Founded by Hugh G. Conway, C.B.E. in 1987

For the advancement of education through the study of works of Ettore Bugatti

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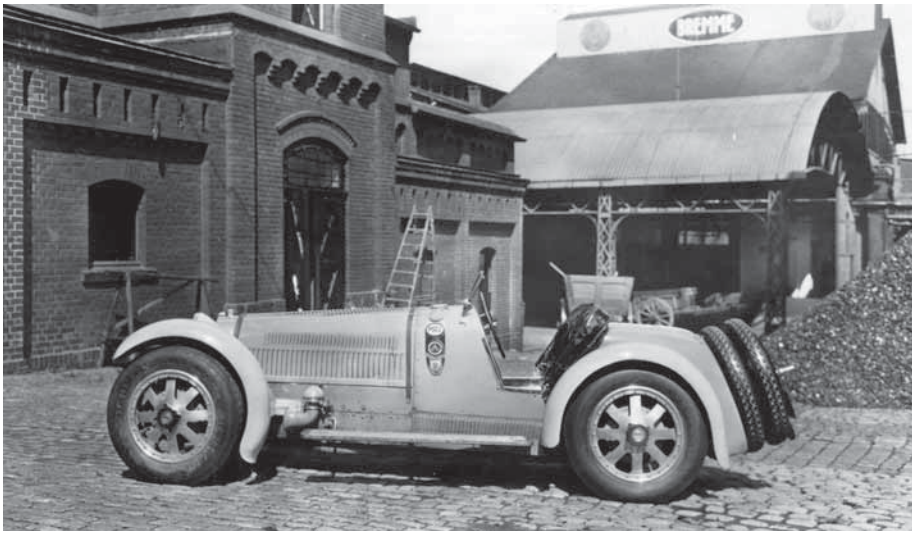


Eric Van Esser's Type 35B, chassis number 4878, photographed in the Bremme works courtyard when owned by Emil Bremme. The Tyres are Michelin Cablé Confort, beaded edge 730 x 130. The wheels for these special balloon tyres were introduced for road use of the Type 35 in April 1925. See the Bugatti Trust letter to the Vintage Sports-Car Club on page 24

Chairman's Report

2009 has been a year of anniversaries. Bugatti, one of the most revered car marques, celebrates the centenary of the establishment of its factory at Molsheim in 1909. However there are several more – the Morgan car company at 100, the iconic Mini at 50 are just two. Although Ettore Bugatti's first designs date from the beginning of the 20th century, they were produced by other manufacturers who employed him. The 28 year old Ettore achieved his ambition to build his own cars by renting an old dye works near Strasbourg with help from his friend, de Vizcaya in December 1909. In fact it was not until early in 1910 that the company Ettore Bugatti Automobiles was established and commenced production of a 1327cc 8 valve 4 cylinder model so perhaps 1910 is the true anniversary. This was considered to be the first Bugatti thoroughbred (Pur-Sang).

To commemorate the early years of the company, the National Motor Museum at Beaulieu kindly allowed the Bugatti Trust to borrow and display one of the five cars produced in the first year. It was owned for many years by the late Peter Hampton and was bequeathed to the nation upon his death in 1991. Factory records show it as having been delivered to the Paris agent Huet on 13th December 1910 and is the second oldest Pur Sang Bugatti still remaining in existence. It is also believed to have been the personal possession of Mme Bugatti for a time and seen service on the battlefields of WW1.

To continue with the theme of the centenary: Norbert Steinhauser came to the Trust from his home in the south of France to talk to members about his research on the life and works of Ettore Bugatti. His book Ettore Bugatti, l'Artisan de Molsheim exposes the extraordinary early professional life of Ettore Bugatti up to the first years of the 1920s, which so often has been considered uninteresting with no direct connection with the glorious years of 1925 to 1935. His book, despite a high price, has proved a best seller and may be already out of print. The talk was well attended and universally well received and we are most grateful to him.

The Trust has continued to support several academic institutions. Awards were presented to two final year students at Coventry University's design show in June. In July Bath University came fourth out of a hundred international entries at the Formula Student at Silverstone. Earlier in the month pupils from two schools, Tewkesbury and Winchcombe competed for the Bugatti Trust design challenge, a competition devised by the Trust to encourage interest in design and innovation by 14 and 15 year olds.

The global economic downturn is likely to have a negative knock-on effect upon the Trust's income and the financial results for 2009 are expected to show an overall loss. Well over half its income is generated from bequests, which have been invested in an equity based

The Bugatti Trust Design Challenge cup was presented to one of the teams from Winchcombe School

charitable fund. According to advice given by our investment manager it will reduce by about 25% and we will be obliged to sell a number of units in the fund to cover the shortfall. Whilst we could reduce our costs somewhat by limiting our activities I do not believe it would be in the long term interests of the Trust as a study centre and as a charity dedicated to encouragement of engineering design to the benefit of the community. Nor do I believe this would be what our supporters would want but would welcome views on the matter.

Michael Ulrich

5 September 1951 – 2 April 2009

We were shocked to hear that Michael Ulrich died on 2 April 2009. He was a good friend of the Bugatti Trust. He and Swantje, his wife, used to visit Yorkshire and also take a cottage near Prescott each Summer. They liked to catch up with their friends, under the chestnut tree near the bridge in Ettore's field, over the Vintage Sports-Car Club weekend. They were involved with Bugatti research, particularly for his book – 'The Race Bugatti Missed'. That book covered the interesting connection with De Dietrich during 1902-1904 and together with Uwe Hucke and Norbert Steinhauser Michael became a leading authority on that episode. Uwe began the process of re-creating the De Dietrich Bugatti Type 5 racing car at a time when little was known and subsequently a very great deal of original research was carried out with drawings from the De Dietrich Association and many documents, particularly French and German press reports of the period.

Commissioned by Uwe, Michael started building a large scale metal model of the Type 5 and it was his preliminary meticulous drawing work for this model, for which Michael used a CAD system, which helped to unlock many of the technical puzzles and overcome gaps in our knowledge. We now know far more about this aspect of the Ettore Bugatti story as a result.

Michael Ulrich speaking at a De Dietrich Association exhibition in Strasbourg on 1 March 2004

Professionally, Michael was a Civil Engineer in soil mechanics and an academic. His hobbies included work on and using his 1928 CGS Amilcar which he sold last October. He was an artist, sculptor and automobile model maker (see Trust Newsletter Nos. 5 & 8 for some examples of his work).

Recently he purchased a 1927 20 HP Rolls Royce with a Weymann body by Mulliner but sadly only took possession just three weeks before his fatal heart attack.

Our deepest sympathy goes to his wife Swantje and his brother Thomas.

A Bugatti Story

Hugh Conway

Wind the clock back 71 years to September 1938. Neville Chamberlain accompanied by the French Prime Minister, Daladier, comes home from Munich with a little piece of paper to announce “peace in our time”. Public opinion in Britain and France is ecstatic.

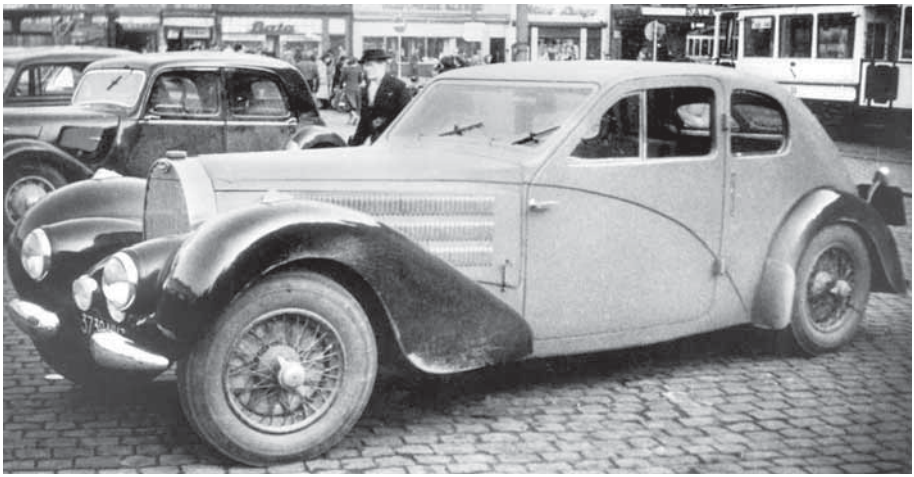
The gratitude of France for what Mr Chamberlain has done to avert a catastrophe brings forward a public subscription to buy a piece of land and build and furnish a chateau for him. As a further gesture the French government decrees that the piece of land acquired will be looked upon as British soil.

At this time the Molsheim works, apart from motor cars, is mostly employed on Government work and is protected by tanks and a battalion of French infantry. The General in charge accepts Jean’s invitation to the hospitality of the Chateau St Jean.

Enter Ettore Bugatti, ever mindful of an opportunity for publicity that is too good to miss. Immediately upon hearing of this he announces that he will open the French subscription list by presenting a Type 57 saloon to be auctioned and the money to go to the fund. The saloon is specially painted green. Not only is green the British racing colour but in France this colour denotes hope.

We all know that optimism is short lived and within 12 months the whole of Europe is at war. Fast forward 10 years - Ettore and Jean are no longer with us and the factory is under the control of Ettore’s surviving family members. Factory manager is Pierre Marco and his general works car is a two tone green Type 57 Bugatti. Could this be the one that Ettore had planned to auction in order to help pay for the piece of land?

This car was eventually sold to the USA in 1959 and has been described as being Ettore Bugatti’s personal transport. Furthermore it may be asking too much to make the connection with the subscription appeal but could it not be worthy of further investigation?



Brescia Modifiée, Chassis Number 1994, A Brief Encounter

Iris M Scott – known as Poppy

In 1935 at the age of 18 I had my first car, a jaunty little 3-wheel BSA, with two wheels in front and one at the back, in which I passed my driving test.

I was married during the war in 1942. During this period (war permitting) we had a succession of off-beat cars, including a Morris square-four and an old London black taxi-cab. The driver sat in the only front seat of the taxi-cab, beside which was an open space intended for luggage. We strapped a kitchen chair into this space, where I sat rather precariously and very exposed to the elements.

My father-in-law, a Scotsman who had emigrated to Canada at a very young age, came back to England with the Canadian Forces to serve with them in France during the First World War 1914-18. At the end of hostilities he settled in London, married, and joined the famous Bentley firm at their London Headquarters as a staff driver; during the course of his work he drove many famous people including dignitaries from overseas. My recollection is that he also lapped Bentleys at Brooklands, on one occasion winning a silver stop-watch for the fastest lap.

Many years later, it was his connection with classic racing cars that led him to the Bugatti for sale in (I believe) the London Showroom of the well-known agent Lemon Burton. Regrettably, I cannot verify these details, as all those involved are no longer with us.

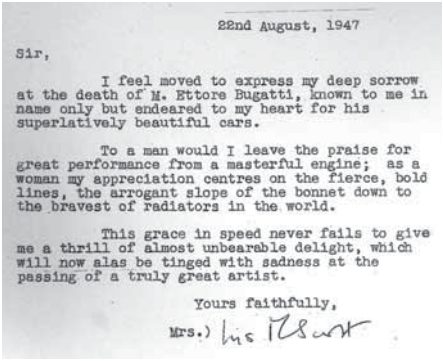
We took delivery of Bugatti PJ 8733 on Saturday 29 June 1946.

Details from Log Book:-
Bugatti 12 H.P. 2-seater Open Tourer.
Registration No. PJ 8733
Chassis No. 1994
Engine No. 1944

My husband Bob loved working on cars and was able to give the engine all necessary care and attention.

We used the car for everyday purposes in and around London, with annual holidays as follows:-
Holiday at Gribble Inn, Dorset, England during the Summer of 1947. I had designed a Bugatti badge based on the shape of the noble radiator, which I knitted into the front of a white sweater and wore with pride. (Chart for the badge enclosed, just as a matter of interest).
1948 for our holiday at the Pack Horse Inn, Allerford, Somerset and in 1949 a holiday at my parents' home in Somerset.

M. Ettore Bugatti's death was announced in the Daily Telegraph on 22nd August 1947 and I sent a 'tribute' letter to the 'Autocar' magazine:



22nd August, 1947

Sir,

I feel moved to express my deep sorrow at the death of M. Ettore Bugatti, known to me in name only but endeared to my heart for his superlatively beautiful cars.

To a man would I leave the praise for great performance from a masterful engine; as a woman my appreciation centres on the fierce, bold lines, the arrogant slope of the bonnet down to the bravest of radiators in the world.

This grace in speed never fails to give me a thrill of almost unbearable delight, which will now alas be tinged with sadness at the passing of a truly great artist.

Yours faithfully,

Mrs.) Iris Scott

On Saturday 29th April 1950 the Bugatti PJ 8733 was sold by us. I have no recollection as to how it was sold on, or to whom.

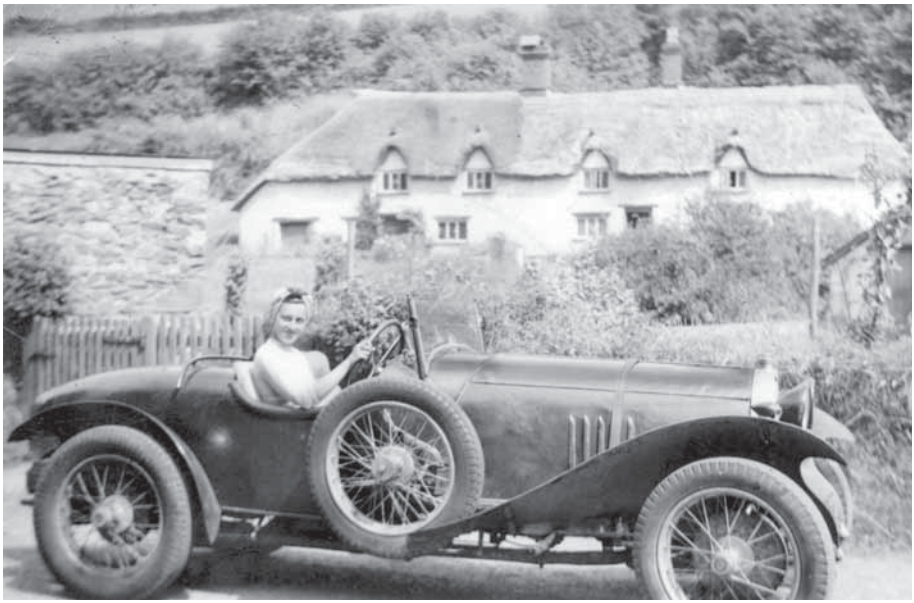
From then we reluctantly settled for conventional family cars, which proved essential when our two daughters came along.

I am on my own now (2009) and far too old for driving, but I still look back on my brief Bugatti days with much pleasure.

Here are just a few of my cherished memories:-

- Driving around Town in the Bugatti was a truly show-stopping event. Such a car had never before been seen in the streets of suburban London. We would park up and go off shopping, but when we returned, would be obliged to stand back while a ring of onlookers would be going around the car and gazing at it with great curiosity both inside and out.
- However, not so exciting when the Police took an unwelcome interest in us for speeding!
- I recall that, as the passenger, I would be required to work the pump with a brass handle located on or maybe under the dashboard from time to time – some sort of priming necessary? I don't remember!
- We had to climb in and out of the vehicle, as there were no doors.
- It was open to all weathers. We once did a 200-mile journey from London to the West Country, where my parents were living. It was Christmas time, and at the end of the holiday we had to drive back to London in deep snow and rutted ice over Salisbury Plain (this was in the days before Motorways). We soon became unbelievably cold and stopped off at a tiny hostelry called Bawdrip Inn on our way through Somerset, in the hope of thawing out our frozen limbs. The Innkeeper was very helpful, but thoroughly bemused by the spectacle we presented!

These snapshots were taken during our holidays in the West Country. The poor quality is explained by their having been taken on a small Kodak camera some 61 years ago!



Ed. Note:

Mrs Scott's Brescia, chassis number 1994, was first delivered to the Paris showroom on 23 March 1924, probably without coachwork. The car is wrongly listed as chassis number1944 in The Bugatti Book of 1954. Originally with 2 wheel brakes, a Salmson front axle with Perrot brakes and the 2 seater Jarvis body were fitted before the time of the ownership of Mr & Mrs Scott.

The car is now in American ownership.

Bugatti Lecture at Coventry University

David Browne

Dr Alex Moulton was the special guest presenter of last year's prestigious Bugatti Lecture at Coventry University on 26th November 2008.

Vice Chancellor Professor Madeleine Atkins introduced Dr Moulton to a packed house which ranged from design students to fellow motor industry luminaries Spen King (former Rover Engineering Director and 'father' of the Range Rover); Prof. Jim Randle, formerly Jaguar's Director of Product Engineering (and the man behind the famous 'Saturday Club' which produced the XK220 supercar) and Ian Callum, Director of Jaguar Design, himself a Visiting Professor to the University's Dept of Industrial Design.

Dr Moulton held his audience's attention with a series of slides and anecdotes delivered in typical forthright but good-humoured style. These summarized his illustrious career as a creative engineer, tackling fundamental issues of suspension design on 2, 4 and multiple-wheeled vehicles.

His working relationship with the Mini's creator, Alex Issigonis, and his affordable rubber cone solution to Citroen's complex, expensive, hydraulically inter-connected front and rear suspension are well-documented, and were perfectly illustrated by a slide of an Issigonis sketch drawn on the menu during a working lunch in the Austin Directors' canteen!

Similarly, his 'first principles' approach to bicycle design, which led to the biggest changes that industry had seen in 60 years and anticipated the continuing trend for full-suspension bicycles, is well chronicled. Less well-known were his ideas for a space-frame bus which had the distinction of going from prototype to museum exhibit without the inevitable 'distractions' and subsequent loss of purity of thought by being put into production!

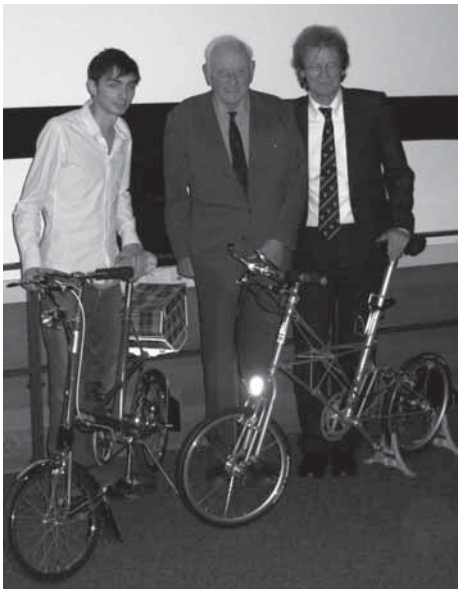
The Bugatti lecture is so-named because of kind sponsorship received from the Bugatti Trust - indeed, Barrie Price and Hugh Conway have become regular visitors and good friends of the Dept of Industrial Design, annually awarding design prizes in the name of the Trust. Dr Moulton cleverly brought his talk to an end with some slides illustrating his appreciation of Ettore Bugatti's modular, multiple straight eight-engined railcars, with their 'up and over' aerodynamics which inspired Sir Nigel Gresley's record-breaking A4 Pacific steam locomotives.

The following lively Q&A session confirmed Dr Alex's acknowledgement of BMW's Mini as a clever and successful marketing exercise(!), but also that – the exotic 'Double Pylon' notwithstanding – development of his space-framed bicycles continues. We wait with curiosity, interest and patience – and should probably start saving up now!

Professor Clive Richards, the Associate Dean of Art & Design, brought proceedings to a close by thanking Dr Moulton for an illuminating and stimulating evening, confirmed by the enthusiastic applause which followed.

Later, Dr Alex caught up with old friends and colleagues, and perhaps with an eye on future developments, Industrial Design student James Harness who had enjoyed a 6-month Professional Training Placement at the Moulton HQ in Bradford-on-Avon the previous year, and whose final year project was – a folding bicycle…

On display in the foyer were a rally-prepared 1965 Mini Cooper S loaned by Peter Barker and Hugh Conway's 1926 Type 35 Bugatti. There were 3 Moulton bicycles in the lecture theatre itself: final year design student Sameer Rayyan's mid-1960s Mk 2 'De Luxe', design tutor David Browne's Pashley-built 'fx8 Millenium', and a stainless New Series 'Double Pylon' kindly provided for the occasion by Pashley Cycles' Dan Farrell.



Dr Alex Moulton, centre, with Sameer Rayyan (final year design student) and David Browne

This 3D rendering of the Bugatti showroom at 116 Avenue des Champs-Elysées is from the 'work in progress' of Stuart Brown's early Type 35 computer model

The Bugatti Showrooms in Paris

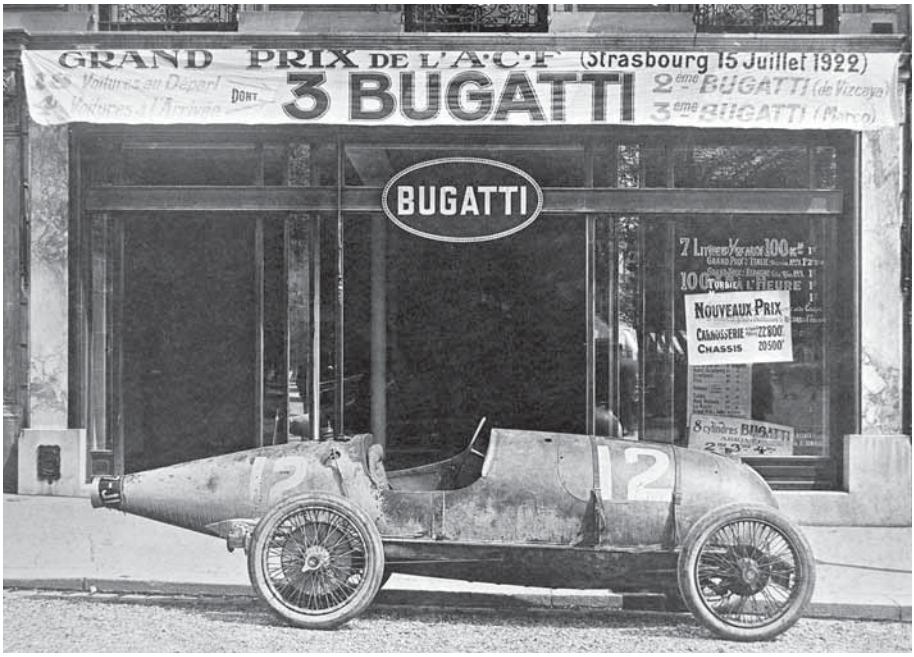
Richard Day

From 1920 the Bugatti showrooms at 116 Avenue des Champs-Elysées in Paris were the headquarters of the Paris sales office, the Société de Vente des Automobiles Bugatti, which was established by Ettore Bugatti's close friend Etienne Bunau-Varilla and a few other associates but Bunau-Varilla was the main shareholder, not Bugatti. Pierre de Vizcaya was manager and the main salesman at that address until about 1925 or 1926.

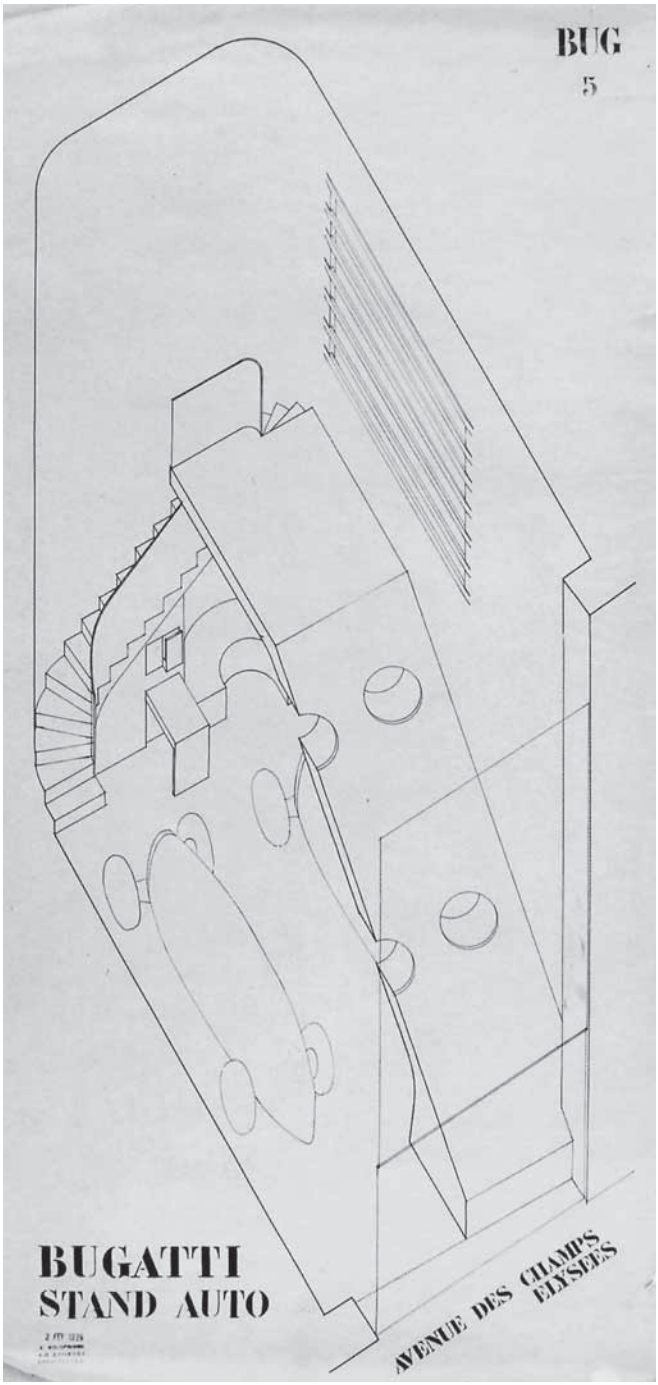
The premises used for preparation of new cars and repairs, was nearby at 32-34 Rue Marbeuf also headed by Bunau-Varilla.

This operation had worked well but Bugatti had not been fully in control and arrangements were changed from 1928.

In the Royal Institute of British Architects' drawings collection the architecture and furniture designs of Ernö Goldfinger are very well represented. Goldfinger is known as one of the foremost exponents of the modern movement in the UK for a long period, from 1934 until his death in 1987. He was born in Budapest but moved to Paris in 1921 where he worked and studied at the Ecole Nationale Supériere des Beaux Arts from 1923. He was influenced by many of the



The 1922 Strasbourg Grand Prix Type 30 outside the showroom at 116 Avenue des Champs-Elysées



An axonometric drawing dated 1929 by Ernö Goldfinger showing a Bugatti car showroom for Stand Auto in the Avenue des Champs-Elysées in Paris

Paris based architects – Auguste Perret, Mies van der Rohe and Le Corbusier. In Paris in 1929 Goldfinger designed a Bugatti showroom for Stand Auto in the Champs-Elysées. The drawing is illustrated in the RIBA Drawings Monograph No. 3. "Ernö Goldfinger" by Robert Elwall (we are grateful to the RIBA for permission to show this drawing)

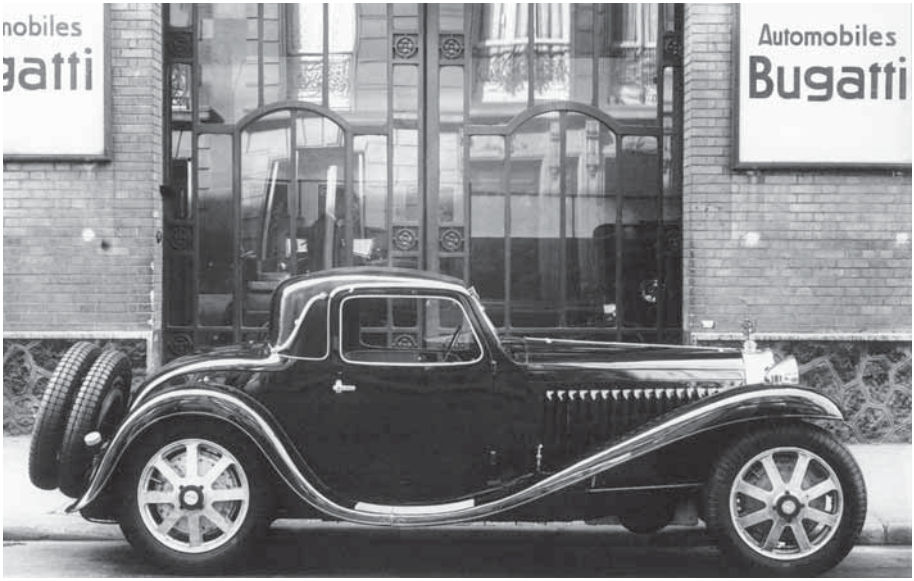
Stand Auto was a car agency with a showroom at 144-146 Avenue des Champs Elysées. The owner was the cyclecar exponent Robert Sénéchal who had become a Bugatti agent after he had created good publicity by driving a Type 43, with a sealed bonnet and gearbox locked in top, from Nice to Paris.

In Paris Goldfinger set up a partnership with Andras Szivessy and they worked on a number of projects for interiors of apartments, shop designs and furniture. In 1929 he was still a student and did not achieve his diploma until 1932. Perhaps this Bugatti showroom was only a hypothetical student project.

In October 1928 Bugatti opened his own showrooms at 46 Avenue Montaigne in Paris. This was backed up by his workshops at 75 Avenue Carnot in Levallois-Perret.

These are brief notes which hopefully raise a few questions about the Bugatti showrooms in Paris. We would like to find out more. The building at 116 Champs-Elysées still exists although the frontage has been radically changed. It is now a boutique called Petit Bateau.

We are grateful to Norbert Steinhauser for some of this information.



One of the first Type 55s in front of the new Bugatti showroom at 46 Avenue Montaigne, Paris.

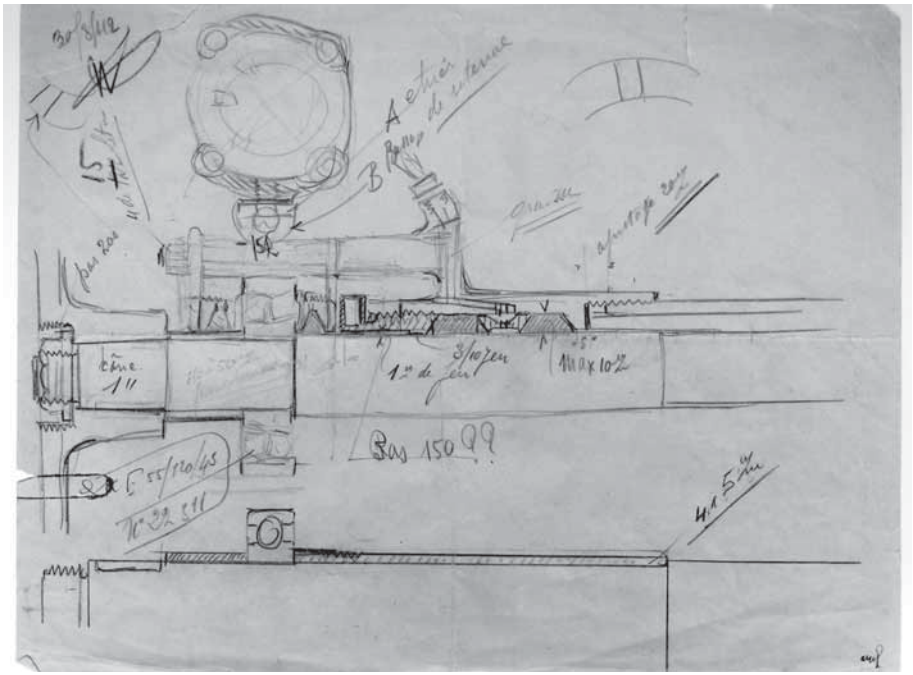
An Ettore Bugatti Sketch of a Marine Stern Tube

This 1942 design for the inboard end of a boat stern tube, probably for his own yacht, is the mature Bugatti at his best. Some of his pencil sketches simply illustrate an idea, but here we have a detailed, fully dimensioned drawing which could be given to the machine shop.

A stern tube is a deceptively simple piece of machinery. It has to transmit power from the engine to the propeller while accepting the movement inevitable in the hull. Journal bearings must stay in line while the inboard bearing transmits the reaction forces which drive the boat. Finally it must keep the sea out and the lubricant in, with these two separate at all times.

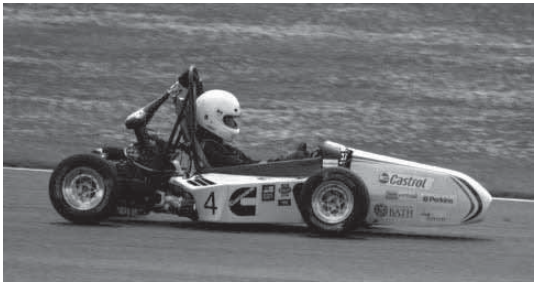
Bugatti's solution is to mount a substantial seal housing on the end of the shaft casing. Two independent water seals compressed by an externally threaded sleeve with tommybar sockets have a grease space between fed from an easily accessible pressure greaser. The main casting carries four support bolts clamping between oil seals a substantial double row roller bearing capable of taking both thrust and journal loads. A very small amount of leakage is desirable to prevent the water seals from overheating, so shaft and bearing seals are separate with a small space between to allow water from outside the boat to pass harmlessly to the bilges.

An alternative sketched separately shows a single deep groove ballrace in place of the double roller bearing.



Signed and dated 30 March 1942 sketch detail of the inner end of a stern tube showing bearings, gland packing, lubrication and 55mm diameter propeller shaft.

A Postcard from Silverstone (or how went Formula Student 2009)



The Team Bath car at Silverstone

Dr Geraint Owen, Senior lecturer in Design, Manufacturing and Automotive Engineering together with Dr Kevin Robinson, lecturer, Powertrain and Vehicle Research Unit at Bath University's Department of mechanical Engineering, provide their personal accounts of the Institution of Mechanical Engineers Formula Student Competition that took place in July.

This year's event at Silverstone was larger than ever with 105 Universities represented, and the UK event is now the biggest event worldwide (although probably not the most prestigious).

With such a large number of competitors, there has been a need to spread the event into more days. Our year 3 team, with Kevin, all got there on Wednesday. And as I type this most of them are still there for their 5th night under leaky canvas. That said the third years finished their presentations on Thursday evening and have spent some of the remaining time studying the opposition in readiness for next year, and then remained partying!

There were a few notable features this year. There were no American teams present. But instead, there were a large number of well organised, well funded, high quality entries from Germany. It is clear that in the last 2 or 3 years, German universities have been really bitten by the FS bug. They are bringing teams of 40-50 students over to the event, many with the FS cars in specialist transporters. Added to this they have serious levels of industrial support. One judge came over to see our car as he had judged four German teams and four British. As he noted, the German cars had all been top quality whilst the British were rather second rate. A nice touch was that he had been sent by his fellow judges to see us, as they thought we were likely to have a decent car!

There were a number of interesting entries in the 'Eco' class, with Hybrids and battery powered cars featuring heavily. Interestingly, whilst they were in a different class to the main event, their performance was quite comparable, although there are some health and safety issues when students build a car running with 300V DC at 120amps!

A significant number of graduates from previous years attended over the weekend and it is clear that the Alumni from our FS team are now getting up the ladder in the motorsport industry.

So, to the events themselves:

The 3rd years presented their design for next year's car in Class 3. Reasonable scores in the Business and Costing sections (2nd) weren't sufficient to make up for a poor result in the Design section. The judges focussed heavily on a couple of specific areas of the car where the design was known to be weak and we were heavily penalised for this. Eventually they finished 5th out of 16.

In the main event the 4th year team did better than usual in the static events. In the design aspect we were in the top 20. We scored an impressive 2nd overall in the Business Presentation section. We surpassed this by winning the Cost and Manufacturing element.

The static events took place in parallel to getting the car scrutineered for safety, compliance with the rules, noise testing and brake tests on Thursday and Friday. This was reasonably trouble free, except for an electrical short that meant replacing all the brake pipes on Thursday night.

To give an idea of the time involved at the events: Most days involve work on the car starting at 7:30am and still being hard at it when you are thrown out of the pits at 11pm to go and have a pint and a bite to eat in the camp site before hitting the tent.

Moving on to the Dynamic events:

Saturday morning didn't go too well. Drive train problems in testing had limited the number of practices of the hard starts for the standing 75m acceleration event. Our time of 4.16 seconds compares well with our 2007 record of 3.97. But the competition is now getting tougher and tougher. The winner was 3.74 secs.

The steady state cornering was a little better, but the drivers thought that there was a bit too much understeer with the cold tyres. The final event on Saturday was the twisty sprint. A better performance here saw us 12th - close to a number of the big players but still a long way off last year's winners Stuttgart.

So with only the Endurance left, we were around 10th overall and it was very close for being top UK team between us, Oxford Brookes, Swansea Metro, Hertfordshire and Aston.

Sunday's endurance was a weather lottery. During the morning when all the top teams ran, the weather was damp at best or in heavy rain. Worse than this, the second car on the track emptied itself of oil. The track then became a skating rink. We were on 12th, by which time the oil was everywhere. Our times were the fastest of anyone in these conditions, helped by strong driving from our two favourite drivers. Slowly the rainfall was washing off the oil and as the morning progressed the times started to fall and we were passed.

The sun shone in the afternoon and very quick times were posted on slick tyres. Interestingly, this year saw far more people finish the Endurance section - nearer 50% rather than the usual 25%.

In their wisdom the organisers decided not to moderate the times for the conditions (which the rules allow), meaning that Swansea and Brunel who ran in the afternoon sunshine were given a huge advantage.

Despite this when the results came out we managed to repeat our result of last year of 4th overall and the best UK team. In normal circumstances this would have been a huge success, but

given the conditions this was an amazing result.

We should all be proud of what the students have achieved for the University. This is the 3rd year in a row we have been the best UK team. 4th overall is the highest any UK team has ever come, and we have now done it twice on the trot!

And once again we have done this with a budget at a fraction of that of our European and UK opposition. The continued support of our sponsors is vital, and success like this can only help. Our van is the scruffiest in the paddock!

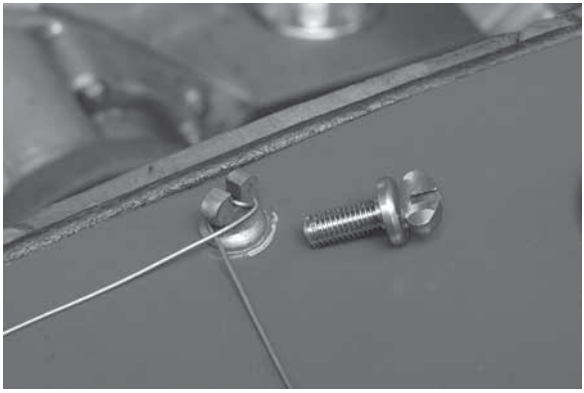
As always, the team couldn't do this without the help of a number of people in the Department, thank you all. Special thanks should go to Andy Church, Rob Pepler, Andy Green and Guy Brace.

The biggest thanks of all goes to the students for working hard for two years to do this with many a sleepless night over the last two months.

For those who didn't read the above: 2009 – Bath 4th overall and best UK team so roll on 2010.

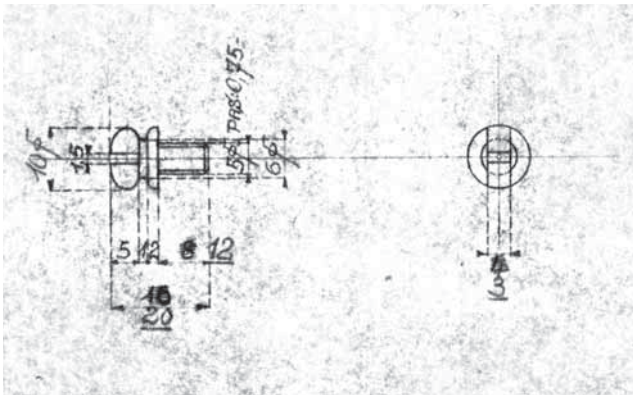
Bugatti Type 35 Body Screw

Malcolm Gentry



Why on earth did Mr Bugatti make a screw so complicated when a simple screw would do? I have never come across any of Ettore Bugatti's components where complication did not have a valid reason. Sometimes for mechanical efficiency (of the day, of course) or in order to fit in with a special production process or just to look right. So with that in mind you have to examine the familiar screw that fixes the GP body in place.

It only holds lightweight panels so you would think it could be a more simple screw fastener. The key, I think, is the slot for the lock wire; this is not the whole answer though but just a lead. If we assumed that the lock wire is there to stop the screws coming loose then so many other screws on the car would have the same treatment. If we said the wire was there to avoid losing expensive screws then they could have been made far less expensive and their loss would not be an issue. My assumption, based on being able to examine many original body panels over the years, is this: the screws were never tightened hard on to the panels. They were deliberately



The factory drawing of the body screw

left slightly loose to allow the panels to move as the chassis twisted. If you take a close look at an original panel you will find the body screw hole is drilled large and a brass ringlet is riveted in place. The hole in the ringlet is far greater than the size of the screw, 6mm diameter for a 5mm screw, allowing for movement of the panel. With the screw loose and sliding over the hard brass surface there would be no damage to the aluminium as the panels moved over the chassis. Therefore, the loose screw had to be secured with lock wire. The normal use of lock wire involves carefully threading the wire through a hole. This body screw has a slot instead so that a row of screws could be quickly laced. To help speed up the whole operation even more the Bugatti race mechanics were issued with a special hand brace for the body screws.

Now all this assumption leads us to a chicken and egg question. When Ettore was developing the Type 35 did he find that with a conventional screw holding the panel, the body panels would distort or crack while the car was in competition or did he design the chassis to flex and realised early on in the concept that he would have to allow the body to move around on its fixings? We believe the latter – as the body screw drawing is dated April 1924.

So, now we have a good look at the chassis. I would guess and say that the Type 35 chassis was by far the most complicated of its type in its day. Almost every other racing marque used parallel channels which were nice and simple to make and repair. The Type 35 is far from simple although it is basically twin rails they vary in depth and width throughout the entire length and only briefly form a parallel section where the engine is mounted. If you ever pick up a bare chassis you will find it's a wobbly thing in every direction except one, it will not sag in the middle. Why is it so complicated without good reason? So we look further for evidence that the design concept was to allow the chassis to flex rather than to overcome problems caused by flex. The most rigid part of the chassis is the area forwards of the bulkhead. The engine is solidly bolted to the frame and there are frame reinforcing plates fitted. So from the front of the chassis to the flywheel it is rigid and would not twist under normal racing conditions. From the engine rearwards there are many features to accommodate the inevitable flexing which occurs

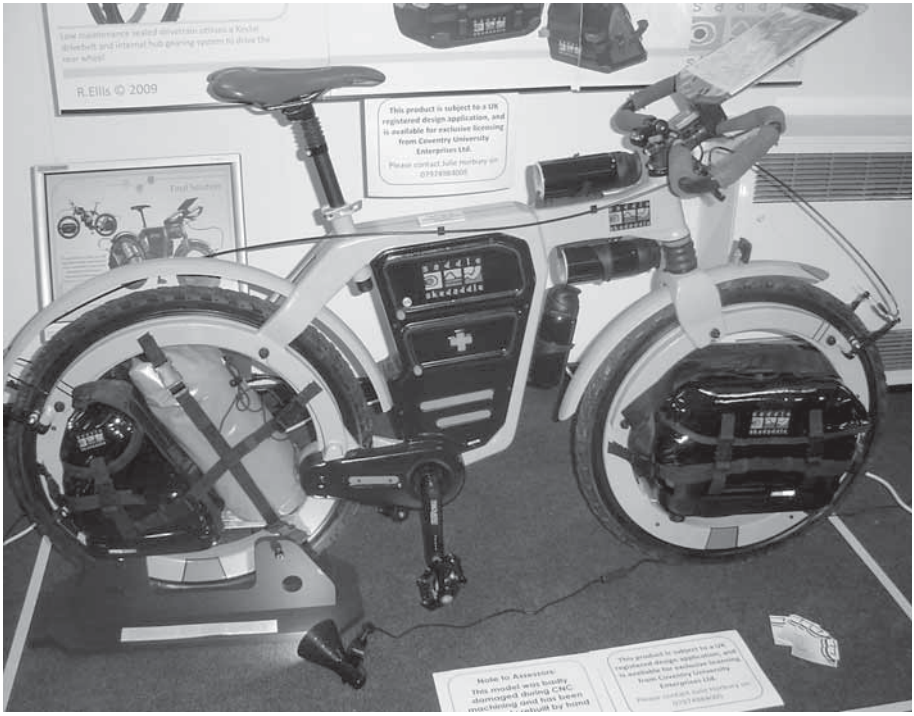
during normal race conditions. The first is the drive to the magneto where there are two complicated flexible leather couplings. The second is the drive shaft out of the clutch which has a flexible coupling. The rear flange of the shaft has a male and female cross section to take the drive and the bolts that hold the flange together are not tightened but spring loaded to allow for the flange to move apart when the engine is no longer in line with the gearbox during chassis twist. The bulkhead is a rigid structure of two layers and braced but with tiny narrow feet where it fixes to the chassis with only two 7mm bolts in either side. This could indicate that the bulkhead needed to be rigid to hold the magneto and steering column stable but the small fitment area to the chassis had less influence on the chassis maintaining its flexibility. The chassis cross tubes with split ends, which support the gearbox, are also structural components which are obviously designed to flex. All these features are complicated and high maintenance but are not secondary solutions to a problem. They are integral to the concept and they ensure that the chassis works as designed. It was a flexible chassis by design, but why?

With some extensive experience with karts (many years ago now) which had no suspension at all you had to set the chassis up to maintain handling and traction. The basic kart chassis is designed to twist in the middle which when loaded on cornering will allow the inside front wheel to lift but still maintain both rear wheels on the track surface, which leaves you three tyres on the ground instead of two as the inside rear would lift if the chassis couldn't twist, it's a little more complicated than that but the same principle may be in the design of the Type 35 chassis. A pictorial example of this is on the front page of our website (www.gentryrestorations.co.uk). You will see a Type 37A cornering hard at Monaco with the inside wheel clean off the ground but both rear wheels firmly planted. If they weren't, the rear wheel would be spinning the moment the throttle is opened because of the lack of a limited slip differential (they did not appear until much later (one of the Type 51's biggest track advantage over a 35)). Any amount of throttle that can be used to good purpose is an advantage; a tenth of a second here and there makes all the difference. The only other option would be to make a very rigid chassis and very flexible suspension (modern thinking) but Bugatti tried that (nothing is new) and it didn't work (Type 36 rigid parallel chassis complicated axles and suspension). That was some very advanced thinking and I bet that he had that option from the start of the Type 35 idea but it did not appear until later and was soon shelved. The next question is where did all this advanced thinking come from? Some more research may be required and that will lead to many more questions, I'm sure. Well all of this is conjecture, guess work and logic but as we can't go back in time we may never know for sure but we have the real thing to inspect and try and understand. The drawings are useful but only give us part of the answer. The old photographs are useful. The pictures don't tell lies, and you have to handle a lot of different original cars and parts before you can speak with any kind of authority. We hold the opinion that the Bugatti body screw helps to explain that Ettore Bugatti deliberately designed structural flexibility into the rear half of the Type 35. I'm open to any other thought anyone might have about any particular point in this article.

Coventry Students win Bugatti Trust Awards

The Bugatti Trust has continued to support automotive and product design students at Coventry University. Anthony Moran, a BEng Automotive Design graduate had developed a mine resistant chassis for NP Aerospace, one of the largest thermosetting moulding companies in Europe. Rob Ellis, a graduate in Industrial Product Design had developed a touring bicycle with hubless wheels in which luggage could be fitted. They were singled out for their innovative design work and each was presented with a certificate and cheque by Hugh Conway and Barrie Price at the University degree show held in June 2009.

Rob Ellis, one of the award winners, with Hugh Conway at Coventry University



The bicycle designed by Rob Ellis

Fiacre Carrosserie – Lidia Bugatti and Elizabeth Junek Faux Cabriolet on Type 40 & Type 43 Chassis

David Morys

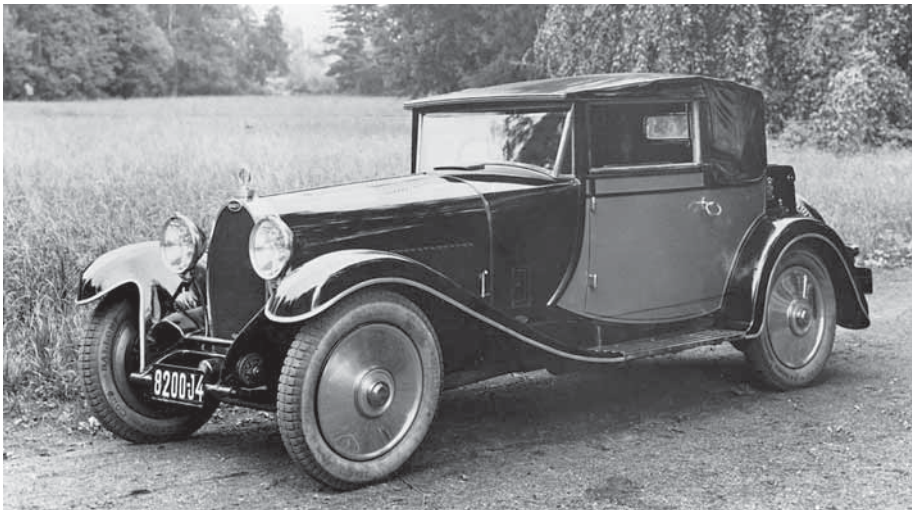
The fiacre coachwork seen on Types 40, 44, 46 & 49 all bear a close resemblance with an elegant wing line, flat windscreen and detailing such as the carriage door furniture. In 1928 a rather special T40 with lower roofline, supercharger and Type 46 brakes, chassis number 40623 was constructed at the works for the Bugatti family and has ever since been known as the Lidia Bugatti car. Allegedly, this car was built in secrecy by Jean without the consent of Ettore himself.

In the event we understand that Jean's ruse was discovered by his father before the car could be completed but he allowed it to continue without hindrance. Here was a unique combination of the traditional carriage work which he himself so admired and the modern interpretation that distinguished his son's designs.

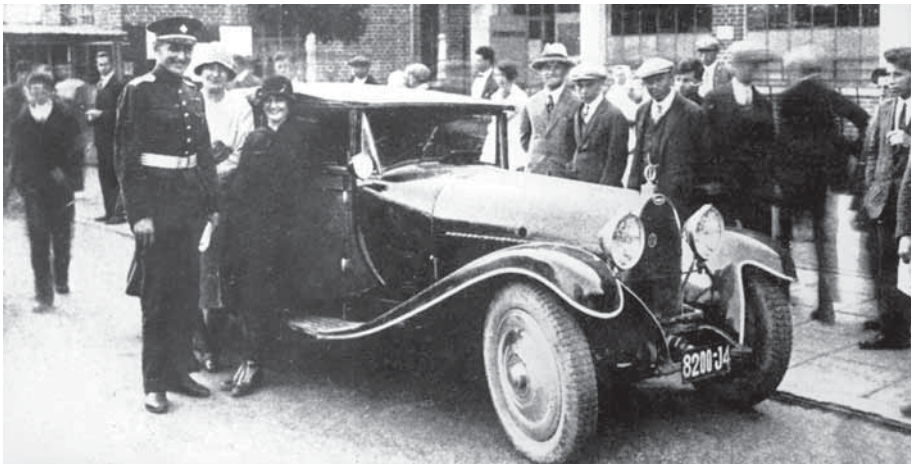
It was whilst looking at images for another query altogether that we came across the picture of the Type 43, chassis number 43271 that had been built for Elizabeth Junek.

Elizabeth Junek apparently much admired the car of her close friend Lidia and she commissioned a Type 43 to be built along the same lines.

The coachwork of this car, as you will see from the picture, bears a close resemblance to the Lidia T40 the most obvious similarity being the treatment of the windscreen. This features a triangular fillet at each side which gives the glass a wraparound effect. Of course the biggest difference is the roof and this is where, on the T40, Jean cleverly incorporated a full length opening hood with folding rear section and a complex internal mechanism. Alas the Junek car makes do with a fixed head section over



Lidia's Type 40 at Molsheim

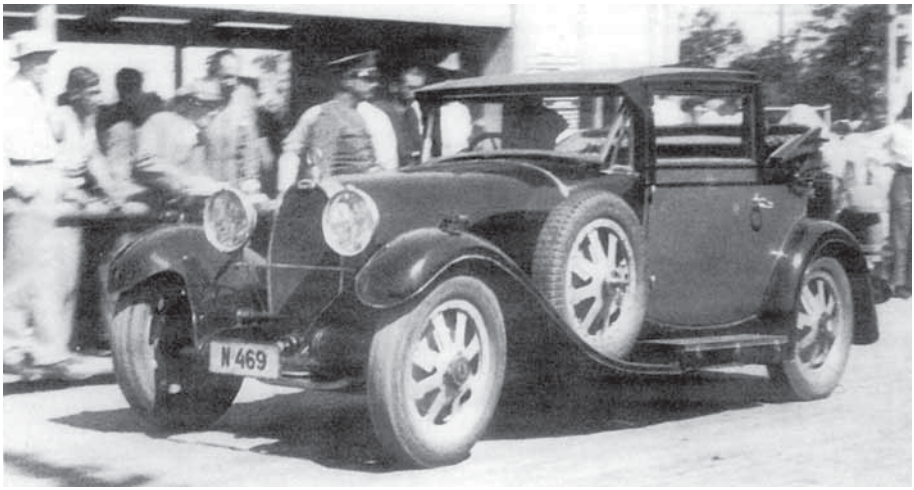


Elizabeth Junek and the Lidia Type 40

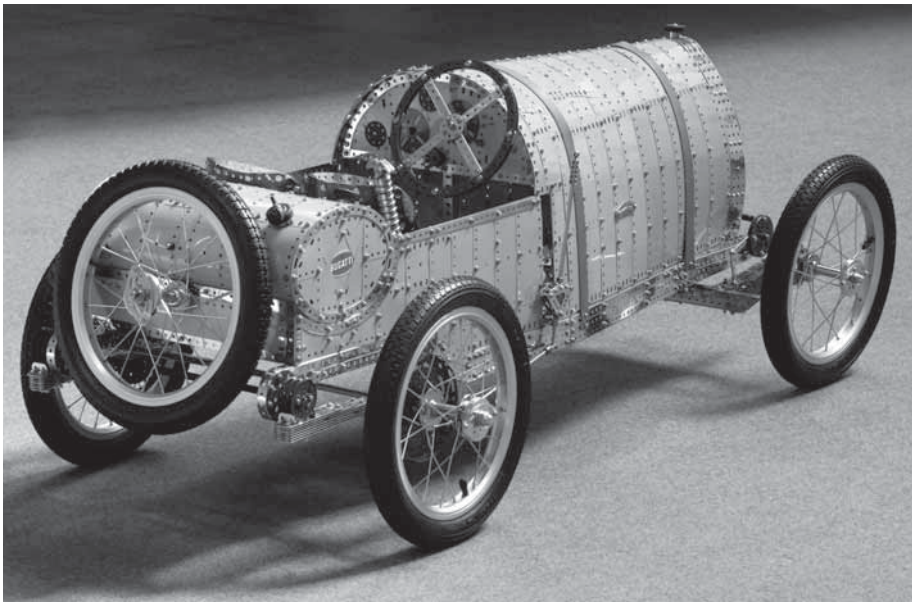
the front seats and folding rear complete with the traditional external pram irons.

Though the factory had built the coachwork for the Type 40, interestingly the Type 43 is attributed to Gangloff yet we have a situation where the similarity between the two is remarkable. However two early pictures of the Type 40 confirm that its coachwork was factory built as they clearly show the oval coach builders plate at the base of the scuttle on either side of the car. Unfortunately the car no longer has these in place. The Gangloff plate incidentally was also oval in shape but abbreviated at the ends.

Rather unfortunately by 1934 the body on the Type 43 was considered too staid and it was replaced with a two seat roadster by the Czechoslovakian coach builder Uhlik of Prague.



Junek Type 43: Zbraslav to Jiloviste uphill race, May 1931 when owned by Urban Emmerich



Alan Covel's latest Meccano model, Type 13

Correspondence

Bugatti P100 Aeroplane

John Mellberg is carrying out very detailed research into the Bugatti aeroplane. These extract are from his emails to the Bugatti Trust and the Curator at the EAA Air Venture Museum – Ed.

17/18 August 2009

Nice to hear from you. You and your Bugatti Trust colleagues have been very good to me, and I'm grateful for the friendship and camaraderie. Bob Shaw, a friend of mine for many years, and yours, came up from Richmond, Illinois to see the P-100 with me, the afternoon of the day I was there, and this was his 1st time to see the airplane. He was speechless at first sight of it, much as I was 2 years ago during my first visit. Considering its condition as received at Don Lefferts facility, the EAA did a remarkable job, years later, of putting the airplane back together and presentable to the public.

I'll be back near Oshkosh at Xmas time, and weather/travel logistics permitting, will venture back to EAA, where I've been promised by my contacts there to remove the top fuselage cover so we can have a look inside, and to the inner rear, where there seem to be few or no images available revealing the structure and components that occupied that space behind the rear engine. If this can be accomplished, there will be much pictorial information to share with everyone Bugatti wise.

I've also attached an image received from Ron Lawrence of the air recirculation ducting behind the rear engine that carried the hot air from the radiator away from the engine bay, and out through openings in the fuselage lower sides into the blended wing fillet chambers, and out of the wing trailing edge air extractor vents. Didn't know if anyone had seen this photo prior to this? It was a complete surprise to me when Ron L. sent it. He tells me he has more to come.

Best Regards

John Mellberg

The area of specific interest was the empennage, lower/vertical stabiliser and what would be the 'tail skid' assembly, which was a spring loaded, retractable unit that in the 'on the ground position,' was extended below the tail fin, retracted up against the lower fin structure in flight and extended again for landing with the internal spring of the tail skid taking up any shock associated with the landing/ground handling. As was found during the aircrafts initial restoration in the U.S., at Don Leffert's Automotive Restoration Facility in Connecticut, the rear tail skid shock absorbing shaft was 'frozen' to its attachment collar, in a partially extended position, hence the need to fabricate an additional sheet metal spacer/transition piece, between the lower fin terminus and the cast aluminium 'tail skid,' with attached shoe casting protecting the bottom edge of the tail skid from being ground off during take offs and landings. The EAA 'restoration team' did a beautiful job of dealing with this anomaly in a visually seamless way.

My friend and colleague, Ronald L. Lawrence, an aircraft structures engineer at Boeing, created the original 3-view drawings of the P-100, made from actual measurements taken of the aircraft in the 1970s, when the aircraft was at Leffert's facility, copies of which I had previously given EAA. Ron L. presently is producing a complete set of engineering drawings of the aircraft as originally configured so the aircraft will be historically documented/preserved. He currently is completing the empennage drawings and needed the dimensional data I was taking from the aircraft during my visit, to compare against those dimensions he had taken years ago while its initial restoration/preservation was underway.

His complete set of drawings of every physical part of the aircraft are being formatted in CATIA and will be an extraordinary work upon completion. From this body of technically correct information, I am planning to build a 1:10th exact scale display model of the P-100, employing original 'like' materials wherever practical, with removable panels as per the original to reveal the inner details of the aircraft.

Sincerely

John Mellberg

Grand Prix Bugatti Wheels and Tyres

Ed. Note: We have recently sent this letter to the VSCC in response to their request for information about the original factory cast wheels and their tyres.

26 August 2009

For the introduction of the Type 35 in August 1924 the wheels were cast aluminium with detachable rims for 28 x 4 straight sided tyres. The defective tyres used for that first event were Dunlop SS Cord 28 x 4.

Generally though, the early Type 35 wheels were cast aluminium with detachable rims to take 710 x 90 beaded edged tyres. Various makes of tyres were used with these wheels, often 'Pirelli Cord'.

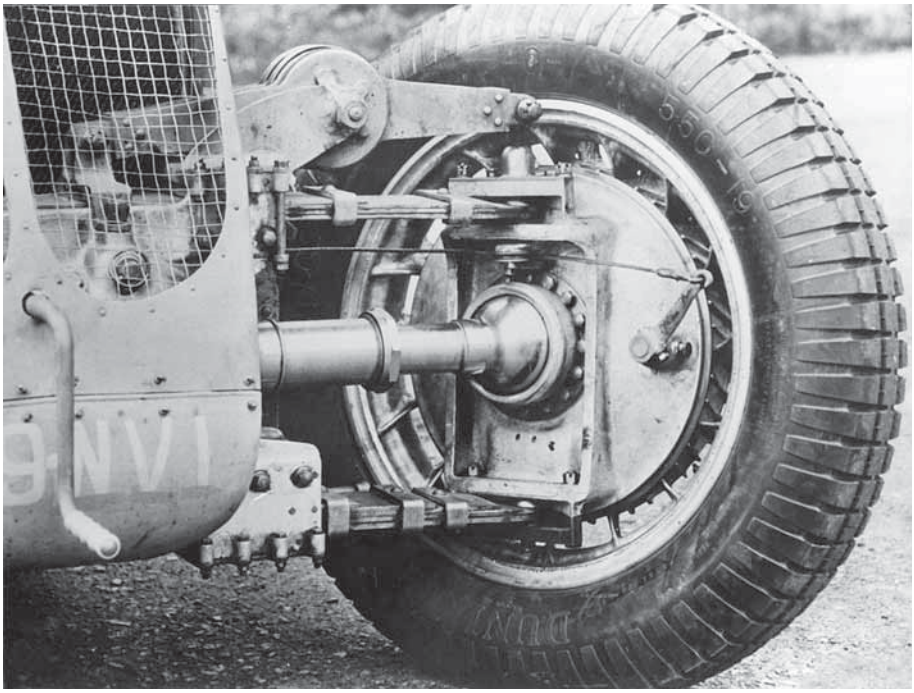
From April 1925, 730 x 130 cast aluminium detachable rim wheels became available for Rapson and Englebert beaded edged tyres (see picture on page 1). The factory drawings for these wheels and rims are numbered 35 CH 64 and 70 and are dated 2 April 1925. Examples were fitted with Dunlop Cord 'Ballon' and Michelin Cable 'Confort' tyres (cars chassis numbered 4323, 4394 and 4878). These tyres were expected to give a softer ride than the normal 710 x 90 ones and might not usually have been used for racing.

From 9 February 1927 small braked detachable rim wheels were used at 19 x 4 size to take 28 x 4.75 straight sided tyres. (Drawing number 35 CH 456)

The larger (330 diameter) braked wheel was introduced for the Type 43. It was a 19 x 4 detachable rim wheel to drawing number 43 CH 8 dated 24 September 1926. The width inside the rims is shown as 68mm. This wheel was designed to take 28 x 4.75 tyres. The design was updated with a stronger aluminium casting but still with 19 x 4 rim dimensions. These wheels were used not only for the Type 43 sometimes with Dunlop Cord Ballon 5 inch tyres but also for Types 35B and C with 19 x 5 Dunlop Racing tyres.

Well base versions of the large braked cast Bugatti wheel were first shown on another Type 43 drawing, numbered 43 CH 83. The drawing is dated 6 December 1927. The rim dimensions are nominally the same as 43 CH 8, that is 19 x 4, with a width of 68mm inside the base of the rim. This is the wheel called up in the Type 51 Parts List and used from April 1931 for the Type 51 often with Dunlop Racing 19 x 5 tyres. It would also have been used for the later Type 35B as well as the Type 43.

There is a drawing numbered 43 CH 96 dated 29 Jan 1931 for another wider well base 19 x 4½ wheel. The overall width of the rim was 116.2mm and the width inside the base of the rim was 79.2mm. This wheel could presumably take a 5½ inch tyre and would also have been available for use with the Type 51 or a late model Type 35B but may have first been intended for the softer Dunlop Cord Ballon tyres for road use with the Type 43.



The Type 53 wheel with Dunlop Racing 5.50 x 19 tyre

The Type 53 well base wheel was 19 x 4 (The drawing is dated 19 December 1930 and numbered 53 CH 38) and the width inside the rim is 68mm. It was fitted with Dunlop Racing 5.50 x 19 tyres.

There are two factory drawings for wheels for the Type 54, both dated May 1932. They show wheels with well base rims the same sizes as above, that is 19 x 4 and 19 x 4½. The main difference between these and those shown on the Type 43 drawings being the size and design of the brake drums.

All of the above wheels were made of cast aluminium. The material that Bugatti used was a good quality, heat treatable aluminium.

There is a picture of Kaye Don's Type 54 at Brooklands in 1934 with Dunlop 6.00 x 19 tyres but with non standard wire wheels.

This is the best information I can obtain from original drawings, parts lists and contemporary photographs in the Bugatti Trust collections. I hope it is useful.

Yours sincerely

Richard Day, curator of the Bugatti Trust

Is this a Bugatti design for a capstan?

4 August 2009

Further to our conversation on Sunday at Prescott, I have attached some rather better photos that show the capstan in more detail. The rubber rod inserts in the casting can be clearly seen although some of them are missing. I assume these would have been to give some grip on the sheets. If it were at all possible to confirm whether it is indeed a Bugatti design I would be very grateful.

Regards

Nick Coates

School Talk

6th July 2009

On behalf of the Stemnet club students and teachers at Cleeve School may I say a big 'Thank you' for your talk last week. The feedback from students was that they found it really informative and interesting, and a real insight into engineering and design. It's really good to have such a knowledgeable enthusiast to explain some science and engineering of engines and Bugatti design, along with a bit of history too.

I think several of the students were really inspired.....hopefully perhaps the next great car design will come from a former pupil of Cleeve!!

I'm sure many of the club members will follow up the invite to visit the Trust too.

Many thanks,

Yours sincerely,

Veronica Bucknel
(Head of Design Technology at Cleeve School)

The Trustees regret that after almost two decades without an increase the minimum subscription for annual membership to the Trust will rise to £35. This figure covers little more than the production cost of the newsletter and we hope that members will continue to support it as they have done in the past. It has also been decided that for administrative purposes the subscription year will run from 1st January 2010. This we believe is the preferred option for most subscribers.

If you know someone who may be interested in joining the Bugatti Trust do pass on these details of membership.

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Talk given to the Bugatti Trust Members	**as above**	
on 18 January 2009		

A few back issues of the Bugatti Trust Newsletters are still available - at £10 each plus post and packing.

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