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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| **Contacts:** | Richard Day | Curator |
| | Julie Bridcutt | Secretary |
| | David Morys | Photographer |
| **Office Hours:** | **Monday – Friday** | **10.00 a.m. – 4.00 p.m.** |
| **Address:** | **The Bugatti Trust, Prescott Hill, Gotherington, Cheltenham, Gloucestershire GL52 9RD, UK** | |
| | **Tel. +44(0)1242 677201** | **Fax +44(0)1242 674191** |
| | **E-mail: info@bugatti-trust.co.uk** | **www.bugatti-trust.co.uk** |




*A group of guests at the official opening of the Bugatti Trust 20 years ago. From the left they are: Lord Raglan; Michel Bugatti; O A 'Bunny' Phillips (founder member); Louis Quetelart (Vice President, Club Bugatti France); E Stafford East (founder member); Dr Joao Lacerda; John Marks and L Roy Taylor (founder member)*

# Chairman's Report

It is now twenty years since the Bugatti Trust was officially opened and as a result it may be appropriate to reflect on what it has achieved in that time. First of all we must acknowledge the generosity of our benefactors who made the annex extension in 2003 possible and transformed the exhibition space to make it more welcoming to visitors. Access to photographs, drawings and documents is much improved and as a result we believe that we are now established as the main source of research material worldwide.

The provision of facilities as a study centre and for the promotion of good engineering design has remained a principal objective throughout. We were extremely grateful therefore to Dr. Alex Moulton for his fascinating talk to members after the AGM on 24th January. He is so well known that we need hardly mention his achievements ranging from the Moulton bicycle, the first radical change in design for 60 years, to revolutionary rubber and hydrolastic suspension systems fitted to 8 million cars. Dr. Moulton's professional life has been devoted to the research and development of innovative designs and he has become an icon for budding engineers. He has recently published his autobiography.

At the time of writing, a talk by Paul Kenny, the author of the biography of Amherst Villiers, is due to take place at the Trust. Bugatti enthusiasts will know Villiers for his early career modifying Brescias and supercharging a Vauxhall for Raymond Mays. His later career which included designing Malcolm Campbell's land speed record breaker, the first 'bluebird', in 1927 was another landmark of note.


Coventry University's annual Bugatti lecture series has continued and this year the talk was by Richard Parry-Jones who was Vice President responsible for global product development of the Ford Motor Company until his retirement two years ago. A number of Trust members attended a thoroughly enjoyable and well attended talk in the University's lecture theatre.

*Bath University's 2008 formula Student car hangs in the stairwell of the Institution of Mechanical Engineers.*

Our plans for 2010 include providing support to the Bath University Formula Student team for the third year. This year's team has much to live up to as the University has been one of the top teams for each of the past two years. Formula Student is about building future engineering talent by designing and producing a single-seater racing car, not just in design and manufacture, but in many of the management, marketing and people skills so vital in the modern world, across all sectors of employment. It is run by the Institution of Mechanical Engineers and attracts over a hundred entries from all corners of the globe. To promote the event to Institution Members it now has the 2008 Bath entry in an eye catching and unusual display at its headquarters in Westminster.

The dynamic part of the competition takes place on the Silverstone circuit over the week-end of 16th-18th July and is open to spectators free of charge. All teams would welcome your support.

I have left to the end to offer my few words on the passing of Fitzroy Raglan. He contributed in so many ways with Bugattis going back to the early 1950s. We were honoured that he allowed his talk to the Trust to be filmed just one year ago. As a Trustee his advice was always welcomed and his wise words will be much missed.

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# The Lord Raglan 8 November 1927 – 24 January 2010

Barrie Price

FitzRoy Raglan died on the 24 January 2010 after suffering failing health for the last twelve months; he was aged 82 years. He was born the Hon. FitzRoy John Somerset and succeeded to the title as fifth Baron Raglan in 1964.

FitzRoy joined the Bugatti Owners' Club in February 1952 and soon bought and campaigned a Type 37A, which he owned for many years until he acquired the Type 51 which he retained for life together with a Type 46 coupé. He was Chairman of the Bugatti Owners' Club for eleven years and was active as a Director of the Bugatti Trust from 1989 until the end.

He had many interests apart from Bugatti including music – founding the Raglan Players – he likened the genius of Mozart to that of Bugatti. He spent much time aided by his faithful staff in maintaining and improving his estate; one could perhaps describe the beautiful Cefntilla as an arboretum. He used to say, 'I must leave the house and grounds in better shape than when I inherited.' In this aim he certainly succeeded. His interest in architecture led to his chairmanship of the Georgian Bath Society. FitzRoy served as chairman of Cwmbran new Town Council from its inception in 1949, for a period of ten years: he was also active in the House of Lords until his retirement. He was chairman of the charity Parity – which worked for equal rights for men and women.

A great character, occasionally given to eccentricities, which only made his friendship more appealing: I cannot recall a dull moment in his company.

# Stuart Tresilian's racing Bugatti engine rebuilt by the Rolls-Royce Schneider Trophy Air Race engine design team

Hugh Conway

A search of the files held by the Bugatti Trust has produced some interesting correspondence by Rolls-Royce on Bugatti cars. An internal memo dated April 1928 from Henry Royce to Ernest Hives was headed "Steering" and read as follows:

"The car which (after the Hispano) might be interesting from a road holding point of view, and for other reasons, is the straight eight Bugatti.

I see several of these 1927 models for sale secondhand at about £400. We should not drop much in buying and selling one. I was thinking of getting one myself just to study, but perhaps I am too big, and certainly I am too old; it might appear rather crazy.

I say this because these cars, above all others are used on these rough and varying roads with much confidence that they will not get out of control, and it might settle some of the questions about which there are different opinions, but in all probability what suits them would not suit us, but it would be as well to find their characteristics."

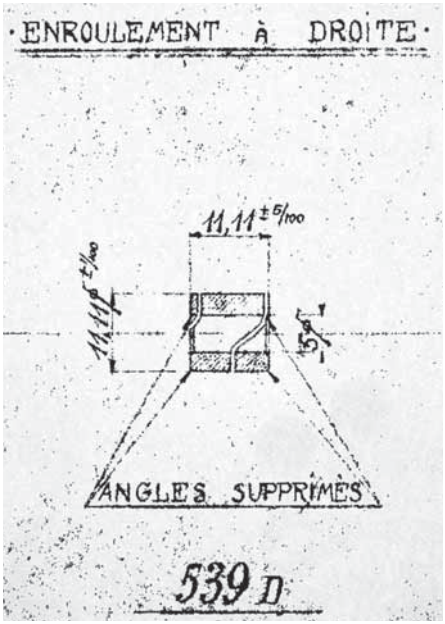
The company's Paris agent was immediately instructed to look for a second-hand one in good condition. Royce obviously had a soft spot for Bugatti, having previously owned an 8-valve before WW1, whereas Hives clearly did not. Hives soon found one which was for sale at £450 and he tested it. He made it known that he disliked the hard suspension and described the general running as "impossible". He concluded in a letter to Royce that it was so far removed from any Rolls-Royce product that he doubted whether the company could gain any useful information, adding, "We are certain that there is no car in the world with the speed range, flexibility, silence and comfort equal to the Phantom sports car". There the matter was left.

However, when Stuart Tresilian joined Rolls-Royce in 1929 as a 25 year-old engineer reporting to A.J. Rowledge, the famous chief designer of the aero engine department a further opportunity presented itself. With his first year's bonus Tresilian purchased a 1928 unblown 2-litre Bugatti Type 35 for £325.

He used his Bugatti for everyday transport. On one occasion whilst travelling between London and Derby the engine developed a serious rattle and he found the filter plastered with steel flakes – a big end had failed. In those days a standard repair would cost around £250 and this he decided was beyond his means.

By good fortune his chief, Rowledge, expressed a desire to see the design and construction of such a famous and novel engine and persuaded Hives to undertake the repair, a thing never before attempted in England. The job was given to the same team in the Experimental Department which had built the world-beating Schneider Cup engines.

His engine had standard bronze one-piece cages with Hyatt-type spiral hollow rollers. It was decided to make new cages in steel, cyanide hardened.




*From the 1925 factory drawing of the spring rollers for connection rods, "Rouleaux Elastique pour Bielles" The original Bugatti big end rollers were 7/16" x 7/16" helical springs with 52 right hand and 52 left hand ones per car as originally fitted to Tresilian's car.*

However as Bugatti made the rollers hollow, and he thought the oil capacity might be important, the new set was made hollow but omitting the spiral feature. Although he did not like the weakness of the hollow rollers he did wonder whether Bugatti had selected the Hyatt-type on purpose so that they would crumble up completely as his had done and avoid breaking the rod and wrecking the engine – a similar benefit white metal in plain bearings offers.

Notwithstanding the difficulties of reassembling an unknown engine the crank went back together in perfect truth. He also made arrangement drawings of the engine for Rolls-Royce from the bits.

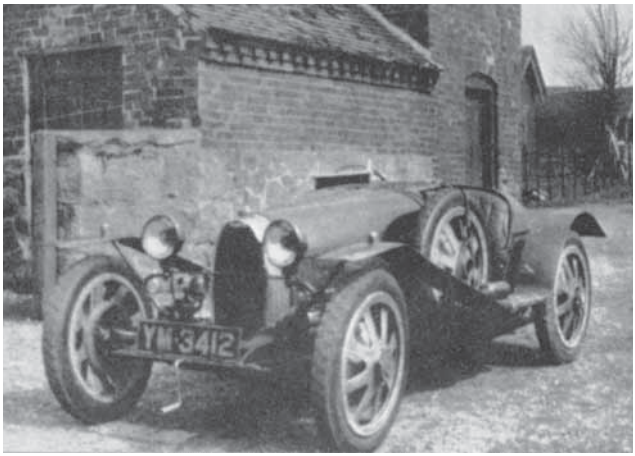
At the end of all this, the experimental shop superintendent said to Tresilian: "How much should we charge, would eight quid do?" Amazed, he mumbled, "That's not much". So the Superintendent said, "All right we'll make it eleven."

Shortly after Tresilian concluded that there must have made a technical mistake somewhere, as it wasn't long before steel flakes reappeared in the oil filter. He concluded the mistake was in piloting the cages on the inner diameter where there was no oil instead of on the outer diameter where there was oil. The outer diameter lands on each side of these cages had oil return threads which they had faithfully reproduced and must therefore have been near in fit.

We think it is more likely that the appearance of steel flakes was that they were the residue left behind in the sump from the previous failure, which is almost impossible to clean out fully without the engine being removed from the chassis. In any case not wanting to experience another 9 months of work and knowing that if Bugatti's advice was sought it would insist on replacing the whole crank, he decided to run in the engine for 1000 miles at 30 m.p.h. checking the filter every few miles. It eventually cleared and the steel flakes stopped. Thereafter speed was progressively increased and he ran it successfully for the next three years before selling it and buying a Type 55. He even won one or two races at Donington with it.

Stuart Tresilian left Rolls-Royce in 1936. Thereafter he had a number of senior appointments including that of chief designer at Lagonda and chief engineer at Armstrong Siddeley. He also

undertook a number of interesting consultancy projects including advanced engine design work. At the time of his death at the early age of 58 in 1962 he was assistant chief engineer of Bristol Siddeley Engines. All of his projects died with him.




## Postscript

Stuart Tresilian's Type 35 with chassis number 4613 and engine 44 was ordered by Malcolm Campbell in August 1925 and delivered on 28 September 1925. It was invoiced to E Bugatti, London on 11 December for 58,665 French francs and the account was settled that month. It was a nice, early, 2 litre GP car on beaded edge wheels and it features in all the British Bugatti Registers.

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## Viscount Louis De Monge and the Bugatti Aeroplane

*Hugh G. Conway wrote the story of De Monge and the Bugatti aeroplane in 1987 for Bugantics, Volume 50 No 4. Some of that information came from an interview made in hospital with De Monge shortly before his death in July 1977. We have the tape of this interview at the Bugatti Trust. The interviewer was Etienne Boegner and it has been translated from French by Michael Robson. The full translation was published by Jaap Horst in Pegasus No 19 in 2008. Here we have made some corrections, explanations and omissions of some parts where the interview rather drifted from the subject.*

### *The De Monge Interview*

**Etienne Boegner:**
From the aerodynamic standpoint, it was an original and remarkable piece of engineering.

**Louis De Monge:**
In fact this aircraft exhibits very special features... It originated from Mr. Bugatti's desire to win world speed records, that is to say, not only on the ground but in the air. Wishing, therefore, to achieve this he called me and asked me the following question. Given the extreme lightness of weight and immense power of the most recent Bugatti engines (magnesium with 8 cylinders in line), he asked me if it would be possible to construct an

aircraft powered by a Bugatti automobile engine. I asked for a week or so to study the matter in general. I arranged the engines in different configurations both in the front and at the rear and on the sides and, in a word, looked at the entire question of combining a Bugatti automobile engine with a De Monge airframe and it was from this hypothesis that I started the exercise. The answer was "yes"; it would indeed be possible to achieve a world record with a Bugatti automobile engine, (or engines) an idea which most people would consider absurd or at best somewhat strange.

**B:** Can you describe the aerodynamic features of this prototype aircraft which even today represent very advanced ideas?

**LDM:** First of all the very fact of using these engines allowed one to achieve certain aerodynamic shapes which were not otherwise possible. At least the Type 50B engine had the advantage of being very small and slim with a high power-to-weight ratio.

The question was not simply to build a machine for some conventional role but it was to develop an aircraft for record breaking and nothing else. From the beginning the purpose of the aircraft was to achieve speed records based on an aerodynamic design study. This was not the case with the engines (which were not originally intended for this purpose), especially as they were water cooled and were (therefore) characterized by the enormous drag factor of a radiator. This was indeed a penalty. I considered the possibility of surface radiators which would not offer so much resistance as they would be on the wing surface (not projecting), but at the (very high) projected speeds the resistance would (still) be around 30/35% of the whole airframe. This virtually ruled them out for this type of aircraft. It would require considerable engineering to obviate these difficulties.

**B:** You are saying that the drag from the radiator if it were constructed in the usual manner would take up almost 30% of the aircraft's power?

**LDM:** Yes. At those speeds most definitely. At record speeds. That was where the greatest difficulty lay. I therefore devised a cooling circuit with a different layout which incorporated a radiator within the aircraft instead of outside.

Whilst the speed of entry and exit (of air to and) from the radiators must correspond to the speed of the aircraft a cone shape would be necessary and I found this in the rear part of the fuselage; in the tail itself, such that the cooling effect would be produced in an area where the airspeed is less, at least in relative terms. It is for this reason that the tail had a completely new function which was to effect a deceleration (of air) before and an acceleration after the cooling matrix. Thus the dimensions of the radiator could be made extremely big and wide compared with the norm. After the air entered the aircraft its speed would be reduced before it entered the radiator. In these conditions in order to find a convenient point of entry I concluded that it would be necessary for the air to enter by way of apertures in front of the control surfaces, that is to say at the leading edges of the tail, and then to exhaust via the trailing edges of the wing. There would be losses in

the circuit but overall I estimated that such losses would be clearly very small compared with externally mounted radiators.

**B:** You have spoken of the aircraft's features which were designed to enable adequate control during deceleration before landing. Could you give me the details?

**LDM:** These details are well explained in the Bugatti Patents which include a very comprehensive description of all the systems and components. It is easy for me (to understand), but I will explain. The aircraft that (the Patent) describes one might term a "polaire". A polaire; that is to say the airfoil configuration, can be changed in reaction to different speeds. The polaire, (the value of the change of shape), would be a function of airspeed, or a curve of that order.

*Ed Note: The use of flaps allow reduced landing and take off speed of aircraft was still a novel feature in 1937: "in spite of the numerous arrangements of trailing-edge flaps … there is no guarantee that the most effective type has yet been discovered." From Flight Magazine 13th May 1937.*

**LDM:** Nevertheless the pilot would have to intervene to change it. It would be necessary to have one curve in certain situations and another in others. That would be obtained by the use of flaps which in our case were automatic but which in general would always be controlled by the pilot.

**B:** How can you be sure about the auto correction capability of these (fully automatic) flaps?

**LDM:** They were activated by a double system: control was affected both by air speed and by the engine: full power and reduced power. One or other of these two control systems were activated depending upon the speed of the aircraft. Then again there was a built in security system. Some aircraft break up in the air as the pilot goes too fast for a particular airfoil configuration causing a rupture of the airframe. So, in making this automatic one would avoid frequent accidents as the system is automatically activated (to reduce drag at high speed). The second system was, I hope that I have not entirely forgotten, a hydraulic arrangement in which the aircraft slowed itself down progressively. That is to say the polaire placed itself at the optimum setting and, from then on, adopted an attitude of lesser resistance, or greater, as required.

**B:** There are other things you wish to discuss before we talk about certain tests or certain experiences which took place with the aircraft in the tunnel at Richfield.

**LDM:** Speaking generally there was no question that landings could be facilitated by the fact that the polaire matched the optimum (flaps) angle and also, after having touched down, the surfaces would open out which would create a down force which would increase the grip of the braking wheels on the ground thus reducing the landing run. There were, therefore, two features which one would not normally find on aircraft.

*Ed Note: Here, De Monge is referring to his bifurcated control surfaces. The lower element acting as a flap and after touch down the upper element*

*rises as an air brake which also creates downforce to assist the braking effect of the wheels whilst helping to prevent the aircraft pitching forwards.*

**B:** Are all these peculiarities described in Bugatti's patent?

**LDM:** Yes, plus certain observations (which have been published separately).

**B:** Could you tell me what were the characteristics of the two Bugatti engines? You said that they had 8 cylinders in line, a magnesium engine (crankcase), an excellent power-to-weight ratio. Were there any other features you would like to explain? Knowing the power of the engines were you able to calculate the performance of your aircraft, that is to say its speed?

**LDM:** The engine was extremely powerful relative to its low weight. It would almost certainly not have been an engine with a long life. It gave out some 550hp but it exhibited another feature, in that the transmission of power from engine to propeller was made by a shaft, a cardan shaft. This posed (some) very special problems of a technical nature. In fact the problems were solved. (The engines) were tested and worked extremely well. I saw them myself in Molsheim where I was able to see the completed project where the propeller was mounted on the end of a shaft. All our components functioned (well) at full load. A special test bench was constructed for that.

**B:** What was the projected speed of the aircraft?

**LDM:** 550km/h

**B:** What was the current world speed record?

**LDM:** Well, it was about 500 km/h. We were counting on exceeding this by 10%.

**B:** What was the cubic capacity of the engine?

**LDM:** 4.7 litres if I remember correctly.

**B:** Bugatti used to speak of you with a great warmth and had an enormous regard for your work.

**LDM:** It was a very pleasant association. He never said anything like "do this, do that", he simply observed, which was his style. He accepted my opinions and my views; he never issued "orders" but always gave the most precise instructions.

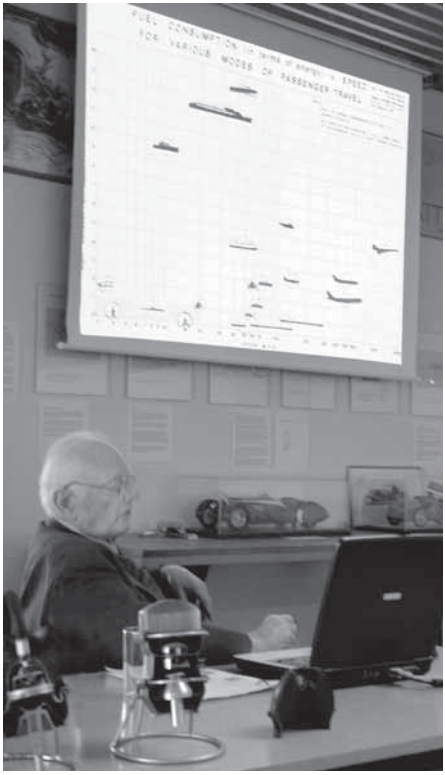
**B:** Well, Bugatti was himself a great creator and he immediately recognised another great innovator. He followed your thinking with a passion, a concentration and with extraordinary pleasure.

**LDM:** Yes, had there not been a war, the situation would have been entirely different.

**B:** The war marked the end of an enterprise which was, without doubt, a masterpiece. This nobility and beauty of design is what certainly strikes one about everything Bugatti undertook and it is echoed by the elegance and beauty of everything you designed also.

**LDM:** We got there together.

# Dr Alex Moulton



*Dr Alex Moulton speaking at the Bugatti Trust*

On 24th January, following the Bugatti Trust AGM, Dr Alex Moulton gave a splendid illustrated talk. The theme was 'a lifetime in engineering' and Dr Moulton's approach to engineering design was exemplified by the numerous projects with which he has been associated. These have ranged from a revised suspension design for his Scott motor cycle, through many production car projects, and from a prototype coach to the Moulton bicycle. Dr Moulton defined his term 'engineering design' (a logical process which has little to do with 'styling') by reference to Bugatti and he showed us examples of pencil sketch communication between Issigonis and himself. All of the thoughts were sketched, even before they were articulated in words.

At the end of this inspiring talk Hugh Conway presented the speaker with a framed drawing of Bugatti in his Paris drawing office – it seemed most appropriate.

*Hugh Conway presented a picture of Bugatti in his Paris drawing office to Dr Moulton*

The autobiography "Alex Moulton, from Bristol to Bradford-on-Avon – a lifetime in engineering" is available from the Bugatti Trust at £25 plus post and packing.

## Volunteers Sought

The Bugatti Trust would always welcome hearing from anyone interested in helping with archiving and cataloguing.

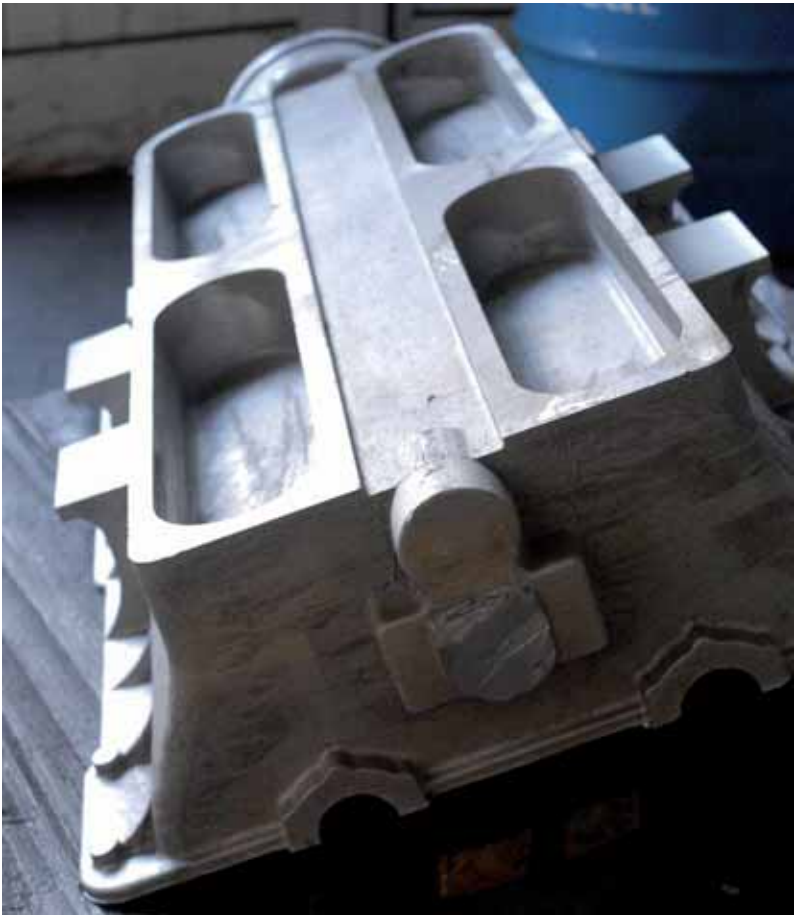
# Aero Engine Display at the Trust

Richard Day

We have now completed the display of the First World War Bugatti/King U16 Aero Engine. The original parts were bequeathed to the Trust by the late Bunny Phillips and mounted on a display stand by Ernie Allen in 2001. In 2006 we set about building a replica crankcase, an expensive project which was partly funded by Jens Hucke to whom we are very grateful indeed. Drawings were prepared, patterns made and the aluminium was cast in a foundry in South Wales.

The seven double bearing caps were then produced and the line boring and other machining was done in Bristol.

The engine has been mounted on a new stand and most recently we have



*Crankcase casting, unmachined.*

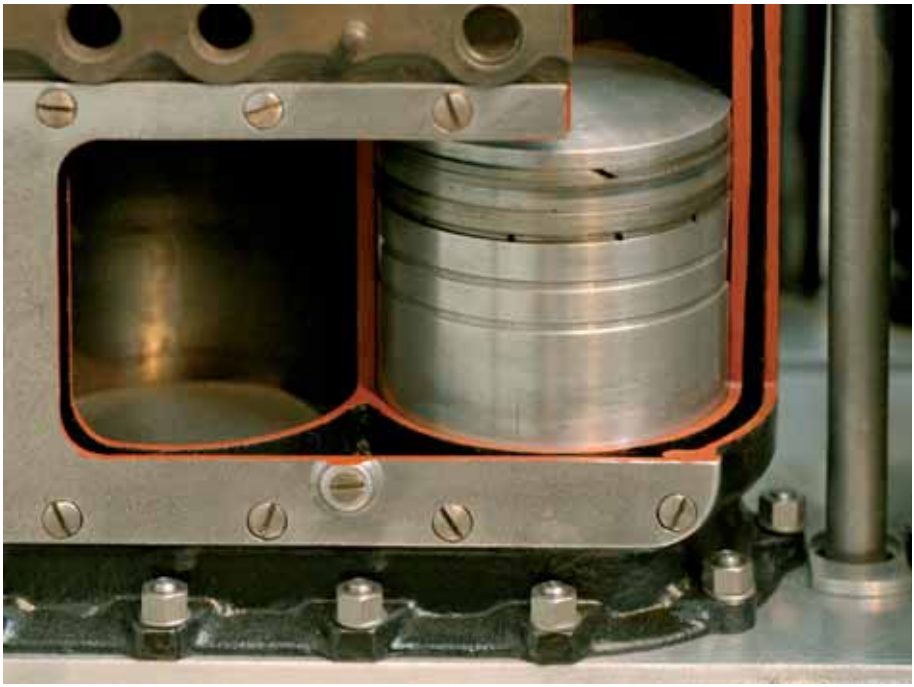
completed the assembly with the prop shaft, cylinder blocks, pistons and rods, cambox, vertical shafts, ventilators and the carburettor, magneto and exhaust stubs.

The 16 cylinder Bugatti aero engine was a modular development of the Type 18 car engine of 1913 (see Newsletters 6, 9, 22 and 23). The project was of very great significance particularly because, from Bugatti's point of view, the prototype was sold to the American government for 60,000 francs and 100,000 dollars were paid for the rights to build 500 engines. Based on the consumer price index this would be equivalent to £1.24m today. This funding came at a critical time. Without it would Bugatti have been in any position to invest in the Molsheim factory in the immediate post war period? Perhaps that beautifully equipped factory would never have existed.

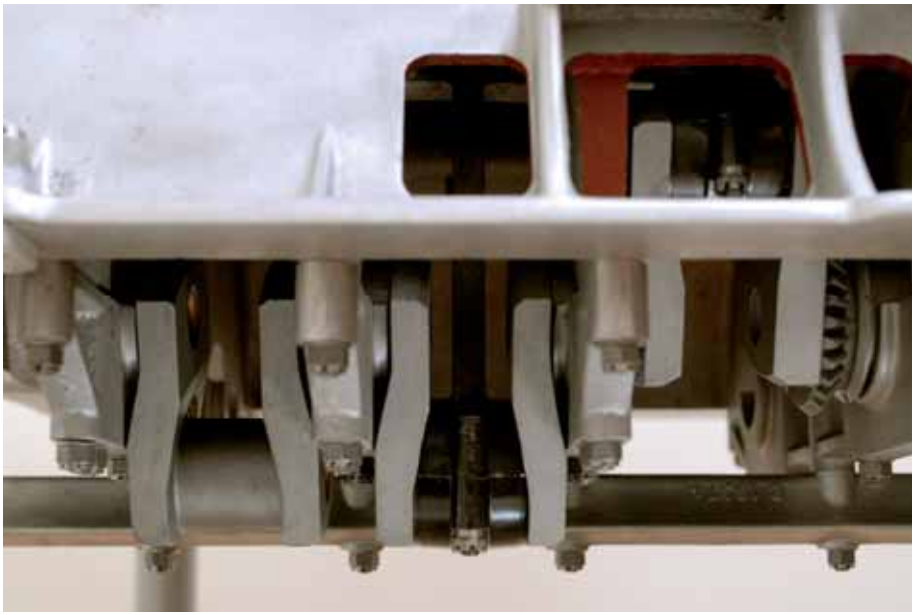
One of the main reasons that the R. C. Bolling Commission's report of August 1917 recommended Bugatti's design to be purchased by the American government was the compact size of the engine. It had a relatively small frontal area by virtue of its 'U' format but it was also significantly shorter than normal. This was achieved, in part, by undercutting the crankshaft webs which resulted in a saving of 120mm (4¾") in the total length. The four cylinders of each block were also remarkably close coupled with only 6mm of iron (and no water) between cylinders on the centreline. We have cut windows in our display engine to show these features.

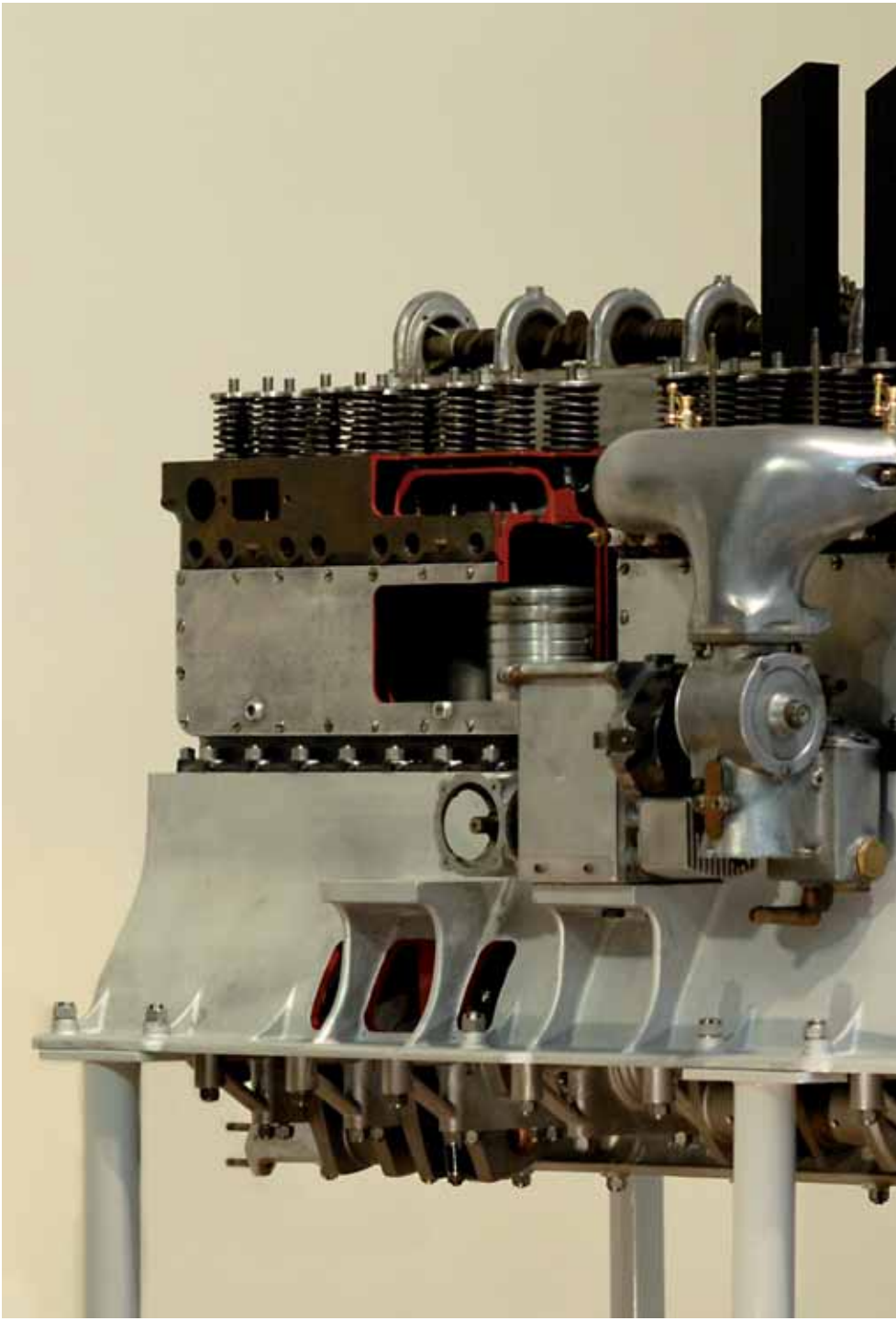
Many of the engine's other features such as the crank/propshaft gearing, the typical Bugatti valve and cam arrangement and, of course, a certain sculptural quality, are all clearly evident. Do come and see it.

*The new crankcase, inverted, with its crankshaft, bearing caps, and central oil gallery.*

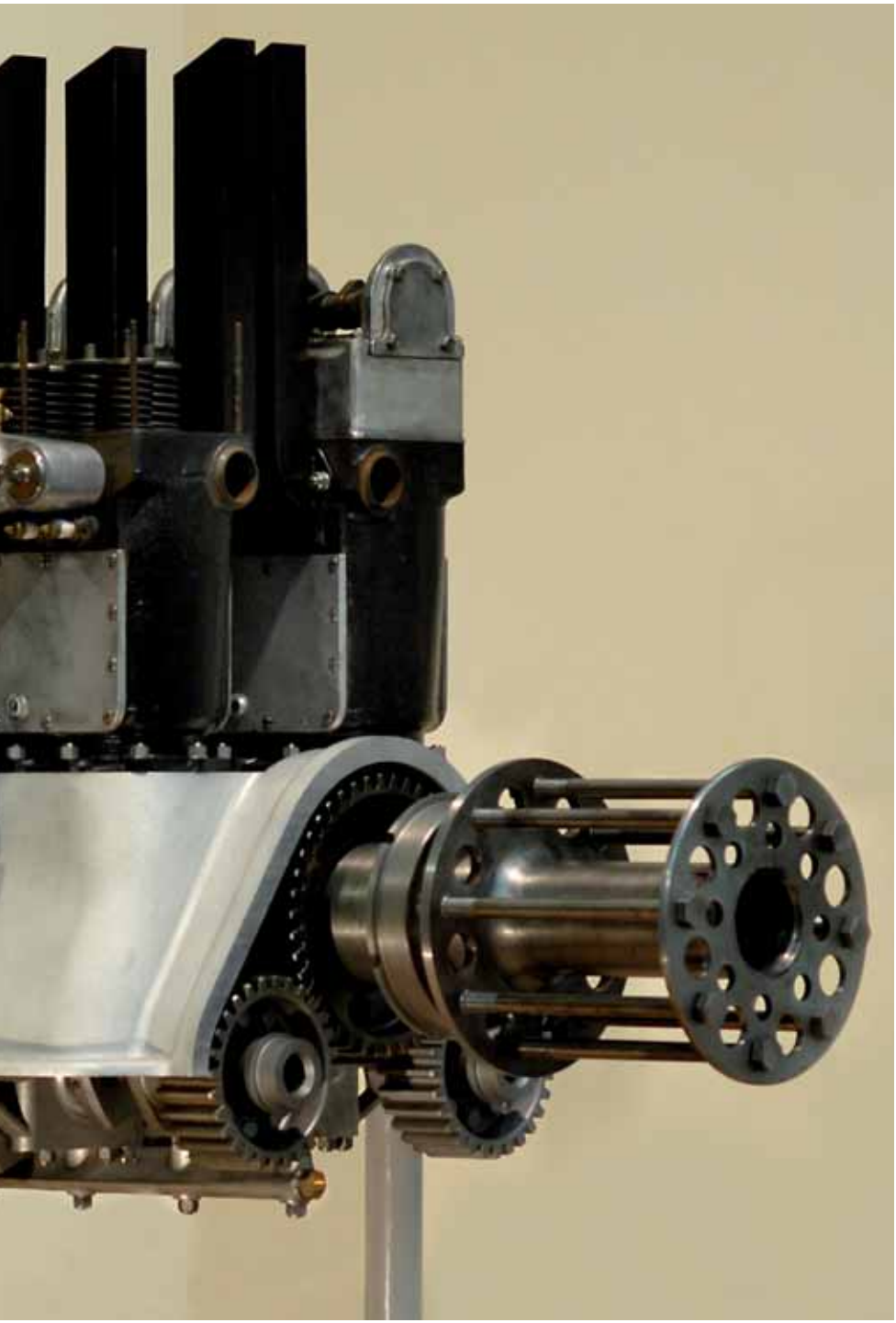


*The display engine is sectioned to show the undercut crankshaft webs and the close coupled cylinders.*





*The completed aero engine*



*display at the Bugatti Trust*

# Douglas Hogg, Coventry University Automotive Design Student

*Inspired by his visit to the Bugatti Trust, Douglas Hogg has linked his final year design project to the concepts which underlie Jean Bugatti's Aerolithe. This is his recent report:*

This is my final year major project. I am designing a super lightweight Bugatti GT car branded 'Aerolithe' for the year 2025, in accordance with Ettore and Jean Bugatti principles of automotive design and the theme of aerodynamic elegance. I am calling it the Aerolithe as I am hoping to imbue it with similar qualities to the original, namely advanced aerodynamics, modern styling, graceful elegance and intelligent engineering.

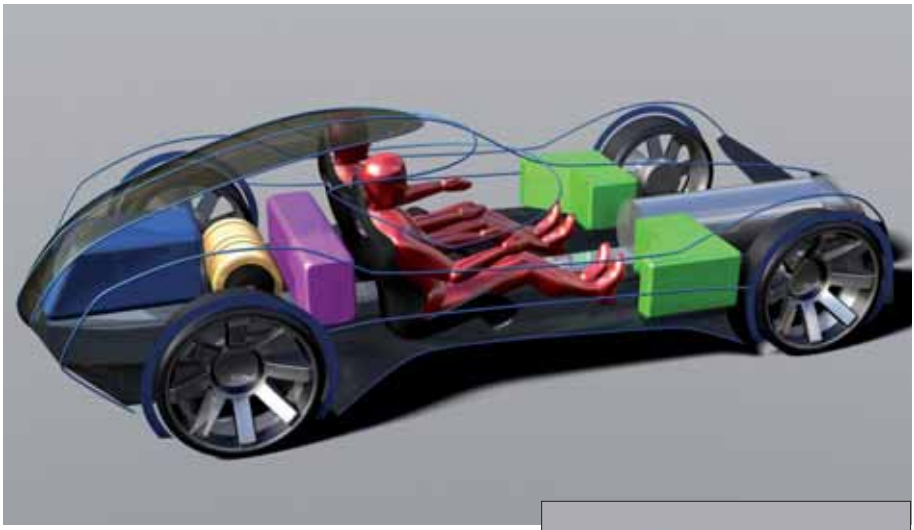
Feedback so far on my project from tutors and industry professionals has been very positive. My interim presentation last week went very well and I received one of the highest marks in the year group – projecting a 'first with honours' classification.

Since we last spoke, the specification and parameters have been sorted and I have worked through the design process to the stage of physical modelling. The clay model in the picture is very much a rough sketch so that I can physically work on the proportions and surfacing to get them nailed, and carry out aerodynamic testing in the smoke tunnel. The clay is to be scanned in a 3d scanner next week so that I can build my final CAD model, using it as a reference to make sure everything is in the right place.

To summarise the specification; the car is a front engined GT with a wrap around windscreen, split centrally like Bugattis of old. Body construction is magnesium alloy and carbon Kevlar composites. The drivetrain is a turbine/electric hybrid, using a microturbine engine to charge a battery array which in turn powers electric

motors on the rear axle. (No physical linkage between the turbine and the wheels, turbine functioning purely as a range extender.) The advantages are chiefly lightweight construction, low fuel consumption with minimal emissions and flexible fuel types. The total weight of the vehicle would theoretically be around 1300kg. The doors are my chief concession to over the top, dramatic show car design – they are a two part split opening canopy that essentially takes away the front section of the cabin, allowing easy access to the interior.

So after the initial concept generation and development stage I worked on throughout January, I have spent the last month on proportion and form trying to get them completely right, as it is fairly essential that my Bugatti looks good. I have tried to avoid retro and create a thoroughly modern design that still captures the feel of the Aerolithe without simply rehashing it.



*Douglas Hogg's unfinished, ¼ scale, clay model*

The next stage that I am just getting into is sorting out the detailing with lights, vents, door handles etc. I am a firm believer in getting the shapes right first, then detailing, as if the basics aren't right there is no way the project can succeed. My approach for the details, as for most of the design, is to do what Jean would do. Keep it simple, intelligent and artistic. Bare metal sculptural forms seem to be the most fitting. Once the exterior is sorted and I have sent it off to be modelled, then I begin the interior design process. Key themes are high quality materials, simplicity and sculptural forms.

My final quarter scale model will be milled in high density foam from my CAD model, then painted at a professional car paint shop. My current opinion is for a metallic mid-grey with a hint of French racing blue. The metal components like the front intake, central strip, exhaust and door handles will be milled from aluminium at a company up in Scotland, provided I don't run out of money. It is important to me that my model looks good as the Coventry degree show is published worldwide, in magazines and on the internet, and people with the power to give me a job will be either attending the show or looking it up online.

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## JRD Tata – a Grateful Bugattiwallah

Hugh Conway

J. R. D. Tata was head of India's largest industrial empire for five decades and a pioneering aviator who founded the international airline Air India.

Born in France in 1904, his father was a first cousin of Jamsedji Tata, a pioneer Indian industrialist. JRD as he was commonly known came to be regarded as one of the key industrial pioneers in modern India. As his mother was French, he spent much of his childhood in France and as a result French was his first language.

Whilst in France he was given the money by his father to buy a 2 litre Grand Prix Bugatti which he used for several years and gained a reputation for speed. He was drafted into the French Army just as he was about to go to Cambridge University, having spent a year at a crammer in London. After completing National Service in France, he returned to Bombay and joined Tata Sons as an unpaid apprentice, then a modest but expanding industrial house.

It would appear that he could often be spotted zooming through the traffic-empty roads of Bombay. Eventually the police also took a fancy to his Bugatti and booked him for a driving offence. But lack of concrete evidence saved him and the police reluctantly let him off after strictures by the court. However the police continued to trouble him so that later he sold it.

At the age of 34 he became Chairman of the Tata Group holding company. Over the next five decades whilst under his Chairmanship the number of companies in the group grew from 15 to over 100.

He was inspired early in his life by the aviation pioneer Louis Blériot, and took to flying. In 1929 he received the first

pilot's licence issued in India. He came to be known as the father of Indian civil aviation after founding Tata Airlines, India's first commercial airline in 1932. In 1946 it became Air India, now India's national airline.

In 1944 JRD flirted briefly with the anti-British independence movement and even declined a knighthood. But he soon developed ideological differences with his friend Jawaharlal Nehru over his socialist policies and the nationalization of the airline he had founded.

Reproduced below from the archives of the Tata Group is an excited letter from a young JRD writing to his father from the Hotel Graziella, Juan le Pins to thank him for the money to buy his Bugatti.

Hotel Graziella
Juan les Pins

25 Feb. 1926

Dear Papa

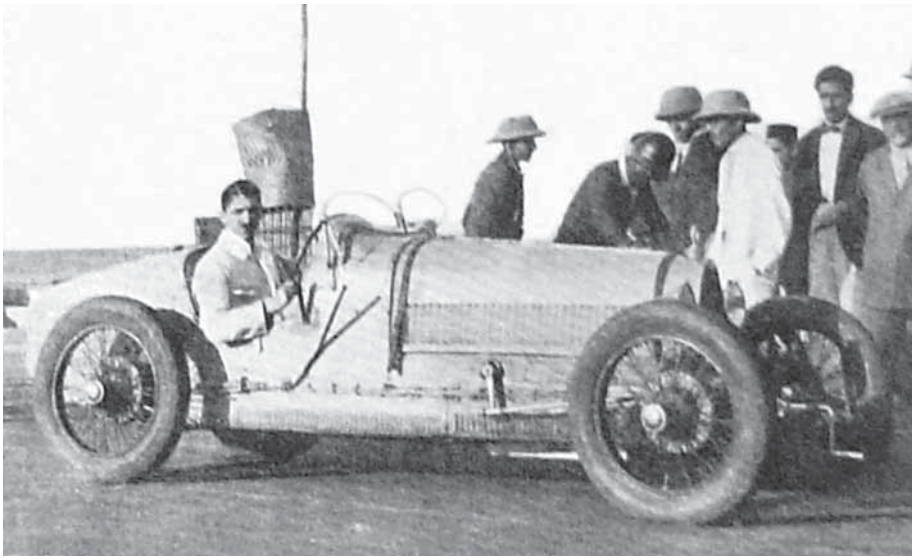
First of all excuse me please for writing to you with a pencil, but my fountain pen is not working for the moment and as I am in pyjamas I must perforce stay in here and use a pencil as I intend finishing this letter. Tomorrow morning I am afraid it will be the same then.

Papa, Papa, thank you! Thank you so much for your wire which gave me the most acutely joyful shock in my life! It made me all the more happy as I had resigned myself to not having a Bugatti now. So imagine what I felt, when on my arrival here I found the following wire: "from Bombay buy Bugatti", I couldn't believe my eyes and I think I was hopelessly fooled that evening and night. I jumped about and danced like a madman. I did not want to lose a single moment and didn't know what to do! I thought of phoning up to Paris but who to? It was a Saturday. I thought even among other things of taking the first train back myself. I must have schemed and schemed and dreamt of my dream car very late in the night!

Next morning, that is Sunday I was afraid to go and see on my table whether that wire had not been a child of my overheated mind or imagination. Thank God no! So I sat down and wrote four wires and one letter. One wire to Bugatti asking them to keep for me the car I had seen before leaving if it was not sold yet. I sent the other wire to Max who having been with me in all my negotiations with Bugatti knew all about the question. The letter was also to him, asking him to get me a car as soon as possible and to wire to me when it would be ready.

Day before yesterday I got his reply saying that the car would be ready 11 days later. He phoned me up the following day asking for details. Incidentally I heard him as if he was only a few feet away.

He asked me to send 3000Fr for a deposit. I understand that these people won't take a chance this time! Well, the position is this now, that I am writing about a letter a day to Max, that my impatience is almost feverish, and that most of all my heart is swollen with gratitude and thanks for you. I don't know what made you so happily change your mind and say yes, but I suppose it was my letter which persuaded you that swank was not the reason I wanted the Bugatti for. Anyway you have made me absurdly glad and happy. You wouldn't be sorry if you knew how much!



*Speed Trials, World Parade Bombay. Fastest time of the day by JRD Tata in his 2000cc Bugatti (Autocar 21st January 1927)*

The car will be ready probably Thursday next. So I will leave here Wednesday use the car in or around Paris for three days to run it in and get used to it and will start back for Juan les Pins on Sunday, Hurrah!

Meanwhile, after spending four days here I have realised how useful a car is here. For trams or autocars are so slow and irregular for travelling about the coast, Cannes, Antibes, Nice etc. The Bugatti will be paradise … I will not say anymore about the Bugatti as your telegram has settled all about that and so splendidly to! You have actually ordered me to buy it!

It is on my arrival back at the hotel that I found that blessed telegram – Oo-Lala! Thank you again…! Of course, Papa 21000Fr are more than enough for 3 months. You have allowed me 3000Fr a month! It is true that I will probably overreach that mark during my stay here. But when I am back in the army I will spend much less. But these 21000Fr are going to be eaten up by the Bugatti and I hope you have arranged to send me more. 5000Fr more for the Bugatti and a few thousand more for living on.

Today is Darab's birthday. I have sent yesterday a wire to wish him and Jimmy many happy returns of the day, also thanking you a 1000000 times for the car.

I will stop now, again excusing myself for using a pencil. Good bye, Papa dear, I hope you are all very well and happy, as happy as I am. Thanking you again with all my heart, I send you all my most loving kisses.

Your grateful Bugattiwallah Johnny

*Source: Tata Archive*

# Flat Out

## Back to the Road and Track

*The following piece is from chapter 5 of George Eyston's autobiography, 'Flat Out', which was first published in 1933 and full of period charm. He describes his race in the Grand Prix de Boulogne in August 1926 with his Type 39 Bugatti.*

There was a little straight-eight unsupercharged Bugatti car which I admired very much. I had seen it perform at Brooklands, but it did not seem to be very speedy, in fact, 95 m.p.h. seemed the maximum. I did so want to have a faster car than I had been able to obtain hitherto for the Grand Prix des Voitures Légères at Boulogne, on the course with which I was already quite familiar. It would be such a pleasure and relief to have a car which would perform reasonably well without effort. I went to Malcolm Campbell, who owned this car, and found that he would part with it. It was a very special 1,500 c.c. racing model which had been built specifically for the Monza Grand Prix, and had been driven successfully by the Italian Bugatti ace, Costantini.

So I took the plunge, and spent a week going over everything with two valuable assistants, Papworth and Charlie, and with their help and that of a carburettor expert got plenty of life from the engine. The car now had a very useful acceleration and ran perfectly at all speeds.

One day I took out the back squab, and here sure enough was the great Costantini's name pencilled on one of the wooden uprights. It thrilled me beyond words. Here really was a famous little car, and I had now no excuse if it did not carry me well.

It was now due to be shipped to Boulogne. There I found I was up against very severe competition. Parry Thomas had his famous Thomas Special 1,500 c.c. Straight Eight of the latest type, supercharged, and then there was Miss Ivy Cummings on the new 4-cylinder 1,500 c.c. Bugatti, while one of the famous Talbot Darracqs had been brought from the works in Paris by Moriceau, the chief *meter au point* and works driver, for Mr Emerich, from Czechoslovakia, to try his luck. This car was one of the three which the previous year carried all before them in all the Grand Prix races of importance, since at that time 1,500 c.c. was the limiting capacity allowed for these events. So the race did not look a gift by any means, and in buying this very expensive car I had taken on a complete gamble.

But the Thomas Special, although over in France in good time, was eventually withdrawn through irritating teething troubles. Malcolm Campbell's new Bugatti straight from the factory threw a connecting rod in its first trip on the last day of practice, after putting up a cracking speed, which was hard luck on the driver. All the other cars seemed to be running extremely well.

The race started in brilliant sunshine on a piping hot day in August. I was drawn next to Miss Cummings, and at the start we both accelerated away in true sprint fashion, just as if the race were only a mile. Both of us were anxious to be first at the hairpin a kilometre down the road. Somehow I won by about a length, and swung round, the Talbot now close on our heels, while the whole howling mob behind stirred up the dusty road. Very soon after the hairpin there were sharp bends to the right and left. A glance over my shoulder for a second to see how the field lay very nearly caused my undoing.

I turned forward to see that I running into a bend at an impossible speed. I could not think of checking much with all that mob a few feet behind, so take it somehow or other I must! The tyres simply screeched as I wrenched the car round. I kept it on the road and I had gained a yard or two into the bargain! But although for the time being I was in the lead, trouble was to come. The next corner was a bad one. I had to let go the throttle and steady up the car. On opening out, the engine began missing badly. One by one the cars behind me shot past. The only thing to do was to pull up quickly and find the cause of all this. Keeping the engine running, I flung open the bonnet and fished for my plug tester. It was broken! It took me a little time to go over the wiring system and change a couple of plugs which had never been firing correctly since the start. And by this time I was left all on my own; the exhausts were dying away in the distance. Before I went off I thought I would make sure of things this time, and I gave everything one more look over.

She started up immediately, and I tore off determined that I would give the car no rest until I caught up with the leaders, and I calculated that it would take me at least 50 miles to do it. On my second lap the first man I came on was Emerich, in the Talbot. He was in a deep hollow, evidently having run off the road. He had a friendly woodcutter pushing frantically, and the car was just about to start.

I do not think he expected any car on the spot at the moment to witness the outside assistance which I believe we were not supposed to have! But what of that in such a desolate spot? I'm sure none of us, bar an official, would have said a word. Good luck to him if he could get started up, as there was an appreciable rise just at that point.

I dashed past, swaying from side to side on the switchback road through the woods. The road was narrow and had a very bad surface. It was simply a connecting link between to main arteries leading from Boulogne to Lille and Paris respectively. I was as yet a good 15 miles from the grandstands and pits.

I began little by little to pick up the stragglers. I was enjoying myself hugely. The car was going like a dream. It was perfectly balanced, steering beautifully, and with an engine running like an electric motor. In the whole of my experience I have never had such a wonderful ride. Naturally, the speed was not to be compared with some of the cars I have driven since, but the perfect running was most pleasing.

I saw the Talbot in at the pits being taken on by Moriceau. It was just in the act of dashing off, presumably to catch me, as I was now just ahead of it and on my third lap. On the long straight stretch I saw my brother's Aston Martin, fitted with the supercharged Anzani engine I had used in the boat, broken down by the wayside. He had passed the pits third on the first time round just behind the Talbot, which was not a bad show for his first road race.

My pits signalled that I was now lying second, so presumably Ivy Cummings was still going great guns. I did not know how far she was ahead. I had passed a large number of the smaller cars, and it was now time that I should be closing up with whoever was leading, for I had done over 60 miles since my enforced stop.

Just as I was descending a steep winding hill I saw a blue Bugatti piled up against a tree. As the bends on this hill were somewhat tricky and I was trying to make up time, I did not have a chance to see the number of the car. But when I passed the pits again I was signalled in no uncertain manner that I was lying first in the race. So it dawned on me that this must be the leading car crashed, the car whose girl driver had put up such an epic performance. I thought as I sped along that this was tough luck indeed, for she had actually led the race for nearly half the distance.

In a couple of laps, which was about 45 miles, I had obtained a ten minutes' lead on the remainder of the field.

Just then I heard a tinkling below, close to the back axle. Had I better investigate at once or chance it? I thought it best to stop, and did so on the brow of a hill, so that if the engine failed to start on the handle I could run down. I found one of the tie rods on the back axle had broken and was trailing. It was bumping up against the undershield when the car was in motion. There was nothing I could do to repair it on the road, but knowing the state of affairs I could now save the car a bit on the worst bumps, of which there were a good many.

My engine started up on the first pull of the handle, and I made off before the plugs could oil up. On the next round I glanced at the signal board in my pit and saw I had not lost much by this second stop, and so far I had matters my own way.

The long leg of the course running away from Boulogne was through a forest, and the road a veritable switchback, first dropping into a deep trough and then ascending over a blind crest and dropping down again, and so on. The car would gather tremendous speed on the descents and would then shoot up on to the next brow, going "over the top" in fine style. It was most exhilarating.

Just where the road entered the forest round a blind curve, an ambulance was stationed in front of a little inn. Two red-cross nurses sat on a bench in front of the ambulance watching the race. They waved to me each time I passed, and of course I gave them a cheery reply. But it was a silly thing to do as it turned out, for I was at that moment more interested in the girls than the driving, and I very nearly went off the road in consequence! But as it happened the race ended without any further event, and I had the satisfaction of winning my first road race.


*George Eyston, winner of the Grand prix de Boulogne in 1926*

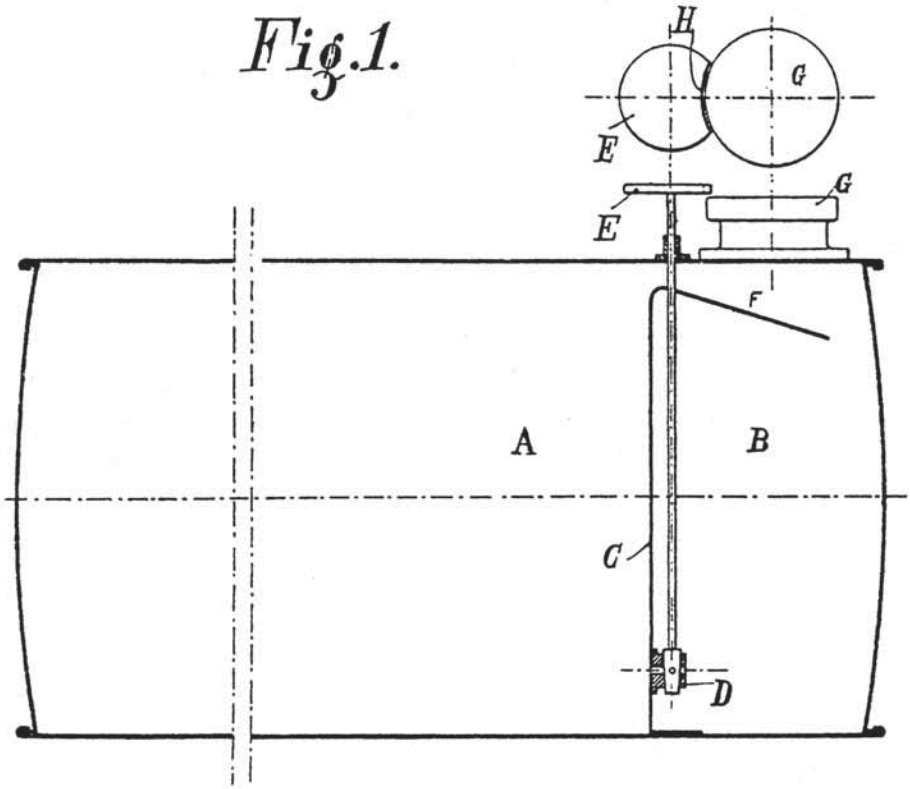
# An Ettore Bugatti Patent for a Petrol Tank with a Built-in Reserve

Richard Day

French Patent Number 541.755
sought in Paris on 28 September 1921
*'Réservoir double pour automobiles'*

This simple device consists of a partition, 'C' within the petrol tank to create the main tank, 'A', and a reserve, 'B'. The filler neck is located above the reserve section so that it is always filled first when refuelling. Once 'B' is full the main tank fills because the partition is not full height (as in the Titanic). When you run out of petrol from the main tank you can open a tap, 'D', with a knob, 'E', to allow the reserve petrol through. There is a simple interlock at 'H' so that you are prevented from forgetting to close the tap when you replace the filler cap 'G'.

A version of this elegant arrangement was used on the Type 28 and some of the later luxury cars – Types 41, 46 and 50. It was a great improvement on the usual expedient of strapping a spare petrol can onto the running board.



## Bugatti Reverse Engineering latest news

Stuart Brown of 3d Engineers develops further applications for his innovative and sophisticated three dimensional computer aided design software technique.

As a result of his success he has been commissioned to undertake work on several other projects – not just automotive – and has lectured on his techniques to Derby University engineering students.

Whilst studying engineering, Stuart undertook a detailed study of one of the most successful and iconic vintage racing cars, using the latest sophisticated 3D CAD (three dimensional computer aided design) software. He has demonstrated his project at several seminars at the Bugatti Trust and elsewhere.

Drawings of the many hundreds of parts needed to create the Type 35 Grand Prix Bugatti were scanned and converted to three dimensional images using SolidWorks® 3D CAD software. The components were then built up into assemblies to make up the complete car.

Hugh Conway, the Trust Chairman said, "The Trust in its commitment to the study of the works of Ettore Bugatti offers encouragement to young people to take up careers in engineering and design. CAD software is an integral part of many university engineering and design curricula.

The successful project to create and analyse the Grand Prix Bugatti demonstrates the importance of the creative and individual approach of Ettore Bugatti and provides a bridge to the modern computer design processes. We are delighted that the project proved successful and has opened the door for Stuart to new opportunities."

For further information on what Reverse Engineering can offer and more details of the Bugatti project visit his web site at http://www.3dengineers.co.uk

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## Correspondence

From Saleem Ahmadullah, Mumbai

A friend of mine is friendly with the erstwhile ruling family of a small state, Kalahandi. Today it is in Orissa, which now is one of the Indian states and is located in eastern India next to the Bay of Bengal. My friend sent me this picture with a cryptic caption which seems to read as, "Bugatti 1934* the last series 8 cyl supercharged. Special body by Villers, presumably de Villers."

I understand that the car was exported from India sometime in the 1960s.

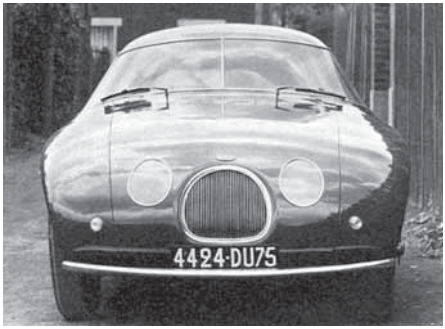
I trust that this will be of some interest and I wonder whether the present whereabouts of the car are known.

I have recently met somebody who is a sort of an old car collector and also collects photographs and details of

* Note: The date could be 1939. The caption has been scribbled on to the back of the photograph and is not clearly decipherable.

where cars are all over India. He says that in addition to V. J. Mallya's Bugatti which, as you know, is not running, there are two more in dismantled condition in India. I shall try and get the details of both these cars and let you have them.

*Ed. Note: James Brown, an American sculptor living in Paris made fibreglass bodies for two cars, 57645 and 57723, and exhibited them at the Salon de l'Automobile in 1955. One of them was later purchased by Peter Borstel who re-bodied it as an Aerolithe replica the other remains in a museum in Brussels.*

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Department of Aeronautical and Automotive Engineering
Stewart Miller Building
Loughborough University Leicestershire LE11 3TU UK
Department Tel: +454 (0)01509 227200 Department Fax: +44 (0) 1509 227275

**Richard Day**
**Bugatti Trust**
**Prescott Hill**
**Gotherington**
**Cheltenham**
**Gloucestershire**
**GL52 9RD**

Loughborough University

RE: Industrial Lecture 24th February 2010.

Dear Richard

Thank you once again, for delivering this extremely valuable lecture, to our first year Automotive Engineering students. Feedback from the students is extremely positive and further re-enforces the significance of this lecture.

I hope you are able to visit us once again next year, as one of our key speakers on this programme.

Very best regards

Scot Layton
University Teacher
Aeronautical and Automotive Engineering
Stewart Miller Building
Loughborough University

Tel 01509 227225

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


Prescott Hill, Gotherington, Cheltenham,
Gloucestershire GL52 9RD, UK
Tel +44 (0)1242 677201 • Fax +44(0)1242 674191
E: info@bugatti-trust.co.uk
www.bugatti-trust.co.uk

## NEW FORM please read carefully!

### APPLICATION/RENEWAL FOR MEMBERSHIP 2010

**Please note that as from 2010 membership will begin on 1st January and end on 31st December**

I hereby apply to become a member of the Bugatti Trust, formally known as Bugatti Molsheim Limited. I acknowledge that as a member I will be liable to contribute to such a company a sum of not exceeding UKP £1 (One pound sterling) in the event that the company is wound up and cannot meet its liabilities.

**Membership: a. Single b. Life**

**a. Single membership UK & Overseas £35 per year**

**As from 1st January 2010 Single Membership will be £35 per year for UK and OVERSEAS**
**This applies to anyone joining or renewing after 31st October 2009**

**b. Single Life Membership £1000 (minimum donation)**

**UK tax payers only: Why not GIFT AID your subscription, which will benefit the Bugatti Trust? If you have not done so already do fill in a Gift Aid Form – it need only be filled in once.**
**Please request a form from the Trust if you require one or download from the website.**

**Due to high bank charges the Bugatti Trust does not accept foreign cheques or currency.**

*I enclose a cheque/*I wish this payment to be charged to my credit card (*please delete as necessary)

Card Number ……/……/……/…… Start Date ……/……. Expiry Date ……../……..

Issue No…….. (if applicable) Security Code: ……. (last 3 digits reverse of card)

Name on Card …… Signature of card holder ……..

**PLEASE COMPLETE THIS SECTION IN BLOCK CAPITALS**

Title …… Full Name ……

Address ……

…… Post Code …… Country ……

Tel (Home) …… Tel (Business) ……

Mobile …… Fax …… e: ……..

Applicant's signature …… Date ……

Please sign and return the whole form to The Secretary at the above address.

Founder : H G Conway CBE

Bugatti Molsheim Ltd. Reg. Office as above. Company Regn. No. 2180021. Charity Regn. No. 298099 BTMF/2010

# Items for sale at the Bugatti Trust

## BOOKS

| | |
|---|---|
| ***Bugatti – Notice de Conduite et Entretien Chassis Type 40 and Chassis Type 38 1926-27*** **together with English translation [text only]** | **£20 plus post and packing**<br>**UK £2.00**<br>**Europe £3.00**<br>**Rest of World £5.00** |
| ***Grand Prix Bugatti, 3rd Edition by H G Conway*** | **£45 plus post and packing**<br>**UK £8**<br>**Europe £9**<br>**Rest of World £18** |
| ***Bugatti T57S by Bernhard Simon & Julius Kruta*** | **£85 plus post and packing**<br>**UK £12**<br>**Europe £17**<br>**Rest of World £28** |
| ***Full Throttle – Bugatti by Tracy Maurer (Children's book)*** | **£11.00 plus post and packing**<br>**Postage as for DVDs below** |
| ***Bugatti – From Milan to Molsheim*** ***Uwe Hucke and Julius Kruta*** **[only 2 copies left]** | **£250.00 – collection from Bugatti Trust** |

## DVDs

| | |
|---|---|
| ***Bugatti DVD by H G Conway – Part 1*** **(Running time 70 minutes)** **PAL/NTSC, both formats available (please state which you require)** | **£19.99 plus post and packing**<br>**UK £2.00**<br>**Europe £3.00**<br>**Rest of World £5.00** |
| ***NEW! Bugatti DVD by H G Conway – Part 2*** **(Running time 1 hour 10 minutes)** **PAL/NTSC please state which you require** | **£19.99 plus post and packing as above** |
| ***Special Offer BUY Part 1 & 2 together and save £5*** | **£35 plus post and packing as above** |
| ***Raglan avec Elégance*** **Talk given to the Bugatti Trust Members on 18 January 2009 by the late Lord Raglan** | **£12.99 plus post and packing as above** |

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

Any of the above can be obtained direct from the Bugatti Trust by telephoning +44 (0)1242 677201 during office hours, or by emailing to info@bugatti-trust.co.uk Please also refer to our web site for other information on items for sale: www.bugatti-trust.co.uk