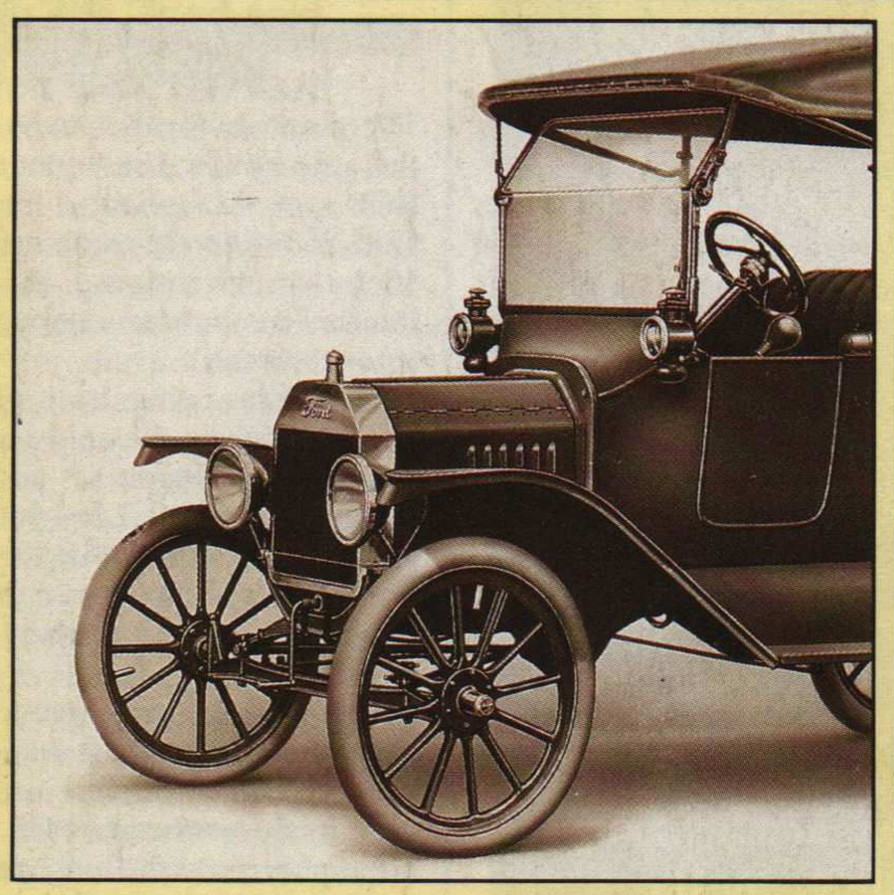
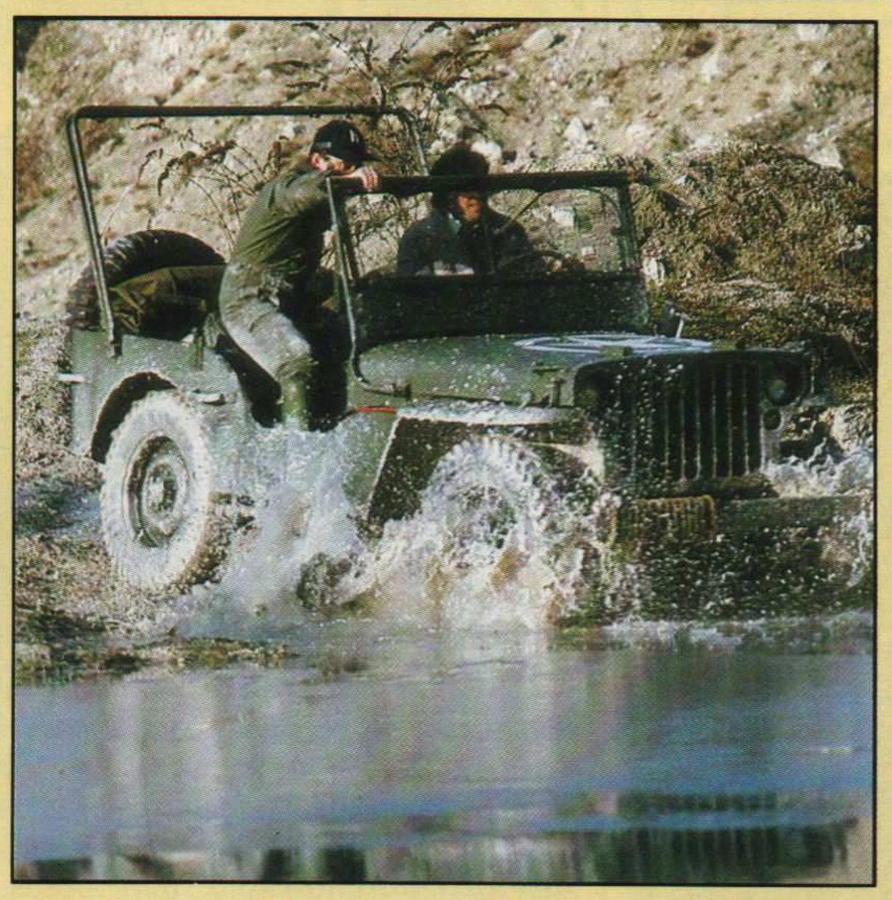
AUTOCAR





1895-1985

NINE DECADES OF AUTOCAR AND THE CAR

Ninety years ago a new magazine was launched. Devoting itself to the new-fangled horseless carriage, *The Autocar* soon became a mouthpiece for the motoring movement. Over the next couple of months *Autocar* will present the changing face of the car as seen through the pages of the magazine since 1895. Each week, for the next nine, we will look at a decade recording the major events and choosing *our* Car of the Decade. Collect all nine, and you'll have a unique record of the autocar — and *The Autocar*

A SPEED LIMIT NOTICE.

One of the first official notices in regard to the imposition of a speed limit for motor cars reaches us from Beverley. A facsimile of the poster, which is only a small one, is appended:

BOROUGH OF BEVERLEY

MOTOR CAR ACT, 1903

LIMITATION OF SPEED.

NOTICE

IS HEREBY GIVEN

THAT by an Order dated the 3rd September, 1904, the Local Government Board have restricted the speed of Motor Cars on the following highways in the Borough to FIVE miles per hour, viz:-

A. At the junction of the Streets known as York Road and North Bar Street Without, including "The Bar."

B. At the entrance to the Market Place and Lairgate from North Bar Street Within.

C. In the Street known as Butcher Row.

A copy of the said Order and the Plan shewing the area of the Highways subject to the above limitations can be inspected at my Office.

Dated this 14th day of September, 1904.

J. WILLIS MILLS,
TOWN CLERK.

TOWN CLERK'S OFFICE, BEVERLEY.

Editor: Matthew Carter
Writers: Graham Robson
David Burgess-Wise
Research: Mark Gillies
Design: James Baker

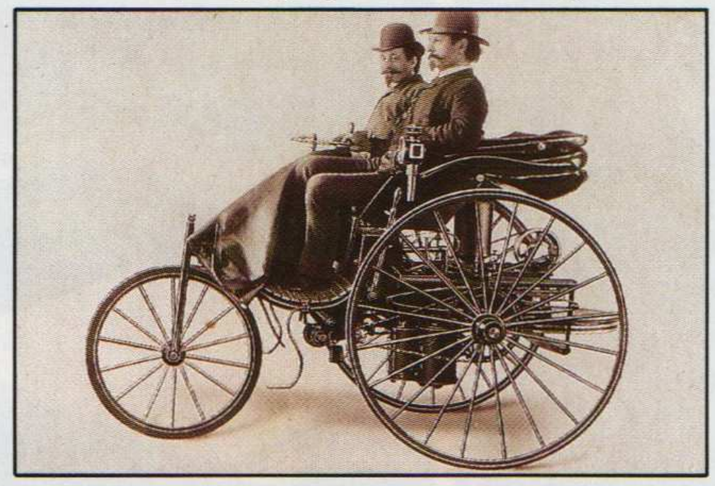
BEFORE 'THE AUTOCAR'

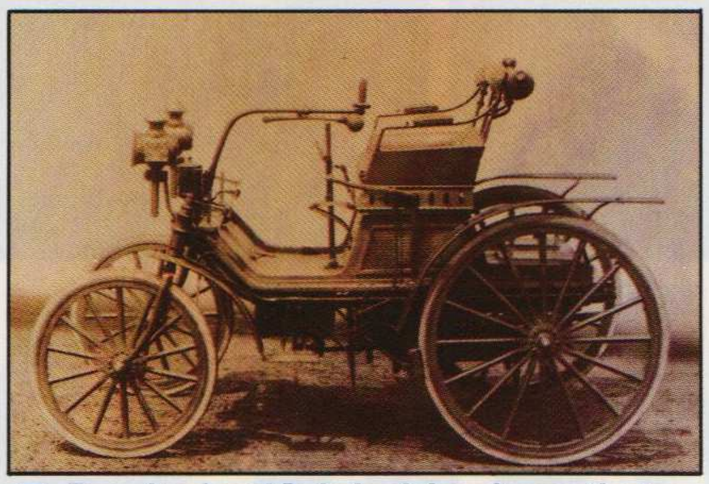
Ten years before *The Autocar* was born, the motorcar took its first steps

There's no doubt about who actually invented the automobile: the honour *must* go to Carl Benz, of Mannheim, Germany, who in 1885-86 brilliantly combined those two great Victorian inventions, the cycle and the internal combustion engine, to create the first true motorcar.

Unlike his compatriot, Gottlieb Daimler, Benz conceived the entire vehicle — engine, chassis,transmission — and was concerned enough about detail design to install the puny engine on its side so that the flywheel rotated horizontally. Benz feared that the gyroscopic effect of a vertical flywheel would affect the steering . . .

Daimler's concern was to develop a compact, self-contained "universal power source", which he first installed in a crude velocipede test bed in 1885, and then fitted a horse phaeton with a more powerful engine, its single cylinder protruding through the floor of the passenger compartment. A two-speed belt drive acted on a cross-shaft with pinions at either end, engaging in toothed rings on the rear wheel spokes.





■ **Benz (top) and Daimler (above) were the two marques at the forefront of the automobile.**

Daimler supplied engines for sawbenches, firepumps, tramcars, airships and motorboats. Demand was so great that he and his assistant Wilhelm Maybach moved into larger premises and developed a vee-twin power unit which was adopted by the French pioneers Peugeot and Panhard et Levassor.

In Britain, development of horseless carriages was impeded by draconic legislation intended to curb road damage caused by heavyweight traction engines; nevertheless, Edward Butler, of Erith, Kent, filed a provisional patent for a "Petrocycle" in 1884.

In his magnum opus *Motor Vehicles and Motors*, published in 1900, Worby Beaumont claimed that Butler's tricycle was shown at the 1885 Inventions Exhibition. As originally built, the Butler had rotary valves and double-acting cylinders like those of a steam engine; curved connecting rods drove the rear wheel with no intermediate gearing.

The Petrocycle had electric ignition — Daimler used hot-tube ignition — the first-ever spray carburettor and front wheel brakes. Though it was ultimately unsuccessful, Butler's Petrocycle was at least photographed to prove that it had existed; that cannot be said of the motor car built by Edouard Delamare-Debouteville, who lived near Rouen. Attached to his 1884 patent for a "perfected gas engine and its applications" were drawings showing a crude power carriage; it broke in two on its first run . . .

Nevertheless, in an excess of chauvinistic zeal, last year France used the Delamare-Debouteville patent as the excuse for a celebration of "100 years of the French automobile", even though the evidence that Delamare-Debouteville's carriage ran in 1884 is scanty. However, in 1883 he *had* ventured on to the road with a gas-powered tricycle. Its first brief trip ended in an explosion.

But Delamare-Debouteville isn't the only candidate for the world's first internal-combustion car (external combustion — steam — was around far earlier), for the claims start with the Swiss Isaac de Rivaz, who, around 1807, built a crude trolley jerked along by a "Voltaic pistol". Its practicality was limited as the exhaust valve was opened by a pedal . . .

In 1826 one Samuel Brown climbed Shooter's Hill, near London, at the controls of his clumsy "gas and vacuum" carriage, with an 89-litre two-cylinder rocking-beam engine. Then there was the American Reuben H. Plass, who, interviewed by *Horseless Age* shortly after the turn of the century, claimed — almost certainly falsely — to have built a self-propelled fire-engine in the 1860s. Its 20hp four-cylinder engine had "cylinders made from Civil War cannon", and drove through a fifth wheel.

For a long time, Austrians believed that their compatriot Siegfried Markus had built a motor car in 1875. Indeed, the car was hidden during the Nazi era to save it from destruction. for Markus was a Jew, and he seemed to have predated Benz . . . However, that "1875" car has now been shown to date from around 1888.

Thirty years ago, I remember seeing the crude horseless carriage of the Danish mechanic Albert Hammel in the Brighton Run: it was said to date from 1887, and to be the world's oldest petrol car in running order after the Benz and Daimler carriages. But now it seems that the unspeakably primitive Hammel really dates from the late 1890s . . .

And though the American lawyer George

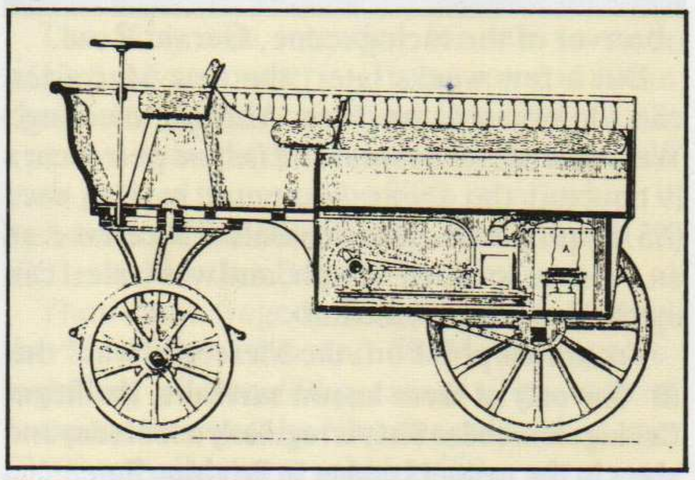
A Haymarket publication © 1985

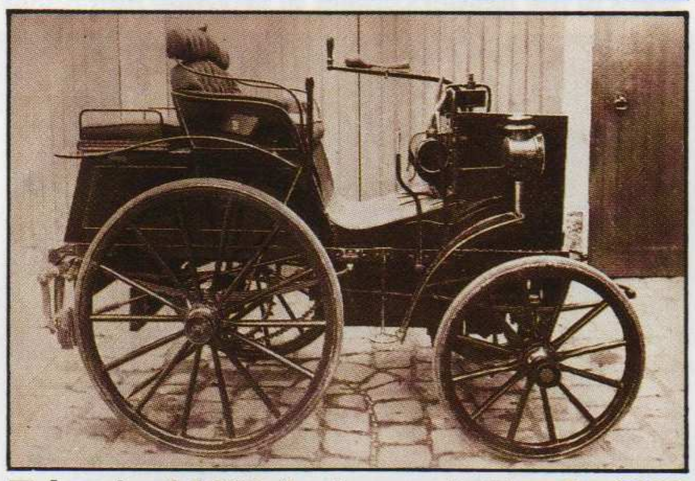
Baldwin Selden filed a "master patent" in which he claimed to have thought of the automobile in 1877, his claims were contested by, notably, Henry Ford.

Two "1877" Selden cars were built as evidence during the trial in which the monopolistic Selden Trust took Ford to court for non-payment of royalties. As counter-evidence, Ford built a "Lenoir" car, operating on the same principles as the carriage built in 1862-63 by Jean-Joseph Etienne Lenoir. Powered by a gas engine which operated without compression, in September 1863 the Lenoir carriage made a lethargic 18km round trip in Paris, and was sold to Tsar Alexander II.

That was better luck than Carl Benz, who didn't sell a car until 1888. His first customer, Emile Roger of Paris, also became his agent.

If the Germans weren't buying it and the British were legislating against it, the French took the automobile to their hearts; by 1891 both Peugeot and Panhard et Levassor were delivering cars to private owners.





■ Lenoir of 1863 (top) was primitive. By 1892 Panhard (above) had proved the car had a future

And Panhard et Levassor quickly established the typical layout of the automobile by housing the engine at the front under a bonnet, driving the rear wheels through a sliding gear transmission. Benz didn't enjoy commercial success until 1893, when his first four-wheeler, the Viktoria, began to find buyers, followed a year later by the lightweight Velo, which was instantly popular.

America, so soon to lead the world in terms of production, was late getting started, its first experimental automobile built in 1891 by John W. Lambert of Ohio City.

Manufacture didn't begin until the brothers Charles and Frank Duryea founded their Duryea Motor Wagon company during 1895, built 13 cars — the first featured in the first issue of *The Autocar* — and crossed the Atlantic to run two of them in the Emancipation Day run from London to Brighton in November 1896.

EARLY PRODUCTION CARS

The French take the lead

There's no question about it; by the time *The Autocar* came on the scene the French had taken over the lead from the Germans. The most revolutionary thing that Carl Benz had done since his epoch-making invention of the car in 1885-86 had been to add a fourth wheel; Gottlieb Daimler's products of the 1890s were few and obsolescent, so much so that when a British Daimler company was established in Coventry in 1896 by that egregious company promotor Harry J. Lawson, its products were based on the French Panhard et Levassor (Daimler-engined, of course) rather than the German Daimler (which had such unspeakable design features as centre-pivot steering).

Of course, the Benz design was copied by quite a few companies who were seeking to break into the motor industry without undertaking expensive development programmes, but only as a stop-gap which was quickly superseded. Except at the Benz factory itself, where Carl Benz stubbornly clung to his aging design, so that in 1902 the directors had to bring in another designer, Marius Barbarou, to develop a front-engined car to keep up with the rest of the industry.

For those who sought performance at low cost, in 1896 Léon Bollée of Le Mans introduced his *voiturette*, a speedy three-wheeler notable as the first production car to be fitted with pneumatic tyres.

Proving the truth of the saying "he travels fastest who travels alone", the single-seated De Dion Bouton tricycle was produced by a company that had been building steam vehicles since 1883 and had branched into internal combustion in 1895. Its single cylinder engine could run reliably at the unprecedented speed of 2000rpm, and these remarkable power units were built by the thousand and bought by many other manufacturers.

Among these was the young son of a button maker, Louis Renault, whose original light car of 1898 was one of the first shaft-driven automobiles.

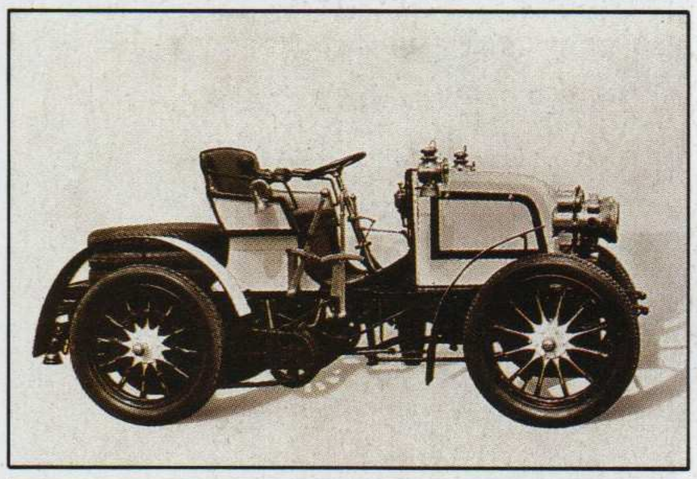
De Dion Bouton joined the light car set in 1899 with a rear-engined 3½hp voiturette; by 1902 this had grown into the 6hp Model K, with the power unit at the front under a "coal scuttle" bonnet. Its simple two-speed transmission drove through the famous De Dion axle, originally invented by Bouton's brother-in-law Trépardoux to transmit the power of steam carriages.

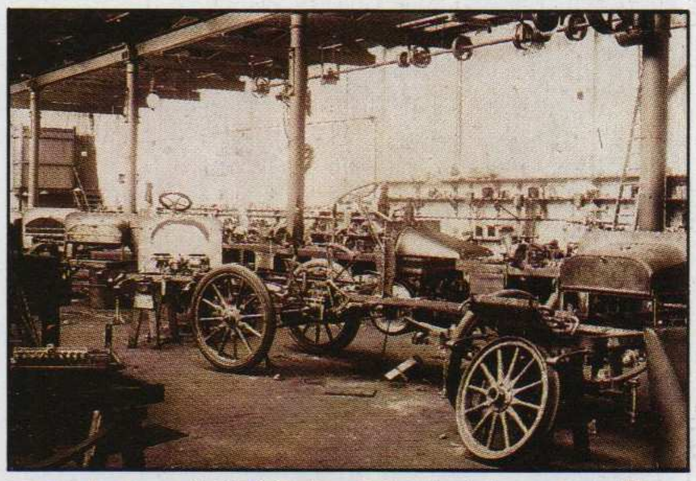
But by the turn of the century, these popular French and German cars were being challenged by a new breed of popular car from across the Atlantic. It started with the Locomobile steamer, immortalised by Kipling in "Steam Tactics"; Hubert W. Egerton drove one from John o'Groats to Land's End in December 1900, and serialised his exploits in *The Autocar*. Locomobiles, however, were too frail and liable to commit *suttee* to be a lasting success, and the real American challenge was to come from the little gas buggies built by Oldsmobile, Cadillac and Ford, which spearheaded an invasion which was to culminate in the Model T Ford of 1908.

But as far as larger cars were concerned, it was the leading French makers who set the style in the closing years of the 19th century. The "Système Panhard" — which was actually devised by Levassor — defined the classic front-engine, rear-wheel-drive configuration that was to serve the car so well until front wheel drive found a new popularity with the 1959 Mini (the very first "automobile" of all, Cugnot's steam truck of 1769-70, drove its single front wheel). Then, in 1901, the world entered the "Mercédès Age", and suddenly everyone was copying the style of the new car.

True, some advocates of the "armoured chassis" (wood strengthened with steel flitch plates) and the tubular frame derived from cycle practice fought a rearguard action against the pressed steel chassis pioneered by Mercedes, but by the end of *The Autocar*'s first decade, cars had settled down to a fairly consistent pattern.

Never again would there be such a wide variety of chassis layouts or motive powers available: cars began increasingly to resemble one another mechanically, with in-line petrol engines, channel steel chassis, speed variation by sliding gears, and shaft drive, though out-and-out sporting machinery still retained side chain transmission so that final drive ratios could easily be altered.





■ Daimler of 1899 (top) had vicious handling. Factories have changed a little since 1903 (above)

This near-universal layout was an amalgam of the Panhard, Mercédès and Renault designs; already the experts were predicting that car design had almost reached finality!

CAR OF THE DECADE

MERCEDES 60

It was sold as an elegant tourer, but the Sixty was equally at home on the race tracks

It's difficult nowadays to appreciate just how fast car design progressed during the first decade of *The Autocar*, because in those ten short years the motor car developed from childhood to maturity, from a primitive carriage that moved no faster — and frequently less certainly — than the horse-drawn vehicle it supplanted to a rapid devourer of horizons capable of covering a mile a minute.

The old adage that "racing improves the breed" was never more true than in the period from 1895-1905, for between those years the speed of the fastest racers improved almost fivefold, from little over 20mph to more than 100mph. And no car spurred that dramatic increase more than the Mercédès, created by Gottlieb Daimler's remarkable protege Wilhelm Maybach at the behest of the Austrian Consul-General in Nice, the flamboyant Emil Jellinek, who raced under the *nom de course* of "Mercédès", the name of his teenage daughter.

Jellinek had a passion for speed, which he indulged at the helm of the most powerful cars he could persuade the Daimler company to build for him, though it must be said that the 24hp Daimler of 1899 was an elephantine device whose height and short wheelbase engendered vicious handling.

So Jellinek commissioned Maybach to create "the car of the day after tomorrow", and, less than a month after the death of Gottlieb Daimler in March 1900, signed a contract worth half a million Marks for the first batch of 30 cars; they were to be called "Mercédès" to lessen sales resistance in France — Jellinek was the unofficial Nice agent — where memories of the Franco-Prussian War of 1870 still rankled.

The Mercédès promised much — for the first time it combined a pressed steel chassis, equal-sized wheels, gate gear change, honeycomb radiator mounted ahead of the engine and mechanically-operated inlet valves — but its debut at the February 1901 Grand Prix de Pau was a sad disappointment. "It was so untuned that it was quite impossible to more than guess at its capabilities," reported that

observer of the racing scene, Gerald Rose.

But a few weeks later, the new Mercédès cars dominated the Nice Autocar meeting. Werner's Mercédès was the fastest petrol car: it covered the flying kilometre in 41.8 sec, (53.5mph), won the Nice-Salon-Nice race at an average speed of 36mph, and was fastest car up the La Turbie hillclimb.

From that point on, the Mercédès was "the

■ **One only of three known survivors, the Roger Collings Mercedes Sixty is regularly used today and stars in the annual London to Brighton Run**

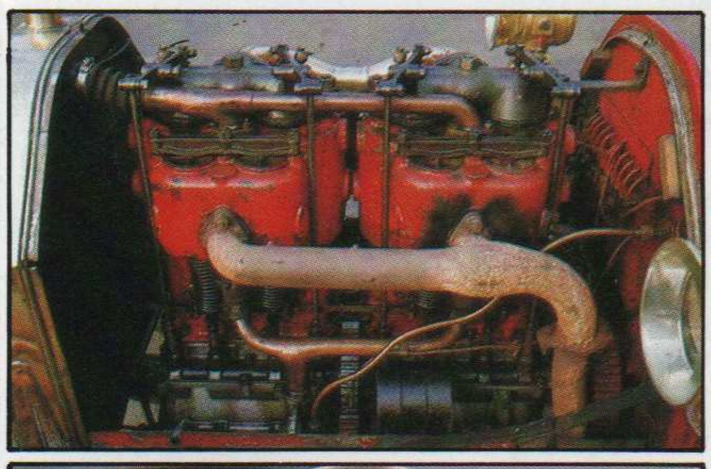
car that set the fashion to the world", and wealthy sportsmen vied for ownership of Mercédès cars, to the extent that in March 1903 *The Autocar* remarked: "The Daimler Motoren Gesellschaft, of Cannstatt, are understood to have sold forward the whole of their production of Mercédès cars in England for some months."

At the beginning of 1903, Mercédès announced their new 60hp model, a blindingly fast machine with a 9236cc four-cylinder engine; it was "an exceedingly dangerous toy", as evidenced by *The Autocar*'s report of Count Eliot Zborowski's fatal accident on La Turbie. "The Count was driving one of the new 60hp Mercédès, and is said to have been very nervous at starting," telegraphed *The Autocar*'s correspondent. "He had had little or no time to have become accustomed to his car."

It seems as though Zborowski's elegantly starched shirt cuffs had caught the hand throttle lever on the steering wheel — it varied the lift of the inlet valves — and jammed it open . . .

The Sixty was intended for sale to well-heeled private owners — it cost some £1800 in chassis form, and could incur a tyre bill of £500 a year — thought the Daimler works expected even greater things of the 90hp racers which it had entered for the premier racing event of 1903, the Gordon Bennett Trophy.

Then came tragedy: in June fire destroyed the Daimler works and 70 Mercédès cars, including all the 90hp racers. The twisted remains of one of the Nineties, which had cost £3500 to build, were sold for £60.



■ **Top: A true driver's car, the Sixty is still capable of some 85mph, but needs careful handling. Left: Engine is a massive 9.2-litre four cylinder that pounds away at no more than 1200rpm maximum. "You feel like a primitive god at the wheel of the Mercédès Sixty". Steering is direct and responsive**

Private owners lent their 60s to the works team, and it was the car of the rich American Clarence Gray Dinsmore which won the Gordon Bennett, driven by the "Red Devil" — Belgian ace Camille Janatzy. That was the amazing achievement of the Mercedes 60 in that first decade of *The Autocar* — a car that could just be stripped of its touring bodywork to win the world's premier motor race.

And that is how Roger Collings maintains his Mercédès Sixty, one of three known survivors of the model. It wears its elegant tonneau bodywork and flared mudwings for the Brighton Run in November, and the rest of the year runs in vintage trials and races.

Yet, apart from the substitution of an updraught Zenith carburettor with foot throttle control for the crude 1903 instrument, and the occasional use of 20×6.00 wellbase rear wheels for off-road trials instead of the 880×120 beaded edge originals, the Mercédès runs in unmodified 1903 trim, down to the low-tension ignition. This has pull-rod actuated strikers which part to produce a spark from the LT magneto.

The Mercédès Sixty is a true driver's car: a magnificent performer still capable of some 85mph, it will not brook a moment's inattention. But with that massive engine pounding away insistently — at top speed, it's probably doing no more than 1200 rpm — and the direct, responsive steering, the Mercédès makes you feel like a primitive god at the wheel.

This is the kind of car that so intoxicated Mr Toad with speed. Indeed, in the issue of *The Autocar* that gave the first full description of the model is a photograph showing the tangled wreck of a 40hp Mercédès in a ditch, the result of a high-speed crash. Despite the driver's "extremely narrow escape," said the magazine, "he so quickly recovered that the day after he ordered one of the 1903 Mercédès . . .

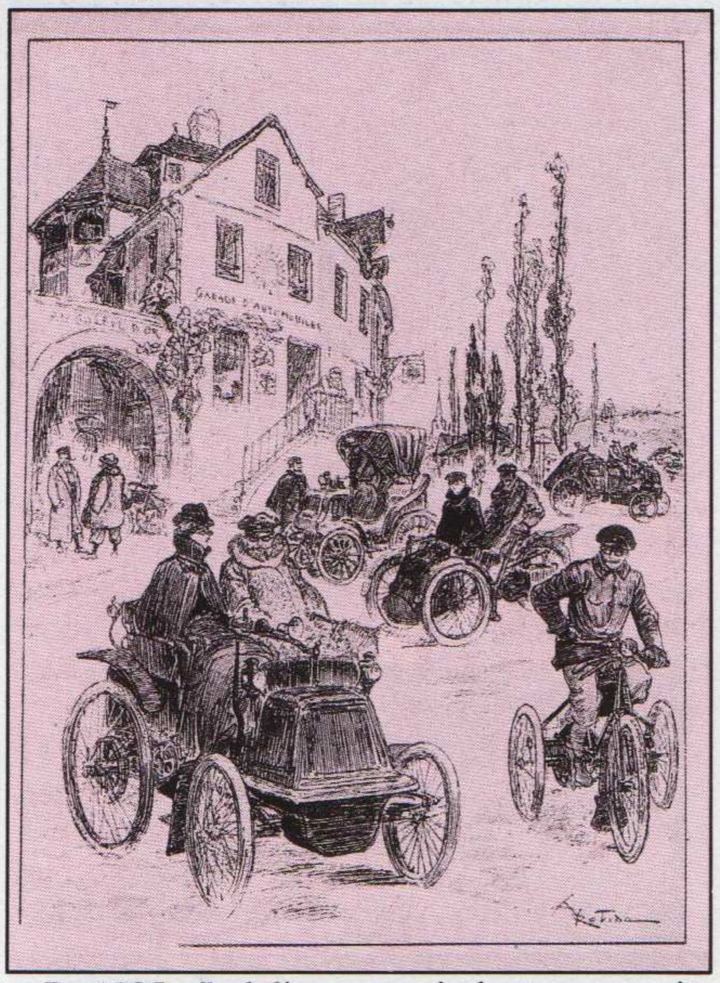
THE AUTOCAR IN VICTORIAN TIMES

Progress was slow but sure

Even though Sir David Salomans had organised the first 'Horseless Carriage Exhibition' at Tunbridge Wells in October 1895, there were probably fewer than a dozen private cars in Great Britain at the time, and no British car had yet been put on sale. It was a real act of faith, not to say blind optimism, for a new magazine, to be called *The Autocar,* to be launched on Saturday 2 November 1895.

At the time everything was lined up against the motor car, which was still in a very primitive state. Although the requirement to have a man walking ahead of a car, carrying a red flag to warn the populace, no longer applied (that detail had been swept away in 1878), every car needed three attendants when it went out on the road — one to walk ahead, the other two to calm the spectators!

Yet progress could not be stifled; the legislation, especially its 4mph speed limit, came into ridicule, and there was strong and spirited lobbying, on behalf of influential people, to legalise and improve the lot of the new-fangled motor cars.



By 1895 a fledgling motor industry was on its way in the UK, and most particularly in the Midlands. Herbert Austin was dabbling with three-wheelers for Wolseley, Lanchester for himself, while that irrepressible company promoter, Harry J. Lawson, was setting up the British Motor Syndicate.

Perhaps it was inevitable, therefore, that William Iliffe was persuaded to start up a magazine, to base it on Hertford Street in Coventry, and to install one Henry Sturmey as its founding editor. Not only had Sturmey already been successfully involved in other publishing ventures, notably as editor of *The Cyclist* from 1879, but he was a supporter of Lawson and all his schemes.

The new venture, titled *The Autocar,* 'A Journal published in the interests of the mechanically propelled road carriage', was the very first in its field, and it acted as a mouthpiece, if not always wittingly, for Lawson's lobbying.

The very first page of the first issue thought it necessary to equate several phrases thus: "Horseless carriage — automobile carriage — automatic carriage — autocar. All these names have been used to designate the latest production of the ingenuity of man, the motor-driven road carriage, irrespective of whether steam, electricity, hot air or petroleum be the motive power."

Right away, too, Sturmey began his lobbying: "Nor is any excuse needed for our entry into world of periodic literature. Every new movement is fostered and encouraged by publicity and the free letting in upon it of the light of public opinion . . ."

In the next few years, therefore, *The Autocar* grew up with the British motor industry, and took closer and closer notice of what was going on. All the lobbying, of course, was successful — probably quicker than its promoters had hoped — for the new regime arrived in November 1896, when the Locomotive Act was swept away and the speed limit was raised to a dizzy 14mph! The motoring age had begun.

ANALYSING THE PRODUCT

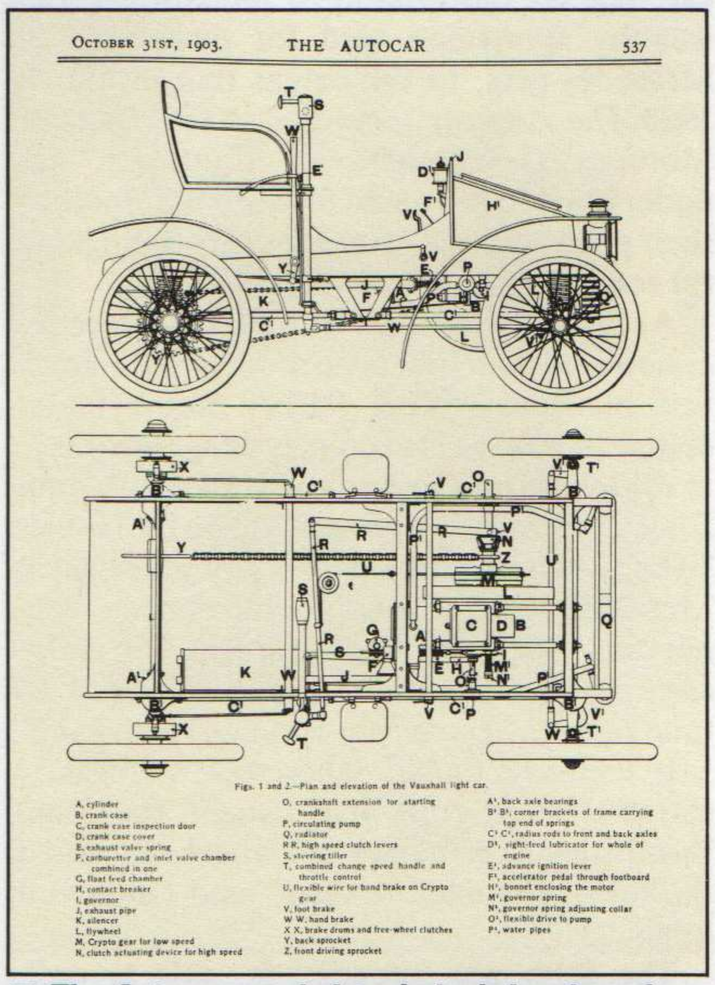
Technically *The Autocar* was none too analytical in the early days

The Autocar did not have a nominated technical editor until the 1920s, and it must be said, right away, that Sturmey himself knew little about cars at first. It wasn't until 1928 that a full and formal Road Test format was achieved — before that we merely appraised the cars, but took very few performance figures.

In the very first issue, however, our standards were set, when we spent three pages describing the vehicles at the Tunbridge Wells exhibition (our first Motor Show Report, no less!), though it didn't help our credibility.

"On reference to figs 1 and 2 it will be seen that the frame is formed of two lengths of steel tube 1 and 2, separated by and attached to two end cross lengths 3 and 5, and a central tubular stay 4 . . ."

Nor were we too analytical about the cars, for when our correspondent was invited to drive the Hon C.S. Rolls's 'new Panhard et Levassor racing carriage', he spent the whole of the first page and much of the next two



Figs. 1 and 2.—Plan and elevation of the Vauxhall light car.

A, cylinder
B, crank case
C, crank case inspection door
D, crank case cover
E, exhaust valve spring
F, carburettor and inlet valve chamber combined in one
G, float feed chamber
H, contact breaker
I, governor
J, exhaust pipe
K, silencer
L, flywheel
M, Crypto gear for low speed
N, clutch actuating device for high speed
O, crankshaft extension for starting handle
P, circulating pump
Q, radiator
R R, high speed clutch levers
S, steering tiller
T, combined change speed handle and throttle control
U, flexible wire for hand brake on Crypto gear
V, foot brake
W W, hand brake
X X, brake drums and free-wheel clutches
Y, back sprocket
Z, front driving sprocket
A¹, back axle bearings
B¹ B¹, corner brackets of frame carrying top end of springs
C¹ C¹, radius rods to front and back axles
D¹, right-feed lubricator for whole of engine
E¹, advance ignition lever
F¹, accelerator pedal through footboard
H¹, bonnet enclosing the motor
M¹, governor spring
N¹, governor spring adjusting collar
O¹, flexible drive to pump
P¹, water pipes

■ ***The Autocar*** **carried technical drawings from the outset. Even the 1903 Vauxhall 5hp (below) was deemed a technically wondrous machine**

describing how the invitation came, and the problems he had in getting to Paris. Deep down there was to be some comment about the car itself, but remarks like: "The scenery began to be exceptionally picturesque as we got deeper into Normandy" seemed to take up a lot more space.

By the early 1900s, however, our knowledge and experience had increased considerably, and we were soon able to start the type of technical description which made *The Autocar* so famous in later years.

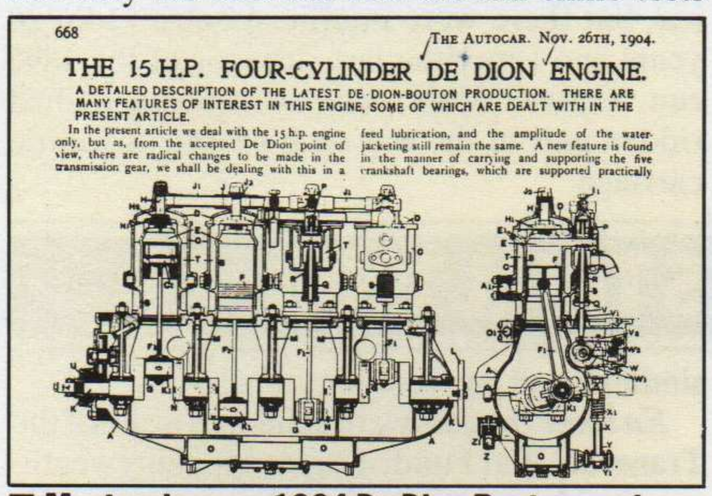
The delightful facet of all these descriptions was in the detail drawings and explanations of what might still have been simple machines, but were still magic and mysterious to most pioneering motorists. The '5hp Vauxhall Light Car' of 1903 received four pages in our issue of 31 October, including not only top and side view drawings of the chassis — with details like the exhaust silencer and the gear lever

solemnly annotated — but technical detail of such jewels as the accelerator pedal linkage.

Soon, however, we were able to cross-refer one car with another. In 1904, for example, we discussed the 12hp Sunbeam as "the only chain driven car at present on the road which has the whole of the transmission entirely protected. When introduced two years ago, doubts were expressed as to the feasibility of this arrangement, but time has proved it to be satisfactory . . ."

Indeed, to read *The Autocar* in that period is to learn everything possible about the innards of the great Veteran cars. Our analysis of the four-cylinder 15hp De Dion Bouton unit (26 November 1904) was a masterpiece of which that company's technical director would have been proud.

We soon got used to motor shows, too, although in those days we called them exhibitions. The Automobile Club promoted its first show at Richmond in 1899, and naturally *The Autocar* was there, recording not only the cars but also the hill-climb tests


668 THE AUTOCAR. NOV. 26TH, 1904.

THE 15 H.P. FOUR-CYLINDER DE DION ENGINE.

A DETAILED DESCRIPTION OF THE LATEST DE DION-BOUTON PRODUCTION. THERE ARE MANY FEATURES OF INTEREST IN THIS ENGINE, SOME OF WHICH ARE DEALT WITH IN THE PRESENT ARTICLE.

In the present article we deal with the 15 h.p. engine only, but as, from the accepted De Dion point of view, there are radical changes to be made in the transmission gear, we shall be dealing with this in a

feed lubrication, and the amplitude of the water-jacketing still remain the same. A new feature is found in the manner of carrying and supporting the five crankshaft bearings, which are supported practically

■ **Masterpiece — 1904 De Dion Bouton engine**

(up Petersham Hill) and the 50-mile 'Efficiency Trial' (Southall-Stokenchurch-Southall) which went with them. By 1902, however, the 'motor show' had gravitated to the Agricultural Hall, in London, and would have been recognisable to today's foot-weary motor show addicts. Then, as now, the motorist needed to know everything, and we did our best to oblige. A stand by stand description included such makes as the Albion and the Lanchester, both long gone.

THE BIRTH OF MOTOR SPORT

The great city to city races marked the birth of motorised competition

Man is a competitive animal, and loves to beat the next man. No matter what the activity, *someone* has to prove himself supreme. Running, jumping, fighting, riding horses — there was always a good excuse. Then came the motor car. Some form of competition was inevitable.

At first, but in theory only, it was reliability and not performance that was at stake. The world's first properly organised motoring contest was the *Concours des Voitures sans Chevaux* of 1894, which ended with an 80-mile reliability run from Paris to Rouen and back. It wasn't supposed to be a race, but the competitors made it one — fastest being Comte de Dion's steam-powered device, at 11.6 mph.

The first real race was held in July 1895, before *The Autocar* was born, over 732 miles from Paris to Bordeaux and back. The hero of this marathon was Emile Levassor, who drove his own make of car single-handed throughout for 48¾ hours, an average of nearly 15mph. In the same year, the New York *Times-Herald* also sponsored a race in the USA, won by Frank Duryea in one of his machines.

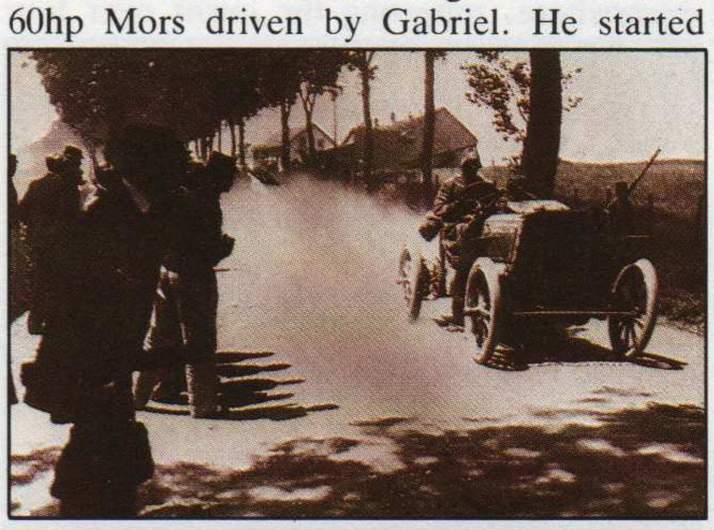
There was no sport at this time in Britain because of the complete lack of cars themselves, and the repressive legislation. The first motoring event, of course, was the legendary London-Brighton Emancipation Run of 14 November 1896, where Harry Lawson's cars and cronies were much in evidence, and the result was a mixture of farce and chaos.

For the first few years, however, motor sport in Europe was all about town-to-town racing, with the cars getting bigger, faster and — frankly — more dangerous every year. It must have been exciting to compete, but the local populace were infuriated.

Speeds rose rapidly. Following the Paris-Amsterdam-Paris in 1898, the Paris-Bordeaux race of 1899 was won by Charron's Panhard et an average of nearly 30mph, a startling speed for the day. But that was only the start, for in the Paris-Vienna of 1902 Marcel Renault's 'light' Renault averaged 38.9 mph, beating the larger Panhards and all the Darracqs.

But it could not last, and the infamous Paris-Madrid race of 1903 sealed the fate of open road racing. On the section from Paris to Bordeaux there were dozens of accidents, at least 15 fatalities, and the authorities stepped in to protect the lives of the estimated three million spectators who were lining the dusty roads. Cars were towed ignominiously to the railway station by horses, and were sent back to Paris by train.

The fastest car on that tragic event was the 60hp Mors driven by Gabriel. He started



■ **Top: the Panhard was a favourite in the city to city races. This one dates from the 1902 Paris-Vienna epic. Above: Nation against nation racing was the *raison d'être* of the Gordon Bennett cup. 1903's event was held in Ireland**

168th, passed every car ahead of him in impossible conditions of visibility, and *still* averaged 63.5 mph from Paris to Bordeaux. The heroes were around at a very early stage . . .

The only safe way to go motor racing, it seemed, was around a circuit, and although the first nation-against-nation Gordon Bennett Cup races were open-road events, the 1903 race was held on a road circuit in Ireland. It was the first British motor race of all time, and *The Autocar* devoted 22 pages of its 6 July issue to reporting the great event:

"We are extremely glad to be able to record that it has been carried through entirely without accident, except to one of the competitors and his mechanician . . ."

But it was not all good news for the British.

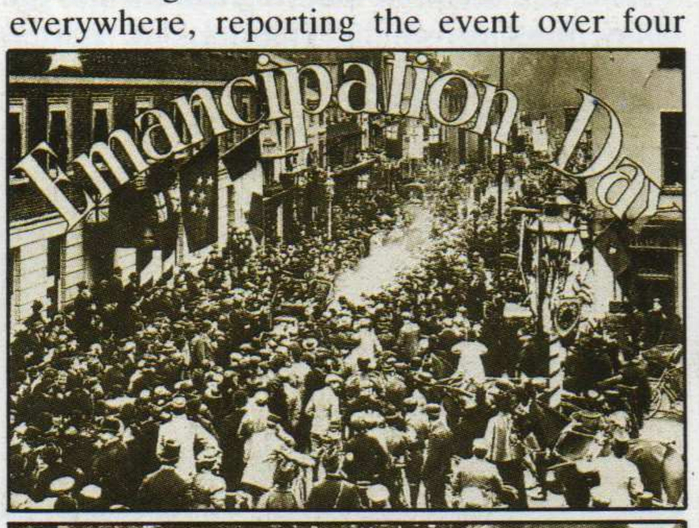
THE DAWN OF MOTORING: 1895-1905

Although S.F. Edge's Napier had won the 1902 race, the first British 'Gordon Bennett' was won by Jenatzy's 60hp Mercedes, at a stirring 52mph average in an event lasting for 10 hr 15min.

Traditionally, the Gordon Bennett race was held in the following year in the country of the previous victor, which meant that it departed to Germany and never returned to the UK. Since we had no permanent race circuit until 1907, when Brooklands opened up, we only had the new RAC Tourist Trophy.

In the meantime we had reliability trials, and — from 1905 — the Brighton Speed Trials and the Shelsley Walsh Hillclimb. There was no doubt at all, though, that all British road events for production cars were founded on the scene-setting Thousand Miles Trial of April/May 1900, which started and finished in London and took in Bristol, Manchester, Edinburgh, Leeds, and several special tests and speed trials along the way.

Once again *The Autocar* seemed to be everywhere, reporting the event over four successive weeks, and summarising that "We who have followed it from day to day can look back calmly upon the incidents thereof and form our own conclusions about the performances of the cars. It must be admitted that the event has been a decided success . . ."



■ Top: celebrating the Emanicipation Run of 1896. Above: Gordon Bennett winning Mercedes Sixty

The fascination of all this activity was that it was still mainly carried out by gentlemen, often as an alternative to other such upper-class sports as ballooning or horse racing. The day of the professional racing driver, and the professional team, was still some way away.

The cars themselves, however, were already becoming more purposeful and more efficient, the standard-bearer for this type of car being the original 35hp Mercedes of 1901, which had appeared just in time for the Nice Speed Week of that year and swept the board. Once the sponsors of the Mercedes, Daimler of Germany, got their teeth into motor sport, the entire scene would change.

MAJOR HAPPENINGS FROM THE DECADE

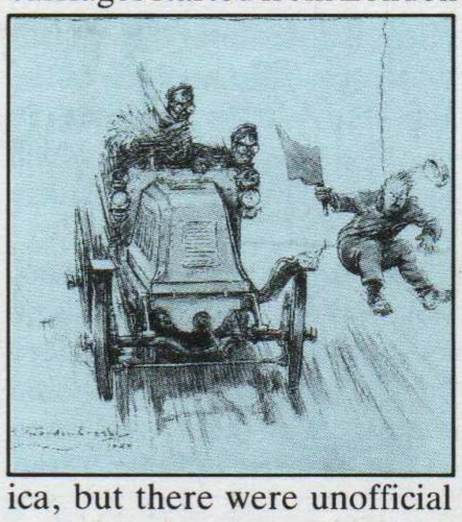
EMANCIPATION DAY 1896

"Today, November 14, 1896, is a red-letter day, not only in the history of automobilism, but in that of England itself," proclaimed *The Autocar*. "It marks the throwing open of the highways and byeways of our beautiful country to those who elect to travel thereupon in carriages propelled by motors, instead of in horsedrawn vehicles or upon bicycles."

The occasion was the replacement by the 1896 Locomotives on Highways Act of the restrictive Acts of 1861 and 1878, which had stifled automotive development in Britain by compelling all self-propelled vehicles to be preceded by a pedestrian — the celebrated "Red Flag Man" — and to be controlled by a two-man crew.

Now the speed limit was raised to 14mph (though local by-laws usually moderated this to 12mph), and the manning requirements annulled. To celebrate that "red-letter day", the magazine was printed in red ink — which rendered it almost unreadable to "the 35,000 readers who saw *The Autocar* for the first time", a remarkable indication of the public interest shown in Emancipation Day.

To celebrate the passing of the 1896 Act, a run was organised from London to Brighton that historic November 14; 35 horseless carriages started from London's Northumberland Avenue after the Earl of Winchilsea had ceremonially torn a red flag to shreds.



Cars had come from France, Germany and even America, but there were unofficial entries too; 20 years ago I met the last survivor of the 1896 run, Conrad Volk, who as a teenager had ridden part of the way on his father's electric carriage.

THE 1000 MILES TRIAL 1900

On April 23, 1900, "the first great automobile tour ever made in England was under weigh"; organised by the Automobile Club of Great Britain & Ireland (later the RAC), the 1000 Miles Trial was run over a 1080-mile route linking most of the major towns and cities of England and Scotland.

Its aim was to "advance the automobile movement in the United Kingdom" by demonstrating the horseless carriage in places where it has never been seen; of 83 vehicles entered, 65 actually started and, in the words of the official report of the event, "with the exception of a few vehicles, most of which ought never to have started, all covered the whole or greater part of the trial."

The Autocar's Harry J. Swindley was aboard a 7hp Peugeot as the competitors drove out of London: "Big Daimlers came hard on the wheels of panting voiturettes, a throbbing quad separated a public service vehicle from a 12hp Panhard. Eurekas, Decauvilles and similar small fry went scuttling by . . ."

En route the cars were exhibited in aid of the Transvaal War Fund; despite appalling weather, incidents were few but occasionally spectacular. One man driving a De Dion braked and jumped up to pursue an urchin who had flung his cap in front of the vehicle, overbalanced, fell out, and ran himself over, while a four-passenger Lanchester was withdrawn when its body split in two. An Orient Express hit a cow and ended in a ditch; Montague Grahame-White's Daimler broke its steering, so that the dapper Monty had to stand on the step and steer the car with his foot on the hub of the off-side front wheel. He covered 54 miles in this manner, until the car could be repaired.

The Trial, said *The Autocar* was "an undertaking great and unprecedented in this country, which by its success from start to finish has accomplished marvels in forwarding the interests of automobilism in this country".

THE MOTOR CAR ACT 1903

Under the 1903 Motor Car Act, which came into force on January 1, 1904, the speed limit was raised to a heady 20mph. In return, cars had to be registered and carry number plates, a move which led motorists to complain of being numbered like criminals (though Earl Russell queued all night to secure the registration "A1" for his Napier).

The police enforced the 20mph limit with alacrity, trapping motorists from concealment behind trees and hedges with stopwatches of dubious accuracy. Indeed, Sergeant Jarrett of Chertsey was promoted to Inspector within the year because of the number of "speeding" motorists he hauled before local magistrates.

The Autocar published a remarkable local paper billboard: "CONSTABLE UP A TREE — REMARKABLE EVIDENCE IN ARUNDEL MOTOR CASE".

It was to combat the "hedgehogs" that *The Autocar* published a map of known speed traps every week, and the Automobile Association was founded, its cycle scouts surreptitiously warning members of police activity ahead.

EDWARDIAN MOTOR CAR

Motoring was still for the wealthy, though mass production was coming

"That most elaborate and costly form of luxury, the high-powered, sumptuously fitted motor-car, which as a means of travel has in the few years of its life eclipsed the railway train in speed, comfort and convenience" achieved a surprising following in the Edwardian era, particularly considering that such cars could cost £1500 as a bare chassis, plus virtually as much to body and equip for the road.

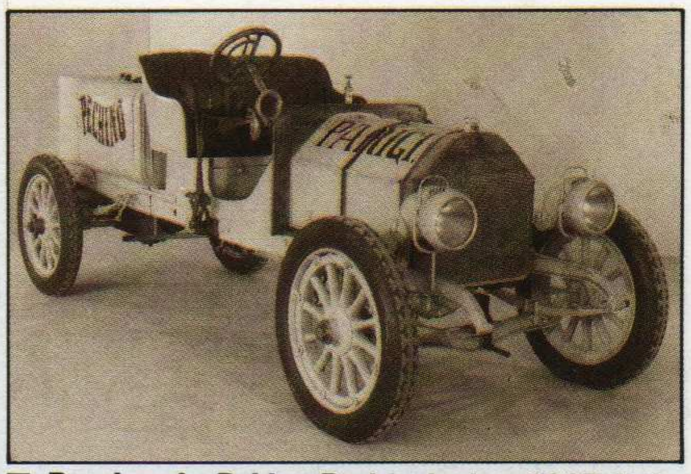
But in that second decade of *The Autocar*, the automobile engineers had passed the experimental stage, and were now increasingly seeking refinement: though the Mercedes had set the pace in the first few years of the century, by 1906 there were many contenders for supremacy. Britain had makes such as Daimler, Rolls-Royce and Napier; France had the De Dietrich, Berliet, CGV, and the Delaunay-Belleville, product of a famous firm of marine engineers and the favourite car of the Czar of Russia. From Italy came such marques as the Fiat and the Itala, both with an enviable record of sporting success; even Spain, whose record of car production was somewhat sparse, moved into the front rank in one step with the Hispano Suiza, built in Barcelona to the design of an expatriate Swiss engineer, Marc Birkigkt. Describing "a promising car from Spain," *The Autocar* commented: "This vehicle appealed to us as being one of the cleanest designed that it has been our lot to see for a long while."

Certainly, international design standards had converged to the point where — apart from cars like the brilliantly unorthodox Lanchester — most countries were producing cars built on very similar lines. The reason, said *The Autocar* in 1907, was the number of French engineers, draughtsmen and mechanics who had been induced to work in foreign countries: "A new trend was given to the Benz business by a French engineer, who redesigned the whole car, much to the disgust of Benz himself . . . The Italian industry owes its birth to the wholesale importation of French mechanics . . . Until quite recently most of the automobile engineers in Italy were French. Some of the makers in the United States are now looking to France for the brains and skill with which to build their cars."

Chief among these was the E.R.Thomas Company, of Buffalo, NY, who got into trouble with the immigration authorities for bringing 13 workmen, a foreman and a draughtsman into America to develop the new Thomas Flyer car, which was closely inspired by the Brasier, for whose makers the 15 illegal immigrants had worked. But that French know-how enabled a Thomas Flyer to win the world's longest motor race, the 25,000 mile New York-Paris event of 1908.

Metallurgy was playing its part in car development, too; in 1906 *The Autocar* commented: "The all-round improvement in the production of steels has been very marked during the past five years or so, but in no particular branch has improvement been so marked as in material for automobile engineering." And, as part of that overall improvement, the discovery that steel alloyed with vanadium possessed remarkable strength proved of crucial importance in the development of the mass-produced car.

One of the main sources of supply were the Creusot foundries in France; and it was a piece of vanadium steel picked up from the wreckage of a French racing car at an American meeting that inspired Henry Ford and his metallurgist assistant, Childe Harold Wills, to use vanadium steel to build their Model T light, yet strong.

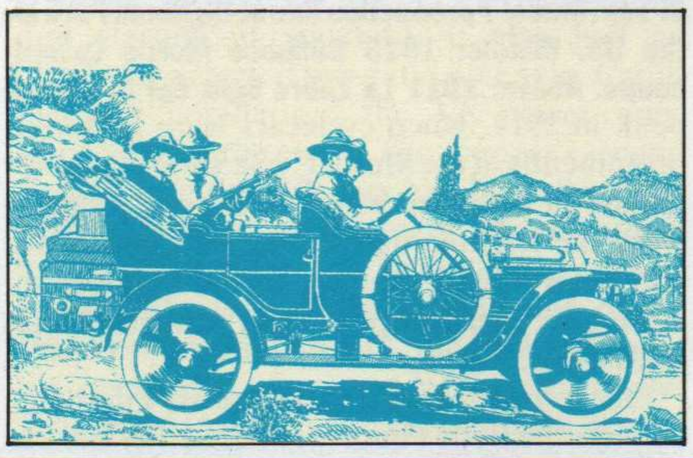


■ **Borghese's Peking-Paris winning 1907 Itala**

And while in the pre-1905 era, car manufacturers had largely been satisfied by the mere fact that their engines ran, in the Edwardian period great strides in engine design were made, and the first scientific analyses of the combustion programme were carried out. This began a search for efficiency which saw the first twin overhead camshaft engines developed for racing by Peugeot, the first aluminium pistons adopted by by Aquila Italiana, and the first centrifugal superchargers adopted by Chadwick in America.

It was racing which forced the pace and increased the volumetric efficiency of the internal combustion engine. Of course, the advocates of the doctrine that "there's no substitute for inches" were still active — road-going cars of 10-litres swept volume were common among high-priced marques, and 15-litre cars not unknown — but such engineers were confounded by the rise of fast

■ **'Noiseless' 15hp Napier of 1910 (below). Right: Prince Henry Vauxhall of 1911, a true sports car**

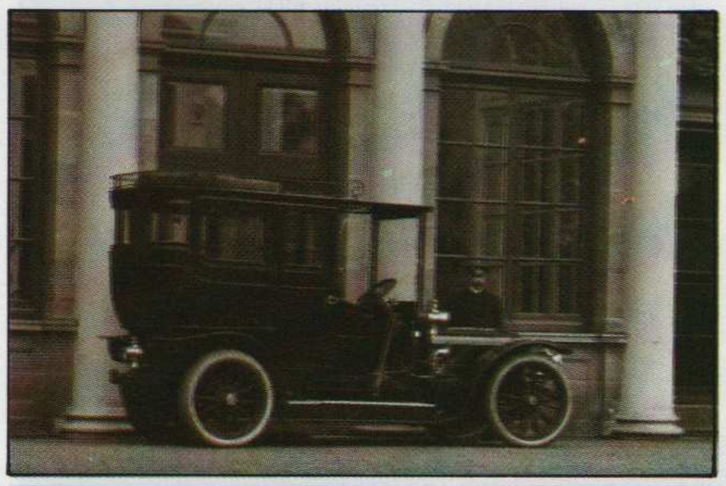


■ **Percy Lambert's record breaking "all British" Talbot was the first car to cover 100 miles in the hour**

voiturette racers, like the Stefanini-designed Isotta Fraschini which greatly influenced the work of Ettore Bugatti. Because their engines turned faster, these small racers were just about as rapid as the monsters, and much less cumbersome.

And out of the voiturette racers and the touring car trials like the Herkomer Trophy and the Prince Henry Trophy sprang the first true sports cars.

Other sciences were helping shape the



■ **Motoring in the grand manner. Top: 60HP Austin six-cylinder of 1908. Above: Fiat 28/40 heads up a Java Motor Club gathering back in 1909**

Edwardian motorcar, like the growing realisation of the importance of aerodynamics in car design. S.F. Edge carried out a series of experiments at Brooklands into the relationship between frontal area and performance, while in 1907 *The Autocar* published an article illustrating the air currents affecting a moving car. It must be added, though, that the text referred to the effect of airflow on mud splashing rather than any more profound application of aerodynamics.

Nevertheless, although formal closed coachwork remained sufficiently tall for occupants wearing the elaborate headgear demanded by Edwardian society, car bodywork in general became lower and more streamlined during the decade, the development of the torpedo body leading the way for the vintage cars of the 1920s.

There was a transitional period of high-scuttled ineptitude around 1910, as cars developed from the open coachwork that rose in tiers and had no front doors; then the coachbuilding industry reached its apogee with the supreme elegance of cars like the London-Edinburgh Rolls-Royce, where the upper line of the body flowed smoothly back from the bonnet. Moreover, the level of craftsmanship evident in bodywork and trim would never again be matched, for the vast pool of cheap, highly-skilled labour would be drained by the Great War.

THE EVOLVING INDUSTRY

'New Motoring' saw the birth of the cheap cyclecar

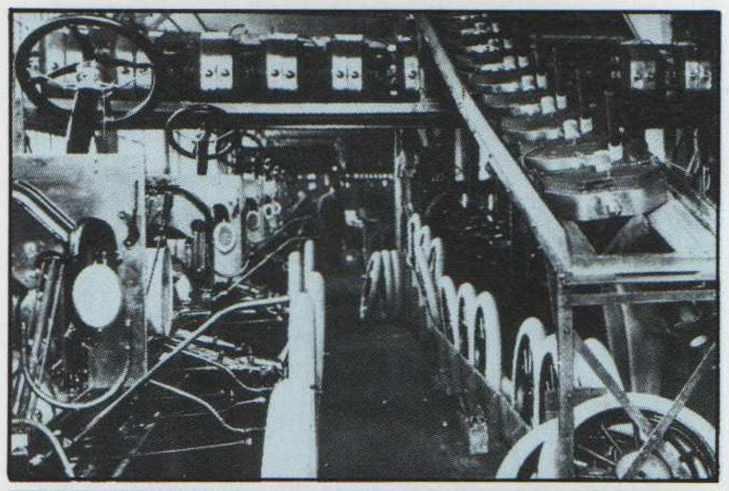
If the Edwardian period was noteworthy for its many-litred luxury cars, it also saw the birth of the truly popular car. The Model T Ford was a child of *The Autocar*'s second decade: so, too, were the cyclecars which represented a dead-end attempt to provide ultra-cheap motoring combined with an acceptable — even exciting — performance.

This "New Motoring" had its origins around 1909-10, when impecunious enthusiasts built themselves lightweight runabouts powered by motorcycle engines, often salvaged from an accident, and were asked for replicas by friends, thus becoming motor manufacturers . . .

That was the origin of two of the most famous cyclecars, the tandem-seated Bedelia from Paris and the Morgan from Malvern in Worcestershire. The latter is the only cyclecar to leave a lasting progeny, for today's Morgan sports cars still have the same type of sliding-pillar independent front suspension devised by motor agent H.F.S.Morgan back in 1909.

Contemporary with these two marques was the GN, built by two young engineers called Ron Godfrey and Archie Frazer-Nash. The GN survived into the early 1920s, and was the origin of the Frazer-Nash, which retained the cyclecar's ingenious chain-drive transmssion, while Godfrey was one of the triumvirate who gave their initials to the HRG sports car of the 1930s.

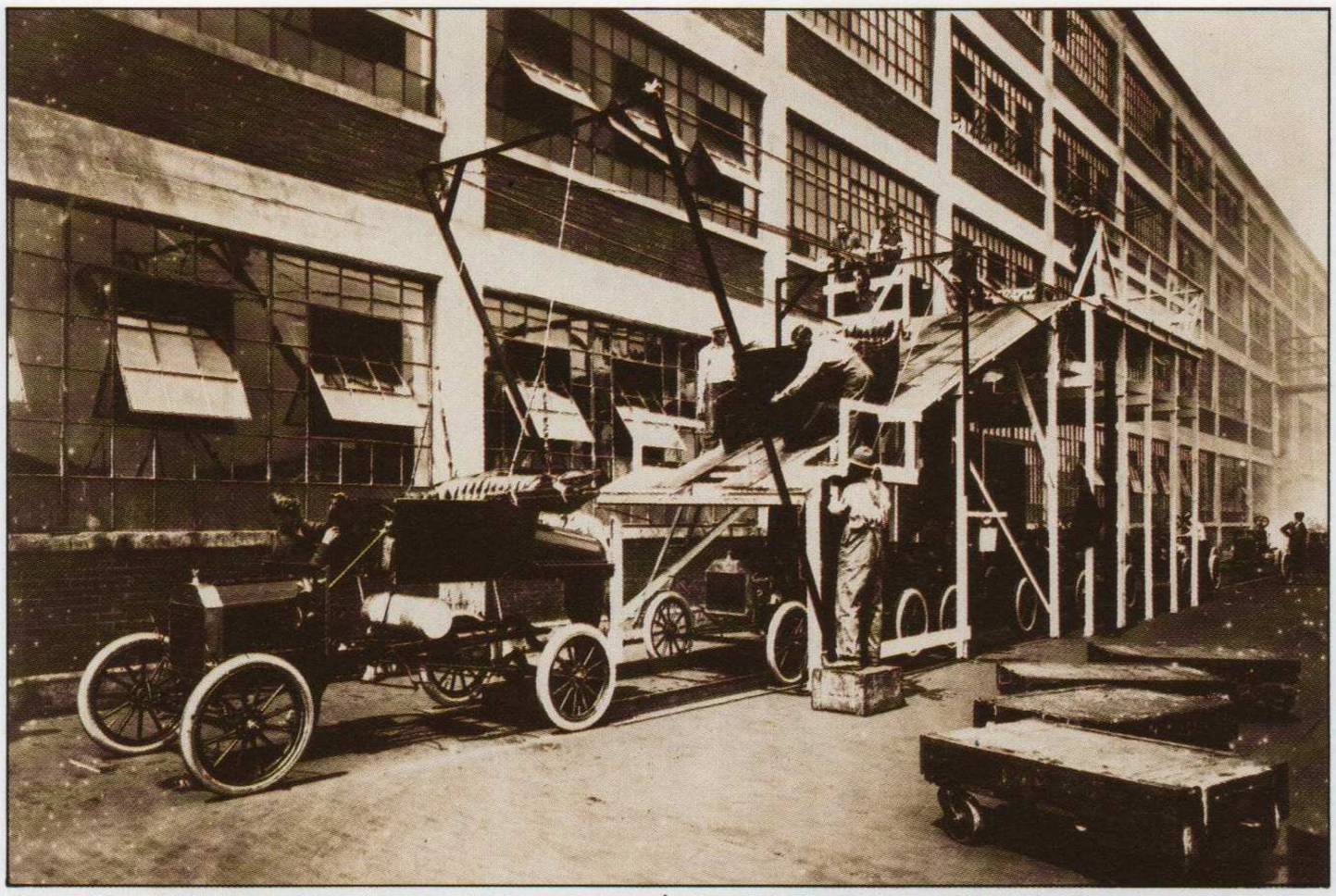
None of these pioneer cyclecar builders foresaw the immense popularity of these engagingly crude vehicles, which reached its



■ **Top: Model T production line at Highland Park in the US. Middle: 1915 Bullnose Morris Oxford coupé. Above: 1911 Le Zebré light car in action**

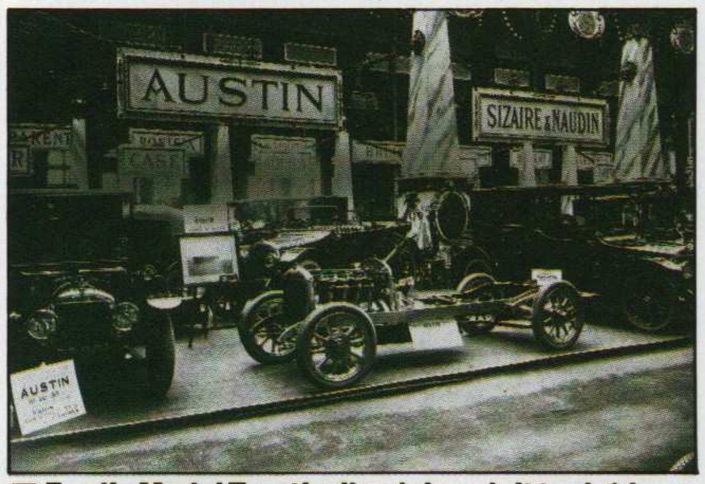
peak in 1912, when cyclecars were featured prominently at the Motor Cycle Show. Over 40 makes of cyclecar were exhibited, ranging from the frighteningly crude with belt drive and centre-pivot steering to the "big car in miniature", with purpose-built power unit and shaft drive.

One step up from the cyclecars were the light cars like the Bebe Peugeot, designed by Ettore



Bugatti, which had a tiny four-cylinder engine of 856cc and a curious two-speed transmission which had concentric propellor shafts, each with its own crown wheel and pinion.

Then there were more substantial machines like Bugatti's own Type 13, the little Calthorpe Minor, the Standard, Hillman and Singer. The latter was a car of such potential that a garage owner named Lionel Morris bought one as a foil to his Rolls-Royce Silver Ghost, and tuned it to such effect that he won a number of hillclimbs with it, notably at Aston Clinton in Buckinghamshire.



■ **Ford's Model T on the line (above). It took 1 hour 33 mins to assemble each car. Austin's 1913 Paris show stand (below) with a 30hp chassis to the fore**

The success of this car inspired Martin to build his own car, starting with a 1913 prototype consisting of an Isotta-Fraschini chassis with a Coventry-Simplex engine: he christened it "Aston Martin".

This decade also saw the introduction of the first practical self starters, notably on the 1911 Cadillac, the first car to offer electric lighting and starting as standard; it also had an elctrically-selected two-ratio rear axle. Cadillac also popularised the V8 power unit, introduced at the end of *The Autocar*'s second decade (the first V8 cars had been the Paris Madrid racers of Clement Ader, steam aeroplane builder and telephone pioneer), while 1915 also saw the introduction of the first-ever production V12, the Packard Twin-Six, inspired by a Sunbeam V12 racer, *Toddles V*, shipped to America at the outbreak of war.

THE LONG ARM OF THE LAW

How the motorist became the most hounded member of society

The Autocar's second decade opened with a legal *cause célèbre*: on 23 September 1905 a motorist named Herbert Johnson — one of the 300 members of the newly-formed Automobile Association — was stopped by a police constable on the Fairmile near Cobham in Surrey, and told that he had been exceeding the 20mph limit. A few seconds later, an AA scout named William Jones rode up and said that he had been cycling behind Johnson all the way, and that it was impossible that he could have pedalled uphill at over 20mph.

But the police prosecuted Johnson all the same — and then arrested Jones, and put him in Brixton Jail charged with perjury.

At the Assizes, Mr Justice Grantham, a notable anti-motorist, said that the police were only doing their duty, and recommended that a verdict of guilty be brought in. To their credit, the jury ignored the recommendation, and found "the youth Jones" not guilty.

It was a significant victory for the AA, which had staked its all on the success in this case; the AA enrolled its 500th member in April 1906, the 1000th only three months later and the 5000th at the 1906 Motor Show at Olympia.

The methods by which the AA warned of police traps were simple; at first the patrols just reversed their yellow badge so that it showed red. When that was deemed to be too overt a warning of police presence, AA members were merely warned: "If a scout fails to salute, stop and ask the reason why.

At this period, there were few legal obligations on the owner of a motor car — there was, for instance, no compulsory third party insurance or driving test — though he had, since the 1903 Motor Car Act, to be over 17 and in possession of a driving licence, issued for 12 months at a cost of five shillings. Up to 1 January 1910, cars were subject merely to the road, or wheel, tax of £2 2s annually, plus an initial registration fee of £1; additionally, a licence fee had to be paid on any armorial bearings painted on the car, plus 15s licence for the chauffeur, if one was employed.

Then, for 1910, cars became subject to taxation by horsepower, based on the already obsolescent RAC formula, which related horsepower developed to piston area, without taking swept volume into consideration. Initially, cars were divided into broad bands according to rated horsepower, the largest cars paying a swingeing £42 annually — equivalent to several hundred pounds in today's money — the smallest £2 2s.

However, cars used merely for taking servants to divine worship on Sundays or voters to the poll were exempt from tax . . .

■ **If the AA patrol didn't salute, you had to ask why**

CAR OF THE DECADE

ROLLS-ROYCE SILVER GHOST

'The best car in the world'

■ **The Silver Ghost during its 2000 mile trial (above). AX201 in 1907 with the Rolls-Royce team on its way to the Scottish Reliability Trial (below)**

It was late in 1906 that the youthful Rolls-Royce company launched its 40/50hp six-cylinder as a successor to the 30hp six introduced in 1905. As primitive sixes went, the 30hp Rolls-Royce wasn't at all a bad car — one of them defeated a four-cylinder Martini in a reliability trial known as the "Battle of the Cylinders", and drove the author J.E. Vincent to hyperbole: "The motion, smooth, swift and swifter still, even as the flight of the albatross that stirreth not his wings, and absolutely free from vibration, was divine . . ."

But the 30hp was prone to that hereditary taint of so many early sixes, periodic vibration which could snap the crankshaft, and the model was dropped after only 37 cars had been built. In its stead Henry Royce produced his magnum opus, the splendid 40/50hp, powered by a pair-cast six which demonstrated that Royce was not afraid to seem retrogressive in his search for perfection.

Where the 30hp had used an F-head engine, with overhead inlet valves, the 40/50 was a sidevalve of particularly massive construction. And, where the 30hp had been conceived as three twin-cylinder engines in line, the 40/50 was laid out as two three-cylinder engines mounted back to back, so that the centre pair of pistons rose and fell together.

This raised the critical speed of the crankshaft outside the normal operating speed; at the same time, crankpins and journals were increased in diameter, a full-pressure lubrication system was adopted, and extra-long main bearings contributed further to the smooth running of the engine.

This refined power unit was mounted in an exceptionally well-made chassis where every bolt hole was checked for squareness and the rear axle casing "sewn together with a ring of tiny bolts" for good stress distribution.

The result was a car which brought new standards of smooth running to the luxury class. In April 1907, *The Autocar*'s representative rode in the first 40/50 to be seen on the streets of London. "The running of this car at slow speeds on the direct third is the smoothest thing we have ever experienced, while for silence the motor beneath the bonnet might be a silent sewing machine."

Though it wasn't mentioned at the time, this was the car which was to confer immortality on the model, chassis number 60551, the 13th 40/50 to leave the Manchester factory of Rolls-Royce. It was christened "The Silver Ghost" from its aluminium-painted Roi-des-Belges body, its silver-plated brightwork and "its extraordinary silence and stealthiness".

Indeed, when *The Autocar*'s correspondent was taken on a test run from London to Bexhill-on-Sea and back, he unwittingly fathered a cliche by writing: "At whatever speed this car is being driven on its direct third speed there is *no* engine so far as sensation goes, nor are one's auditory nerves troubled driving or standing by a fuller sound than emanates from an eight-day clock."

Like all 40/50 Rolls-Royce built until 1909, "The Silver Ghost" had a four-speed gearbox

in which top was an overdrive ratio, known misleadingly as "the sprinting gear", intended to give refined high-speed cruising; but it was a concept too far ahead of its time, for the average motorist of Edwardian days was obsessed with top gear flexibility.

Even the godfather of the Silver Ghost, Claude Johnson of Rolls-Royce, was prepared to mishandle the gearbox in the interests of publicity; on the way back from Bexhill, he climbed Reigate Hill on third gear, slipping the clutch slightly to crest the hill without changing down. This was a prelude to an RAC-observed 2000-mile trial ending in a journey from Glasgow to Bexhill using only direct third — on which the Silver Ghost could accelerate from 3.4mph to 53mph without hesitation — and overdrive top.

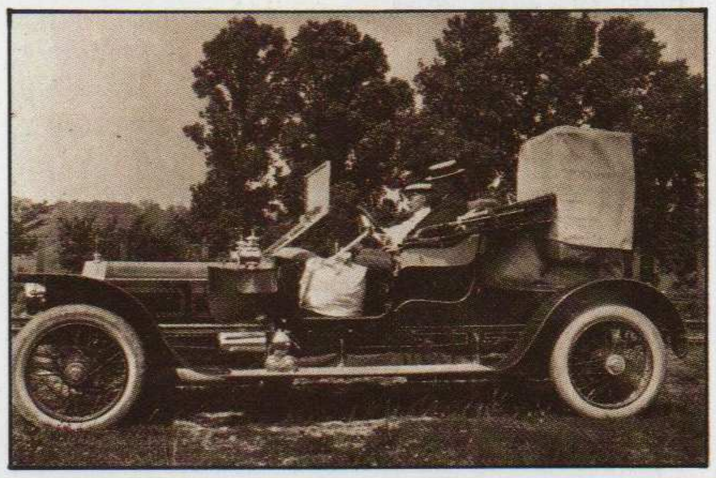
That 2000-mile trial, made in company with a 30hp White steam car, was only the prelude to a far more impressive demonstration of the fact that the Rolls-Royce had become "the best touring car in the world", a phrase coined by the company's American agent in 1907. This was an observed 15,000 miles test, starting with participation in the Scottish Reliability Trials, during which the car made only one involuntary stop, when the petrol tap was accidentally closed after 629 miles.

Thereafter, the Silver Ghost went on to take a gold medal in the Scottish Trials and to complete the remaining 14,371 miles of the observed run without involuntary stops, except for that bugbear of the Edwardian high-powered car, tyre trouble. During the run, 31 tyres were replaced, though several came from a faulty batch.

Today, that original Silver Ghost — for the name was subsequently adopted as the generic title for all 40/50 Rolls-Royces — is preserved by its makers, having in the interim covered over 500,000 miles in the hands of its only private owner, Dan Hanbury.

Of course, the intervening 78 years have brought vast strides in the ability to conceal mechanical clamour, but when you ride in the Silver Ghost today, you are still aware of the immense refinement that can only be achieved by painstaking assembly. And realise that Frederick Royce was right in designing an engine of low, but adequate output, that would continue to give impeccable service long after smaller, more highly-stressed power units had been consigned to the scrapheap.

■ The original Silver Ghost – chassis 60551 – as it is today (above). The Hon CS Rolls (below) being chauffeured in a Silver Ghost goes off ballooning



OPEN ROAD MOTORING

Dust, punctures, breakdowns – it was hard being a motorist

Even with so few cars on the roads, it wasn't all bliss and solitude. Not only were there tens of thousands of horse-drawn vehicles in use, many of them still sublimely assuming that they had precedence; but also the road surfaces themselves were often not in a very good state.

Worse than this, however was the tyrannical way that the police tried to enforce the overall 20mph speed limit, which had applied to all British roads from the end of 1903. Many motorists did not even consider this reasonable at the time it became law, and by 1914 it was often being ignored.

There was also the problem of repairing frequent punctures, dealing with one's own mechanical breakdowns (or, more likely, setting the chauffeur to the task), or finding fuel supplies. Petrol stations with pumps and underground storage would not arrive until the 1920s. In the early days one bought the stuff, in metal two-gallon cans, from the local chemist; then, still in cans, from a garage. Many cars were sold with a can already strapped into place on the running boards.

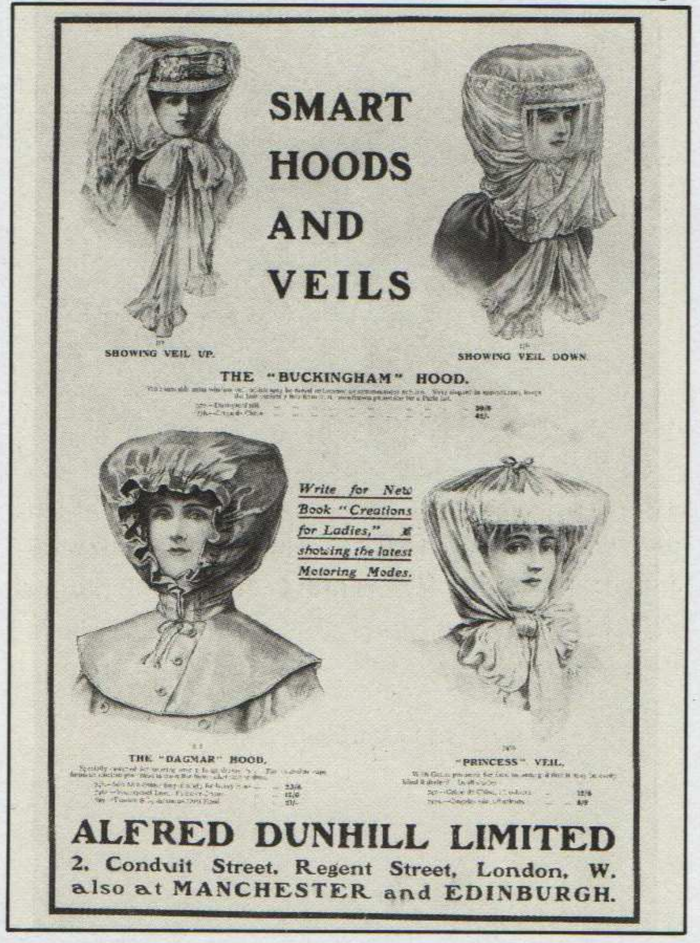
It took so long, somehow, to go motoring, even in an Edwardian car. Most owners by definition were wealthy men, who employed at least one chauffeur/handyman to look after the car. The car would have to be rigorously serviced by him every week, the brass or nickel would need regular reburnishing, and — because most cars were still open, and the roads very dusty — one had to dress up in heavy coats, gauntlets and a hat. Ladies invariably wore veils.

Cars needed to go through a complex 'start-up' procedure in the mornings (it helped to pour fresh fuel into the tanks, through a chamois leather strainer), the cognoscenti then checked *The Autocar* for the latest list of speed-trap hazards, made sure that their Automobile Association badge was clearly displayed, and made sure that they stopped to enquire why a patrolman had not saluted them. This was the AA's way of warning of nearby speed traps, without actually breaking the law of the land . . .

There was continuous conflict between motorists and the judiciary, which is why the AA had originally been set up, as a mutual protection agency. The judiciary was dominated by magistrates having a 'county' or 'county sport' background, which meant that the majority enjoyed horses, and objected to motor cars and their so-called foul habits.

Speed-trapping usually meant the use of two policemen, often hiding in the hedges, waving handkerchiefs and clutching hand-held stop-watches. Assertions of high calculated speeds were usually believed by the bench, and counter-evidence was often swept aside. Yet, as the late Michael Sedgwick, the eminent motoring historian, once pointed out: "When we contemplate our Edwardian motorist, we must also remember the compensations. He did not know what a traffic jam was. There was no compulsory insurance, no driving test, and no Highway Code. The Treasury Rating road fund tax had yet to be invented. The highest annual tax levied in 1913 was 21 guineas, for which one could licence 15 litres of Opel . . ."

In other words, a resourceful, watchful (and well-to-do) motorist enjoyed peaceful and relatively solitary motoring conditions in the pre-Great War period. He was free of the need to travel by railway train (the dominant transport medium at the time) and was able to move far and wide, both for pleasure and business. The next great motoring surge forward, would follow in the 1920s.



■ The problems of being a pioneer motorist included dust, accidents and punctures. Driver and passengers had to dress for the occasion, goggles (below) – stored and in use – were *de rigueur* for all chauffeurs

MOTOR SPORT: THE TITANS

It was, truly, the Golden Age of motoring racing

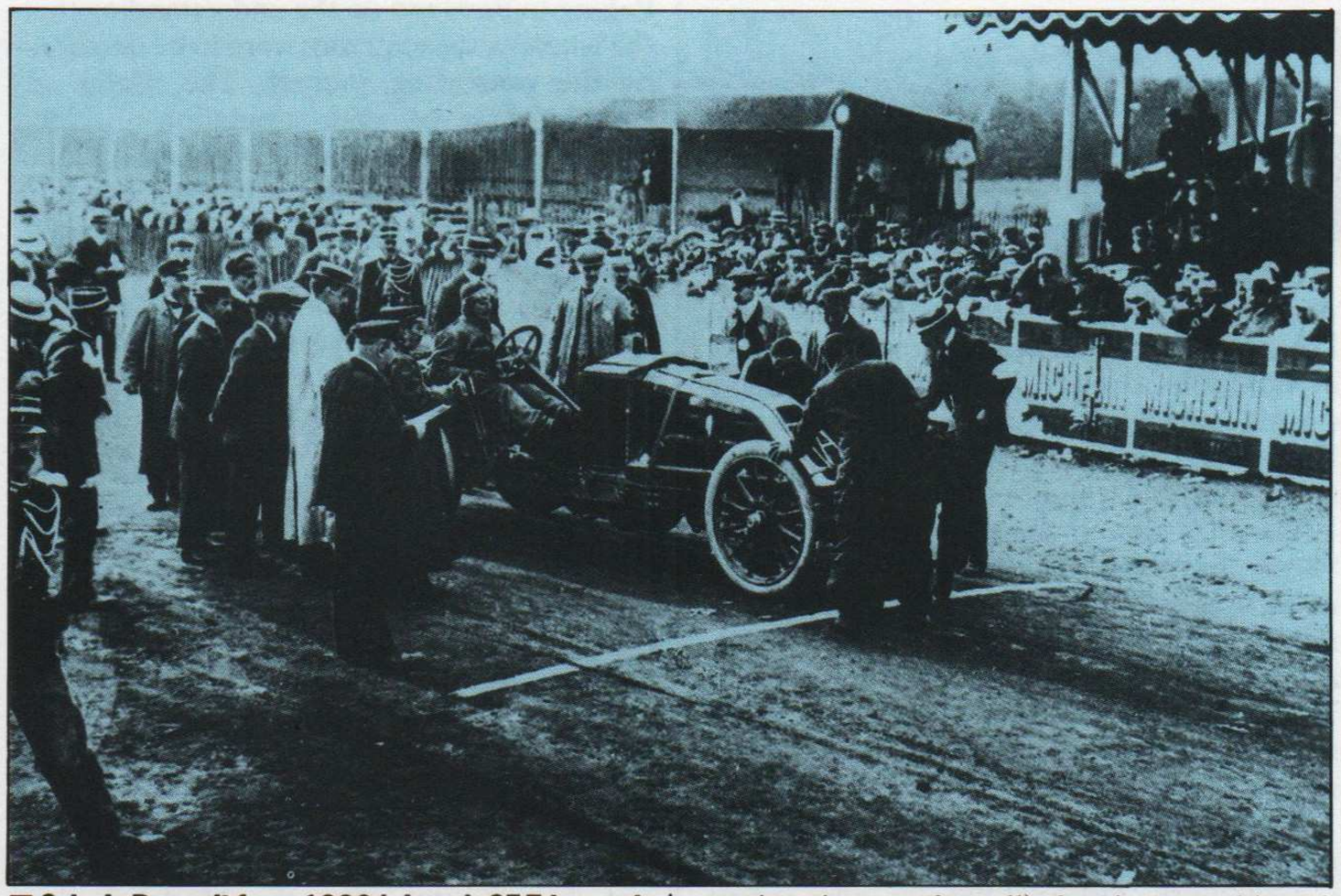
From 1906, when the very first Grand Prix was held in France, to June 1914, when Hornsted's monstrous Benz achieved 124.1 mph at Brooklands to set a new Land Speed Record, Edwardian cars grew rapidly — faster, heavier, and more complex. This was the first truly 'Golden Age' of motor sport, with many reputations being made, and others destroyed.

Wherever possible, *The Autocar* liked to have a reporter to watch a race, a long-distance

trial, or a record attempt. It was a constant source of chagrin, therefore, to find that so many international events were dominated by European, rather than British, marques. Only at Brooklands — the concrete bowl first opened in 1907 — where handicaps were arranged to provide very close finishes, were the British at all well-represented. Even then, imported cars tended to hog the limelight.

Most major events were established in this period: Grand Prix racing (at first confined to France), long-distance trials like the Herkomer Trophy and the Kaiserpreis, the Targa Florio (from 1906), and even the original Monte Carlo Rally of 1911.

Here at home there was the Tourist Trophy, held in the Isle of Man, or there was racing at Brooklands, but that was about the height of it all — a few speed trials, a hillclimb or two, but no other permanent circuits. Brooklands had been built by Hugh Locke-King in the grounds of his estate at Weybridge, and for a short time was dominated by horse racing ideals, not only because of the handicaps, but because of the



■ **Szisz's Renault from 1906 (above). SF Edge and his Napier (1908) at Brooklands (left). Lautenschlager's French GP-winning Mercedes (below)**

different colours worn by the drivers! Once S.F. Edge had set that remarkable 24-hour record run in 1908 (driving the night-time sections by following lines of flickering oil lamps at the base of the banking), it all became more serious.

The world's first Grand Prix, however, was held on a 65-mile road circuit near Le Mans in June 1906, with six laps to be covered on each of two consecutive days. Ferenc Szisz, driving a massive Renault, owed his victory to detachable wheel rims for quick changes — truly, the search for the 'unfair advantage' was already under way.

The early Grand Prix cars, of course, were real 'Titans' — that Renault, for instance, had a 12,970 cc engine — but as a sign of the times rules and regulations were soon brought in to curb the excesses. For 1908 there were maximum bore limits (but the winning Mercedes had a 12,831 cc engine). Incidentally, the first of many political storms led to Grand Prix racing being suspended between 1909 and 1911, and it was not until 1912 that it all started up again.

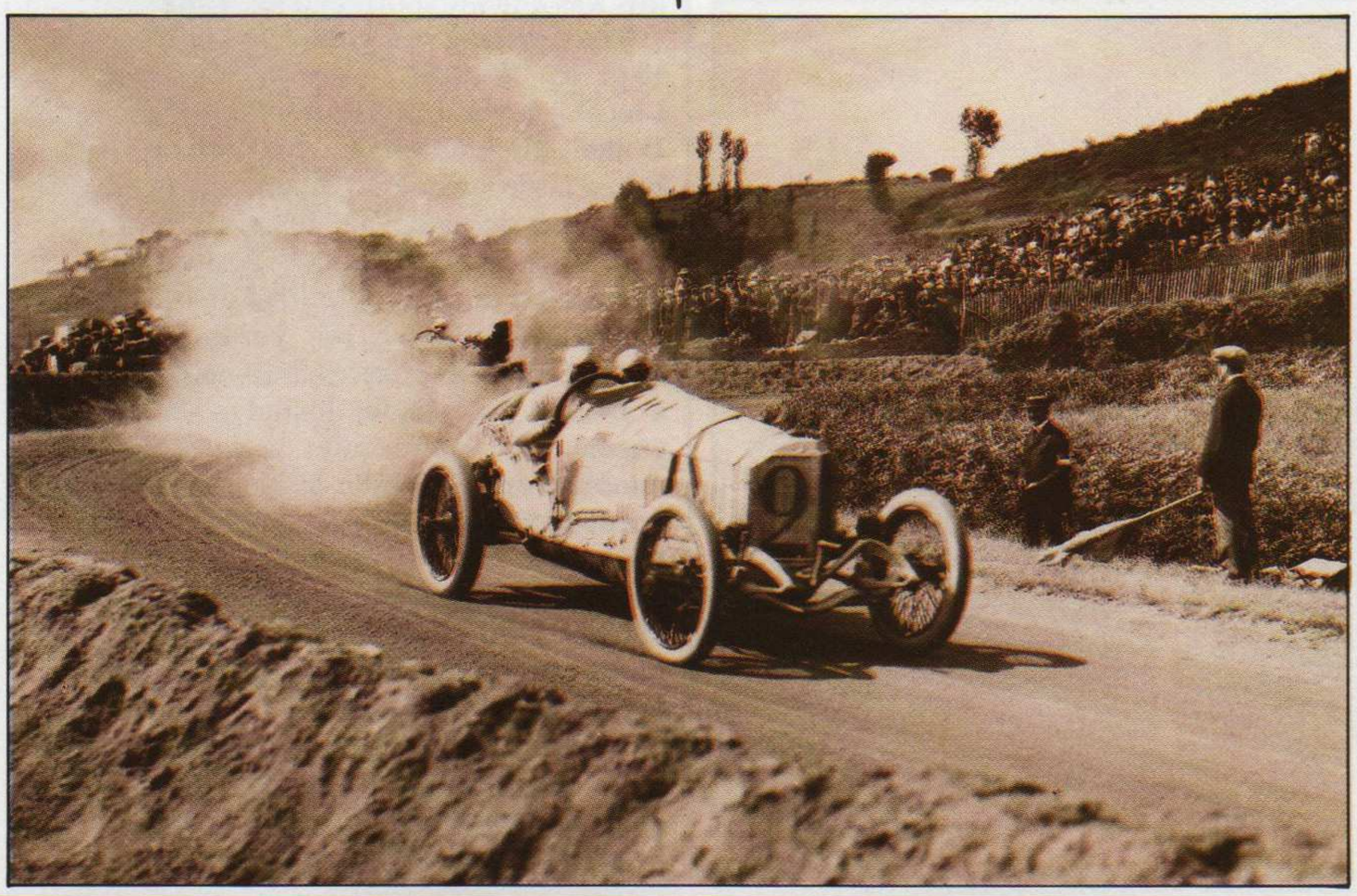
That year saw the arrival of twin-overhead-camshaft engines (from Peugeot) and much greater efficiency, but the *really* efficient racing car era was ushered in by Daimler-Benz. Their 1914 GP win at Lyons was hugely unpopular (war between France and Germany was imminent, after all), but it was achieved with a modern-looking 4½-litre engine. *The Autocar*'s 38-page report (yes, that's right, 38-pages) told every aspect of the race, and of the winning cars we wrote that "Most striking in appearance were the white painted Mercedes . . . One felt instinctively that these Mercedes would have to be reckoned with."

But how speeds had changed, and power outputs increased! Renault had needed 13 litres and a fast, flat lap to achieve 63 mph, but on a much more twisty and mountainous course Lautenschlager's 4½-litre Mercedes averaged 65.35 mph.

Our own big race of the Edwardian period, of course, was the Tourist Trophy, held in the Isle of Man from 1905 to 1914. The first winner was J.S. Napier's Arrol-Johnston, which averaged 33.9 mph, narrowly beating Percy Northey's Rolls-Royce. By 1914, when the already-famous motorcycle TT circuit was in use, the 600-mile race was won by K.Lee Guinness (Sunbeam) at 56.44 mph, this taking him 10 hr 38 min to complete. The interesting name of W.O. Bentley (driving a DFP) took sixth place. We thought this was all "a wonderful performance considering the tortuous and mountainous nature of the course."

Then, of course, there were the great trials. To combine speed with great distance and pure endurance it was necessary to go to Europe (our own 20 mph limit made serious trialling impossible until the 1930s). Fed up with seeing Austro-Daimler, Benz and other big cars winning the major events, Rolls-Royce sent three special-built Alpine Eagles (plus James Radley's personal car) to the 1913 event, swept the board, then had the pleasure of seeing Radley repeating the trick in 1914.

It all made our long-distance events, like the 'Land's End' and the 'Exeter', look easy by comparison and it showed that a big sporting gulf was already building up between the British and the rest. In Europe the glory was in climbing mighty mountains without breakdowns, but in Britain it was also necessary to have the prettiest coachwork as well.



MAJOR HAPPENINGS FROM THE DECADE

PEKING-PARIS 1907

In February 1907 the Parisian newspaper *Le Matin* proposed an endurance trial from Peking to Paris, "this route being chosen on account of its severity." Only five cars actually started from Peking on June 10: an Itala, two De Dions, a Spyker and a Contal tricar, which soon fell by the wayside.

The first part of the route was appalling: "Soon after leaving Peking the road becomes a mere track, which winds through a wild mountain country up to all sorts of altitudes, and sometimes disappears altogether," wrote *The Autocar*. "The cars will have to cross ravines where there are no bridges, and climb mountain passes where there are no roads."

In fact, the first obstacle the competitors had to surmount was the Wai-wu-pu, or State Council of the Celestial Empire, who at first refused to issue passports for the cars to enter Mongolia. When, at last, the vital documents were grudgingly granted, it took an army of 150 coolies to manhandle the *chi-chos* ("fuel-chariots") out of Peking across the mountains, through the Great Wall and up to the Mongolian Plain.

Thereafter, the Itala, driven by Prince Scipio Borghese, led the other cars across Asia — a bridge collapsed under it, and it used the Trans-Siberian Railway as its road for many miles — and, having had a wooden wheel rebuilt by a Russian sledge-builder, arrived first in Paris, three weeks ahead of the others.

But the perils surmounted by the winning Itala were as nothing compared with the difficulties overcome by Godard, driver of the Dutch Spyker.

"Godard," said *The Autocar*, "induced Mr Spyker to place a car at his disposal for the Peking to Paris run on the understanding that the whole of the expenses were to be defrayed by the promoting journal. The *Matin*, of course, made no such stipulation . . . Not having a penny in his pocket, Godard sold the spare tyres and parts to enable him to reach Marseille. He there succeeded in getting credit from the shipping company to carry him and his car to China, and on arriving at Peking with absolutely nothing he is said to have borrowed money from a bank to be guaranteed by the prize he would receive on reaching Paris. As a matter of fact, there was no prize at all . . ."

THE MOVING PRODUCTION LINE 1913–1915

Henry Ford's vision of "a car for the great multitude" began to take shape early in 1910, just over a year after the Model T was introduced. In January production was shifted from the Picquette Avenue to the outskirts of Detroit, where a magnificent new factory, the biggest building under one roof in Michigan, had been erected at Highland Park.

Here Ford merged two well-established American technologies — the absolute standardisation of parts insisted on by the gun industry and the moving production conveyor of the Chicago slaughterhouses — to produce the world's first moving production line for motor cars.

By subdividing the assembly operation into finite operations carried out by individual operators as the moving line passed their workstations, Ford speeded up the time taken to assemble a car. With his first experiments in building cars on a moving line, Ford was able to reduce the time taken to turn out a Model T chassis from 12½ hours to 5 hours 50 minutes; as the system was adopted throughout the Highland Park factory, so the time it took to build a Model T fell, so that by the beginning of 1914 it only took 1 hour 33 minutes to assemble each Model T chassis.

The moving production line was the lever that Henry Ford needed to put the world on wheels; in the early 1920s Highland Park was building 2 million Model Ts a year, and half the cars in the world were Fords.

CABS THAT SAVED PARIS 1914

The way that motor transport was to change warfare was first demonstrated in September 1914, when Paris was threatened by the German army; the spearhead column was 16 miles from Notre Dame.

The French managed to halt the German advance on the River Marne; but to force the enemy to retreat, needed to encircle them. Twelve thousand reinforcements were in Paris, and needed to be transported secretly to the front to close the circle; but the railway could only cope with 6000 . . .

General Joseph-Simon Gallieni, newly-appointed Military Governor of Paris, commandeered 600 Paris taxis — most Renaults — to transport the men to the battlefront. Each cab made two trips, carrying five passengers. The surprise attack forced the Germans to retreat in confusion: the cab drivers were paid double the fare, plus a 27 per cent tip!

THE FIRST TANK 1915

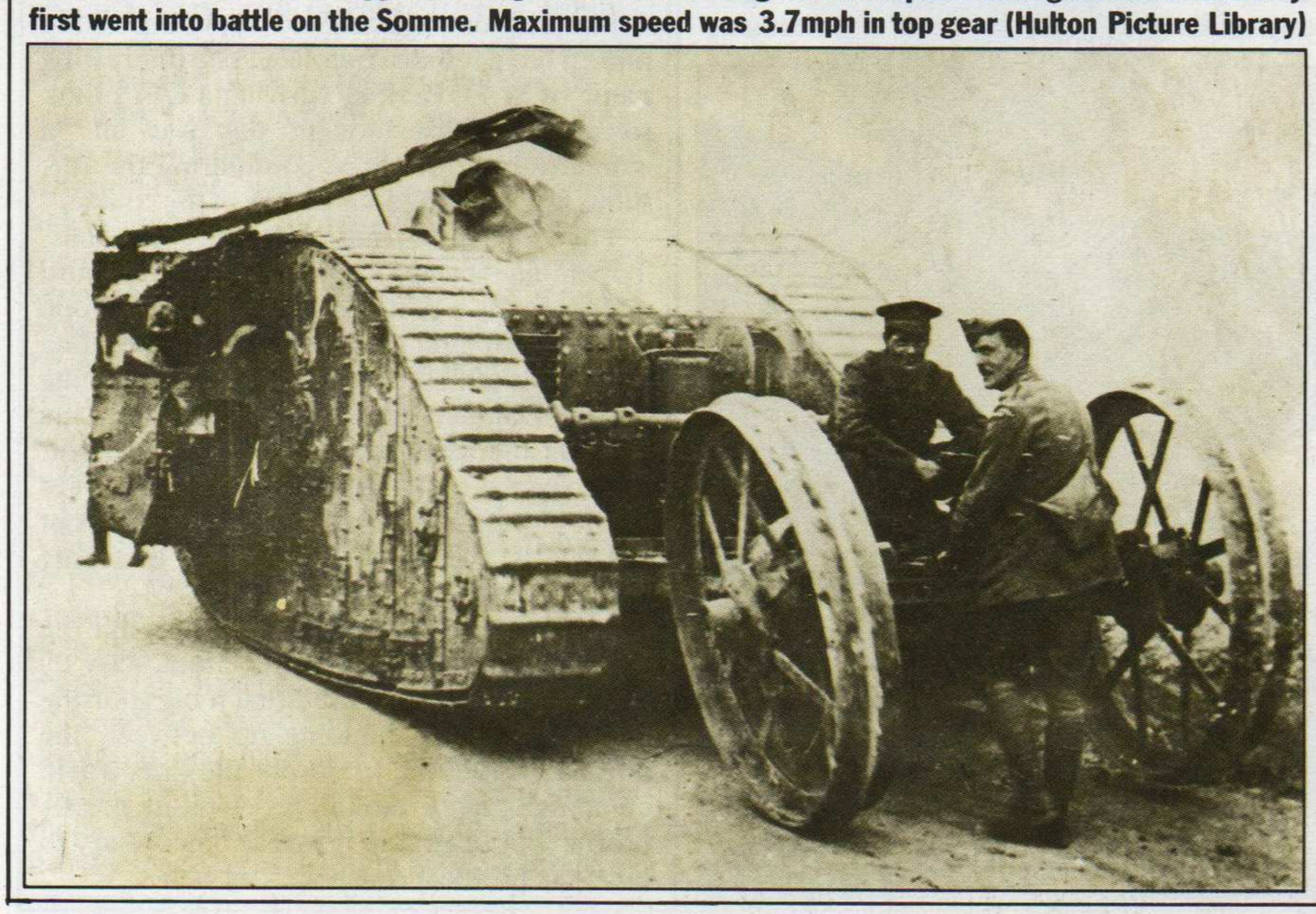
Working in great secrecy, the British motor industry developed a new war weapon, an armoured tracked vehicle codenamed the "Walter Carrier for Mesopotamia"; naturally, this was quickly shortened to "Tank".

The first tank was completed in December 1915 by William Foster & Company, of Lincoln: it was irreverently known as "Little Willie", after its designer, Sir William Tritton. It had a top speed of 3.5mph, and needed an outrigged "steering tail" to help it to turn.

A steering tail was also used on the first production tanks, the Mark I of 1916, which had tracks running the perimeters of its lozenge-shaped sponsons and was powered by a 105bhp six-cylinder Daimler sleeve-valve engine. The power unit was started by a double-cranked handle inside the hull which needed four men to turn it; the heat and fumes made the interior of the tank extremely unpleasant. The Mark I was manned by a crew of eight, could achieve a maximum of 3.7mph in top gear, climb over vertical objects 4ft 6in high and cross a 10ft trench.

Tanks caused panic among the Germans when they first went into battle on the Somme on 15 September 1916: but they freed the war from the bloody impasse of the trenches.

■ Mark 1 tank with its outrigged steering tail and Daimler engine caused panic among Germans when they first went into battle on the Somme. Maximum speed was 3.7mph in top gear (Hulton Picture Library)



THE 1920s MOTOR CAR

Family motoring became realistic for many with cars like the Austin Seven

There's no doubt about it — nowadays we think of the 1920s as the heyday of the vintage car, an era in which car design scaled new heights of excellence. Yet while a very few of the cars of that period were built to such exacting — and expensive — standards, what is perhaps even more remarkable about the period is the fact that it was the first flowering of the truly popular light car.

There had, of course, been good small cars before the Great War, but they were expensive, and usually built only in two-seater form; the advances in car engineering and production that took place in the early 1920s enabled the large-scale production of small four-seated cars at a price that could be afforded by the family motorist.

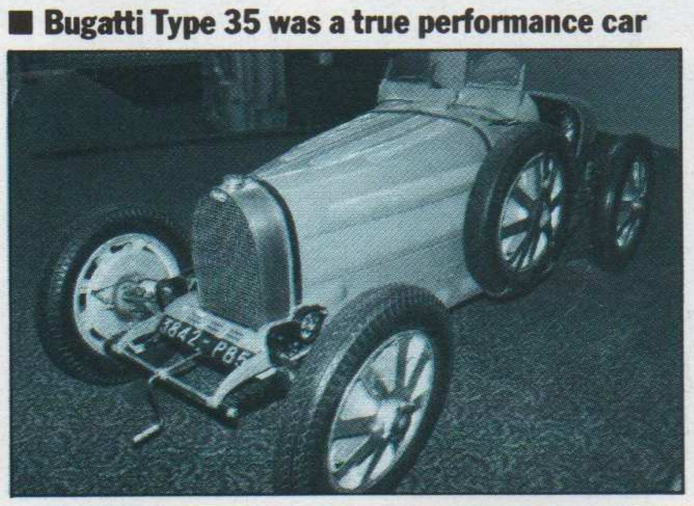
It was partly a reaction to the £1 per horsepower taxation imposed on British cars by the 1920 Finance Act, and to similar taxation by capacity schemes introduced by other governments, and partly a realisation that there was a new class of marginal motorist to whom low cost of ownership was paramount; either way, the small cars developed in the early 1920s were a hardy and durable breed which quickly proved their worth in events like the Scottish Six Days' Trials, a 900-mile event "deliberately designed to smash up every frangible part of the entered machines".

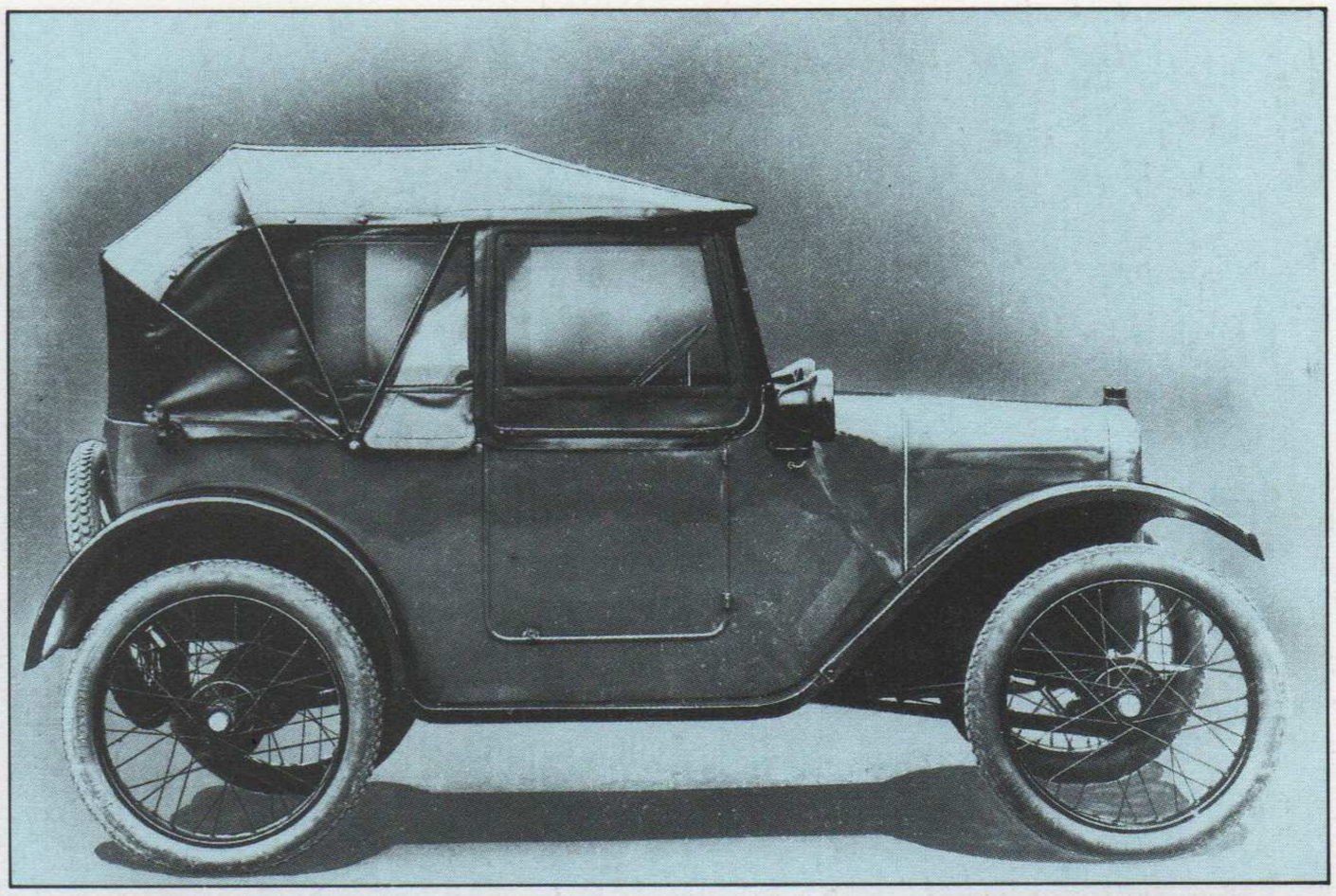
Here, alongside "super-cyclecars" like the flat-twin aircooled Rover Eight, were introduced cars which engendered both commercial success and lasting affection. Inspired by the tiny tandem-seated Peugeot Quadrilette, Sir Herbert Austin closeted himself in the billiard room at his home and developed a little four-seated car which occupied the same "footprint" as a motorcycle and sidecar, offering a more civilised form of family motoring at a comparable price.

Though some of his colleagues doubted his sanity, Austin put his "Seven" on the market in 1922 and enjoyed instant success, for the new model outsold all the other Austin models.

In a slightly higher price class, ex-cycle agent William Morris achieved similar success with his "Cowley" light car, which had started life during the war as an assemblage of imported American components and since become thoroughly Anglicised.

■ **Bugatti Type 35 was a true performance car**





■ **Austin Seven (top) brought motoring to the masses in England, and was a huge sales success. Bentley was expensive and built in limited numbers**

Known as the "Bullnose" from its handsome rounded radiator, the Cowley was Britain's answer to the Model T Ford; its nearest rival came from Wolverhampton's once-flourishing motor industry, where the Clyno company, famous during the Great War as makers of military motorcycles, turned their attention to car production in 1922, and introduced a light car which achieved surprising production from a remarkably cramped factory. By 1926, Clyno was Britain's third-biggest car manufacturer, turning out 300 cars a week at the peak of a meteoric career which ended in failure in 1929.

Such cars made up the bulk of traffic in the early 1920s; you would have had to have waited a very long time to see any of the marques which hindsight regards as the typical "vintage" motorcar.

Such chassis as the "H6" Hispano-Suiza, the 3-litre Bentley and the 30/98 Vauxhall were only built in limited numbers to the bespoke request of a clientele for whom money was no object. You can gauge that by the fact that the Bentley was the most expensive car in the popular 15.9hp taxation class by the substantial margin of £500. On the other hand, it had an overhead camshaft power unit based on the best wartime aeronautical practice, and offered unrivalled performance and endurance. The marque dominated the most gruelling sports-car race of the 1920s, the "24 Heures du Mans", which it won five times in the decade.

Nearest in concept to the Bentley was the 30/98 Vauxhall — "the Car Super-Excellent" — which never achieved the same racing success, though as it was really a throwback to Edwardian days, that's hardly surprising.

A less civilised, but equally remarkable, performance car of the day was the Type 35 Bugatti, which made its debut at the 1924 French Grand Prix at Lyon; it was a jewel-like design by the Milanese from Molsheim, Ettore Bugatti, whose artistic skills were reflected in its purity of line, while the fact that it ran so well was a tribute to Bugatti's exacting standards, since many of its design features were perversely eccentric.

And it should not be forgotten that the early 1920s saw the popularisation of such indispensable features as electric starting and four wheel brakes; they also witnessed the start of the rapid eclipse of the open touring car by the cheap saloon.

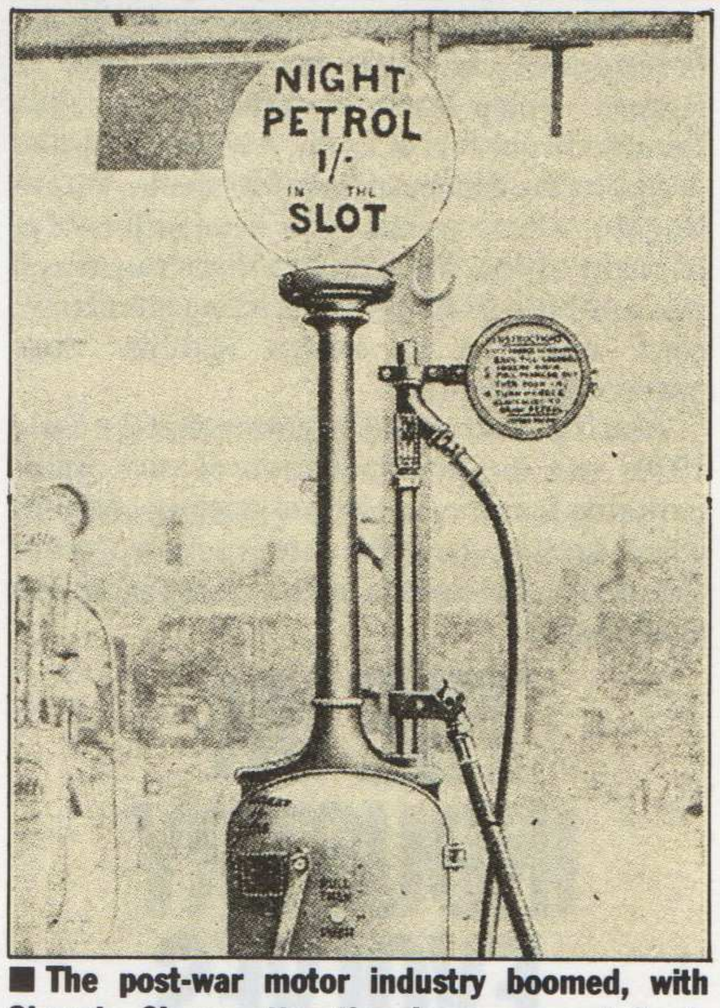
THE UK INDUSTRY EVOLVES

War brings boom

During the war years Britain's motor industry turned to the war effort, so it was not until 1919 that private cars were again on sale.

All the conditions were right for a car-buying boom, for the number of cars on the roads had dropped from 132,000 in 1914, to

THE GREAT WAR AND AFTER: 1915–1925



■ The post-war motor industry boomed, with Olympia Shows attracting huge support (top). Petrol was cheap (above) and dropped in price

78,000 in 1918, and thousands of self-taught servicemen were streaming back from the war with an urge to go motoring.

Was it a surprise, therefore, to see so many new cars on show at Olympia in 1919? Of more than 250 marques, no fewer than 134 were British, though many of those only existed on paper, or as mock-ups, and few could be expected to prosper. The inflation — and the slump which so swiftly followed — weeded out most of them and only the strong survived.

Right up there dominating the industry were three companies — Austin, Morris, and Ford . . . some things never change! Along with Wolseley, they had all been prominent before the outbreak of war, and they were to stay that way for another 50 years.

Austin was expanding almost all the time at Longbridge, but a financial crisis (and the choice of the wrong — 20hp — single-model policy in 1920) nearly led to bankruptcy. Herbert Austin, even though ousted from control for a time, withdrew to his home at Lickey. He took a young designer, Stanley Edge, with him, and produced the sensational new Austin Seven in 1922. It was not for nothing that he claimed it would 'knock the motor cycle and sidecar into a cocked hat . . .'.

Morris, too, had financial troubles, but he had the right one-model policy and took a huge gamble in cutting prices when everyone else was raising theirs and saw 'Bullnose' sales rocket upwards. From 1300 in 1913, production leapt to 7000 in 1922 and no less than 55,600 in 1925! The factory at Cowley, of course, had to expand at the same rate, with new buildings being thrown up every year.

Ford did not actually make cars in the UK, but assembled large numbers of Model Ts in a factory at Trafford Park, near Manchester. Even though the T was hit by the RAC tax rating, it sold well because it was so cheap — at £125 in 1924, it undercut the Austin Seven by a considerable margin.

The other established manufacturers at the time were Rover, Wolseley, Singer and Standard. In volume terms, though, there was virtually no contribution from Vauxhall, Hillman, or Riley. A big industry re-shuffle was yet to come, for most cars were still built by hand, automation had yet to be invented, and almost every body shell was based on a wooden skeleton.

Yet Britain had an industry selling more and more cars every year. There were still 70 listed firms in 1924 when annual production, at 116,600, was into six figures for the first time. Petrol fell in price from just over four bob a gallon in 1920 to 1/6 per gallon in 1925, there was no purchase tax nor sales tax of any nature, and sales of British products were about 98 per cent of the total UK market. In spite of what some axe-grinding economists would have you believe, the British people as a whole were becoming more prosperous, car production was rising (and prices falling), and not even the General Strike of 1926 could throw this trend off course.

Even so some things never change. In its New Year editorial of January 1924, *The Autocar*'s editor wrote that: '. . . . we will do our best . . . to convince the public, and the Government . . . that we have earned relief from both the more onerous regulations which still hamper the full development of automobilism, and also the heavy taxation which is at present imposed . . .'

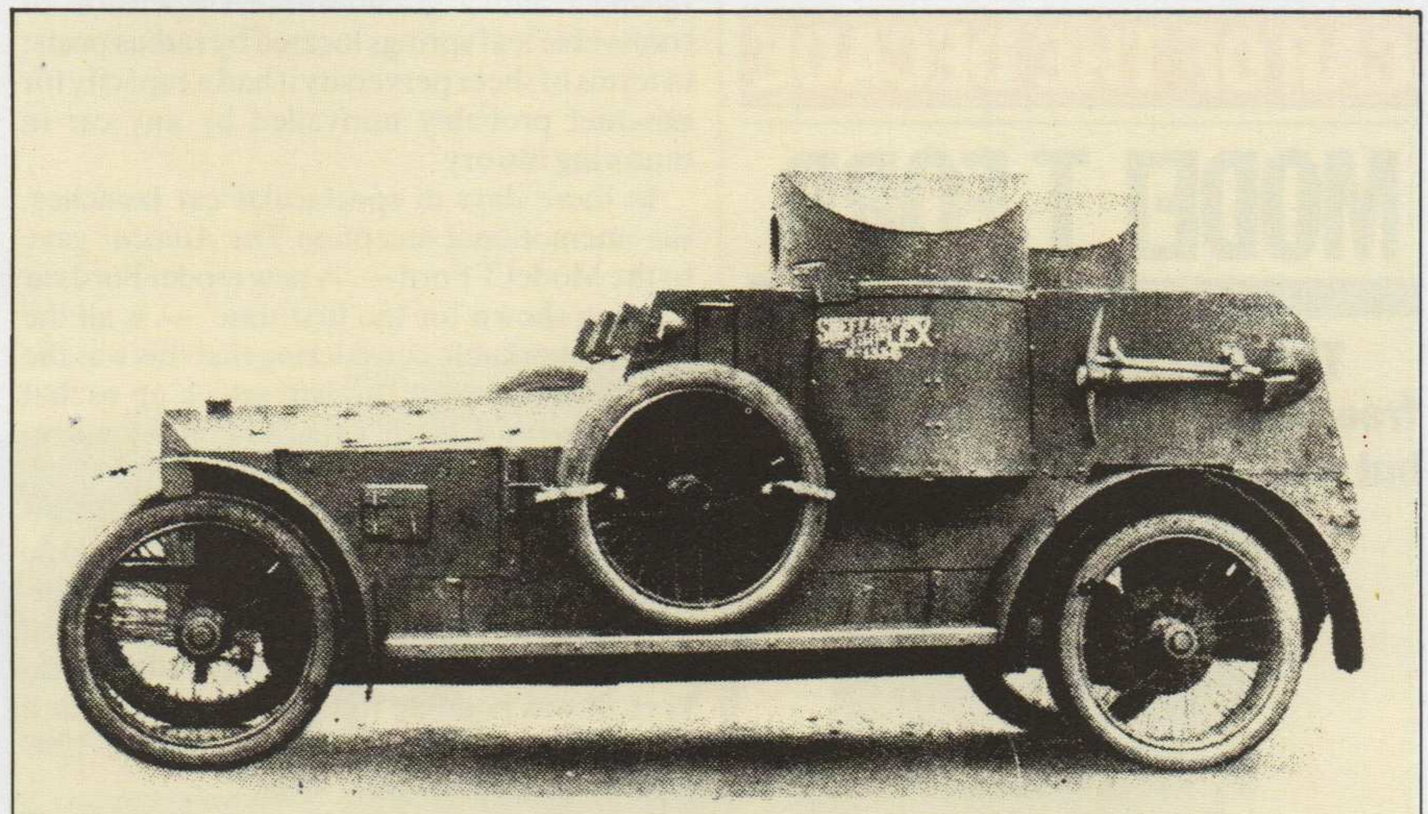
WARTIME CONDITIONS

Motoring took a back seat as The Great War soaked up resources

"The war," commented *The Autocar,* "among the very few benefits it conferred, can claim to have proved a forcing ground for the development of the internal combustion engine. Indeed, it is not too much to say that, without the petrol and oil engine, its character would have been entirely altered — perhaps for the better . . ."

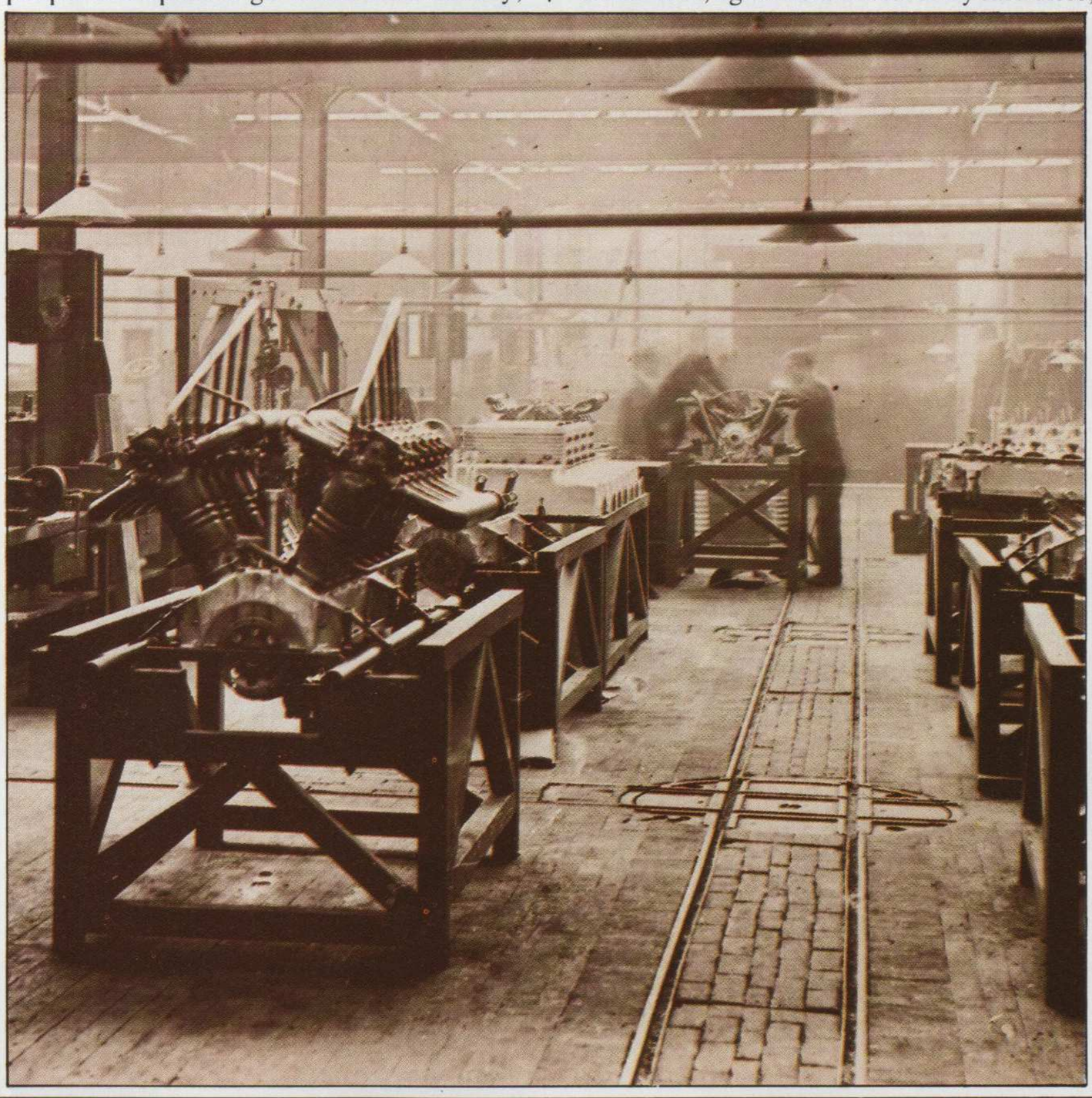
Nevertheless, the war didn't have much effect on private motorists in Britain at first; factories introduced 1915 models, and when supplies from British plants began to dry up as production switched to war material, so imported American cars became popular — until March 1916, when their import was prohibited.

Nor was there petrol rationing until August 1916, merely of higher prices caused by shortage of supply, plus Government appeals for motorists to give up the "extravagance" of joyriding: in the first few days of the war, as people attempted to get home from holiday, they had to pay up to £1 for a two-gallon can of people attempted to get home from holiday, they had to pay up to £1 for a two-gallon can.



By 1917 the shortage of petrol had beome so acute — private motorists were lucky if they could get ten gallons a month — that coal gas was used to power cars, usually carried on the roof in vast billowing containers.

Though the internal combustion engine had made it possible for aeroplanes and Zeppelins to carry out bombing raids on Britain, there was never a complete blackout during the Great War; lights were obscured by card discs,



■ **The motor industry geared up for war. Cars were given armour plating (top), buses saw active service, and factories produced aero engines**

and the need to drive at night was lessened by the introduction of Daylight Saving Time.

When Zeppelin raids on London began, in 1915, Commander Rawlinson of the Naval Armoured Car Service collected a V8 De Dion Auto Canon from Paris, where General Gallieni had already set up a mobile air defence system, and drove it back to London where it formed the nucleus of the "Mobile Anti-Aircraft Brigade". This brigade used guns mounted on Daimler and Lancia chassis, and was stabled at the Hampstead home of Grand Duke Michael of Russia.

They didn't actually shoot down any aircraft, but did frighten several marauding Zeppelins into releasing their bombs early.

Quite apart from spectacular weapons like tanks and aeroplanes, the internal combustion engine found its way into all aspects of warfare. London buses were commandered to carry troops to the front, motorcycles and light cars were used for carrying despatches, British army staff cars were (in ascending order of rank): Singer, Austin, Wolseley, Sunbeam, Daimler, Vauxhall and Rolls-Royce, the latter also providing chassis for armoured cars.

And an ambulance used by the Italians on the mountainous border between Austria and Italy, reported *The Autocar,* was built on a 1908 Grand Prix 115hp Itala chassis which was so unsuitable for the task that the authorities impounded it and its crew on suspicion of spying . . .

CAR OF THE DECADE

MODEL T FORD

The Tin Lizzie brought the freedom of the road to millions but was an evolutionary dead end

The debut of the most significant car in motoring history was greeted with scant enthusiasm by *The Autocar* back in November 1908: but then the Model T Ford was really remarkable more for what it represented — the car that put the world on wheels — than for its engineering, which was an unforgettable combination of the sacred and profane

In terms of metallurgy, the Model T made extensive use of high strength vanadium steel; in terms of detail design it was ingenious, with an induction magneto incorporated in the flywheel and a go-anywhere suspension of transverse leaf springs located by radius posts; in terms of sheer perversity it had a capacity for mischief probably unrivalled by any car in motoring history.

In these days of spectacular car launches, the unemotional reception *The Autocar* gave to the Model T Ford — 'A new model Ford car is being shown for the first time' — is all the more remarkable considering that this was the world première for this car, which up to that point had not been exhibited in its native America.

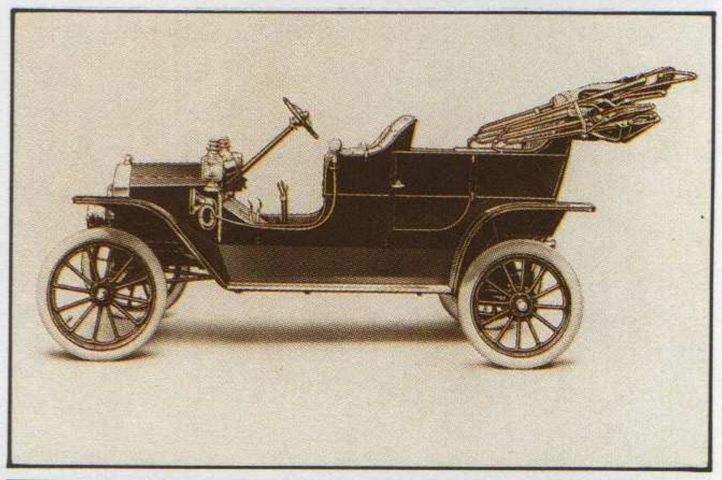
Old Henry Ford called Model T his 'Universal Car', for he thought that it would go on forever, thanks to his policy of interchangeable parts; and certainly as Model Ts puttered out of the factories in ever-increasing numbers, it was possible to take a part built for a 1925 Ford and bolt it straight on to a 1909 model.

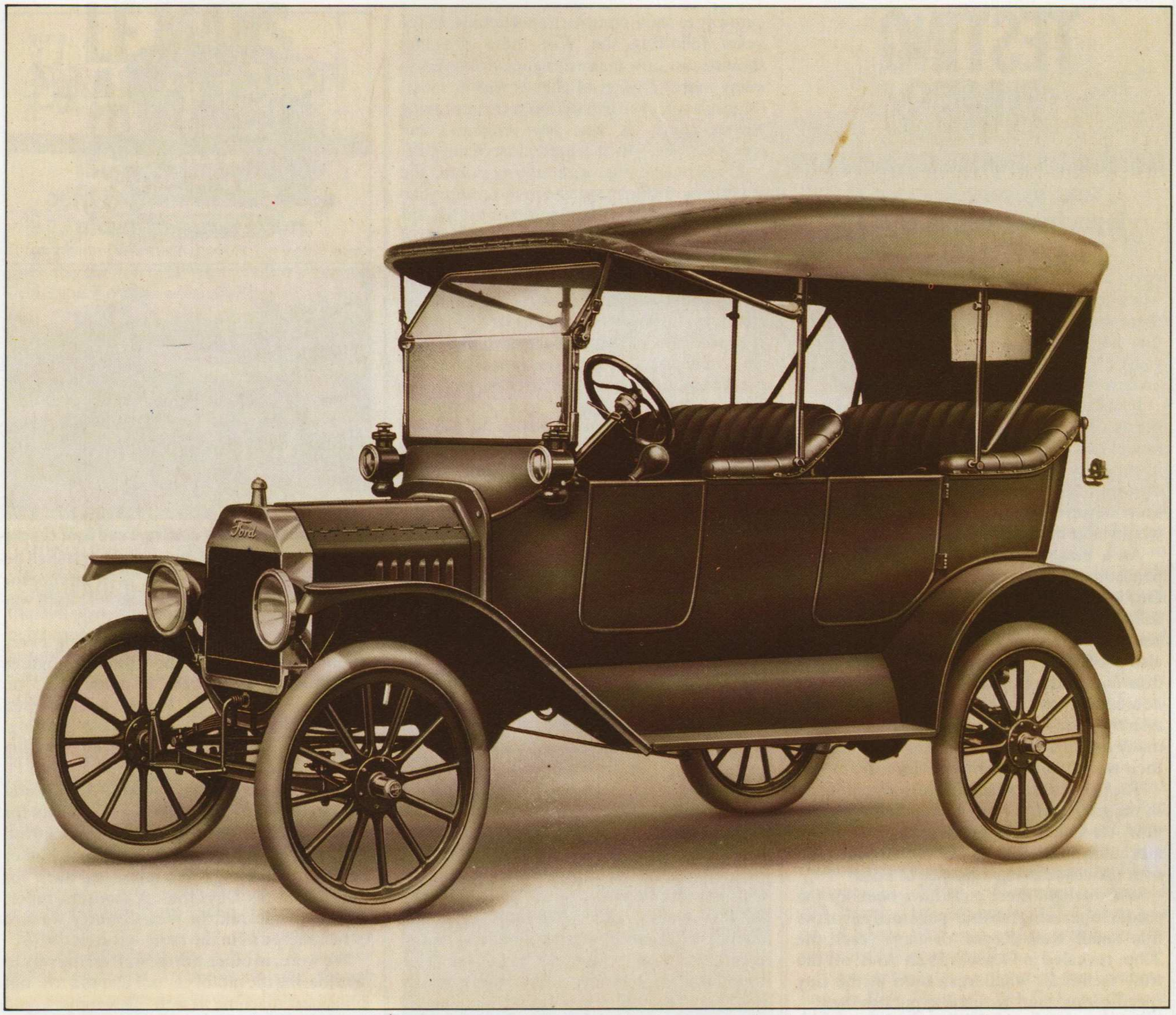
Equally, when you climb aboard a Model T you know that for all but the first 800 of the 16 million Tin Lizzies built, the basic layout of the controls will be identical — but so different from anything else on the roads that for many years some American states used to issue two kinds of driving licence — one for normal cars, the other for Model Ts.

Like other cars the Model T has three pedals: but they have unusual functions, dictated by the fact that Model T really bridged the gap between the crude gas buggy and the true motor car.

The left-hand pedal, for instance, is certainly labelled "C" for clutch, but is actually the means of changing gear, from low to high ratio (Henry didn't get around to putting three speeds in the gearbox of any of his cars until the Model A appeared at the very end of 1927); you tread hard on the pedal to engage the stump-pulling epicyclic gear, and release it to shift into top, while there's a neutral somewhere in between. But you declutch by pulling

■ Until late in the Model T's life, you could have it in only one colour — black. With market share falling, the 'Tin Lizzie' became available in fancy colours, though it was still crude if tough machine





■ Model T was the most significant vehicle in motoring history, being the car that put the world on wheels. Despite a long life span of 20 years, the T was changed very little. By 1927 it was outmoded

on the handbrake, move away by releasing it and tramping on the left-hand pedal.

Neither of the other pedals helps you accelerate away, for the right one operates the transmission brake, while the central pedal is the reverse. The accelerator is — dependent on whether the T is right- or left-hand drive — the left-hand or right-hand stalk beneath the steering wheel, the second steering column stalk operating an extremely sensitive ignition advance-and-retard mechanism.

And then there is the steering, whose reduction mechanism is a tiny epicyclic gearing at the top of the steering column; because the drop arm moves from side to side rather than fore-and-aft, it is liable, when age has induced a certain slackness in the steering joints, to go overcentre on hard left lock and reverse direction. That is, even at the modest top speed of a Model T a frightening experience.

Should an impact result, however, the strength and cleverness of the Model T will become immediately apparent. Strength may seem an odd concept in a chassis with the torsional rigidity of a boarding-house bedstead and whose only cross-members are the front and rear suspension mountings, but though the T chassis will whip and twist — incidentally causing distressing leaks in the radiator — it will not break, and rarely bends . . .

And the cleverness lies in the fact that transverse suspension sets the leading edge of the tyres so far ahead of the vulnerable radiator and lamps that, provided you hit the target head-on, the bulk of the impact will be absorbed by the skinny 30×3½ tyres, and little physical damage be sustained . . .

Model T was at its greatest in *The Autocar*'s third decade, for by then it was being built on the moving production line; in 1917 that attractive — and leak-prone — square-cut brass radiator was phased out in favour of a less romantic black steel cooler.

A couple of years later came an electric starter; this was often a snare and a delusion, for, while the compression ratio of the T was low, its engine was relatively large and its ignition system temperamental, thanks to the roller-contact "timer", so that often all the starter did was to run down the battery, and fray drivers' nerves.

Those in the know prefer to crankstart a T on battery ignition, listening to the reassuring buzzing of its quartet of trembler coils. Nevertheless, unless the ignition has been fully retarded, a Model T has a kickback of horrendous proportions — I carried the imprint of a milled headlamp rim nut on my wrist for six months after a stubborn T had backfired when I was cranking it!

Model T had many such little eccentricities, but it was a full-sized car at an unmatchably low price, and brought the freedom of the road to unprecedented millions; drive one nowadays, though, and you will realise why, despite its worldwide diffusion, Model T was an evolutionary dead end.

TESTING TIMES

Year by year *Autocar's* technical analysis became more and more detailed

After a slack time during the First World War when no new British cars were being designed, there was a positive rash of new designs in the first half of what we now call 'the Vintage years'. Year by year, *The Autocar*'s technical analysis became more and more detailed.

It was easy to get, quite literally, at the bare bones of a new car's design, for every new model had a separate chassis, and most could be properly illustrated without using 'ghosted' drawings. Yet it was for these 'cutaways', as we soon began to call them, that *The Autocar* would later become famous.

As a magazine, we started the years of peacetime with one exceptional artist, Freddie Gordon Crosby. Not only could 'Gorby' (as his friends used to call him) conjure up a stunning pastel action shot of a Grand Prix, but he could also produce meticulously accurate technical drawings of the chassis and engine layouts of new cars. Little *vignettes* of mechanical detail would be included in any description — how many motorists became experts as a result of their weekly read of Friday's *Autocar*?

The headlines, of course, were always made by the great and glorious new models. Then, as now, we found it easier to enthuse over the mechanical delights of a Rolls-Royce, than over the cost-cutting diligence of Ford.

What delight there must have been for the reader in perusing the four-page analysis of the first 'small' Rolls-Royce for many years, the 20hp, revealed in October 1922. And, for the truly technical, what frustration in the tiny specification chart we used to publish then!

Power outputs rarely got a mention (whether Rolls-Royce or not), nor did gear ratios, or final drive ratios. How many steering turns lock to lock? Not quoted. The size of brakes? Not quoted. Overall length or width, or height? Not quoted. Were suspension dampers fitted? Who knew.

We were, however, unfailing deferential to the Great and the Good. Of the Rolls-Royce, we started by pointing out that: 'For years past it has been known that Rolls-Royce Ltd. have been conducting experiments and research work in connection with chassis of smaller dimensions than those of the world-famous 40-50hp car . . .'

Royce himself had compiled the description, by the way, for 'no chassis of the 20hp Rolls-Royce was available for examination in time for an article to be prepared by us for publication this week . . .' An early look at a prototype perhaps? Comprehensive press releases about the new design? Certainly not.

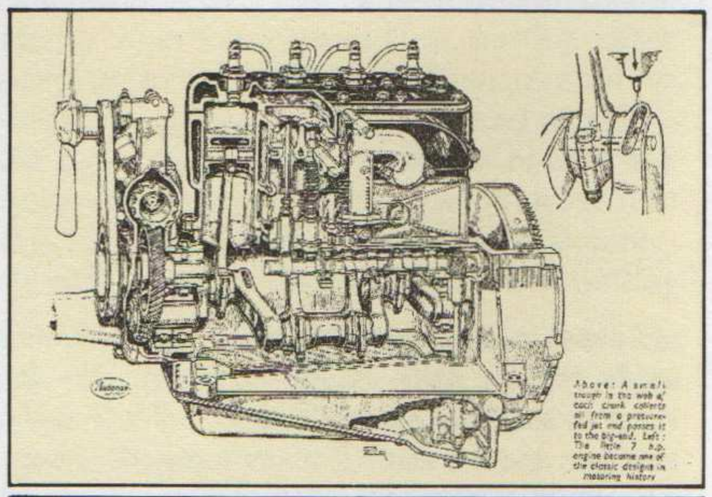
On the rare occasions like this, there would be a Gordon Crosby chassis drawing, partly cutaway to show constructional details. In the years following the War these drawings showed just how many designers followed so many more. Design of chassis was in something of a rut, even if materials were improving all the time. It was new engines, and transmissions, which caused most of the stirs.

The Autocar was, without any doubt, the leading motoring magazine in the country, so we could be sure of gaining if not the scoops (which were so rare at the time — somehow, it was not expected of us), then the latest news.

Perhaps our first, and very prestigious, piece of hot news was to describe the first of the Bentleys. In May 1919, well before cars were ready for sale, our report suggested that: 'The car is built primarily for speed, and is intended for the enthusiastic sportsman of the motoring world. Not only has it a most sporting appearance, but it is proposed that the peculiar feeling of absolute control obtainable with the genuine racing machine shall be experienced.'

The Autocar, however, was gradually changing as motoring changed ahead of it. Up to 1914, the magazine reflected the fact that motoring was for the wealthy, and that most cars were driven and maintained by paid employees. In the 1920s we saw that more and more cars were owner driven, more were smaller and cheaper, if not simpler. As a result, we began to publish regular features on the care and upkeep of ageing cars. There was no *Buying Secondhand* series — that would have to wait until the 1970s — but for the first time *The Autocar* reader was assumed to know one end of a spanner from the other. We spent three weeks, for instance, talking through the little quirks of the Morris Cowley, in 1923.

Although the official 'Road Test' formula was still in the future, we took the assessment of new models seriously. Trials, long-runs, or tests were accompanied by a brief 'Data for the Driver' section, and in all cases we talked about performance, roadholding, and equipment. Yet, wasn't it nice, that we had the space to indulge in platitudes at the start of every one? July 1924 saw a trial of the latest Lagonda prefaced with the remark: 'One of the most important features of any car is that it shall be thoroughly comfortable . . .' — it was not for a whole paragraph that the Lagonda itself was even mentioned.

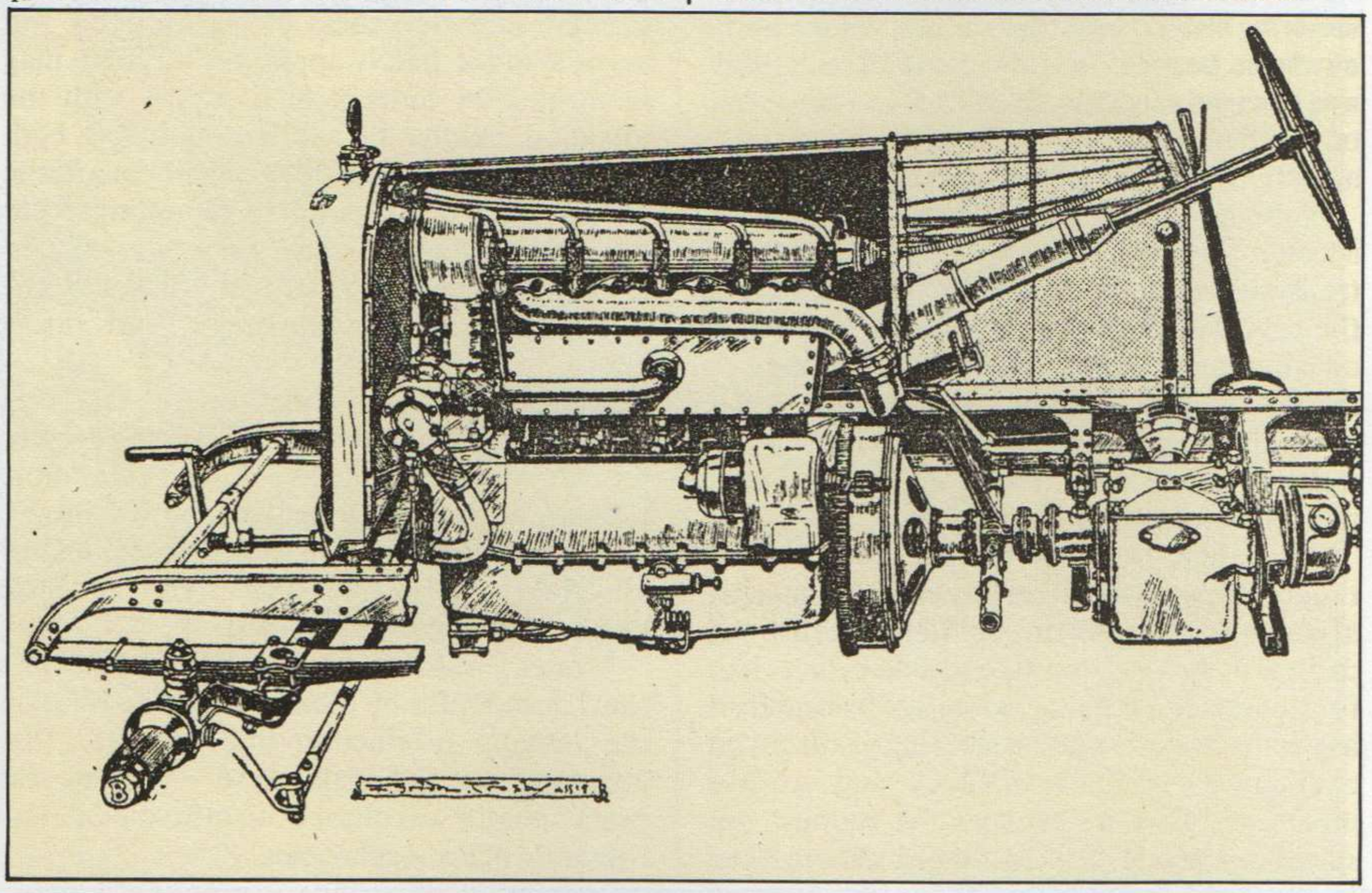


■ **Evaluation included cutaways and boot checks**

Even so, we were already covering every major feature except performance figures (that would come in 1928). A summer 1925 'on the road' trial of the latest Swift covered performance, gear changing, cold starting, suspension, brakes, hill-climbing, seating comfort and equipment.

Although we did not publish 'long term' tests in the 1920s, we often took test cars for long journeys. One memorable trip involved taking over the latest 20-70hp six-cylinder Daimler, and using it as a reporting 'hack' for the A.C.U. Six Days trial. A thousand miles, taking in Wales and the West Country, was not to be sneezed at in the more leisurely 1920s.

We were, in other words, well on the way to considering the motor car not just as a toy, but a business machine as well. This trend would accelerate still further in the next decade.



LE MANS AND LSR

Supercharging and aero engines herald a new phase in motor sport

It took time for motor sport to get going again after the First World War. Nations, populations, and facilities were all shattered. It was a real miracle that sport of any sort could struggle back towards normality before 1920.

In the following few years, however, there were several major developments. Fierce competition raised the 'Blue Riband' of motor sport, the Land Speed Record; true long-distance sports car races, such as Le Mans, came into existence, and the supercharger (refined for aircraft engines already) made its mark in racing cars.

Grand Prix racing, in fact, was still a very restricted business, for only France and Italy organised events until 1924, when the Spanish joined in with Belgium following in 1925. For the first post-war season — 1921 — there were two races under the old 3-litre formula, chiefly notable for the American Duesenberg's success in the French (at Le Mans), at its first attempt.

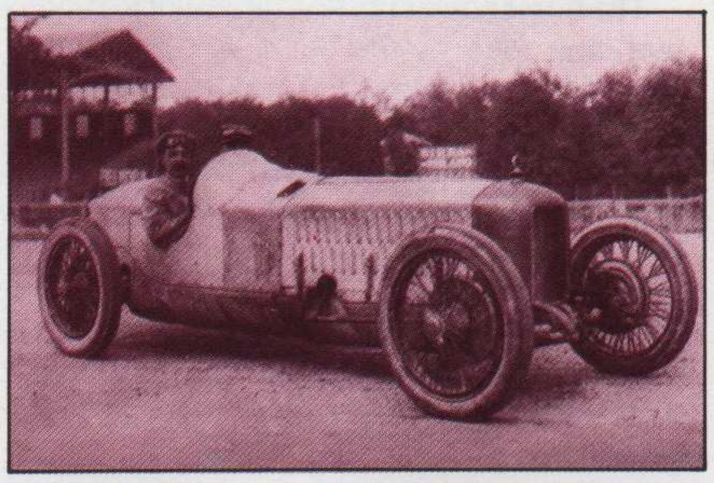
For the next four seasons, a 2-litre limit applied, which Fiat and Alfa Romeo contested at first. However, supercharging (which had already been used by Mercedes in sports car racing) suddenly arrived on the scene in 1923. Fiat's cars failed in France, but solved the problem within weeks to win comfortably at home in Italy. But Fiat's French GP loss was Sunbeam's (and Britain's) gain, for it was a mould-breaking 'first' for Sir Henry Segrave's unsupercharged car. The ever-middle-class *Autocar* headlined its report: 'A notable British success in strenuous struggle' though devoted ten pages to a blow-by-blow account.

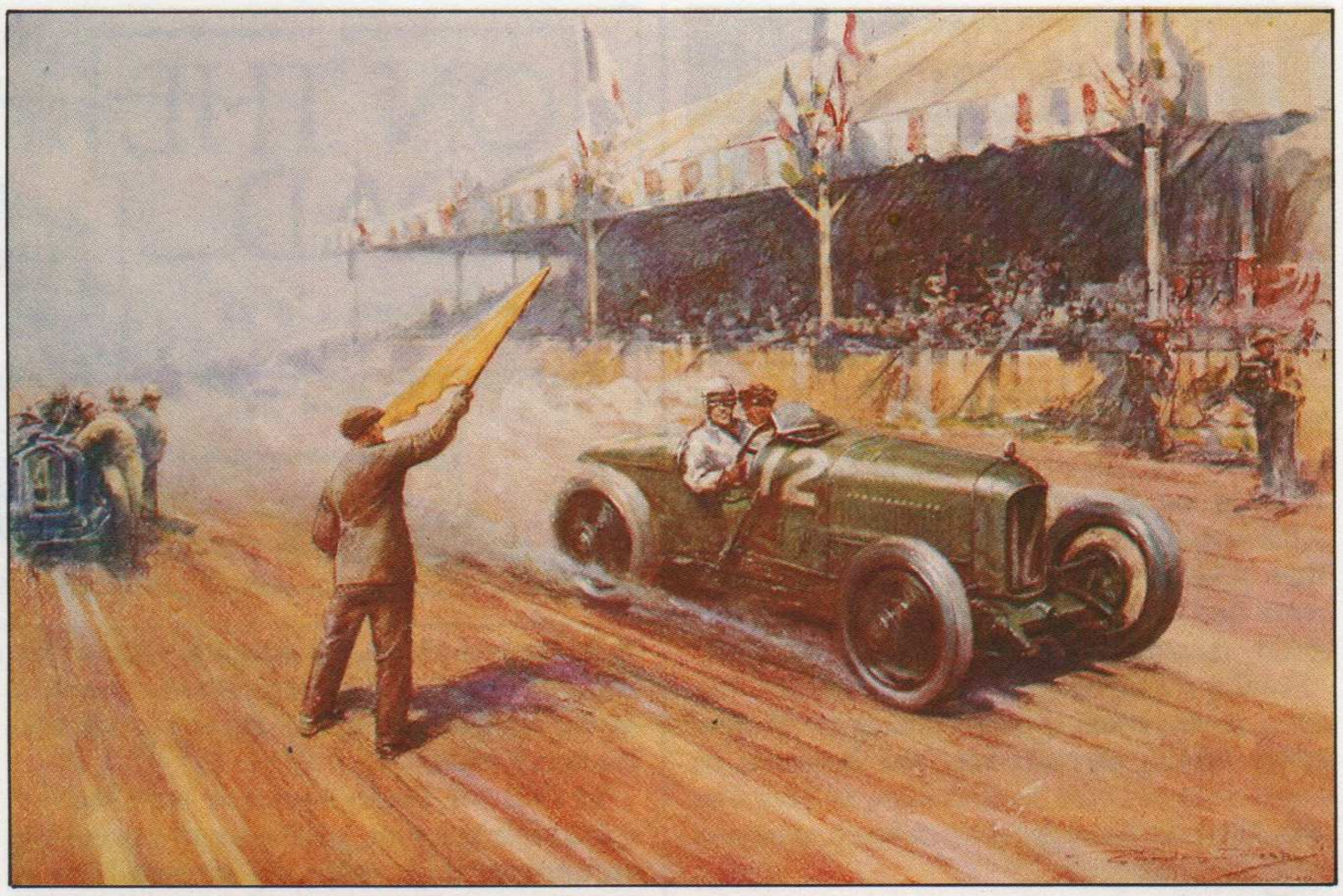
From then on almost every international race except Le Mans and the Brooklands classics would be won by supercharged cars, until war once again closed down the sport 'for the duration'.

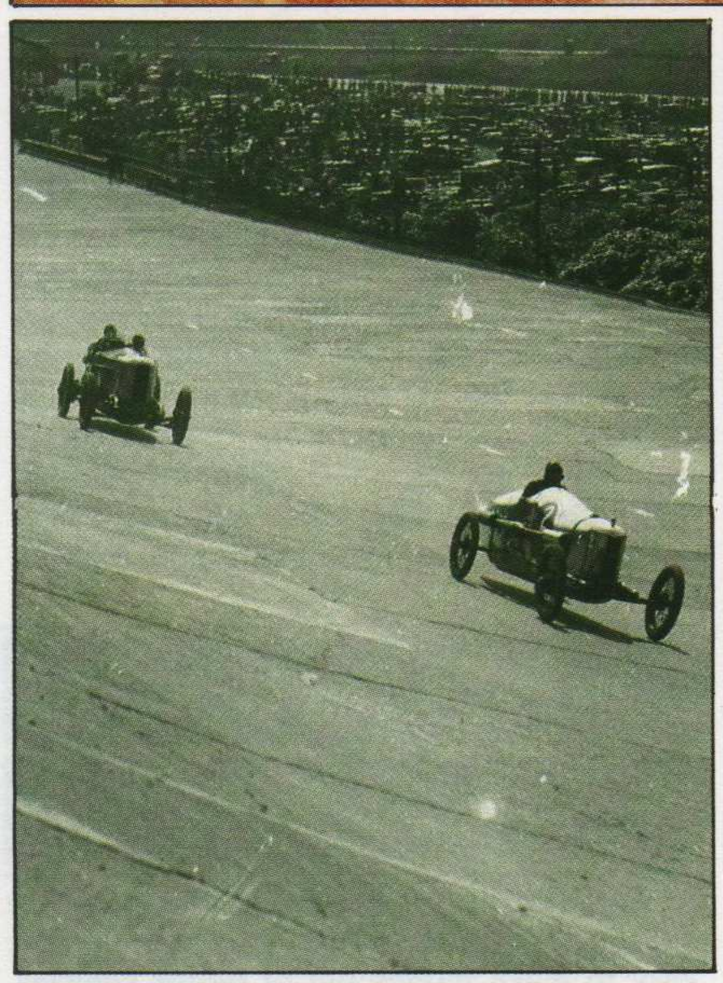
The Sunbeam's success, however, was short-lived, for Segrave only won once more (San Sebastian, 1924), after which the Alfa/Bugatti/Delage running dog-fight got under way for the rest of the 1920s.

For Britain a more encouraging continental development was the launching of the 24 Hour race at Le Mans for production sports cars. The regulations were fascinating. They required competing cars to carry all their own spares, and all had to be production cars.

■ **Alfa Romeo began Grand Prix racing in 1923**







■ **First Grand Prix win for Britain was Sunbeam's in the 1923 French event (top). International rivalry was becoming intense in GP racing. At home, most British racing took place at Brooklands (above)**

In that first year, 1923, no fewer than 18 manufacturers entered a total of 33 cars. A 3-litre Bentley finished fifth and established the lap record for a 12-mile lap at 66.69mph, and Chenard-Walcker took the first victory. A year later, however, John Duff and Frank Clement took a 3-litre to victory setting W.O.'s concern on the way to late 1920s dominance. *The Autocar* reported on 'The wonderful utility of four-wheel-braking demonstrated in Rudge-Whitworth Cup contest . . .', and pointed out that the 57.2mph average speed 'constitutes a world's record for a 24-hour road race'.

One has to remember, however, that these were essentially touring cars (all had to complete a minimum of 20 laps with hoods erect!), and that the Le Mans road surface was still greasy and stony. It was endurance, rather than speed, at Le Mans in the early days, and the British public soon took notice of this.

The 'performance' aspect of motor sport was becoming dominated by the Land Speed Record, which was still for cars looking something like ordinary racing cars, and at speeds one could at least relate to!

Hornsted's much-modified 'Blitzen' Benz had left the record at a two-way 124.1mph in 1914. But after the Americans had set some astounding 150mph speeds, one-way only (which did not count, according to the FIA), Guinness's 350hp Sunbeam achieved 133.75mph at Brooklands in 1922. This car had an 18.3-litre V12 aero engine which set the scene for future contenders.

That performance unleashed the competition. In 1924 Thomas's 10.6 Delage achieved 143.3mph and, just six days later and on the same road, Eldridge's massive 21.7-litre Fiat-based Mephistopheles, raised the record to 146.01.

Enter Malcolm Campbell, who bought the 350hp Sunbeam, to push up the record to 150.76mph at Pendine Sands. After this he commissioned a completely new 'Bluebird' car, which was to dominate the LSR in the following decade. In that decade, the LSR would be doubled, from 150.7 to 301.1mph!

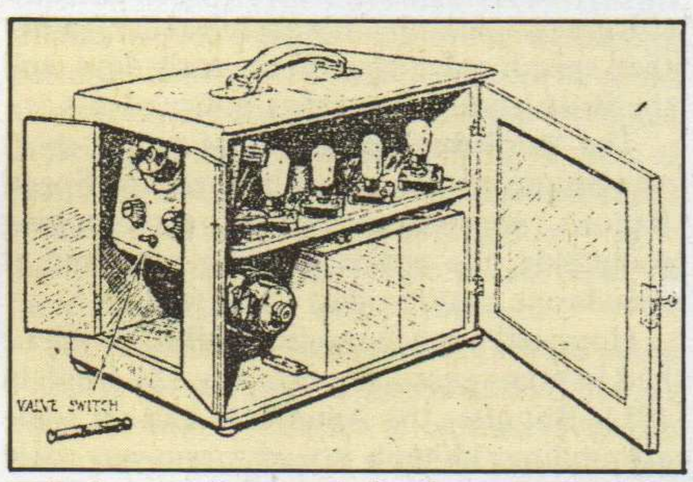
In the meantime British motor racing, centred around Brooklands, went on in its own insular way. Handicaps, sprints, and the lap record were far more important to the 'right crowd and no crowding', than the development of rugged, versatile, road racing cars. The big event of the year, in every case, was the JCC's 200-miles race dominated almost every year by Talbot or Darracq cars from the S-T-D combine. In 1924, K. Lee Guinness's Darracq averaged 102.27, other Darracqs finished second and third and our reporter thought it a 'smashing victory for the trio of Darracqs'.

MAJOR HAPPENINGS FROM THE DECADE

THE FIRST CAR RADIOS - 1923

"Hullo, Motor Folk!" chortled Captain Richard Twelvetrees to introduce his "Motoring Chat" broadcast from the 2LO station in London on Saturday December 1, 1923. Although it had been in operation little more than a year, the British Broadcasting Company had already recognised that there was great interest in radio among motorists: "Frankly," said one 1922 light car owner, "so soon as one owns even the cheapest 20-mile range crystal receiver set, one becomes as badly infected with radio-rabies as ever one was with motor-madness when one first owned a car or motorcycle."

The early valve radios were only marginally portable, being roughly the size and weight of a large suitcase; neverthelesss, motorists loaded wirelesses into their cars and drove off to



■ **Early car radios were bulky, but proved popular**

beauty spots like Burnham Beeches, and unshipped 100ft of aerial so that they could listen to "humorous programmes as good as those put on at music-halls . . . The Air Ministry weather reports, a very interesting item . . ."

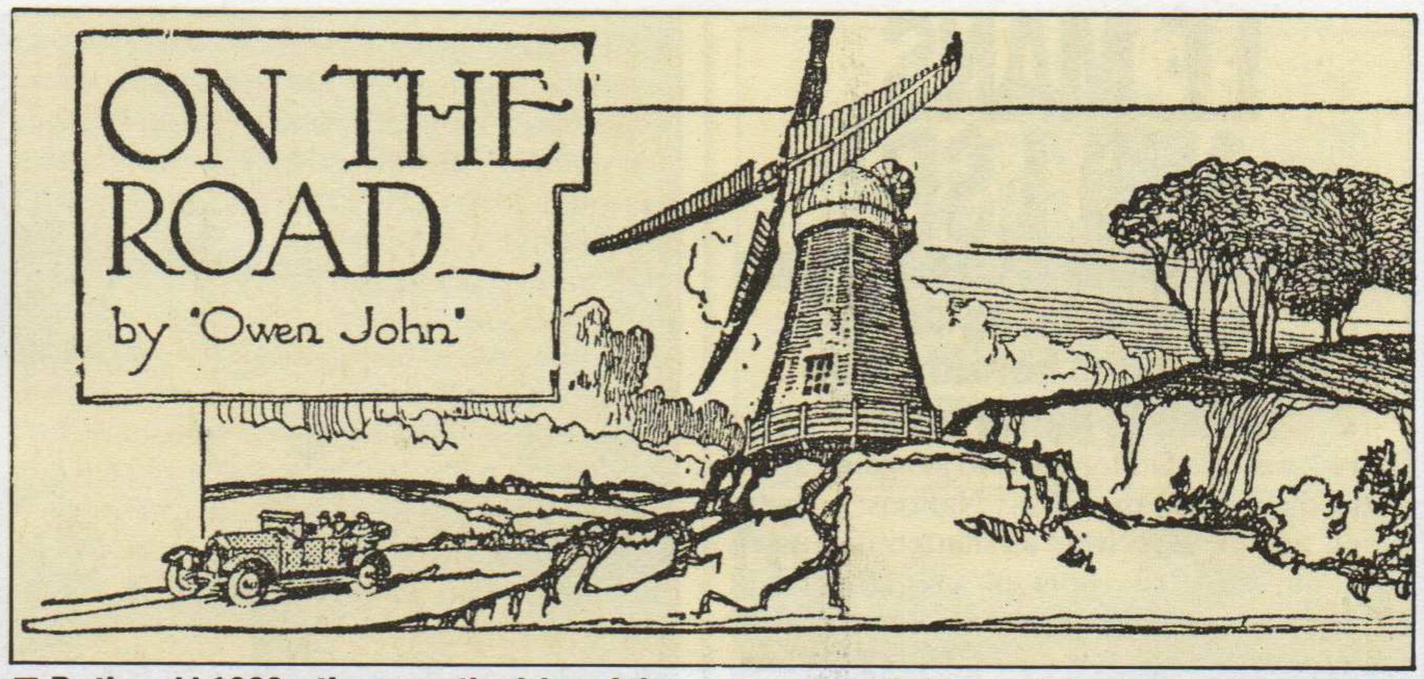
The Autocar was early to recognise the motoring interest in radio; motoring Canon B. H. Davies wrote regular articles on "Wireless and the Car", intended for "the man who likes searching the ether".

"No-one with any taste for the open air life —

THE FIRST CARAVANS - 1919

and in this category naturally come all users of touring cars — could fail to feel a certain response to the attractions of a motor caravan," wrote Wilfred Gordon Aston in *The Autocar* in 1921. He was describing a "travelling maisonette" built by Darracq, a two-wheeled trailer caravan with leaded-light bay windows which folded flat for towing.

The commercially-produced trailer caravan had made its debut only two years earlier, built by a cantankerous Black Countryman named



■ **By the mid-1920s, the romantic vision of the open road was being overtaken by events.**

Bill Riley, who named his caravans — inspired by the wartime ambulance trailers — after his backer, Eccles.

In 1921 the Eccles company built the first collapsible caravan, with sides of canvas and an undercarriage originally intended for an aeroplane; at 3cwt, it was light enough to be towed by a motorcycle and sidecar.

That same year, *The Autocar* attended the first-ever rally for trailer and motor caravans, at Leamington Spa; the typical caravan of the early 1920s was bluff-edged, with a lantern roof like a Pullman train and as chintzy as a country cottage. The rapid rise in the number of people taking caravan holidays at this period was due to enterprising agents who advertised caravans for hire in *The Autocar*. In 1925, one agency in Yorkshire exhorted motorists to book their trailer caravan as early as October "to avoid disappointment for your holiday".

POSTWAR BOOM -AND BUST

In the "land fit for heroes" that supposedly existed after the Armistice, it was remarkably easy to make money out of motor vehicles. Now that the wartime restrictions on private motoring had been lifted, the market for cars was wider than before. Many thousands whose only prewar experience of motoring had been occasional bus rides, had driven cars, lorries or motorcycles during their military service, liked the experience, and decided to buy a powered vehicle after the Armistice. There were also war profiteers looking for something suitably ostentatious on which to spend those profits . . .

This huge new market had two results: cars were in short supply, and cost more.

Many new companies entered the industry; some were manufacturers of armaments and aircraft left short of business by peace, some were hopeful mechanics and engineers seeking to make their fortune.

Typical of the former was the Grahame-White Aeroplane Company, based at Hendon Aerodrome, who built cyclecars, car bodies and bedroom furniture to stay in business; the latter category included the backstreet makers of horrifically crude cyclecars — but also Bentley . . .

American manufacturers hit a record output of 1.9 million in 1919, with a backlog of 2.3 million unfulfilled orders.

Then calamity struck and the boom collapsed. Before the end of 1920, many American manufacturers were forced to suspend production — Ford closed his new Rouge plant on Christmas Eve and sent the workforce home; senior executives patrolled the empty building on rollerskates, packed spares, and laid concrete.

Europe was hit, too: it was only bold price-cutting by Ford and Morris which freed the log-jam and got production moving again in spring 1921.

NEW TAXES, NEW ROADS - 1920

It was the Finance Act 1920 that really established the motor vehicle as the milch cow of the Exchequer, for instead of the nominal carriage tax on motorcars, they were taxed on each horsepower according to the RAC formula. The good news was that this formula was already outdated, and bore no relation to actual developed horsepower; the bad news was that it was assessed only on the cyclinder bore, encouraging British manufacturers to develop long-stroke engines to minimise liability to tax.

At the rate of £1 per horsepower, the 2.9-litre Model T Ford, with a virtually "square" engine, paid £22 a year: the long-stroke 3-litre Bentley paid only £16 annually. It was an iniquitous tax base that retarded engine design for three decades.

The horsepower tax was intended to replace fuel tax: but by the end of the decade, motorists were taxed on horsepower *and* petrol . . .

The 1920s also saw the construction of bypasses like the Purley Way to take motor traffic round towns: but without restrictions on ribbon development, the bypasses were soon flanked by gimcrack housing and industrial building that often attracted worse traffic than that which the roads had been been built to avoid.

MOTORING FOR MASSES

How mass production changed the face of motoring for the masses

From the mid '20s to mid '30s, the whole atmosphere and character of British motoring changed completely. What had been a gentlemanly, middle-class habit, where touring, personal service, and hand-built cars ruled the day, changed into a more mundane business. Almost all the commercially important new cars of the early 1930s were small, cheap, and sometimes quite nasty.

Yet, from 1926 to 1935, the number of cars on British roads doubled — from 750,000 to 1.5 millions — in spite of the Depression. Even more significantly, only 23 per cent of cars sold in 1927 were of 10hp (say 1.3-litres) or less, whereas in 1935 that proportion had rocketed to 61 per cent.

The most important mass-market cars of the period? There were many, but excellent examples would surely be the Morris Minor of 1928 (and the MG Midget which evolved from it) and the Ford 8hp of 1932, the Hillman Minx of 1931, the first mass-produced Vauxhall, the Cadet, the Rover 10 of 1933, the front-wheel-drive Citroën *Traction Avant* of the following year, both the Flying Standards, and the first SS-Jaguars, of 1935.

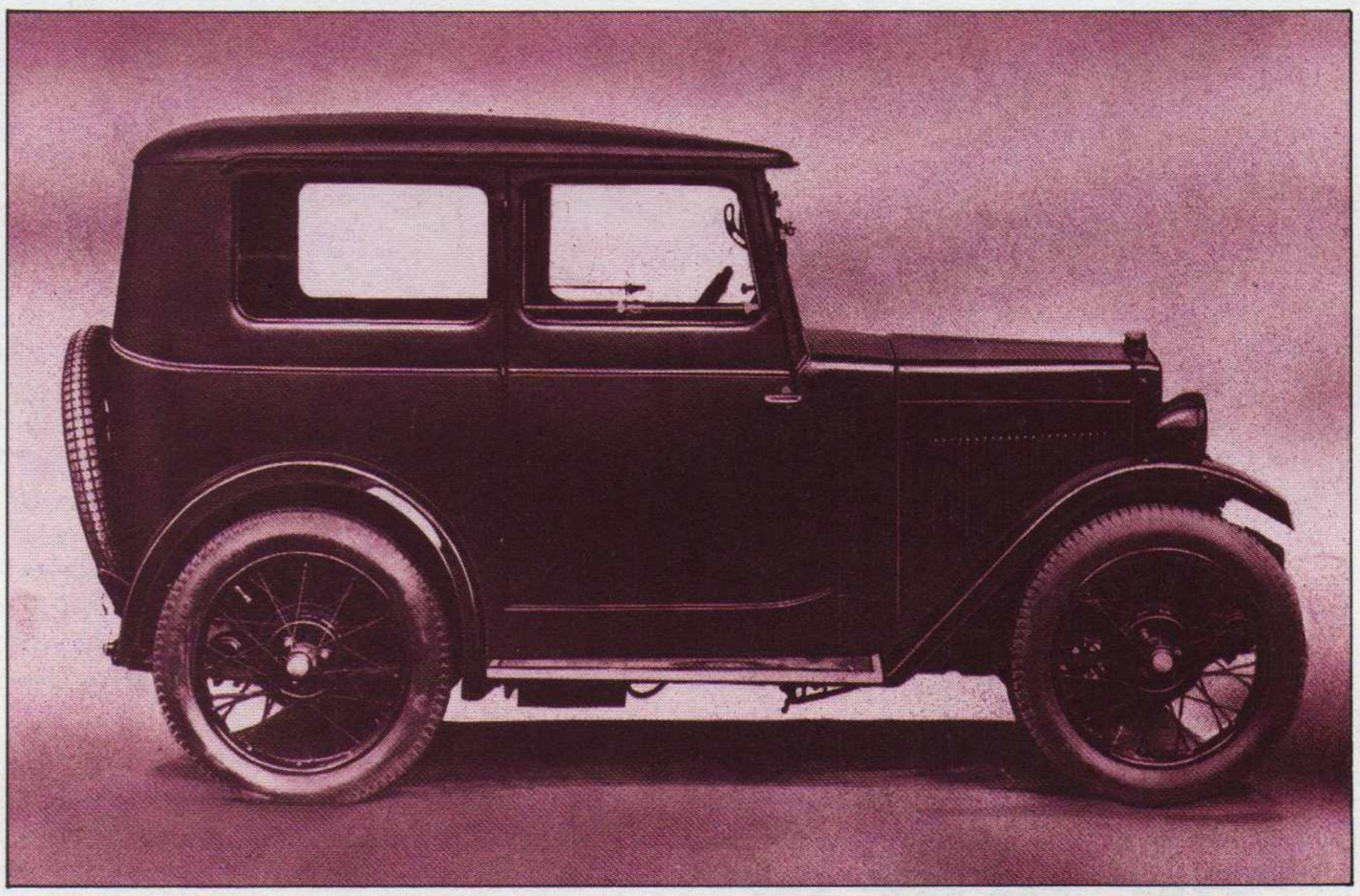
In addition none of this rapid expansion in the market would have been possible without the development of the all-steel, all-welded body shell. Pressed Steel Co. were first from 1927, but Fisher & Ludlow soon followed. As *The Autocar* said in November 1927: 'To be dropped suddenly into the midst of it (the new Pressed Steel plant, at Cowley) is like stepping out of factories, as we know them, into a vast engineering shop typical of the very best and latest practice in the United States.'

The Austin Seven had been on the scene for six years before Morris announced their new Minor, which was direct competitor. Our technical staff thought it 'a car that may well make history not only in the land of its birth, but throughout the world . . .' Yet it was a real paradox in so many details; while the chassis was very basic, with half-elliptic springs, friction dampers, and channel-section frame side members, the engine was an advanced little overhead-cam 847cc unit, with a vertically-mounted dynamo whose rotating centre shaft also drove the camshaft via a bevel gear.

It had a cramped four-seater layout, with a tiny 6ft 6in wheelbase, but it sold for only £135. Because it weighed little more than 1400lb, it achieved about 45mpg and *that* is what made it such an attractive car. Further, as our testers said: 'It settles down automatically to a steady 40mph', and could achieve 55mph flat out.

■ Triumph Super Seven of 1929 with an England body. Large car luxury in a small car package

ENGLAND TRIUMPH SUPER-SEVEN SALOON



■ The Morris Minor of 1931 was conceived as a direct rival to Austin's extremely popular Seven

This was the right way to attract marginal motorists away from their motorcycle combinations, and it paid off handsomely, even if the vertical dynamo layout did give a lot of trouble. (Indeed the overhead cam layout would be abandoned inside four years.)

William Rootes's approach with the Hillman Minx was just the same. There hadn't been a small Hillman for some years, nor a cheap one. The new car, which sold for £159 as a four-door saloon in 1932, was very ordinary indeed but the public loved it for that. After all, if it was reliable, who wanted more than 1185cc, side valves, and a three-speed gearbox, with cart-sprung axles, and a Pressed Steel Co. body shell? Especially as the car did 59mph and 35mpg with generous rear-seat passenger space, and a modern style?

It was that sort of motoring for the masses that General Motors set out to provide, from Vauxhall, which company they had bought up in 1925. Their first offerings were merely interim, but the Cadet, of 1930, was a 'Seventeen' selling for just £278, and the overhead-valve £195 Light Sixes which followed was even better.

At a slightly higher level, too, we should single out the first of the Wilks Rovers, the 'New Deal', as it were, after the nasty Rovers of the late 1920s, and the astonishing attractive, fast, and good-value SS-Jaguars of 1935; the 2½-litre, which looked like a £1000 sports saloon, but retailed for just £385.

However, perhaps the real trend setter for the masses, if only we had known it at the time, was the release of a brand-new front-wheel-drive Citroën, the legendary *Traction Avant*, in 1934. Not only front-wheel-drive, but a unit-construction body shell and all-independent springing, made it a car to remember. *The Autocar*'s analysis of 4 May found it: '. . . exceptionally interesting and unusual throughout its construction.'

There is no doubt at all that, in the UK at least, the foundations for the very successful motor industry of the 1950s and 1960s were laid in the '20s and '30s.

CHANGING TIMES

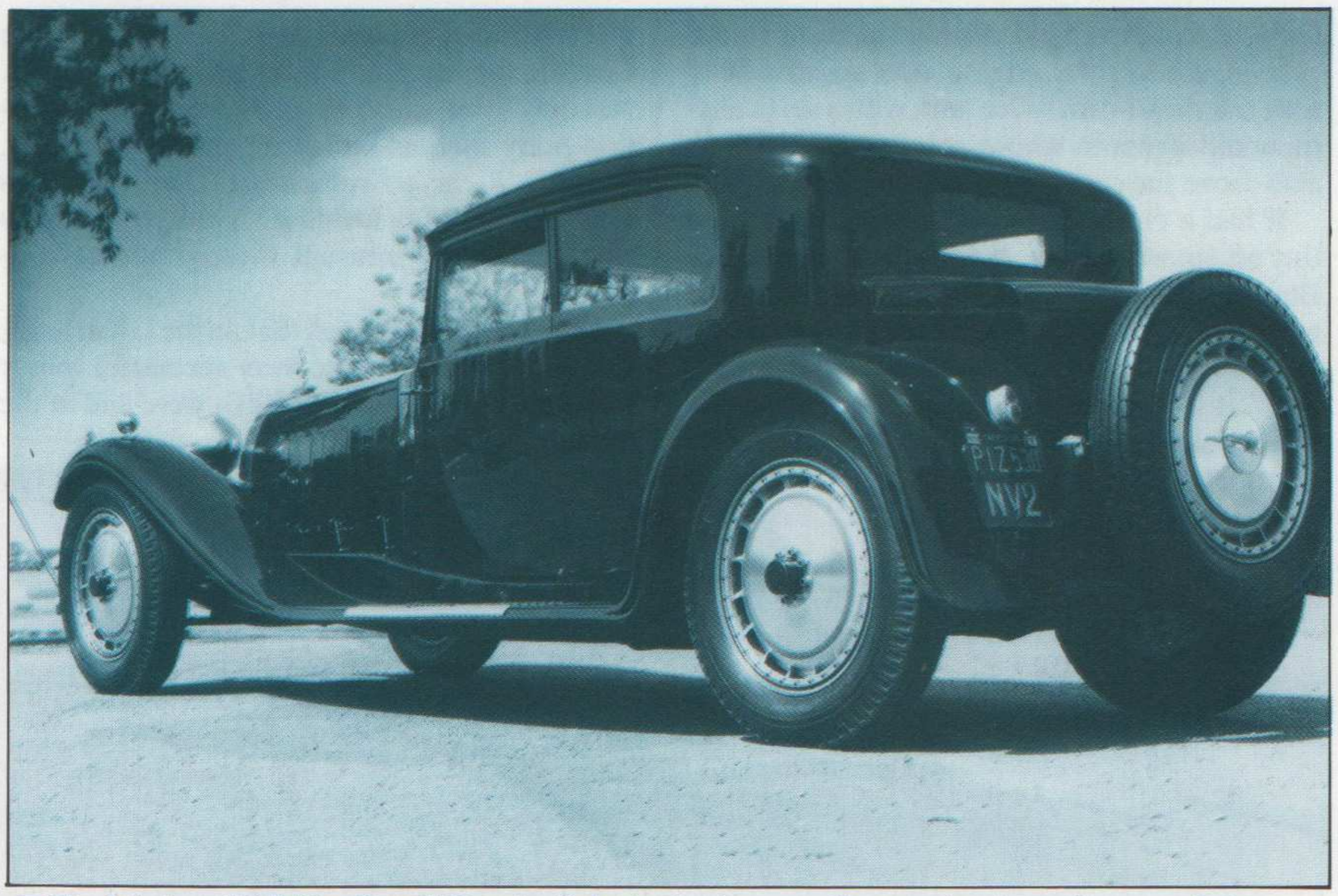
The small car was born and made the Depression easier to take

At the Olympia Motor Show of 1925, there were only two British small cars (Austin and Jowett) selling for less than £150. Ten years later there were five, and the cheapest was priced at just £100.

From the late 1920s, to the mid-1930s, the cost of living was trending slightly down all the time. Except in towns and cities, traffic densities were low.

Was it any wonder, therefore, that more and more motorists flooded on to the roads, to take immediate advantage of their newly-affordable mobility?

This, in fact, was the paradox of the period. Sociologists will tell you that all was gloom, depression, and high unemployment in the UK. The facts are that many people became steadily more and more prosperous. There was a new middle-class, probably working in an office, probably living in the Midlands or the south of England, who could afford to ditch his £50 motor-cycle, and buy his £100 car. If not, there was always a three-year-old Austin



■ **The fabulous 12.7-litre Bugatti Royale. Only six were sold between 1927-33 despite hopes**

Seven for £40, or many a banger for £10.

As Mr Toad would most assuredly have said: 'Villages skipped, towns and cities jumped — always somebody else's horizon! O bliss! O poop-poop! O my! O my!' *That* was the attraction of motoring for the tyro. *That* was what made starting on the handle, driving in an overcoat and gloves in winter, and greasing the chassis every 500 miles worthwhile.

THE BEST OF THE VINTAGE

Despite the Depression it was a time for some of the greatest cars ever

"If the architecture of Olympia is open to criticism, the exhibits within are beyond it," pontificated *The Autocar* midway through its fourth decade. "Today there is no room in Britain for the cheap and shoddy, or for immature design." But a far more potent force than public taste was winnowing the ranks of the motor industry, for the world was already into the second year of the Great Depression. Though the magazine published a spread of photographs of the "immature designs" of a decade before, the 79 makes on show at Olympia represented a drop of nearly 100 over 1920.

As far as popular cars went, God was now very firmly with the big battalions, for it was only the mass-producers who had the financial reserves to weather the storm, and many marques of impeccable pedigree but limited recources vanished during the Depression. The rapid rise and fall of the AJS light car proved that more than a famous name was now needed to break into the motor industry.

But the decade that bridged the Depression also saw the production of some of the most sumptuous motor cars of all time, like the Bugatti Royale, a 12.7-litre straight-eight introduced in 1927. Alas, the kings for whom it was intended failed to buy, only six Royales were sold between 1927 and 1933, and Ettore ended by adapting the power unit to drive high-speed railcars for the SNCF.

More successful was the straight-eight Duesenberg Model J launched in 1928, a dohc 6.9-litre luxury car capable of some 116mph; it represented an engineering peak for the American motor industry and sold steadily in limited numbers through the Depression, only to vanish in the house-of-cards collapse of the Auburn-Cord-Duesenberg empire in the late 1930s.

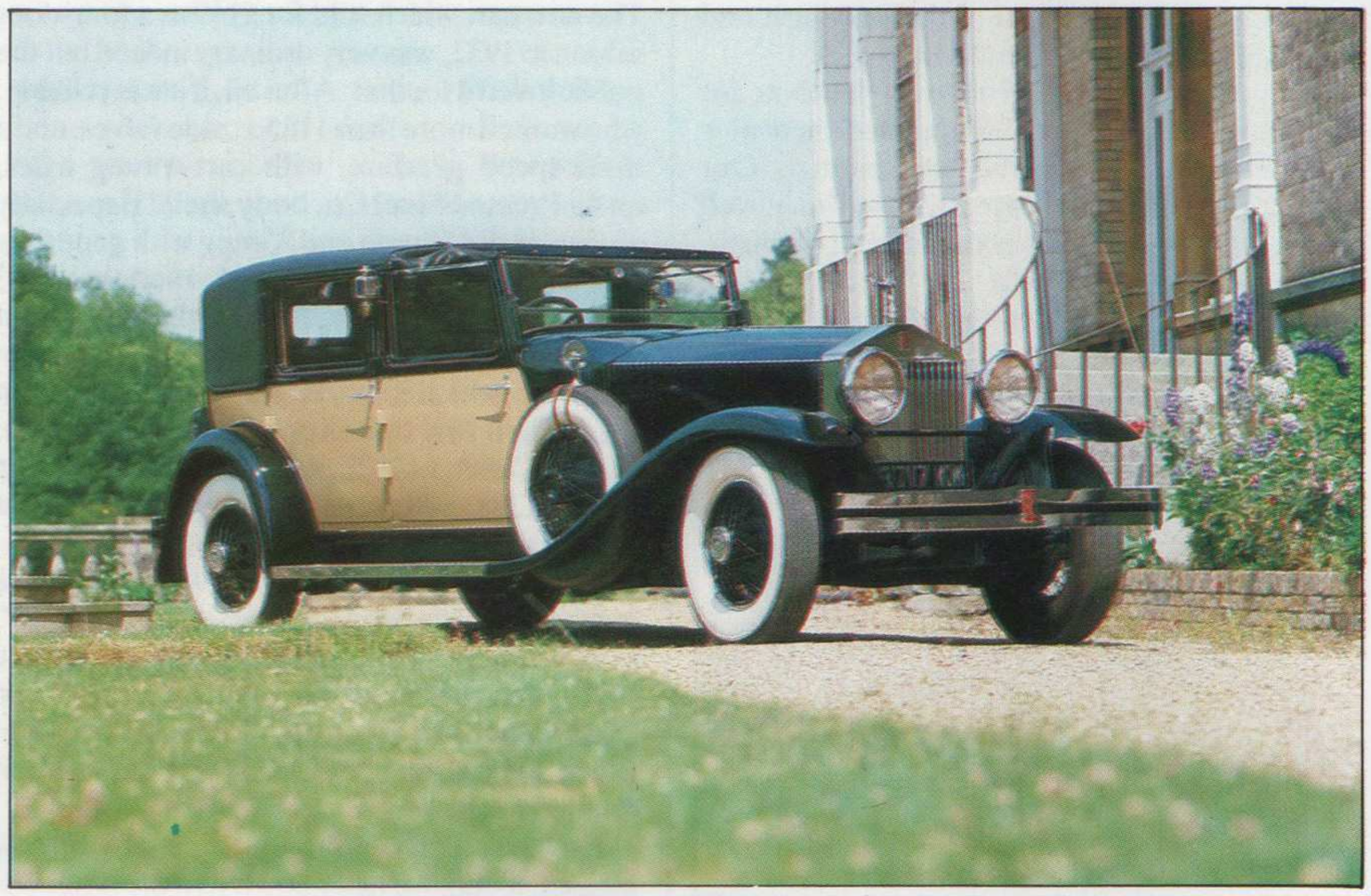
In 1930, the biggest car built in Britain was the new 8-litre Bentley six-cylinder, "the latest design of a firm which, more than any other, has carried the British colours to success in open and international competition." But that all-out racing policy had drained Bentley Motors of finance, and though the luxurious 8-litre was, even at prices up to £3000, the most profitable car Bentley had ever built, the company failed in 1931. Though Napier were keen to return to the luxury-car business by acquiring Bentley, they were outbid by the agents of Rolls-Royce, whose Rolls-based "Silent Sports Car" was a very different creature from the blood-and-guts Bentley sports cars that had made the marque's name during the 1920s.

Another giant of the Depression was the 9.4-litre V12 Type 68 Hispano-Suiza, introduced in 1931, which had pushrod ohv instead of the overhead camshaft of the 1920s Hispanos; its successor, the Type 68*bis*, was by far the biggest car of the 1930s, with the power unit enlarged to 11.3 litres — which, even by the standards of the day, was an awful lot of litres to achieve a 110mph top speed . . .

In fact, giant vee-engined cars enjoyed a limited vogue during the Depression years: in America Packard, Cadillac, Franklin and Pierce-Arrow all launched V12s in the early 1930s, while Cadillac, Marmon and Peerless unveiled V16s, of which only the Cadillac enjoyed even limited success.

Engine design had now improved so dramatically that the trouble and expense of building such power units was unnecessary, and by the end of the 1930s engines with more than six cylinders were a rarity.

■ **Below: VSCC was formed to keep the fun in motoring. Bottom: Unique Hooper-bodied Rolls-Royce Phantom 1 built for a wealthy American**

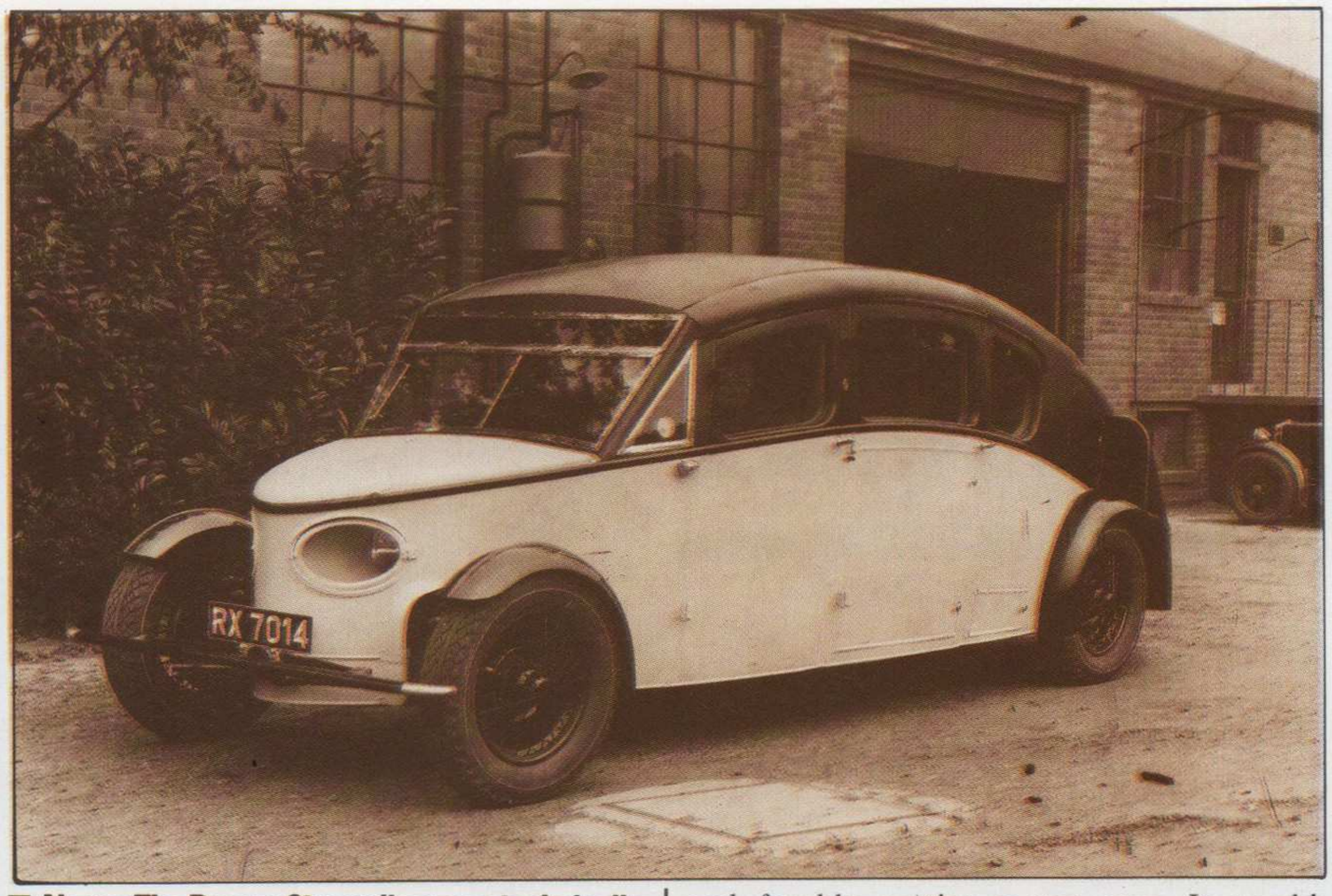


VINTAGE AND DEPRESSION: 1925-1935

The end of what we now call the "vintage" years (1919-30) saw some interesting attempts to popularise new technical concepts like the rear-engined, aerodynamic Burney Streamline, designed by the man responsible for the R100 airship. The Prince of Wales bought one, but the Burney was a commercial disaster. Front-wheel drive made a tentative appearance on sports cars like the Alvis and the French Tracta, but needed the genius of André Citroën to popularise it — and even then the effort broke him. And the elegant coachwork of the 1931 Austro-Daimler concealed a tubular backbone chassis with a rear swing axle, though independent front suspension didn't become popular until the mid-1930s, which also saw the widespread adoption of synchromesh gearboxes, thus removing one of the last skills from driving a motorcar.

Technical advances there were in that fourth decade of *The Autocar*, but compared with the motorcar of 1925, its 1935 counterpart was generally far more sophisticated, in the true dictionary sense of that much abused word.

Beneath its gaudy exterior and advanced technical features, it was actually a lot less fun to drive; and it was to counter this debasing of motoring standards that the Vintage Sports Car Club was formed in 1934 to use and preserve the best of the pre-1931 cars. Already *The Autocar* had played a crucial role in the preservation of motoring history by its sponsorship of the Brighton Run for pre-1905 cars from 1928 on: in the years ahead its articles would arouse the enthusiasm of future generations for vintage cars, too . . .



■ **Above: The Burney Streamliner was technically interesting but a financial disaster. Below: The Bentley 8-litre, the biggest car in Britain in 1930**

DEPRESSION AND ITS VICTIMS

The fall of many

It is fascinating to see how the British motoring scene changed between 1928 and 1933. The Depression struck the United States in 1929/30, and began to affect the British about a year later. In that period several well-known car makers hit trouble.

At the 1928 Olympia Show, *The Autocar* listed 57 marques, but by 1933 this had fallen to 39. Large manufacturers such as Austin and Morris had even more models on offer, in a desperate (and successful) attempt to bolster up sales, but many of the old 'vintage' hand-builders had gone.

The onset of mass-production, lower prices from the Big League, and a rash of small cars, all helped to kill companies like Clyno, Swift, HE and Argyll. But it wasn't only the small concerns which were in trouble.

Even before the onset of Depression, Humber and Hillman, both of Coventry, and both conveniently next door to each other, decide to get together to ensure survival. That laid the foundations for a large concern to build up (the Rootes Group), but it needed Rootes capital to make all that possible.

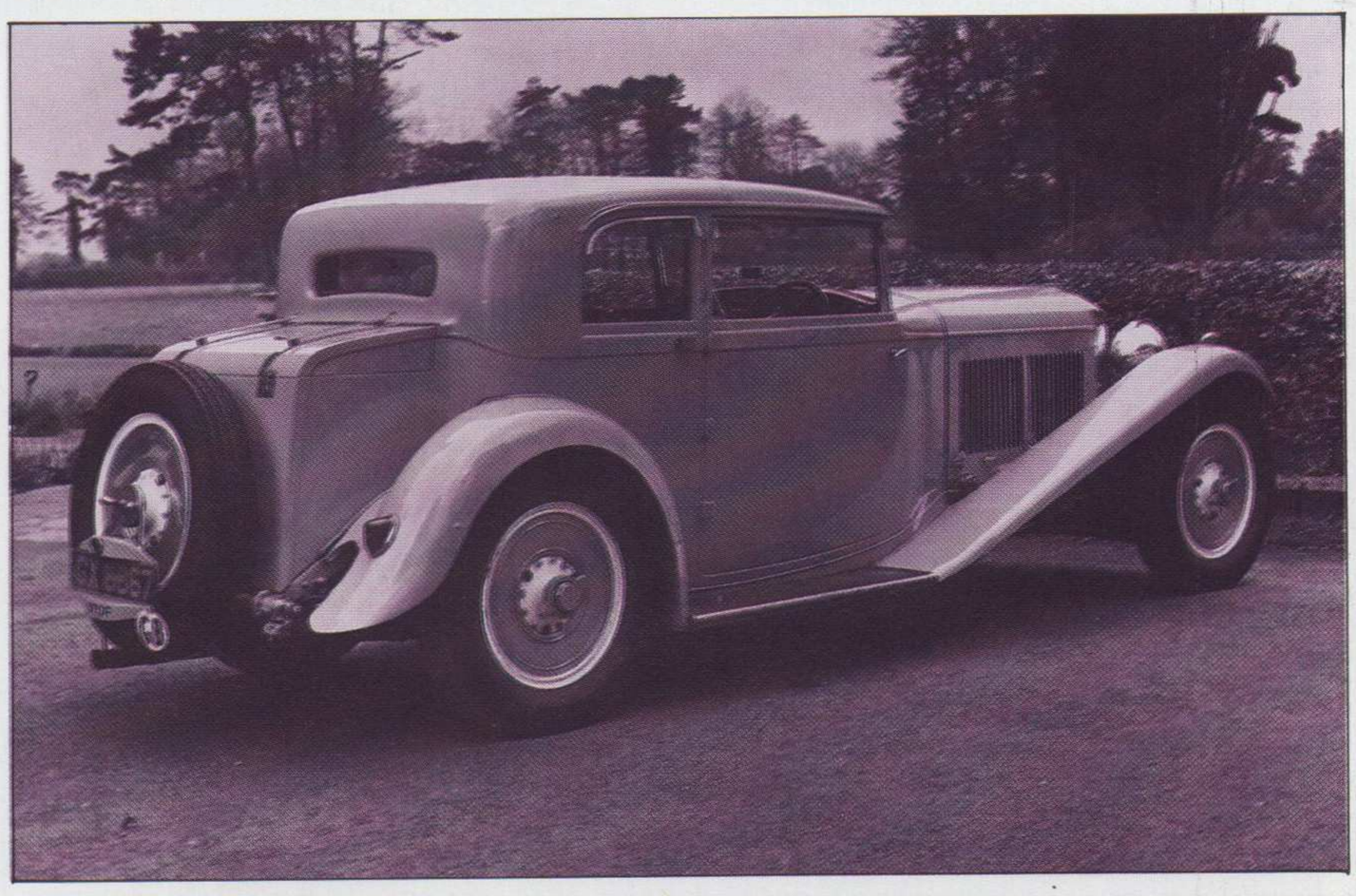
Other concerns, like Singer of Coventry and Birmingham, slid steadily out of contention, for they had been Britain's fourth largest marque in 1928, but needed a financial reconstruction in 1932, while Rover (also of Coventry) came within a hair's-breadth of joining them.

The real headlines were made by two of the country's most famous marques — Lanchester and Bentley. At the end of the 1920s both were building large-engined, expensive, machines for the rich, and by 1931 that breed of customer was becoming very scarce indeed.

When the banks called Lanchester's overdraft, they were forced into a shot-gun marriage with Daimler, and from 1932 the marque began to reappear on smaller, cheaper and frankly nastier motor cars. It would survive, as a down-market Daimler, until the 1950s, and is still presumably a dormant Jaguar marque.

Bentley, too, ran out of customers, and were taken over, in very shady circumstances, by Rolls-Royce, for until the last moment 'W. O.' himself had thought he would be bought up by Napier. There were no Bentleys at all in 1932 and 1933, and the next new model was based on the design of an existing Rolls-Royce engine and transmission. Yet, in many ways, the later 'Silent Sports Car' was a much nicer, and more successful, machine than the 'Cricklewood' model which it succeeded.

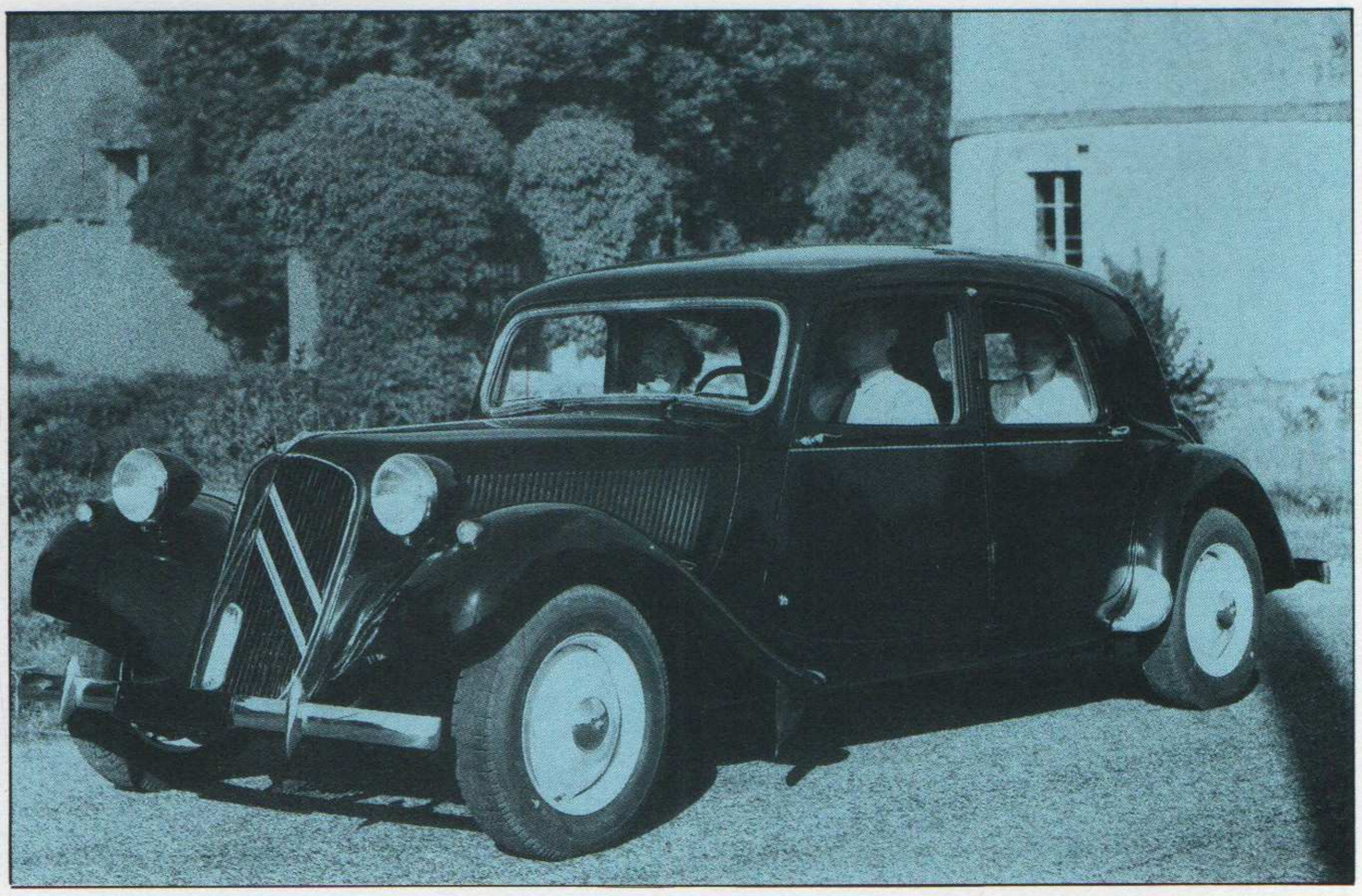
In these awful times (when UK motor car production fell to only 158,997 cars in the whole of 1931), it was a miracle that any important new marque even came into existence, let alone prospered, but it did. The new marque was SS, and within five years it had evolved into SS-Jaguar. The rest, as they say, is history . . .



CAR OF THE DECADE

CITROËN TRACTION AVANT

'Light years ahead'



Let's kill a few myths. The Citroën *Traction Avant* was not the world's first mass-produced front-wheel-drive car. Nor was it the first with a monocoque body (it wasn't even the first Citroën with this feature). Nor did it pioneer torsion bar suspension or 'streamlined' bodywork. It was, however, the first to combine all these features, and it was light years ahead of any other volume car of the decade.

It was, in its day, faster across country (particularly if the roads were rough, and in France they were), more comfortable, quieter, quicker around corners and more stylish than anything else around. It was a cocktail with the kick and flair of a Manhattan, compared to the light and bitter opposition.

The *Traction*'s predecessors give no clue at all as to what was to burst so sensationally on the scene just over 50 years ago (the *Traction* celebrated its half-century last year). Previous Citroëns had been worthy, sturdy, cheap, reliable, or, to put it another way, boring. They sold well and provided adequate transport for M and Mme Français (probably a bank manager and his wife), but they didn't set the world on fire — the British equivalent was something like the Bullnose Morris.

André Citroën was, of course, the inspiration behind the *Traction*. It was his greatest achievement — and it killed him.

Born in 1878 he was like many of motorings's pioneers, an entrepreneur de-luxe. Employed by Mors for a time, he left and started his own gear-cutting firm (hence the double chevron Citroën symbol). He amassed a fortune during the first world war making shells for the French government. His major qualities were his abilities to sell, and his realisation that mass-production was engineering's greatest offering to the twentieth century.

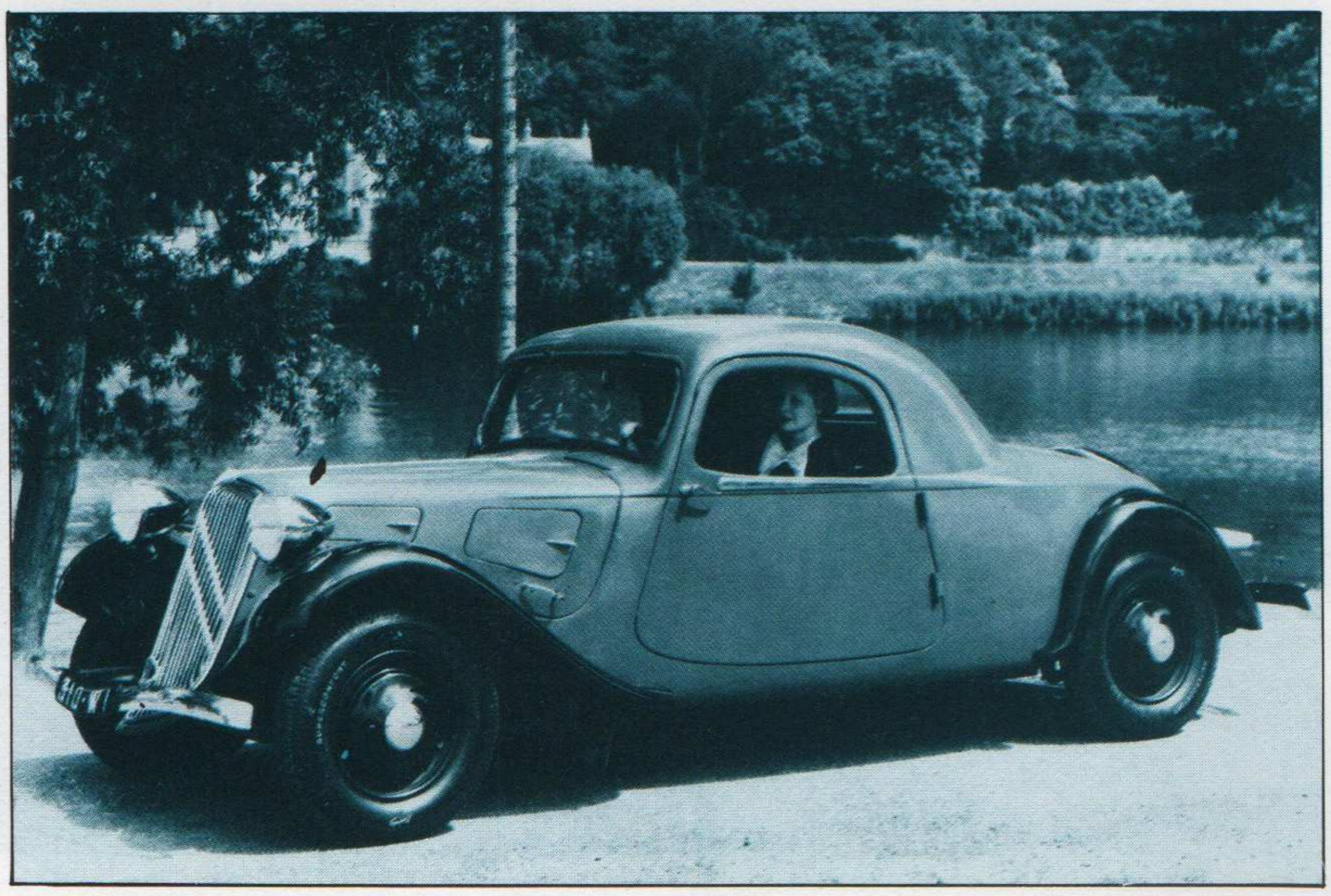
He started his car company in 1919, and the models bore names as prosaic as their specification: Type A, B2, C5, B10 and so on. They sold reasonably well, but by the early thirties not in the sort of volumes required to keep mass-production lines going efficiently. A replacement was required for the then-current model, the Rosalie.

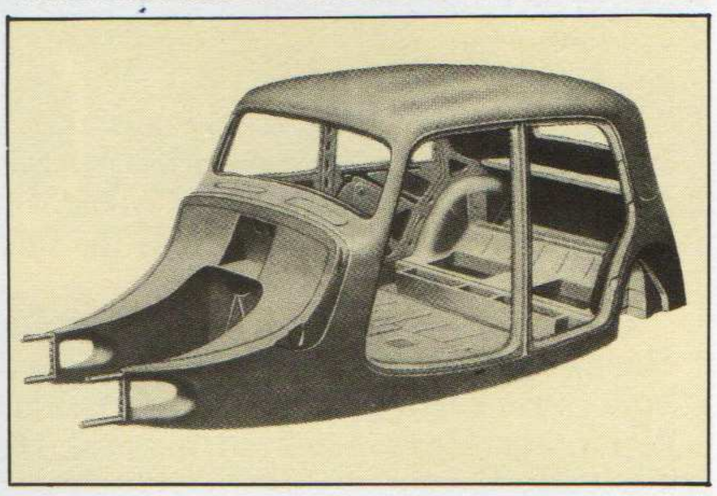
Having decided that the Rosalie's successor had to have front wheel drive, he then set the designers — André Lefebvre and and Maurice Sainturat — an impossibly short schedule to get the car into production. The result was insufficient development time, the usual early problems associated with a rushed job (not helped by Citroën's insistence that the car be fitted with a Sensaud de Lavaud automatic transmission, a running disaster if ever there was one, replaced at the eleventh hour by a more conventional manual box), and financial collapse for Citroën. The Michelin family, those grey, faceless, secretive *eminences grises* of the French economy, took over the company (they had been Citroën's chief creditors) and it was they who saw the Traction achieve fame — Citroën, ousted from his firm, died in 1935.

Lefebvre's design was an instant classic. From the Rosalie came the principle of the monocoque, as did the idea of the torsion bar suspension and 'floating power' engine mounts. The engine, though — a model of efficient design — was all new: it featured overhead valves, a short stroke, and wet cylinder liners.

Suspension at the front was by upper wishbones and lower transverse arms to which

■ The classic Traction, the French built Onze Normale called Light 15 here (top). Fixed head coupé (below). Traction monocoque (bottom)





the torsion bars were attached, at the rear by a beam axle located by trailing arms which activated the transverse torsion bars. There were hydraulic brakes all round, worm and roller steering (fairly quickly replaced by rack and pinion) and the aforementioned three speed gearbox, sticking out in front of the longitudinally mounted engine.

■ Beautifully restored pre-war Traction roadster of David Boyd has become a valuable collector's item, which is worth at least five figures

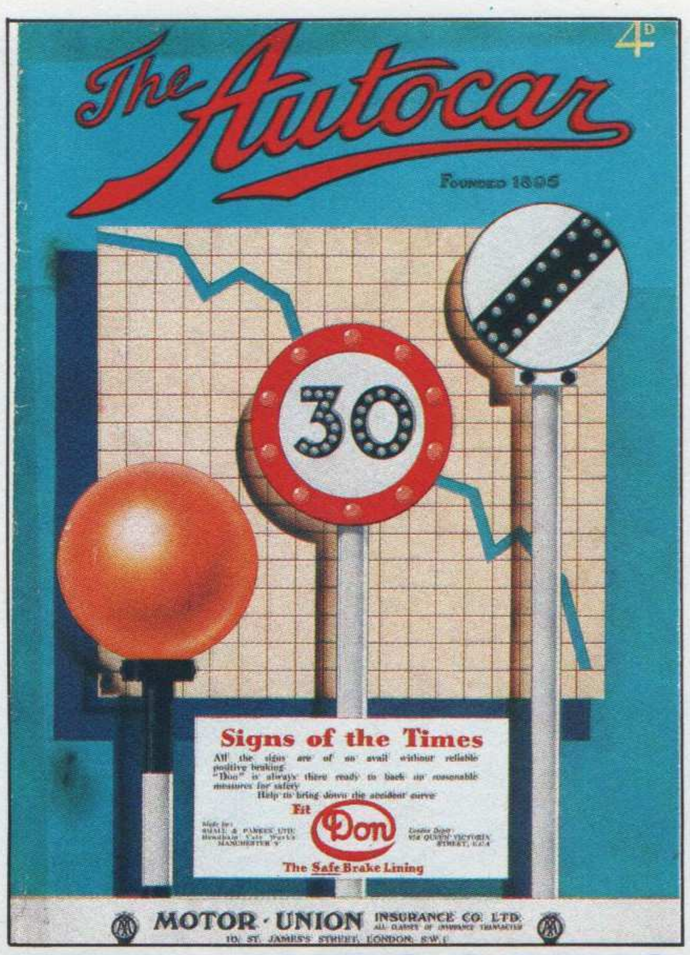
A variety of engines were offered, from a 1303cc four to a still-born V8 (what a machine that would have made!), but the most famous was the 1911cc four, which gave its name to the most classic of *Tractions*, the *Onze*. There were alternative body shapes as well, glamorous drop-heads and coupés, for example, and the lengthy *Familiale*.

Some 700,000 *Tractions* were made between 1934 and 1957 when they were replaced by the even more startling DS. A production line was set up in Slough and, though exact figures aren't known, it is estimated that about 35,000 four cylinder models were made in this country, revelling in the names of Light Fifteen and Big Fifteen, a reference to their RAC rating.

To drive a *Traction* today is no great shakes. The steering is muscle-building heavy at low speed, making parking exhausting (not helped by the minuscule back window!), but it improves with speed and is always nicely direct and full of feel. Performance, with about 50bhp to pull 20cwt along, isn't startling either, with a maximum top speed in the 70mph region and acceleration of the 'here to next Tuesday' variety — but the beauty of it is that, once up to cruising speed, you just keep it there day in and day out.

Potholes and bumps are smothered with an aplomb that many modern cars can't match, and there is an air of solidity about it totally unequalled by its contemporaries. Roadholding and handling, too, are well up to current standards (especially when fitted with the obligatory Michelin Xs) and on any twisty road it will leave many ostensibly quicker thirties machines far behind — no wonder it was the darling of both Maigret and the getaway mobs in equal proportions. There is quite a lot of engine and gear whine, but other than that the *Traction* is still a refined car.

No great shakes compared to today's cars perhaps: but compared to anything else from 50 years go you can see why it had to be the Car of the Decade.



THE AUTOCAR'S FACTS AND FIGURES

The first road test arrives

Although we had been trying out cars for a good many years, the very first official *Autocar* road test was published on 13 April 1928. The subject was the £70 Austin Seven 'England Sunshine' saloon, which achieved 47mph and recorded 42.4mpg fuel economy.

We have come a long way since then, for an early test occupied only one and a half pages, with one picture, a dashboard diagram, and a few figures. To do the job Brooklands was hired, the only special equipment being an accurate stop watch and a tape measure! It was ex-editor H. S. Linfield who recalled for us, many years later, that in those days *The Autocar* worked until lunchtime on Saturdays, and that much of the driving of test cars was on 'statutory' Saturday afternoon jaunts, usually with 'Sammy Davis' at the helm, and often with a visit to Brooklands, or another sporting event, as an excuse.

There were highlights right away, including the 92mph maximum achieved in a 4½-litre Bentley in 1929, the 97.8mph achieved in its supercharged development in 1930, and the effortless 101.12mph clocked up for the 8-litre in December 1930. It was no wonder that, on the latter occasion, we described the 8-litre as 'Motoring in its Highest Form: The Tremendous Performance'. By that time, too, tests occupied a full two pages, and there were three pictures! But how frustrating — we only measured 10-30mph acceleration in each gear. No standing ¼-mile sprints, no intermediate maxima, and (we're ashamed to say) rarely any criticism.

Fascinating to recall that the 8-litre's 101mph top speed was beaten by the race-tuned 8C2300 Alfa-Romeo in April 1932 (106.8mph, and 14mpg!), but rarely equalled throughout the 1930s. Which brings back to mind the Railton Light Sports Tourer test of November 1935, which achieved its 100mph, and also caused a stir, as the words said, by: 'The car's performance up the Brooklands test hill as part of the test was spectacular, the machine averaging nearly 30mph up it from a standing start, leaping high into the air at the summit, as the photograph shows, and travelling some 35 feet before touching the ground again . . .'

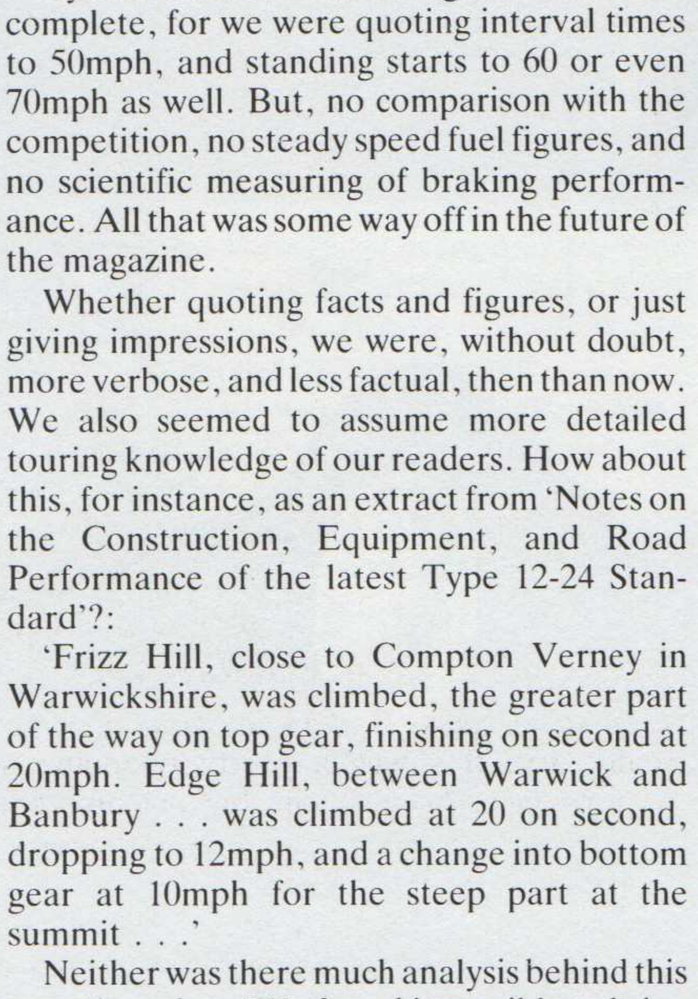
(Not many people believed the picture, especially Linfield's slicked-down hair-do, but it was genuine, none-the-less!).

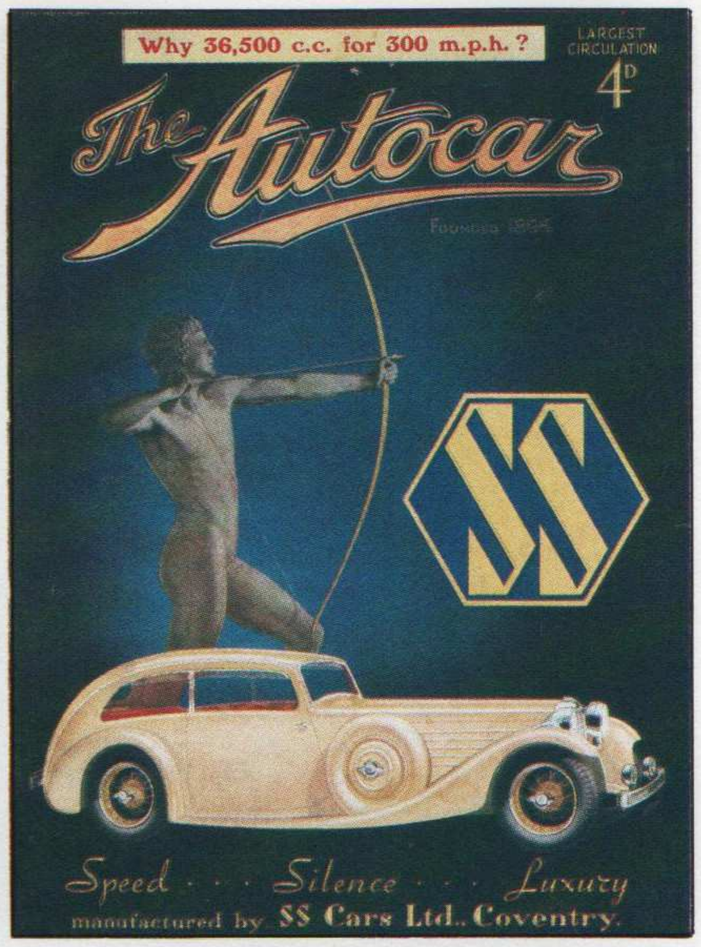
By that time, too, our test figures were more complete, for we were quoting interval times to 50mph, and standing starts to 60 or even 70mph as well. But, no comparison with the competition, no steady speed fuel figures, and no scientific measuring of braking performance. All that was some way off in the future of the magazine.

Whether quoting facts and figures, or just giving impressions, we were, without doubt, more verbose, and less factual, then than now. We also seemed to assume more detailed touring knowledge of our readers. How about this, for instance, as an extract from 'Notes on the Construction, Equipment, and Road Performance of the latest Type 12-24 Standard'?:

'Frizz Hill, close to Compton Verney in Warwickshire, was climbed, the greater part of the way on top gear, finishing on second at 20mph. Edge Hill, between Warwick and Banbury . . . was climbed at 20 on second, dropping to 12mph, and a change into bottom gear at 10mph for the steep part at the summit . . .'

Neither was there much analysis behind this assertion, that: 'We found it possible to bring the car rapidly to a dead stop from coasting at 20mph down a gradient of 1-in-6 with the exertion of a fair amount of force on the pedal . . .'

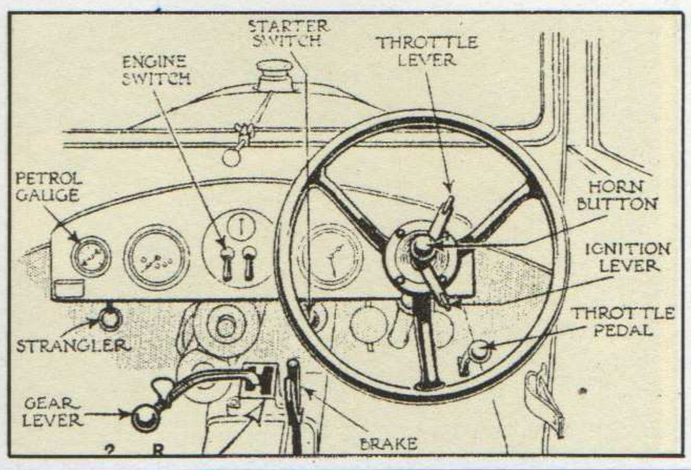




Times, of course, have changed, but could we really have thought the original 1932/33 type of Ford 8hp was 'A Car of Exceptional Potential Interest' . . . with a 'Lively, Powerful, Engine'? After all, its top speed was 59mph, and its all-out maximum in second gear a mere 36mph. Nowadays, for sure, we could never get away with ignoring the road holding of a car completely, yet this Ford, whose lack of directional stability became legion, attracted only the comment that: 'The steering is very light, and partly for that reason a little strange at first, especially as there is bound to be more reaction from the springing on any but first-class surfaces with a car of fairly short wheelbase . . .'

Even so, we still got through a lot of testing, even if not in as much detail. In 1933, for instance, no fewer than 80 cars were tried, of which only eight were European, and another nine North American. We analysed the spread, finding maximum speeds spanning 48.9mph (Austin Seven saloon) and 92.3mph (Rolls-Royce Phantom II Continental), prices spanning £120 (Ford 8hp) and £2425 (the Rolls-Royce again), and a mean top speed figure of 67.55mph, which had only crept up from 64.4mph in five years.

■ The face of the *Autocar* in the mid 1930s. Top left: June 1935, signs of the times. Top right: January 1935, the SS on target. Left: December 1934, Rootes shows its roots. Below: dashboard drawings were always an important part of tests



BROOKLANDS AT ITS BEST

The concrete bowl's last years were its best, though the bumps got even worse

Although Brooklands was no longer the only British Circuit — Donington was used from 1933, and the Ards circuit was still the Tourist Trophy venue — it was still the home of British motor racing. There was a thriving car building, and modifications, industry inside the concrete bowl, and a wide variety of events on the circuit itself.

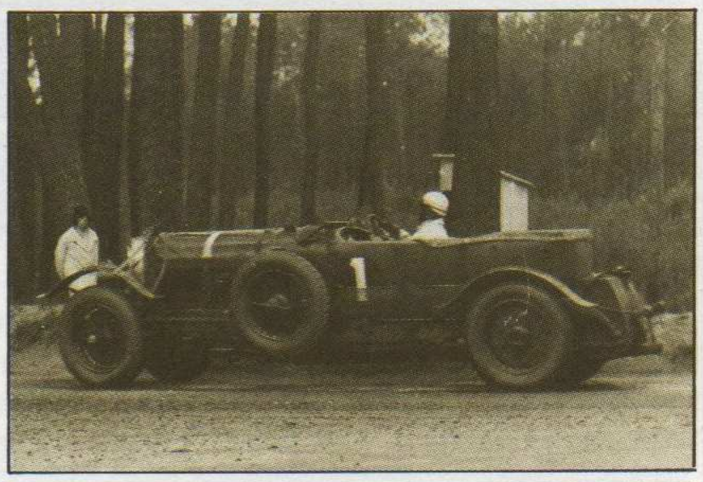
Brooklands, of course, was ideal for events requiring sustained high speed, so long-distance events like the Double-Twelve (hours), and the 500-miles race attracted much attention. There was also the perennial battle for the outer circuit lap record, which rose only slowly from 131.76mph in 1928 (Kaye Don's Sunbeam), to 143.44mph in 1935 (John Cobb's huge Napier-Railton).

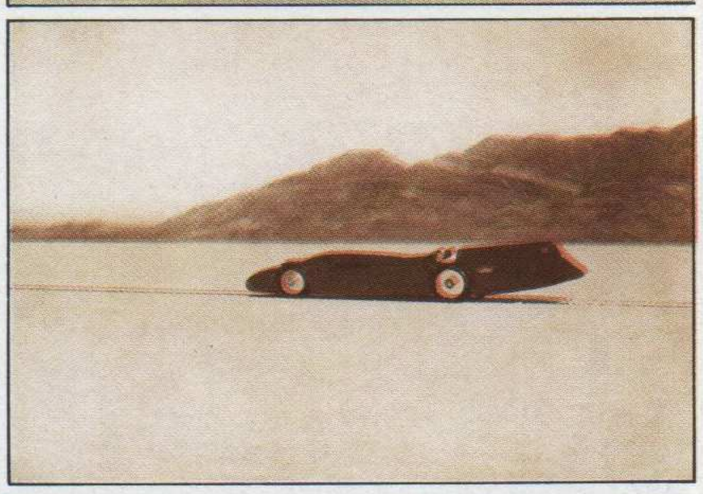
The lap record had to be attacked in a specific time trial, and required real bravery, for Brooklands was very bumpy, and had never been designed for the 160mph-plus top speeds needed. As our revered sports editor, 'Sammy' Davis wrote of Cobb's drive in *The Autocar* at the time: 'As the track was not really dry, this was a pretty phenomenal performance, because the big machine slid about in a manner quite exciting . . . the tyres would only last for two laps.'

It was the 'Double-Twelve', held only in 1929, 1930 and 1931, which caused so much attention. Run under handicapping rules, it involved the cars racing for 12 hours on each of two successive days. In 1929, with the cars locked away, overnight, between each session, Ramponi's 1½-litre twin-cam Alfa won at 76mph, from the Davis (*The Autocar* again)/Gunter Bentley at 81.39mph. Our eight-page race report, headlined 'Britain's First 24-Hour Race', described the event as the 'greatest race that England has ever seen'.

But not its fastest race. That privilege was reserved for the BRDC's flat-out, outer circuit, blind — the 500 Miles race — held at the end of the season (to allow leisurely rebuilds in the winter which followed!) In 1931, for instance, Jack Dunfee and Cyril Paul averaged 118.39mph to win in a Speed Six Bentley, while in 1935 John Cobb and Tim Rose-Richards unleashed the Napier-Railton, tyres permitting, to a 121.28mph average. (They raised it again, to 127.05mph, in 1937.)

Many people forget, too, that the first two British Grands Prix were held at Brooklands, in 1926 and 1927. Using, in each case, artificial corners placed in the finishing straight, these poorly-supported races were both won by Delage cars — at 71.61mph in 1926, and 85.50mph in 1927.





■ **Top: Six hour race at Brooklands in 1929. Above: Away from Brooklands, Bentley dominated the Le Mans 24 Hour race, and Sir Malcolm Campbell took the LSR to over 300mph in 1935**

By the mid-1930s, however, Brooklands was beyond its best, for the outer circuit seemed to get bumpier by the year, the public seemed to tire of handicap racing, and the track's natural speed limits had already been reached. From this point on, road racing became more popular.

MAJOR HAPPENINGS FROM THE DECADE

SPEED LIMITS

By the late 1920s, Britain's overall 20mph speed limit was discredited. Many police forces no longer seriously tried to enforce it, and most motorists ignored it.

The law, it seemed, was an ass, and eventually had to be changed. Even so, there was much muddle-headed Parliamentary debate before a new Road Traffic Act came into force. From 1 January 1931 British roads *including those in towns*, were free of any speed limit for the very first time.

The Autocar, who had campaigned long and loudly for this, was delighted. At one point they had assured the world that almost any car could cruise safely at between 35 and 40mph, though at least in an editorial on 2 January 1931 the editor thundered that: 'Motorists need scarcely be warned again that this does not give anyone the right to drive fast where circumstances do not fully justify speed . . .'

Unhappily all hopes of restraint were in vain, and it was soon clear that unlimited town speeds were potentially dangerous. Accident levels soared, there was public disquiet, and the result was that the 30mph speed limit 'for built-up areas' (and the definition of that caused many a waspish editorial, too!) was imposed from 18 March 1935.

EMPIRE BUILDERS

Until the mid-1920s Britain had, quite literally, dozens of independent, mostly small, car makers. In the next ten years, however, two multi-marque giants emerged and it was already possible to talk about Britain's 'Big Six' car makers — Austin, Ford, Morris, Rootes, Standard and Vauxhall.

The first of the 'empire builders' was William Morris, later knighted, and — from 1934 — ennobled as Lord Nuffield. Morris Motors had been building cars since 1913, but it was not until 1924 that the first 'MG' car was produced from another Morris enterprise, the Morris Garages business. Then, at the end of 1928, Morris bought up Wolseley, which had gone into liquidation, and kept that as a personally-owned business too.

After appointing Leonard Lord to make sense of it all in the early 1930s, he was persuaded to merge everything. From mid-1935 MG and Wolseley joined SU Carburettors, Morris Engines, and other businesses, in one large group. And three years later he would buy up Riley.

The Rootes Group started with two motor trading brothers, William and Reginald, who bought a stake in Humber-Hillman in 1928, and took compete control in 1932. They already owned the Thrupp & Maberley coachbuilding business.

Rationalisation set in rapidly, but William in particular, wanted to be a real tycoon, and looked around for more acquisitions. He bought the Karrier commercial vehicle business in 1934 then, after the S-T-D combine called in the receiver at the end of 1934, moved swiftly to annexe Talbot, of West London, and Sunbeam, of Wolverhampton, both in 1935. Three years later he invented the Sunbeam-Talbot, and the process was complete.

THE £100 CAR

Ford's entry into the small car market, in 1932, upset the apple cart, and caused something approaching panic among the ranks of other manufacturers. Before then Ford had built Model Ts and Model As, both badly hit by the horsepower tax rating. Now not only did they have a new factory at Dagenham, but a car specifically designed as a British 'Eight'.

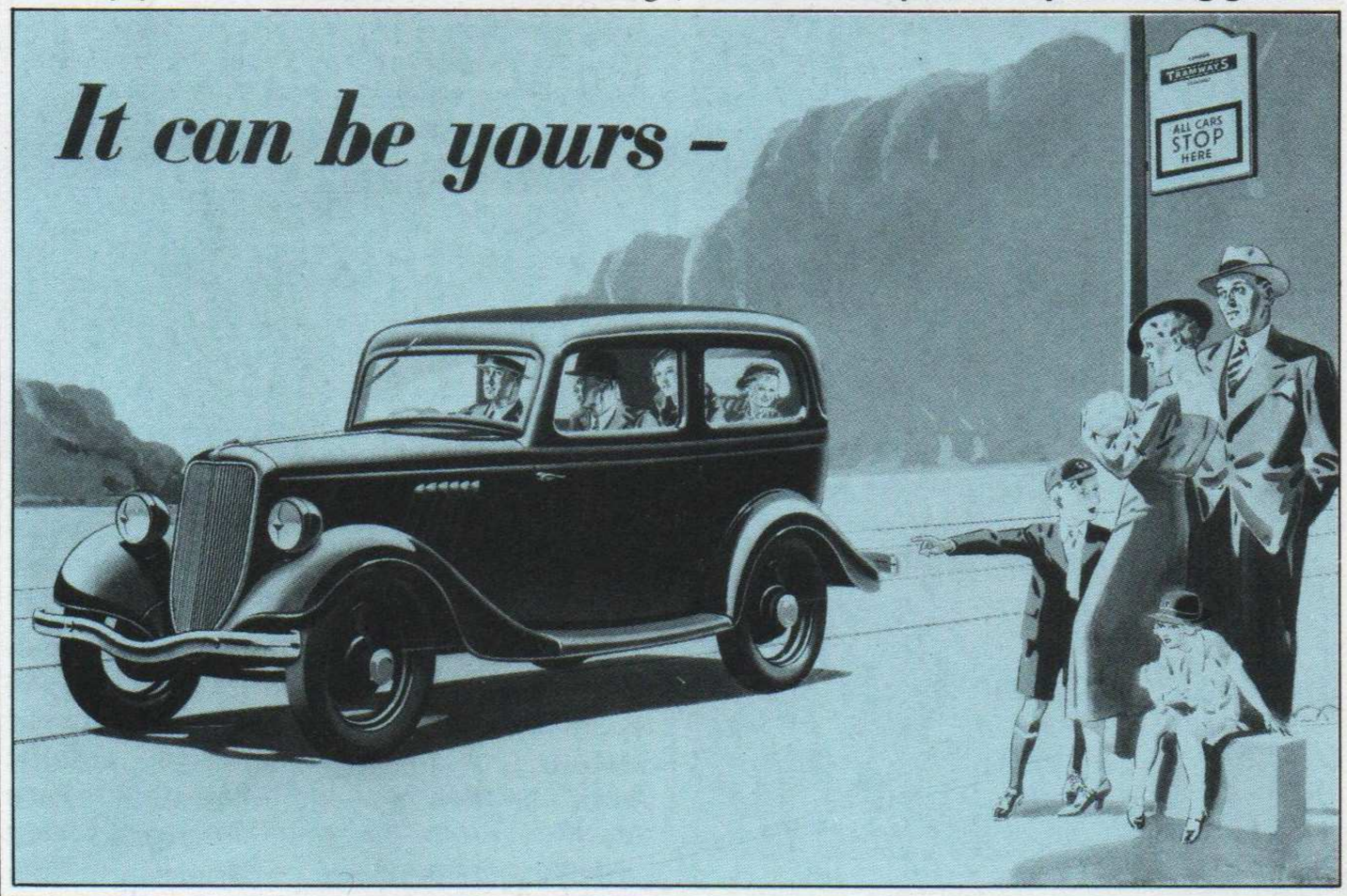
Much of the credit for this car lies with Ford's UK chairman, Sir Percival Perry, who insisted on having a car to combat Austin, Morris, Standard, and Singer at their own game. The miracle was that such a car was designed so quickly, and entirely in Detroit.

In Britain the Ford Eight was launched on 18 February 1932, and sales began in August. The style was that of the latest Model Y, shrunk onto a 90ins wheelbase, and the engine was a simple 933cc with 20bhp. The big advance, however, was that it sold for only £120, thus placing it under every other price except that of the Austin Seven. No wonder that it went on to sell 158,000 in five years, and also spawned the Tens, and many other small Fords.

The Autocar was weeks ahead of the launch, with a real 'scoop'. In our description, we suggested that: 'The new 8hp car should make a distinct appeal to the British public. Of this, its sponsors are sure . . .' and 'The very idea of a baby Ford is really exciting . . .'

But in the years to come, there were even bigger upsets in store for the opposition. Prices were trimmed every year, and in October 1935 came the new 'Popular', selling for just £100— the very first time a series-production British car had ever got down to that price. It was an epoch-making gesture, by any standards.

■ A popular car at popular price. The £100 Ford 8hp Popular was the first series-production car to sell for that price. An epoch making gesture!



THE FIRST DRIVING TEST

For many years anyone wanting to become a motorist had to have a licence. Getting one, however, was simplicity itself. One merely walked into a post office, filled in a form, handed over a small fee, and got a piece of paper. Thus equipped, one bought a car, and learned to drive by — driving!

Which was all very well when the roads were empty, and the speed of cars was low, but by the 1930s was perhaps not at all wise. Accordingly, in 1935, as part of the package which included the imposition of a speed limit in towns, came the requirement to pass a driving test.

The law became effective on 1 April 1935 (and we don't think that was a tongue-in-cheek act by any civil sevant), and proved remarkably easy to meet. Even so, *The Autocar* published a three-page 'how to do it' feature called 'The Art of Driving', in which hand signals, and very basic manoeuvres figured strongly.

'The one thing that is necessary above all in the really good driving of a car is judgement of pace', we advised, and ended by suggesting that: 'Having satisfied the examiner in this test, make a firm resolve. "That is how I will *always* drive."'

The first 'Pass' certificate of all was issued to a Mr R. E. L. Beere, of Kensington, W14, on 16 March 1935, and was reproduced, for posterity, in our columns.

DESIGN ADVANCES AT HOME

Getting the message

Between the wars British car design bogged down. On the one hand the 'Treasury rating' of annual taxation encouraged the building of long stroke engines, and on the other our industry was protected from competition by the McKenna duties, and our own 'Buy British' instincts.

By the mid-1930s the Europeans were streets ahead in chassis engineering, engine design, and styling. The fact that we had very good road surfaces, rising prosperity, and something of a complacent national attitude didn't help. Quite simply, we had nothing to answer the front-wheel-drive Citroëns, the delicious overhead-cam engined Alfa Romeos, and the independent front suspension of many foreign makers.

Things gradually changed — they had to — so that by 1940 the new models were beginning to get somewhere. The biggest and most obvious trend was to unit-construction (or, more correctly, combined body/chassis) structures. The front-drive Citroën had a true monocoque in 1934 (the Lancia Lambda had already pointed the way in the 1920s), but there was no matching design from the UK until 1937.

The Morris 10 and 12 'Series II' cars of 1935 had body floors welded to the chassis frame, but the first true chassis-less car was the Vauxhall Ten-Four of 1937. A year later the Morris Ten Series M matched it, and at the outbreak of war the new-model Hillman Minx joined in.

Independent front suspension took ages to get a foothold. A look at *The Autocar*'s Buyer's Guide in October 1935 showed IFS in big Hillmans, Humbers and Vauxhalls, but in no other mass-market car. There was more before 1940 but none from Austin, Morris, or Ford. And of independent *rear* suspension, there was no sign.

Most British engines were long-stroke, low-powered, and had side-valve breathing right up to 1940. Austin, Ford, Rootes and Standard all stayed that way, though Morris and Vauxhall produced new generations of ohv units by then. To get its performance a big British sports car relied on large-capacity engines — the SS100, for instance, had 3.5-litres to produce a 100mph top speed, while the long-stroke 1.3-litre MG TA was limited to about 75mph. Quite definitely, one can blame the 'Treasury rating' for this.

We were, however, getting the message — with hydraulic brakes gradually ousting cable or rod linkages, styling coming up to date with recessed headlamps and smoother lines, and with almost every car getting a synchromesh gearbox. There were no completely automatic transmissions at this stage (the very first would be in 1941 Cadillacs in the USA), but more and more cars had pre-selector transmissions of one type or another; the Wilson type (so famous in Daimlers and Armstrong-Siddeleys) was much the most popular.

All in all, though, late '30s British cars were better at gimmicks like permanent on-board jacks and window blinds, than true innovations. Perhaps we did not realise just how important SS-Jaguar's 'air-conditioning' installation of 1939 (which means 'fresh air heater' in modern language) was to become.

In this decade most of the technical innovation was reserved for aircraft, and for military vehicles. That is another story, except that one should mention the way in which Daimler Scout and Armoured cars helped provide engines for post-war Daimlers, and Austin light trucks would do so much for the Austin cars of the late 1940s.

... AND ABROAD

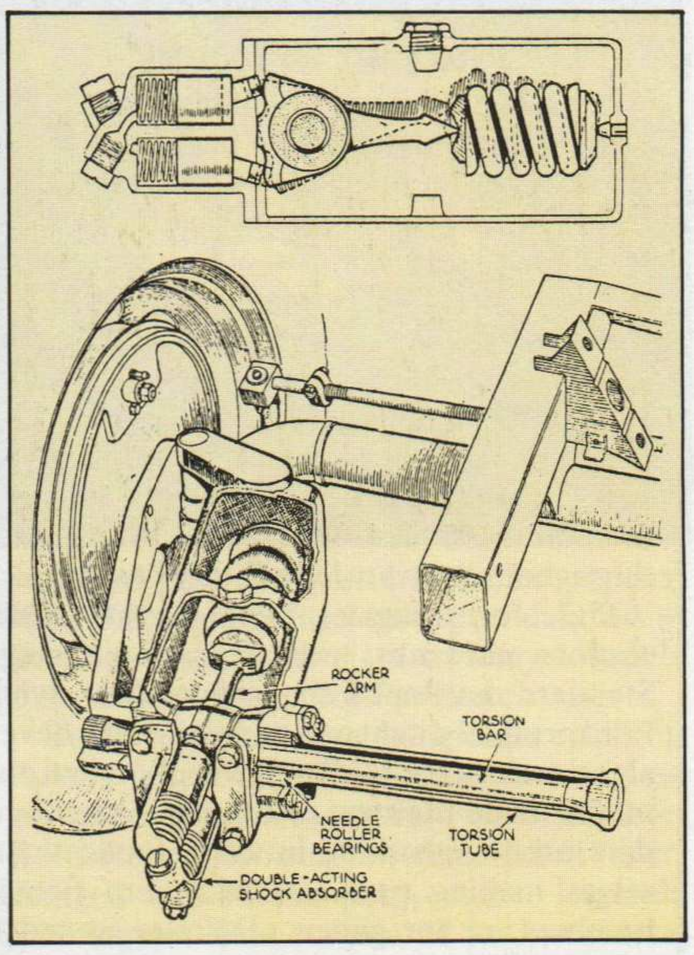
Automatic transmission, no chassis and valvegear upstairs

The major technical breakthroughs of the late 1930s and early 1940s were all made overseas, some in Europe, but a surprising number in North America. Even in Detroit, where the industry's tycoons were most keen on annual styling changes, much was going on 'under the skin'.

Cadillac (a General Motors company) was the first to offer fully automatic transmission — the famous Hydramatic — which lasted well into the 1960s, and they were also the last to offer a V16 engine. Several American cars, too, offered overdrives, but these were of the conventional, rather than later (British) epicyclic type.

There was the phenomenon of chassis-less body construction which attracted much publicity when the front-wheel-drive Citroën

■ Standard 8 stuck to sidevalves (left). Exotic Alfas boasted all-independant suspension (below left), while in 1937 Vauxhall's humble 10 had torsion-bar IFS and chassis-less construction.



Traction Avant appeared, but was also a feature of cars as diverse as the Chrysler Airflow, and the Lancia Aprilia. The Volvo PV444, first seen in 1944, had a true monocoque, as did the Renault 4CV of the mid-1940s, which had evolved during the Second World War itself.

Supercharged engines had already hit their peak before 1935, so no-one rushed to join Mercedes-Benz (with their 'optional' system) or Alfa Romeo. There was, however, a trend towards more powerful and higher revving units, though overhead valves, rather than overhead camshafts, were usually enough for most designers. A lot of attention was given to BMW's complex cross-pushrod overhead valve gear, combined with part-spherical combustion chambers, while several companies (Saab included) looked at the DKW type of front-wheel-drive layout; Saab's day was yet to come.

Rear engines were still quite rare, however. The VW Beetle was still only a prototype, and the Tatra was not often seen out of its native Czechoslovakia. The Beetle was not admired by the pundits of the day, for its air-cooled engine and its rounded styling were not to many people's liking. In any case, rear engines meant independent rear suspension, and on the evidence of the Auto-Union GP cars that meant trouble, surely?

If only we had known it then. The Americans were to have the greatest influence in the mid-1940s, not for what they looked like, but because their market would prove so attractive to so many companies immediately after the six years of war.

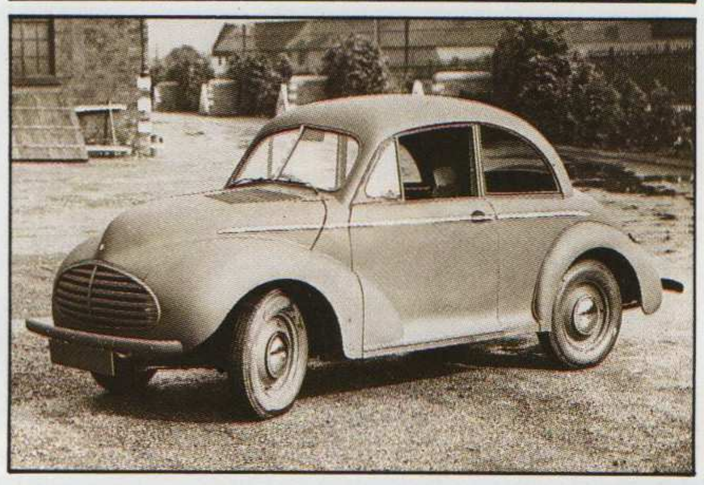
THE BRITISH CAR AT WAR

Rapid conversion to military production played its part in victory

Without the British motor industry the British forces would not have won the war. Not only did the industry manage vast 'shadow' factories which produced aero-engines, but they also supplied cars, trucks, and other machines, to keep our forces on the move.

Production for civilian purposes ended early in 1940, after which the private motorist had to adopt a KBO policy (KBO = Keep B.....g On) with an ageing product. Most jigs, tools, and assembly facilities were stored away for the duration, but a few cars were made throughout the war, for military purposes.

MG, for instance, built aircraft centre sections and tanks, while Jaguar built wings. Standard developed air-drop vehicles, while Ford produced light personnel carriers. Several factories in the Midlands were bombed out, others made the strangest things. Coachbuilders used to working in wood found themselves making parts for Mosquito fighter/bombers, or for gliders. Daimler turned to



■ **This 1937 Packard (top) was a V12, while the Citroën (middle) combined unitary construction and front-wheel-drive. The prototype Morris Minor (above) was initially developed in secret during the war years using a much narrower track.**

building Scout and Armoured cars, while Rootes also made some very odd, if effective, military Humbers.

At Austin, however, tens of thousands of 1939-style Eights and Tens were produced, some with pick-up bodies, but many as drab-painted saloons, while Ford of Dagenham continued to build the small transverse-spring chassis with various bodies fitted. There were no large and luxurious cars still being made — most of them were requisitioned, as and when needed! — and a lot of general running about was done in the ubiquitous US-made Jeep.

How many WW2 films and newsreels have we seen, where officers swish up to important meetings in their big Humbers, Vauxhalls, or Wolseleys? Almost all had been built by 1940, and were re-furbished as and when required. No-one, but no-one, was building coachbuilt shells anymore. Daimler built ambulances, as did Morris Commercial, while Wolseley actually bought back 600 secondhand cars for conversion to ambulance bodies. Morris seemed to build anything mechanical, from tanks to complete aircraft, but they also managed to produce some of the smaller passenger cars, also for staff car use.

It was a fascinating period, where the factories produced a few prototypes (the Morris Minor and the Jowett Javelin, for instance), but otherwise played with big and destructive military toys.

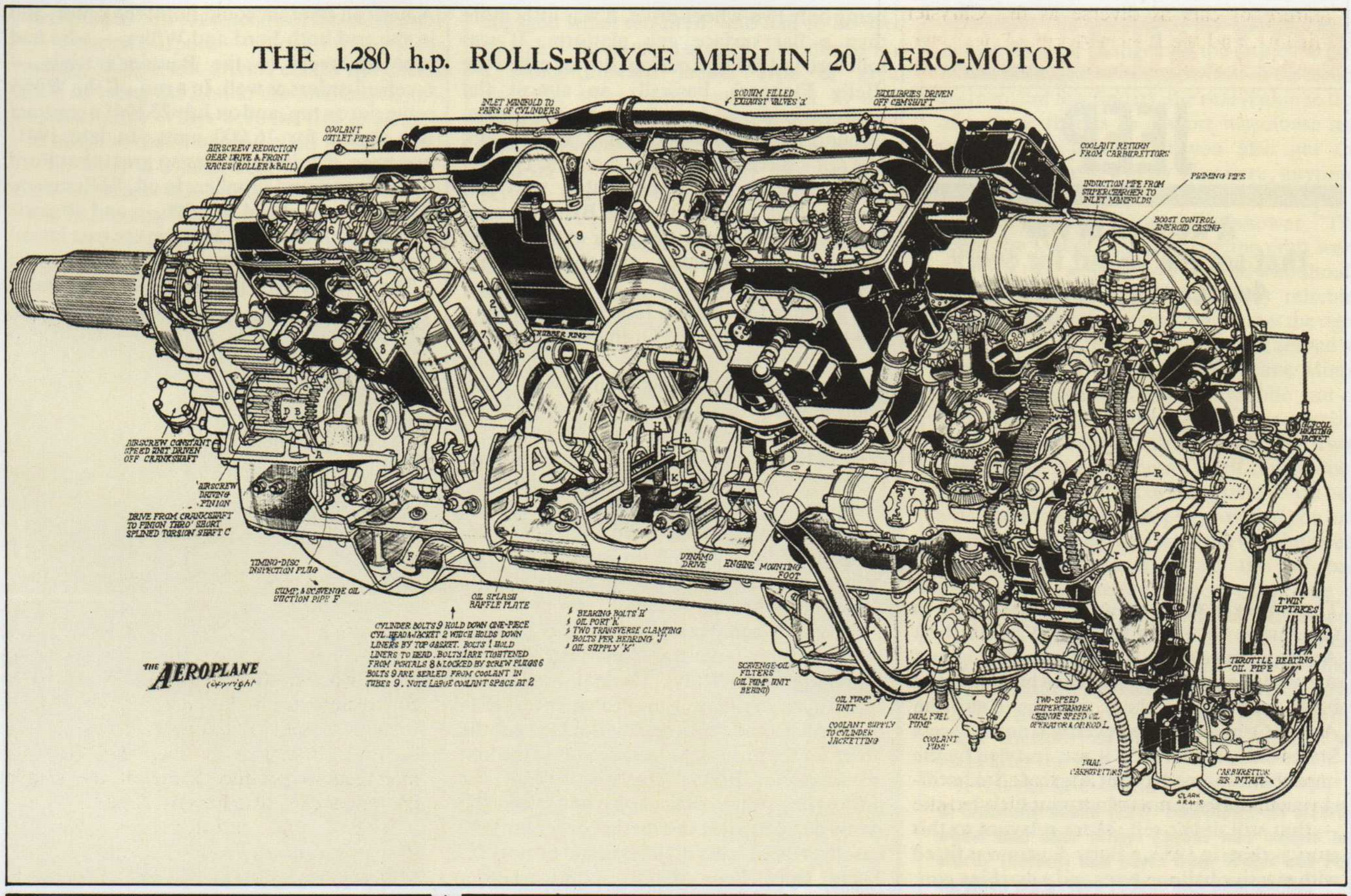
WORLD WAR TOYS

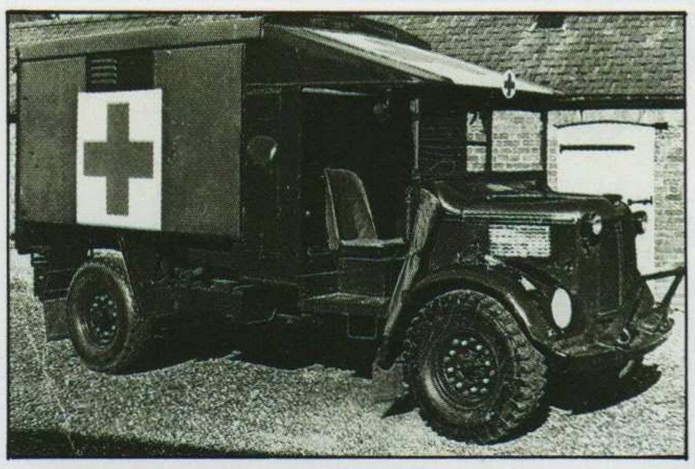
From steel helmets and ammunition boxes to full-size tanks

Who was it who said: 'The difference between men and boys . . . is just the size of their toys!'? If it had not been for the ghastly business of killing people and destroying property, even complete nations, the machines of war would have provided endless enjoyment for countless servicemen.

The most famous new 'toy' to emerge from the war was the US Jeep, such a versatile little four-wheel-drive device that it set the standard layout chosen by 4wd manufacturers ever since; without the Jeep, there would have been no Land-Rover, and without that, where would Rover be?

Here there is space to do no more than mention some of the 'toys' produced by the motor industry, and these range from full-size tanks (Churchills, from Vauxhall) to Bren-gun carriers (from Ford), mines (from Wolseley), to bomber fuel tanks (from Austin). Austin,





■ **Rolls-Royce immortal Merlin aero engine (top) fought the war in the sky, while the rest of the industry churned out countless trucks, ambulances and staff cars, many converted from pre-war saloons. After the war, many of them continued in more peaceful civilian duties.**

for instance, produced 2.5 million steel helmets, and nearly 3.5 million ammunition boxes during the war period.

There were so many products that no one firm was famous for one of them. Daimler, of course, had their go-anywhere armoured car, which *The Autocar* took delight in describing in 1943 (after the censors lifted restrictions, presumably once the Germans had captured some to study!). With all-independent suspension, a 4.1-litre six-cylinder engine, and steering wheels facing forwards *and* backwards, it was quite a 'toy'.

So, too, was the Bren gun carrier, which had armoured tracks but 3.6-litre V8 engine power, while Nuffield's biggest military machine was certainly the Crusader tank. Vauxhall concentrated on building thousands of those snub-nosed Bedford trucks which seemed to come in all shapes and sizes, but their most spectacular product was undoubtedly the 38-ton Churchill tank, designed, tooled and put into production in one year.

Rootes produced 4wd staff cars (an ex-staff man, Ted Eves, records that the prototype was immobile at first, with one axle driving forward when the other drove back . . .), while Standard built 20 Bristol Hercules engines, 3000 Beaufighter fuselages, and dabbled at length with the lightweight motorcycle saddle 'Jungle Bug' project for Far Eastern use.

But it would be unfair to highlight one firm. Rover, after all, developed the original gas-turbine engines with Frank Whittle. Rolls-Royce produced the magnificent supercharged V12 Merlin aero-engine. Lagonda V12 engines were considered for fast coastal boats. The list is almost endless . . .

CAR OF THE DECADE

JEEP

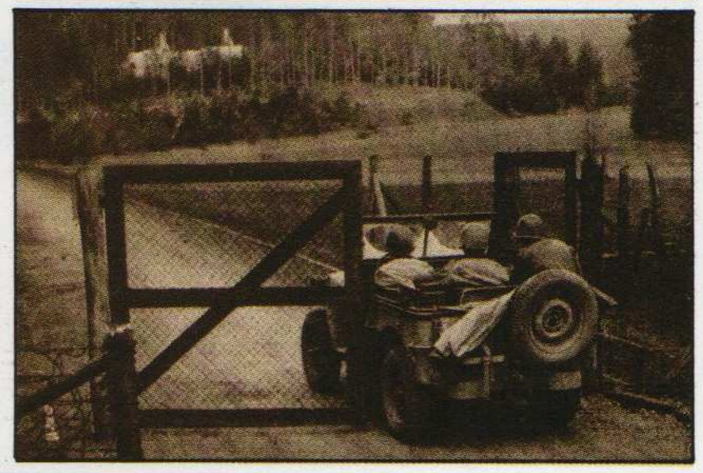
A weapon of war that set the layout for every 4wd car that followed

The origins of the Jeep lie, believe it or not, in the Austin Seven! In the late 1920s Herbert Austin allowed various companies throughout the world to take out a licence to build his little baby, and one of them was the American Austin Company. The Seven was not a success States-side, and in 1935 it was restyled by the improbably named Count Alexis de Sakhnoffsky and emerged as a voluptuous little beastie — that still didn't sell. More relevant to this story is that, in 1933, a Baby Austin was fitted with massive balloon tyres and a machine gun: being only two-wheel-drive, it was little more than a flat surface gun platform. It was followed in 1937 by a curious device called the 'Belly Flopper', basically an almost flat platform powered by a Baby Austin engine. Ground clearance was minimal, and it, too, was not a success, but it was shown to Delmar Ross, Chief Engineer of Willys, who saw something in it. In 1938 some Bantams were lent to the American Army for evaluation as reconnaissance vehicles, and the Army reported favourably.

It all came together on June 19 1940, when a sub-committee of the Ordnance Technical Committee of the American Army met at the Bantam factory at Butler, Pennsylvania: the main features of the proposed vehicle were mapped out. It was to have four-wheel-drive, a crew of three, one machine gun, good ground clearance and ramp angles,and minimal bodywork. Specifications were drawn up, and a contract for 70 put out to tender. There was a sting in the tail: the first prototype had to be delivered within 49 days, the balance to be delivered within the next 26!

Only two companies, out of 135 invited, submitted tenders: the American Bantam Company and Willys Overland. Bantam called in an engineer, Karl Probst: in less than five days he had plans ready. Bantam got the order for the prototype, and delivered the first on schedule. Before the majority of the prototypes were delivered, however, the Army decided to place a further order for 1500 based on the success of the Bantam prototype. There were some doubts as to whether American Bantam could fulfill the order, and in the end both Ford and Willys — who had sent observers to the Bantam's trials — received orders as well. In a run-off the Willys came out on top, and on July 23 1941 a contract was signed for 16,000 units. In late 1941, however, the demand was so great that Ford became a second supplier. In all, Willys made 361,349 Jeeps, Ford 277,896 — and all parts were interchangeable. Bantam the true inventors of the Jeep, lost out all along the way . . .

The origins of the name are generally



■ **The Jeep coped with all sorts of conditions (top) and was modified to carry a variety of extra weaponry, as on this SAS version (above).**

WAR TIME AUSTERITY: 1935-1945

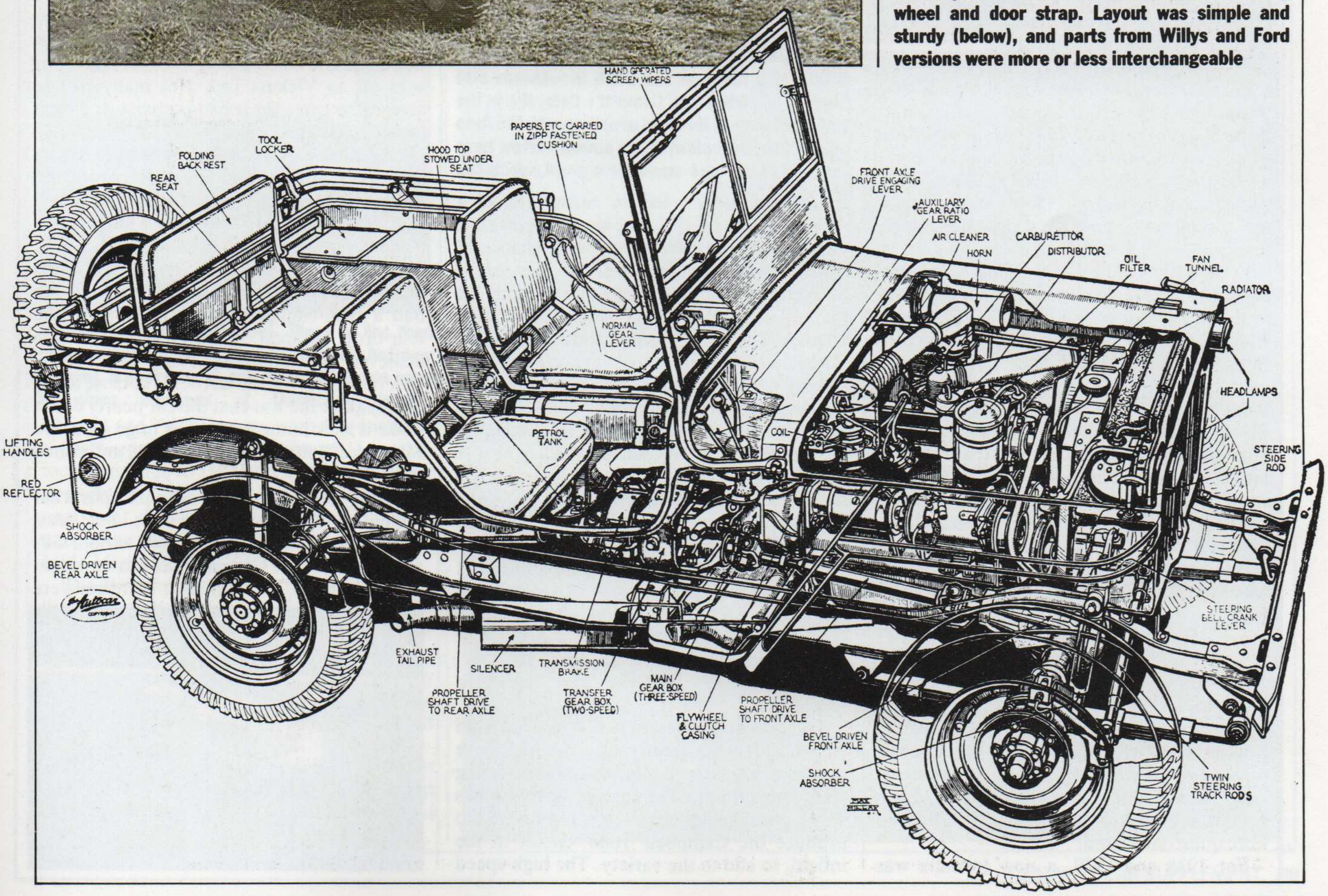
accepted to be a contraction of the initials 'GP' — General purpose — though Irving Hausmann, Willy's test driver, claims the distinction of being the first to use and emphasis it, and certainly Willys were the first to adopt it, so much so that it became their trade mark.

So what is a basic Jeep? The engine is a four-cylinder side-valve, displacing 2199cc and delivering 60bhp at 4000rpm. Transmission was via a three-speed gearbox and high-low range transfer box attached to it. A further box allows front-wheel drive to be engaged when required, and had to be used when low range was engaged. The chassis was a straightforward ladder type of great strength, there were leaf springs at each corner, and hydraulic brakes were standard. Bodywork was notable more by its absence than its presence, and many was the GI or private who cursed this feature in bad weather . . .

To drive a Jeep is to know you're driving minimal transportation. Comfort and refinement didn't come high on the list of Army priorities! The steering at low speeds can be heavy, the gear change is of the crunch variety (there is alleged to be synchromesh on second and top, but few find it), the ride is akin to that of a horse thanks to a short wheelbase and springs that don't, but you also get the impression that it will go anywhere, anytime, and keep on going.

In the words of General Eisenhower, "The Jeep, the Dakota and the landing craft were the tools that won the war" — and who should know better? Compact, rugged, reliable, versatile, it was the perfect machine at the right time. It was all things to all men. It served as transport for Kings, Generals, Prime Ministers — and privates. It was a mobile gun or rocket launcher, a messenger boy, an ambulance, a Black Maria, an armoured car — it was everything. It could heave itself out of deep glutinous mud or fine, drifting sand — yet belt along good roads at 60mph (provided you had a fairly strong following wind). It was the direct and sole predecessor of all the off-road vehicles we see today, almost every one of which follows its mechanical layout. It has seen service in every country of the world. There was an amphibious version, one of which actually made it across the Atlantic! It could be adapted to run on railway tracks. It became the staple transport of third-world countries for years after the war.

It was the first — and the best.



■ **Campsite scene (left): note sawn-off steering wheel and door strap. Layout was simple and sturdy (below), and parts from Willys and Ford versions were more or less interchangeable**

DEUTSCHLAND UBER ALLES...

Germany ruled the Grand Prix roost, but Britain took world records

From 1935 to 1939, Hitler's Germany dominated world-class motor-racing, and for the ensuing six years they attempted to dominate the world. In motor racing it was a complete, if not sudden, shift for there had been a time when Alfa Romeo and Bugatti had seemed to be winning almost everything. Now, except in some sports car events, the names of Mercedes-Benz and Auto-Union dominated the scene.

There was also a shift in interest, as far as we Brits were concerned. There was little British interest in sports car racing any more, for Bentleys were outdated, Lagonda and Talbot out of contention, and MG had withdrawn. Brooklands, frankly, was already past its best, while Sir Malcolm Campbell had turned from the land to the water, for his record-breaking.

No-one in Europe, however, could ignore the thunderous excitement of the '750kg' Grand Prix racing formula. As an attempt to keep down speeds and engine sizes, it had failed completely — what had developed were the fastest racing cars of all time.

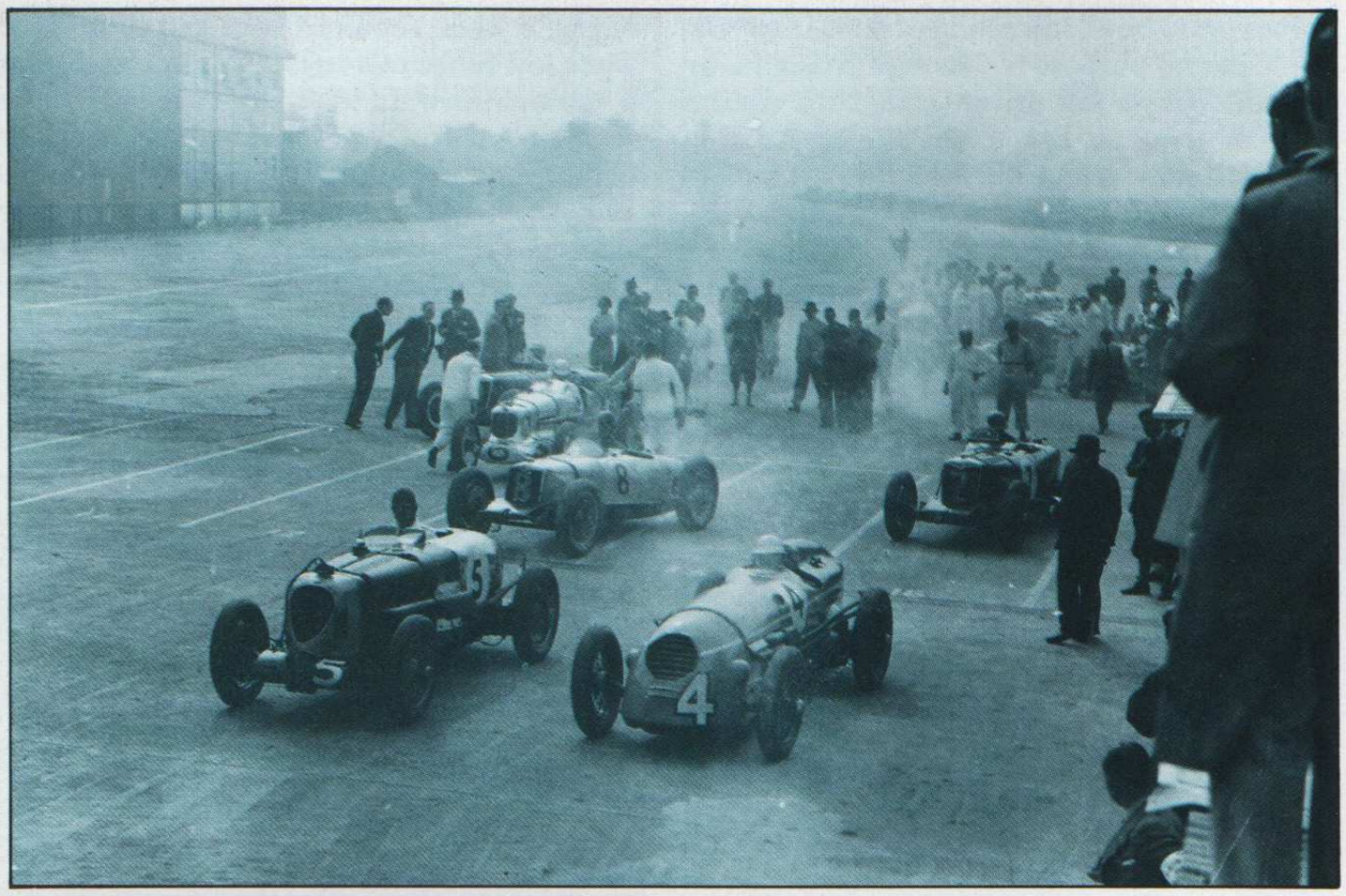
In five years, however, the two state-subsidised German teams won almost as they pleased. It was only the occasional inspired drive like Nurburgring 1935, where the little genius Tazio Nuvolari (in an old-fashioned looking Alfa Romeo) won, or at Pau in 1938, where a reliable and driveable Delahaye beat the troublesome new Mercedes-Benz cars, that the mould was broken.

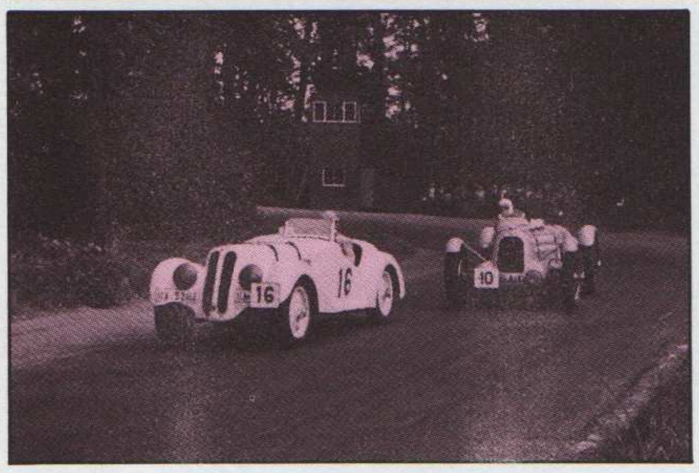
From 1934 to 1937, the '750kg' formula produced large-engined, fast, supercars from the Germans, and even occasionally from Alfa Romeo. In 1935, the 430bhp 4-litre Mercedes-Benz cars swept the board, winning nine events to Auto-Union's two. A year later, the mid-engined 520bhp/6-litre Auto-Unions won six times, compared with two 460bhp/4.75-litre Mercedes-Benz wins — and that included prestigious victories in the German, Italian, and USA Vanderbilt Cup events.

There was time for one more titanic struggle. For 1937 Mercedes-Benz produced an efficient new front-engined W125 chassis which featured De Dion rear suspension, and a 580bhp/5.7-litre eight-cylinder engine (whose supercharger sucked, rather than blew, through the carburettors).

In every way this was the red-blooded peak of battle, for Mercedes-Benz now had Caracciola, von Brauchitsch, Lang, and the young Englishman Richard Seaman all in the team, with Auto-Union using Bernd Rosemeyer, Luigi Fagioli, and Hasse in their cars. Each team won five major events, and Alfa Romeo were quite outclassed.

For 1938 and 1939, a new formula was introduced, which led to teams choosing 4½-litre unblown, or 3-litre blown engines. At one time there might have been a chance of other teams winning, but in the event Mercedes-Benz were even more dominant than before, with their 485bhp/3-litre V12 engines. There was triumph and tragedy, too, for Richard Seaman, who won his first *Grand Epreuve*, the German in 1938, but crashed and died in Belgium a year later.





■ **MGs and Rileys at the 1936 Brooklands 500 (top). Bira's BMW and Comotti's Delayahe in the 1937 TT (above). Nuvolari wrestling with the Auto Union at Berne (below): huge power, narrow tyres and lots of courage made for a great spectacle.**

Britain saw two Grands Prix at Donington Park in 1937 and 1938, both of which were won by the unwieldy Auto-Unions. The effect on the crowds was startling, as *The Autocar*'s 'Sammy' Davis recorded in 1937: '. . . with 30 seconds to go, they started, and at once every other noise was drowned. Nothing like that had been heard ever before in motor racing in this country . . . When Lang shot over the crest of the road into view . . . inoffensive spectators clapped total strangers on the back, beseeching to observe an amazing spectacle . . .'

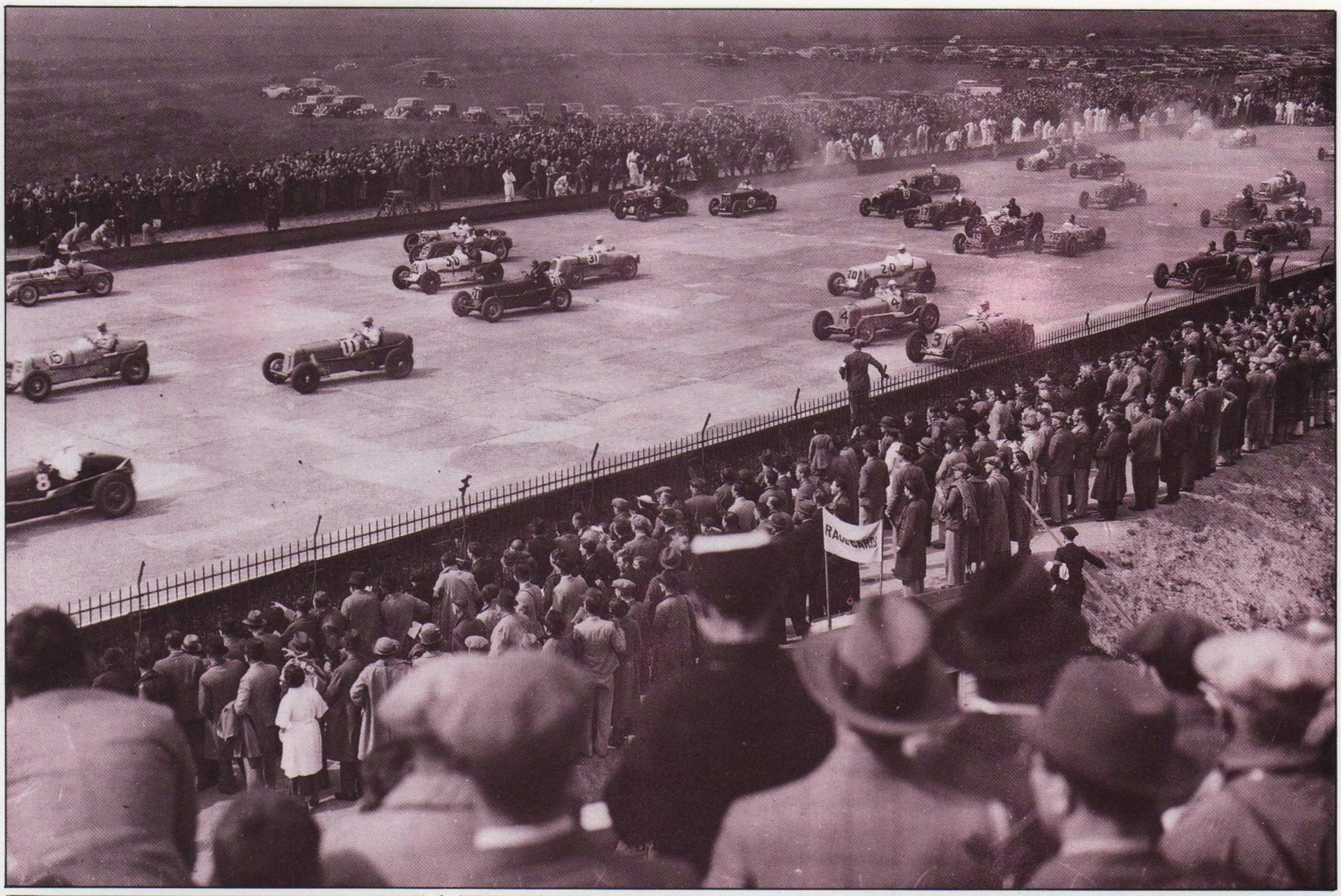
That was how different it all was, even from Brooklands outer circuit racing, of which there was now very little. Brooklands was suffering from competition at Donington, and London's new Crystal Palace circuit, and felt obliged to produce the Campbell 'road' circuit in the infield, to add to the variety. The high-speed long-distance events once held there simply faded away, the last (the BRDC's 500 kilometre — not mile — race) being in 1937, when John Cobb and Oliver Bertram took the famous Napier-Railton to its last major success.

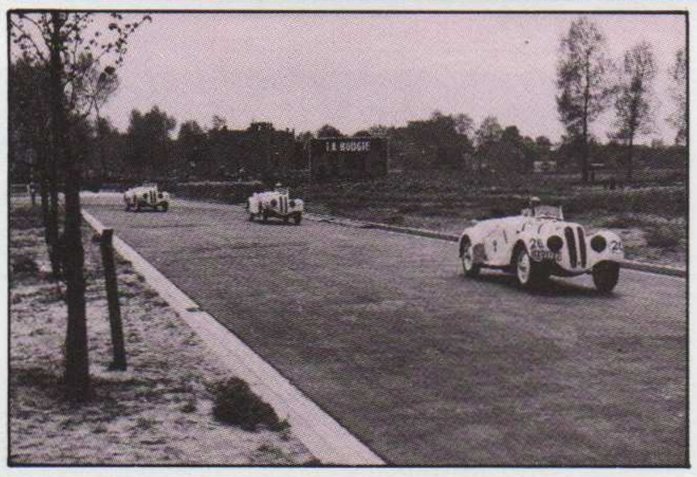
The last Brooklands race of all was an outer circuit handicap, won by an old Graham-Paige, in August 1939. During the war, trees were planted on the famous banking to disguise its outlines from the efforts of German bombers, and immediately after the war it was sold off to Vickers Ltd. Not many people seemed to care, for it had outlived its charm and its usefulness.

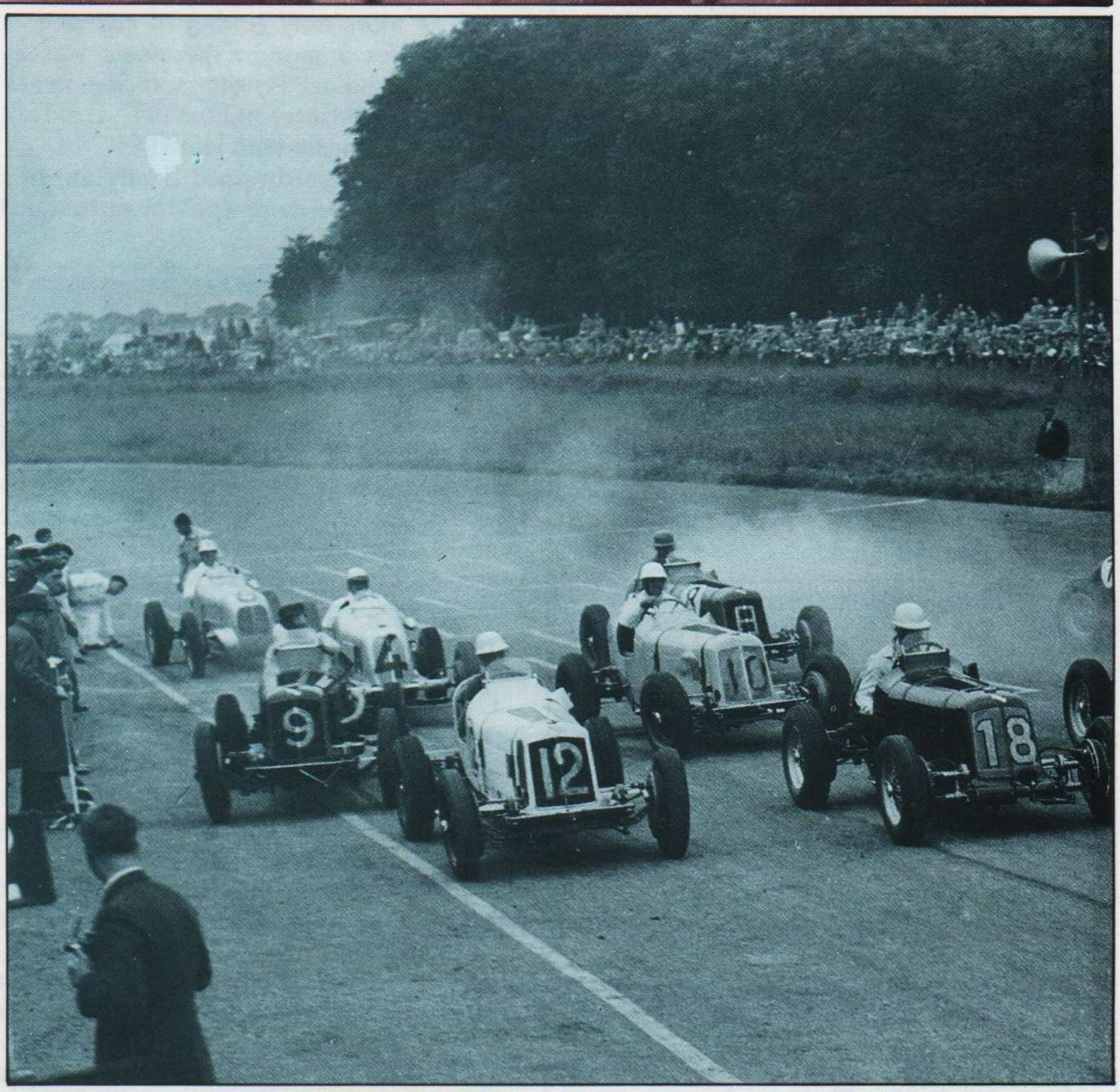
Out in the wide world there was still a British monopoly of the Land Speed Record, even though Sir Malcolm Campbell had abandoned it. Capt. George Eyston had a huge twin-Rolls-Royce engined 'Thunderbolt' built, which took the record at 312mph in 1937, and again at 357.5mph in 1938, while John Cobb had a twin-Napier engined Railton (a real tear-drop shaped beauty) built, which achieved 350.2mph in 1938, and finally 369.7mph in 1939, the last being so close to the outbreak of the war that the car nearly didn't make it back home again. The huge 44.5-litre Mercedes-Benz contender was still unfinished in 1939.

In the meantime, long-distance sports car racing enjoyed a renaissance, not least because several countries refused to hold GPs as benefits for the Germans and ran sports car events instead. The dominant marques were

WAR TIME AUSTERITY: 1935–1945







■ **Brooklands in 1936 (top). Three of the then ultra-modern BMW 328s duelling at Antwerp (above). A packed grid, mainly of ERAs, gets away in close company at Donington (right).**

Bugatti and Alfa-Romeo, with big-engined, supercharged, twin-cams, though Lagonda took two V12s to Le Mans in 1939, finishing strongly in third and fourth places. An important development in Europe was the pace of the new BMW 328s, which won the last Mille Miglia, held in 1940.

The British scene, if anything, collapsed a little into itself, for the Ards road circuit was no longer thought safe enough for the Tourist Trophy, and the Isle of Man events faded away through lack of support. Trials were gradually hounded off the roads and tracks by public opinion, and only rallies showed much sign of expansion.

From September 1939 all that came to an end. In 1945, when private motoring crawled back on to the scene, there was no official motor sport for some time.

WAR TIME AUSTERITY: 1935-1945

MAJOR HAPPENINGS FROM THE DECADE

THE HORSEPOWER TAX RAISED

British motorists had enjoyed a low-cost 'Indian summer' since 1935, when the annual Road Fund licence cost had been reduced from £1 to 15/- per 'Treasury', or 'RAC' rated horsepower. This meant, for instance, that the owner of an Austin 10 or Morris 10 had to shell out £7 10s a year instead of £10 — the difference perhaps being a half of his weekly wage or salary, and not to be sneezed at.

In the second half of the 1930s, however, the British government began to re-arm feverishly to meet the German menace, and set about raising money to fund this spending on new 'planes, tanks, and ships.

Accordingly, in his budget of April 1939, the Chancellor of the Exchequer, Sir John Simon, shattered us all by proposing to raise the taxation rating from 15/-/RAC horsepower, to £1 5s/hp. At a stroke this would make the same 10hp car's annual licence fee up to £12 10s, which was perhaps twice, if not more, the average weekly wage. In 1985 terms, and compared to new car prices, that would mean an annual licence fee of about £300!

The Autocar called it 'A Black Budget for Motorists', even though the impost was not due to become effective until 1 January 1940, pointing out that 'a prime object of the reduction from £1 to 15/- per horsepower was to stimulate overseas sales by encouraging the production of larger cars for home use . . .' and that 'The new scale will have exactly the opposite effect.'

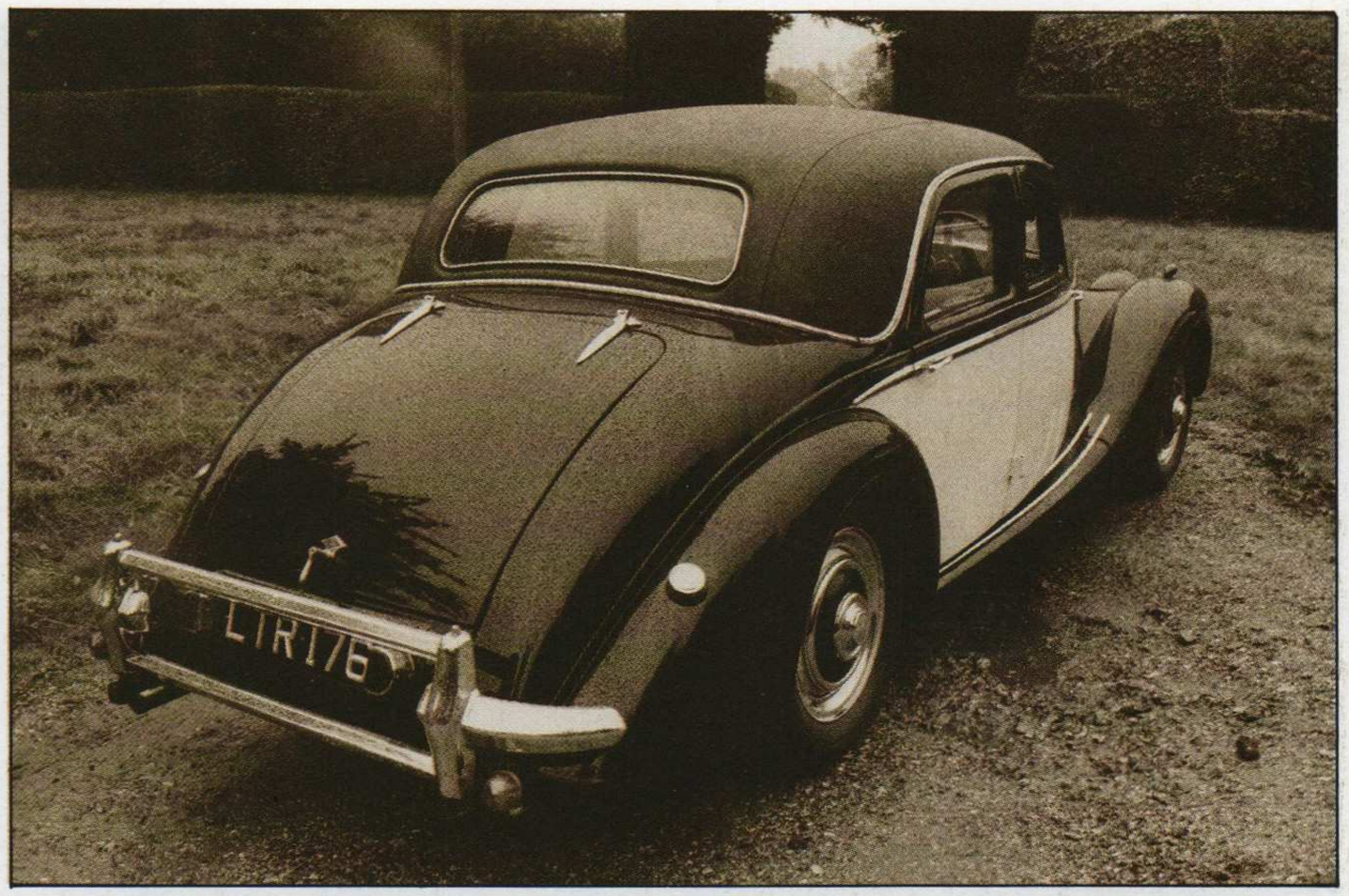
Various motor industry tycoons grumbled loudly, but those like Austin, Morris, and Standard, who made a lot of small cars, thought it might be good for them. Thus Capt. John Black of Standard said: 'We do not believe that the increased taxation will materially affect our output.'

In fact war broke out before it really mattered. After the end of the war, the 'RAC Rating' system had fallen into disrepute, and was speedily abandoned.

POOL PETROL AND RATIONING

When war broke out in September 1939 the fuel-supply industry was ready for the shock, though they hadn't publicly talked about it before.

Right away, all different grades and makes of fuel, were withdrawn and a new lower-quality type of 'Pool' motor spirit was made available. This sold for 1/6d a gallon, of which precisely half was tax. Surprisingly, the price of petrol rose only slightly, to a peak of 2/1½d during the war, though it was no longer available to private motorists after 1942. The octane rating of this brew was about 75 — a far cry from the 97/99 ratings of today.



■ **Riley RM: sleek and very modern for 1945.**

Rationing was introduced from 16 September, after which fuel could only be purchased by presenting coupons at the pumps, these being issued by the Divisional Petroleum Officers. Unless supplementary rations were issued for 'essential travel', the rationing was very strict, with a 7hp car only getting four gallons *a month*, and a large car of 20hp (RAC rating) or more only getting 10 gallons . . . 150/200 miles a month, therefore, was an absolute maximum. Private motoring, in any case, was banned after 30 June 1942. It did not become 'legal' again until mid-1945.

Rationing was not dropped, finally, until the spring of 1950, and there would be no branded fuels again until 1953.

PURCHASE TAX ARRIVES

Until the outbreak of the second world war, no sales tax of any nature was levied on the delivery of a British car. On the other hand, what were known as the McKenna duties (the name was inspired by the Chancellor who had introduced them in 1915), were imposed on imported cars to protect British industry.

Once the British government knuckled down to a concerted war effort in 1940, it needed every possible scrap of revenue to finance the fighting. Accordingly, from October 1940, a new 'Purchase Tax' was invented, and imposed on all non-essential goods.

At first, of course, this meant nothing to the private motorist, for the last new cars had been completed in the middle of that year. Demand, in any case, would have been tiny for there was severe rationing, and by the middle of the war 'pleasure' motoring was banned altogether.

However, in November 1941, *The Autocar* announced that: 'An agreement has now been made . . . whereby the Purchase Tax value of chargeable motor vehicles will be list price less 16⅔ per cent, plus £2 5s for delivery charges. The net figure is divided by 133⅓ per cent to ascertain the tax . . .'

This tax, though theoretically a 'temporary' war-time measure, was never rescinded. Along with the ravages of inflation, fuelled by the war, it ensured that the price of a Ford Anglia — around £126 in 1940 — would be £293 in 1945.

THE FIRST POST-WAR CARS

In theory, attention to the war effort was total. No manufacturer should have had time to design and develop new models for introduction immediately after the declaration of peace. One way or another, however, there were many announcements even in 1945.

The first post-war programme to be launched was that of Austin, who revealed the new 16hp saloon, complete with its new overhead valve 2199cc four-cylinder engine, in September 1944. *The Autocar*, which was down to 18 editorial pages by this time, devoted six pages *and* a colour cutaway drawing to this momentous launch.

Next along were Standard (May 1945), Singer (June), and Rootes (Hillman, Humber, and Sunbeam-Talbot in August), but these were all merely revived 1939-40 models, for which tools had been dug out of store.

The first true post-war model shown, although not yet ready for deliveries to begin, was the sleek and smart RM-Series Riley 1½-litre (29 August 1945), with the 1.3-litre Lanchester Ten (a frustrated 1940-model, not seen before this time) in December 1945. It was immediately followed by the post-war Armstrong-Siddeleys and the Healey,

REBUILDING EUROPE'S INDUSTRY

War takes its toll

After the fighting was over, in May 1945, and the dust had settled, Europe's motor industry counted the cost. Digging out the old tooling and facilities was one thing, but repairing the damage was quite another.

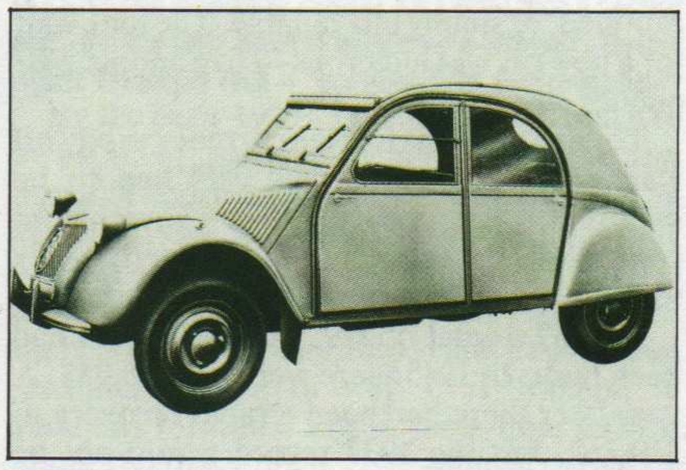
Allied bombing had taken a terrible toll. Mercedes-Benz, VW and Opel had all been blitzed, while BMW found their main factory out of reach behind the new 'Iron Curtain'. In Italy, Fiat and Alfa Romeo had both been plastered, as had Renault in France. Smaller businesses like Bugatti had taken a hammering, too.

First the buildings had to be made good, roofed in, and the workforce re-housed. Then, somehow, tasks had to be found for them. Mercedes-Benz directors succinctly stated that their business 'had ceased to exist', while VW effectively found itself as an enormous orphan.

Yet it was VW which produced the first miracles. Cars began to trickle out of Wolfsburg during 1945, and numbers steadily increased. The thousandth 'Beetle' arrived in March 1946, and 10,000 were built in that year. The first '100,000' year was 1951, after which the Beetle marched upwards, faster and faster.

Citroën and Renault were no less resourceful. Both had low-priced "peoples' cars" under development even during the war. The Renault 4CV was announced in 1947, and the Citroën 2CV followed in 1948. Both, within two or three years, were the foundation stones for future prosperity.

It was a similar story in Italy. Fiat struggled back to making cars in 1945, but Alfa Romeo made just three cars, and Lancia none at all.



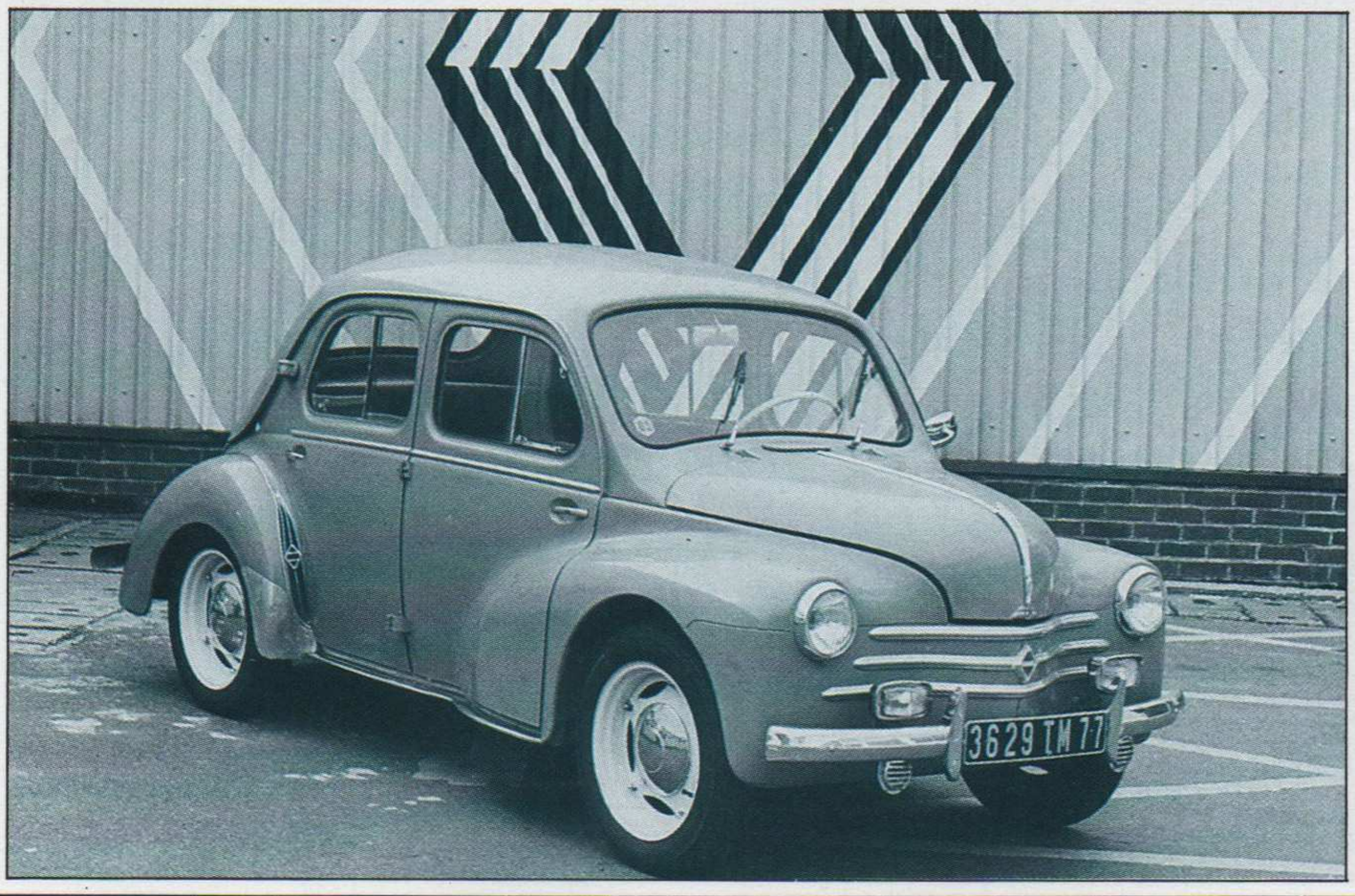
Germany, of course, had to struggle hardest of all. Mercedes-Benz did not produce a complete new car until June 1946, and only built 214 in that year. BMW produced cooking pots and pans, bicycles, and motorcycles before they could even think of cars again — the first of which did not arrive until 1951.

It is instructive, now, to remember when the major concerns first produced true post-war cars, though VW were quite happy to build Beetles for decades, so they never even got involved. The first 'new' Mercedes-Benz arrived in 1951; in France, the first new Peugeot was the 203 of 1949; in Italy there was the Alfa Romeo 1900 and the Fiat 1400, both of 1950.

In the meantime things were on the move in Scandinavia, where Sweden had remained strictly neutral during the war. Volvo announced their PV444 in 1944, but did not start delivering cars for two more years, while Saab showed their front-drive two-stroke 92 model in 1947.

■ Clockwise from top: Citroën's 2CV in prototype and production form. Saab's 92. Minors being built. Renault 4CV announced in 1947

In almost every country, however, the rebuilt companies prospered, and a flood of new models was prepared and launched. There was a huge demand for personal transport . . . and a shortage of supply for several years. It was an ideal situation for selling cars, and for the enthusiast the variety was quite stimulating.



RATIONING THE GOODS

Shortages of cars and petrol made motoring miserable

Immediately after the second world war was over, the British people, and British industry, were worn out — in fact and in spirit. Men *and* machines were exhausted, and though our credit was good, our national resources had nearly disappeared.

The new government produced an austerity policy more rigorous than in any previous peace-time period. Everything was either

rationed, or simply unavailable. The long wait for a new car was ludicrous — five and six *year* queues were common.

To earn precious foreign currency to pay off war-time debts, most new cars had to be exported. To police this, government controlled all steel supplies — delivering only to companies which showed a big export ratio.

In 1937 a total of 379,310 British cars had been built. In 1945 there were only 16,938. A year later there had been a rapid recovery to 219,162, but the 1937 record would not be beaten until 1949.

The 'basic' petrol ration was restored right away for all motorists — though it was ludicrously low at 30 miles-worth a week. As the fighting ended and tens of thousands of tanks, trucks and aeroplanes were decommissioned, more fuel became available, but it all had to be bought in dollars. As a consequence, the 'basic' ration was withdrawn altogether for a time in 1947 and 1948, but it was not until 26 May 1950 that it was abandoned completely; even then, only 'Pool' petrol of 74 octane was available. Branded fuels did not go back on sale until 1953.

In the meantime there had been considerable 'rationing by price', for the cost of a gallon rose from 1/11d in 1945, to 4/3d in 1952, and it never came down again.

At first new cars were only available to 'essential users' like doctors and were sold against government issued permits, but this scheme was later abandoned and massive queues set in. The crafty motorist ordered several new cars, and sold unwanted ones for a fat profit — the scope for abuse was obvious.

The 'Don't you know there's a war on? mentality lasted for years, and made a ready excuse for shortages. In many cases they were tragic — for many skilled mechanics never came back — and in others they were serious. Many European car makers produced models on bare rims, and left customers to find tyres!

Getting the country back to normality took years. Petrol stations were only open for limited hours until the 1950s, garages operated in a seller's market and made fortunes, and many new cars were 'for export only'.

Government even tried rationing of new cars by price — for in 1947 purchase tax on cars costing more than £1000 (basic — which was at the Alvis/Armstrong-Siddeley level) was doubled, to 66⅔ per cent, dropped in 1950, then applied to all cars from April 1951.

■ Below: One of the first truly new post war cars was the Standard Vanguard. This is a Phase 1A. Bottom: Ford's top model, the Zephyr Zodiac

THE LONG WAIT

After hostilities newly designed cars were a long time coming

There was an enormous, pent-up, demand for new cars in the late 1940s, and for a time the motor industry frantically tried to meet this by churning out old-style cars. Even in 1947, the best sellers were mainly pre-1940 designs.

Austin were making lots of 1939-type Eights and Tens, Morris ditto, Ford had their Anglias and Prefects, Standard their Flying Eights and Twelves, Rootes their 1940-model Minxes, and Vauxhall their Tens and Twelves.

Not that any of them were content to go on doing this for long. The problem was that almost everything was rationed, or needed permits, and there were delays in getting new machine tools and body pressings facilities. Any company which had been honest and not indulged in new car design before 1945, could not hope to get the post-war models out before 1948.

It affected the large and the small alike. The first true post-war Ford — the Consul/Zephyr series — did not meet its public until 1950, while Jaguar's new twin-cam engine, designed

■ Left: The stunning Jaguar XK120 – 'not a racing car'. Below left: Morris Minor – 'a winner'. Below right: Triumph TR2 – 'outstanding performance'

during the war, was revealed in 1948. Standard's Vanguard was rushed through for 1948, while the modern Aston Martin also took as long.

Then came the first post-war British motor show — at London's Earls Court in October 1948. Even though there was no prospect of getting immediate deliveries for most of the customers, they were positively avid to see what was on offer.

Just look at the list of new post-war models which all made their bow that month: Aston Martin DB1, Austin A70/A90, Bristol 402, Frazer-Nash, Hillman Minx, Humber Hawk, Jaguar XK120 and Mk V, Lagonda 2½-litre, Morris Minor, Oxford and Six, Rover P3, Singer SM1500, Sunbeam-Talbot 80 and 90, Vaxhall Wyvern and Velox, Wolseley 4/50 and 6/80.

The Autocar was agog about this display, writing that: 'About 50 new models are exhibited at Earls Court — many of them for the first time — and they reveal considerable technical advances . . . the dark decade of the war and post-war period has gone; the new cars radiate a heartening gleam . . .'

Surprisingly, the more interesting, limited-production, post-war models had already appeared. In some cases this was because it was easier to set up body supplies, in others because the design had been done during the war years. Even so, it was a pleasure to see new cars like the Allards, Healeys, and RM-series Rileys in 1946, the Austin A40 and the Jowett Javelins during 1947.

TESTER'S DELIGHT

It was a golden era for the British motor industry

For our testers, and technical writers, there was almost too much to absorb in the first ten post-war years. It was as if the world's motoring brains had built up ideas throughout the years of war, and were now letting them out in a torrent.

Although our road tests did not resume until January 1947, our methods were transformed. Brooklands was no longer available, so we flitted, gypsy-like, from airfield to airfield, before settling on MIRA in the 1950s. We were the first magazine to adopt a 'fifth wheel' and electrical speedometer at this stage, and our figures were thus all the more reputable.

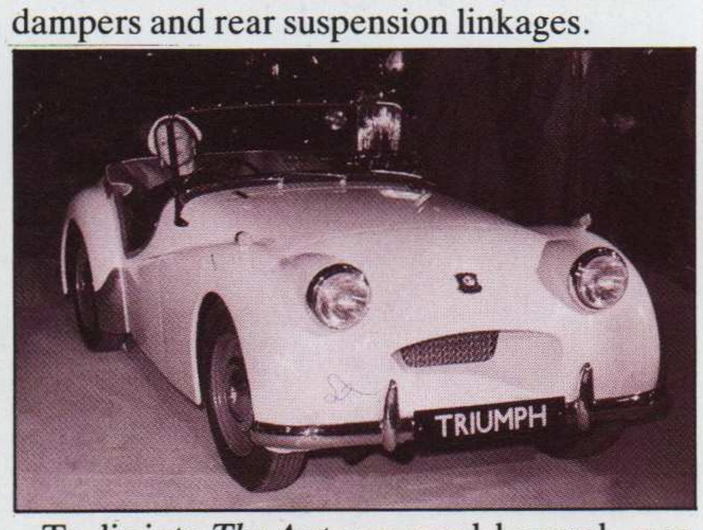
The true excitement built up in 1949 and 1950, when the post-war designs came along. We thought, for instance, that the Morris Minor was: 'Indeed, a winner among small cars . . .' in spite of a low top speed of 61mph, and we almost ran out of superlatives when trying the original Jaguar XK120 roadster in April 1950: '"No, it's not a racing car", was an answer that had to be given several times to small boy admirers . . . Perhaps there are others who do not appreciate that this stupendous car of the sleek appearance is primarily a very fast, tractable, touring car.'

We even found time to test a 2-litre Ferrari 212 sports car in June 1951. Since it achieved 116mph, and 0-60mph in 10sec., it was not surprising that we thought that: 'It would be easy to describe the Ferrari as a racing car with sports bodywork, but this would not do justice to its extraordinary docility and perfect road manners . . .'

By the early 1950s, indeed, we had much to be proud of, particularly in regard to the new breed of sports cars. Of the Triumph TR2, in January 1954, we wrote that it: '. . . not only provides an outstanding performance but it is also particularly good value for money . . . there are very few cars indeed that have a mean maximum speed of well over 100mph in standard form and at the same time sell for about £600 basic price . . .', while of the MGA in 1955 we opined that: 'To confound the critics who say that racing teaches no useful lessons comes the brand-new MG sports two-seater.'

The Autocar was also famous for its detailed technical descriptions and those wonderful cutaway drawings, produced especially beautifully by Max Millar and John Ferguson. There was so much to read, and so much to inspect, that a visit to the showrooms was virtually unnecessary.

'Once more an Austin Seven' heralded the launch of the first post-war small Austin — more familiarly known as the A30 — not only with a cutaway drawing, but with a ghosted comparison with the 1930s-style car of the same name. 'Silver Cloud and Series S' headlined the six-page analysis of the new generation of Rolls-Royce and Bentley cars — not only with chassis drawings but cross-sections of complex heating installations, and an erudite dissection of details like crankshaft dampers and rear suspension linkages.



To dip into *The Autocar*, week by week, was to taste the most amazing variety. At one moment — in September 1951 — there might be a breathtakingly detailed analysis of the V16 BRM, while at another — 18 September 1953 — the subject might be the cheap and cheerful Standard Eight saloon.

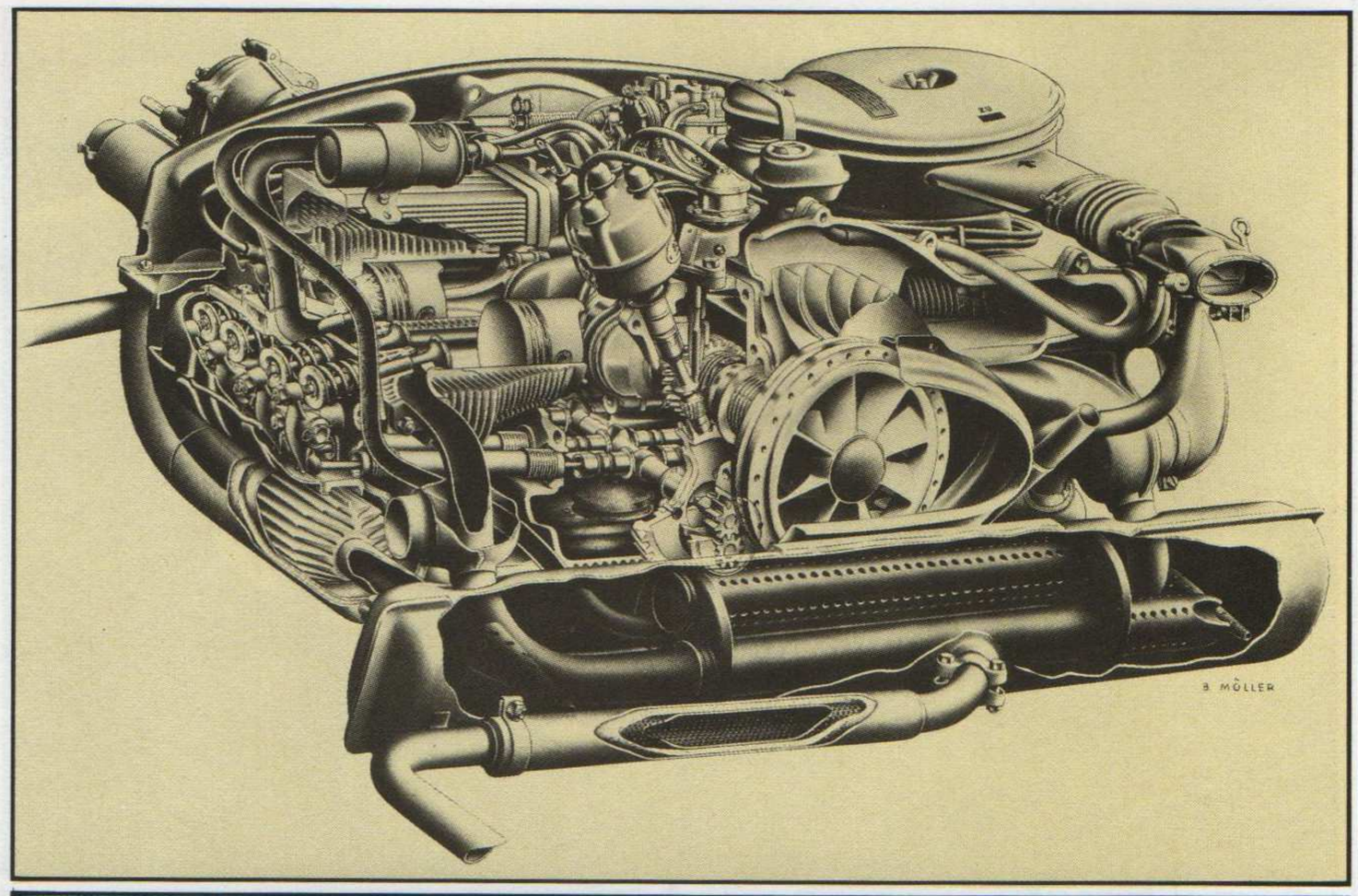
Britain was building more and more cars with every year that passed — 522,515 in 1950, then a slump, but a rush up to 769,165 in 1954, and another advance, to 897,560, in 1955.

Perhaps there had never been such a good time for the industry, or for the motoring press in this country. Thirty years on, it is difficult to see how we could support a 'Big Five' (the BMC merger of 1951-52 put Austin and Morris together), produce so many different sports cars, have no fewer than ten marques still built in Coventry alone, and still keep a market share of around 95 per cent in the UK. But in ten short years, from the end of the Second World War, the 'Great Recovery' had been made. *The Autocar* was proud to record it all.

CAR OF THE DECADE

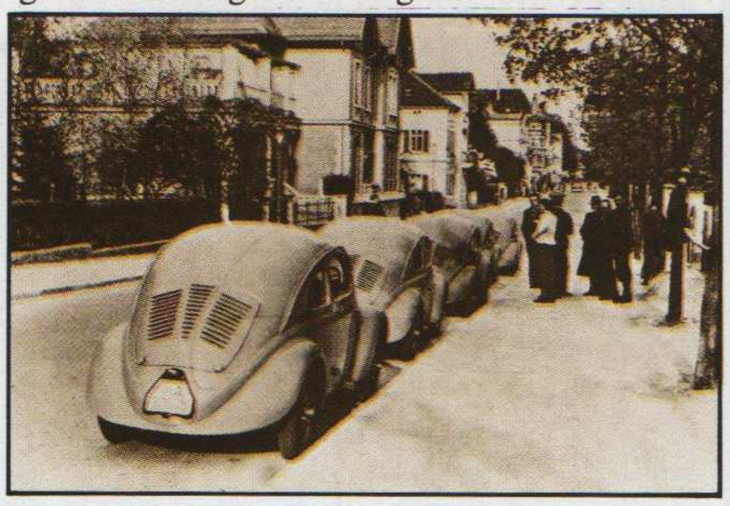
VW BEETLE

Hitler's war machine is the most successful car of all time — despite itself



One man, at least, predicted that the VW Beetle would be a success — Adolf Hitler. Fortunately for us, though it did succeed, it wasn't under quite the circumstances he envisaged. On the other hand, a team of eminent British engineers, assembled to have a look at it just after the war as possible reparations, saw no future in it at all, which was not surprising since, judged by accepted standards, it was anything but conventional.

That very lack of convention was both its greatest strength and its greatest weakness: it



proved to be an exceedingly good basic design, rugged and reliable, but would lay it open to attack from Ralph Nader and the safety lobbyists. No car has ever had such ups and downs, but then no car has ever been so successful.

The Beetle was designed by a genius, Ferdinand Porsche, to the requirements of Hitler whose dream of cheap transport for the masses was inspired by Henry Ford and the Model T and was to be echoed in later years by Citroën. Hitler wanted a machine that had a top speed of 100kph (62mph), consumed fuel at the rate of 6 litres per 100 kilometers (33mpg), could carry two adults and three kids — and cost Dm1000 (about £90). Porsche could provide the first three — Hitler would see to the last.

The design of the Beetle was unconventional by American or Western European standards but was fairly typical of the ideas propounded by a small pocket of engineers in West Europe, of which Porsche and Hans

■ Top: The famous flat four. Above: Beetles on the line. Above left: Prototype VW30s on test. Below: One million Beetles had been built by 1955

Ledwinka of Tatra were the major proponents. their basic premises were quite simple. The roads in that part of the world could be atrocious, so some form of independent suspension was almost essential. Winters were cold, too, so air cooling to eliminate freezing radiators was another necessity. Engines were noisy and smelly, so put them in the back where their effect would be lessened.

Porsche had started his own design bureau in 1930, and had already been commisioned by two motorcycle manufacturers, Zundapp and NSU, to come up with a small cheap car with which they could branch out.

Porsche's concept is well known, and it is a reflection on its correctness that it remained basically unchanged almost throughout the Beetle's life. There was a backbone platform chassis, transverse torsion bar suspension at the front, torsion bar swing axles at the back,

and an air-cooled flat four in the tail, clothed in a body of undoubted ugliness but of equally undoubted streamlined form for its day (aerodynamics as we know it today was still in its infancy then). Erwin Kommenda styled the body, while the engine was by Franz Zavier Reimspiess, names that would become famous through Porsche cars in post-war years. It was to be assembled in a vast factory at Wolfsburg, and production was scheduled to reach no less than 1.5 million in 1942.

THE GREAT RECOVERY: 1945-1955

■ **A pristine 1952 split rear 'screen Beetle complete with genuine factory fitted sun roof. The shape was to change little over the next 30 years**

The war, however,intervened before production could really start, and the factory churned out Kubelwagens and its amphibious sister the Schimmwagen. At the end of the war the factory was practically in ruins, but in West Germany — just. It was also in the British sector and came under the charge of Major Ivan Hirst of the REME. He oversaw the initial faltering steps back into production (helped by an order for 10,000 by the British army). But in 1948 an ex-Opel director, Heinz Nordhoff, took over, and with his coming the Beetle's real success started. It was he who initiated the one-model policy and, more importantly, the process of gradual change and refinement which kept the car visually identifiable but meant that it was progressively improved throughout its lifetime.

Modifications were so many that it would take a book to record them all, but there were certain cut-off points. An increase in capacity from 1131cc to 1192cc in 1952, a larger rear window in 1958, a synchromesh gearbox in 1961, and so on. In the seventies the mods were more radical — MacPherson strut front suspension in 1971, for example, and progressive increases in engine capacity to 1600cc — but it was always the same old Beetle to afficianados. Sales too soared, the first million being reached in 1955, the first million *in a year* coming in 1965, and the Beetle became the world's best seller in 1973 when it overtook the Model T. To date 20 million have been built.

To drive a Beetle of the fifties today, and to compare it to its contemporaries, tells you why it was such a success. The first impression, born out on longer aquaintance, is one of immense solidity — you *know* nothing is going to break. Then there's the light, progressive, quite direct steering, the slightly rubbery but unbeatable gearchange, a ride that absorbs bumps and potholes as if they weren't there,and the unburstable engine thrumming away behind you. there's also, of course, that clap-hands back suspension that will have you off backwards at the limit (which can be quite low in slippery conditions!), heavy brakes and dubious heating. Above all, though, there's that feeling of quality. Not quality in the sense of leather seats or wooden doorcappings but in the sense that everything works, and properly and reliably. And that unique VW character. You can see why so many people, of all nations, fell for it.

THE RISE AND RISE OF FERRARI

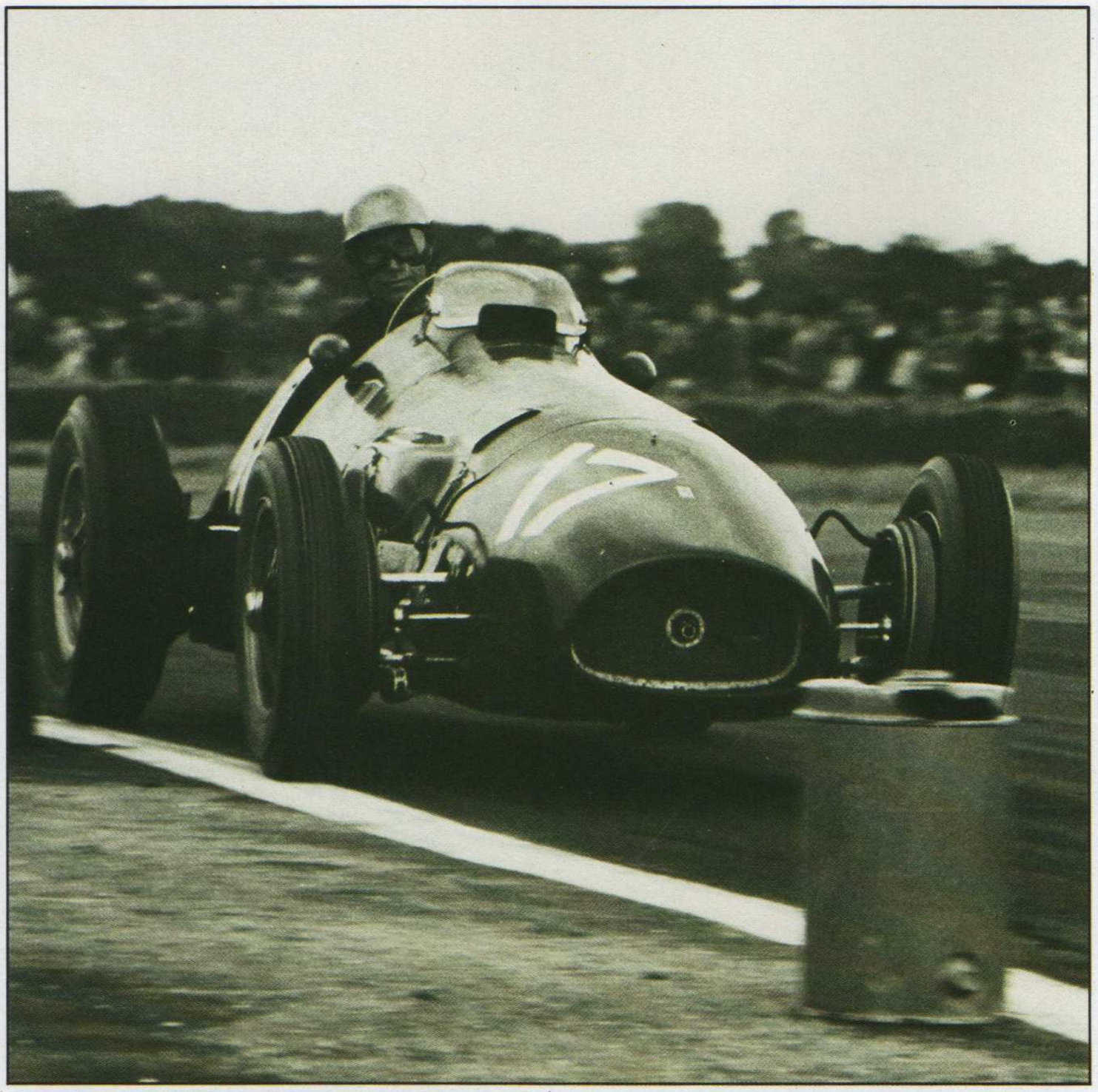
Motor sport was soon back

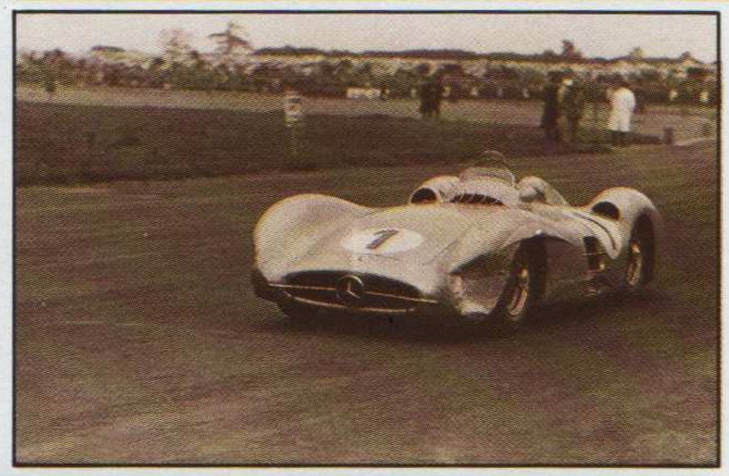
In spite of the shortages — in spite, it seemed, of everything — there was motor racing in Europe almost as soon as the last bullet had been fired in 1945. It was like old times, for the race (on 9 September 1945) was in the Bois de Boulogne, outside Paris, and was won by J-P. Wimille's Bugatti.

A further 19 'free-formula' races were held in 1946, after which Grand Prix racing made its comeback. But it was all very diffrent. The Germans had been banned from motor sport, *pro tem*, the formula had changed (to 1½-litre supercharged or 4½-litres unsupercharged), and so had the cars. Alfa Romeo's P158s were dominant, and there was a new name to conjure with — Ferrari!

In the first ten post-war years, more and more Ferraris appeared, in more and more events. They won at F1, F2 and sports car level, with an amazing variety of V12, straight-four, and straight-six engines. Not only that, but they finally made unsupercharged engines fashionable again.

But it wasn't all Ferrari, nor all F1. The ambitious BRM project was unveiled in 1946, but the first, desperately unreliable, V16 car did not run until 1949. Enthusiastic clubmen in the UK invented 500cc racing, and this soon became an international formula; one of the founder members, John Cooper, went on to build GP cars in the 1950s. A young man called Colin Chapman started building sports cars with phenomenal road holding, calling them Lotus. Better still, Aston Martin and Jaguar both took to sports car racing with enormous success.





■ **Above: the Ferrari legend begins — Taruffi at Silverstone in 1952. Left: Three pointed star returns. Fangio at Silverstone in 1954. Bottom: Rally success came from the works Sunbeams**

But it was GP racing which made all the headlines. Alfa Romeo, with the 1938-design P158s, won as they pleased in 1947 and 1948, arrogantly took a year off in 1949, then came back with revised cars for 1950 and 1951. Britain's first GP was at a newly-acquired airfield circuit, Silverstone, in 1948, when Villoresi's Maserati won. Naturally *The Autocar* was there, calling it a 'Magnificent Motor Racing Spectacle — England's First International Race Since the War . . .' (we liked capital letters, too!).

The Alfas had not visited Silverstone in 1948, but arrived in 1950, taking the top three places. Future world champion Guiseppe Farina won, at 90.95mph, and we headlined our report 'A Royal Silverstone', for the race was attended by H.M. The King. That was one of several occasions when the BRM was promised, even demonstrated, but did not start. Later in the year, one car did start at Silverstone, breaking its transmission on the start-line. Our editorial called this the 'BRM debacle', and went on to point out that: 'It is becoming obvious that very little serious work has been done on development . . .'

In the meantime Ferrari produced a 4½-litre unsupercharged GP car which first matched, then beat Alfa Romeo on several occasions in 1951. Quite suddenly, therefore, Alfa Romeo withdrew from GP racing, F1

THE GREAT RECOVERY: 1945-1955

collapsed, and for the next two years F2 was dominant, being fought out between 2-litre Ferraris (Ascari winning many races) and Maserati.

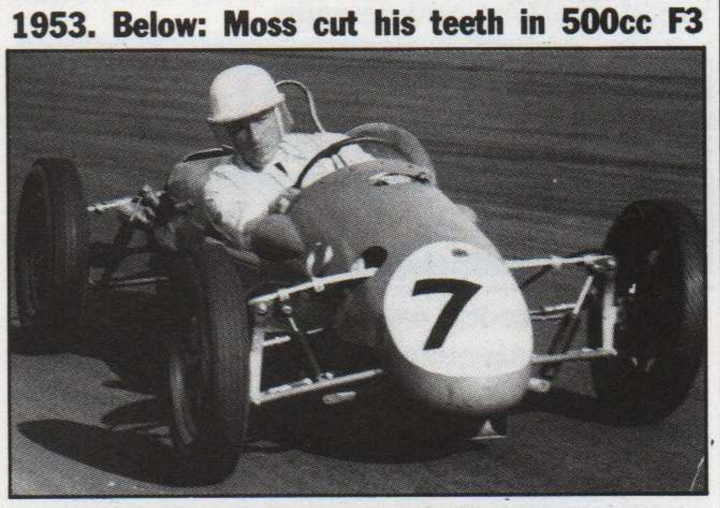
Then came the 'new' F1, for 2½-litre cars, in 1954, at first with Ferrari and Maserati winning. Until, that is, Mercedes-Benz turned up at Rheims with their streamlined W196 straight-eight single-seaters. For the next 18 months, they set standards no-one else could match. As *The Autocar* said of the French GP: '. . . after the initial laps it was clear that the recent era of Italian supremacy was ended.'

The BRM *was* a debacle, by any standards, and Britain had no competitive GP cars before the mid-1950s. On the other hand, the Coopers, Keifts, and other marques dominated 500cc F3 racing until it died of stagnation, while in F2 we built good, if not dominant, cars in the HWMs and Connaughts.

We were altogether more successful in sports car racing. First Aston Martin, then Jaguar, produced special prototype two-seaters for such events, with Aston Martin shining in British long-distance races such as the Goodwood 9 Hour events of 1952 and 1953, and the TT of the latter year.

Jaguar, according to designer William Heynes, were only interested in Le Mans, winning it in C-Types in 1951 and 1953, being second in 1954 with the sleek new D-Type, and winning in 1955. Jaguar brought aerodynamics to motor racing, and 180mph top speeds,

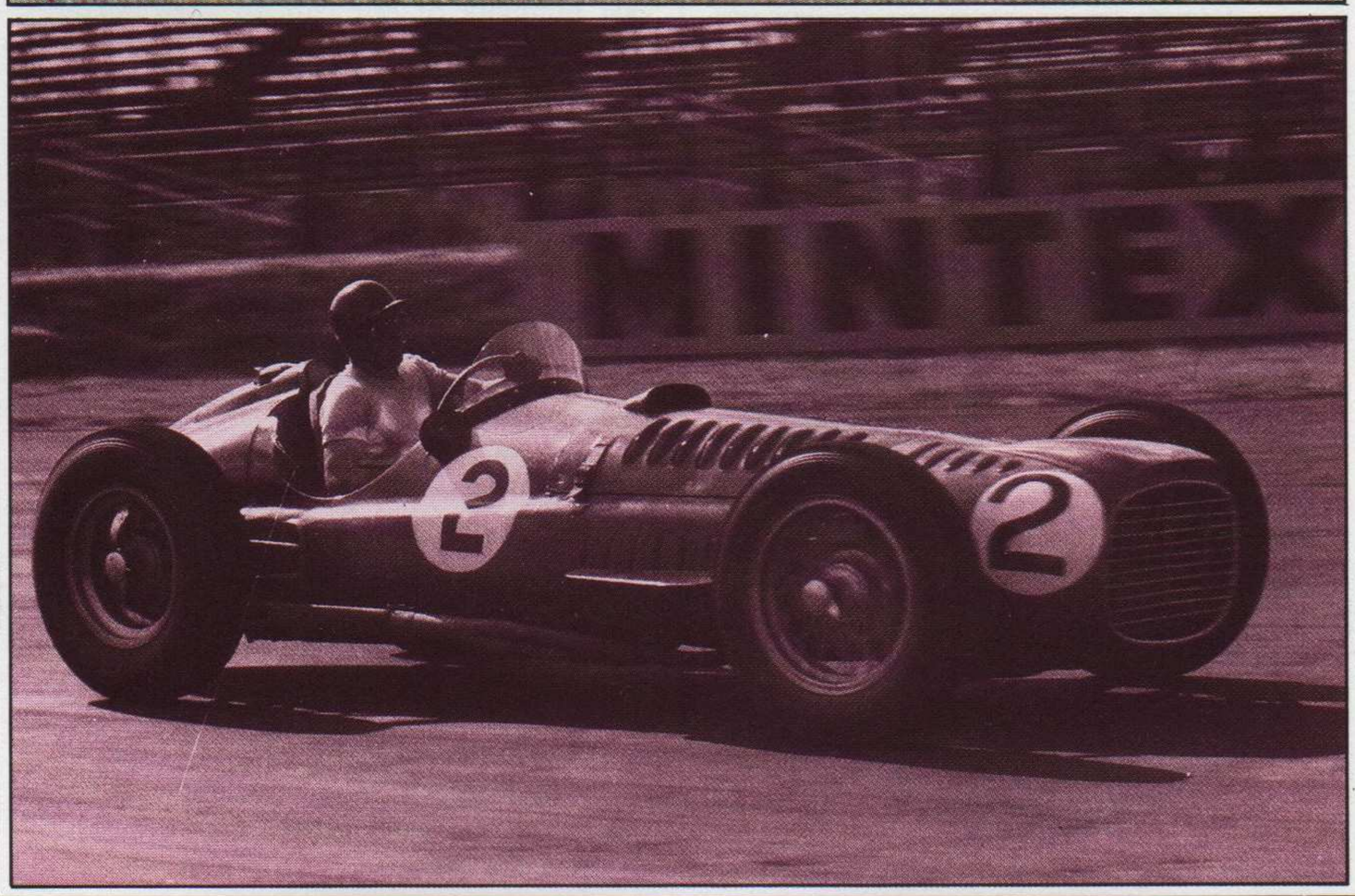
■ Left: The V16BRM sounded glorious, but flattered to deceive. Wharton at Silverstone in 1953. Below: Moss cut his teeth in 500cc F3



which electrified everyone, not least the customers. After losing to Mercedes-Benz in 1952, then winning in the following year, *The Autocar* headlined its report: 'Jaguar taste sweet revenge'.

In 1955, though, Levegh's Mercedes-Benz plunged into the crowd at Le Mans, killing more than 80 people. Motor racing was never the same again, not did it deserve to be until safety measures were improved.

On the other hand international rallying went from strength to strength, with British teams — Sunbeam-Talbot and Triumph the most important — coming to the fore. Our individual Superstar, in fact, was Ian Appleyard, usually Jaguar-mounted, who won innumerable events in the period (including two RAC Internationals), yet Sydney Allard won the 1952 Monte in one of his own cars — still the only man to do so — while Gatsonides's 'works' Zephyr won a year later. Britain's surge towards sporting supremacy, rallying *and* racing, was on its way.



THE GREAT RECOVERY: 1945-1955

MAJOR HAPPENINGS FROM THE DECADE

BUDGET SPORTS

Before the second world war British cars were rarely seen in North America, but afterwards more and more were sold 'over there'. Legend has it that the American serviceman stationed in the UK came to know all about British sports cars, took the hobby back home with him in 1945, and created a ready-and-waiting market.

For years, though, the British could only supply cheap, or expensive, sports cars to what was the most important export territory. The best of the 'cheap' was the ancient-style 75mph MG TC; the best of the 'expensive' was the exotic, 120mph, Jaguar XK120.

At the beginning of the 1950s, several British car makers fastened on the same opportunity to fill the gap. The result was that the Triumph TR2 (2-litres/105mph), and the Austin-Healey 100 (2.6-litres/110mph) both went on sale in 1953, the 2.3-litre Sunbeam Alpine was hastily created out of the Sunbeam-Talbot saloon in the same year, while the much-delayed MG MGA (1.5-litres/100mph) finally met its public in 1955.

It was the start of a great, successful, and profitable British tradition, which lasted into the 1970s, before the burgeoning US safety and emission laws conspired to kill off the breed. Nothing now remains.

THE COVENANT SCHEME

When the second world war had finally been won, the consequence for the motor industry and the motor trade, was a huge boom in demand. No new cars had been delivered since 1939/40, many had been wrecked in the bombing, and hundreds of thousands were simply worn out.

British industry took time to get going again after the declaration of peace and were obliged to export most of their output due to government decrees. The result was enormous waiting lists for all new cars. Five to seven years might elapse between the placing of an order, and the delivery of a car.

The street-wise put in multiple orders, and hastened to sell unwanted models, only weeks old, for a huge profit. It was to combat this black-marketeering that the 'covenant' scheme was introduced. In 1946/47, a buyer had to guarantee to keep his new car for a minimum of six months, and from March 1947 that became 12 months. An agreement, printed and administered by the British Motor Trade Association, had to be signed, and there was no wriggling out of it.

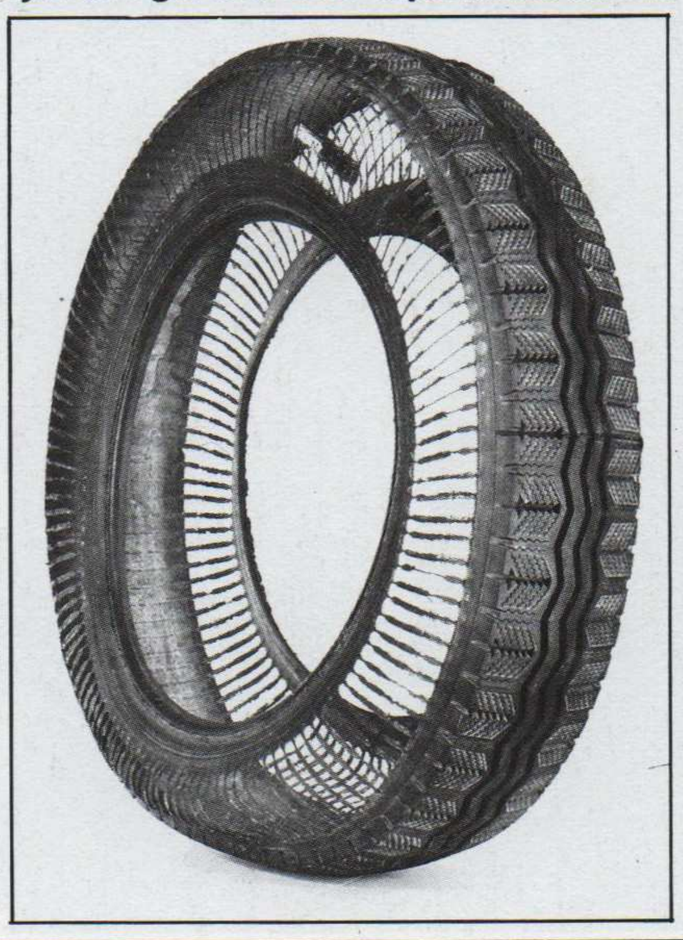
Demand remained so high, and the convenant scheme was so successful, that at one time it was to have been extended, and this was enacted in 1950. However, in the early 1950s, supplies increased considerably.

During 1952 more and more individual models were freed from the scheme, the period was dropped back to one year before the end of the year, and in January 1953 it was abandoned completely.

RADIAL PLY TYRES

For many years between the wars, there had been no major advance in tyre design, except that rims had gradually become wider, sections had broadened, and pressures had been lowered. What was known as the 'balloon' tyre had found a use in very adverse conditions.

■Michelin of France changed our driving habits with the invention of the radial ply Michelin X tyre. Tyre on right is a 1946 experimental carcass



Michelin of France then fundamentally re-thought the whole theory of tyre design, and produced the 'radial' instead of the 'cross' ply concept. The original Michelin concept was to run a band of steel wires around the circumference of the carcass, under the tread. This made the tread more stable on the road surface, yet allowed the side walls to move around more than the conventional type.

The result was that these original radial-ply tyres, named Michelin X, produced phenomenal mileage, because the tread did not squirm around as much, and excellent grip in dry and wet conditions. The one major disadvantage on the early tyres, not entirely alleviated even today, was a rather 'sudden' break-away at the limit of adhesion.

Early cars using Michelin X tyres as standard were Citroëns (Michelin controlled that company financially), and Alfa Romeo, but by the mid-1950s they were becoming optional on many other sports and higher-performance cars.

It would not be until the late 1950s that Michelin had a rival — for Pirelli produced the Cintura, which had a textile radial ply carcass. After that, most manufacturers swallowed their pride, took out a licence for one or other of the systems, and paid royalties, so that they could join the radial-ply 'club'.

THE END OF RAC RATING

By 1939, the 'RAC Rating' — the means of measuring a car's nominal horsepower according to its engine's piston area (but ignoring the stroke, and therefore the cubic capacity) had become discredited. It had led to most British cars having long-stroke/small-bore engines, which were good sloggers but poor in terms of power output and efficiency, and it was harming export prospects considerably.

After the war, when it was vital to export the vast majority of our cars to earn currency (American dollars, in particular) to start paying off war-incurred debts, this rating was a positive deterrent to progress, and had to be abandoned.

The Treasury wanted a new system which would rake in at least as much money in annual licence dues every year, and the first alternative system proposed was to charge £1 per 100cc engine size, which would have cost a Hillman Minx owner £12 a year, but a Rolls-Royce Wraith owner £43 a year. Need I say that this scheme was howled down by influential lobby groups, and a new egalitarian flat rate, at £10 for newly-registered cars, was imposed from 1948.

That flat-rate tariff has applied ever since, but — as every motorist knows — it has increased steadily in the intervening years. Raised from £90 to £100 at the March 1985 budget, it now stands at ten times its 1948 level yet, paradoxically, it is probably a cheaper annual impost than most motorists experienced in the 1940s.

CHANGING FACE OF MOTORING

The future arrives

If you had transported a British motorist forward from the 1930s to the 1950s, he would still have felt relaxed and familiar with the scene, but by the 1960s it would all have begun to look strange. So much, not only in the design of the cars themselves, but their environment had changed.

Examples? Motorways, parking meters, 50mph speed limits, and 150mph top speeds, to name just a few. Cars like the Mini were smaller than anything seen before, and elevated motorways (M4) and vast suspension bridges (the Forth road bridge, near Edinburgh) were futuristic for that period.

It was all due to the fantastic explosion in British motoring in the period. In the mid-1950s about half a million new cars were being registered every year, but this rose to 820,000 in 1960, and to 1.2 million in 1964. British car production rocketed with this — from a low of 707,000 in 1956 to a high of 1.87 million in 1964.

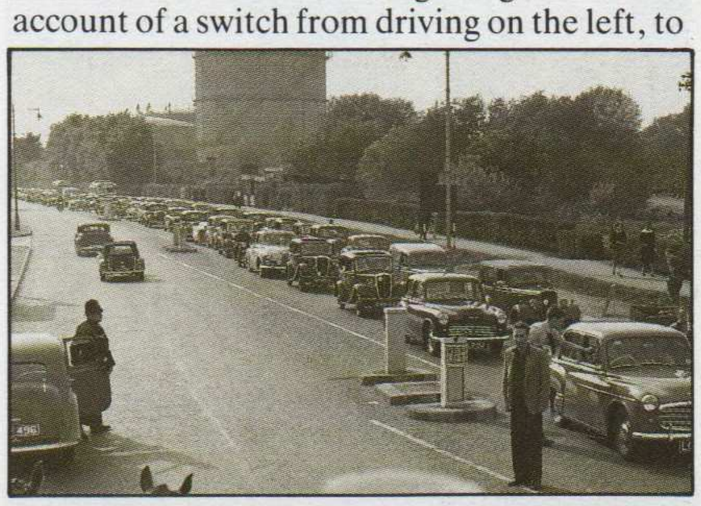
Quite simply, the UK was running out of space for its motorists, and little was being done, at first, to ease the problem. The politicians, on the one hand, made it easier to buy cars than ever before — dropping the rate of purchase tax in 1959, raising it slightly in 1961, but more than halving it, from 55 per cent to 25 per cent, in 1962 alone — and then made it difficult for the car to be enjoyed.

Almost every town and city was jammed up, and almost every main road was disgracefully old fashioned. Official solutions, initially were to clamp down on everything — 50mph open road speed limits on busy weekends for some roads, parking meters in London from the late 1950s, and the introduction of radar speed trapping (which caused a furore, at the time) — but is due course attempts were made to improve the lot of the motorist.

By 1960, national and local government found money to build new roads and parking areas. Cities like Glasgow and Coventry produced motorisation plans, while Professor Colin Buchanan's famous survey 'Traffic in Towns' pointed a possible way to gutting and reconstructing cities. One of their chilling reminders, shrugged off at the time, was that: 'In Britain the motor age is still at a comparatively early stage. We are approaching the crucial point when the ownership of private vehicles, instead of being the privilege of a minority, becomes the expectation of the majority. At present (1963) there are in Britain about 6.6 million cars . . .'

But it wasn't just the new roads which made motoring better, it was the faster cars, the better tyres, brakes, and handling which went with them. Until 1955, car makers had been looking back to their previous achievements. Now, they were looking forward at last.

The prospect of new roads was exciting, even if it did look like a case of 'Jam tomorrow . . .'. Ernest Marples, minister of transport from 1959 to 1964, was so outspoken that he irritated many motorists; there was quite a boom sale for car window stickers suggesting that 'Marples Must Go'. One motoring journalist even had the gall to ask him if new roads were being designed to take account of a switch from driving on the left, to driving on the right, in a few years hence!



■ Top: Ernest Marples, Minister of Transport, was not popular by introducing the parking meter. Above: Supply of fuel was getting beter. Left and below: Traffic jams were everyday events

Regulations over what, where, when, and how, a motorist could stop and leave his car, was a great feature of the period. There were Clearways, peak-hour Clearways, Pink Zones (remember those, for Christmas traffic in London?), single yellow lines, double yellow lines, part-time pedestrian precincts, double white lines in the middle of the road, and even talk of road pricing in cities to thin out the commuters.

In some ways it got easier to motor, and in some ways more difficult. Car licences were extended to run for three years, but the 'totting-up' procedure of offences came in too. MoT tests were introduced, at first for 10-year-old cars, but servicing intervals gradually lengthened. Remember Advanced Driving tests? The expansion of airborne car ferrying to and from the continent? Motorail networks springing up in the UK? Channel tunnel fever? Mini-cabs in London? The brief craze for bubble cars?

On the other hand let's not forget the Suez war of 1956, and the six months of fuel rationing which followed it. Or the threat of breathalyser testing. The need to fit front seat safety belts from 1965. The 70mph speed limit from 1965, too?

One thing was certain. Motoring was never dull at this time!

WORLDWIDE ADVANCES

Old motoring standards could be thrown away

From 1955 to 1965 there was a great leap forward in motoring technology. It wasn't just that the BMC Mini brought front-wheel-drive into everyone's price range, or that disc brakes and radial ply tyres made a lot of headlines. It was a general realisation, and agreement, that the old motoring standards could be thrown out, and new ones imposed.

In the main, British cars of the mid-1950s were dull, if worthy. Almost all of them had rigid rear axle suspension, dumpy styling, and old-fashioned engineering detail. The main advances came from Europe. Japan was still busily copying everything they could while the American industry in Detroit was, well, just Detroit.

But the cost accountants had ruled for too long. Saving pennies by using smaller tyres, and cheaper trim, had to go out of fashion, and from the end of the 1950s, it did. Rapidly.

Two important trends were to engine/transmission/driven wheels all in a package,and to all-independent suspension — sometimes all on the same car. It is difficult to recall just what a stir was caused by the new BMC Mini in August 1959, not least because Alec Issigonis had turned an existing engine sideways, to make the engine compartment even shorter than ever.

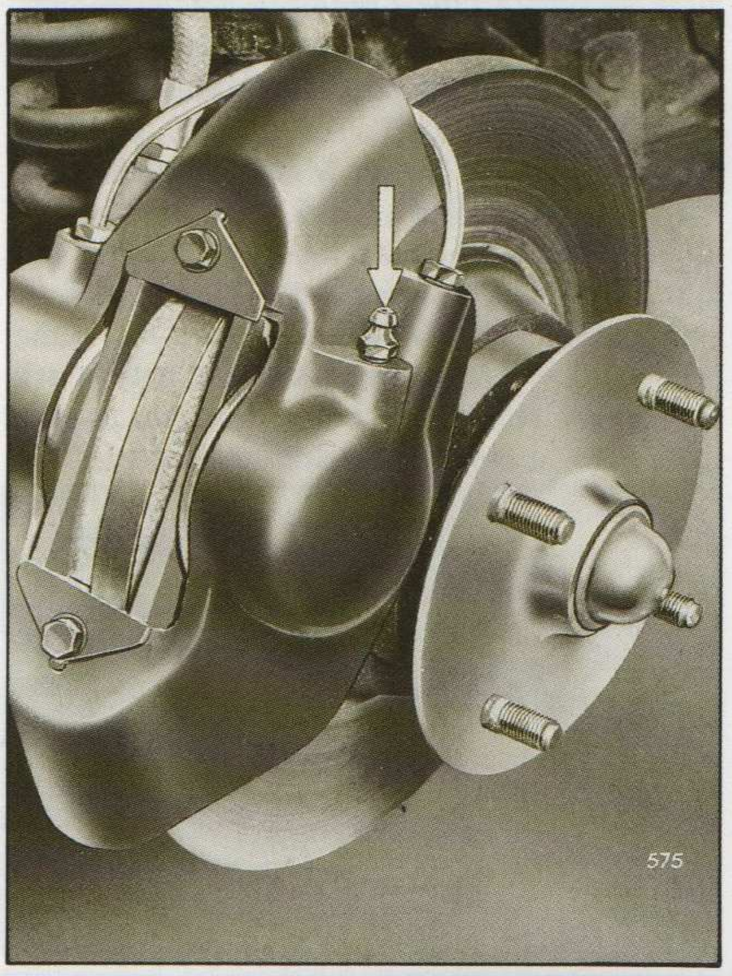
In our Motor Show Review of 1959, 'Steady' Barker of *The Autocar* wrote that: 'Perhaps 1959-60 may one day be held to mark the beginning of a second Vintage era . . .' The same Barker, irreverent to the last, discussed the Chevrolet Corvair like this: 'What happens when you put a VW on the rack. First you stretch it backwards a bit by sticking on two more air-cooled cylinders; then, working backwards, you remove the best speed (3rd) from the transmission, and stick on podgy back wheels with more universals and less swing . . . There's courage for you . . .'

As *The Autocar*'s editorial had already said, a couple of weeks earlier: 'One may be forgiven for wondering what more our motor industry can offer in this amazing year. It is certain that at no period in its history has it produced such an outstanding selection of completely new, practical and marketable cars . . .'

No-one in the UK, except those whose profits were made by being traditional, stayed out of the race in this ten year period. For the new-car buyer, it was a heavenly phase. Apart from the Mini, there would also be the Triumph Herald (all-independent suspension and a separate chassis frame), the Vauxhall Viva (the first small Vauxhall for many years), the Hillman Imp (rear-engined, and a Coventry-Climax development to boot), and the Ford 105E Anglia (with the first of a family of now-legendary oversquare engines).

Sportscars? Triumph produced the TR4 and the Spitfire, Austin-Healey the lovable 'frog-eye' Sprite, and the he-man's 3000, Sunbeam the be-finned Alpine, and later the V8 engined Tiger, MG the MGA twin-Cam and the MGB. More sensational, even, were the Lotus Elite, the Jaguar E-type,and the AC Cobra.

Cars for the rich? How about the Rolls-Royce Silver Cloud at one end of the period,



and the all-power-assisted Silver Shadow at the other? A V8 engined Daimler Majestic Major? The Lagonda Rapide, and the Aston Martin DB4.

But what about the many new 'building blocks'? Rover buying the rights, in 1965, to produce light-alloy ex-Buick V8 engines under licence? Another new V8, this time from Rolls-Royce? A very clever twin-cam conversion of the Ford engine, for use in Lotus and Ford high-performance cars? A whole series of splendid and successful racing engines from Coventry-Climax?

Nor was that all. Triumph put Girling disc brakes on to their TR3 in 1956, and started a fashion. Michelin X radial ply tyres soon became optional on many British high-performance cars in the mid 1950s.

There was more. Lucas produced fuel injection systems, first on Jaguar D-type racing cars, later on the Maserati 3500GTI, and eventually on a whole variety of racing engines. Lotus not only made use of glass-fibre almost respectable, but they produced the world's first grp monocoque for the '57 Elite.

At a more mundane level, more sophisticated transmissions spread to many cars, even of the humble variety. If the early 1980s will eventually be known for the rash of five-speed gearboxes to be offered, the 1955-1965 period saw a number of all-synchromesh transmissions for the first time (extremes being Ford, with the Cortina, and Jaguar, with the 4.2-litre E-type).

There was also a peak in the popularity of

■ **Left: Triumph Herald with all-independent suspension and separate chassis. Disc brakes fitted to TR3. America's best, the Chevrolet Corvette. Above: Tyres by schh you know who . . .**

the Laycock overdrive (an easy, if not the cheapest, way to provide an extra gear above top, though its clutchless-change characteristic had charm), and a surge in the number of cars available with automatic transmission.

It wasn't merely that Borg Warner produced their Model 35 automatic, which was useful for cars as low-powered as the 55bhp BMC saloons, but that Automotive Products developed a tiny, and ingenious, transmission, which BMC proposed to offer in the Mini. By comparison with these important developments, a rash of clutchless-change/manual boxes carrying such trade names as Manumatic and Standrive, were a short-lived late-1950s phenomenon.

It was, without a doubt, the most energetic surge of new developments seen in this country.

THE DEMISE OF THE COACHBUILDER

Killed by the monocoque

The British coachbuilding industry had been fighting for its survival since the 1920s, when Edward G. Budd's method of building all-steel welded bodies had been taken up here.

Until then bodies had been built up on the basis of a wooden skeleton, and the covering panels had often been shaped by craftsmen by hand. The advent of big, heavy-duty, body presses ended all that. Within ten years, all mass-produced cars had all-steel bodies.

The coachbuilders could still practice their art on cars as diverse as the Alvis and the Riley, the MG Midget or the Rolls-Royce limousine — just so long as there was a separate chassis frame on which to start. Even when the mass-market saloon had been built in pressed steel, the coachbuilders could still erect sports cars, tourers, and estates on the same base.

Then came the monocoque body/chassis unit, tentatively from the late 1930s, then dominant from the 1950s. Even if a car maker supplied a partly-built underpan for the purpose, to 'coachbuild' on that was a much more complex and costly business.

The number of coachbuilders showing at Earls Court, therefore, slumped dramatically. In 1955, there were 16 separate displays listed in *The Autocar*'s guides (and this was only half the number showing in the 1930s). By 1965, though, only four important independent coachbuilders survived.

Prestigious firms like Park Ward, and H.J. Mulliner, had joined forces with Rolls-Royce, while James Young relied almost completely on Crewe for its business.

THE URGE TO MERGE

Take-overs become in vogue and famous marques die

In the first half of the 1960s Leyland made the most headlines in the British motor industry, by taking over Standard-Triumph, then the AEC truck business, and making it very clear they were looking round for more. But that was not all. The urge to merge was everywhere.

Jaguar bought Daimler in 1960 (plus Guy Motors, and the famous Coventry-Climax business), while Rootes bought Singer. In 1965, even the upright and conventional Rover company went shopping, and snapped up Alvis. Every time this happened in the UK, there were ripples in the *status quo*, and one result, soon, would be that the customer's choice was reduced. Before Jaguar bought Daimler there were several stately cars on offer from Radford, but within five years only the hybrid 2½-litre saloon was still significant. Before Rootes bought Singer, there were individual models with excellent engines; within three years, a Singer was no more than a 'badge-engineered' Hillman.

This process, however, was not confined to the UK. In Italy, Gianni Lancia sold his famous company to the Pesenti interests — that actually leading to more, not less, new-model activity in Turin (Flavia and Fulvia were the results) — while in Germany Audi came under the control of Daimler-Benz. Simca had just bought Ford-France, and later went on to control Talbot-Lago, but by the end of the 1950s, Chrysler of Detroit had gobbled up Simca too! It was that sort of decade.

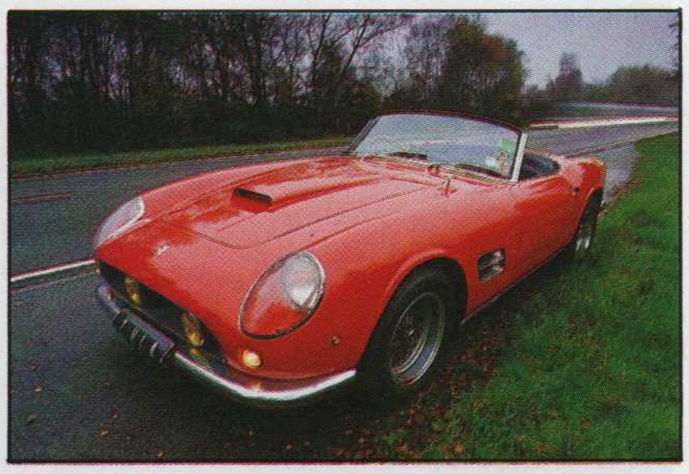
Some famous names — Armstrong-Siddeley, Pegaso and Borgward, for instance — disappeared completely, and others (such as Riley and Wolseley) became mere shadows of their former selves. There were plenty of hopeful new names at motor shows — remember Iso, Facel-Vega, and Gordon-Keeble? — but few new marques really became established. The most important, commercially, was DAF. The most exciting, in its own eccentric way, was Lotus.

The two most important moves, for the future at least if not for this period, were that Chrysler Detroit took a stake in Rootes in 1964, and that a year later BMC bought out the Pressed Steel Co. The Chrysler move was converted into a complete take-over in 1967 and a humiliating sell-out in 1978 while the take-over of Pressed Steel meant that there was no longer any large independent builder of bodies to supply Jaguar, Rover, and the like. *That* would have enormous implications.

Think of any corporate cliché you like — Big is Beautiful, or Two Heads are Better than One, perhaps — for so many tycoons found them excuses to buy and sell, to wheel and deal. Everyone was at it — Ford even tried to buy up Ferrari!

There would be even more of this in the 1970s.

■ Top: Last of a coachbuilt line, the Graber-bodied Alvis TF21 in desirable drophead form. Above: Follow Rootes' takeover, the Singer marque became Hillmans by another name. Below: Coombs version of the Mk II Jaguar — fast and cheap. Bottom: Ferrari 250 California, ever beautiful road cars from the *Commendatore*



CAR OF THE DECADE

MINI MINOR

The car that started a whole new revolution

Car of the *decade*? Whether you love or hate it — and only a very few cars have aroused such strongly mixed feelings among motoring *amateurs* — the Mini is nearer the car of at least two decades or more. No, of course it wasn't the first in the world to have a crosswise-mounted engine and gearbox; the idea was not new in the summer of 1959, nor was front-wheel-drive. But the combination of these to achieve the smallest reasonable length for a four-seat mass production car was a revolution; a revolution which set the design layout for *every* manufacturer of popular cars since.

With any car that has been in production for over a quarter of a century, let alone one that has added a new word to the dictionary, and whose faults and shortcomings as much as its merits are so familiar to so many, it is easy to forget what an advance the Mini was when it appeared in that August of 1959. To appreciate that, it helps to remember what was available in small, economy-minded, independent motorised transport in the late 1950s. If you couldn't run to a Morris Minor or a Ford Anglia, there were the various three-wheelers, such as the bubble car, a dubious imported breed with motorcycle-power, too small inside, inherently less than stable not to mention noisy and gutless, or the more antiquated but equally deplorable British equivalents which were a faltering half step on from the sidecar.

The indigenous tricycles have survived for whatever reasons, but what was then the British Motor Corporation's Mini rightly killed the bubble cars, and set entirely new standards in space efficiency — not that that phrase had been coined then — and, as all sorts of people not always interested in the Mini's original purposes began to find out, manoeuvrability.

It may seem odd to say so now, but compared to the available alternatives, the Mini was a proper car. It had four well-located wheels, very much at each corner, making it look and feel infinitely more stable than many *cars* of the day, let alone tricycles. You could get four adults inside with tolerable comfort; there was a little boot, but also a great deal of oddment space in large pockets in the single skin doors, and beside the back seats, a big dash shelf, and under the back seat.

Things we now take for granted, like proper heating and ventilation, were either extra (the heater) and/or crude, but then that was the case for plenty of early Mini contemporaries near the bottom end of the market. Under the tiny snub nose there was a proper four-cylinder water-cooled engine, not a rackety air-cooled twin, and at the end of a long whippy gearlever, a four-speed gearbox — not well endowed with synchromesh then, but it was a relatively normal four-on-the-floor set up. And finally, the Mini did go, by 1959 standards. The engine was an 850, not a 350, and thanks to the car's smallness overall, it wasn't heavy; 34bhp and a kerb weight of only 12½ cwt meant excellent economy, an over-70mph top speed, and standing start acceleration to 60mph in under 30sec — not exactly performance by today's standards, but respectable enough at the time.

So what brought about this phenomenon from a group of companies scarcely noted for anything but the most stolidly conventional offerings, outstanding after the amalgamation of Austin with the old Nuffield (Morris) group for a majority of entirely boring cars too often not even meriting the euphemism "worthy"?

■ The oldest surviving Mini — 621 AOK — and its celebratory twin the Mini 25. Changes are legion, but they're basically the same car under the skin

The credit goes to the designer of one of the better Nuffield cars, Alec Issigonis, responsible for the Morris Minor, a much more conventional car than the Mini, but which had at least two Mini-anticipating characteristics in its wheel-at-each-corner stability and its responsive rack and pinion steering.

The trigger had been the Suez crisis of 1956, which was the first reminder of how important fuel economy might become in the future. It is still remarkable that such an original mind as Issigonis's could persuade the BMC management of the time, that such a radically different, "minimum" car could be a realistic BMC-marketable prospect. His engineering reasoning was simple and logical, and to the present generation no doubt blindingly obvious. That is so with hindsight; it was almost inconceivably odd by any standards prior to 1959 — the sort of thing the foreigners might do, but certainly not the British.

He argued that the engine and drive train took up more space than necessary, and that the best way to minimise that space was to combine the two at one end of the car. The commercial success of the Volkswagen Beetle had suggested to some that the rear-engined car was the way forward—but that overlooked its considerable dynamic limitations, the most important of which for the ordinary driver was stability. Front-drive replaces instability with the best of the opposite. And if one had a relatively short engine, there would be room to turn it through 90deg, saving a large amount of lengthwise space — a saving that could be largely preserved if the gearbox was placed underneath the engine.

Here arose the ultimate engineering impudence which worried many pundits then and afterwards, but which with development has proved to work more than well enough in practice. Mounting an engine on top of its gearbox makes too tall a drive unit, and too long a transfer of drive from engine to gearbox. The impudence was to put the gearbox into the engine sump, so that it shared the engine oil as its lubricant, as did the helical final drive.

The gains achieved in space-saving with the so-called east-west engine were further improved by sitting the occupants relatively upright — something that was always disapproved of by road-testing journalists, but which a surprisingly wide range of sizes of owners usually got used to happily. Another space-saver was the introduction of the smallest wheels and tyres seen on a normal car then — very necessary in such a light car to keep the sprung-to-unsprung weight ratio tolerable.

There are many aspects of the Mini which, especially after 25 and more years, and very nearly five million cars made, ought to have been done better. And some of those faults have been with the car for most of that time. Paradoxically, it is partly blamed for the catastrophic fall of BL which led to nationalisation in the 1970s, because of the painful fact that although the customer sees much less motor car and therefore does not expect to pay so much when he buys it, a Mini is very little cheaper to make than a bigger car. It was

■ Top: Sir Alec Issigonis with some of his creations on his 1971 retirement. Above: Station wagon style. Below: Timo Makinen on the 1965 Tulip Rally

therefore underpriced at first and for a long time afterwards. Its early days were plagued with unreliability and low quality standards, while several of the more basic aspects of the design — sliding windows, flimsy cord-type interior door latch releases, the original floor-mounted pushbutton direct starter, the first gearbox-mounted gearlever — were forced out by an increasingly sophisticated market.

But the Mini remains, and not for any sentimental reasons. Its peak annual production rate of around 318,000 in 1971 is a lot more than the 35,000 of last year, and the current 800 a week of today is a shadow of what used to be. The Metro, with its long needed extension of Mini ideas into fields already established by other manufacturers who learnt from the Mini, has predictably taken the lion's share of the Mini market. But the Metro is not as small as the Mini, so that there is still an obvious need, which the Mini happily fills even now.

Drive an early one today and then step into a modern version and the similarities are obvious . . . the bus driver position behind the wheel, the curious offset pedals, the incredible use of space. There are differences, though. The early car has but one instrument centrally mounted, and impossible to reach minor switchgear — and noise comes from all quarters.

But, even 25 years apart, they are still the same car.

TESTING HIGHLIGHTS

Some new cars were good, a few were bad and some sensational

The Autocar's road testers had a fascinating time in the 1950s, and early 1960s. Not only were sensational cars like the Mercedes-Benz 300SL and the Jaguar E-type coming along, but there were astonishing little cars like the first Minis, and still a few bad ones like the first Vauxhall Victors. Never (or rarely, it seemed) a dull moment.

The 300SL set every standard in the mid-1950s, though our test car of March 1955 was well-short of the claimed 165mph top speed 'in certain gearing'; we had to be content with 129mph, but 0-100mph in 21secs was still extremely impressive. Our testers thought that: 'For a passenger who has not travelled in the 300SL before, the effect (of acceleration) is electrifying.' Incidentally, even though we still wrote our tests with diplomatic care, there was no mistaking our thoughts about the handling: 'On wet roads the car slides slightly . . . but with judicious handling there is no tail breakaway. It is a car that teaches its lessons sharply, and thus demands respect.'

The first E-type of 1961 was a very different animal indeed. We thought it: 'A breakthrough in design of high-performance vehicles for sale to the public . . . It offers . . . sports-racing-car performance and handling, combined with the docility, gentle suspension and appointments of a town car . . . competitors will be hard put to match any of the main talking points of performance, handling, ride comfort and price.'

Clearly, *The Autocar* loved it, and so, in a different way, did we love the first Minis. As we said of the test car, of August 1959: 'Throwing convention to the winds often produces freaks in the automobile world, but when done by a clever and imaginative designer the result may be outstanding. This is certainly the case with the Morris Mini-Minor which . . . was found to set new standards of comfort and road worthiness in the very small family car class . . .'

There seemed to be so much to write about. Clearly we had reservations about the controversial Chevrolet Corvair, for we thought (of the handling) that: 'In wet weather, care must be taken to avoid tail slides . . . The driver might be in some difficulty to keep full control if he had to make a sudden right-left-right swerve . . .'

On the other hand the commercially astute Ford Cortina was so conventional that we struggled to be interested in it. The testers were actually quite sniffy about the lack of disc brakes, the seats and fittings, and the level of equipment. Very quickly, though, the media and, of course, the customers came to terms with that.

Perhaps, we were even getting a touch bored with some long-established models. Of the Rolls-Royce Silver Cloud III, in 1963, we suggested that: 'It is true to say that the gap between a Rolls-Royce and its competitors, in many respects, is narrower today than it has ever been . . .', though we balanced this with the muse that: 'It is a pity that a connoisseur's car like the Rolls-Royce remains far beyond the dreams of the vast majority of the world's motorists . . .'

There were, of course, a few 'lemons' — mostly from the USA, or from Eastern Europe. Who, for instance, would have wanted to be the tester to write (of the 1963 Plymouth Fury) that: 'We had considerable difficulty during our measurements of retardation at 30mph in neutral. At any pedal load much above 50lb the rear leaf springs wound up under the braking torque, causing really violent axle tramp that built up, and felt destructive . . .'

In those ways, at least, cars have improved a lot in 20 years!

BACK TO FRONT

The mid-engine revolution comes to motor racing

At the beginning of this decade almost every successful racing car had its engine up front, but at the end, the engine was almost always behind the driver. In just a few years, the very basis of racing car design changed dramatically and completely.

Even though there were front, mid and rear-engined road cars at the dawn of motoring, the front-engine soon became the 'norm', and racing cars followed that fashion. Apart from the unsuccessful Rumpler, and the only partly-successful Auto-Union of the 1930s, nothing came along to upset that particular *status quo*.

Then John Cooper started building mid-engined motor-cycle engined F3 cars in the late 1940s, progressed from there to F2 single-seaters, and eventually produced his original mid-engined F1 cars in 1957. They might all have been cheap and cheerful, but they were also successful. Soon, more eminent designers started thinking hard on the subject.

After the Cooper-Climax cars won World Championships in 1959 and 1960, there was a rush to emulate them. Lotus, BRM, and finally Ferrari, all threw out their obsolete front-engined cars, and went for mid-engined layouts. Porsche, who had *always* built rear-engined race cars, merely moved the

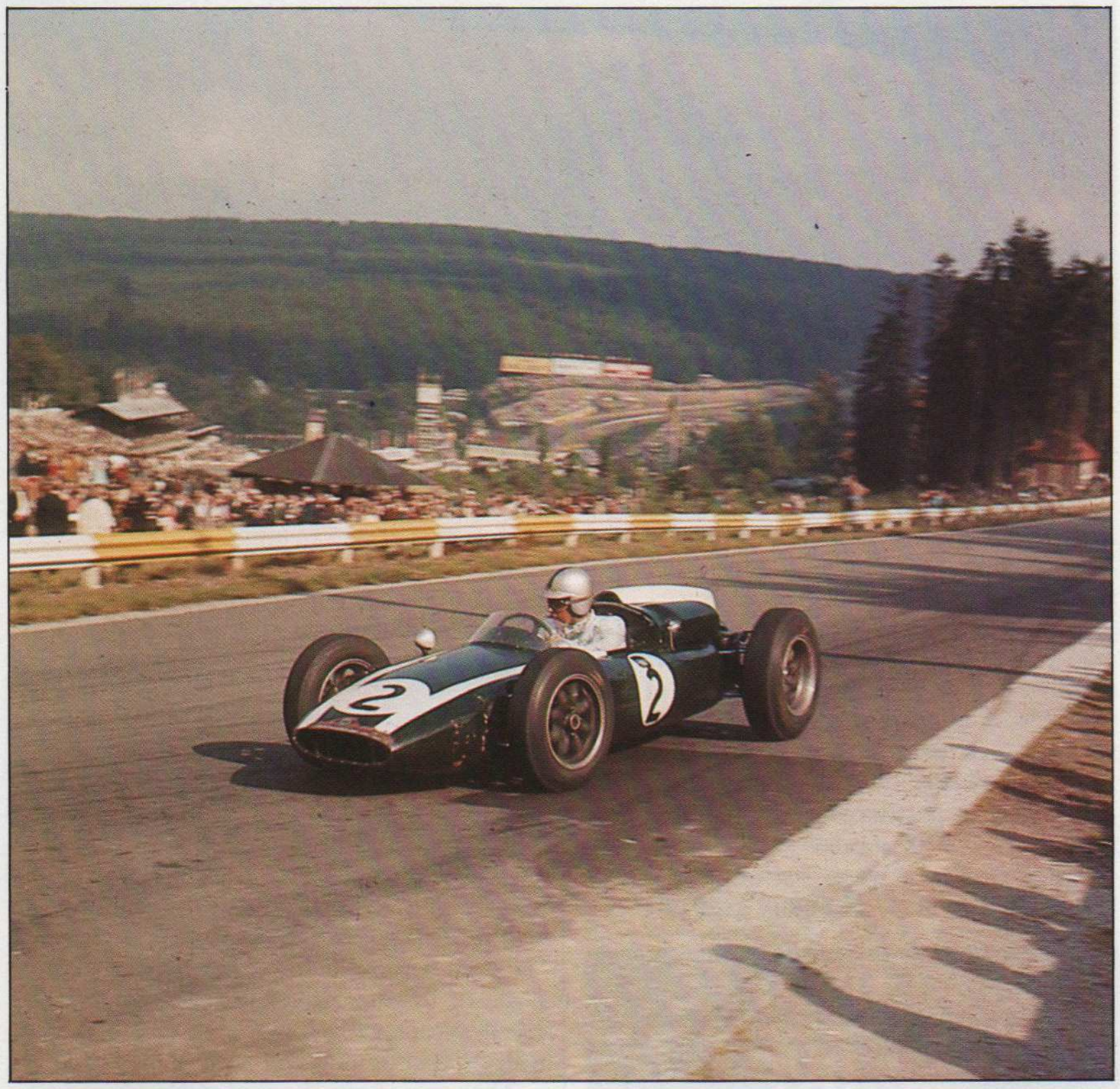
■ Top left: Jaguar's E-type brought new excitement to the world of motoring — 'a breakthrough in design'. Left: Gullwing Mercedes 300SL needed careful handling, but reached 100mph from rest in only 21secs. Below: Phil Hill, 1961 at Aintree in the 'shark-nose' Ferrari 156 with mid-mounted engine

engine forward a foot or two, and joined the new convention.

The practice came first and the theory followed on behind. The mathematicians, and the pundits, eventually decided that it was in any case best to have the driver in the nose, and that the handling and traction of mid-engined cars could be superior to any other.

It took longer to convert sports car designers to the same layout, but mid-engined Ferraris and Maserati two-seaters were raced in 1961, and after the launch of the big Ford GT of 1963/64, there was no resistance to change. The Ferrari 246SP's first win was in the 1961 Targa Florio.

On the other side of the Atlantic, it took a bit longer for the front-to-back upheaval to take place. Jack Brabham's Cooper-Climax had raced at Indianapolis in 1961, but it was not until Jim Clark's Lotus 29 so nearly won the 1963 Indy 500 race that the message got through. By the mid-1960s it was all over, and the traditional front-engined Indy roadsters had been consigned to the museums.



ENTER THE RALLY SPECIAL

Homologation arrives

Rallying changed direction significantly in the 1960s. Before then it was possible to win the tarmac 'road races' with ultra-fast catalogue sports cars (Alfa Romeo, Porsche, and Mercedes-Benz models were very successful). Then came the onset of the 'special stage' event with loose surfaces, or the car-breaking events like Liège-Sofia-Liège, or the East African Safari. Special cars for special purposes were needed — and the big-spending factories set out to produce them.

'Homologation' meant getting a car recognised by world motor sport authorities, and in each category a minimum number of cars had to be built. Scope for sharp practice was wide — but, no names, no pack-drill . . .

The very first 'homologation special' was really the stubby, 1.3-litre, Zagato-styled Alfa Romeo Giulietta SZ, which was as tough as it was fast, but then came the inexorable development of BMC's Austin-Healey 3000. From a low-slung 'boulevard-racer' in the mid-1950s, it became a brutal, near-unbreakable, and enormously fast 'works' rally car of the 1960s, winning Alpines, Lièges, and almost (but not quite) conquering the Saab domination of our own RAC rally.

Next along, and still the most famous, was the BMC Mini-Cooper S, a John Cooper/Stuart Turner/Alec Issigonis invention, and sold in three engines sizes, of 970, 1071 and 1275cc. From 1964 to 1967 the 1275S, as it was always known, was *the* most successful rally car in the world. In spite of being only ten feet long, and afflicted with 10ins wheels, it was amazingly versatile, strong, fast, and seemingly quite irrepressible.

Although Triumph produced their racing/rallying Spitfires, whose resemblance to standard was purely coincidental, it was the saloon-based 'specials' which made headway. At the same time as the Mini-Cooper S there was the Ford Lotus-Cortina, the Renault 8 Gordini, and the Alfa Romeo GTA. For a short time, too, there was the ground-shaking Ford (USA) Falcon Futura Sprint, and at the other end of the scale there was the buzzing little series of Fiat-Abarths.

But this was only the first phase — for the 16-valve engined Ford Escorts, and the turbocharged BMWs were yet to come. And, after that, Lancia's epoch-making mid-engined Stratos . . .

■ Top left: Jack Brabham confirms the superiority of the rear-engined layout by winning the 1960 Belgian Grand Prix at Spa, after leading from start to finish. Left: The Austin Healey 3000 was a formidable rally car. Makinen on the '65 Scottish Rally towards the end of its competition life.

MAJOR HAPPENINGS FROM THE DECADE

THE FIRST MOTORWAYS

Although the first European motorway was the single carriageway Turin-Milan road of the 1920s, and the first Hitler-inspired *autobahn* followed in 1935, Britain's roads were a traffic-jammed disgrace by the mid-1950s.

New road schemes proposed — some even started — in the 1930s, had been dropped or abandoned due to financial constraints, and a massive road building programme proposed by government in 1946 came to nothing. Returning prosperity changed the situation, and from about 1955 new roads started to be built again.

'Special motor roads' is what they were called at first, but 'motorways' is what we always called them. The major projects, right from the start, were M1, from London to Yorkshire; M4, from London to South Wales; and M6, from Birmingham to Lancaster. Allied to this it was decided to build huge new road bridges over the Severn, and the Forth estuaries, and to comprehensively up-grade the A1 'Great' North Road.

By using an already-safeguarded route it was possible to open Britain's very first motorway, the 8.2-mile Preston by-pass (now part of the M6) in December 1958. The first long length of motorway to open was M1, from St Albans to Crick (near Rugby) in November 1959, more bits of M6 and the M50 from the still un-built M5 to Ross-on-Wye followed, and shortly a network began to take shape.

Minister of Transport Ernest Marples said he was 'appalled' by the high speeds on M1, which nevertheless proved to be very safe.

FARINA STYLE AT BMC

Austin had merged with the Nuffield Organisation in 1952, and within three years a major mechanical rationalisation programme was under way. Leonard Lord (ex-Austin) was BMC's new chairman, and wanted to make the group into an efficient multi-marque concern.

Neither Austin nor Nuffield had stylists with flair, so in 1955 Lord went shopping — to Pininfarina, of Turin — for future model shapes. For the next few years, almost everything commissioned by BMC had a body shape by Pininfarina. That, and the decision to 'badge-engineer' several different marques out of one basic style, made the BMC line instantly recognisable, even if it also looked opportunistic and cynical to many observers.

The original 'Farina-styled' BMC car was the Austin A40 of September 1958, but in the next few months no fewer than five versions of

a new 1½-litre model (Austin A55/Morris Oxford/MG Magnette/Riley 4/68 and Wolseley 15/60) all appeared, with the fins which became characteristic of this type.

Later in the year even bigger cars — Austin A99, Wolseley 6/99, and Vanden Plas Princess 3-litre, also appeared — with a bigger statement of the Pininfarina theme.

Although the sensational Mini arrived in mid-1959 (with dumpy styling definitely inspired at Cowley), the 1100 models of 1962 were also Pininfarina shaped, and the Italian masters even had a look at the new MGB.

That, however, was the high-point of the Anglo-Italian partnership, for the next generation of BMC models were front-drive Issigonis creations, where styling had definitely taken a back seat. The more's the pity!

DISC BRAKES ARRIVE

Although Frederick Lanchester postulated the disc brake principle at the beginning of the century, the first practical use was in fast fighter aircraft produced during the second world war. It was not until 1952 that Jaguar first raced their XK120C with Dunlop disc brakes fitted.

In Europe, there was no disc braked production car before 1955 (D-type Jaguars and sports-racing Lotus models don't really count), and it was Citroën, with the sensational new DS19 of that year, who set the trend. A year later Triumph put Girling discs on their TR3 sports car, and Jensen-Dunlop discs (all-round) on the 541. Usage picked up rapidly from 1957 when Jaguar progressively adopted them for their new road cars.

It is amazing to recall that Ferrari and Mercedes-Benz both sold 150mph supercars throughout the 1950s with drum brakes, and no-one thought to brand them as dangerous. It was merely accepted, up to that point, that a

■ When BMC wanted more style for its range of cars it turned to Italy and Pininfarina. The Farina A40 was the first ever hatchback and was quickly followed by a host of badge engineered models

big, heavy, Grand Tourer had to be driven with fading brakes in mind.

Discs, of course, were costly at first, but once Lockheed, Girling, and ATE got to grips with mass production, they rapidly took over.

ROTARY REVOLUTION

The piston engine had been with us, in all shapes and sizes, for 70 years before the world's first gas turbine engined car (Rover's 'JET 1') was built, but principle never had a hope of beating the industry's cost targets. Every attempt to supplant the piston engine, indeed, had foundered on the same rock.

Then came Felix Wankel of West Germany, and his new rotary engine concept. Although it was not pure rotary like a gas turbine (the eccentric which activated the rotor, rather equivalent to a conventional crankshaft, saw to that), it promised to be mechanically more elegant than the age-old Otto Cycle principle.

Wankel's first rotary ran in 1957 — a small, single-rotor unit — and in conjunction with NSU the new design was patented, and first shown in 1959. While the theory was exciting, the practical production problems — not least in sealing the chambers — and ensuring a long life for those components, were immense.

The first Wankel-engined car shown was the NSU Wankel Spider, of 1963, with a single rotor engine of 'nominal' 1-litre capacity, producing 50bhp, but the first serious Wankel-engined car was the twin-rotor 2-litre (nominal) NSU Ro80 of 1967.

Reliability problems, and heavy fuel consumption, did nothing for the Wankel engine's image — but all that would come to head in the early 1970s.

EUPHORIA — THEN CRISIS

The atmosphere changes

In 1965, no-one could have forecast that the world's motoring scene would have become so gloomy, ten years hence. At that time there was no excessive burden of legislation, oil was cheap, and inflation was low. More and more people found themselves able to afford a new car. Continental holidays by car became the new fashion. All was right with the world.

Except that the same prosperity was stoking up trouble for the future. Oil consumption (for industry, for heating, and especially for cars) boomed, supplies couldn't follow suit and prices rose. Worse still, UK inflation, which had been bumbling along at one or two per cent a year early in the 1960s, ambled up to five per cent by the late 1960s, and took off with a rush in the early 1970s, to 20 per cent, and more. The price of everything motoring — especially fuel — soared.

Petrol had cost around 22p/gallon for years in the 1950s and early 1960s, but gradually crept up, to about 35p/gallon, by 1973. At this point the Yom Kippur war erupted, the price of crude was quadrupled, so that by 1 January 1975 the average price was 75p/gallon. It's been going up ever since.

That was the bad news. The good news (not even a Hollywood script writer could have managed it better) was that masses of oil was found under the North Sea bed and started to flow in 1975. We would be self-sufficient by the early 1980s . . .

The rise in new car prices? In a word — horrifying. In 1965 an 850 Mini cost £470, but by the end of 1975 it was £1299. There would be a lot more to follow in the next few years. Once again, however, the news wasn't all bad, for our entry into the Common Market meant a change in motoring taxation — from 36.7 per cent in 1968, it dropped to 25 per cent in 1972 then, after the change to VAT, to approximately 18 per cent.

High-speed motoring became possible in the UK — and illegal at the same time! The motorway network rapidly took shape in the late 1960s/early 1970s (M1 to Yorkshire was finished in 1968, M6 to Carlisle in 1971, and the M1/M5/M6 link to the Midlands was forged at the same time), but the 'temporary' 70mph limit imposed in 1965 was never lifted. There was worse, too, for following the fuel supply scare of 1973/73 another 'temporary' 50mph limit was applied, nationwide, on all roads, and not eased again until 1976.

New car registrations rushed up to 1.7 millions in 1972, but slumped dramatically in 1974, following the fuel crisis. *Autocar* ran a big feature entitled 'The car in crisis' in March 1974, when we suggested that: 'Let there be no mistake — motoring can never be quite the same again. Far from being over, the fuel crisis is merely lying dormant for the time being.'

We were also extremely realistic about the desirable attitude to meet new restrictions: 'Fanatical, implacable, opposition to petrol price increases and speed limits is the line of the bigot. Petrol is expensive and precious . . . Until the alternatives come along some time in the distant future, we must learn to use the motor car more economically . . . That way we can longest hold on to the ultimate independence that only private motoring can provide.'

What was amazing about this worrying time, however, was the number of cars with phenomenal performance which appeared. Jaguar produced their extremely sophisticated 5.3-litre V12 engine, while Aston Martin produced a four-cam V8 of the same displacement. BMW produced a few turbocharged 2002s, but Porsche were much more serious about it, and offered the magnificent 911 Turbo from 1975.

There were 8-litre front-wheel-drive coupés from Cadillac in North America, and 174mph Ferrari Daytonas from Italy. Mercedes-Benz produced the 6.3-litre engined 300SEL, as *machismo* as could be imagined, and the most prestigious thing about the new Range Rover was how awful (14mpg) its fuel consumption could be.

Illogical? Of course. At times it almost looked like the prelude to the Fall of the Roman Empire. 'Eat, drink and be merry, for tomorrow . . .' Instinct, however, proved to be right. The world of private motoring did *not* come to an end in 1973/74. Private cars were *not* to become impossibly expensive to run. The shock, in fact, was good for our system, for the cars which evolved in the next ten years were all the more economical, and environment-friendly, because of it.

■ Below: Front wheel drive Cadillac Eldorado coupé. Bottom left: 70mph speed restrictions. Bottom right: Turbo power for the Porsche 911

THE BIRTH OF THE SUPERMINI

The Mini's bigger rivals

Let's make one thing clear right now. The BMC Mini wasn't the world's first mini-car, but it *was* the first modern front-wheel-drive machine. At a mere ten feet long, it could only be undercut by ludicrous bubbles, and the crude, air-cooled, Fiat 500. For its size, it had an outstandingly roomy passenger box.

But not enough for many people. After the Mini had been launched, there was a long pause while rival designers studied its merits. Was it the right way to go? Was a transverse engine correct for other people? Was it the right size?

Alec Issigonis was too busy to worry about that. He merely pressed ahead with the design of the 1100/1300 series, which were 12ft 3ins long, and then the much larger 1800 models. The public, however, were surprised to see no instant 'Mini-copies' in the first few years.

In general, however, it seemed that other designers and product planners wanted to provide larger cars. They didn't like the idea of 10ins wheels, tiny luggage boots, and sit-up-and-beg steering. The first two 'clones', accordingly, were the Autobianchi (which means Fiat, really) Primula of 1964, and the Peugeot 204 of 1965, after which strange cars like the air-cooled Honda 1300, and its twin-cylinder N360/N600, were launched.

The definitive evolution of the Mini, however, was the Supermini, and the first of these did not appear until the end of the 1960s. Commercially, these became the new standard-setters for the world. The Fiat 128 of 1969, perhaps, was a bit too big at 12ft 8ins long, but the 127 of 1971 (at 11ft 9ins) most certainly was a Supermini.

It was the 127 which made the world of motoring sit up and take notice, whereas the Renault 5 of 1972 (which had a space-wasting longitudinally-mounted engine) was not nearly as outstanding.

After that, the rush was on. Honda produced their civilised little Civic in 1972, the VW Polo arrived in 1975, and Ford's Fiesta followed in 1976. Perhaps it was the last two models which set the seal on the Supermini's reputation. After that, everyone had to get in on the act.

It needs perspective to see why a Supermini was such a bargain compared with smaller family cars of ten years earlier. A Polo for instance, was 10mph faster, 11 sec faster to 60mph, and scarcely less economical than the Austin A35 of 15 years earlier. Not only that, but it was 7ins wider across the rear seat, had disc front brakes, all-independent suspension, and a hatchback body style, all the while being no longer and 60lbs lighter than the A35.

In the 1950s, a small car was a shrunken version of its medium-sized cousin, but by the 1970s a Supermini was a breed all of its own. Even compared with the mid-1960s, the average Supermini offered so much more space, hatchback versatility, handling, and performance. Was it any wonder that most manufacturers rushed to offer their own designs, or that BL started the process off yet again in 1980 with the ultra-space-efficient Metro?

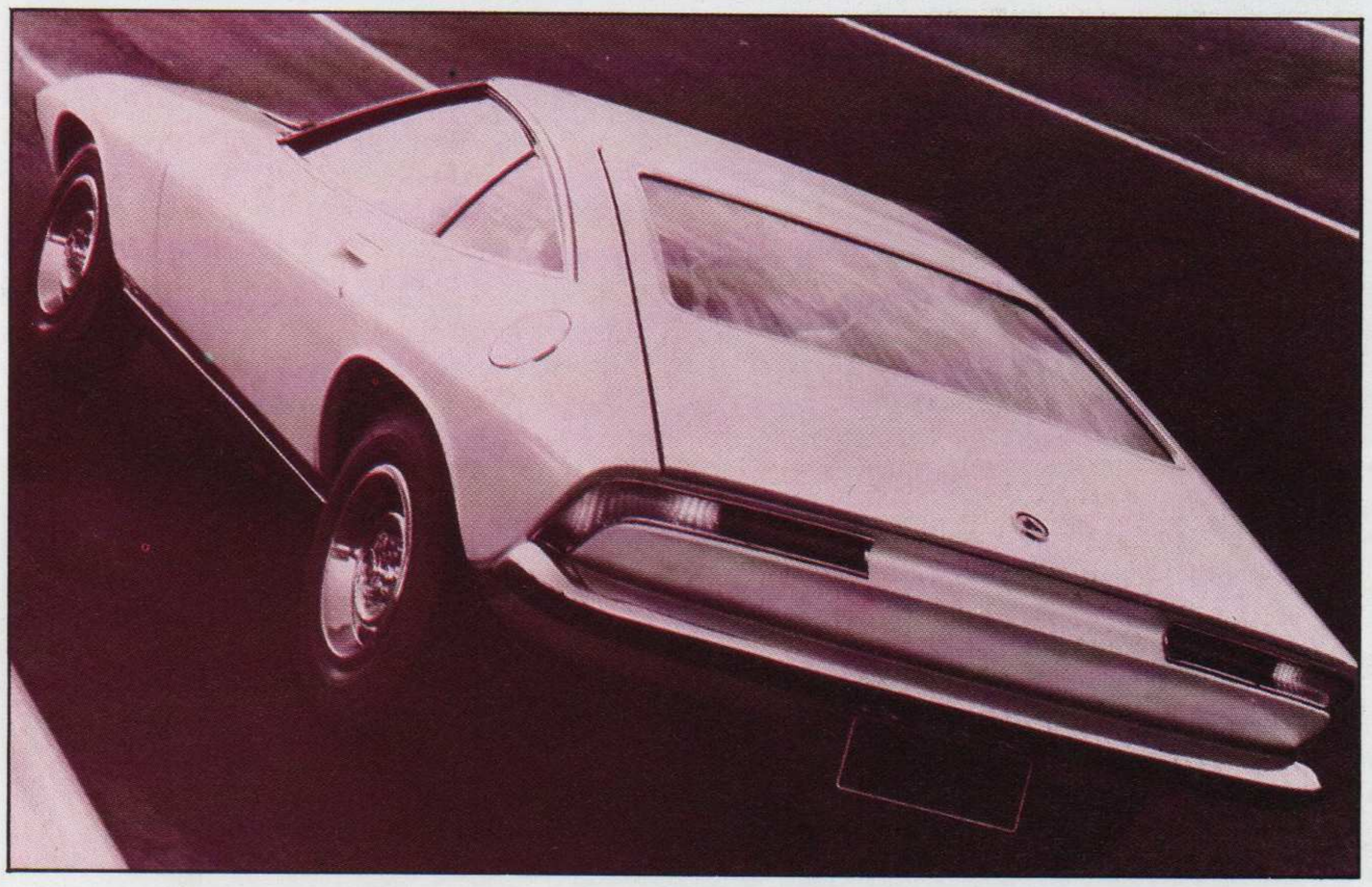
DETROIT'S COLOSSAL INFLUENCE

The 'World Car' arrives

Once the United States embraced the motor car, production in that country rocketed well clear of every other. For many years, however, Britain was the second largest producer of cars, not being overtaken (by West Germany) until the mid 1950s.

Detroit's influence was felt all over the

■ Below: The Fiat 127 started the rush of Superminis from Europe. The 127 (right) arrived in 1971 and was joined four years later by the Volkswagen Polo (left). The Mini was outclassed



■ Above: Opel Kadett was GM's first 'World Car'. Below: Detroit style down under — Holden Torana

world. In 1965, for instance, not only were 10 million cars built in the USA—half the world's total—but Ford, General Motors, or Chrysler either owned, or controlled, other car-makers in the UK, in Europe, South Africa, South America, and Australasia. Although Detroit was slow to take up the concept of the 'world-car', it always had influence on the styling of its subsidiaries.

One year's Chevrolet would soon be aped by a new Vauxhall, Opel, or Holden, and some British Fords were certainly styled, in all but detail, in the United States.

Yet, as the 1970s opened, the tycoons of Detroit were not content with their achievements. Japan's industry, after all, was coming up rapidly (200,000 a year in 1960, 3.2 million ten years later!), and Detroit wanted to be a part of it. So, what happened? Ford took a stake in Mazda, General Motors in Isuzu, and Chrysler in Mitsubishi. All would have liked more, but the Japanese were both proud, and cautious, and would have none of it.

In Europe, at least, the blending process went ahead. Ford designs were commonised from the end of the 1960s, while GM started to weld Opel with Vauxhall from the early 1970s. Chrysler would have liked to do the same with Simca and Rootes, but the money ran out first . . .

Then, in the early 1970s, came the concept of the 'world car', with General Motors leading the way. Opel, it was decided, should take design leadership for a series of cars to be built all round the world (and even, at times, in Detroit itself). First along was the T-Car — Opel Kadett to the Germans, Vauxhall Chevette to us, Isuzu Gemini in Japan — and the Ascona/Cavalier variety followed it.

The process continues, and is often difficult to know who leads who. A journey to Australia or South Africa shows how much the world car has arrived.

Except for one thing — Detroit's cars are rarely built in any other country. Not yet, at least . . .

BL — THE FATAL MISTAKE

Big is not beautiful

By the mid-1960s business tycoons all over the world had come to believe that 'Big is Beautiful'. Big companies, it was suggested, could be even more successful if they got bigger, and the spate of mergers continued.

In Britain, government encouraged surviving British companies to huddle together to fight off competition from multi-nationals like Ford, General Motors, and Chrysler. By 1967, only two large groupings remained — one was British Motor Holdings (effectively a merger between BMC and the Jaguar Group), and the other was Leyland, which included Triumph, Rover and Alvis, Leyland, Albion and AEC, plus many peripheral businesses.

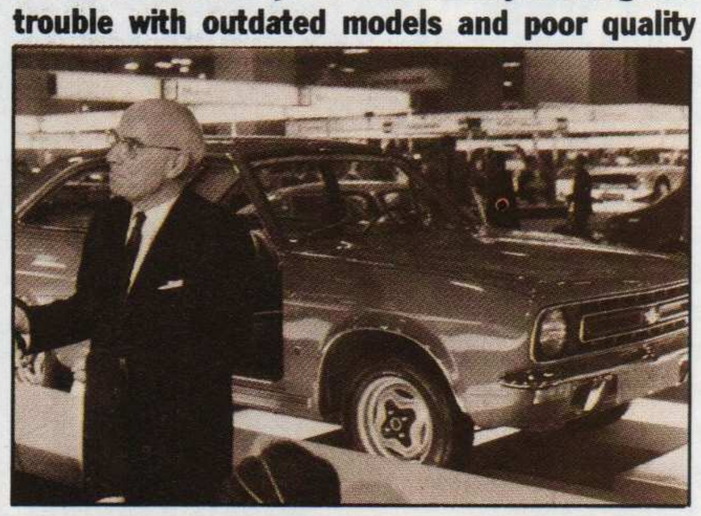
Perhaps the process should have stopped there? If it had, Leyland might still be a privately-owned (rather than nationalised) concern today. In late 1967, however, Sir Donald Stokes and Sir George Harriman got together for talks, and the result was that, from January 1968, British Leyland was founded.

In some ways it made sense (Triumph and Rover got body supplies from Pressed Steel, which was a BMH company), but in other ways it was quite illogical. What, for instance, could possibly have been the common interest of Alvis and its military vehicles, and Austin-Morris with its tiny Minis? Or 40 ton Leyland trucks with 150mph E-type Jaguars?

Whatever, when the new company started trading it held 41 per cent of the British car market, but that figure almost immediately started trending down. By January 1975, when the company ran into an insoluble financial crisis, it had dropped to 30 per cent, and by the early 1980s it was right down again, to about 16 per cent.

The problem? Too many old models, poor product quality, strikes, and a great deal of mis-placed complacency. Perhaps, as one cynic once commented: 'If founding British Leyland was the answer, it must have been a bloody stupid question!'.

■ Lord Stokes at the 1971 London Motor Show. By this time British Leyland was already running into trouble with outdated models and poor quality



CAR OF THE DECADE

NSU Ro80

The Wankel-engined saloon delighted those who drove it, but sent owners into despair

Choosing the NSU Ro80 as the Car of this Decade may seem perverse since, unlike those for previous decades, it may be deemed a failure. That is because of its *raison d'etre*, the twin rotor Wankel engine which was the delight of all who drove it, yet which ultimately killed the car. Indeed, the Ro80 was arguably the most magnificent *failure* of *any* decade.

It would have been rated an exceptional car even if it had been originally designed and sold with a good conventional piston engine, but it was the Wankel rotary which gave it such an edge, particularly in refinement. Wankels are not the ideal rotary of engineers' dreams, because in the first place they do not have the perfect rotational symmetry of, say, the gas turbine. But with two epitrochoidal rotors, it is easy to achieve balance which provides close-to-turbine standards of smoothness.

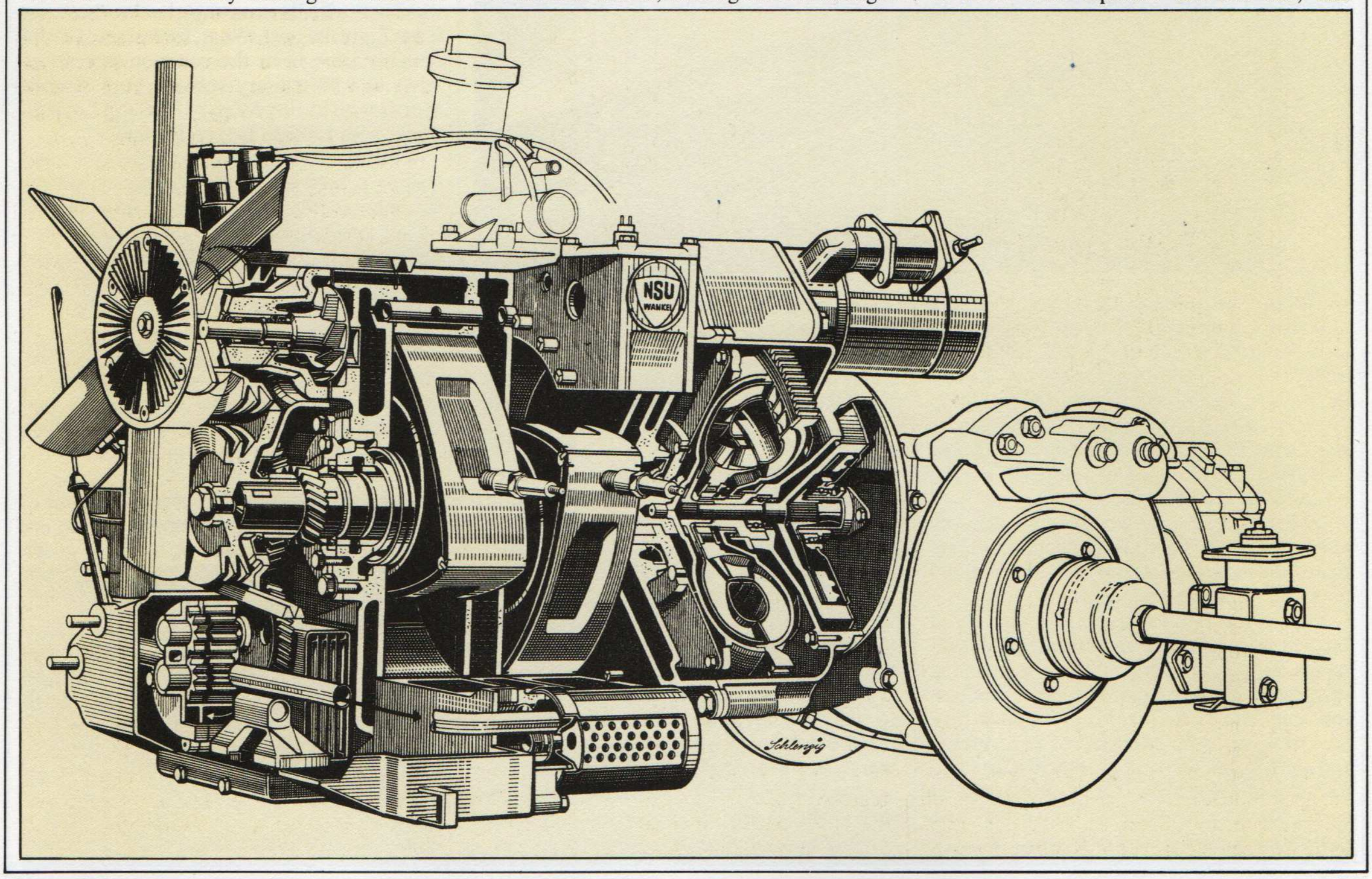
In the original design of its creator Felix Wankel, there are no valves to hit pistons — there are no pistons in the conventional sense anyway — or to limit maximum engine speed, since the cycle is controlled by the rotary piston passing ports in the combustion chamber walls. There *is* a limit set on maximum speed, by the wear resistance of the rotor tip seals, rather than by any immediate physical breakdown of the engine caused by driver over-enthusiasm — although with the Wankel in the Ro80 it was terribly easy to exceed the 6600rpm red line on the revcounter, because the only way you knew you were being naughty was by watching the instrument.

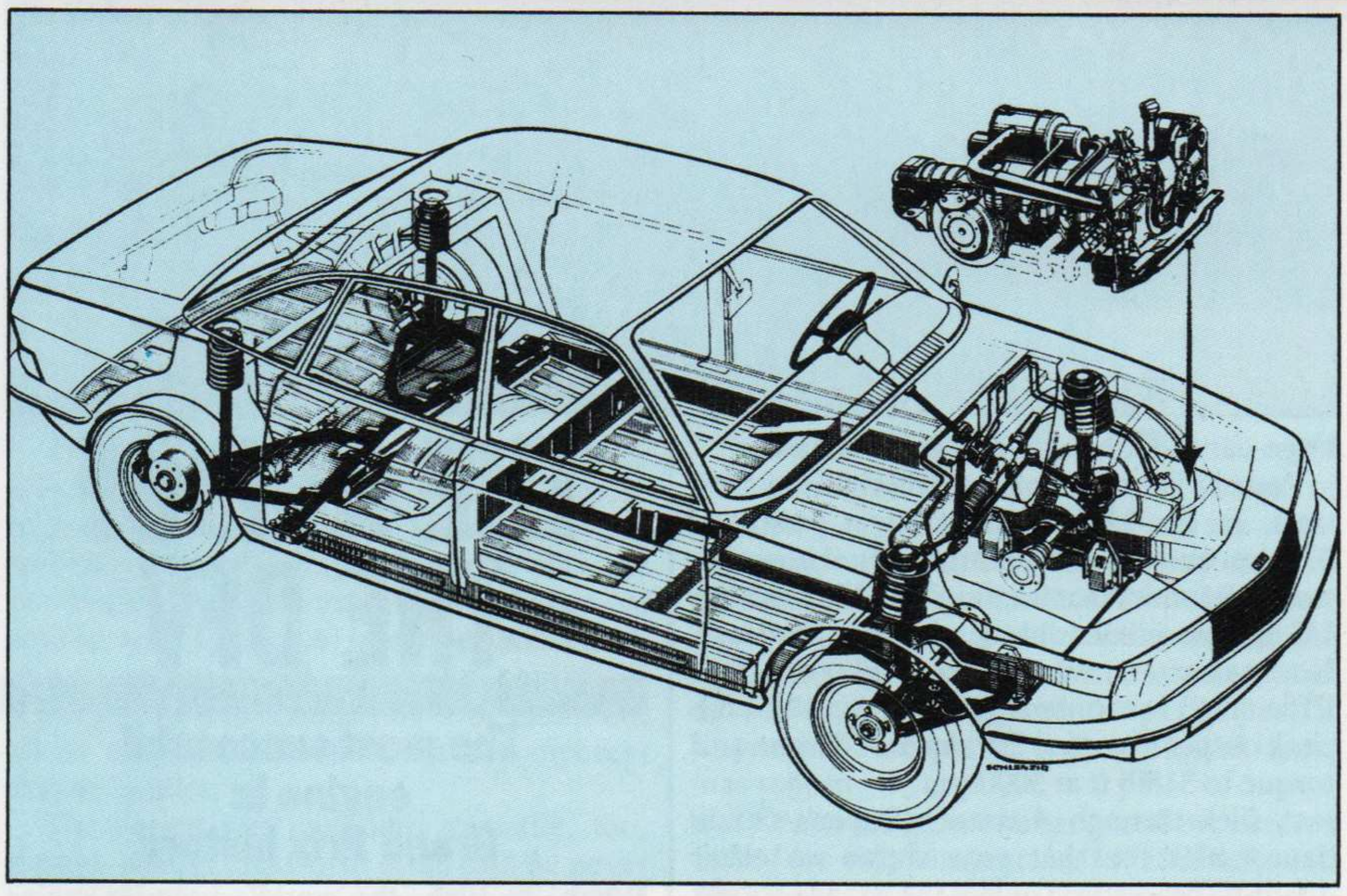
Partly because of the not-so-impressive low speed pulling power of the engine, NSU did not offer a conventional manual transmission. The Ro80 had a semi-automatic, with a wide torque-multiplication ratio (2.3-to-1) Foettinger hydraulic converter instead of a clutch to pass the 114bhp at 5500rpm power output to a three-speed helical spur synchromesh gearbox. There was a clutch as well, released whenever you held the gearlever knob (it was electrically released via a microswitch in the knob, and a servo), in order to relieve the gearbox of converter torque during changes — not an ideal device, making smooth changes difficult — and often operated by mistake.

■ **Above: *Autocar*'s long term Ro80 was loved but went through two engines in a short space of time. Below: The Wankel rotary engine was the car's raison d'etre and the cause of its ultimate failure**

The car was front-drive, in 1967 still something of a novelty for larger cars, which with what was effectively 1990cc and a whopping 9ft 4.7in wheelbase to carry a correspondingly long (nearly 16ft) body, this was certainly a great saloon. It was its length, plus the long nose and a waistline that tapered gracefully up to a high-ish tailed, very roomy boot behind the well rounded, beautifully raked cabin, that gave the Ro80 an advanced drag coefficient for the time. It is no coincidence that those of us old enough to remember this extraordinary NSU were irresistibly reminded of it when we first looked on what is so obviously its grandchild areodynamically, the almost equally remarkable 1982 Audi 100.

Suspension was all independent, with struts in front with separate anti-roll bar, and





■ Above: Constant revisions to the Ro80 still failed to cure engine reliability problems. Fuel economy was not a strong point either. Below: Aside from the engine, the Ro80 was conventional

strut-sprung trailing arms behind, both ends having unusually long wheel travel of around 7½ins in front and no less than 10ins behind. Steering was power-assisted ZF rack and pinion, one of the then-new breed which gave the right amount of assistance combined with unusually good feel. The car was superbly stable in a straight line, as all good front-drive designs should be, had immensely good grip for the time, and imperturtable road manners when cornered hard. In this it was a worthy complement to its engine refinement since, as well as allowing the driver to go much faster than a nervous passenger would normally permit, its stability, grip and lack of body roll made it easy to corner hard.

Another Ro80 feature inherited by the current Audi 100, is a very large fuel tank. The NSU's held 18 gallons, but unlike manual-gearbox Audi 100s with their 17.6 gallon tanks, the Ro80 needed that tank. It was always disappointingly thirsty; in our Continental Road Test of 1 February 1968, the car was quick for the time — with a 107mph maximum speed, and a 0-60mph of 13.9sec — but returned only 18.2mpg overall.

Supposedly equivalent 2-litre conventional cars of the time all managed between 22 and 25mpg in similar conditions, and it was partly this lack of economy which helped kill such a lovely machine. The Wankel's high surface-to-volume ratio also handicapped it severely in the search for adequate compliance with American exhaust emission regulations, but its ultimate downfall was tip seal life, which limited it considerably. *Autocar's* much loved long term test Ro80 went through two engines in its comparatively short time in our hands, and a small but thriving business has arisen since in converting Ro80s to piston-engined form, usually Ford V4. The Wankel died in Europe and North America after a tremendous first flush of licence-buying. Now only Mazda in Japan perserveres.

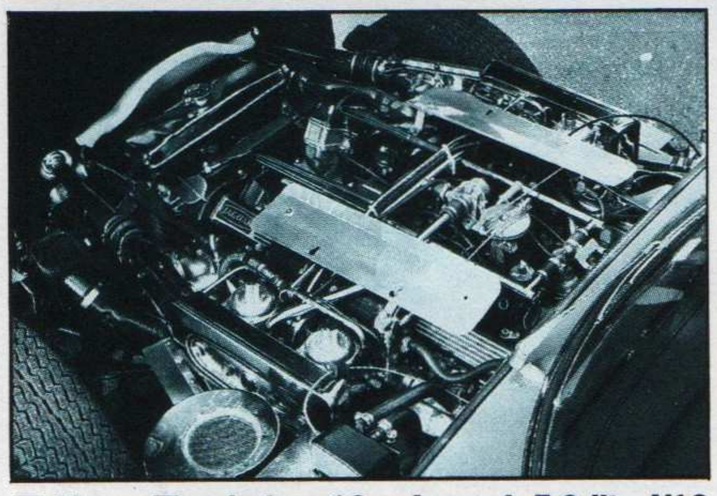
With the death of Wankel in its birthplace, the Ro80 died with it, a car before its time. Perhaps the only consolation now is the present Audi 100, so very obviously heir to the Ro80. But its predictably rough five-cylinder engine is far from the best example of how acceptable the conventional piston engine can be in place of the so-smoothly purring twin-rotor Wankel.

ENGINE OF THE DECADE?

Jaguar V12 was smooth and silky, but was out of place in a fuel crisis

In the 1960s, the pundits were perhaps too enthralled by the new Wankel engine to see much future for piston engines. Perhaps—but Jaguar were not . . . 24 years after astonishing us all with the launch of the world's first quantity-production twin-cam engine, they produced the world's first modern, series-built, V12.

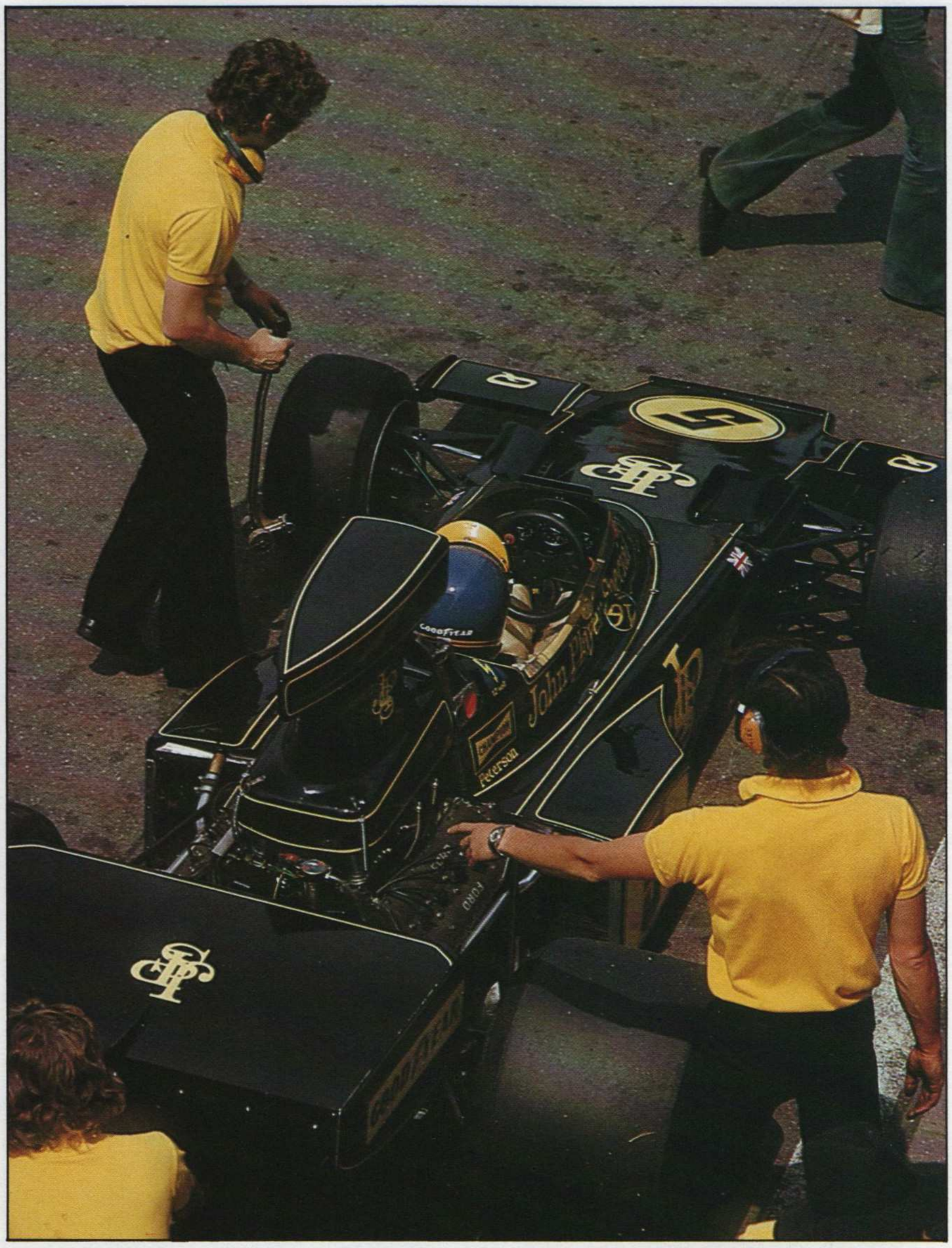
It was magnificent in 1971, and it is still magnificent today. Only the high cost of fuel, and its unjustified 'gas-guzzling' image, spoils the overall picture.



■ **Above: The glorious 12—Jaguar's 5.3-litre V12 first appeared in the Series Three E-type, and transformed the car from sports to boulevard. In the XJ saloon, however, the engine is magnificent. Right: The Ford Cosworth DFV in the back of Ronnie Peterson's Lotus 72. To date the engine has scored 155 Grand Prix victories in an 18 year life span**

There had been V12s before this, but none so advanced, or so powerful. We don't count the Ferraris, which were beautiful but essentially hand-built, and we discount inefficient old designs from Packard, Cadillac, Lincoln and Lagonda, to name but a few.

Here was a light, compact, and extremely powerful unit, silky-smooth and amazingly refined, suitable for sports car or limousine—just as you might expect from the six-cylinder XK's descendant. Jaguar had tried twin cam heads at first, but settled on single-cam-per-bank in quantity production. It was 5.3-litres then, and still is in 1985. There was 'stretch' hidden away inside the light alloy block, but the soaring price of fuel, and a down-turn in large-car sales, has never seen it unleashed.



Power? There was plenty of it, right from the start. In the 1971 V12 E-type, it produced 272bhp, and 304 lb ft of torque. Fuel injection worked wonders for the unit from 1975, but the US emissions laws did their best to throttle it. No matter — when the 'HE' (or High Efficiency) version was put on sale in 1981, the peak output was up to 299bhp at 5500rpm, and torque to 318lb ft at 3000rpm.

A flick through *Autocar*'s Buyer's Guide data tables for that year shows no other quantity-production unit in the world on a par with it, except for the two very different Porsche engines (the 911 Turbo, and the 928S). And as for silence, flexibility, and sheer civilised behaviour, it had, and indeed still has no equals.

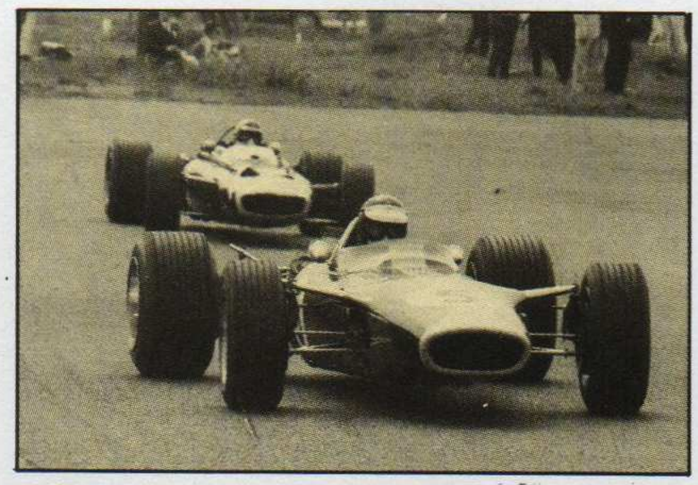
When Sir William Lyons inspired the birth of the original XK engine, he demanded that it should look beautiful. Perhaps the V12 is not beautiful, but by any standards it is an impressive lump of machinery. Will it ever be surpassed?

THE AGE OF THE DFV

The most successful engine in Grand Prix history

When, in 1966, the world's premier racing formula changed, British motor racing was plunged into crisis. In the last four years of the 1½-litre formula, Coventry-Climax and BRM V8 engines had been dominant. For the new 3-litre formula, Coventry-Climax were not to carry on, and BRM's complex new H16 design was too special — and too restricted — to be available to many.

As in so many cases it was Colin Chapman, of Lotus, who inspired a solution. Having first appealed, in vain, to the industry's 'trade



■ **The making of history. Jim Clark takes his brand new and untested Team Lotus-Ford 49 to a debut win in the 1967 Dutch Grand Prix at Zandvoort**

union' — the SMM & T — for support, he persuaded Ford to finance a new Grand Prix engine.

The rest, as they say, is history. Ford paid Keith Duckworth of Cosworth just £100,000 to design and build a new unit for them. The first DFV (Double Four Valve) V8 3-litre unit ran early in 1967, produced more than 400bhp as soon as it was power tested, and won its very first race (Jim Clark/Lotus 49), the Dutch GP of June 1967.

There were teething troubles, of course — not even the Duckworth genius could circumvent all of them — but the engine was never less than competitive. Only Lotus had the use of the DFV in 1967, winning four races, and leading all the others, but other teams were allowed to buy units in the years to come.

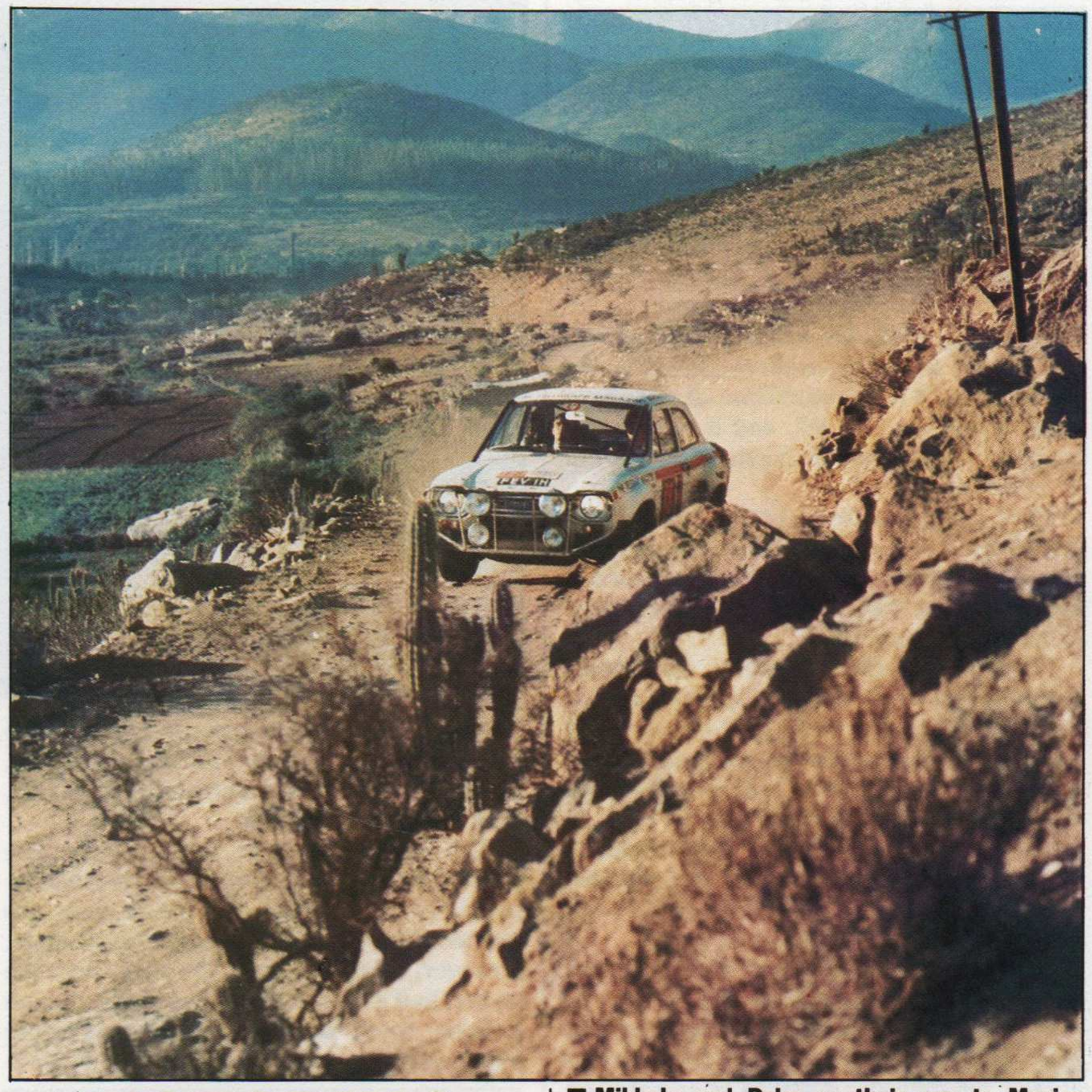
Once the DFV was made reliable (and that mainly meant keeping the camshaft drive gear train in one piece . . .), there was no stopping it. It won 11 GPs in 1968, 11 more in 1969, and another eight in 1970. That was when Ferrari produced the flat-12 'Boxer' engine and started fighting back.

It then became a matter of statistics, rather than highlights. The 50th GP win came in Canada in 1972, and the 100th eventually in Monaco in 1977. In this and its developed form, the DFY, it went on to chalk up 155 victories, the last being at Detroit in 1983, 16 years after its debut.

The amazing feature of the DFV's career was that there were so many of them — more than 400, including the final DFY type — and that they were relatively so simple. Twin cams per bank, and four valves per cylinder, of course, with Lucas fuel injection, and a peak power output which gradually rose from 405bhp (1967) to 520bhp (DFY of 1983), but all so easy to understand for a competent engine builder.

The design was incredibly versatile, too, though Keith Duckworth often said he never intended that to be so in the first place. Not only could the unit be made smaller (DFW was a 2½-litre Tasman unit), but larger and de-tuned for sports car racing (DFL, up to 3.9-litres), and finally — since 1976 — turbocharged, as the 800bhp 2.65-litre DFX unit, now universal wear for every competitive USAC/CART single-seater racing in the USA.

It looks highly likely to complete the 1980s, at least, still as a race winning engine, in one form or other.



■ **Mikkola and Palm on their way to Mexico**

MOTORING MARATHONS

Adventure returned to the rally world, but only at a cost

We had marathons in the early days of motoring (Peking to Paris being the most famous), but more localised rallies took over for the next half a century. In 1968, however, the *Daily Express* sponsored the first of the modern inter-continental marathons, from London to Sydney, and a spectacular, if enormously expensive, type of motor sport was reborn.

The new long-distance generation of events lasted for only ten years — for 1978's Round South America seems to have been the last — but it stretched the pioneering, *and* the organising spirit, to the limit.

London to Sydney, Australia, by way of the Middle East, Bombay, and a ship-board interlude to Perth, sounded a long way, but it turned out to be much easier than feared. Roger Clark's Ford Lotus-Cortina led much of the way, but in the final hours his car broke down, and victory went to Andrew Cowan's Hillman Hunter.

Two years later, the *Daily Mirror*-sponsored London-Mexico World Cup Rally was a much more serious adventure. On a route bounded by Sofia, Lisbon, Rio de Janiero, Santiago, and Panama City, Ford, British Leyland and Citroën 'works' teams battled throughout, with Ford's Escort (and Hannu Mikkola/Gunnar Palm), taking the top prize after six weeks and 16,000 miles. It was an event that had everything, including 10-hour long special stages, 16,000 foot mountains, and perfectly horrid endurance demands.

But the costs were enormous, so for 1974, when the 'World Cup' went from London to Munich, via two crossings of the Sahara desert, and Kano in Nigeria, the entry was almost entirely of so-called private owners. That entry was decimated before the first Sahara crossing, and in the end only a handful of cars completed the two-way journey.

Two more important marathons followed, both of them being won by 'works' or 'works-blessed' Mercedes-Benz cars. In 1977 there was a re-run of London-Sydney, without the help of the *Express*, and in 1978 there was an extremely long and tedious circuits of South America, starting and finishing at Buenos Aires. The first event was won by Andrew Cowan in a 280E, the second also by Cowan, in a 450SLC!

But the short boom was over. Factory teams were loth to enter in case their huge budgets were wasted by incidents in the wilderness, and few private owners could raise the money. Perhaps we will see no more of these events?

MAJOR HAPPENINGS FROM THE DECADE

ENERGY CRISIS

By the early 1970s the rest of the world was used to the seemingly-endless conflict in the Middle East. It had erupted into all-out war in 1956, and again in 1967, and it was almost inevitable that more fighting should break out in 1973.

The fighting was always between Israel, and one or more of the Arab states. Israel had no oil, and the Arabs had a lot. A consequence of war was either that supplies to the rest of the world were disrupted.

From the mid-1960s, however, the world's consumption of oil rose inexorably and — most important of all — the USA became a net importer of the stuff. Proven reserves of oil, it was said, had peaked out, and the wells would dry out by the end of the century.

The Arabs founded OPEC (Organisation of Petrol Exporting Countries) and steadily started pushing up the price of crude. The rest of the world grumbled, but paid up.

Then came the Yom Kippur War of October 1973, won most decisively by Israel. In retaliation, OPEC (which included Iran) not only jacked up the price of crude oil by a factor of four, but they also declared an embargo on supply to those countries which they said had supported Israel in the fighting.

Within weeks there were major shortages, queues at petrol stations, and the threat of rationing all round the world. In some countries it was actually imposed, but in the UK it was only threatened. Most governments took the excuse to lower speed limits as an aid to economy. Matters eased from early 1974, but limits were rarely abandoned.

SAFETY FEVER

Until the 1960s the legislators were very relaxed towards the motor car, even in face of the hundreds of thousands of people killed, or injured, in motor accidents every year.

Then, at first in the USA and later in many other countries, voices were raised about vehicle safety, and about the noxious gases emitted from exhaust systems. The two flash points in the USA were a growing 'smog' problem in large cities (especially Los Angeles), and the Ralph Nader tirades against cars like the Chevrolet Corvair.

In the USA the so-called caring liberals began to lobby for new legislation, and from 1967 they got their way. In the next ten years a torrent of new laws flooded out of Washington, requiring all new cars to have much 'cleaner' exhaust emissions, to run on lead-free fuel, and to conform with crash standards, roll-over standards, driver visibility standards, brake balance standards . . .

The result was that cars progressively became heavier, less nimble, and less economical (for 'cleaning up' the exhaust gases also meant a loss of fuel efficiency). Surprisingly, however, they became no less pretty once the stylists had got used to the new rules, though nothing could stop them becoming more expensive, and considerably slower.

■ The amazing mid-engined Lamborghini Muira was the first of a new breed of supercar. This is a 1971 Muira 400SV which had a power output of 385bhp and a top speed of 180mph. Its successor, the 1973 Countach, was even more stunning

IMPORT INVASION

Nowadays, of course, we are quite used to imported cars taking more than half of the UK sales, but it wasn't always like that. Even in the late 1960s *Autocar* headlined feature 'One in Ten is Foreign', and it caused a stir.

Between the wars our industry was protected by the McKenna duties against imports, and the market share was tiny.

Until the end of the 1950s UK buyers stayed loyal to domestic products, and the imports took time to build up their sales organisation. Two major changes then occurred. One was that the choice of British cars began to fall away, as makers rationalised on new models, and the other was that the importers realised what type of cars we would buy. The fact that Britain's car workers had evolved their own appalling image for poor quality didn't help.

By the early 1970s the import share of the market was well over 20 per cent, reaching a quarter in 1973, and trending firmly up towards 50 per cent by the end of the decade.

There was nothing uniquely British about this, for the trends were obvious all over the world. Our own entry into the Common Market (January 1973) reduced tariff barriers, while the onslaught of Japanese cars was another major factor.

MID-ENGINED SUPERCARS

Until the mid-1960s, the archetypal Supercar had a massive engine up front, and rear drive, sometimes via a rigid axle. Even though all competitive racing cars (single-seater or racing sports) were mid-engined by 1965, the world of production car design lagged behind.

Early practical mid-engined road cars included the Matra 530 and the Lotus Europa, but it was not until the amazing transverse V12 engined Lamborghini Miura was shown in 1966 that truly fast mid-engined Supercars appeared.

It was logical, and it was inevitable, for if a wealthy customer only wanted two seats and striking styling, he could have it in several forms, without compromise. Luggage space — or, rather, the lack of it — was what always hampered the prospects of cars like the VW-Porsche 914, or the Matra-Simca Bagheera. When it came to buying the Ferrari Dino 246GT, however, no-one complained!

The Muira, however, had the market to itself for a time. Next along was the fast, but under-developed Monteverdi Hai, but the first truly practical example to go on sale was the Maserati Bora, first launched in 1971. Ferrari's famous Berlinetta Boxer was also seen in 1971, but did not go on sale until 1973/74 (at the height of the energy crisis!)

By that time, in any case, Lamborghini had gone one stage further. They showed the Countach in 1971, and replaced the Miura with this projectile in 1973. Nowadays the mid-engined car is completely accepted, and the motoring scene is all the more exciting for that.

UK MARKET TRENDS

The rise of Ford and GM, the fall of BL and Chrysler

In the last ten years there has been a massive shift in British car-buying habits. The winners in this battle, without doubt, have been Ford, General Motors, and the importers; the losers, also with no argument, have been British Leyland, and Chrysler (now Talbot).

Autocar took lots of flak over the years about the number of imported cars tried, tested, and owned, but this was only in line with general trends. Just look at these figures: in 1975, Ford's market share was about 22 per cent, the importers accounted for 33 per cent, and BL took 31 per cent. That left just 14 per cent for Vauxhall, Chrysler (about seven per cent each), and the independents.

In the next few years BL lost out steadily, the importers gained rapidly, Ford forged ahead and General Motors started to revitalise their Opel-Vauxhall combine. Chrysler sold out to Peugeot, the cars being renamed Talbot, but their slide continued. Imports were at peak, by the early 1980s, at nearly 60 per cent, though much of this figure included the built-up Fords, Vauxhalls, and Talbots brought in from the Common Market countries.

In 1984, though, Ford had clawed their way up to 28 per cent of the market and Vauxhall-Opel sales had rushed up to 16 per cent, both these figures including a proportion of imported cars. BL had become Austin-Rover and slumped to 18 per cent, while the entire Peugeot-Talbot share was down to a miserable four per cent.

Of all the imports the Japanese were knocking on the 11 per cent barrier (right on their agreed 'prudent marketing' figure), while total imports from the EEC countries added up to 36 per cent.

Over the decade, though, the choice of British, or British-made, cars declined considerably. Was it any wonder that many family-car motorists looked to the importers for variety? They certainly could not find cheap 'marginal motoring' machines like the Skoda, or technically excellent BMW or Mercedes-Benz competitors at home. And as for the small, versatile, hatchbacks — in 1980 there was nothing exclusively British, so in 1981 the Metro was almost bound to succeed. Three-quarters of all private sales are foreign.

In the mid-1980s the face of the industry has changed completely. Ford, Vauxhall, and Talbot produce the same cars as their West German and French counterparts. Specialist importers like Saab, Volvo, BMW, and Daimler-Benz make hay. Only the makers of dull cars like Fiat, Renault and (yes, even) Citroën have suffered.

Walk into a showroom today and it is often not easy to know where a particular car comes from. The Ford Fiesta might be British—but it might also be Spanish or German. Vauxhalls come from the UK, from Holland, or sometimes from West Germany. Only with the Austin-Rover range are you sure that final assembly was carried out in the UK, but even then engines might be Japanese or Italian, and transmissions might be Japanese or German.

There is another side of the coin — that companies like Ford export hundreds of thousands of engines and transmissions every year. But the days of a true British motor industry are really over.

ECONOMY AND EFFICIENCY

Fuel crises and political unrest advance technical progress

Although the basic conditions for UK motoring have changed very little in the last ten years, the climate (emotional and political) has been transformed.

The miracle is that the nation seems to have shrugged off two energy/fuel price crises, and a seriously inflationary period inspired by these. In ten years the new cars have become measurably better, even though the roads themselves have lagged behind. As motorists, we kill fewer of the breed every year, but it has needed compulsory safety belt usage, and stiff drink-driving laws to help bring this about.

In ten years the big advance to the cars has been to their efficiency. It had to come. After all, if the cost of fuel, of the spare parts, and the labour to maintain the cars is all being pushed up, the obvious incentive is to use less of each.

This was tackled in several ways. One was to make the engines more fuel-efficient (and, that, in many cases, meant using a sophisticated fuel injection system, with electronic engine management to optimise everything); another was to minimise mechanical rolling resistance (more efficient transmissions and higher gearing, better tyres, and thinner lubricants); the third was to improve a car's aerodynamics.

Consider aerodynamics. A car's drag is a function of its frontal area, and its shape. The frontal area is inviolate, unless you are to provide a smaller passenger cabin, but a lot can be done about drag coefficients. In 1970 an average figure would have been 0.45. By 1980 that was certainly down to about 0.38, and in the mid-1980s anything over 0.30 for a new car is considered disappointing.

Then there has been a concerted rush to provide five-speed manual, or four-speed automatic, transmissions, with an 'overdrive' top gear being essential. That has helped

■ Top: Volvo's 700 — top models from a leading importer. Above: Ford's Fiesta — home made or imported? Left: The Metro — the car that saved BL

economy quite a bit . . . and improved dual-carriageway roads allow fifth to be the normal gear these days.

Turbocharged engines haven't helped fuel economy at all, but then a proportion of us will always like flashing acceleration, and hang the expense. In general, though, overhead-cam engines, careful fuel metering, and efficient breathing are all providing better economy than before. Would you have expected an *Autocar*-record 33mpg for a 1.6-litre Sierra ten years ago? A 16mpg Range Rover? A 22mpg 3.2-litre Porsche 911 Carrera?

We get significantly longer warranty periods than before (a year's warranty, with unlimited mileage, is the norm today — ten years ago many manufacturers were imposing six months/6000 miles), and the interval between major services has moved up sharply from 5000 miles to at least double that.

The fact that radial ply tyres last twice as long as cross-plies has put some tyre makers out of business (when commercial disaster overtook them, they couldn't understand why!), while anti-corrosion warranties sometimes cover six years on the latest cars.

In some ways, though, things never change. You need an MoT inspection when the car is three years old — no longer than before — and it's highly likely that your car's exhaust system will fall off every two years or so. And don't expect to see insurance premiums fall ever again — every time a car gets more sophisticated the cost of repairs rockets. You can't have it both ways!

JAPAN'S INDUSTRY TAKES OFF

But imports are restricted

Before the 1970s, the Japanese motor industry tended to copy us (but build better). Now they design, develop, and build good cars in enormous quantities. More cars are built in Japan than in Detroit, and that upsets the *status quo* of the last half-century.

It was with front-wheel-drive cars like the Honda Civic and the Datsun (Nissan) Cherry that Japan moved sharply forward, and with the Z-Cars that they achieved a sporting image. Since then there has been no stopping them. Front-wheel-drive is now the 'norm' for almost all new models. Toyota's latest 16-valve engine, and the mid-engined MR2 coupé may both be derived from European practice, but that doesn't make them any less exciting.

Japan built 6.3 million cars in 1979, compared with 8.5 million in the USA, but that situation was soon different. In 1984 there were 7.4 million from Japan, and 7.8 million from the USA — a year earlier Japan had outsold the USA by nearly a million cars.

Few Japanese cars were exciting, but most were well-packaged, reliable, and floating on the great Japanese reputation for building everything very well, and for making them last a long time. All over the world, car buyers liked that, and bought them in huge numbers.

The trade, however, was all one way, for the Japanese made it very difficult for anyone to sell imported cars in Japan. More and more governments objected strongly to this, and took action to limit Japanese car sales in their territories. Some nations, like Italy, virtually banned them altogether. The UK merely leaned heavily on the concessionaires, the result being a 'prudent marketing' agreement which held the Japanese cars' market share to about 11 per cent.

One way to get round this was to conclude co-operative agreements. The Austin-Rover/Honda was one such (and the most important for this country), the Nissan-Alfa Romeo link-up another. There may be more later in the decade, and Nissan's decision to build cars in the UK may also be important.

■ **Above: Cars like the new Toyota Corolla show just how good the current Japanese cars are. Below: Chevrolet Chevette, made for the US**

AMERICA DOWN SIZES

Gas-guzzling US monsters become a thing of the past

In the early 1970s the average American car was about 17ft long, weighed more than 4000lbs, and had a 6-litre/300bhp V8 engine. Then came the Yom Kippur War, the energy crisis, and a spate of legislation to enforce fuel economy. The average American car of 1985 is 14ft long, weighs under 3000lbs, and has a 2.5 or 3-litre four-cylinder or V6 engine.

General Motors claim to have started their down-sizing programme, at least at the styling stage, before the energy crisis erupted. Whatever, the first evidence came in 1976, and Detroit's cars have been getting smaller ever since. Not only smaller, but more fuel-efficient, and many with front-wheel-drive power packs.

Washington's bombshell was to enforce new Corporate Average Fuel Economy rules (CAFE, for short), which required a manufacturer's overall fuel consumption figure to rise

from 21.6mpg in 1978 to 33mpg in 1985. All this, by the way, while insisting on fuel-guzzling emission limitations too.

The only answer was to slim down cars, produce more efficient engines, and more versatile transmissions. The second oil price crisis of 1978/79 helped encourage a short-lived vogue in diesel engines (would you believe diesel-engined Cadillacs?), but that boom is over by the mid '80s.

Some 'American' cars turned out to be re-styled Europeans — such as Chevrolet's Chevette, Ford's Escort/Mercury Lynx, and Chrysler's Omni, but the next generation of front-wheel-drive Detroit models were technically exciting. More money has been spent on development, and re-tooling, in the last ten years than in the previous 30 — and the cars are all the better for that.

Detroit still has much to learn (or, at least, to acknowledge) about refinement and true quality, but you still have to be impressed by the design of the latest Corvettes, the mid-engined Pontiacs, or the latest Thunderbirds.

TESTING MILESTONES

From the Bentley Mulsanne Turbo to the Skoda 120L . . . we've tested them all

In the last ten years, getting on for 1000 test cars have passed through our hands, and we must have 'figured' at least 800 of them. A surprising number of them have been instantly forgettable — but a few have been truly memorable.

It's human nature, perhaps, that we remember those with towering performance, but we ought, too, to recall the super-economical machines as well. Some were fast like the 164mph Lamborghini Countach LP500S, and some merely simply slow like the 64mph Fiat 126. Some were expensive — the £63,288 Bentley Mulsanne Turbo, some just cheap (and nasty) like the Skoda 120L . . .

Some readers, of course, are never satisfied. We tested a Ferrari Boxer BB512 in 1978, recorded 'only' 163mph, commented that Ferrari claimed 188mph, and got an avalanche of criticism from the pundits. The fact was, we never traded in rumour, only in facts — and it was significant that the car was never re-submitted 'for you to have another go . . .'.

At the other extreme there is the vexed question of fuel economy. Without exception, no car we test ever reaches those much-advertised hype claims, so — once again — you, the reader, complain. A look down the lists in 1980 shows that the most economical car we had tried in recent years was the Citroën 2CV, at 45.9mpg, and that only four other cars — three small Renaults, and the Reliant Kitten — had beaten the 40mpg mark.

Five years later the Citroën is still our most economical petrol-powered car, but the best of all is the 48.1mpg Daihatsu Charade Diesel, while VW's Golf Diesel recorded 46.1mpg, and Ford's Fiesta Diesel 46.1. The average, for all cars,is much higher than before, which means that all the lessons about engine efficiency, and aerodynamics, are sinking in.

It is the innovation, not the super-frugal models, which has made the most headlines. Of the first-ever turbocharged Rolls-Royce — actually badged as a Bentley (the Mulsanne Turbo) — we wrote, in 1982 that: 'If fuel costs don't matter, the Bentley is immensely attractive and enjoyable — quite, if one may be so vulgar about a car from Crewe, the most point-and-squirt near-limousine ever to come from that factory . . .'

Then, of course, there were our collected thoughts about the super-slippery Audi 100 generation, which we called a 'Benchmark in Efficiency', and said that its performance: 'makes it the new standard-setter for the class, and a target for a number of manufacturers at work in supposedly higher breeds of car.'

■ Top: Ferrari Boxer — glorious to look at and delightful to drive . . . but we only recorded a 163mph maximum. Above: But that's more than double the little 2CV's 69mph flat out blind!

It's worth remembering, too, that we were not over-chauvinistic about the original Austin Metro of 1980, judging it 'Excellent — but could easily be still better', but pointing out shortcomings in noise, engine behaviour, seating, ventilation, and overall quality . . .

Sometimes, of course, we have been so hard — with opinions based on facts — that no future tests cars have come our way. Of the Skoda 120L we commented: 'Poor directional stability and tricky handling with swing oversteer on corners . . .' — it may be better now, but we've never been able to find out.

All in all, though, there are few bad cars these days, though a lot of dull ones. In spite of the 70mph overall speed limit, by the way, more than half of all the cars we try exceed 100mph comfortably, and only two of them — the Citroën 2CV and the Fiat 126 — can't even reach 70mph on the flat.

CAR OF THE DECADE

AUDI 200 QUATTRO

The current state of the art

There is no doubt at all that the Audi 200 quattro embodies three of the primary advances of this most recent decade better than any more prestigious rival. And to permanent four-wheel-drive, anti-lock braking, and turbocharging — all developments of earlier times — it adds an immensely important fourth advance, an aerodynamically smoothed body. The Audi is not perfection — no car is — and it could be bettered. But it is superb nevertheless, and the significance of its existence cannot be ignored by any other full range manufacturer who wishes to retain his self-respect.

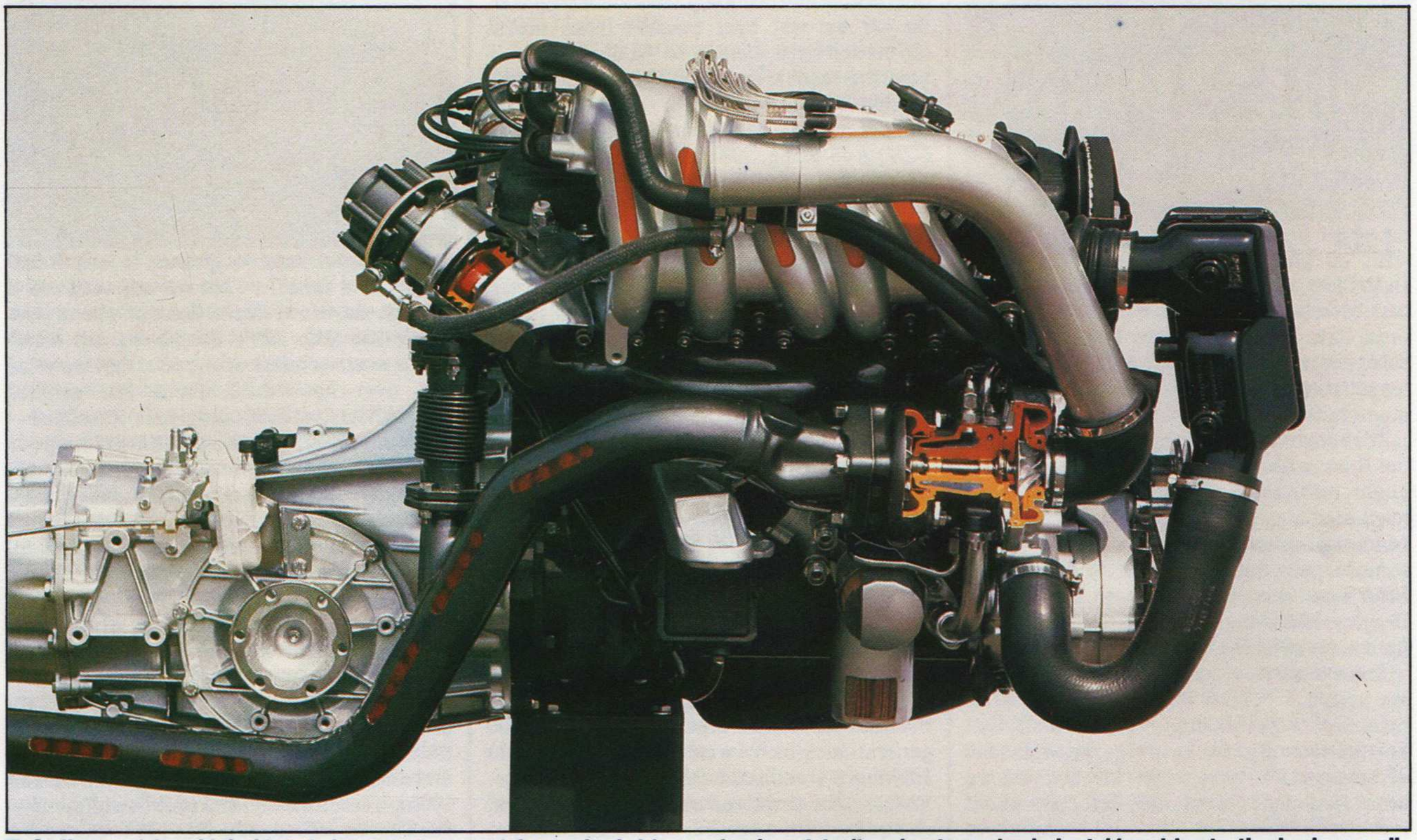
Without any argument, the greatest of the Audi's three distinctions is its all-wheel-drive system. The system itself is remarkable more for its simplicity (some would whisper, with a tinge of justification, crudity) than its sophistication — and although Audi was alone when it introduced this sporting, rather than off-road, transmission layout at the Geneva Motor Show in March 1980, they were not the first; Jensen showed and sold its more comprehensive Ferguson-principle Grand Touring FF coupé with permanent four-wheel-drive *and* an anti-lock braking system *14* years before.

How did the Quattro system happen? Audi was — and still is — a thrusting, effectively young company eager for a place in the sun which always seems to shine so benignly on the well established Daimler-Benz and BMW. The quickest and, *if* you win, surest way to gain real stature internationally amidst such giants is to go racing or rallying in the right field. Others had already demonstrated what could be done in rallying, often — up to recently, at least — using cars that *looked* like recognisable production models. It must have been obvious to Audi that four-wheel-drive, at any rate when first used and before rivals had followed suit, offered just the chance of publicity-gaining domination of International rallying.

Even if it hadn't intended to go rallying with special, immensely powerful versions of the Quattro, but merely wanted to offer faster top models in its range, four-wheel-drive was very much required. For, in case anyone has forgotten, all Audis since the re-creation of the marque (out of DKW) in 1965 had been front-wheel-drive — the old-fashioned, non-space-efficient Citroën-layout type with longways engine. And as the first Audi 200 Turbo of 1979 had already demonstrated, there is a limit to how much power you can satisfactorily put through the front wheels, and that is at around 100bhp per ton laden; exceed that, and traction and steering suffer unacceptably.

The Audi design team cleverly saw that the old-fashioned drive train offered a very clean, simple way of adding a drive aft to the back wheels. The drive to the front wheels already existed, so no clumsy asymetrically placed transfer drive past the engine was needed; the engine was already out of the way, ahead of the front final drive. But if the all-wheel-drive is to be permanent, you've got to have a centre differential, to prevent the transmission "winding up" due to inevitable small wheel rotation differences. They made the lower, output shaft of the all indirect two-shaft gearbox — which is the final drive pinion shaft in the front-drive original — hollow, and extended it backwards to the carrier of a surprisingly small centre differential. That left room for the correspondingly small diameter front pinion drive shaft to run forwards from the diff to the forward drive. A brilliant piece of straightforward thinking, which in the original Quattro cost only 165lb overall in extra weight.

The Quattro's wonderful rally success up to last year (when the competition caught up and overtook) is history. Back in the real world of cars you can buy, Audi kept its promise of making quattro (the small q is deliberate) versions of all their cars, first with the 80 in November 1982, then the remainder in the autumn of 1984. That was when the current 200 Turbo quattro was launched.



■ **Audi turned its old fashioned, longways mounted front wheel drive engine layout to its advantage simply by taking drive to the back as well**

This new 200 embodied all the best features of then-current Audi development. Besides the updated drive system, Audi had at last overcome the problems of mating Bosch electronically controlled four-channel anti-lock braking (first shown in three-channel form by Mercedes in 1978) with four-wheel-propulsion, although unlike the ATe system developed for Ford's Sierra XR4×4 for its 1985 launch, it was not always in action (being automatically cut out if one locked the centre differential). Nevertheless, anti-lock brakes are a tremendous and genuine aid to real safety in driving which complement the 200 Turbo quattro's combination of power and forward traction superbly.

■ The Audi 200 quattro combines four wheel drive, a turbo-charger and anti-lock braking with an aerodynamically efficient slippery bodyshape

The oddity of the 200's mechanically fuel-injected 79.5 × 86.4mm 2114cc engine is its number of cylinders — it is a straight five, arrived at in Audi's climb up the power and capacity ladder, when basically they added a cylinder to their old four-cylinder original. It achieves the extra size at the expense of some unavoidable engine imbalance, which advanced hydraulic mounts do their best to hide. The turbocharger has a water-cooled bearing to eliminate the problems of stopping the engine immediately after a hard run. Its compressor output is intercooled and blows at a maximum boost of nearly 12psi, to provide 180bhp at 5700rpm, with a massive 186lb ft of torque at 3600rpm.

That is enough to propel this 3110lb saloon to a maximum speed of 143mph, thanks half to that lusty engine, and half to the superbly sleek, slender body, with its elegantly raked superstructure, gentle wedge profile, and a mass of good detail aerodynamic design. It will accelerate from rest to 60mph in 7.4sec, which is very good for the size of car, yet in the same *Autocar* Continental Road Test, it recorded nearly 20mpg overall, which represents equally remarkable efficiency.

The abiding impression left on all who drive this late 20th century marvel is of its supreme stability, on top of the incredible traction you expect from four-wheel-drive. Couple that to such performance, and anti-lock braking, and you have something which is at least a current classic, worth preserving in the most discerning collector's museum, and which may well turn out to be the car of the current quarter century.

TURBO TAKEOVER

The Ford-Cosworth V8 is blown off by forced induction

By 1975, Formula 1 was in a rut. Apart from Ferrari, and Alfa Romeo, almost everyone else relied on Ford-Cosworth V8 power, and that was stuck at around 460/480bhp, unblown, from 3-litres. There had always been the option of 1.5-litres, with forced induction, but no-one had tried this.

Supercharging, it was thought, was for museums. However, the phenomenon of turbocharging was coming along rapidly in American USAC racing, and in racing sports cars like the Porsche 934s. It was only a matter of time before someone tried his luck with a single-seater.

Renault took up the challenge. Using a 90 degree 1½-litre V6, it produced its first F1 car in 1977, and started winning in 1979. There were still several years of Cosworth domination to come (Keke Rosberg won the Driver's championship in a Williams-Cosworth in 1982), but from 1980, when Ferrari first showed their turbocharged 1½-litre, the writing was well-and-truly on the wall.

Normally-aspirated engines like the Cosworth, the Alfa Romeo flat-12, and the flat-12 Ferrari, all seemed to reach their limit at about 520/540bhp. With turbocharging, it was never difficult to reach, and surpass those figures, although it was often very difficult indeed to keep the engines running properly for the length of a race. For the first few seasons, much hilarity (and a lot of expense) was caused by the sight of turbochargers blowing up in clouds of blue smoke and, not infrequently, sheets of flame into the bargain.

By the early 1980s, though, BMW, Ferrari, Alfa Romeo, Hart and Porsche (who designed the TAG engine) had all produced reliable 1½-litre turbos. Qualifying power soon went up to 700bhp, and race power to 650bhp—and that is increasing all the time.

Personalities dominating GP racing in this period were, of course, Bernie Ecclestone, who runs the 'sport' as his own personal business; the late, great Gilles Villeneuve, who drove every race to his utmost; Niki Lauda, who survived a fiery accident at the Nurburgring, retired for two years, yet has still won three Championships in the decade, and FISA's Jean-Marie Balestre, without whom the gossip columnists would have been scratching for copy at times!

After turbocharging, the phenomenon of the decade was the development of ground-effect aerodynamics, and for the future there is the new Ford-Cosworth turbocharged engine to consider (it will race in 1986), and a reduction to 1.2-litre engine size.

The show-business, the razzmatazz, and the bickering, no doubt, will continue, while drivers' earnings will become even more ridiculously high.

ON ALL FOURS

All wheel drive and turbocharging take the rally world by storm

Since 1975 we have seen two distinct rallying periods. Until 1980, the world championship scene was dominated by front engine/rear drive 'homologation specials' like the Ford Escort RS and the Fiat 131 Abarth. Since then four-wheel-drive, and especially the Audi Quattro, have taken over completely.

There is a simple reason for this shift—until 1979 four-wheel-drive was banned from rallying (and most people, remembering the still-born 4wd GP cars of 1969-70, didn't think they would work). The first true 4wd rally 'car' was the Range Rover, used in long-distance/rough-road events, and the Quattro didn't start to win until 1981. It became reliable and dominant in 1982, and it wasn't until 1984 that another four-wheel-drive 'special', the Peugeot 205 Turbo 16, began to defeat it regularly.

Ford and Fiat battled away at each other for

years, once Fiat-Lancia had forcibly 'retired' the splendid Stratos. Fiat won more events and championships, merely by tackling more. The Escort was quicker, no less versatile, and ultimately longer-lived. The marque won the World Championship in 1979, while Escort drivers were individual champions in 1979 and 1981.

Into the 1980s came a new set of regulations, now known as 'Group B'. This meant that only 200 of a particular car had to be built, and Opel, Ford and Lancia thought two (rear) wheel drive was enough. Opel struggled on for years (with their driver, Walter Rohrl, becoming world champion in 1982), while Lancia's Rally was a mid-engined coupé which won many tarmac events, and the Makes series in 1983. Ford saw the light, almost too late, and cancelled their Escort RS1700T.

Then came the Quattro, with its way-forward engine, permanent four-wheel-drive, and 50/50 per cent torque split. It wasn't ideal, but it gave great traction, it was available in big numbers, and it was usually driven by top-class drivers. Hannu Mikkola and Michele Mouton mastered it first, but Stig Blomqvist and Walter Rohrl followed. In its second full year (1982), the Quattro won the Makes series, and its drivers so nearly became individual champions. In the following year, Hannu Mikkola won the Driver's Championship he so richly deserved. In 1984 the car and their chosen driver (Stig Blomqvist) won *both* series.

But the Quattro period was already over. The new short-wheelbase car didn't work properly, and the new Peugeot was amazingly effective, right from the start. For 1985, too, several more 200-off Group B cars were promised — from Ford (RS200), Lancia (Delta S4), Citroen (BX) and MG (Metro 6R4). The next two or three years should see fascinating, ultra high-speed, motor sport.

■ Top: The all-conquering Audi Quattro. This is Blomqvist on the 1983 San Remo rally. Left: The start of the turbo revolution in F1 — Jabouille's Renault RS01 at Monte Carlo in 1978

MODERN TIMES: 1975-1985

MAJOR HAPPENINGS FROM THE DECADE

BL SURVIVAL

British Leyland started the decade in crisis, and has been struggling to regain stability ever since. In January 1975 the government stepped into provide financial assistance and — within months — nationalisation. It was not until 1984 that the selling-off (or 'privatisation') of profitable sectors began again.

In 1975 BL's UK market share was 31 per cent (it had been as high as 45 per cent ten years earlier . . .), and it was falling fast. By the end of the 1970s, it had dipped below 20 per cent, and bottomed out at about 18 per cent before the first of the new models arrived.

The nationalised concern, under Lord Ryder, had all the wrong policies, a bloody-minded workforce, and old-fashioned cars. Managers came and went — it seemed as if the group had a death wish. Then Michael Edwardes was appointed as chairman, the atmosphere changed, and things started to look up.

Not only did Edwardes approve a whole series of new models (the in-phrase of the period was a 'product-led recovery'), but he also faced up to necessary factory closures, and essential cuts in staff, workforce, and overheads. Getting rid of the trouble makers was probably his greatest achievement. In the early 1980s, BL produced the new Metro, Maestro, Montego, and joined forces with Honda to make the Acclaim and the Rover 200 series.

There will be more later this year with the still-secret 'XX' project. But the market share is still under 20 per cent, and the company (now called Austin-Rover) still make a loss. Is there a long-term future?

DIESELS FOR ALL

In the last decade the choice of diesel-engined cars in the UK has exploded. In 1975 sales were measured at hundreds per year, and the only diesel-engined models on offer were from Mercedes-Benz and Peugeot.

Then came the VW Golf diesel engine, which was a quantum-leap ahead in terms of refinement, smoothness, and efficiency. That was one stimulus to the opposition — the other was the rocketing price of fuel. In the UK diesel fuel taxation was always as high as that of petrol, so savings were only in long-term economy.

Now, in 1985, almost every important European manufacturer has diesel engines in his range. Of the British mass-producers, only Austin-Rover are behind the times (the Rover 2400SD is large, and limited in appeal), while in Europe it is the specialised producers like Saab and Lancia who stick to petrol engines. You can even buy a diesel Alfa Romeo or BMW.

There are few diesel-engined Japanese cars yet, but surely it won't be long. The big advance in the UK, came in 1984 when Ford announced their Fiesta/Escort diesel units; it jolted the market into new awareness of this type, and total annual sales passed 50,000. They may double in the next two years — and that's still only six per cent of the market. For the future, there's still a long way to go!

COSTS SOAR EVER HIGHER

The 1970s saw the price of everything rise rapidly. The 'great inflation' began in 1972, and continued to the end of the decade. Using the old 'Mars Bar' principle of pricing (looking at one item which hardly changed during the period . . .), we can see that a Mini 1000 cost £675 in 1970, and £1108 on 1 January 1975. Now, in mid-1985, that price has risen to no less than £3388.

The price of petrol is also a good yard-stick. Before the Suez War of 1973, a gallon of 4-star cost about 35 pence, but by 1 January 1975 it had risen to about 70p. That was a doubling in little less than a year. The next big jump came in 1979, from about 80p to £1.20p, and we don't have to remind anyone that the £2.00 gallon arrived in the spring of 1985. What next?

Labour costs at garages have also soared. In 1975 we were quoting about £4 an hour, and now we quote up to £20!

And that's not all. At the 1975 budget, the chancellor increased the annual tax duty for a car licence from £25 to £40, and it finally hit £100 in the spring of 1985. In 1948, when the flat-rate system had been ushered in, it had cost £10 a year to licence your car.

Yet more and more people bought cars, and kept them running. There were 252 cars per 1000 inhabitants of the UK in 1975, and that figure is 325/1000 today. Yet we still have a long way to go to catch up with the Germans (410), the Swiss (400), and the French at 380 cars per 1,000 people.

ROCKET RECORD

Britain had dominated the fight for the Land Speed Record between the wars, but the Americans developed jet-powered monsters. The rules were changed, and not even Donald Campbell's latest *Bluebird* could compete. Gary Gabelich's rocket-powered *Blue Flame* put up the record to 630.388mph in 1970, and there the matter rested.

But at the end of the decade Richard Noble's *Thrust II* began to take shape. He was determined to bring the record back to the UK, but it needed millions of pounds of sponsorship, and nine frustrating years of trying before he made it.

His 'car' was a Rolls-Royce Avon aero-engine jet powered projectile, running on solid wheels. At full speed, with re-heat in use, there was an awesome 34,000 horsepower on tap. He was going to need all of that — not only to hold the required speed, but to accelerate up to it in no more than five miles from a standing start.

After years of testing, development, and demonstration, the first serious attempts on the record were made in 1981 and 1982, but both were defeated by the weather and poor track conditions. In October 1983, conditions were much better. Noble flung the gold and brightly-decorated machine through the measured mile in less than six seconds, each way! On 4 October, at 633.46mph, the record was his!

■ Sir Michael Edwardes faced more than press as chairman of British Leyland. He faced the music but seemingly called the tune giving BL a future

WHAT FUTURE FOR OUR MOTORING?

Gazing into the crystal ball

You can forget the scare stories about a world running out of oil. In our lifetime, it isn't going to happen. When the first energy crisis struck in 1973, the world's reserves were said to be less than 30 years. Since then in every succeeding year, more new reserves have been found than oil used.

For the next generation, at least, the world's cars will continue to use refined oil to drive their engines, in one form or another. More and more diesels will be sold, as they are made smoother and less smelly, but there don't seem to be viable alternatives to the piston engine in sight.

In spite of Mazda's amazing faith in the Wankel engine, no-one else looks like coming back to it. And as for the chance of electric cars, or even composite mechanical/electric cars, that's still for the visionaries. The fiasco of the Sinclair C5 (which isn't a car at all, but our point is still the same) shows that you can't store enough electrical energy to give enough performance for long periods. The larger the vehicle and the greater its payload, the more ludicrous is the need for bigger storage batteries. Advanced batteries and fuel cells? Oh, sure — we've heard that before. File it under death rays, remote control, and corrosion proof cars!

The shape of future cars is going to be rather different from today's. Within ten years, we will look back at cars like the Ford Sierra and the latest Opel Kadett, and see how significant they were. Long smooth snouts, rounded lines, flush-fitting glass, and C_d figures of around 0.25 will all seem normal — the aggressive prows of 1960s Mercedes, Jaguar and Rolls-Royce models will look positively archaic.

We are, too, going to see a much greater use of plastics in our cars, not only in panelling, but perhaps even in other areas where iron or non-ferrous metals have held sway for generations. Not glass-fibre, you understand, but more high-tech materials. And, by then, the price may be right. Better, even, is the hope that corrosion from those items will have been banished for ever.

Manual transmissions, probably, will change very little, but after a lot of development aggravation, expect a modern generation of contantly variable automatic transmissions (the sort Fiat and Ford are working on now) to take over, and expect electronics to control their every setting. Four-wheel-drive, however, is likely to become much more popular, especially in higher-priced luxury models.

■ Above: The Sinclair C5 electric trike is a bold attempt at alternative transport, but has yet to prove itself. Below: Citroën's look at the future. The Eole shows the way aerodynamics might go

Electronics? Certainly there will be a lot more of that in the car of the future. Small but amazingly powerful computers will look after everything from fuel injection settings to the air-conditioning, the instruments to the lighting, the anti-lock braking, and the transmissions. Properly developed, their control will be so unobtrusive that you will forget they are there at all. Until, that is, they go wrong . . .

Some things, of course, will not change. Man will still be a competitive animal, and will like to drive fast and corner hard, if only to prove to himself that he is better than the next man. He will still be determined to enjoy his motoring, somehow, even if control of much of the machinery is taken from him.

But will he still be able to afford it, and how much choice of models will have? Sorry, our crystal ball is too cloudy to tell you that.