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ROLLS MET ROYCE 50 YEARS AGO

A Meeting that made Engineering History

Fifty years ago this month, two men met in Manchester. From this meeting came a household word and a 20th century synonym for excellence - Rolls-Royce.

Henry Royce, an electrical engineer, came up the hard way, helping to support the family at ten years of age. He worked, studied and starved - alternately and together - while he accumulated knowledge and a genius for improving existing machines and instruments.

He was quite a prosperous manufacturer of dynamos and electric cranes when, in 1903, he bought a second-hand French car. Typical of its day, - noisy, unreliable, crude and inefficient - it appalled him. His urge to improve turned to motor cars.

With little knowledge of cars and none of their manufacture, he set about making three 10 h.p. two-cylinder cars in a factory intended for making dynamos and cranes. Hand-picked mechanics and apprentices, some of whom are still alive, worked with him, making, adapting, experimenting and testing. Much of the precision work Royce handled himself.

On April 1st, 1904, the first car was ready. A pull up on the starting handle and it started - an unprecedented occurrence with a car at that time. This easy starting was mainly due to the electrical system which Royce devised.

The Hon. Charles Stewart Rolls, educated at Eton and Cambridge, was the third son of Lord Llangattock. The family had a large estate in Monmouthshire, a town house and an ocean-going yacht.

But the conventional life of the leisured classes of Edwardian England was not for Charles Rolls. He took a degree in Mechanics and Applied Science, and became one of the most knowledgeable and daring of pioneer motorists at the turn of the century.

His motoring career began in 1894, when he was 17. His father took him abroad. From England, where a few "horseless carriages" travelled along the highways at four miles per hour preceded by a pedestrian carrying a red flag, Rolls found himself in France, where motor cars had developed without restrictive speed limits and the hostility of police and magistrates.

The motor cars on the roads of France were a revelation. He bought a $3\frac{3}{4}$ h.p. Peugeot and brought it back to England. He drove his car to Cambridge, breaking the speed limit with an average speed of $4\frac{1}{2}$ miles an hour. A year later, in 1896, the law was changed, doing away with the man with the red flag and setting a speed limit of 12 miles per hour.

He turned to racing and records - John o' Groats to Land's End in a Daimler in seven days in 1897; winning the first Thousand Miles Reliability Trial in 1900 with a 12 h.p. Panhard; establishing a world speed record of 93 miles per hour driving a 70 h.p. Mors at Phoenix Park, Dublin, in 1903.

In 1902, with an organizing genius named Claude Johnson, he set up in business as C.S. Rolls & Co., selling the best continental cars. After two years in business he was the leading motor car salesman in the country, with orders on his books for over 100 cars - and not a British car on the market that he considered good enough to handle.

One of the first three cars built by Royce went to Henry Edmunds, who has been described as "The Godfather of Rolls-Royce". Edmunds, a pioneer motorist and one of the founders of the Automobile Club, had lately become a director of Royce Limited. It was he who took Rolls to Manchester. They lunched with Royce at the Midland Hotel. Both men took to each other at sight - the painstaking perfectionist and the seeker after motoring perfection.

Rolls saw the Royce car for himself, rode in it and drove it. There was no more to be said. Rolls undertook to sell all the cars Royce could manufacture. The little car was exhibited for the first time at the Paris Salon and won a diploma and a gold medal. Rolls used it to drive the Duke of Connaught around on manoeuvres that summer.

Royce, the maker, carried on experimenting and testing. Rolls, the salesman, was looking ahead.

A 10 h.p. two-cylinder car was not really what Rolls wanted. He sold cars to "the carriage trade".

The wealthy aristocracy of Edwardian England was slowly but inevitably changing over from the horse-drawn carriage to the "horseless carriage". This was a clientele to which the adventure and uncertainty of driving early motor cars did not appeal. It demanded reliability, comfort and silence. To that end, Rolls began to feed Royce with ideas, suggestions and demands based on his own experience.

At Christmas, 1904, the famous name, Rolls-Royce, was actually born in a working agreement between C.S. Rolls Limited and Henry Royce Limited. In the following spring 15 h.p. three-cylinder and 20 h.p. four-cylinder models were on the market, followed in a few months by a 30 h.p. six-cylinder car.

The Rolls influence was making itself felt and these were much more the type of cars he wanted to sell. Comparison of the 10 h.p. and 20 h.p. cars shows how rapidly Rolls was revolutionising Royce's ideas about cars. Royce, using all his skill and perseverance, was improving and developing towards mechanical perfection: Rolls was making the Rolls-Royce the fashionable car of the day and putting it on the map.

By 1906, Royce's production capacity was big enough to allow Rolls to drop all other makes of car. They founded Rolls-Royce Limited. Royce's old partner, Claremont, became chairman, Rolls was technical managing director, Johnson became commercial managing director and Royce was chief engineer and works director. Royce began to plan a move to new and larger works.

Within a few months Rolls had won the Isle of Man T.T. race in a walk-over, driving a 20 h.p. Rolls-Royce. He followed his success by taking the car to New York and winning the five-mile race at the Empire City Track.

While all this was going on, Royce was at work on yet another car - a 40/50 h.p. six cylinder car which he believed to be the finest thing he had ever done. It was ready for the Motor Show in the autumn of 1906. It became the Silver Ghost, the car which gave the world a new standard of engineering excellence and motoring comfort and earned for the Rolls-Royce the simple slogan "the best car in the world".

Soon Rolls, already an enthusiastic balloonist, found another world to conquer. He met the Wright brothers and became one of Britain's pioneer aviators. He was killed while flying at Bournemouth in 1910 - the first Englishman to be killed in a flying accident.

Years of work and neglect of himself took their toll of Royce. A serious illness in 1910 was followed by years of exile from his new factory at Derby. Surrounded by a team of experts his work continued in the South of France and on the South Coast of England. He designed the Eagle engine which powered more than half the Allied aircraft in World War I and the first aircraft to make a non-stop flight across the Atlantic.

The war over, Rolls-Royce returned to the manufacture of cars and Royce was largely responsible for the design of the Phantom I and Phantom II which succeeded the Silver Ghost. In 1928, the Government pressed the company to develop a racing engine and, before he died in 1933, Royce (now a baronet) had the satisfaction of seeing his engine power the aircraft which in 1931 won the Schneider Trophy outright for Britain.

The work of these two men - so different in origin yet so identical in outlook - lives on.

In World War II, the Rolls-Royce Merlin engine, of which 150,000 were made, was the most-used power unit of the victorious allied air forces. It was the engine which powered all Britain's fighter aircraft in the decisive Battle of Britain. Today, at factories at Derby and in Scotland, Rolls-Royce is producing engines for the aircraft of the jet age - for the Viscount and the larger Comets which are revolutionising air travel: for the Canberra, Valiant, Hunter, Swift.

The Rolls-Royce cars, joined by the Bentley in 1931, are now made at the Rolls-Royce factory at Crewe, and uphold the tradition established by the Silver Ghost.

With all this expansion, the factory which Royce built at Derby is still the hub of a great organization, and through Rolls' first workshop and garage at Earls Court pass all Rolls-Royce and Bentley cars for export. His showroom in Conduit Street, London, W.1, still bears the name Rolls-Royce. Its decor is almost unchanged. In the window this month stand the original Silver Ghost and one of the very first 10 h.p. cars ever to bear the name Rolls-Royce. Both are in first-class running order.

SUMMARY OF ROLLS-ROYCE AERO-ENGINE DEVELOPMENT

PISTON ENGINES

1914 Design work started on the first Rolls-Royce aero-engine, a liquid-cooled Vee type of twelve cylinders arranged in two banks of six, mounted at an angle of 60 degrees on the crankcase, named Eagle.

1915 Eagle engine on test six months after start of design work. Delivers 225 h.p. at 1800 r.p.m. By the end of the war the power of the engine had been developed to 360 h.p. at 2,000 rpm.

75 h.p. Hawk also designed and developed for use in "Blimps".

Falcon engine designed for fighter aircraft. This was also a Vee-twelve liquid-cooled unit giving 285 h.p.

1918 525 h.p. Condor engine on test. Subsequently developed to 650 h.p.

1919 Alcock and Brown in a Vickers Vimy powered by two Rolls-Royce Eagle engines make first direct flight across the North Atlantic in 16 hrs. 12 mins.

Ross and Keith Smith in a similar aircraft make first flight England to Australia, 11,130 miles in 124 hrs. flying time.

Van Ryneveld and Quinton-Brand make first flight England to South Africa, - 6,281 miles in 92 hrs. 58 mins. flying time, again a Vickers Vimy with two Rolls-Royce Eagle engines.

Engine Production - 1915 to 1924

Eagle	4674 engines built
Hawk	200 engines built
Falcon	2185 engines built
Condor	327 engines built

1925 Design work on Rolls-Royce 'F' series engines started. (Later called the Kestrel). Retaining the 12 cylinder "Vee" form of the Eagle, all the cylinders of each bank cast in one block.

1926 First 'F' series engine tested and delivered 480 h.p. By development this power was increased to 785 h.p.

Production

4,750 Kestrel engines were built for a wide variety of aircraft, including the Hawker Hart, Hornet, Handley-Page Hamilton and Heyford, Blackburn Sydney and Nautilus flying boats, the Short Singapore, the Fairey Foxes etc.

Altogether the Kestrel was produced in 16 versions and was in service in 17 foreign countries and four countries of the Commonwealth.

1927 Rolls-Royce develop the Buzzard of 925 h.p. This engine was a scaled up version of the Kestrel.

Feb. 1929 Air Ministry decided to compete in Schneider Trophy contest. Rolls-Royce requested to produce a racing engine. The outcome of this was the famous 'R' engine developed from the Buzzard.

Within six months the 'R' engine delivered 1,900 h.p. for a weight of only 1,350 lb. Installed in the Supermarine S.6 seaplane which won the Schneider Trophy contest at a speed of 328.63 m.p.h.

1931 Rolls-Royce again asked to produce an engine for the Schneider Trophy. A third victory would enable Great Britain to win the trophy outright. Nine months in which to carry out the design and experimental work prior to the race in September.

By August the 'R' engine was delivering 2,360 h.p. for a weight of 1,630 lb. Again powering the Supermarine S.6 Seaplane the Schneider Trophy was won outright for Great Britain. A later engine developed 2,530 h.p. and with this engine the World Speed Record was raised to 407 m.p.h.

Twenty 'R' engines were produced. In addition to air speed records they were used for land speed records in Bluebird, Speed of the Wind, and Thunderbolt, and for water speed records in Miss England II, Miss England III, and Bluebird II and III.

- 1932 Design work started on an engine known as P.V.12 subsequently named 'Merlin'. 'P.V.' indicating Private Venture.
- 1934 Merlin completes its first 100-hour run at a rating of 790 bhp.
- 1936 Merlin completed Service Type Test at 975 h.p.
Before the outbreak of war Merlin engines up to Series 10 were in production and the maximum power had been increased to 1,030 h.p.
- 1938 Building of Crewe factory started.
- 1939 First Merlin engine built at Crewe, completed eleven months from the cutting of the first sod of the Crewe factory.
Design and development started on 37.V.12 engine, later named Griffon.
Proposals to erect factory at Glasgow discussed with Air Ministry. Building of factory started in August.
- 1940 First Merlin engine built at Glasgow.
Merlin engine now in production Derby, Crewe and Glasgow. Merlins power Battle of Britain fighters, Hurricane and Spitfire.
First test run of Griffon.
- 1942 Quantity production of Griffon engine started for Firefly, and later for Spitfire and Seafire.
Developed initially to give 1,540 h.p. (1954, current engines deliver 2,455 h.p. and power the Avro Shackleton. More than 6,000 Griffons have been built.)
- 1945 By the end of the war the power of the Merlin had increased to over 2,000 h.p. More than 150,000 Merlin engines had been made in Great Britain and the U.S.A. In the war period the Merlin powered not only the Hurricane and Spitfire, but 19 other types of aircraft including four engined bombers.

1947 Trans-Canada Air Lines start operations with Merlin engined North Stars - the first British engine to power an American designed airliner and the only British engine to be operating on the North Atlantic services.

1949 British Overseas Airways Corporation introduced into passenger service their Argonaut class of airliner powered by four civil Merlin engines.

May 1954 Merlin engines have completed over 5½ million flying hours in Civil aviation. Over 6,000 North Atlantic crossings have been made by Trans-Canada Air Lines "North Star" aircraft.

ROLLS-ROYCE GAS-TURBINE ENGINES

- 1943 The first Rolls-Royce jet engine, the Welland, passed its 100 hours typetest and gave a thrust of 1,700 lb. for a weight of 850 lb. Design of Derwent I started.
- 1944 Deliveries began of Welland for installation in the Gloster Meteor the only jet aeroplane to go into action with the Allies during the war.
- Design and development of Nene started.
- 1945 The Derwent V, successor to the Welland, powering a Gloster Meteor broke the World Air Speed record at 606 m.p.h., more than 100 miles an hour faster than the previous record.
- The first gas turbine engine with propellor to fly was the Rolls-Royce Trent. This took place in September, two engines being installed in a Gloster Meteor.
- 1946 World Air Speed record again broken by a Gloster Meteor with Derwent engines at a speed of 616 m.p.h. (In 1954, Derwent engines are in service with the air forces of Australia, Argentina, Denmark, Holland, Belgium and Egypt.)
- 1947 Pratt and Whitney, U.S.A. sign licence agreement to manufacture Rolls-Royce Nene and Tay engines.
- Nene engines in production at Derby.
- 1948 Belgium sign licence agreement to manufacture Derwent engines.
- 1949 Rolls-Royce Dart turbo propeller engine passed typetest at 1,000 h.p. power increased later to 1,400 h.p.
- 1950 Australia sign licence agreement to manufacture Nene and Avon engines.
- Hispano-Suiza sign licence to manufacture Nene and Tay engines.

1951 An English Electric Canberra powered by two Rolls-Royce Avon engines makes first jet transatlantic flight without refuelling, the first of many record flights by Avon engined aircraft.

1952 Sweden signs licence agreement to manufacture Avon engine.

1953 Westinghouse, U.S.A. sign ten year technical agreement with Rolls-Royce.

Avon engine powering a Hawker Hunter establishes new World Air Speed record at 727 m.p.h.

Avon engine powering Supermarine Swift establishes new World Air Speed record at 737 m.p.h.

Ministry of Supply opens a new factory at East Kilbride, Lanarkshire, to augment production of Avon engines for the Royal Air Force. In addition Rolls-Royce engines are being manufactured by Bristol Aeroplane Company, D. Napier and Son Limited and the Standard Motor Company.

May 1954 British built Rolls-Royce gas turbine engines have completed 2 $\frac{3}{4}$ million flying hours.

Over 185,000 piston and gas turbine aero-engines to Rolls-Royce design will have been produced.

Summary of Car Development, Rolls-Royce Limited, (Car Division)

ROLLS-ROYCE

1904	Royce	10 h.p. 2-cylinder	Bore 95 mm. Stroke 127 mm. O.H.V. 3 speed gearbox Weight 14½ cwt.
		First car registered - M.612	
1905	Rolls-Royce	10 h.p. 2-cylinder	
		Radiator of same shape as to-day and bore R-R monogram.	
	Rolls-Royce 15 h.p.	3-cylinder same bore and stroke as 10 h.p.	
	Rolls-Royce 20 h.p.	4-cylinder same bore and stroke as 10 h.p.	
	Rolls-Royce 30 h.p.	6-cylinder same bore and stroke as 10 h.p. (three blocks of 2 cylinders)	
1907-1925	Silver Ghost	6-cylinder 2 blocks of 3 cylinders. 40/50 h.p.	
1923	20 h.p.	6-cylinder in line.	
1925	Phantom I	6-cylinder in line.	
1930	20/25 h.p.	6-cylinder in line.	
1934	Phantom II	6-cylinder in line.	
1936	Phantom III	V 12 cylinder.	
1936	25/30 h.p.	6-cylinder.	
1938	Wraith	6-cylinder.	
1946	Silver Wraith	6-cylinder.	
1949	Silver Dawn (Export)	Coachwork by Rolls-Royce.	
1950	Phantom IV	8-cylinder in line.	

BENTLEY

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| 1931 | Rolls-Royce acquired the assets of the old Bentley Company. Formation of Bentley Motors (1931) Ltd. | |
| 1933 | 3½ litre | The Silent Sports Car. |
| 1936 | 4½ litre | Fitted with special coachwork. |
| 1938 | Mark V | (4½ litre. I.F.S.) |
| 1946 | Mark VI | First Bentley to be available with coachwork by the company. |
| 1951 | The Continental | Introduced for export only. |
| 1952 | The Continental | Introduced for the home market. |
| 1952 | The B.7 | 4½ litre available with automatic gearbox (export) |
| 1953 | The B.7 | The first of any car to be available on the home market with automatic gearbox. |

See Bentley's 2 1/5
2 1/2 New York
1/2 Lewis cottage.
Yankees etc.
Yankees etc. or
or Govt. 1914.
1/2 1914 etc. works.
1/2 car etc. work etc.
1/2 Sales with Lewis etc.
c/a Baker.
c/a Lewis.
1/2 work etc.
1/2 etc. etc.

KNUTSFORD TO COOKE STREET, MANCHESTER
WEDNESDAY, 19TH MAY 1954

1. Pilot Car - Continental Bentley. SMA.410
Royal George Hotel to Dunham Hill,
Altrincham, via Royce's House
 Roger Cra'ster
 Mr. Hughes
From Dunham Hill,
Altrincham to Cooke Street
 Roger Cra'ster
 Mr. Hughes
2. 2 Cylinder Rolls-Royce 1905
 Jim Reid
 Raymond Baxter
 Mr. Stanley
 Mr. Klementaski
 (Passengers involved in this change-over will travel in the Pilot Car SMA.410)
 Jim Reid
 Raymond Baxter
 Mr. Wilson
 Mr. Heywood
3. 4 Cylinder T.T. Rolls-Royce
 Mr. Sears
 Mr. McKenzie
 Mr. John Norris
 Mr. Greenhaugh
 (Passengers involved in this change-over will travel in the H.J. Mulliner Touring Limousine RTU.280)
 Mr. Sears
 L.S.
 Christopher Jennings
 Harold Nockolds.
4. Silver Ghost 1907
 Walter Garner
 Gordon Wilkins
 Mr. Cockburn
 Lord Hives or Mr. Elliott
 (Passengers involved in this change-over will travel in their own cars or in Bentley RLG.986)
 Walter Garner
 John Eason-Gibson
 Courtenay-Edwards
 Lord Hives or Mr. Elliott
5. Silver Ghost Limousine 1911
 Mr. Watson
 Representative of the Manchester Evening Telegraph
 Miss Clydwell
 Mr. Clark
 Douglas Clease
 (Passengers involved in this change-over will travel in Park Ward 7-Passenger Limousine RTU.281)
 Mr. Watson
 Mr. Reynolds
 Dudley Noble
 Bill Lynas
6. H.J. Mulliner Touring Limousine RTU.280 - (Driver Mr. Rennie)
7. Park Ward 7-Passenger Limousine RTU.281 - (Driver from Crewe)

The place for the change-over will be indicated by the Pilot Car.

TIME TABLE

	Arrive.	Leave.
Royal George Hotel, Knutsford Cocktail Party and Lunch.	12.30	2.p.m.
Brae Cottage, Leigh Road, Knutsford.	2.15	2.45.
Dunham Hill Altrincham (Change over passengers)	3.40	3.50
Cooke Street, Hulme, Knutsford	4.15	5.0.p.m.
Manchester Station (Train for Euston)	5.30	5.50.

The 4 cylinder car will fall to the rear of the convoy after Mere corner and overtake all cars immediately before the change-over at Dunham Hill.