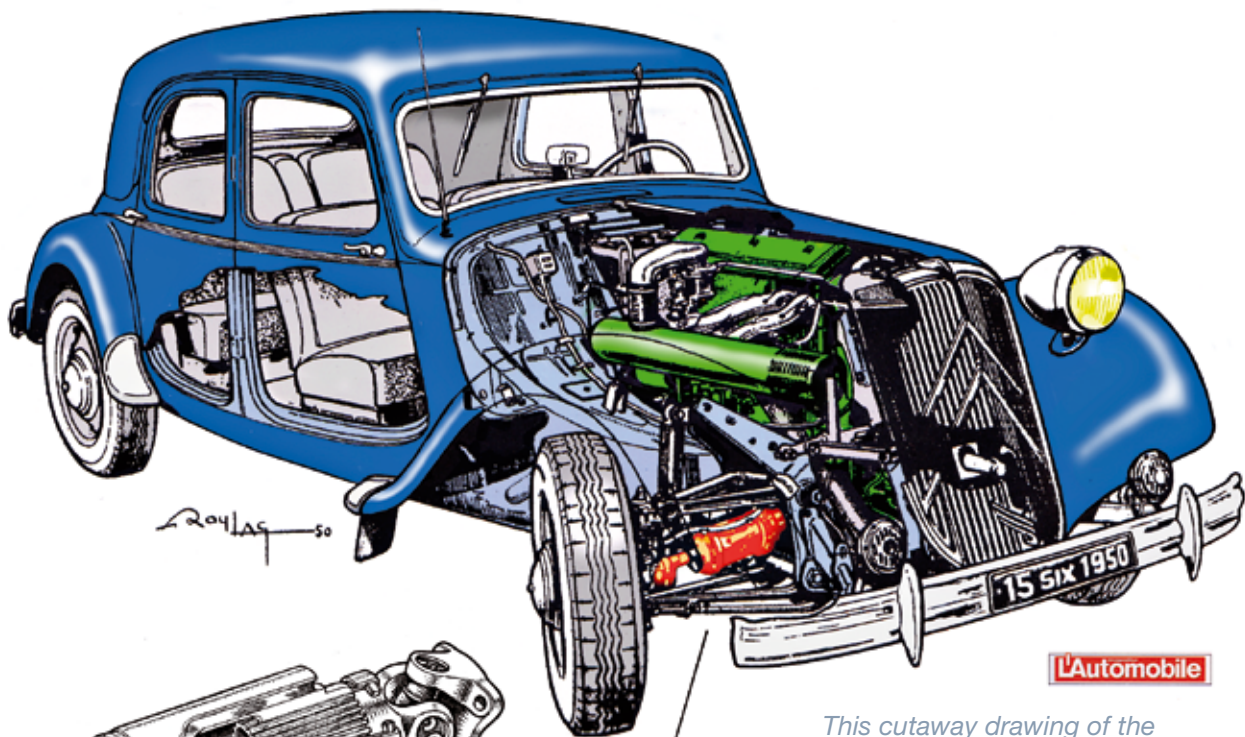
The Conservatoire Citroën at Aulnay-sous-Bois still keeps a display similar to the one which was used for the 1934 photo of the 'horse.' This allows study of the subframe with the engine/transmission unit, the front suspension arms, and front-wheel drive components. (Courtesy Hans Arend de Wit/ Switchimage)



Right: Even in 1938 FWD was still considered a 'Unique Selling Proposition.' A Citroën advertisement from those days says: "Front-wheel drive glues the car to the road."

It was a big day for André Lefebvre. Proudly strutting around the car, he highlighted all its technical features and advantages. Front-wheel drive allowed the coachwork – and the centre of gravity – to be lowered whilst retaining the interior headroom found in conventional cars: and this without sacrificing ground clearance. The low roofline combined with the flat underside also reduced aerodynamic drag, resulting in economic fuel consumption. Independent suspension at the front, and a suspension at the rear with trailing arms, not only improved comfort but also handling. The torsion springs were anchored in such a way that suspension forces were absorbed in the strong midsection of the body, to

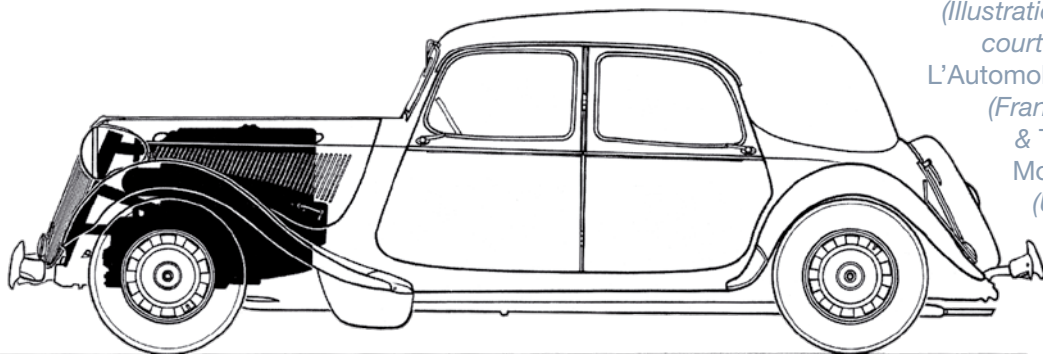




L'Automobile

This cutaway drawing of the six-cylinder Citroën '15' (in this case, a 1950 model with a larger boot and stronger bumpers) reveals the strengthened front suspension and drivetrain. In the separate enlargement is the rubber-cushioned transmission joint developed for Citroën by André Lefebvre's colleagues at Michelin.

(Illustrations courtesy L'Automobile (France) & The Motor (UK))



The Citroën '15' was a large and roomy car, integrating the new six-in-line engine of 2.657-litres developed by Maurice Sainturat in the wide body of the TA 11 Normale. With a total length of 4m 76, it was 11cm longer than the 11 Normale (21cm longer than the 11 Légère), and weighed 1335kg. This French Citroën 15 is not to be confused with the Light 15, made in the Citroën factory at Slough (Great Britain), which was, in fact, a four-cylinder 11CV with right-hand steering, and an interior adapted to British taste. In accordance with the British (taxable) horsepower rating, it was called the Light 15.



The Citroën '15' – Quinze in France – quickly earned a reputation as 'la Reine de la Route' (The Queen of the Road). Thanks to its superb road-holding (due to a low centre of gravity and front-wheel drive), it could achieve higher averages than many more expensive luxury saloons with bigger and more powerful engines. Soon, it also became the favourite car of French bank robbers ... (Courtesy Citroën Communication)

models, André Lefebvre's official role in its development was rather limited, and he acted more as a consultant than design chief. The bulk of the work was carried out by the Service des Méthodes, the department responsible for production preparation of new models, once Citroën's general management had approved the prototypes built by the Bureau d'Etudes.

The six-in-line, push-rod OHV engine was again designed by Maurice Sainturat; family resemblance to the four-cylinder 11CV is obvious. It had the same bore and stroke (78mmx100mm), though two extra cylinders which gave a cubic capacity of 2657 litres and a maximum power output of 77bhp at 3800rpm.

A LEFT-TURNING CRANKSHAFT

This power plant became known as the 15 Six G* (G for à gauche/to the left/anti-clockwise) because its crankshaft rotated in the opposite direction to that in the 'normal' four-cylinder. This had to do with the fact that the three-speed gearbox had been completely redesigned to withstand the higher torque of the six-cylinder. To limit its length so that the new gearbox would not stick out too far at the front, it was equipped with three gearwheel shafts instead of two. After the war the gearbox was redesigned again and, from 1947, Citroën fitted the 15 Six D (D for à droite/to the right) engine in the Quinze.

To cope with higher speeds and cornering forces, the lower wishbones of the front suspension and the drivetrain were also modified. To improve driving comfort and prolong transmission joint life, both transmission shafts to the front wheels were equipped with a sliding rubber-in-torsion midsection. The function of these metal-rubber-metal components was to 'cushion' the transmission forces. Their technology was based on that of 'silent blocks' and their construction was similar to Michelin's 'Bibax' units, which were fitted on heavy trucks with tandem rear axles. Their use in the drivetrain of the six-cylinder Citroën was a direct result of the excellent relations between the Bureau d'Etudes of Citroën and the research department of Michelin. As André Lefebvre had regular contact

* The type designation 15 created some confusion with Citroën buyers in Britain, as the four-cylinder model assembled in Slough was called the 'light fifteen' in accordance with the British HP rating.