

Friends

Showing off



Events UK: the Rudge combination on display



Opening: Members of the public enjoying the opportunity to see at close quarters the museum's reserve collection



Paint-job: the chassis with two coats of red oxide

It's always a pleasure to show off the museum to the public whenever an occasion arises. Especially when there is an opportunity to display work achieved by Friends. Recently the Rudge combination, a Friends restoration project, was taken out to represent CTM on a stand at the NEC for 'Events UK'. Displays there were promoting the leisure industry from around the country and CTM is part of that of course.

This year's stand was shared with Compton Verney, a listed mansion in south Warwickshire that houses important art collections and public exhibitions. We also shared the stand with caterers Amadeus who provide food for the museum's larger events like the Stirling Moss evening and the Coventry Festival of Motoring celebrity dinner.

During the Coventry Festival of motoring a special public opening of the museum store took place. It was important that safety and enjoyment was attended to, and beforehand members helped to tidy up and clean the vehicles, for which they are thanked.

Maudslay

The Maudslay project takes a further step forward as the chassis frame emerges in glorious red oxide primer. That should keep the rust at bay for the next 100 years!

The dab hand with the paintbrush was member Roger Brown. Attention now turns to the wheels and the need to source appropriate tyres. Other work on mechanical parts is in process.

October 2009

Chairman's Chat

A big thank you to all those who responded to my plea last month for your views on a possible change of date for our Clubnights. However, the manager of Esquires has now decided that he will no longer be presenting live music on Thursdays, so your committee has decided to leave things as they are. Following Sue Scott's resignation, Brian Jackson has stepped into the breach as Friends' treasurer. Jenny Jackson has been co-opted on to the committee until the AGM. We are very grateful to Brian and Jenny for their help and support. Sue is now out of hospital and recovering well from her operation, although her complete recovery may take some time. She is impatient to return to full health and although she misses Friends' meetings she sends us her best wishes.

3rd annual
Scott Lecture
Mick Ives
five times world cycling champion



Next meeting
on the
4th Thursday

For tickets
telephone:
024 7623 4270

THURSDAY, OCTOBER 22
£12-50 (proceeds to charity)
but Friends concession at £5
includes nibbles and a glass of wine

PLEASE NOTE—4th THURSDAY



After the recent gathering of Singerfolk in Coventry to commemorate the life of George Singer, member John Taylor kindly sent me some interesting reading. Here is one to share, its title:

"I'm glad I got a Singer !"

—Garage Ltd, SHEFFIELD, October 26th, 1925.

"We had to go out yesterday to tow a client who had run a big-end. Our breakdown lorry is at present having a thorough overhaul, so the writer went out in his 1923 Singer, took a steel tow-rope and brought in the disabled car without the slightest difficulty.

"The towed car weighs 17 cwt unladen, and in addition there were two passengers weighing roughly 10 stone each. The journey was about 14 miles and included one or two hills requiring second gear for an average car. We received the message at 1.25 pm and had the broken-down car back in our garage by 2.30 pm with the greatest of ease.

"The towing Singer has not been touched at all since before Whitsuntide, has been running practically every day and has had no fan-belt for two months. There was not the slightest sign of any boiling and the set of tyres (balloons) have done upwards of 11,000 miles."



By D9 to Malvern

Anyone remember the iconic Midland Red D9 double-decker? There's a pretty special excursion on Midland Red Coaches' preserved D9 on Sunday, October 18

The excursion is in two parts: The bus will leave Pool Meadow as a 159 service around 9am, returning from Birmingham shortly before 6pm.

For those who prefer a longer trip on reaching Birmingham the destination blind will change to 144 - Birmingham to The Malverns, via Worcester. This was the longest route that Midland Red operated with double-deck vehicles.

Special vouchers will be issued on the day for a souvenir bus ticket from a bus conductor wearing authentic Midland Red uniform. £10 return to Birmingham £25 for the complete round trip.

The bus will be stopping en route for photographic opportunities. Ashley Wakelin the owner and driver of the bus can be contacted on 024 76633624

or via his website www.wheels.co.uk

Without doubt the Mini is one of the great iconic cars of the 20th century. It was the inspiration of Sir Alex Issigonis— a ground-breaking design with front-wheel drive, a transverse engine, sump gearbox, 10-inch wheels, and phenomenal space efficiency.

Notably it was still being manufactured in small numbers as late as the year 2000.

Notwithstanding the Mini's undisputed qualities, retired Coventry design engineer Martin Woolston discusses some of its features, and questions aspects of the car's design.



Not so long after the first cars were being made at the Motor Mills in Coventry, Renault established what became the classic layout. A prop shaft driving bevel gears in the rear axle that incorporated a differential, before the turn of the century . This layout was adopted for the majority of cars and it endured for nearly 60 years, until the Mini that changed everything.

Bubble cars

In the fifties we had the BMW Isetta, Heinkel, Messerschmitt and Goggomobil They were all austerity vehicles a step above a motorcycle combination. Then along came what was described as 'Wizidry on Wheels'. But as an engineer I started to question all this wizardry. It seems to me that much of the Mini's engineering leaves a lot to be desired. Controversial stuff I know. For a start 10 inch diameter road wheels may be cheap, light and compact, but were not a common size and required new tyres to be manufactured. In the fifties and sixties most cars ran on 15 inch or 16 inch wheels. There was good reason. The larger tyres provided much better ride on bad roads.

The Mini's conical rubber springing was a contributor to poor riding quality. The rubber is loaded and worked in a combination of shear and compression, and can only work over a limited deflection. This necessitates a high leverage ratio from the wheel to the rubber spring. Consequently the spring has to carry a far higher load than the wheel that requires a stronger sub-frame to carry the load. The suspension arm carrying that load (front top arm, rear trailing arm) then needs very strong bearings that on the Mini are taper roller bearings. These are expensive and heavy. Other vehicles with long travel coil springs use cheaper bearings based on plain or rubber bushes. A rolling element bearing operating over a limited angular travel is not good practice. The reason Mini sub-frames usually need replacement is due to corrosion. But also relates to the high loads they have to contain.

Transverse engines

Of course transverse engines were not a new phenomena. DKW was producing transverse engines in the 1930s. Then after the war Saab followed with a design based on the DKW engine. But Issigonis chose to accommodate the gearbox within the engine. Again, not good practice. Engine bearings are usually plain soft metal and fed with low viscosity (thin) oil under pressure. This oil is heated by the shearing action within the bearings and is used as a coolant within the engine so low viscosity oil is required.

In a gearbox higher loads are usually carried on much smaller areas. These areas are the rolling action of gear teeth on each other and in rolling element (ball or roller) bearings. These bearings can be force lubricated but cannot retain oil under pressure as does a plain bearing. So gearboxes usually rely on high viscosity oils to prevent the oil film from breakdown which would allow metal to metal contact and wear.

The Mini gear train requires five gear pair meshes which is a source of inefficiency and noise. A classic car layout has one gear pair mesh in top gear and three in the intermediate gears. In this gearbox only the gears carrying the load are counted. Other constant gear meshes are only idling.

Drive shafts

Front wheel drive shafts usually need constant velocity universal joints at their wheel ends. These are expensive, heavy and prone to damage because of their large rubber sealing boot or gaiter. The constant velocity requirement is due to the large angular deflection needed for steering.

The classic layout can provide a better turning circle because the front wheels are not driven so can be deflected more—like the

transgression

Triumph Herald and London Taxi turning circles.

The classic layout with independent driven rear suspension can use cheaper, lighter, more reliable and easily serviced universal joints.

The Mini's trailing arm rear suspension offers no camber control while rolling with cornering, ie. if the body rolls by 5° then so do the rear wheels with a negative attitude. For elucidation a motorcycle always corners with positive camber angles with roll, which gives greater cornering force. Most modern car suspensions endeavour to keep outer wheels more upright when cornering.

Having said that the roadholding and handling of the Mini is excellent and provides enjoyment and safety in driving.

Back to the front sub-frame—when I first encountered the tower bolts that hold the sub-frame to the body I was amazed at their size and weight. They wouldn't have looked out of place on a heavy lorry. But on competition Minis they are usually lightened by piercing with a drill.

How they drive

Turning to some of the driving characteristics of fwd. They are probably the more stable layout, particularly in slippery conditions like snow and ice. The ability in such conditions to steer the driving wheels is advantageous, although in normal conditions front drive detracts from the sensitivity of steering feel which is important near the limits of adhesion.

Another drawback with fwd is a lessening of grip for traction on slippery hills and fast acceleration due to the rearward weight change. Stability is compromised under heavy braking by the rear wheels locking and the result is a skid and spin. This is usually countered on fwd cars by limiting the pressure of the rear brakes.

Fwd puts a lot of wear on the front tyres where all the traction and most of braking and cornering forces are generated. The front tyres wear about twice as fast as the rears.

These are just some of the engineering aspects of the Mini.



PROFIT OR LOSS

When a new car is announced competing manufacturers have a look at it in some detail. In the case of the Mini the Ford Motor Company stripped the 'new baby' down to its last nut, bolt and washer. They costed every component, even to the number of spotwelds in the body. They then added up all the costs involved in making the car and concluded that there was no way that BMC could produce it at a profit. In fact the Mini made very little profit from the start.

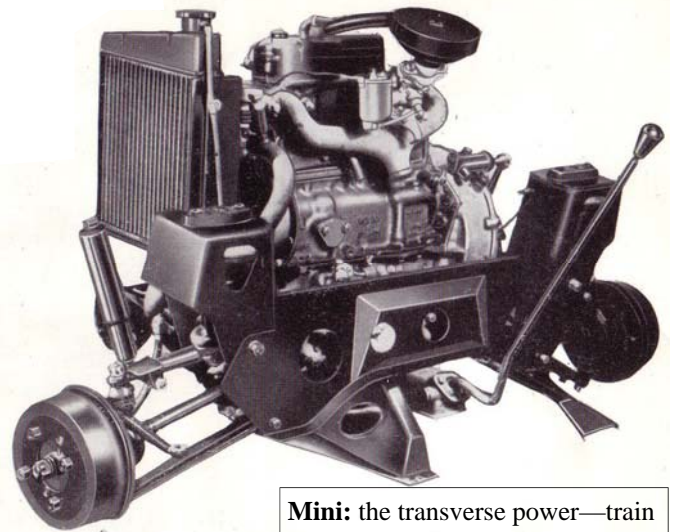
Having said that, we all recognise how this revolutionary little car greatly influenced vehicle layout.

But Ford itself didn't follow the transverse engine practice until 1977 with the Fiesta— 18 years after Mini.

ALEX ISSIGONIS

Alex Issigonis has been much lauded for his design of the Mini. However, in my view his greater achievement was the Morris Minor that was unveiled to the public in September 1948.

Issigonis had been working on the design through the war having started on the car in 1943.



Mini: the transverse power—train

RECORD SALES

Over the 41 years of production life of the Mini only 5.4 million were sold. This placed it tenth in the list of best selling cars. The first was of course the VW Beetle with 21.5 million, VW Golf made 22 million and the Ford Model T came in with 15 million.

BMW STEPS IN

Rover and Landrover (originally the same company) were unusual in that both firms had iconic products that had been in production for too long. The problem was one of design and funding their replacements.

The new Mini brought about in BMW ownership is a very different vehicle in concept from the old Mini, sharing only some of the styling cues. I sometime wonder whether Issigonis is turning in his grave. By contrast the Land Rover Defender has evolved through several iterations over 61 years, the latest for 19 of them. Land Rover, which was my last employer, continues to struggle to find an economic replacement.

My own ideas on that are another story.





Gallic luxury and speed



Photos: (top) an HK500 model similar to the vehicle Stirling Moss would drive from event to event rather than fly. (bottom) a Facel II, the final evolution of the V8 models that came out in 1962

Interesting facts

- After WW2 Facel built bodies for Panhard, Simca and Ford-France and also produced Pininfarina-designed coachwork for the Daninos-inspired Bentley Cresta, precursor of the famed Bentley Continental.
- Some 2900 cars of all models Vega and Facellia were built in the short life of the company.
- Famous owners - Pablo Picasso, Ava Gardner, Ringo Starr, Joan Fontaine, Stirling Moss, Tony Curtis, Dean Martin, Maurice Trintignant and several Saudi princes.
- A 1960 Facel Vega HK500 auto RHD in dark blue with original red leather is for sale in Suffolk priced at £69,995.

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Founder: Jean Daninos (1906-2001)

The car park at any national car event is a source of great interest and this year's Goodwood Revival Meeting was no exception. One of the world's rarer cars is the French-built Facel Vega, made for just ten years from the mid-fifties to the mid-sixties. One might expect to see one of this marque at an event like Goodwood but Friends' Chairman Richard Dawe was amazed to spot two. They are pictured here and web-site Wikipedia forms the basis of this short history about the fortunes of this Paris-based firm.

The first Facel Vega production cars appeared in 1954 using Chrysler V8 engines. Overall the engineering was straightforward, with a tubular chassis, double wishbone

suspension at the front and a solid driven axle at the back—standard American practice. They were as heavy as American cars, at about 1,800 kg (3,968 lb) yet performance was brisk, with an approx 190 km/h (118 mph) top speed and 0 to 100 km/h (62 mph) in just under ten seconds.

The bodywork was beautifully styled, making the Facel Vega an enduring classic. Most cars were two-door hard-tops with no centre pillar, although a few convertibles were built.

The 1956 model was improved with a bigger 5.4-litre (330 cu in) Chrysler engine and updated transmission and other mechanicals; in the same year production began of a 4-door model, the *Excellence*, with rear-hinged suicide doors at the back and no centre pillar. The pillarless design unfortunately made the car less rigid and poorer handling was the result.

Models produced in 1959 had even bigger engines, a 5.8-litre (350 cu in) and later a 6.3-litre (380 cu in) Chrysler V8, and were quite a bit faster despite their extra weight. The final evolution of the V8 models came in 1962 with the Facel II—lighter, sleeker, with more modern lines, and substantially faster.

In 1960, the firm entered the sports car market with the Facellia, a small car along the lines of the then popular Mercedes 190SL. There were three body styles: cabriolet, 2+2 coupé and 4-seat coupé. Styling was similar to the Facel HK500, but with rather elegant (though fingernail-breaking) flush door handles.

With the idea of creating a mass produced all-French sports car competing with the Alfa Romeo, Facel Vega eschewed its standard of American engines, and brought in a four-cylinder 1.6 L DOHC engine built in France by Paul Cavalier. From the start it was a troublesome affair with frequent break-downs. It was replaced with a Volvo P11800 powerplant but the damage was done. Production was stopped in 1963 and despite the vision of it being a "volume" car only 1100 were produced, which is Facel's highest production number. Facel lost money on every car it built, the luxury car side of the company being supported entirely by other work.

The small Facellia met with little success and the company left the car market completely in 1964. Ironically the last project was the best. The Facel 6 used an Austin Healey 2.8 litre engine, but came too late to save the company. Fewer than 30 were produced when the French government scuttled the endeavour.