

Featured Engine No. 43

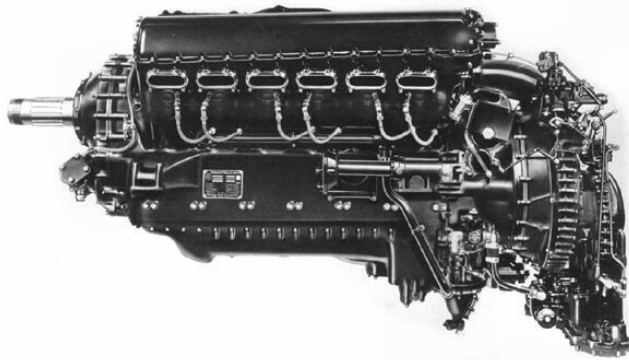
by Kim Siddorn

Rolls-Royce "R" engine

Several people were very kind about my presentation about Roll-Royce piston aero engines at the April club night, so I thought I'd split the text into several parts so that all our members can see it – Ed.

The Schneider Trophy seaplane races gave aircraft and aero engine manufacturers an opportunity to build aero engines of particularly high horsepower, although they only had to stay together long enough to win. A 900bhp Napier Lion W12 "broad arrow" engine had powered the Supermarine S5 with which Britain won the 1927 race at 281 miles per hour. Reginald Mitchell of Supermarine thought the engine had reached the pinnacle of development, as it had direct drive to the prop. The delicate little seaplane needed something altogether more powerful and Mitchell approached Henry Royce directly to see if he could use the new "R" engine then being developed as a private venture for racing. The airframe was lengthened, strengthened and modified and the 37 litre engine was fitted. It had shown 2,800 bhp on test and ran on a chemist's nightmare of some petrol and a lot of very noxious – and excruciatingly flammable – chemicals!

The S6 – referred to at the time as " ... a very large engine hotly pursued by the remnants of an aeroplane" - won the Schneider Trophy in both 1929 and 1931. It established a new world record of 400mph and was used in a succession of land, air and water record breakers in the 1930's.



Just 19 engines were built and many early engines never left the Rolls-Royce test shop. They led a brief and splendid existence & went from one glory to another until they expired. A few still exist around the world – who, after all, would scrap a Rolls-Royce racing aero engine? The one shown above is a factory photo of the engine (serial number R27) that won the Schneider Trophy in '31. It went on to be one of TWO "R's" used in Capt George Eyston's 7 ton, eight wheeled record breaking car "Thunderbolt" in '37 & '38. It was producing 2,530bhp on the record breaking run but had previously been tested at 2,783bhp on test. The other "Thunderbolt" engine is in the RAF museum at Hendon, R37 from Campbell's K4 incarnation of "Bluebird" is at Filching Manor Motor Museum & R27 can still be seen on display at the Science Museum in London.

The "R" was developed from the Buzzard but actually bore little resemblance to its venerable ancestor. It has its capacity & a few other features in common with the latter Griffon.

Rolls-Royce development policy was pretty empiric. An engine was built and run over a increasing number of hours at increasing load until something broke. This was modified – possibly several times – until it was robust enough to give no trouble. The engine would continue to be stressed for longer and longer periods until it was felt that a Type Test could be performed. A BHP figure was set and



the engine run through various evolutions of boost and then run at a sustainable output for a given number of hours. This became the Rated BHP for a production engine resulting from the development. The R caused no end of difficulties on test and the experience gained in development techniques was to prove extremely valuable in Merlin development. It pointed a clear path to the future, but it had a very short operating life and relied on costly and highly specialized fuels. Rolls-Royce now faced the challenge of building engines of similar power that could achieve long life while burning conventional aviation fuel.

By 1932 it was becoming apparent to Rolls-Royce that the Kestrel was coming towards the end of its working life, even though it was then their best-selling engine. A decision was made by Sir Henry Royce to develop a new engine, the PV12. (Private Venture, a development initially entirely funded by Rolls-Royce) It would follow the V12 configuration and geared supercharger of its predecessors, but was of 27 litres swept volume. It was anticipated initially that this engine would be able to reliably deliver around 1,000bhp and, indeed, the Mark II was easily producing 1,080bhp in early marks of Hurricanes. Steady and single-minded development brought this to 2,600bhp in the Mark 130.

When in October 1933 the Air Ministry agreed to finance the development, it was named "Merlin" in the company's birds of prey series of military engines. It was a most fortuitous name for – as things turned out – this Merlin truly was a wizard.

Calendar of Events

Key. Event – E. Club night - CN

Info, sort outs & crank ups, phone 01749 342671

Oct 9th **CN. Skittles & Supper Evening**, South Parade Club, Frome. Phone Diane Davis 01373 464982

Oct 16th **E. Vintage Sort Out** at Cranmore station yard. Phone Brian Baker 01749 342671

Oct 17th **E. Robert's Open Day.**

Oct 25th **CN.** Guest Speaker, Roger Fowler.

The Burnham-On-Sea rescue hover craft

Nov 13th **E. Enstone Sort Out**, Oxfordshire

Nov 29th **CN.** Guest Speaker:- Martin Phippard.

Carara Marble Extraction, Italy. Illustrated

Dec 5th **E. Crank up** at Nunney Catch 01749 342671

Dec 27th **E. Mince Pie Crankup**:- Court Hotel

Dates and venues may change. Check before driving!

Chairman's report *(printed as received)*

By Brian Baker

The clubs monthly meeting at the Court Hotel on August 23rd had "local legend" Henry Body give a talk on his motorcycle racing career over a period of 60 years. Harry excelled at trials, grass track, solo and sidecar, scrambling and finally sprinting. Many of the machines used at the different events were made by Henry himself. He still competes at sprinting, holding many world records for hurtling down a track in a straight line on a 1928 Douglas twin cylinder motorcycle at well over 100 m.p.h. Henry is handicapped as he only has sight in one eye, an injury sustained when he was young, but this has not prevented him winning most of the competitions he has entered. Only this week he was at a National Sprint meeting at Wroughton where he won once again, well done Henry. His talk was very entertaining and interesting to members like myself with a motorcycling background, I have in the past raced against Henry's brother Malcolm, but not against Henry. (just as well as I would probably have lost). Henry declined any payment for entertaining us, he said clubs must help each other out, keep it in club funds. He is indeed an enthusiast and a gentleman. Harry, from the club and myself, a very big thank you.

Don't forget the club Sortout at Cranmore Railway Station on Saturday October 16th. This is your chance to get rid of your surplus bit and pieces and turn them into hard cash, also the chance to find that elusive part you have been searching for. Set up from 8am onwards, the café will be open for hot food and drinks.

Social news

The club would like to say get well soon to Glen James of Langport who has a problem with his legs which has confined him to a wheel chair. Glen is a regular visitor to our events and we all hope you will soon be back on your feet and attending our events. The club would like to say thank you to Michael and Eileen Jennings who live at Templecloud near Bristol who went to Langport and

collected Glen and his wheelchair and took him to our crank-up at Haynes Motor Museum and stayed with him so he could view the engines and chat to old friends and members present. After he had stayed long enough they then took him home again. Oliver likes to talk to Glen because like Oliver he is a guitarist, and they like to chat about guitars. This brilliant act of kindness by Michael and Eileen shows the camaraderie that exists among our members. Michael and Eileen, from me personally, thank you very much – **Brian Baker.**

Earwig hears the committee is hard at work putting together next year's programme of events. Also that here will be some professional skittlers amongst the crowd in October, so Wessex teams will need to sharpen up.

Welcome to new club members

Early Days at Royce Cars

By Albert Crittall

On the 1st of April 1904 there emerged from the workshop of Royce Ltd the first car to be built there, Henry Royce a brilliant designer and engineer drove it. The car was powered by a small two cylinder experimental engine that was completely hand built and much of the work was done by Royce himself who was skilled in the use of tools.

Royce Ltd was an engineering firm that specialised on producing high quality electric motors and cranes, but very stiff and sometimes unfair competition from Germany and America and much underhand dealing began to undercut the price of motors and cranes, both Germany and America had the capacity to produce vast quantities of these articles although they were not of the same quality as the Royce products they were a lot cheaper. Royce refused to lower the quality of his products and his stance created some difficulty in the day to day running of the factory. In order to keep his highly skilled work force together, he turned his undoubted skill into producing cars.

Cars at that time were in their infancy and in many cases were very crude. He was convinced that cars built to a high standard regardless of price had a promising future but his partner A E Claremont was not at all enthusiastic, always complaining that the cars were costing "five guineas an ounce"! It was decided to build three cars, the construction began in late 1903 and the first car was ready for the road on the 1st April 1904. Royce was very sensitive about his product and as the cars of that time provided much material for Music Hall comedians who compared them with "An Avalanche of Tea Trays" and the date of April 1st would have produced much ridicule. Therefore, Henry Royce had the date suppressed in the factory records and was not revealed until some years later. However, Royce need not have worried and when it appeared his first car was a masterpiece of engineering and although it looked rather crude judging by present day standards, it was a true ancestor of all the unrivalled Rolls Royce cars that have been built since.

The first little 10hp car was without equal in any other car of that period and Royce used it as personal transport for many years. Subsequently, it was used as a works transport, running between the works and the L.M.S. railway station at Derby. It was finally retired in 1923 and today it is still in good working order.

The second experimental car was taken over by A E Claremont, Royce's partner, only on the condition that it was used as a guinea pig. He was never very keen on Royce building cars and he even fixed a notice on the dash board of his car that said "If this car breaks down, don't ask silly questions". He also took to booking a hansom cab to follow him in case the car broke down.

A newly appointed Director of Royce Ltd named Henry Edmunds took the third car, he was a very experienced motorist and he also was an influential figure in motoring circles. He soon realised that the car was something very exceptional and after much delicate negotiation he arranged for the Hon. C.S Rolls, at that time the agent for continental cars sold in Britain, to meet Royce and try out the car. Rolls was immediately impressed by the cars performance. He also recognised that Royce was an exceptionally gifted engineer and a strong bond of friendship developed between them. The eventual outcome of the meeting was an amalgamation of the Rolls and Royce companies to form Rolls-Royce Ltd and to produce the cars that Royce designed.

A few technical details of the car might be of interest to car owning members. Bore 95mm x127 stroke, cast aluminium crank case, iron cylinders cast in Royce's own foundry. A two throw, nickel steel, three bearing crankshaft. An unusual feature of the crankshaft was bolted on weights, hand selected to improve dynamic balance. The engine had side exhaust and overhead valves. Royce's own design of carburettor was fitted with an expanding valve and the butterfly valve was controlled by a hand-set governor. The ignition system was by high and low commutators and trembler coils. The first engine was completed in 1903 and was bench tested by being coupled to a Royce designed dynamo where its efficiency was measured electrically. A typical test report read "Load 30 Amps @ 120 Volts for four hours, fuel 2 gallons at a cost of 2/6d per gallon which equals 1/7d per kilowatt hour". This compares favourably with some of today's engines. Finally, the 1904 car weighed ten and three quarters of a hundred weight. The car sold complete for £395.00

Longstock Rally held by The Upper Test Valley By Robin Lambert

Another excellent weekend (11/12th Sept) took place here with just a little shower of rain on Saturday morning it did nothing to deter what was on offer. I always feel sorry for the organisers who have to decide the field layout as each year the show rotates around several different fields at the landowners request and from past experience it must

be very difficult to get things right and would seem like a new venue every year. Engine stewards Alan Vickery & Ray Bassett placed everyone neatly behind a triple roped engine line and you may think that this would be a hazard for exhibitors to climb through but not here as every 5th engine in the line had a little neat wooden gate to access the main area, this must have been a nightmare for the fence erectors to install but it was a very nice touch. Alan told me he had 56 engines on display with all the usual makes were represented and quite a few were generating including our Stuart, people are still finding new exhibits, one in particular was a nice twin cylinder Ruston & Hornsby diesel gen set that was once a hospital standby engine in case the mains power failed and it only had 4 hours running time on its clock so virtually a brand new vintage engine.

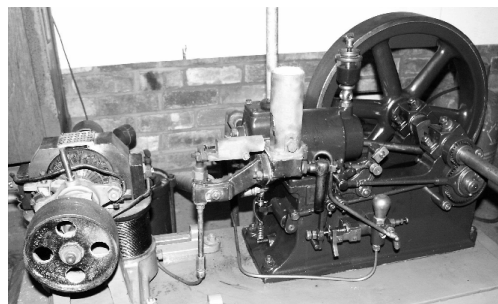
Around 20 Wessex members were in attendance and it was nice to see them chatting to the public and explaining what their exhibits were all about. Our vice chairman Eric had a lengthy discussion with a chap that worked in Europe on an eco project and I am sure he went away much the wiser for Eric's information.

I had a chat with a man who up until last week had an identical engine to our Stuart that was on the same WD trailer as well and he has now put them in a container along with some tractors and set them off to Australia, but there is a twist to all this as he had suffered a stroke and could not manage them any more and had given them to his brother in law for his kindness to him, what a nice gesture.

I enjoyed the stall section, it was made up of all what we find interesting and by the look of things many items were finding their way back to the engine line so I am sure there were bargains to be had, I was told the stall holders don't pay for their pitch but are asked for a donation.

The cars, bikes and commercials were well supported on Sunday with Saturday looking a bit on the short side and I must say that the fish and chips van did a great meal all be it a bit on the expensive side it was cooked to order with generous portions all wrapped in a double insulated bag.

The vintage tractors literally had a field day as they ploughed several acres along with smaller two wheeled hand operated machinery To sum up this was a lovely weekend amongst friends and some new ones with plenty of chat and banter what more could you ask for.



Gardner 'O' & dynamo at the Anson Museum