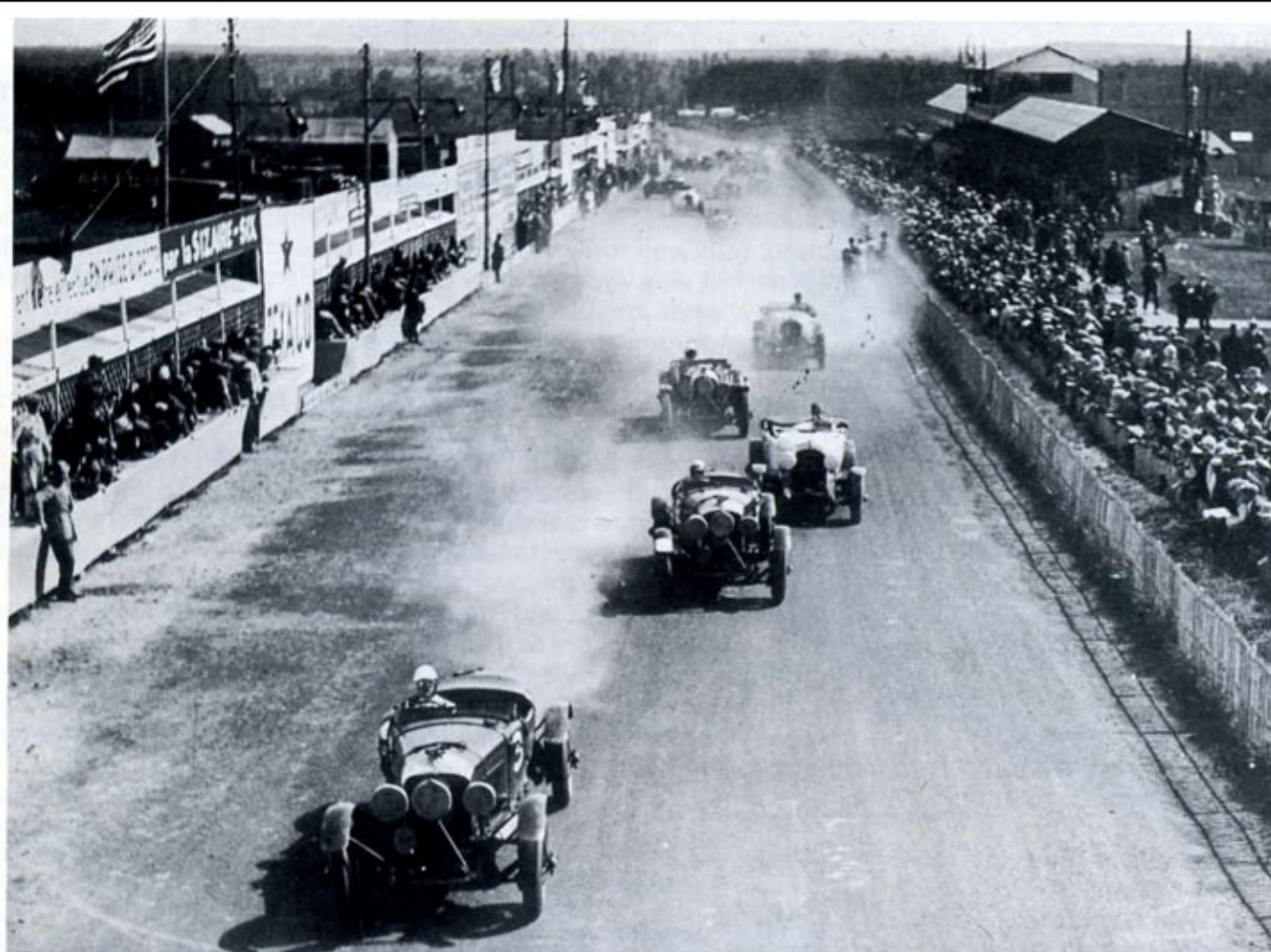


Cars in Profile No. 9: 4 1/2 litre Bentley

Darell Berthon

Note: This is not the actual book cover



1928 Le Mans, 16-17 June. *The start: Birkin, Clement, No. 5 Chiron's Chrysler, Barnato's Bentley and Zehender's Chrysler.* (The Autocar)

The 4½-litre Bentley

by Darell Berthon & Anthony Stamer

Of all the designs emanating from the concise and fertile brain of the late Walter Owen Bentley, that quiet and retiring Engineer and Gentleman, the 4 cylinder 4½-litre (actually 4398 cc.) gave the fewest teething troubles and perhaps afforded him the maximum of personal satisfaction. It was also the favourite model of his regular racing drivers, who found it more flexible than the 3-litre, and who appreciated the inherent safety and stability given to it by its understeering characteristics.

The prototype 4½ was ready to race in June 1927, and production examples were being sold to customers by September of that year, yet the period leading up to its debut had been fraught with administrative and financial worries. Indeed, for Bentley Motors Ltd. the years 1925 and 1926 had been a period of constant anxiety over both their racing and production programmes. After their successful win at Le Mans in 1924 they had failed to bring a car home in 1925 and 1926. Bluntly, they were short of ready money and for that reason could only place small orders with their suppliers of components, thus limiting the economic production of their cars. The volume of orders for Bentleys depended largely upon the publicity resulting from the successful racing of their products, highlighting their above-average reliability and speed. At the same time the firm was very preoccupied with the launching of the six cylinder 6½-litre Bentley, in response to a

demand for a chassis capable of carrying heavy and luxurious coachwork at high cruising speeds coupled with outstanding engine flexibility.

The failures of the two previous years at Le Mans were due, in 1925, in one case to a miscalculation of the exact petrol consumption with the hood up, leading to running out of fuel before the first permitted refuelling stop at 20 laps, and in the other to a withdrawal when a fractured float chamber led to a carburettor fire. In the next year, 1926, the failures were due to the speed that the cars had to maintain to challenge the 3½-litre Lorraines. The Bentleys suffered respectively from valve stretch, a broken rocker arm, and (in the last twenty minutes of the race) running out of brakes and crashing at Mulsanne. The plain fact was that the 3-litre Bentleys were being overstressed; they had reached the limit of reliability required to win at Le Mans, while the new 6½-litre was not yet sufficiently proven at prolonged racing speeds to be subjected to the limelight of major races with the certainty that it would acquit itself favourably.

It was at this critical period that W.O. sagely approached Woolf Barnato, one of his regular clients who had privately been racing Bentleys at Brooklands with success, with the hint that if he wished to continue to enjoy this particular facet of his sporting activities, then a measure of financial support was becoming rather im-

perative. The 7-year lawsuit over the famous 'Barnato Millions' had just been settled in Woolf's favour, and in May 1926 a new lease of life was injected into Bentley Motors when Barnato agreed to join the Company with ample funds to make possible both increased production and the development of a new model.

The prototype 4½-litre

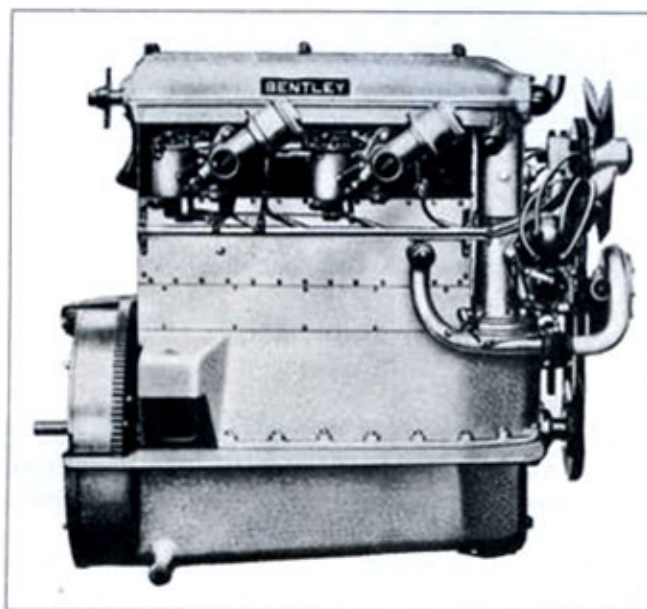
For 1927 a larger and considerably more powerful engine than the 3-litre was required, but the only one then available was the 6½-litre developing 147 b.h.p. in chassis of 11', 12' or 12' 6" wheelbase, and weighing some two-and-a-quarter tons. There simply was not time to develop either engine or chassis for racing, and still less time in which to design and develop an entirely new car, let alone manufacture the minimum of 50 units necessary to comply with the Le Mans acceptance regulations. The only remaining possibility was an enlarged version of the 3-litre which had already proved the soundness of its design. Accordingly, in the Autumn of 1926, work started on a 4½-litre engine of 100 mm. bore and 140 mm. stroke, giving a capacity of 4398 cc. It had a new crankshaft of 55 mm. crankpin diameter, a re-machined crankcase, the sump of the late-type 3-litre, new racing pistons, and 6½-litre con rods. The remaining engine parts and accessories were of 3-litre design, i.e. a monobloc 4-cylinder unit utilizing four o.h. valves per cylinder, operated by a single camshaft (driven by a vertical shaft and bevel gears from the front of the crankshaft) which depressed duralumin rockers—a forked one for the inlet valves and single ones for the exhaust. Both crankshaft and camshaft had five bearings, while cooling was by pump and fan. Twin G5 (sloper) S.U. carburettors provided the mixture fired by twin cross-shaft-driven ML GR4 magnetos operating two sparkplugs per cylinder. The inverted cone clutch was Ferodo lined.

The chassis used was the rigid 3-litre Long Standard type (10' 10½" w.b.) weighing 440

lbs with springs and shackles, constructed of $\frac{5}{8}$ " 35-ton HT steel and stiffened by four heavy angled crossmembers. Semi elliptic springs located an 'H'-section beam front axle of 40-ton HT steel, while the rear semi-elliptics carried an underslung live axle incorporating a 4-star differential.

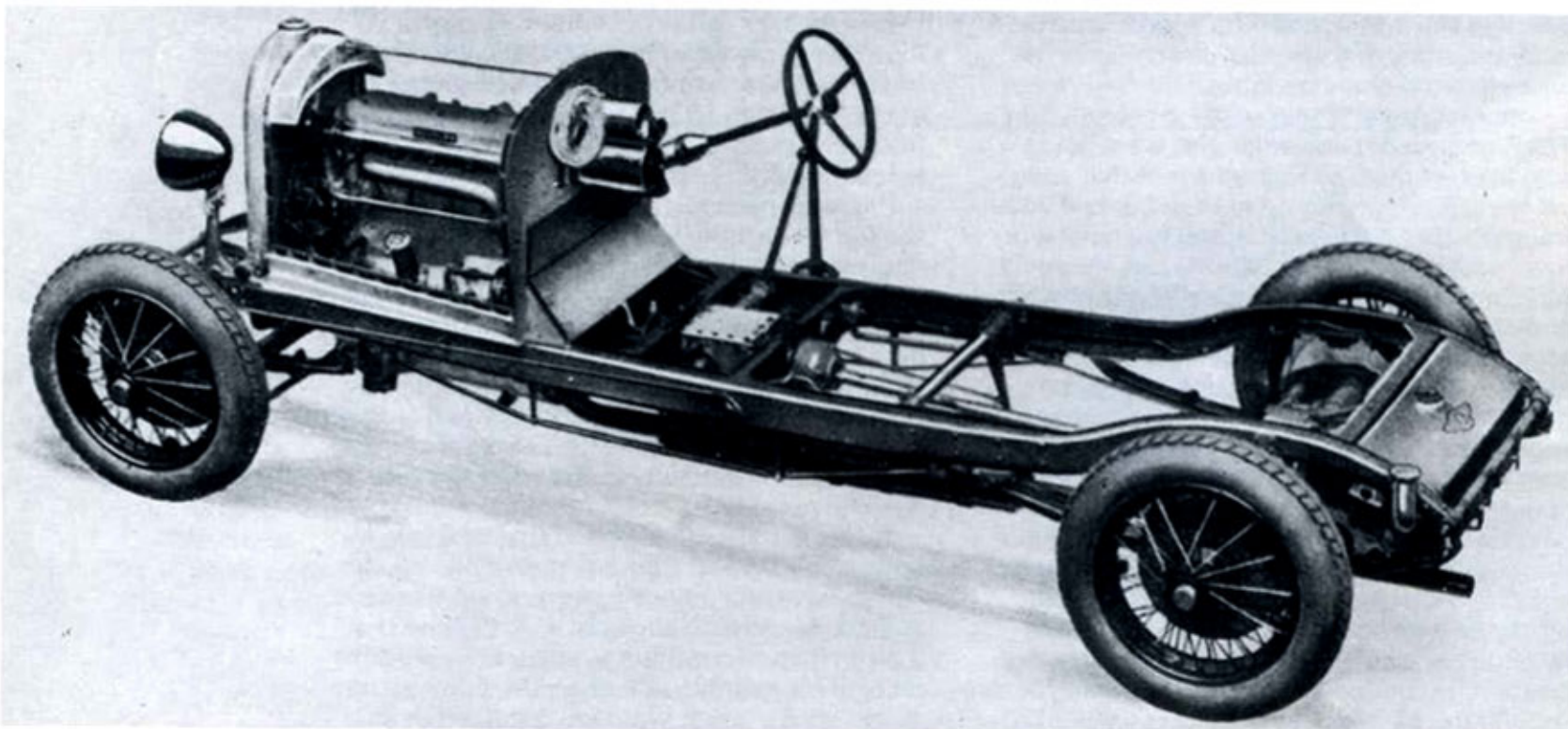
The radiator followed the general shape of the 3-litre type, but was wider, shorter, and of greater capacity, while an enlarged 16-gallon petrol tank was mounted at the rear of the chassis. The b.h.p. produced was around 100 to 110—an increase of about 20—with a C.R. of 5.3:1. The 'A' type gearbox, cone clutch, 'plunging-joint' propeller shaft, and 3.53 rear axle ratio of the 3-litre were retained. The maximum speed in racing trim was a safe 100 m.p.h. at 3,500 r.p.m. In general appearance the first 4½ looked very much like the traditional Vanden Plas 3-litre Speed Model, but with the narrow blade Le Mans-type wings of 1924 to 1926.

The performance put up by the prototype 4½ in the 1927 Le Mans race was most encouraging, and development work on the production model was commenced immediately after-



1928 Standard 4½-litre engine with sloper carburettors, cone clutch, alloy rocker arms.

1927/28 Long Standard 4½-litre chassis near side. Note the cantilever frame braces.



wards, so as to be ready for the 1928 event.

The 1928 Standard 4½-litre

Modifications of one kind or another were built into almost every series (approximately 25 cars made up each series) as a result of lessons learned on road tests, in competitions and at the suggestion of owners. Only the more important changes will be mentioned.

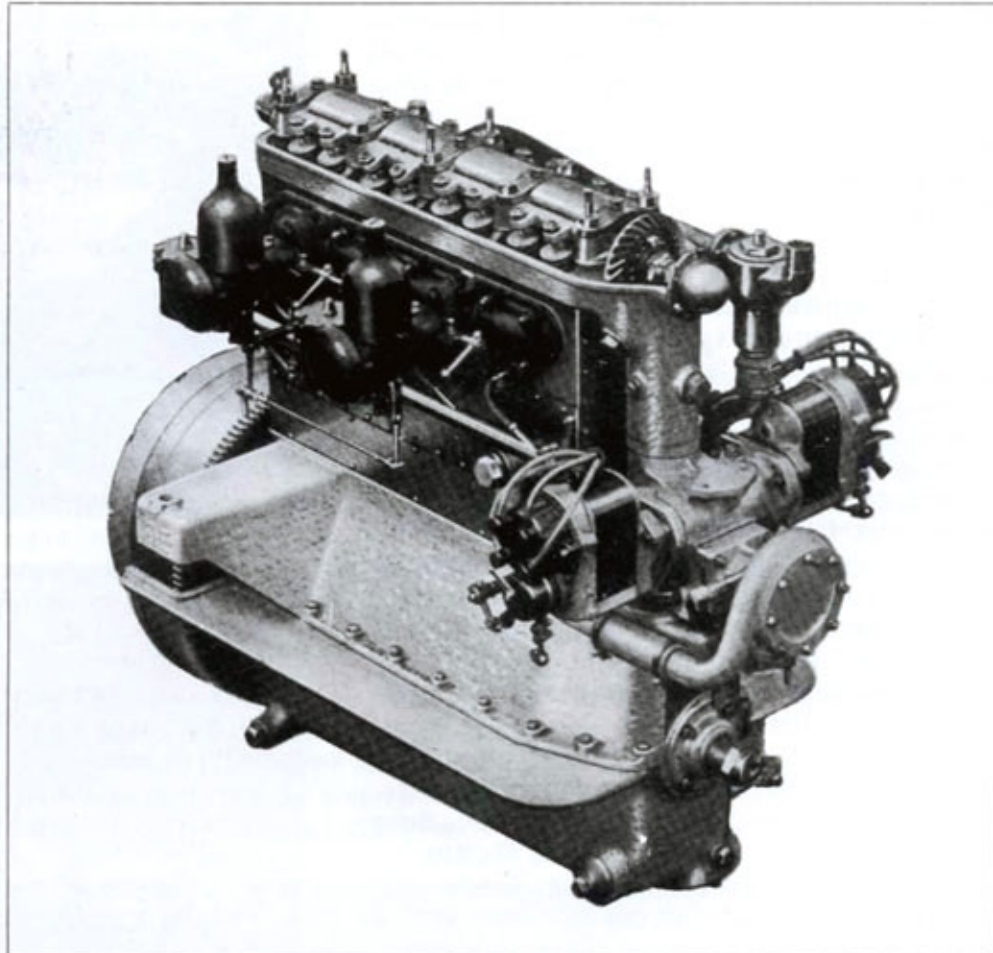
From the fourth chassis of the ST series the new 4½-type radiator, lamp and trunnion brackets were introduced, and in the next (RN) series the rigid-spoked steering wheel was replaced by the Bluemel spring-spoked type. The latter felt much better from the handling point of view, but at first was disliked due to the danger of the spokes breaking in an accident and the steering column causing serious chest injuries (unlike the rigid spoked wheel which spread the shock over a wider area).

From chassis NT 3131 all had Hardy Spicer propeller shafts in place of the pot-joint type, Bentley and Draper shock absorbers, and hardened tips to the rear axle shafts. ER4 long-range ML magnetos, Ki-gas injectors for easy starting, 7-pitch 'D' type gearbox (having the same ratios as the 'A' type but much more sturdy in construction) were fitted from chassis HF 3192 (though the 'C' type box hitherto fitted was retained for use with chassis carrying heavy coachwork), and 0.44 carbon steel front brake drums were introduced with chassis XL 3106. Engines from No. KM 3085 were fitted with a 13 SWG (removable) compression plate reducing the CR from 5.3:1 to 5.1:1 with BM 3622 pistons. From chassis KM 3092 all chassis were fitted with the heavy-type front axle bed (BM 3400) in readiness for the self-wrapping front brake shoes tried out and approved in the 1928 Le Mans race. At the same time vertical S.U. HVG5 carburettors, cast-iron handbrake liners, and 'Staybright' cylinder water jackets were fitted.

1929 modifications

The self-wrapping front brake shoes mentioned above were fitted to all standard 4½-litres from chassis XR 3327 (March 1929). In the same series, the single-plate clutch replaced the old 3-litre cone clutch, and from chassis UK 3278 all 4½-litres were fitted with the 'C' type gearbox unless otherwise specially ordered.

In the next series, from FB3307, all chassis were fitted with the first 'Elektron' component—the bulkhead—and at about the same time 'Halo' handbrake liners replaced the cast-iron type. As a result of the frame fractures in the 1928 Le Mans race, all chassis from the MR series were fitted with the $\frac{3}{8}$ " thick frame (BM 3925) in place of the $\frac{5}{16}$ " previously used for all Bentleys. The next major modification came with chassis NX 3458 in September 1929 when the direct-metalled connecting rod (BM 6589), used by all the team cars in 1929 races and which had given trouble through the white metal cracking or becoming loose, was replaced by a strengthened version (BM 6821) with a steel backed shell bearing which was completely satisfactory; in fact this was the best rod for the 100 mm. bore engine that the Company produced.



1930 modifications

The Firm did not race the 4½-litre after 1929, nevertheless the new 1930 models profited from past racing experience. In April they incorporated several components of the standard supercharged engine such as the crankshaft (with supercharger drive spigot cut off), connecting rods, crankcase, sump, cylinder block, oil pump and flywheel. This engine was known as the 'heavy crank engine' and was practically unburstable in its standard form. With its heavier moving parts and lower compression ratio (5.1:1) it was not as lively as the 'light crank' engine, but by raising the C.R. a reasonable amount its performance could be greatly improved without impairing its reliability.

From chassis FS 3602 0.55 carbon steel brake drums were fitted to the rear axle, and to the front as well from chassis FS 3617, the reinforced sump (BM 4346/4) having replaced the standard supercharged 4½ sump at chassis FS 3611. The XT series was the last one built by Bentley Motors and consisted of only twelve chassis, from the second of which the reinforced crank case (BM 4332/8) was fitted. The last seven chassis had the front axle bed with integral jacking pad (BM 3400).

Three of the AD series, eleven of the FS series, and ten of the twelve XT series chassis were delivered to purchasers in 1931.

In all, 713 4½-litre chassis (including the three standard chassis supplied to Birkin for supercharging, but excluding the six R.C. chassis mentioned later) were built by Bentley Motors Ltd.

4½-litre 'Shorties'

Although the standard 4½-litre wheelbase was 10' 10½", nine cars with 9' 9½" wheelbase were built to special order (three in 1927, two in

1930 'Heavy crank' 4½-litre engine: HV G5 carburettors, plate clutch. Note thickness of foot of crankcase and absence of fan.

1928, three in 1929 and one in 1930). Except for chassis and body lengths, they were almost identical with the standard 4½, with the same radiator, bonnet, scuttle and rear end. They handled beautifully on the road, not unlike the 3/4½ of later years, but with less flexibility in the frame. In the opinion of many they were the best-looking and handiest Bentley ever made.

The Supercharged 4½-litre Bentley

After his experiences with the 4½-litre in 1928, the late Sir Henry (Tim) Birkin appreciated that although the model had shown enough speed and reliability to deal with the opposition then encountered, considerably more performance (without loss of reliability) was now going to be required to cope with the 1,500 and 1,750 supercharged Alfa Romeos which were doing so well in international competition. Accordingly he set his heart on supercharging the 4½-litre Bentley, much to the dismay of W.O. who maintained that a supercharged engine should be designed, if at all, from scratch.

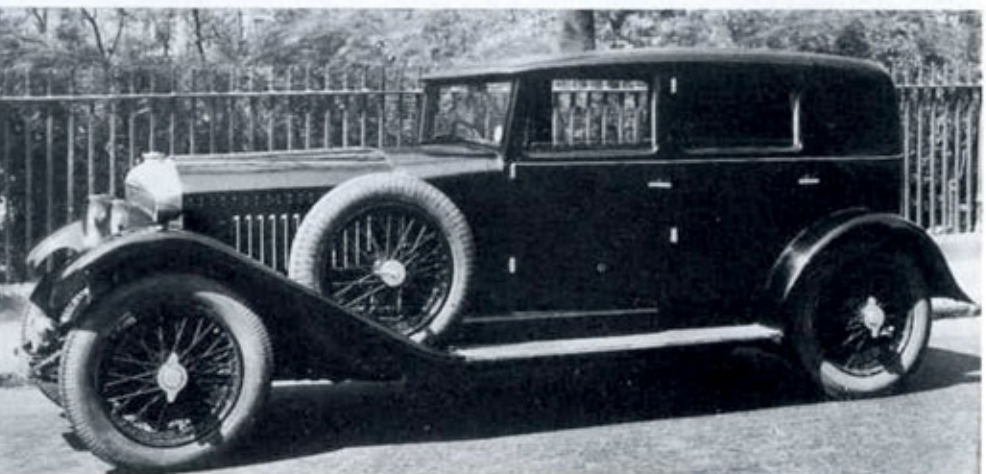
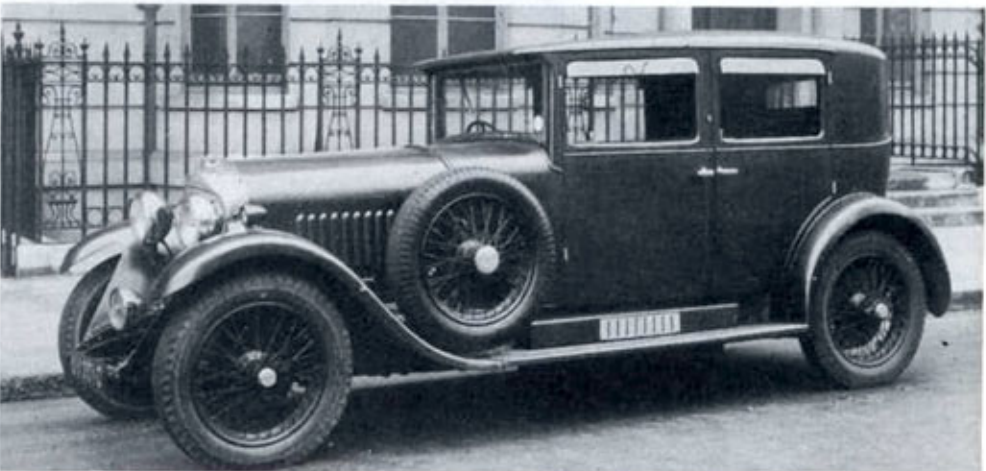
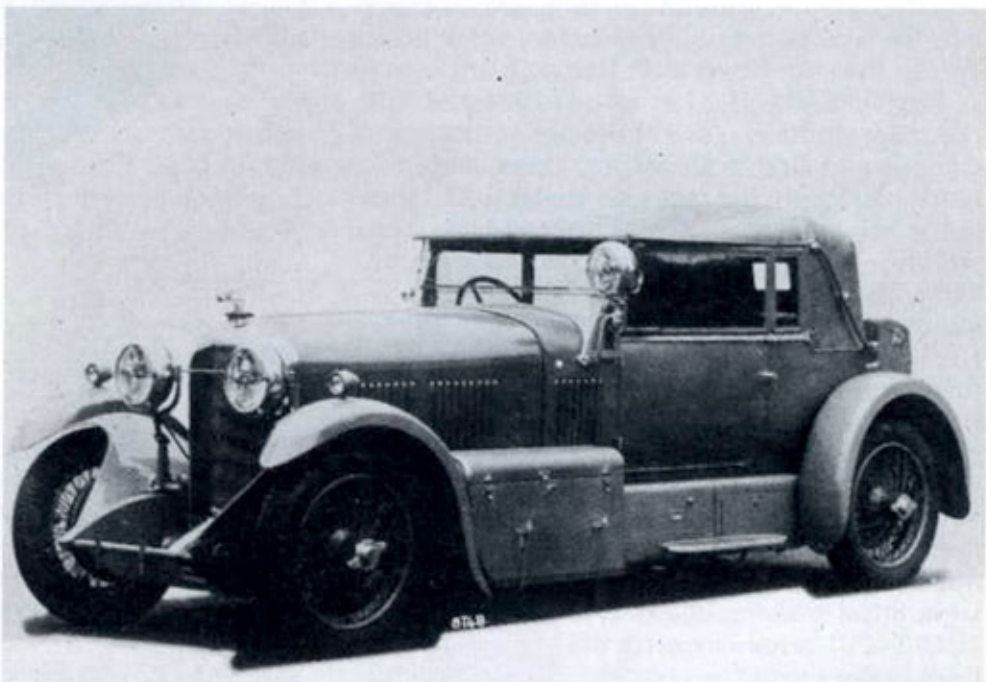
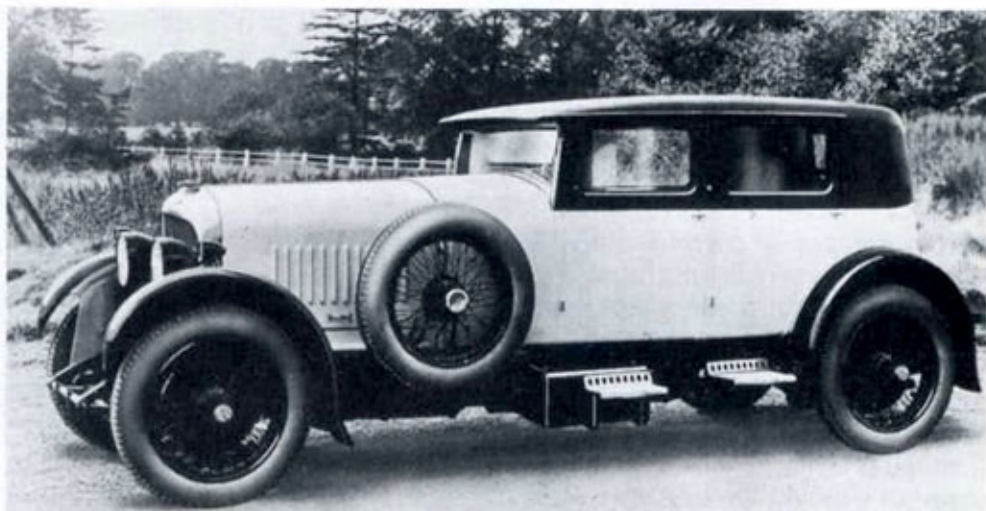
W.O. pinned his faith on a bigger engine, developing more power while retaining reliability, as being the correct answer; events were to prove his point, so far as Bentley Motors were concerned. Despite this, Tim Birkin decided to go ahead with the modification of a 4½-litre engine, to be used in his private team for racing. The basic design of the 4½-litre was followed and C. Amherst Villiers was called in to design a new cylinder block, crankshaft, connecting rods, pistons, oil pump, and lastly in mid-1930, a larger capacity ribbed sump for better oil cooling—all built on a massive scale to cope with the additional stresses to be expected; his supercharger with its twin S.U. carburettors was mounted between the front dumbirons and was driven off the front end of the crankshaft. The standard 10' 10½" wheel-base 4½-litre chassis was used with a modified front crossmember and front tie-bar to carry (respectively) the nose of the engine and the front end of the blower.

Once the prototype had been approved, Tim Birkin managed to persuade Chairman Woolf Barnato to give his blessing to the production of 50 supercharged 4½s so that they could enter a team for Le Mans in 1930.

The large and heavy supercharger absorbed a considerable amount of the power developed by the engine; nevertheless the blown 4½ delivered about 175 b.h.p. at the wheels, as against the 130 b.h.p. at 3,500 r.p.m. of the unblown Le Mans engine, the result being an extra road speed of 10 to 12 m.p.h.

The production supercharged 4½-litre was shown at the Olympia Motor Show of 1929, and by April 1930 examples were getting into the hands of the public. The increased speed and flexibility of the new model made it a very pleasant, docile motor car to drive, and in service it gave very little trouble.

The special Birkin team of blown 4½s unfortunately never attained the reliability demonstrated by the Speed Six competition cars in winning races, although they came near to doing so when one finished 2nd at 112.12 m.p.h. in their last race of the 1930 season—the 500 Mile Race at Brooklands. Due largely



to their superb proportions and suggestion of sheer power, the blown $4\frac{1}{2}$ s have always captured the public imagination as the epitome of the British Vintage sports-racing car, yet it must go on record that their lack of success in races was one of the factors which contributed to the liquidation of Bentley Motors in 1931.

1936 RC Series of $4\frac{1}{2}$ -litres

In 1936 Bentley Motors (1931) Ltd. built six $4\frac{1}{2}$ -litre cars from brand-new parts still held in stock, taking the best features from the 1930/31 $4\frac{1}{2}$, $6\frac{1}{2}$, and 4-litre components. Although made from genuine parts manufactured by the old Company, they were really hybrids and not part of the original production. Though admirable cars with a fair performance, they looked a bit odd to the experienced eye, with their rather ponderous 1936-type bodies built by Vanden Plas. Only one year's guarantee was issued, in place of the original Company's five-year coverage of its products, and these cars have never been regarded as true 'Vintage' Bentleys in the old tradition.

THE $4\frac{1}{2}$ -LITRE IN COMPETITION 1927-29

The 1927 Season

Le Mans. (18th & 19th June). The first $4\frac{1}{2}$ (chassis ST 3001, reg. No. YH 3196) was entered for the Le Mans 24-hour race, and was driven by F. C. Clement and L. G. Callingham to form a team with two 3-litres.

Clement raised the lap record to 73.41 m.p.h. while leading the race, and the $4\frac{1}{2}$ had lapped both the 3-litre twice during its first 35 laps when (with Callingham driving) it became involved in the historic 'White House crash'—a nocturnal series of events triggered off by Tabourin's Th. Schneider half blocking the road and involving the entire Bentley team. The $4\frac{1}{2}$ was ditched and rolled, after which Duller in his 3-litre collided with it, and a few seconds later

the tail was struck by S. C. H. Davis' 3-litre ('Old No. 7' which eventually went on to win this famous race despite considerable disabilities). Thus ended an impressive first $4\frac{1}{2}$ -litre appearance, in a legendary event which spread the reputation of Bentley Motors Ltd. far and wide.

Grand Prix de Paris, Montlhéry. (19th Aug.)

Two months later the same $4\frac{1}{2}$, driven by F. C. Clement and G. Duller, scored this model's first victory in another 24-hour race over a tortuous $7\frac{3}{4}$ mile circuit far more suited to the 17 smaller capacity cars which formed the remainder of the field. The Bentley led for 18 hours, only to be severely delayed when a petrol tank leak caused a fire—the resultant tank and pipe repairs allowed an 1100 cc. BNC to threaten their position, but the $4\frac{1}{2}$ soon pulled away to an eventual 11 lap lead (1247.7 miles at 51.99 m.p.h.).

The 1928 Season

Essex Motor Club's 6-hour Endurance Race, Brooklands. (12th May). Commencing with a 'Le Mans start', drivers and mechanics ran across the track, erected their hoods (to be

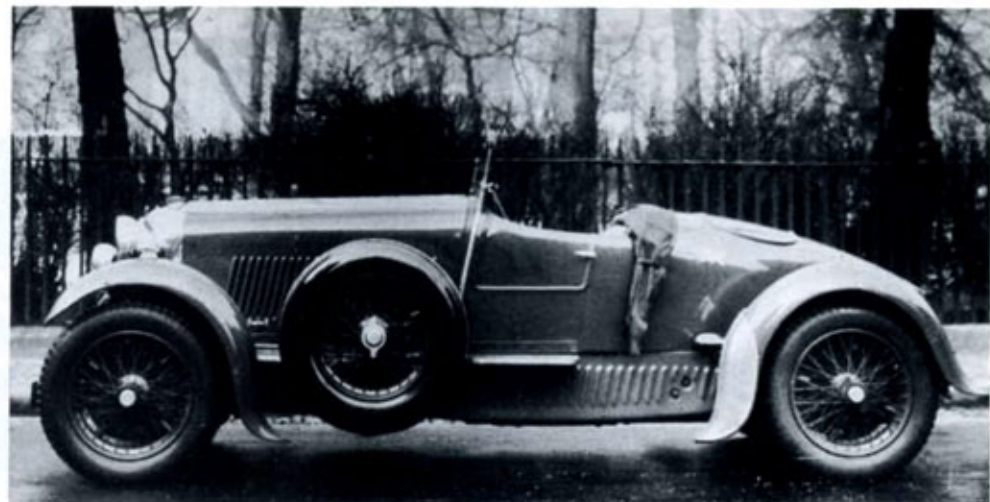
1 1927/28 black and yellow Vanden Plas Flexible Saloon.

2 1928 grey Gurney Nutting drophead coupé for Continental touring.

3 1929 maroon and black H. J. Mulliner four-door two-light Weymann saloon.

4 1929 dark blue and black Martin Walter four-door two-light saloon.

5 1931 grey super-charged Gurney Nutting two-seater, specially built for Woolf Barnato.



1927 Le Mans, 18-19 June: W. O. Bentley and drivers of the 1927 team: (left to right) S. C. H. Davis, W. O. Bentley, Frank Clement, J. D. Benjafield, L. G. Callingham, and George Duller. (Baron d'Erlanger, another member of the team, is not in the photograph).

kept up for 10 laps), and started with the electric starter only.

Bentley Motors entered three 4½-litres, the original prototype once again (Clement/Barnato), and two of the new KM series (Birkin, and Benjafield/Rubin) fitted with light 4-seater bodies which tapered towards the tail, into which the spare wheel was faired, and with cycle-type wings in place of the standard sweeping mudguards.

The 46 entrants fielded a splendid cross-section of contemporary sports cars. After 2 hours, Barnato was leading from Birkin, followed by Mason's Austro-Daimler and Ramponi's supercharged 1500 Alfa Romeo. By 4 hours, Birkin had taken the lead by a lap, followed by W. H. Cook in a Bentley 3-litre, Rubin and then Barnato, while Ramponi led the smaller cars. The Bentley performance was matched by excellent pit work, the cars being refuelled by gravity feed petrol tanks placed on



the pit roofs. When Clement took over from Barnato, the car began to drop back due to weakening brakes (afterwards traced to stretching of the brake rods).

With a field reduced to 26, Birkin won at 72.27 m.p.h. covering 433.64 miles. Rubin/Benjafield were second at 71.36 m.p.h., and Clement/Barnato third at 70.35 m.p.h. On handicap, Ramponi's Alfa Romeo won at 69.51, while the above mentioned Bentleys were placed 3rd, 6th and 8th respectively and also took the Team prize, Barnato recording fastest lap at 76.57 m.p.h.

Le Mans. (16th & 17th June). The same three 4½-litres were entered, the familiar prototype being handled by Barnato/Rubin, and the two KM series by Birkin paired with the experienced Jean Chassagne, and Clement/Benjafield. The regulations no longer specified that hoods must be raised initially, so none were carried. The old upright windscreens had been replaced by fold-flat wire mesh screens moulded to the scuttle line to reduce wind resistance,



and a third outside headlamp was mounted between the existing lamps.

This year there was stiff opposition from the USA, using experienced French drivers. Brisson/Bloch were at the wheel of a 4.9-litre straight-8 Black Hawk Stutz, supported by four 4100 cc. Chryslers.

At the end of the first lap, the three Bentleys led, headed by Birkin. On the next 3 laps, the lap record was broken successively by Barnato, Brisson (Stutz), and Clement who raised it to 76.2 m.p.h.

On the 20th lap Birkin punctured a tyre at speed, the tattered remnants wound around the brake drum causing the brake operating rod to jam and to lock the wheel solid. No jack was being carried (the assumption being that the car could always reach the pits on a flat tyre . . .), so Birkin spent the next 1½ hours hacking the rubber away with a knife. Driving towards his pit impatiently on a bare rim, the wheel collapsed at Arnage and the car's tail slid into the ditch. He then ran 3 miles to the pits, where the 47-year-old Chassagne slung two jacks over his shoulder (seeing that Birkin was exhausted) and headed off up the circuit himself. In an amazing single-handed effort, he fitted a spare wheel, unditched the 4½, and drove it to the pits. Three hours had been lost, yet the race was now rejoined with renewed vigour.

Meanwhile Clement led Barnato, with the Stutz in 3rd position; then Barnato came in to refill and hand over to Rubin, letting the Stutz into 2nd place. On the 26th lap Benjafield (who had taken over from Clement) came in in a haze of engine oil smoke, and Clement located and repaired a fractured camshaft oil feedpipe, then setting off in pursuit of the Stutz, and Rubin's prototype 4½ (in 2nd place). There was no let up in the drama, for Clement's 4½ visited its pit twice for investigation of minor defects, and by midnight was in 4th place behind Stoffel/Rossignol (Chrysler). Up front, Bentley and Stutz alternated in the lead, while Clement repassed the Chrysler before the low-lying dawn mist slowed all drivers.

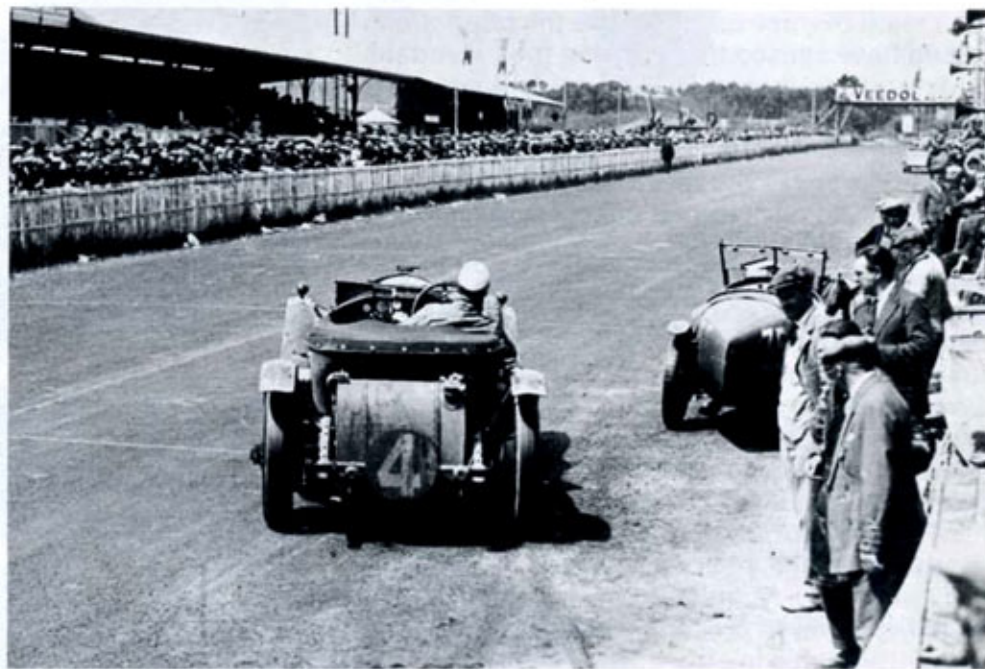
Then followed a disaster for the Bentley team. Clement (in 3rd place) was out of the

race, with a water leak which had emptied his radiator near Pontlieu—the end result of a cracked frame. Barnato now speeded up, and passed the Stutz again, while Birkin/Chassagne had worked their way back to 9th place.

Trouble beset the Stutz, on which the 3-speed box commenced to jump out of top gear, and by noon the Barnato/Rubin 4½ led by 20 miles. The first Chrysler was 90 miles behind the Stutz, while Birkin/Chassagne had achieved 5th place and were moving faster than ever.

In the lead, Barnato was suffering agonies in the final stages of the race, his radiator having sprung a leak after he had had his last permitted topping up, but his luck held out, and he crossed the line in the well-used prototype 4½ to record Bentleys third Le Mans victory—1658.6 miles at 69.108 m.p.h. The Stutz was 8 miles behind him, followed by two Chryslers, and then the Birkin/Chassagne 4½ in 5th place (after recording the fastest lap speed of 79.73 m.p.h. on the very last lap).

German Grand Prix, Nürburgring. (15th July). Less than a month later, Birkin took his 4½ to Germany. The Grand Prix, over 18 laps of the



1 1927 Le Mans 18–19 June. *After the White House crash. The new 4½-litre (on left) in the ditch facing No. 2 3-litre Bentley. No. 3 Bentley though badly damaged managed to continue, and win the race.*

2 1928 Essex C.C. Six Hours Race Brooklands, 12th May. *No. 5 Birkin's newly-bodied 'bob-tailed' 4½. Rubin's 4½ Le Mans Replica No. 6, and No. 4 the first 4½-litre*

3 1927 Grand Prix de Paris, Montlhéry. *The winning 4½-litre driven by Frank Clement and George Duller. The promoters went bankrupt and disappeared with the trophy and prize money!*



1928 Le Mans, 16–17 June. *Bernard Rubin leaving the pits after taking over from Woolf Barnato. No. 35 is the Casse/Rousseau Salmson which won the 'Rudge' Cup. (The Autocar)*

1928 Essex C.C. Six Hours Race Brooklands, 12th May. *Birkin leads Rubin's 4½ through the chicane.*

tortuous Nürburgring was for sports cars, and he was up against really formidable opposition in the form of five Mercedes-Benz SS (6 cylinder supercharged, 7020 cc.) and numerous Bugattis (four 'Works' entered and 13 private).

This year, relief drivers could be nominated—a regulation of which the Germans made full use, knowing how tiring their heavy cars would be on this demanding circuit. Birkin, however, took along the redoubtable Wally Hassan (of Bentley Motors and later Jaguar and Coventry Climax fame) as his riding mechanic, and drove without relief.

90,000 spectators turned out on an extremely hot Sunday. Melting tar and sheer exhaustion caused havoc, only ten cars finishing this punishing race out of a field of 41 starters. Caracciola/Werner's SS Mercedes-Benz won at 64.56 m.p.h., with similar cars in 2nd, 3rd and 5th position. Bugatti claimed 4th, 6th and 7th. Birkin was a very creditable 8th, the regularity and precision of his driving causing much favourable comment, at a speed of 58.38 m.p.h.

Tourist Trophy, Ards Circuit. (18th Aug.).

There was considerable controversy prior to this 30 lap race, Mercedes-Benz withdrawing their team of three cars because the regulations would have caused them to alter their standard bodywork, neither could they agree the stipulations regarding the number of spare wheels to be carried. Bentley Motors withdrew their team in protest at the severe handicapping which would have forced their cars to overtake most of the 56 entrants (often in the hands of relatively inexperienced drivers) three or more times during the race over this twisting and narrow circuit—a feat that was felt to be virtually impossible and highly dangerous. However Tim Birkin and Humphrey Cook courageously entered their own private 4½-litre Bentleys, while Scrap Thistlethwayte had his 6788 cc. Mercedes-Benz 36/220S, and Richard Watney his 4.9-litre Stutz to contest the 'heavy metal' categories of the 44 actual starters.

From the 'Le Mans start' the two Bentleys were first away, a position Birkin maintained when they came in after 2 laps to lower their hoods, but Viscount Curzon's 8-cylinder Type 43 Bugatti had displaced Cook's 4½ for 2nd place. Purdy's blown Alvis F.W.D. was 4th, followed by Malcolm Campbell's 2.3 Type 43 Bugatti which burst into flames shortly before halting at its pit.



1928 Le Mans, 16–17 June. At Pontlieue: the Clement/Benjafiel Bentley with the Brisson/Bloch Stutz on its tail. (The Motor)



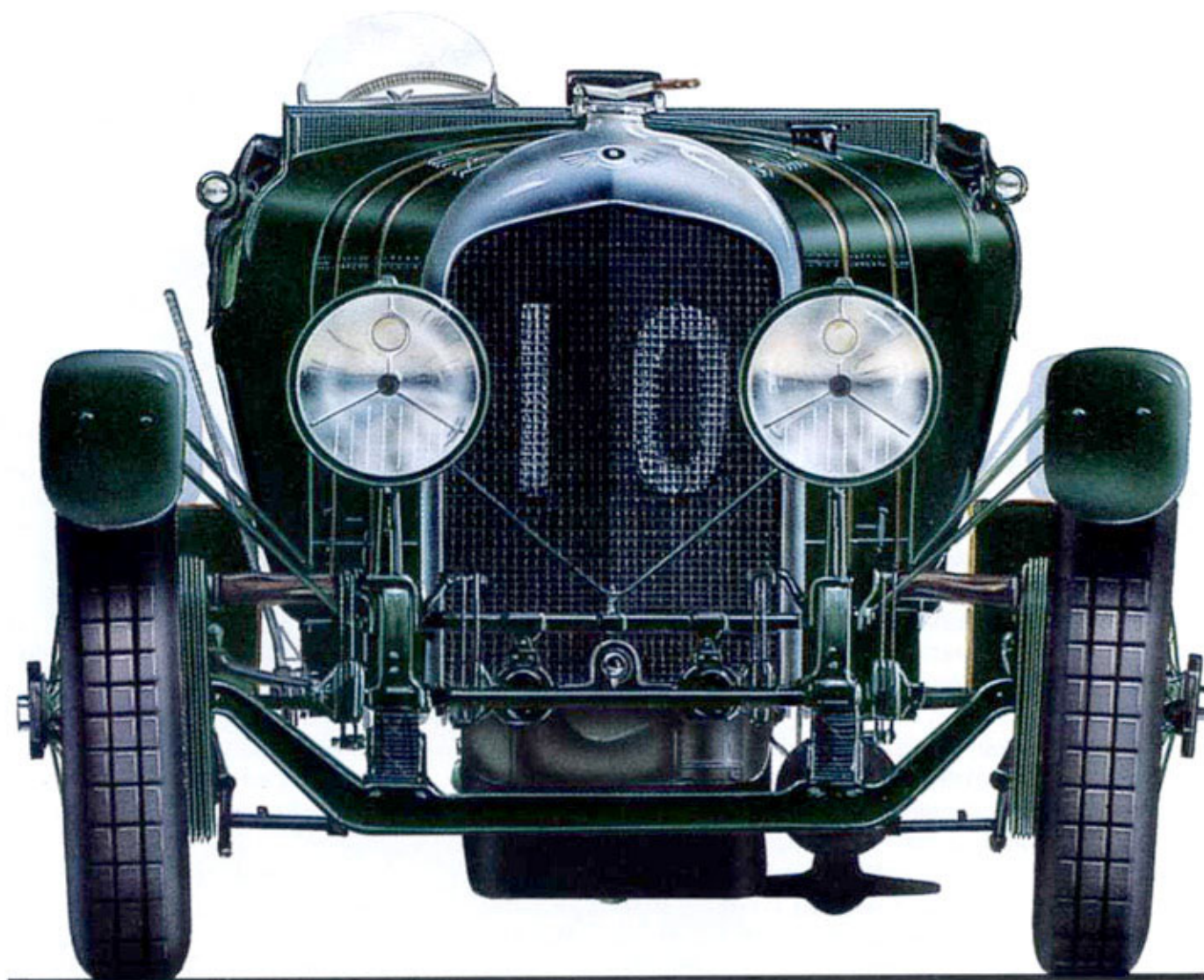
1928 Le Mans, 16–17 June. The end of the race. 'Old Mother Gun' with her drivers, Woolf Barnato and Bernard Rubin. (The Motor)



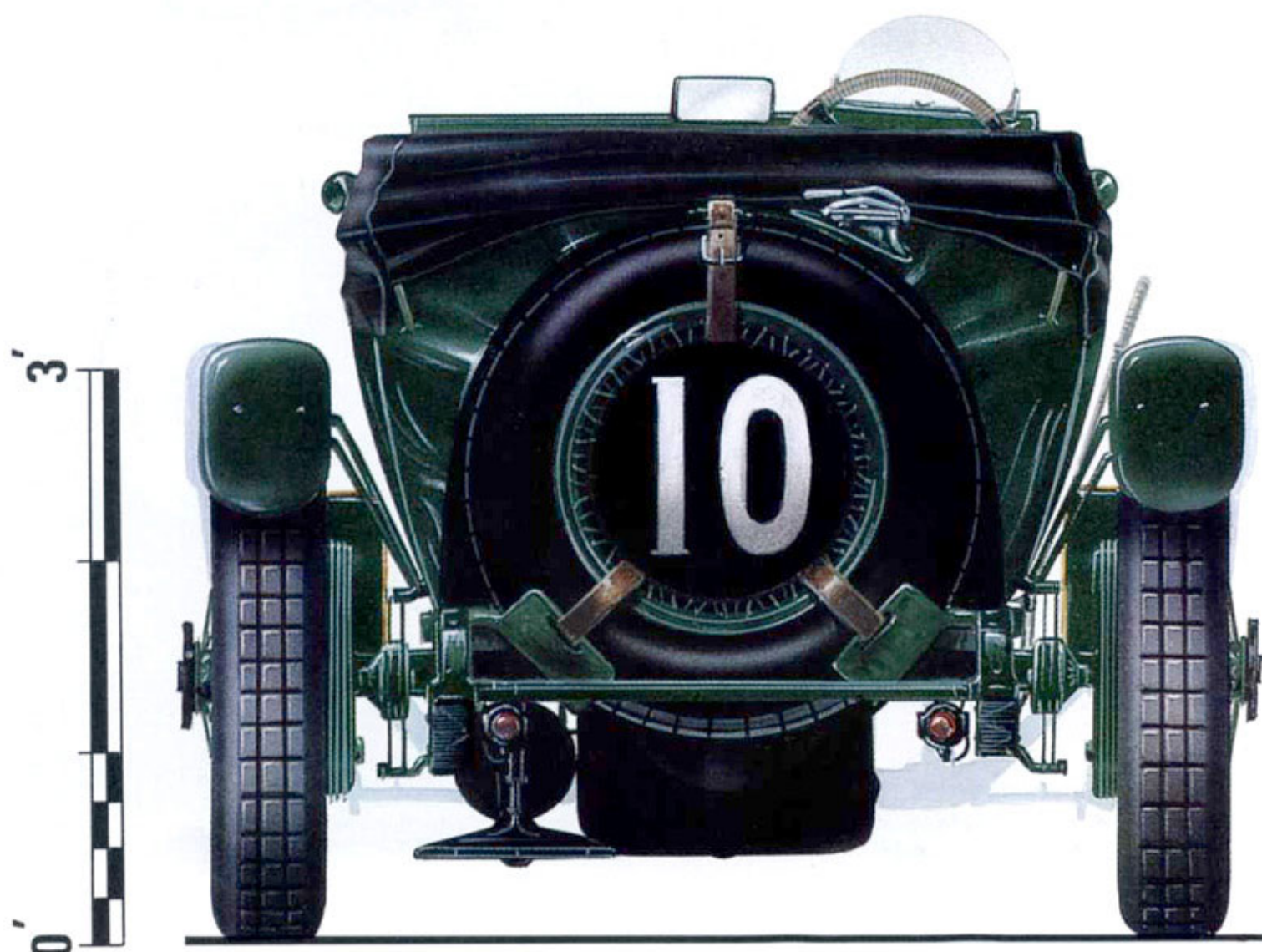
1928 Le Mans, 16–17 June. Rubin filling up the winning car. Barnato gives instructions, next to him are Nobby Clarke, Wally Hassan, Stan Ivermee, Marquis de Casa Maury, W. O. and Frank Clement. Meanwhile an official seals the oil filler. (The Daily Mail)



1928 The Tourist Trophy, 18 August. Humphrey Cook's 4½ leading one of the front-wheel-drive Alvis. (The Motor)



1928 4½-litre 'bobtail' Bentley works team car, to 1929 Le Mans specification. (See also page 208 and centre spread).



At an early stage Birkin was delayed while a fractured oil pipe was repaired, almost allowing Curzon's Bugatti to lap him, and later his number had to be refixed; finally he lost a headlamp. Meanwhile Thistlethwayte's Mercedes, during a most spectacular drive, had recorded fastest lap at 74.39 m.p.h., but plug trouble on the very first lap had spoiled his chances, and shortly after half distance Curzon's car was out of the race, due to a cracked fuel tank, and had to be towed in.

The Bentleys were doing their best to wipe out their heavy handicap, and by lap 22 they were running in 10th and 11th positions, Birkin having made up his lost time superbly, passing firstly the Stutz and then Cook's 4½ to lead his class. Kaye Don was now in the lead in his 'Hyper' Lea Francis, while Thistlethwayte's Mercedes was out of the running, having been ditched at Quarry Corner by co-driver Kindell—fortunately without injury to the occupants—after which it carried on.

The final 5 laps were very tense. Kaye Don still led, but was being steadily overhauled by L. Cushman (Alvis), who spun at Dundonald and hit the sandbags, yet was able to carry on, 37 seconds behind Don. By the final lap, 26 seconds separated them, and Cushman knocked a further 13 seconds off the lead during his agonising last circuit, short of both oil and petrol—he actually ran out of petrol 300 yards beyond the finish.

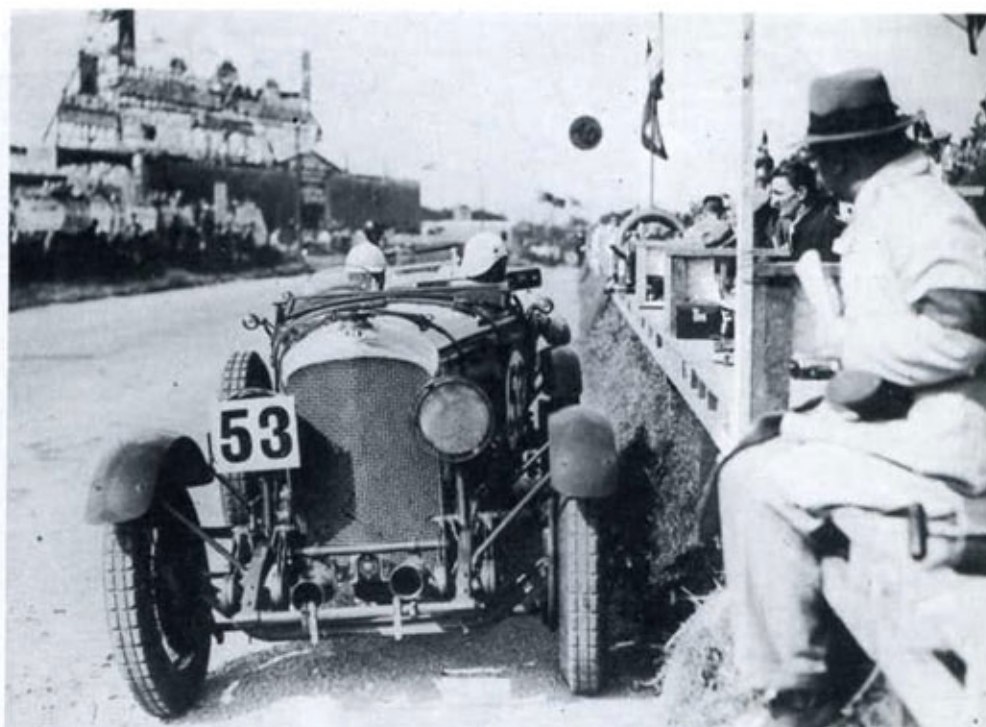
Kaye Don had won a dramatic race at 64.06 m.p.h. in his 1496 cc. 'Hyper' Lea Francis. Of the Bentleys, Birkin had fought all the way to finish 5th (despite his delays) at 65.76 m.p.h. overall, and Cook was 7th at 64.77 m.p.h.—the two highest average speeds of the race.

Coupe Georges Boillot, Boulogne Circuit. (8th Sept.). Only three weeks later, Birkin's well-used 4½ was in action again, and once more was severely handicapped by the race organisers. 25 cars started in this 278.6 mile race and Birkin, on scratch, had to watch the first car (a 749 cc. D'Yrsan) depart 65 minutes before him. The main opposition was expected to be encountered from the team of three supercharged 1500 Alfa Romeos in the hands of Ivanowski, Marinoni, and Cyril Paul. Though Malcolm Campbell had entered his 2.3 Type 43 Bugatti, the fire damage sustained in the T.T. had forced him to appear with a 4-cyl. 1496 cc. version.

When at last Birkin was flagged away, he was 1½ minutes behind Jiday's 3.9 Peugeot, yet within 10 miles he had passed him. The Frenchman was so incensed that he kept his foot hard down going into the next bend leading into a forest, the result being that his car continued straight on into the trees and was totally demolished.

The road-holding of the 4½ Bentley was highlighted by the purely superficial contact with the road surface exhibited by many of the smaller cars, and the Press were loud in the 4½'s praise. Birkin's standing lap was accomplished in 19 min 5 secs, a fine effort.

Around half distance, Rousseau (1096 cc. Salmson) was in the lead. Behind him, the Bugattis of Dutilleux and Campbell were locked in combat. By the 8th lap, Campbell led, with



Rousseau second and Dutilleux third, while Ivanowski had brought his Alfa into the picture, in 4th place. Campbell's brakes were now virtually useless, and he relied more and more on his gearbox until that too gave up the struggle, causing him to shoot up an escape road. Dutilleux was unaware of Campbell's departure, and in his efforts to 'catch up', he overdid a bend on his last lap, slid, and smashed a wheel.

In the last three miles, Ivanowski passed Rousseau to win an intelligently judged race by 9 secs at 69.65 m.p.h. Shortly afterwards, Birkin flashed over the line in 5th place, having averaged a resounding 73.16 m.p.h.—the highest winner's speed ever for this race and including a pit stop of 3 mins 42 secs.

The 1929 Season

Double Twelve Hour Race, Brooklands (10th & 11th May). No night driving was permitted at Brooklands, so this JCC-organised handicap event was run in two daytime stints of 12 hours each, the competing cars being confined to a *parc fermé* overnight. There was a 'Le Mans start' and hoods had to be erected for the first 10 laps.

The Bentley entry consisted of three 4½-litres. Clement/Cook (Cook's car in the 1928 T.T.), Sammy Davis/Sir Ronald Gunter (Clement's 1928 Le Mans car), and Birkin/N. Holder (in the latter's car). In addition, Barnato/Benjafield were at the wheel of the first Speed Six ever to be raced. There was also a privately-entered 4½ (W. B. and Mrs. Scott). On handicap, the main opposition was from five blown 1500 Alfa Romeos and a Salmson.

Fifty-two cars started, and the Bentleys were first away, aided by their quick-action hood clips. The Speed Six led after one lap, followed by Howe's Bugatti, and then the three 4½-litres; though most drivers lowered their hoods at 10 laps, the Bentleys carried on for 14 laps before

dropping theirs.

Normal pit stops weighed against the Bentleys, tyre changes and taking on 30 gallons of petrol occupying nearly three minutes, whereas the smaller cars were away again in one minute.

After 3¾ hours Don's Alfa dropped out with engine troubles, while Howe's Bugatti had long delays at its pit. At four hours, the Speed Six still led, followed by Gunter's 4½ and Ivanowski's Alfa, but the leader's luck was out, the dynamo coupling disintegrating; attempts to continue without the dynamo in place led to disqualification.

Meanwhile Ramponi's Alfa had gained the lead (a pit stop having delayed Ivanowski) from the Davis/Gunter 4½, while disaster struck the Clement/Cook 4½ in the form of a run big-end bearing. While Birkin's 4½ was being refuelled at 6.30 p.m., unburnt gases in the exhaust suddenly ignited, setting fire to the overalls of Birkin's mechanic, Chevrollier, who was badly burnt before help came.

At the end of the first day, Ramponi's 1½-litre Alfa led on handicap at 77.37 m.p.h., the Davis/Gunter 4½ tied for second place with Ivanowski's Alfa (their speeds 81.58 m.p.h. and 76.05 m.p.h. respectively), and the Birkin/Holder 4½ fourth at 80.91 m.p.h. Thirty-five cars were still running. At the start of the second day, most cars were delayed while maintenance was carried out and then got away at warming-up speeds. After 2¾ hours the first casualty was Jack Dunfee, whose Alfa stripped its timing gears, and then after six hours the Bentley team lost Tim Birkin's 4½ (faulty thrust bearing in the differential).

Meanwhile, steady rain had been falling, and Davis' 4½ hit a sand bank, leading to a pit stop. The Scotts' privately-entered 4½ which had been running steadily, though never amongst the leaders, was now slowed by intermittent fuel starvation. When dryer conditions followed,

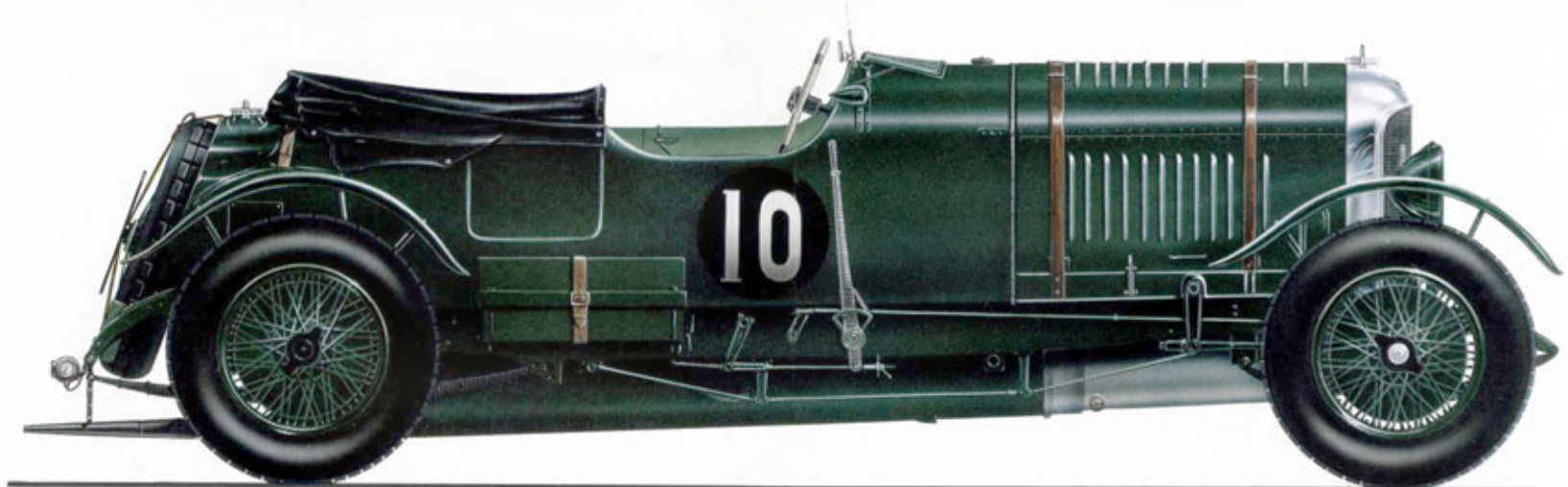
1 1928 The Tourist Trophy, 18 August. *Tim Birkin about to leave the pits after a refill.*

2 1928 Georges Boillot Cup, Boulogne, 8 September. *Tim Birkin in his 'bob-tail' at St Martin. He finished 5th having averaged 73.16 m.p.h.—the highest-ever speed for this race.*

3 1929 J. C. C. Double Twelve Hour, Brooklands, 10–11 May. *Davis's mechanic, Head, peers down at Ramponi's Alfa below him on the banking. Note the strapped-up battery box.*

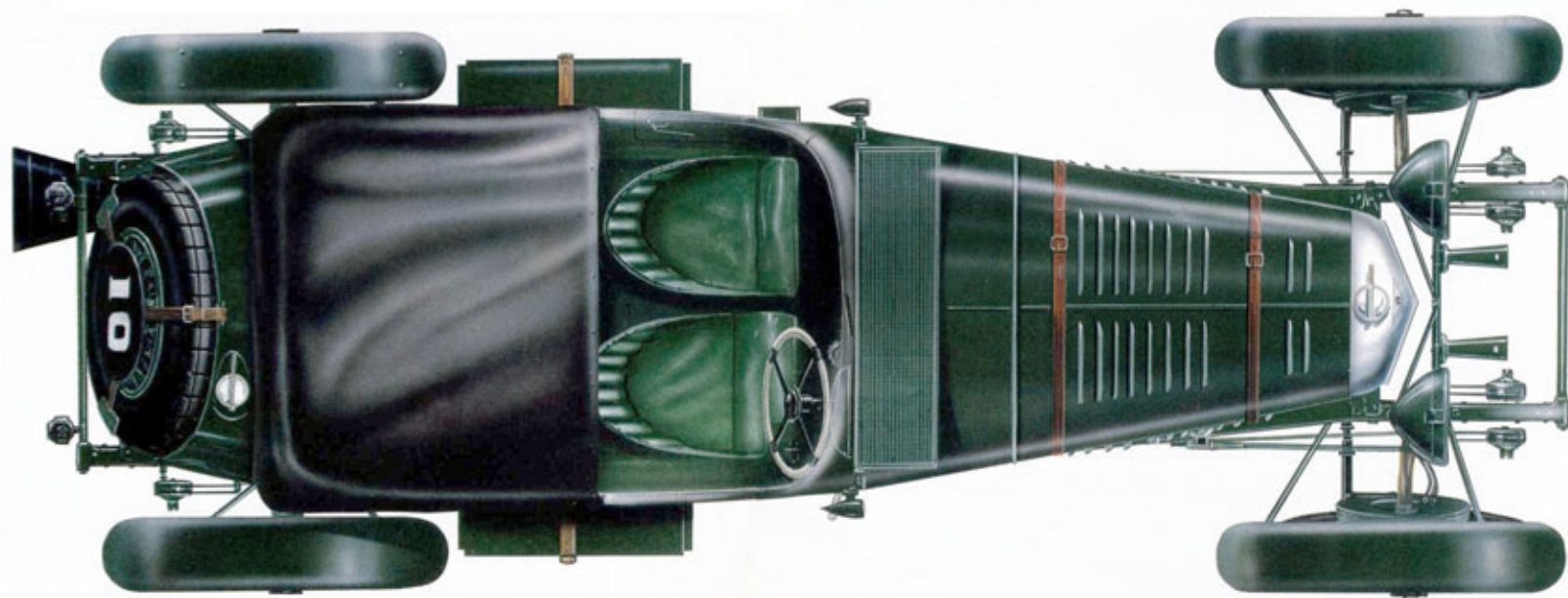


1929 J. C. C. Double Twelve Hour, Brooklands, 10–11 May. *The Davis/Gunter Bentley followed by a Frazer Nash and a Riley on the turn on to the Outer Circuit.* (The Autocar)



Gordon Davies © Profile Publications Limited

1928 4½-litre 'bobtail' Bentley works team car, to 1929 Le Mans specification. This car competed at Le Mans in 1928, driven by F. C. Clement and Dr. J. D. Benjafield (retired) and again in 1929, when Baron André d'Erlanger and Dr. J. D. Benjafield came third at 67·27 m.p.h. (108·23 k.p.h.). Its other races include the 1928 Brooklands Six Hour (Benjafield/Rubin, sixth, 71·36 m.p.h.) and the 1929 Brooklands Double Twelve Hour (Davis/Gunter, second, 81·39 m.p.h.). The Registered Number is YW2557, but number plates were not carried on the car at Le Mans. Present owner: Mr. W. D. S. Lake. (*See also pages 201 and 208*).



Gunter slowly began to gain on Ramponi's Alfa, lapping at almost 88 m.p.h., and his position was improved when the Alfa's battery box came adrift, necessitating pit improvisation with straps and cord, allowing Gunter to snatch the lead. Then the Bentley burst a rear tyre soon after passing the pits, forcing it to complete a slow lap before a wheel change could be carried out. Davis took over at this point, only to be called in to secure a loose bonnet catch (despite the regulation Brooklands bonnet straps!) before he could really set about reducing the Alfa's lead. But this was simply not Davis' day—his oil pressure was alarmingly low, the breaker strip was showing on one rear tyre, and Ramponi was repeatedly slipstreaming behind the larger Bentley to gain valuable extra m.p.h.

When the 24 hours ran out, it was found that Ramponi had won by .0003 on the formula calculation, his speed being 76.0 m.p.h., from Davis and Gunter's $4\frac{1}{2}$ (81.39 m.p.h.) while Mr. and Mrs. W. B. Scott took a creditable 11th place at 70.59 m.p.h. in their privately-entered $4\frac{1}{2}$.

Le Mans. (15th & 16th June). Five Bentleys were entered, led by the same Speed Six that appeared in the Double Twelve, now driven by Barnato/Birkin. Four $4\frac{1}{2}$ -litres were in the hands of Clement/Chassagne, Kidston/J. Dunfee, Benjafield/d'Erlanger, and Howe/Rubin. The last three cars had all run at Le Mans in 1928, and in fact the last two had only had hurried preparation when it was found that two brand-new supercharged $4\frac{1}{2}$ s were not yet sufficiently developed to race (as had been intended).

The first three cars comprised a team with 'Nobby' Clarke as pit manager, and the last two were a second team under Bertie Kensington Moir. As in 1928, there was strong American opposition—a 5.3 du Pont, three Stutz DV32s, and two 4.1 Chryslers, all handled by experienced drivers—amongst the 25 starters.

Birkin completed his standing lap at 76 m.p.h., with nobody else in sight; then came Clement, Kidston, Benjafield, Brisson's Stutz, Bouriat's Stutz, and Howe. After 5 laps, Howe came in for a plug change, Rubin carrying on in this $4\frac{1}{2}$ for a further lap, after which he lost ten laps while a magneto was changed. Howe then rejoined the race, only to coast to a stop with a stripped magneto cross shaft. After 20 laps at gradually increasing speeds, Birkin handed over the Speed Six to Barnato. Four Bentleys now led, followed by Eyston's (unblown) Stutz, the remainder of the field having been lapped at least once. During the night, the Bentley advantage was steadily increased. Brisson's Stutz, in 9th place, burst into flames during refuelling, badly burning him before the flames were extinguished, and co-driver Chiron set out on a solo drive which was later terminated by a split fuel tank. The $4\frac{1}{2}$ s were now plagued by electrical troubles; the bulb carriers in the P100 headlamps were shaking loose, causing the lamps of the 'First Team' cars to flicker and even go out at times—most disconcerting at Le Mans speeds! So speeds dropped, and the Kidston/Dunfee car was displaced from 4th position by the Eyston/Watney Stutz.



The Benjafield/d'Erlanger 4½ had battery trouble causing the headlights to go out on right-hand bends, and was also slowed by a leaking water pump gland which needed regular attention. In the early morning, the Clement/Chassagne 4½ dropped from 2nd to 8th position when repairs to a broken brake rod (caused by shifting ballast) were effected. Chryslers were now in 4th and 5th position.

By 10 a.m. the Speed Six led the Kidston/Dunfee 4½ by 70 miles, Benjafield/d'Erlanger were a further 41 miles behind, and Clement lay another 21 miles back (having displaced the Chryslers).

From 4 a.m. the Speed Six had been slowed

considerably by its team manager and was doing little more than maintaining its position ahead of Benjafield in his 4½ on which the front brake linings had worn right down. For the last two hours the four Bentleys ran to strict pit instructions, maintaining their positions until the very end when the leader paused on the Mulsanne straight to enable all four to form up for a stirring line-ahead crossing of the finishing line. Birkin in the Speed Six had established a fastest lap of 82.984 m.p.h. on his 99th lap. The Index of Performance and the Biennial Cup had also been won by Barnato and Birkin, with Benjafield and d'Erlanger in second place, and a 4.1 Chrysler in 3rd place.

1 1929 J. C. C. Double Twelve Hour, Brooklands, 10–11 May. *At the end of the race Sammy Davis and Head (off side), and Ronald Gunter and T. K. Williams in white overalls, wait for the result.*

2 1929 Records. Montlhéry, 6–7 June, *Re-fuelling stop during the Hon. Mrs Victor Bruce's single-handed 24 Hour Class 'C' record at 89.57 m.p.h. in Tim Birkin's Le Mans 4½-litre.*

3 1929 Le Mans, 15–16 June. *The Clement/Chassagne car which finished 4th, taking Mulsanne corner. (The Motor)*



1929 Le Mans, 15–16 June. *The second of the bob-tailed 4½-litres passing the pit area. (Fox Photos)*



1929 Le Mans, 15–16 June. *The Howe/Rubin 4½ in the pits with mag cross shaft gear trouble. This car took the Class 'C' 24 Hour record at Montlhéry the week before and was hurriedly prepared to take the place of the Birkin supercharged team which was not ready in time. Earl Howe works on the car while No. 18 S.A.R.A. (G. Mottet/W. D. Hawkes) sets off after its pit stop. (The Motor)*

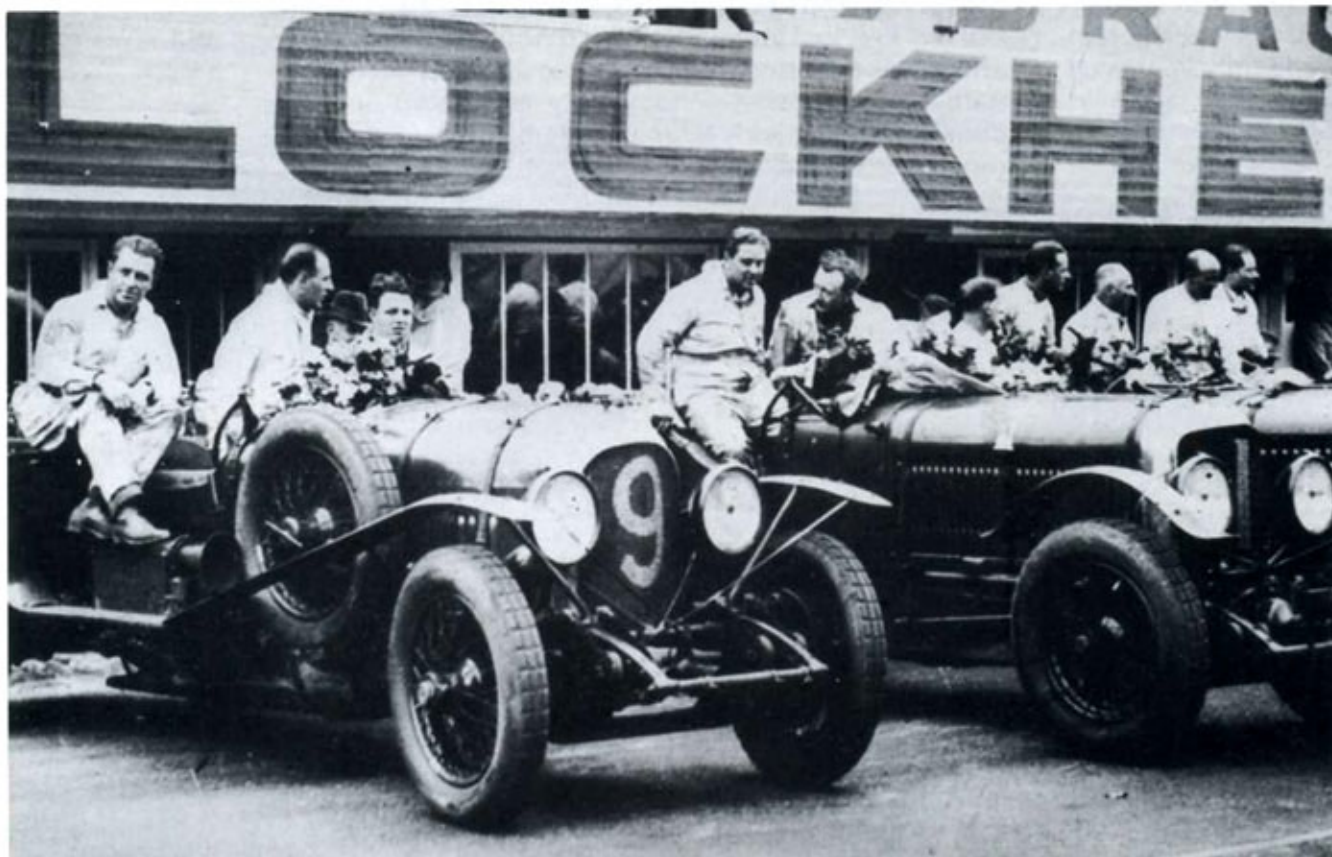


Bentleys at Le Mans, 1929. From the original oil painting by Terence Cuneo, by courtesy of Colourviews Limited.

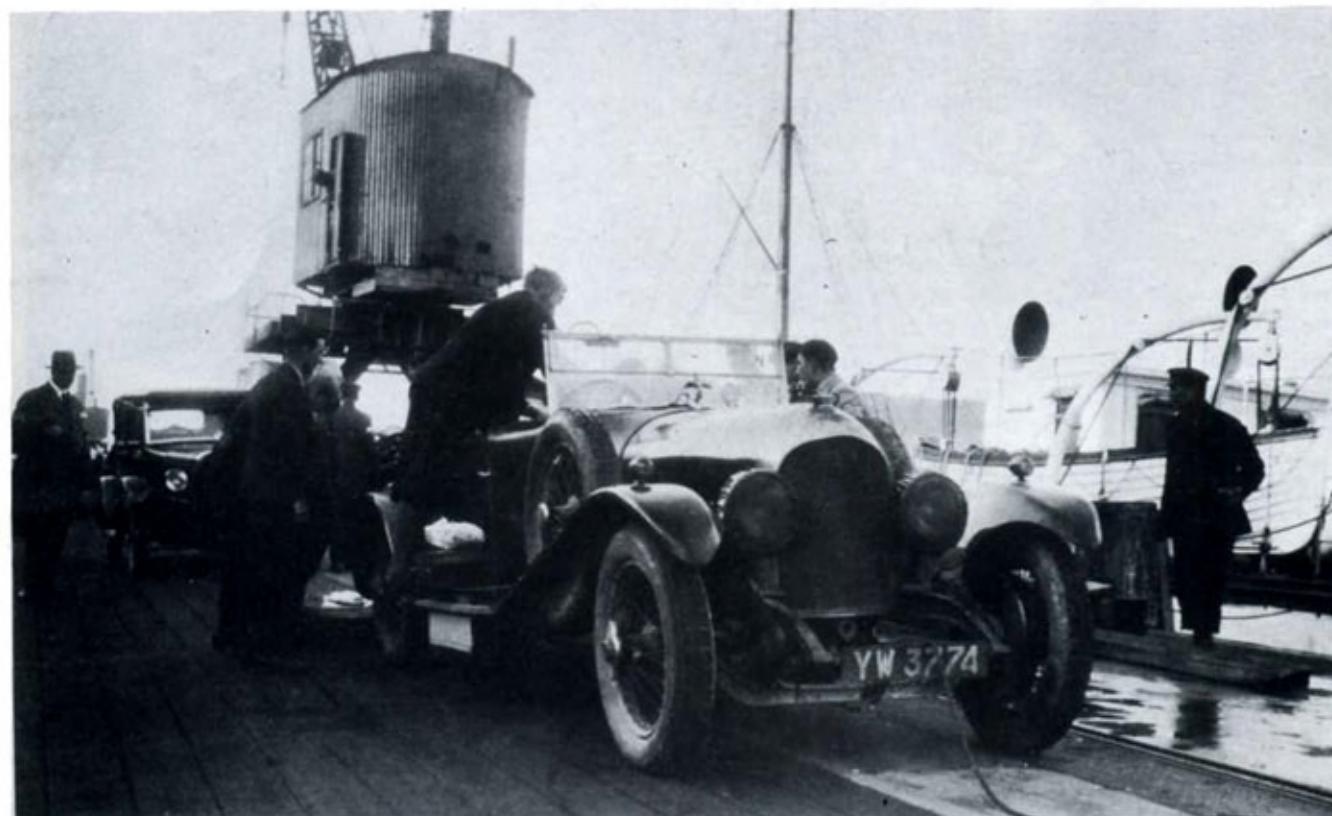
Baron André d'Erlanger tops up the oil on the 4½-litre car which came third, as No. 9 – another 4½ driven into second place by Jack Dunfee and Glen Kidston – thunders past, followed by the 4-litre Chrysler of Henri Stoffel and Robert Benoist. (See also page 201 and centre spread).



1929 Le Mans 15-16 June. Lap of honour. Tim Birkin and the Speed Six winning for the first time followed by the first 4½ in second place. The other two Bentleys, in third and fourth places were close behind, outside the picture.
(Fox Photos)



1929 Le Mans, 15-16 June. The victors. Glen Kidston and Jack Dunfee, Woolf Barnato and Tim Birkin, Frank Clement and Jean Chassagne and Benjafield and Baron d'Erlanger.



1929 Le Mans, 15-16 June. Dieppe pier on the way home. Nobby Clarke supervises the loading of the team's practice car. This car held the job from 1928 to 1930.

Actual speeds were, the Speed Six 73.627 m.p.h. followed by the three 4½s, Kidston/Dunfee 70.665 m.p.h., Benjafield/d'Erlanger 67.273 m.p.h., and Clement/Chassagne 66.405 m.p.h. Thus Bentleys scored their fourth Le Mans win (their third in succession).

Six Hour Race, Brooklands. (29th June). This handicap event required the fastest cars to complete 175 laps (457.8 miles) after a 'Le Mans start'. The 'Works' entered the faithful 'Old No. 1.' Speed Six (Barnato/J. Dunfee) and one 4½ (Cook/Callingham—the car which finished 4th at Le Mans). In addition, there were two privately-owned 4½-litres, entered by N. Holder, and by W. B. Scott who co-drove with J. Patterson. Tim Birkin entered the prototype supercharged 4½ (the car which eventually became the single-seater of Brooklands outer circuit fame). Showing considerably improved acceleration, it was eventually retired for an undisclosed reason—probably lubrication troubles, though the blower relief valve had given trouble.

Thirty-eight starters were headed by Brian Lewis' 2-litre Lagonda, but the Speed Six was in the lead after one lap, followed by Scrap Thistlethwayte's 38/250 Mercedes-Benz and then Cook's 4½. Due to the handicapping, the larger cars were not amongst the leaders during the first half of the race, but the Speed Six led its class, with Cook's 4½ slightly slower. Holder's 4½ retired with bearing troubles after 3 hours, but at 4 hours the Speed Six had achieved 3rd place on handicap, its average speed being 75 m.p.h. while Cook's 4½ was averaging 72 m.p.h. The Scott/Patterson 4½ was running steadily, but some way back in the field.

After five hours, the Speed Six took the lead on handicap from Barnes' Austin 7 which had averaged over 50 m.p.h., while Cook's 4½ led its class. Thistlethwayte's 7.1-litre Mercedes recorded fastest lap at 81.19 m.p.h., before retiring with a broken valve. The field had thinned to 23 by the end of the 6 hours, of which only 9 had achieved their set minimum distances.

Barnato/Dunfee in the Speed Six won, covering 439.49 miles at 75.88 m.p.h. L. and J. Headlam were second in the former's blown 1750 Alfa, Cook/Callingham took 3rd place in their 4½ at 72.94 m.p.h. The Scott/Patterson 4½ took 8th position at 69.91 m.p.h.

Irish Grand Prix, Phoenix Park, Dublin. (12th & 13th July). This two-day event consisted of races for cars up to 1500 cc. on the first day, and for those over 1½ litres on the second, the overall winner of the Irish GP being the one showing the best performance on handicap.

Ivanowski (blown 1500 Alfa) won the first day's race at 75.02 m.p.h. from Sammy Davis in a Lea-Francis. Therefore the second day's entrants would have to average almost 80 m.p.h. to win on handicap.

Two Bentley teams were entered. The 'Works' team consisted of Kidston in 'Old No. 1' Speed Six, plus two 4½-litres (Harcourt-Wood, and Cook). The other team were Tim Birkin's two supercharged 4½s, driven by himself and Rubin.

In addition, Scott entered his private 4½, as did Holder—but the latter non-started. There were 19 starters, and the Bentleys expected the main opposition to come from Thistlethwayte's familiar 7.1 litre s/c Mercedes-Benz and three blown 1750 Alfa Romeos. Sure enough, at the end of the first lap it was Thistlethwayte who led, followed by Birkin, Kidston and Ivanowski's Alfa—an order that was maintained for several laps. The day was a hot one, and Mountjoy corner was particularly tricky due to melting tar; Thistlethwayte was driving most consistently, but Kidston spun the Speed Six at this corner more than once.

Rubin's blower 4½ was suffering from oiled plugs which caused regular misfiring early in the race, dropping him back behind the unblown 4½s. The Mercedes maintained its lead until its first fuel stop, after which trouble set in and it was eventually retired on the 27th lap with a blown gasket—the penalty for lapping consistently at nearly 83 m.p.h. (it did in fact record the fastest lap at 83.8 m.p.h.).

On handicap, the Alfas held the first three places until Headlam's car had steering arrangements and hit a bank.

Birkin's blower 4½ was suffering from overheating, and Kidston snatched fourth place from it. The unblown 4½s were being led by Harcourt-Wood who was driving splendidly. Meanwhile the Rubin blower 4½ had been cured of its misfiring and was motoring really briskly, but had much lost ground to make up.

Then Kidston, who had been gaining steadily on Ivanowski's leading Alfa, slid badly, hit a bank, and bent a rear wheel. Despite a lightning pitstop, this incident probably lost him the race. Though he now reduced the gap to 22 seconds, he had another slide at Gough corner which cost him eight valuable seconds. In the last two laps he made a maximum effort, but it was an impossible task, and the Alfa finished 14 seconds ahead of the Speed Six. Kidston's speed was 79.8 m.p.h., ahead of Birkin whose blower 4½ had recorded 79.0 m.p.h., then Harcourt-Wood in the first of the 4½s at 76.3 m.p.h. followed by Cook's 4½ at 75.5 m.p.h.

Dr. Benjafield achieved 6th place in his 1750 blown Alfa Romeo, ahead of Scott's privately-entered 4½ (73.9 m.p.h.) and Rubin in the second blown 4½ (71.9 m.p.h.).

On handicap, Ivanowski's 76.4 m.p.h. was the best performance, and as he had thus won both day's races, he was winner of the Irish Grand Prix, Glen Kidston being second in the Speed Six.

Tourist Trophy Race. Ards Circuit, Belfast. (17th August). This was a handicap event over 30 laps (approx. 410 miles), with the Bentleys, Stutz and Mercedes on scratch, while the smaller categories were given credit laps according to engine size. A semi-'Le Mans start' required drivers to run across the track and to lower their hoods prior to starting. There was a private 4½ entry of the well-used prototype car, now owned by the Hon. Richard Norton whose nominated driver was Jack Dunfee, but the car was in fact handled by a Major E. Hayes. The 'Works' entered 'Old No. 1.' Speed Six (Kidston), while Birkin had entered

three blower 4½ litres—one driven by himself, with no lesser a personage than W.O. as his riding mechanic (to the considerable alarm of pit manager Bertie Kensington Moir), and the others by Rubin and by Harcourt-Wood who had driven a 4½ so well at Phoenix Park the previous month.

In his autobiography, W.O. makes the classic comment 'I took on the job (of riding mechanic) because I thought our mechanics were beginning to consider themselves heroes. After the race I realized they were right'.

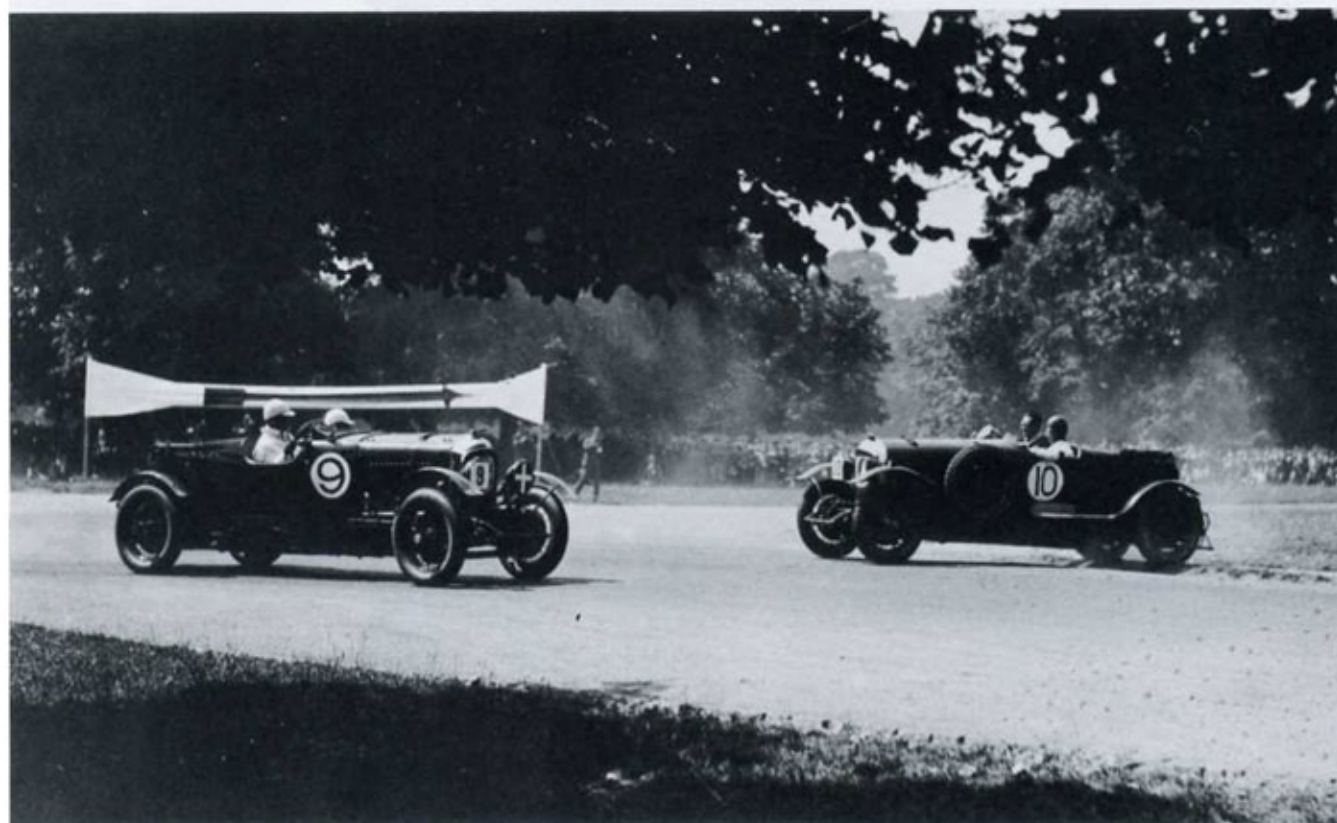
Principal rivals were four Mercedes, two of which were the latest SS supercharged 7020 cc. driven by Caracciola and Merz, Thistlethwayte's new 38/250 car and a 36/220 driven by Maconochie. Amongst the smaller categories, trouble could be expected from no less than eight Alfa Romeos.

With a field of a staggering 65 starters, overtaking on this twisty circuit was clearly going to be a real problem for the faster cars. Caracciola was soon in the lead, passing Kidston, and it was evident that speeds would be very high. Quite early on, Rubin got his blower 4½ into a giant slide at Mill Corner, charged the bank and (to use his own words) 'slowly but gracefully overturned'. Harcourt-Wood's first outing in a blower 4½ was not proving too happy, persistent misfiring causing his eventual retirement after 21 laps. Intermittent showers commenced, making road conditions around the circuit highly unpredictable, yet when most drivers slowed, Caracciola on the SS Mercedes continued undaunted, putting up an amazing performance.

At 10 laps, four Austin 7s held the lead on handicap, lapping at just under 60 m.p.h.



1929 B.A.R.C. Six Hours Race, Brooklands. *The Cook/Callingham 4½-litre leading a Lea Francis, a Lagonda and another Lea Francis through the first chicane at the beginning of the race.* (Fox Photos)



1929 Irish Grand Prix, Dublin, 13th July. *Scott spins No. 10 Bentley in front of Humphrey Cook's 4½ on the melting tar at Mountjoy corner.* (The Autocar)

Caracciola was gradually pulling away from Kidston, but Birkin was holding the second 'Works' Mercedes of Merz. At 15 laps the position was unchanged. Then Kidston got into a long slide coming out of the S-bend before Bradshaws Brae and landed astride a small bank bordering a ditch, a position from which he could not be extricated.

Hayes, going well in the lone 4½, had been in contact with the sandbags and now suffered the collapse of his offside front wheel. Pulling up safely, he was able to replace the wheel, but he lost much valuable time, and he was flagged off when still running at the end of the race. Merz was disqualified when he tore off the battered remains of a front wing with his bare hands.

At 25 laps, two Austin 7s still led, with Campari's Alfa third and Caracciola now in 4th position (having recorded a record lap at 77.81 m.p.h.), while Birkin was still going strong. Half an hour from the end, Campari got ahead of the Austins, and was in turn overwhelmed by the Mercedes which was unslowed by further heavy rain.

Tim Birkin, with W.O. aboard, finished in 11th place on handicap at 69.01 m.p.h. (compared with Caracciola's 72.82 m.p.h.), a splendid effort which won his class.

B.R.D.C. 500 Mile Race, Brooklands Outer Circuit. (12th October). This was a handicap race over 181 laps, the various classes starting at timed intervals (the scratch cars leaving some 68 minutes after the smallest class).

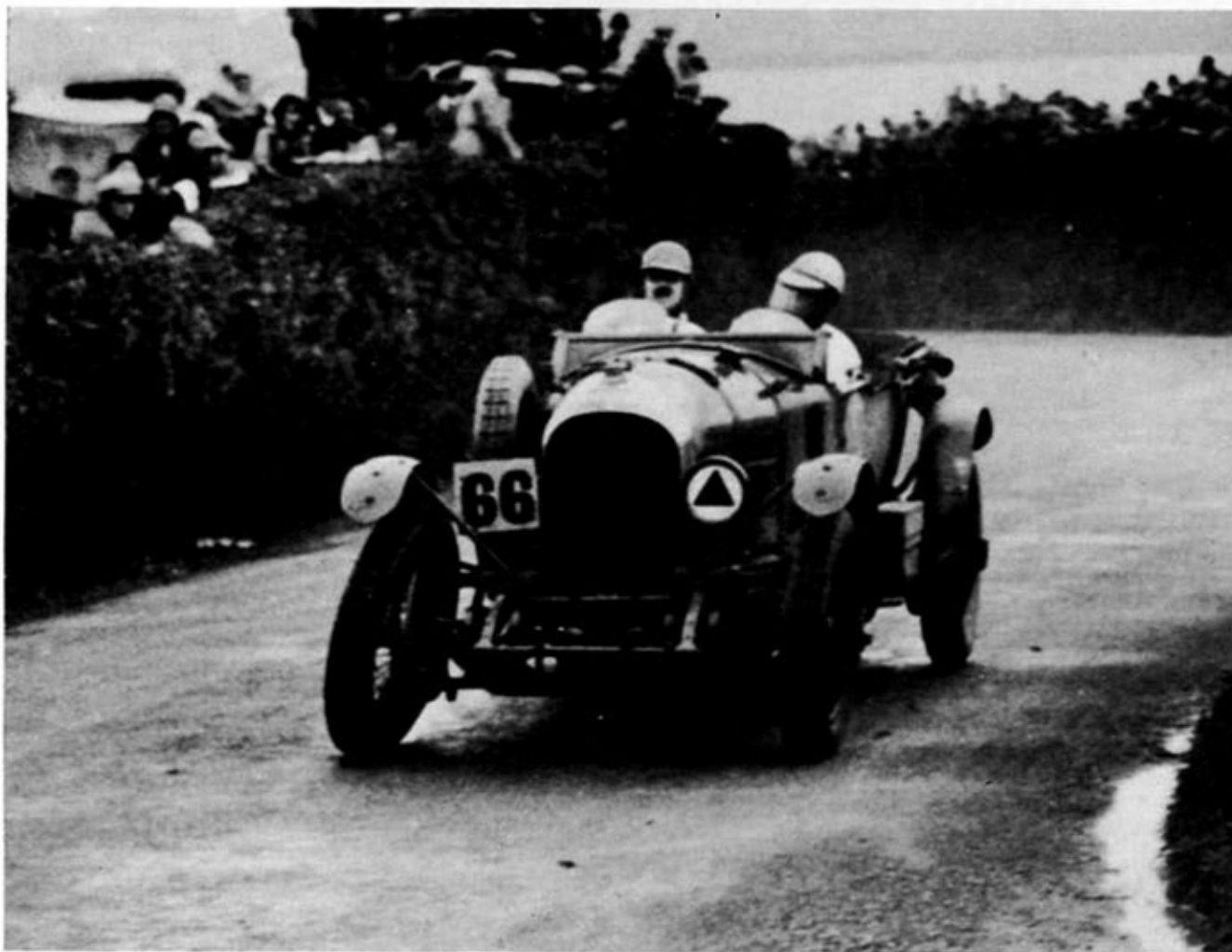
The Bentleys all ran in stripped form. 'Old No. 1' Speed Six, now with short stubby-tailed two-seater body, was in the hands of Davis/C.

Dunfee. Of the 4½-litres, there was a Le Mans car now with long tail (Clement/Barclay), Scott's 6-hour Race car (Rose-Richards/Fiennes), and Hon. Richard Norton's prototype car (J. Dunfee). Birkin/Harcourt-Wood were to drive the original blower 4½. Their main opposition was Kaye Don's pair of V-12 supercharged 4-litre Sunbeams, 'Tigress' (Don/Froy) and 'Tiger' (Cobb/Paul), and the 2-litre Sunbeam 'The Cub' (Eyston).

Once the whole field were away it was Birkin who set the pace, lapping at over 121 m.p.h. and pursued by Don in his latest Sunbeam 'Tigress'. However the blower 4½ developed a severe oil leak which forced Birkin to come in and clean his goggles, screen and steering wheel. Meanwhile Dunfee got the Speed Six into the lead of the Bentleys before handing over to Davis.

At 72 laps, Vernon Balls' Amilcar (1097 cc. supercharged) led on handicap, followed by two Austin 7s. However sheer speed was beginning to tell, and by lap 90 Eyston's Sunbeam 'Cub' was in second position, taking the lead when the Amilcar dropped a valve. Barclay was having an exciting race in the long-tailed 4½. Coming under the Members bridge at some 120 m.p.h. the offside rear tyre burst causing a monumental spin. Three laps later, after changing the wheel, a front tyre burst when he got two wheels off the road when overtaking. Dunfee/Field retired Norton's prototype 4½ ('Old Mother Gun') in what was this famous car's last major race, and Froy retired the Sunbeam 'Tigress' with a broken back spring after leading the field.

Around ¾ distance, Eyston's Sunbeam 'Cub' retired with a broken spring, Cobb's 'Tiger'



1929 The Tourist Trophy Race, Belfast. 17 August. No. 66 'Old Mother Gun' driven by Hayes and privately entered by the Hon. Richard Norton suffers a front wheel collapse. (Belfast News-Letter)

broke its frame (but continued to circulate at reduced speed), and the fabric of the body of the Birkin/Harcourt-Wood blower $4\frac{1}{2}$ caught fire when a flexible section in the exhaust pipe failed. Clement now took the lead in the $4\frac{1}{2}$ which had seen so much drama and proceeded to win on handicap at the fine average of 107.32 m.p.h., Davis/C. Dunfee being second in 'Old No. 1' Speed Six at 109.4 m.p.h., Cobb/Paul's Sunbeam 'Tiger' being third, Headlam/Callingham (blown 1750 Alfa Romeo) fourth, and Rose-Richards/Fiennes fifth in their $4\frac{1}{2}$ after an impressively steady drive.

So ended the 1929 racing season. In 1930 Bentley Motors did not again enter a $4\frac{1}{2}$ -litre in competition prior to their announcement (just after the 1930 Le Mans race) that they were retiring completely from racing to enable them to incorporate the many lessons, learned the hard way, into their production models. Early in the year, the Hon. Dorothy Paget had purchased Tim Birkin's three blower $4\frac{1}{2}$ s (the original of which had now become 'the single-seater') and had added a new road racing car to her team for the 1930 season, to be maintained independently at Welwyn.



1929 B.R.D.C. 500 Mile Race, Brooklands, 12 October. *The start of the under 5000 cc. Class. (From the left, front row) Tim Birkin's supercharged $4\frac{1}{2}$, Kaye Don's two supercharged V-12 4-litre Sunbeams ('Tigress') K. Don/D. Froy, and 'Tiger' C. Paul/J. Cobb), and Frank Clement/Jack Barclay's $4\frac{1}{2}$ with long streamlined tail. (Back row) the Rose-Richards/Fiennes $4\frac{1}{2}$, and 'Old Mother Gun' in her last race, driven by Jack Dunfee/Field. (The Motor)*



1929 B.R.D.C. 500 Mile Race, Brooklands, 12 October. *Jack Barclay loses it on the banking and dives into the cockpit for safety. Later to emerge and to win the race with Clement at 107.32 m.p.h. (The Motor)*

SUMMARY OF 4½-LITRES IN RACES AND RECORDS

Year	Event	Race No.	Drivers	Results	Speed m.p.h.
1927	Le Mans	1	{ F. C. Clement L. G. Callingham	Crashed	—
	G.P. de Paris, Montlhéry	2	{ F. C. Clement G. Duller	1st	51.99
1928	Six Hour Race, Brooklands	4	{ F. C. Clement Woolf Barnato	8th	70.35
		5	{ H. R. S. Birkin	3rd	72.27
		6	{ J. D. Benjafield B. Rubin	6th	71.36
	Le Mans	2	{ F. C. Clement J. D. Benjafield	Retired	—
		3	{ H. R. S. Birkin J. Chassagne	5th	60.46
		4	{ Woolf Barnato B. Rubin	1st	69.11
	German Grand Prix, Nürburgring	7	H. R. S. Birkin	8th	58.38
	T.T. Ards Circuit, Belfast	53	H. R. S. Birkin	5th	65.76
		54	W. H. Cook	7th	64.77
	Georges Boillot Cup, Boulogne	69	H. R. S. Birkin	5th	73.16
1929	Double Twelve Hour, Brooklands	5	{ F. C. Clement W. H. Cook	Retired	—
		6	{ S. C. H. Davis Sir R. Gunter	2nd	81.39
		10	{ Mrs. Scott W. B. Scott	11th	70.59
		12	{ H. R. S. Birkin N. Holder	Retired	—
	Le Mans	8	{ F. C. Clement J. Chassagne	4th	66.40
		9	{ G. Kidston J. Dunfee	2nd	70.67
		10	{ J. D. Benjafield Baron d'Erlanger	3rd	67.27
		11	{ Earl Howe B. Rubin	Retired	—
	Six Hour Race, Brooklands	4	{ W. H. Cook L. G. Callingham	3rd	72.94
		6	N. Holder	Retired	—
		7	{ W. B. Scott J. Patterson	8th	69.91
	Irish Grand Prix, Phoenix Park, Dublin	7	B. Harcourt-Wood	4th	76.30
		9	W. H. Cook	5th	75.50
		10	W. B. Scott	7th	73.90
		8	N. Holder	N/S	—
	T.T., Ards Circuit, Belfast	66	E. Hayes	Flagged Off	—
	500 Mile Race, Brooklands	31	{ F. C. Clement J. Barclay	1st	107.32
		33	{ T. Rose Richards C. W. Fiennes	5th	98.80
		34	{ J. Dunfee J. F. Field	Retired	—
1930	Double Twelve Hour, Brooklands	10	{ M. O. de B. Durand T. K. Williams	Retired	—
	T.T., Ards Circuit, Belfast	4	E. R. Hall	12th	68.36

1930 Shelsley Walsh Hill Climb. *Eddie Hall* takes his T.T. 4½-litre through the esses.

1930 Tourist Trophy, Belfast, 23 August. *Eddie Hall* overtakes Nuvolari's 1750(s) Alfa Romeo (the eventual winner) and Ashby's Riley at Ballystockart. (The Autocar)

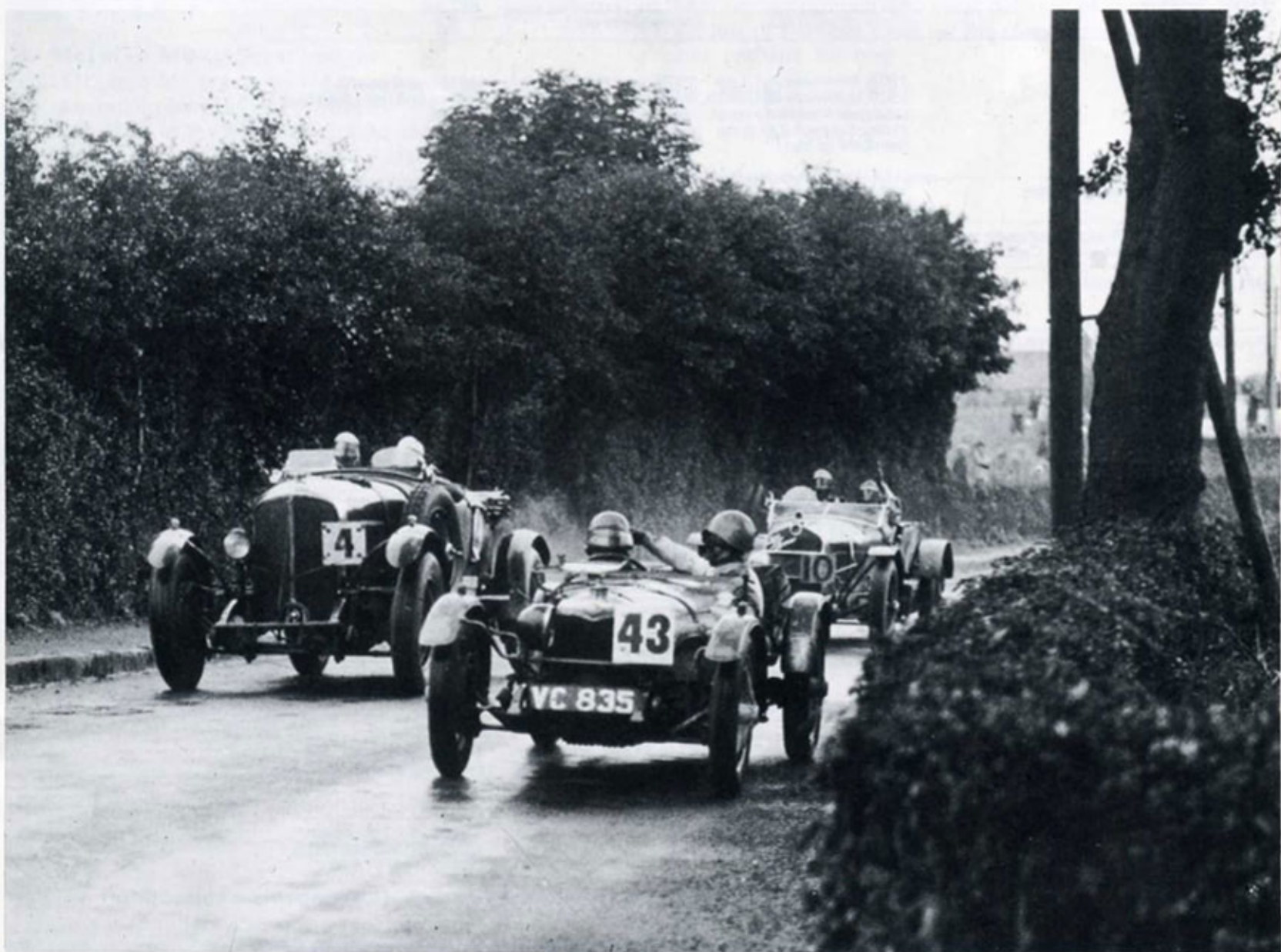
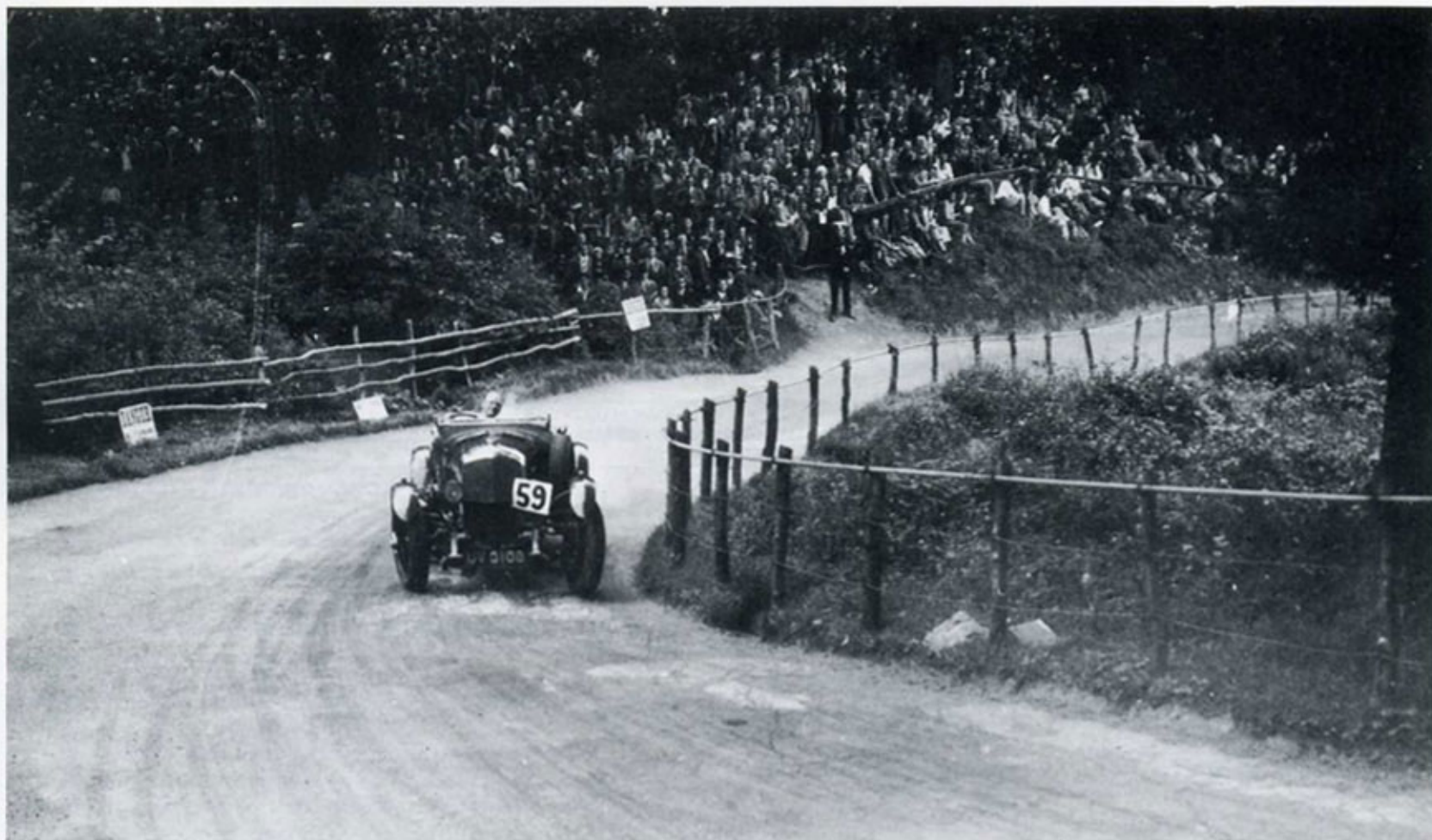
WORLD RECORDS BY A 4½-LITRE BENTLEY

Date & Place	Record	Driver(s)	m.p.h.
23.10.28 Brooklands	200 Km.	{ Dudley Froy	111.60
	200 miles		110.26

CLASS 'C' RECORDS BY 4½-LITRE BENTLEYS

10.10.28	Brooklands	1 hour	{ Dudley Froy	115.50
		100 miles		115.52
<i>All the above records were taken in a short 3-litre chassis, with the first 4½-litre engine installed and a special body.</i>				
6/7.6.29	Montlhéry	24 hour	{ The Hon. Mrs. Victor Bruce	89.57
		3000 Km.		89.08
		2000 miles		89.15
<i>These records were taken by Mrs. Bruce single-handed in a 1928/1929 Le Mans team car (YV 7263) in full road-racing trim.</i>				
22/23.4.31	Montlhéry	12 hour	Stewart & Norton	97.81
		24 hour	Froy & Raphael	93.42
		1000 miles	" "	97.76
		2000 Km.	" "	98.03
		3000 Km.	" "	96.97
		2000 miles	" "	96.68

These records were taken in YH 3196, the first 4½-litre, in road-racing trim. This car was raced at Le Mans in 1927, 1928 and 1929, and in four other major races between 1927 and 1929.



SPECIFICATIONS OF THE 4½-LITRE BENTLEY

	All Models	Standard 10' 10½" W.B. Short 9' 9½" W.B. 1927-1930 (excluding RC series of 1936	Works Team Cars 1927-1929	Standard Supercharged Model, 1930 (excluding the 4 Birkin racing cars)
ENGINE				
<i>Cylinders</i>	4. Cast <i>en bloc</i> . Non-detachable head.	BM 3401 Standard. BM 4354 Supercharged type late in 1930.	BM 3401.	BM 4354.
<i>Bore and Stroke</i>	100 mm. × 140 mm.	100 mm. × 140 mm.	100 mm. × 140 mm.	100 mm × 140 mm.
<i>Cubic Capacity</i>	4398.24 cc.	4398.24 cc.	4398.24 cc.	4398.24 cc.
<i>Camshaft</i>	Single overhead.	BM 3480.	BM 3480.	BM 3480.
<i>Pistons</i>	Aluminium alloy.	BM 3622, Split skirt B.H.B.	Hour glass racing type special high compression.	5 mm. greater gudgeon pin diameter.
<i>R.P.M.</i>		3,500 maximum.	3,750 in emergency.	3,500 Normal. 3,900 Per- missible.
<i>Compression Ratio</i>		Early models 4.8:1. Saloons 5.1:1. Open bodies 5.3:1.	6.2:1. (2 mm. off crank- case and 3 mm. off foot of cylinder block).	4.5:1. 5.1:1. 5.3:1.
<i>B.H.P.</i>		Saloons 5.1:1 CR 105. Open bodies 5.3:1 CR 110.	6.12:1 130.	175 at 3,500 r.p.m. 182 at 3,900 r.p.m.
<i>Supercharger</i>				C. Amherst Villiers- designed Roots type. Boost: 9½ lbs. at 3,500 r.p.m.; 10 lbs. at 3,900 r.p.m.
<i>Ignition</i>	Two magnetos. Two plugs per cylinder. Firing order: 1, 3, 4, 2.	1927 Type M.L. GR4. 1928/30 Type M.L. ER4.	1927 Type M.L. GR4. 1928/30 Type M.L. ER4.	Bosch FF4 or FU4B
<i>Carburettors</i>	Twin S.U.s, 1½" choke.	1927 S.U. type G5 (slopers). 1928/30 S.U. type HVG5 (vertical).	1927 S.U. type G5 (slopers). 1928/30 S.U. type HVG5 (vertical).	1930 S.U. type HVG5 on near side of supercharger casing.
<i>Fuel consumption</i>	At 30 m.p.h.	16 m.p.g. approx.	12-13 m.p.g. approx.	10-12 m.p.g. approx.
<i>Clutch</i>		1927/28 Cone. 1929/30 Single plate.	1927/28 Cone square section spring (one car with plate clutch). 1929/30 Single plate.	Single plate.
<i>Weight: complete engine</i>		597 lbs.	597 lbs. (excluding dupli- cated lines etc.).	687 lbs.
CHASSIS				
<i>Frame</i>		1928, thickness ⅝". Late 1928, thickness ¾". 1928, strut gear standard except short chassis. 1930, front members bolted.	1928, up to Le Mans, thickness ⅝", thereafter, ¾". 1928, strut gear one car only. 1929, front members bolted. 1929, strut gear fitted.	All had strut gear, ⅜" frames and front members bolted.
<i>Springs</i>	Semi-elliptic.	1930 April, Berry springs.	Extra heavy and corded.	Woodhead on front, Berry in rear.
<i>Wheels</i>	Rudge Whitworth well- base rims. Centre lock.	Rudge Whitworth well- base rims. Centre lock.	Rudge Whitworth well- base rims. Centre lock.	Rudge Whitworth well- base rims. Centre lock.
<i>Tyres</i>	Dunlop	5.25" × 21".	31" × 5.35" Road Racing 32" × 6.00" for Brook- lands.	6.00" × 21" (33" × 6.00").
<i>Shock absorbers</i>	Friction type	1928/29 Bentley & Draper 1930 Heavy type B&D on front.	1928 André 2 per axle. 1928 T.T. one Car André 4 per axle. 1929 André 4 per axle.	André 2 per axle.
<i>Brakes</i>	Bentley-Perrot Internal Expanding. F.W.B.	1929, Self-wrapping on front.	1928/29, Brake adjuster on floor between driver's legs. 1928 only, Front brakes 'push-on'. 1929, Self-wrapping on front.	Self-wrapping on front.
<i>Gear box</i>	4 speeds forward & reverse.	1927, 'C' type. 1928, 'D' type. 1929 'C' type.	1927, 'A' type. 1928/29, 'D' type.	'D' type.
<i>Wheelbase</i>		10' 10½" standard chassis. 9' 9½" short chassis.	10' 10½".	10' 10½".
<i>Track</i>	4' 8".	4' 8".	4' 8".	4' 8".
<i>Width overall</i>	5' 8½".	5' 8½".	5' 8½".	5' 8½".
<i>Length overall</i>		14' 3½" standard. 13' 3" short.	14' 3½".	14' 7".
<i>Weight: chassis</i>		27 cwt. standard; 26 cwt. short.	28 cwt.	28½ cwt.
<i>Weight: complete car</i>		32½ cwt. open standard; 36 cwt. closed standard; 31 cwt. open short; 35½ cwt. closed short.	33 to 34 cwt. approx. (in- cluding large tank, dupli- cated lines etc.).	34 cwt. open body; 38½ cwt. closed body.
PRICE		Chassis: £1,050; open sports: £1,295; closed: from £1,575.		Chassis: £1,150; open sports: £1,395 to £1,515; closed: from £1,675.
MAX. SPEED		92 m.p.h. at 3,500 r.p.m.	110-120 m.p.h. according to type of body, tyres and gear ratios.	104 m.p.h. at 3,500 r.p.m.

About the Authors

Darell Berthon was a Vice-President of the Bentley Drivers Club and its Honorary Archivist. He was a member of the Club for 33 years and was its Secretary and/or Executive Vice-President for 21 of them. He was the author of *A Racing History of the Bentley* (Bodley Head, 1956) and of two Profiles on the 3 and 6½-litre cars in the earlier Classic Car Profiles series. Lieut.-Col. Berthon was commissioned in the 1st King George V's Own Gurkha Rifles in 1920 and he retired from the Army in 1947. He owned three Bentleys – two of them 3 litres, and one 3/4½ which he drove and enjoyed from 1937 to 1961. He died in 1972 while preparing this Profile, which has been completed by Sir Anthony Stamer, Bart.

Anthony Stamer was brought up proper in an entirely horse-orientated family, which accounts for lifelong obsession with cars. Kept permanently on the breadline by a succession of total rebuilds, playing havoc with blessed state of matrimony. Wrote handbook and managed sales for late lamented Gordon Keeble car. Succeeded Darell Berthon in 1969 as Executive Director of Bentley Drivers Club, transferring in 1973 to similar position in Bugatti and Ferrari Owners Clubs. Drops on knees nightly, facing Maranello.

Front Cover Illustration: Le Mans, 1928: Rubin filling up the winning car.

Conversion tables

1 litre = 1,000 cc. = 61.0253 cu. ins. = 0.2199 Imperial gallon = 0.2642 U.S. gallon

1 Imperial gallon = 8 pints = 1.16 U.S. gallon = 277.420 cu.in. = 4.5459 litres

1 U.S. gallon = 4 quarts = 231 cu. in. = 3.785 litres

1 inch = 25.40 millimetres 1 mile = 1.609 kilometres

1 kilometre = 0.6214 mile

Horse Power

In the English-speaking countries (British Commonwealth and U.S.A.) horse-power represents a slightly higher power than metric horse-power expressed as the German PS (*Pferde Staerke*), or the French CV (*Cheval vapeur*), in the ratio of 1.0139:1.

Power Outputs

If a brake horse-power (b.h.p.) figure is quoted net in German D.I.N. (*Deutsche Industrie Norm*) or British B.S.Au., then this net power is delivered by the engine to the transmission. If, however, power is quoted gross, or American S.A.E. (Society of Automotive Engineers), this power is delivered by the engine, out of the car, and tested under ideal conditions, being devoid of such power-consuming accessories as fan, water pump, dynamo, exhaust system etc.

Glossary of Anglo/American Motoring Terminology

English	American	English	American
Bonnet	Hood	Paraffin	Kerosene
Boot	Rear Trunk	Petrol	Gasolene/Fuel
Capacity	Displacement	Petrol tank	Gas tank
Carburetter	Carburetor	Side-valve	L-head
Coupé de ville	Town car	Silencer	Muffler
Dickey	Rumble seat	Sparking plug	Spark plug
Dip switch	Beam switch	Three-light	Three-window
Drophead	Convertible	Tourer	Phaeton/touring
Dynamo	Generator	Track	Tread
Fixed head	Hardtop	Two-stroke	Two-cycle
Four-seater	Four-passenger	Tyre	Tire
Hood	Top	Windscreen	Windshield
Kerb	Curb	Wings	Fenders