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# The Automobile

**BROUGH  
SUPERIOR**

**A VERY SUPERIOR  
SPORTS CAR**

**ISSIGONIS LIGHTWEIGHT:  
THE LATER YEARS  
MORE TURNER FILES  
CITROEN 2CV**



**THE INTER-STATE AUTOMOBILE**



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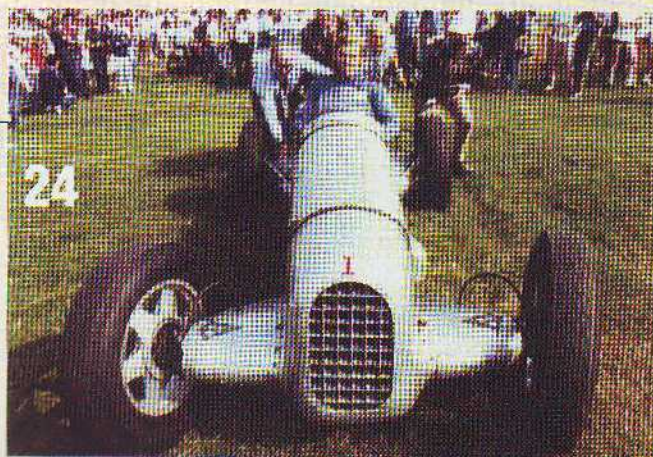


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## LIGHTWEIGHT VERY SPECIAL, PART 2

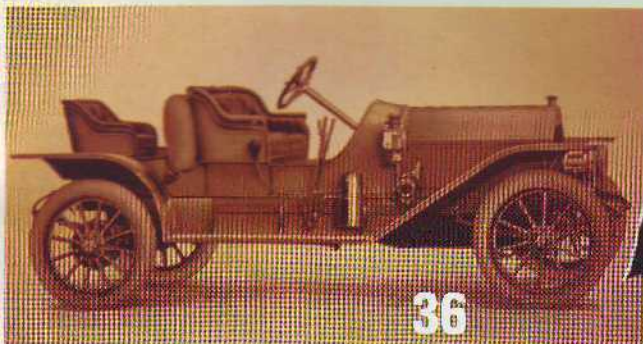
In Part 2 Jonathan Wood brings up to date the history of this remarkable Issigonis-designed hillclimb and sprint car from its origins in 1934 to its completion by George Dowson in the summer of 1938 and its postwar career



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Only 85 Brough Superiors were built between 1934 and 1939. David Bowers captures one of the rare eight-cylinder models

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## MADE IN MUNCIE

Less than 50 miles from Indianapolis, in the town of Muncie, the Inter-State automobile was manufactured between 1909 and 1918. Ever since then, Muncie has been home to a General Motors factory, as Michael Worthington-Williams recalls

## BE YOUR OWN DETECTIVE

Michael Ware gives advice on how to trace the origins and history of that barn-find you have just unearthed



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## BESPOKE DEUX CHEVAUX

This unique special was built by the UK company for a man who was very tall and had suffered a war-time back injury. John Reynolds examines the now-restored car



## THE TURNER FILES

From 1948, Philip Turner was based in The Motor's Coventry office. His son, Tony, has transcribed Philip's diary for July, 1953



## FINDS AND DISCOVERIES



# A SUPERIOR

Only 85 Brough Superiors were built between 1934 and 1939



Brough used a considerable amount of chrome to embellish the Superior. Thick screen pillars provided a substantial anchorage for the Atcherley-patented hood, which could be raised or lowered in five seconds

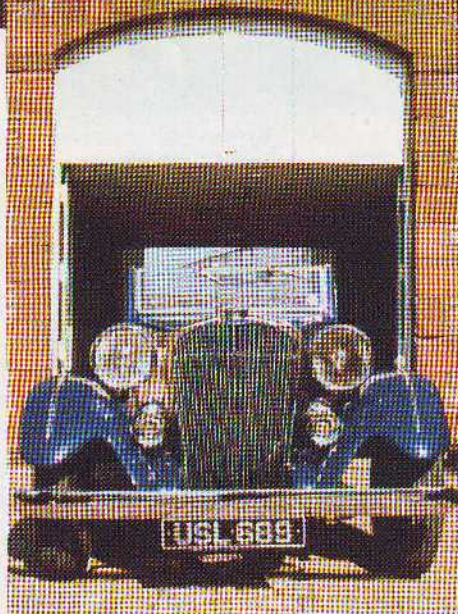
**I**n Fred Jenkins's opinion, the United States lives up to its name as the Land of Opportunity. Spending half the year on the other side of the Atlantic for the last 15 years has allowed him to buy a Jaguar XK150 fixed head coupé and a 1930s touring car.

Fred recounted to me the sequence of events that culminated in the acquisition of a straight-eight Brough Superior that initially caused him some embarrassment, as he'd previously associated Brough's name with two wheels rather than four. "Through my enduring interest in older cars, I naturally got to know many people involved with the American classic car scene, so it wasn't a particular surprise to receive an e-mail from an American friend in late 1999 asking me what I knew about Brough Superiors. My first response was: 'Do you mean motorcycles of the 1920s and '30s with JAP and Matchless engines? They were the Rolls-Royce of motorcycles, very stylish, with

teardrop fuel tank and lots of chrome.' My friend's response caught me off balance: 'No, not motorcycles - cars!' I responded that I didn't think Brough manufactured cars, but my friend assured me he'd actually seen one."

Slightly disconcerted, but fascinated at the prospect of finding out more, Fred made contact with several enthusiasts and surfed the internet, which confirmed that George Brough, the son of William Brough who founded the motorcycle company, had indeed manufactured cars between 1935 and 1939. They had Hudson engines, running gear and chassis. The initial batch of 25 used the Hudson straight-eight, 4.1-litre engines, as fitted to the car his friend had seen. Later examples, numbering approximately 60, had straight-six engines after Hudson declined to supply the larger version.

Fred recalled what happened next: "It transpired that my American friend, who's

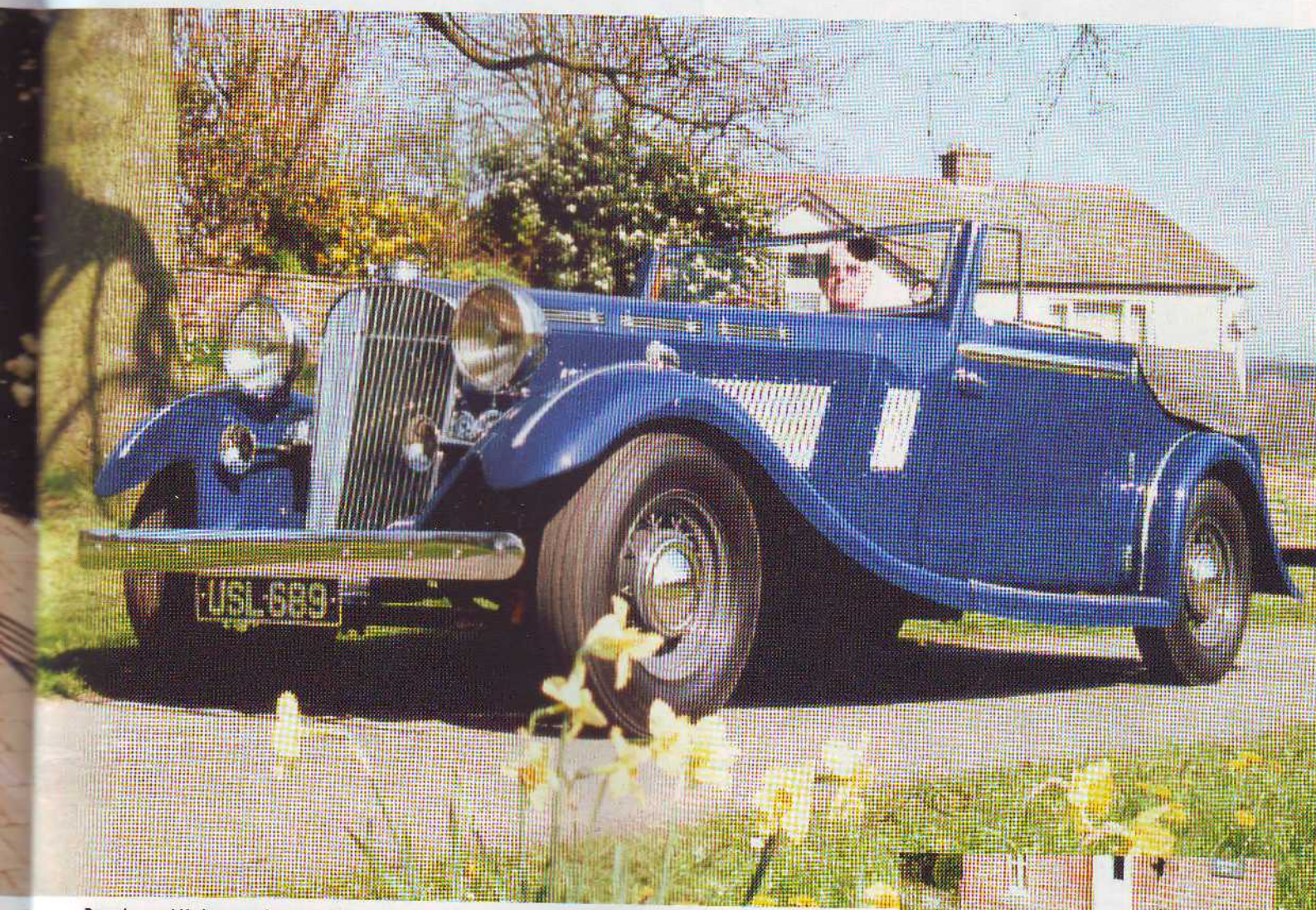


Bumpers were a later addition for eight-cylinder cars



# R SPORTS CAR

39 David Bowers captures one of the rare eight-cylinder models



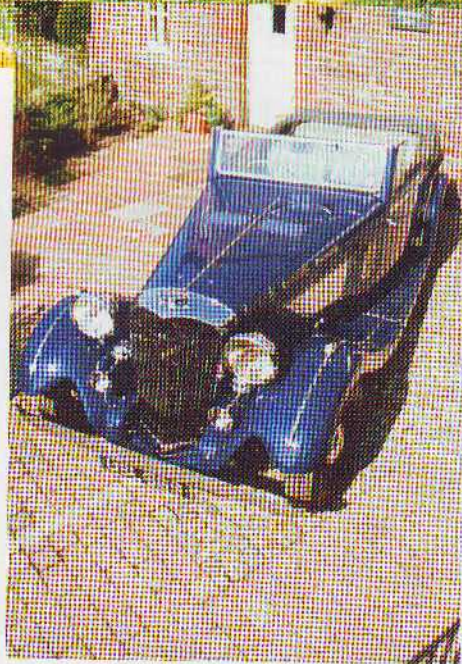
Broughs used Hudson running gear. The front axle, suspended on semi-elliptic springs, is visible here. The 16-inch wheels, unusually small for the period, carried 6.25in section tyres. Ace wheel discs used to hide the spokes

something of an authority on British classics - these are the only cars he's restored and maintained - was approached by Arizona's Motor Vehicle Licensing Department, who asked him to identify a right-hand drive car, lacking badges and documentation, which had sat unused for 20 years. The more I found out, the more intrigued I became. The Brough Superior sounded like a great design concept, so I made tentative enquiries to establish if the car might be for sale."

Unfortunately, the owner flatly dismissed Fred's proposal and would not respond to subsequent enquiries. Fred's friend came up with an explanation for the abrupt break in communications after being approached by a police detective. "He was told drug enforcement officers had found 30 kilograms of cannabis in the boot of the car. This guy had a number of interesting businesses, and this one got him arrested. Months passed by, and I'd finally given

up hope of getting a response to my offer, but then the owner turned up looking rather pale - somewhat unusual in Arizona, where everyone has a healthy suntan. We surmised he'd spent the last few months as a guest of the US Government, so he was probably out of pocket and motivated towards selling the car. A deal was soon done." Fred added that when the car was shipped to this country, in view of the drugs connection, he arranged for a shipping agent to collect it from the docks in case any other illegal substances came to light when passing through customs.

In addition to coming across a marque that had eluded his attention for so many years, Fred was impressed by the performance figures quoted in contemporary road tests. According to these, his car has a top speed of 90 mph, a 0-60mph time of 10sec and torque output that could whisk it from 9mph smoothly and quickly to flat out in the upper ratio of the three-speed gearbox. Fred commented



Elegant Cupid's bow radiator shape is clearly visible



on some of the handsome styling attributes of this four-seater tourer. "The elegant radiator, with a Cupid's bow moulding at the top, is a wonderful design, a symmetrical shape that is repeated in the curved, burr walnut cappings to the door panels. I was also taken by the beautiful, large diameter, matching art déco radiator and fuel filler caps that are sprung open by pressing down the ornately curled release levers. George Brough saw no need to badge his cars, initially. He believed they were so distinctive this was unnecessary, although later examples carried badges, and this car is identified by a monogram on the door tops with intertwined 'B' and 'S' letters. 'Brough Superior' is recorded on the speedometer dial."

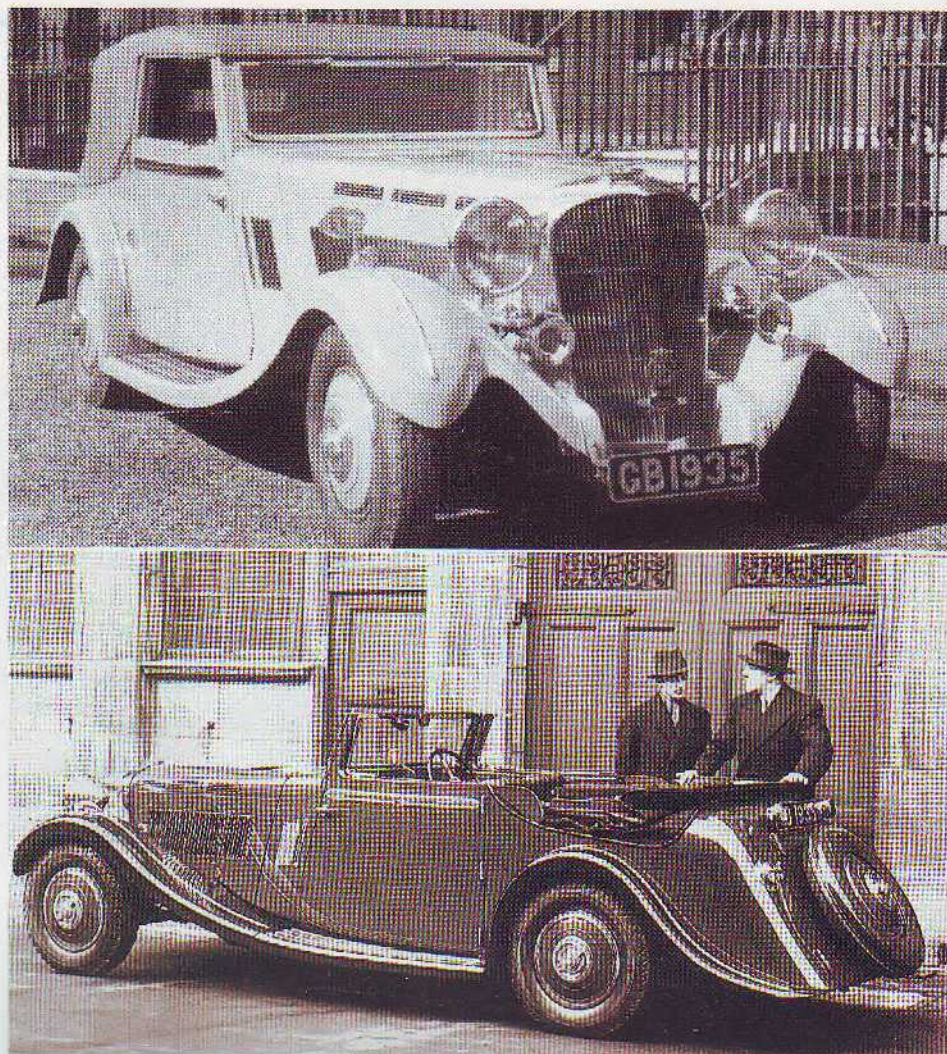
Fred had already started up the engine before shipping the car to this country. This exercise revealed an overheating problem, explaining why it had remained dormant for so long in sunny Arizona. Attempts had been made to remedy this by fitting a new water pump, radiator core and a massive electric fan, but demonstrably to no avail. After making contact with the owner who'd sold the car to an American buyer in 1979, Fred was told the engine had been rebored, but left those shores with an unresolved overheating problem, and that the interior had recently benefited from a refit in Connolly hide.

Fred explained how he tackled this recalcitrant problem; "The timing was badly retarded. A baffle panel in the water manifold had been incorrectly fitted, so that coolant was being disproportionately routed to the front rather than the back of the engine. So the first two cylinders were running cold, but the others were running too hot. Furthermore, the rebore work hadn't been very successful — the pistons were very, very tight. I managed to eliminate these problems, which included fitting a smaller, more discreet electric fan behind the radiator, and the engine was run-in carefully over a period of time until everything loosened up. I then rechecked the compression ratios, which revealed a variation of only two per cent across all eight cylinders."

So now the car's engine could be run for extended periods without the coolant evaporating, but there were a few more problems that needed to be eliminated. The steering was frightfully vague, due to wear in the steering box. The kingpins and bushes were worn out, incorrect spring shackles had been fitted and the castor wedges were missing. The induction manifold was cracked and the gearbox jumped out of gear whenever Fred applied the throttle.

On a more positive note, he was ideally placed to resolve these problems by virtue of the car's dual British/American origins and the fact that he spent so much time in the USA. Following up a lead that had been given to him in Arizona, he arrived at the remote desert settlement of Maricopa, where he met a professional Hudson restorer who'd accumulated a massive collection of original parts that filled several 40ft shipping containers, plus 60 odd cars in various states of repair. Fred came away feeling jubilant after securing most of the parts needed for the car, including many hard-to-find gearbox parts, although getting them home raised a few eyebrows. "There were some entertaining episodes at the check-in desk at Tucson Airport when I had to explain why I was carrying a differential unit, or a gearbox casing and a full set of gears in a bowling bag on another occasion, as my personal luggage back to the UK."

New parts enabled the steering, suspension and gearbox problems to be rectified. A new induction manifold was sourced from the Railton Owners'



Top: GB 1935 was worn by the prototype straight-eight, but was also to be seen on demonstration models. Above: George Brough and the Earl of March, who was the London and Home Counties distributor for Brough

Club - these cars share Hudson components. The suspension already had a new set of springs. The original Hartford-type friction dampers on the front axle were replaced with telescopic items, as fitted to later cars, with a view to improving the handling. The chassis and underside of the car required little attention, as there was no serious corrosion. The refurbishment of the brakes was confined to checking them over, a process which revealed a set of renewed linings and recently skimmed drums, but new brake cables were required and the linkage holes were welded and re-drilled prior to installing new pins.

Fred replaced the fuel tank before reviewing a more serious issue. The A and B posts supporting the wide suicide doors were very weak, suggesting the need for expensive remedial work. "After removing the side panels, I knew that if this car was to be the best example of its kind, then most of the ash frame and aluminium panels would have to be replaced — work that should only be undertaken by skilled craftsmen. This was very costly, but watching the new aluminium panels being made by a coachbuilder was a delight as he formed them into compound curved shapes on an English wheel," said Fred. "Exactly the way this would have been done in 1935 when my car's body was built at W C Atcherley's works in Birmingham. They were proud of their work, as demonstrated by the attractive, embossed coachbuilder's plaques detailing the company's name on each sill, a feature that's always appealed to me."

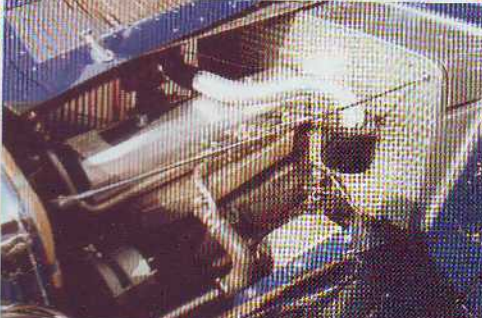
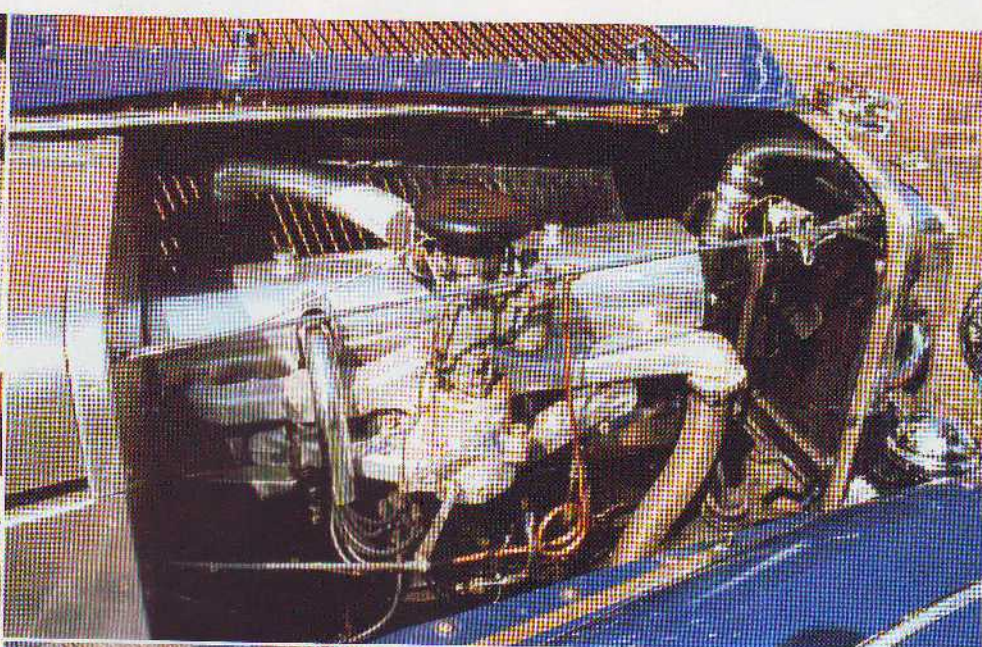
Cosmetic improvements included a new Blumels steering wheel and rebuilt wire wheels,

while Fred arranged for the fittings to be rechromed and the dashboard instruments recalibrated. The car was then resprayed and a new mohair hood and hood bag were fitted. Sundry finishing off jobs included fitting a new coil, refurbishing the fuel pump, starter and distributor, making up a new stainless steel exhaust system and sourcing new wheel bearings, as the car had not turned a wheel for the previous 20 years.

Fred then stood back and concluded the big Brough was everything he'd wanted it to be, although a series of shake down trials suggested improvements could be made. In particular, the car's cruising speed was too slow for fast, modern roads and well below its potential. This was addressed by altering the final drive ratio from 4.11 to 3.5 to 1, with a new crown wheel and pinion. This raised the gearing to approximately 23mph/1000rpm, allowing 70mph at around 3000rpm.

The newly completed Brough Superior made its show debut at the Dalemian Classic Car Show, held near Ullswater in the Lake District, where it was awarded Best in Class and Best of Show. Its next outing was a show at Bakewell, Derbyshire, where Fred met up with the daughter of its original owner, Peter Brough. He was no relation to the manufacturer, but he was the famous ventriloquist who made his fortune with the dummy, Archie Andrews. Fred recalled, "We were approached by his daughter, Rosemary, who lives in Derbyshire. She was keen to be re-united with her father's car, and it was a pleasure to meet her. We picked up another Best of Show award, which added to a very pleasant day out."





Top left: The hood folds very neatly. Most production Broughs had an Ace spare wheel cover. Centre left: All instruments were contained on the central panel. Bottom left: Owner Fred Jenkins at the wheel. Above and left: A dummy cam cover is used to conceal the fact that the straight-eight is a side-valve engine. The 4168cc Hudson develops 125bhp at 4000rpm. It has a balance-weighted five bearing crankshaft with a torsional vibration damper. Below: George Brough in his own straight-eight, which had been used during the war to ferry aircraft parts made by his factory; he still owned it at his death in 1970. The small monogram on the door was all that identified a Brough Superior

When Fred was finally satisfied that the engine had been properly run-in, he took the car down to Brooklands and drove it up the test hill in an event that had been arranged for Jaguar XK owners. 'I'd been invited to take my XK150 along, but I thought, 'No, I'll take the Brough Superior instead. I have a picture of the car on the hill, and although the American who had begged a ride is smiling away, I look rather anxious. Too many revs and I was still worried the old overheating problem might recur. All went well, despite that 2003 hot spell, and the car made it home after a 300-mile journey. This confirmed the overheating problem had been eliminated. Considering its age, my car stood up well against the Jaguars, which has a lot to do with its phenomenal, low down torque. The big, relatively lazy Hudson straight-eight produces 200lb ft at 1500rpm compared with an XK

engine's 210lb ft at a much higher 3500rpm"

Last year marked the 70th year since the first Brough Superior was built. This milestone occasion was celebrated on the weekend of 18th-19th June, 2005, when surviving cars congregated in Nottingham. Owners visited the site of the factory in Haydn Road and George Brough's former home. A line-up of cars was on display at the Great Central Railway's Quorn Station on the Sunday. Rather ironically, the Brough models taking part were overshadowed by products of the company's arch-rival, Railton, as the event was also the Railton Owners' Club's 2005 National Meeting. As so few Brough models were built, present-day owners have affiliated member status. The two makes share Hudson components. No doubt those taking part paid a visit to Nottingham Museum, where a Brough saloon is displayed.



## GEORGE BROUGH AND HIS SUPERIOR

George Brough's ambition was to build a car that would be exceptionally fast, with superb steering and handling, whilst exhibiting the highest standards of comfort and interior appointments. After building a number of prototypes at his father's motorcycle factory in Nottingham, he launched the Brough Superior as an open car in 1935 with the advertising slogan 'Dual Purpose'. This was a reference to the convertible top which could be folded in a mere five seconds, although a saloon version was subsequently added.

The publicity material went on to quote George Brough saying that his design priorities had included: 'Acceleration, good road-holding and the ability to take main road bends without reduction of cruising speed, together with easy control and smooth, certain and rapid braking.' George went on to stress the value of long-term reliability. He believed a properly engineered car should cover 30,000 miles without requiring major attention.

The Hudson straight-eight engine, used in the first 25 cars before the changeover to six-cylinder units, was a side-valve of 4168cc with a power output of 125bhp at 4000rpm. Hudson also supplied the three-speed gearbox, driving via a multi plate clutch with cork linings running in oil, as fitted to the

earlier Super Six. The spiral-bevel back axle was another US component.

Hudson's lightweight chassis, with box-section side members and cross-bracing, helped to keep the overall weight down to only 25 cwt with the elegant convertible body. The suspension, which featured long semi-elliptic springs fore and aft, provided adequate handling and much-vaunted comfort.

Early cars had cable brakes, which were replaced by a Bendix semi-servo braking system with both hydraulic and cable operation, with the cable taking over should the hydraulics fail. The steering was refined by Freddie Dixon, a leading expert in this field. Other refinements included chassis lubrication by means of a pendulum-operated pump, while a Smith's hydraulic jacking system made light work of wheel changes.

The elegant drop-head body produced to the highest standards of the day by W C Atcherley further reinforced the message that this car could stand its ground against such long established firms as Bentley or Lagonda, but at a fraction of the price. Even so, £695, which doesn't sound all that much today, would have bought half a dozen Ford Model Y saloons in the mid-1930s.

It made the Brough much more expensive than the very similar Railton.





George Brough

Other internet resources:

<http://www.dropbears.com/m/models/brough/>

In 1919, after parting with his father W.E. Brough who had been building Brough machines for many years, George Brough set out to begin manufacturing his own motorcycles. George had visions of a far more luxurious machine than the reliable but somewhat pedestrian vehicles his father made, and named his motorcycle the Brough Superior - and superior they were, in every aspect.

Brough presented his first bike at the Olympia show in late 1920 and began production in 1921. This first machine had an OHV J.A.P. engine, and although models with the Swiss Motosacoche V-twin and the Barr and Stroud sleeve-valve engine were built, J.A.P. was the almost exclusive supplier from 1923, with the introduction of the SS80, until towards the end of 1935 when Brough switched to the more reliable Matchless motor.

The SS100 was introduced in 1925, and some 400 of these were produced including about 100 with Matchless engines. In 1938 he produced the legendary Dream, an elegant horizontally-opposed four cylinder design with shaft drive.

Brough achieved many racing successes and speed records, and in fact one machine achieved the astonishing speed of 180mph at Budapest in 1938 - but no record, as the rider, Eric Fernihough, crashed and was killed on the return run.

In 1940, shortly after the onset of war, George ceased motorcycle manufacture in favour of aircraft components, and although he did build one experimental post-war machine, he decided against going into production. He continued in business building precision engineer's tools and Brough Superior parts for many years before his death in 1969.

Brough Superior motorcycles have become one of the most sought-after of all collectors machinery, not least because of their strong connection with the enigmatic Lawrence of Arabia.

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[http://en.wikipedia.org/wiki/George\\_Brough](http://en.wikipedia.org/wiki/George_Brough)

George Brough

From Wikipedia, the free encyclopedia

George Brough (pr. bruhf), (April 21, 1890–1969), was a motorcycle racer, world record holding motorcycle and automobile manufacturer, and showman. He was known for his beautifully hand-crafted, powerful, and expensive Brough Superior motorcycles. His devotion as a racer and showman won over the hearts those who pursued and could afford the fastest and most prestigious motorcycles that money could buy.

In 1928, George Brough recorded the speed of 130.6 mph at Arpajon, unofficially the world's fastest speed on a solo motorcycle.

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[http://www.khulsey.com/motorcycles/vintage\\_motorcycle\\_brough\\_superior.html](http://www.khulsey.com/motorcycles/vintage_motorcycle_brough_superior.html)  
good website

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<http://www.brough-superior.com/>