



England's Racing Antiques

by Dennis May

THE PENCHANT of British automotive commentators for sweet scented euphemism was put to a severe test by the publication, early in 1934, of the first photos and descriptions of the eagerly awaited E.R.A. racing car. Ransacking their vocabularies for civil ways of saying that the thing looked ten years out of date before it had even hit the starting grid, they made reassuring play with the fact that the design was just hopping with Well Tried Principles, passing thence to scholarly considerations of evolution *vs.* revolution. For their money, readers could infer, evolution was a many splendoured process.

In continental Europe, on the other hand, the debut of the gawky, gangling E.R.A. was greeted with more candour than kindness. Charles Faroux, the literary sage whose judgements had been law to two generations of French motorists, suggested that the initials could stand for English Racing Antiques. And an Italian contemporary reported a colony of dodos symbolically nesting at Bourne, the new make's birthplace.

As subsequent events were to show, the E.R.A.'s British apologists had been on firmer ground than they knew, while the heavy humorists in Paris and Milan never had any ground under their feet in the first place. Between 1934 and the 1939 shutdown, E.R.A.s were the dominant factor in European *voiturette* racing, winning a substantial majority of their encounters with the only continental marque—Maserati—that stayed in the running throughout this period. On the Avus circuit, Berlin, in 1937, a privately owned E.R.A. turned the fastest winning speed for any race

anywhere with a 1½ litre limit—119.69 mph. At Dublin the same year a 2 litre E.R.A. averaged 102.9 miles per hour to win the annual Phoenix Park hundred miler—and that still stands as a record for road or airfield races in the British Isles, not excepting the British Grand Prix itself. Prior to the advent of Cooper in 1946, E.R.A. was decisively the most successful racing car ever produced in Britain; in fact, on a *pro rata* basis it is doubtful whether even Cooper has equalled the E.R.A. score to this day, for the total output of English Racing Automobiles was only sixteen cars, against around 700 Coopers.

To feel at home in an E.R.A., a man needed a head for heights. Overall stature of the car, not including the windshield, was forty-six inches. Distance from the road to the seat was twenty-one inches and the ground clearance gave points to a bath chair. Center of gravity came twenty inches above the countryside and the wheelbase was ninety-six inches. Treads, front and back, were 52½ and 48 inches respectively.

There were two reasons why the E.R.A. stuck up in the air such a long way. First, Reid Railton, who had been called in to design the chassis, made no secret of his belief that nature abhorred an ultra low center of gravity; breakaway on corners came later with such a layout, he admitted, but when it did come it happened with lethal speed. Second, as it hadn't occurred to English Racing Automobiles to put the engine at the back, or alternatively to spring the rear wheels independently, it naturally followed that clearance had to be allowed for the drive shaft to swipe up and down under the

driver's seat. *Monoposto* form being the basis of E.R.A. architecture, it wouldn't have been easy to run the shaft alongside the driver.

Nature's abhorrences, as interpreted by Railton, also apparently included springs that sprang. Front and rear suspension both used flat springs of the type misleadingly called semielliptic; the front pair, outriggered from the chassis, being only 24 inches long and allowing a total deflection of less than an inch. Friction shocks were fitted fore and aft.

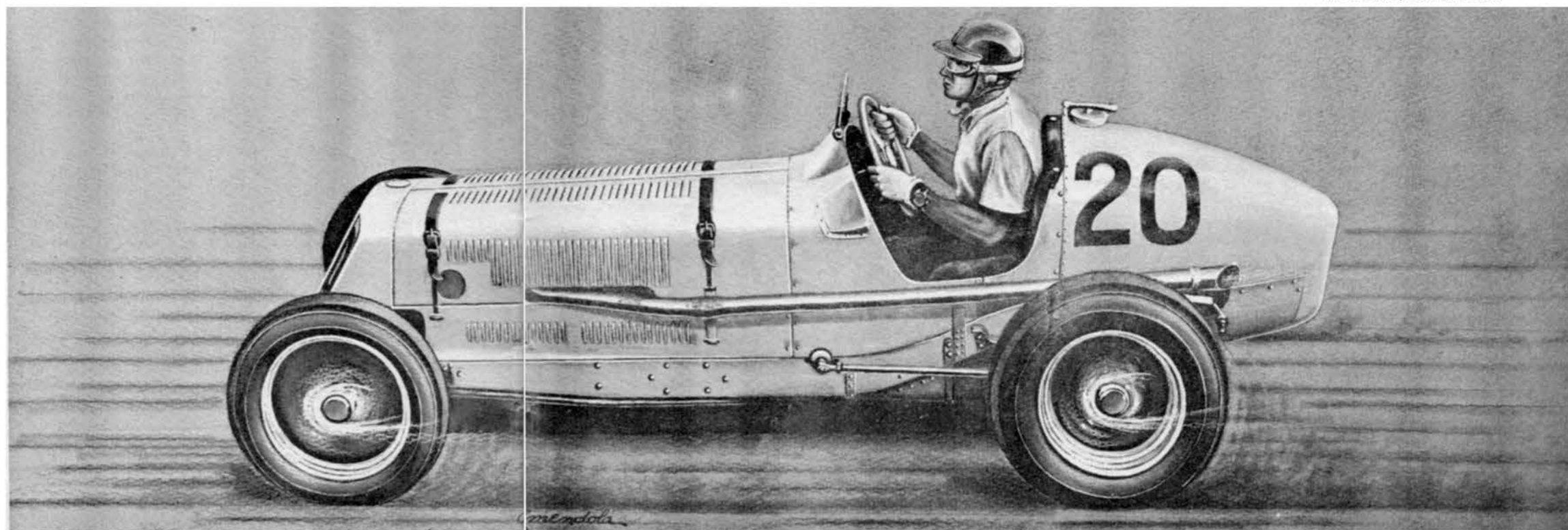
Pliant as a nautch dancer's torso, the original E.R.A. chassis was founded on two channel section side members, parallel and approximately horizontal ahead of the point where they curved up and over the back axle. At intervals, but not very close ones, lissom crosssties were bridged in. In line with contemporary practice, it devolved on this chassis to perform high frequency contortions in response to the thumps and stresses transmitted to it through the practically inert suspension.

The E.R.A. engine being a variation on a theme conceived by Riley back in 1926, it could be argued either (a) that it was eight years out of date when it began its second lifespan, or (b) it had been eight years ahead of its time in '26. There was a choice of three displacements—1098, 1488 and 1990 cc, all with six cylinders. Bore dimensions in the eleven-hundred and fifteen-hundred capacities were the same at 57½ millimeters, the corresponding strokes being 69.8 and 95.2 mm. The 2 litre type measured 62.7 by 107 mm.

Salient features of the engine design, all of them direct Riley legacies, were an iron crankcase and cylinder block

Fastest ERA of them all, excepting the jinxed E-type, was the R1D. Starting out as a B-type, it went through a series of modifications until the two liter engine developed 340 hp. Raymond Mays (above) severed with ERA; it became his car.

In 1939, the R1D was invincible in hill climbs, and at Brighton Speed Trials exceeded 160 mph in standing kilometer.



E.R.A. R4A by John Amendola

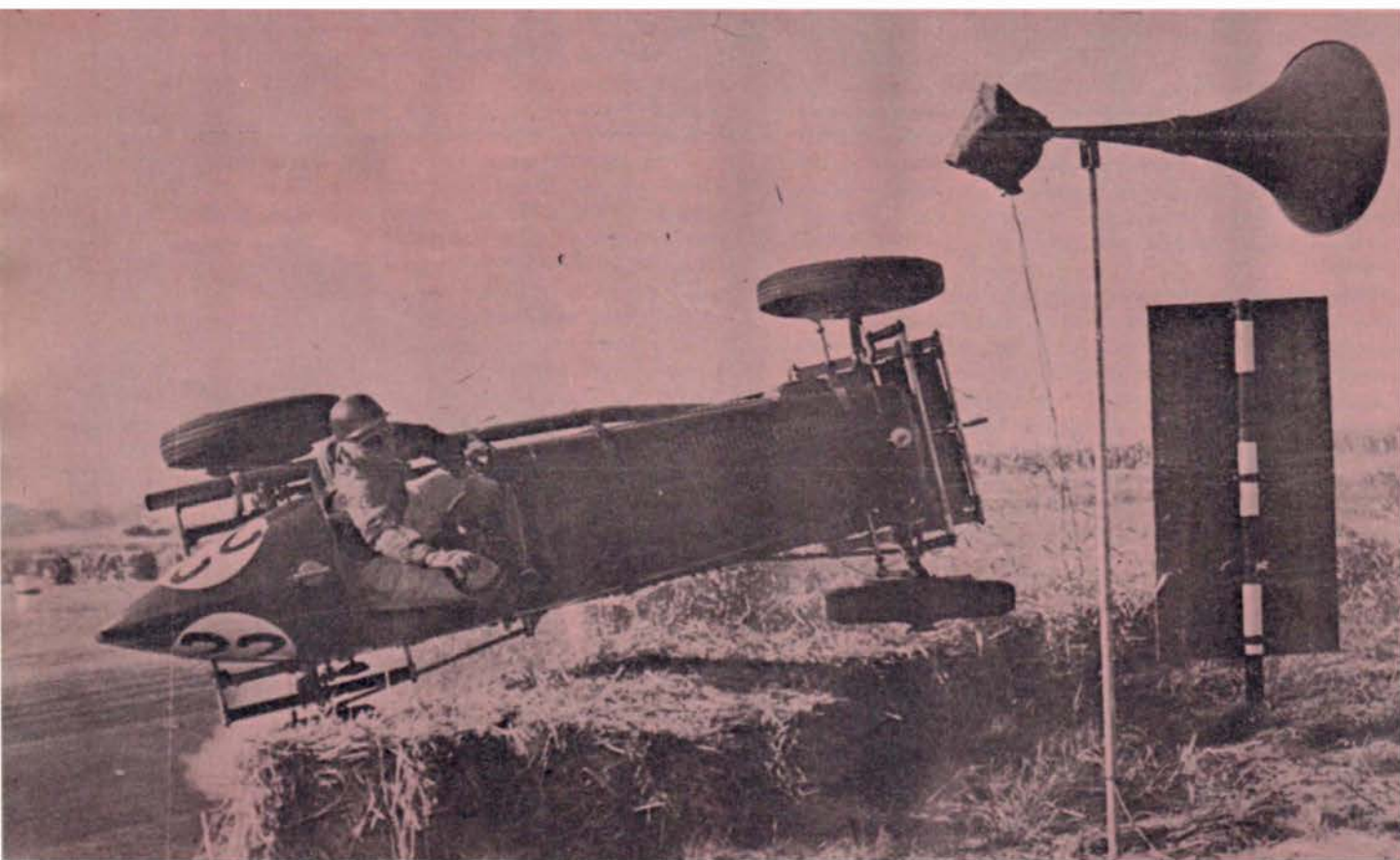
APRIL '58

unit; a one piece forged crankshaft running in three bearings – plain at each end and roller type at the center; a detachable head with hemispherical combustion chambers and two valves per cylinder forming an angle of 90 degrees; dual camshafts set high up in the shoulders of the block and driven by gears from the nose of the crankshaft; and valve operation through short pushrods and overhead rockers. Cylinder head material was aluminum alloy, a departure from the Riley formula.

Onto this foundation E.R.A. doctored a vertical Roots type supercharger, mounted ahead of the front cylinder and inhaling from a single S.U. carburetor. Running at thrice engine speed, the blower gave a maximum boost of 16 psi and endowed the 1½ litre engine with an output of 160 bhp

at 6500 rpm. Components such as pistons and con rods were entirely of E.R.A. design and had a beef factor appropriate to the assigned levels of rpm and combustion pressure. Contrary to Riley's recipe, engine lubrication was on the dry sump principle, with the oil contained in a tank under the driver's seat.

In just one department, the transmission, E.R.A. thinking ran off the rails of convention: in place of the crash type gearbox that was generally favored for racing at that date, they used a Wilson preselector box, operated by a short lever working in a quadrant close to the driver's right knee. The Wilson device, which had a vogue on one or two of the more expensive British passenger cars in the 'thirties, was chosen because it enabled the driver to play most of his



The "Well Tried Principles" upon which ERA's were built included a center of gravity twenty inches above the ground. Designer Reid Railton felt that an ultra low center produced a sudden breakaway, and a high CG was safer. Nonetheless, an occasional ERA driver got into trouble.

arpeggios in moments of relative leisure and mastery *between* corners. During cornering manoeuvres themselves, and on the immediate approaches to turns, it was considered prudent to have both hands on the wheel and keep them there. With the Wilson setup the preselected ratio was engaged by a jab on a pedal corresponding to the normal clutch pedal.

Yet even under two-fisted discipline at all critical points of the itinerary, the prototype E.R.A. showed such an itch for bloodshed that it had to be withdrawn after practicing for the first race it almost contested. This was the Mannin Beg of 1934, run over an imitation Monaco circuit at Douglas, Isle of Man. Part of the course traversed a wide but fairly bumpy road fringing Douglas Bay; and along this stretch, where assorted MGs, Rileys, Altas and Bugattis were

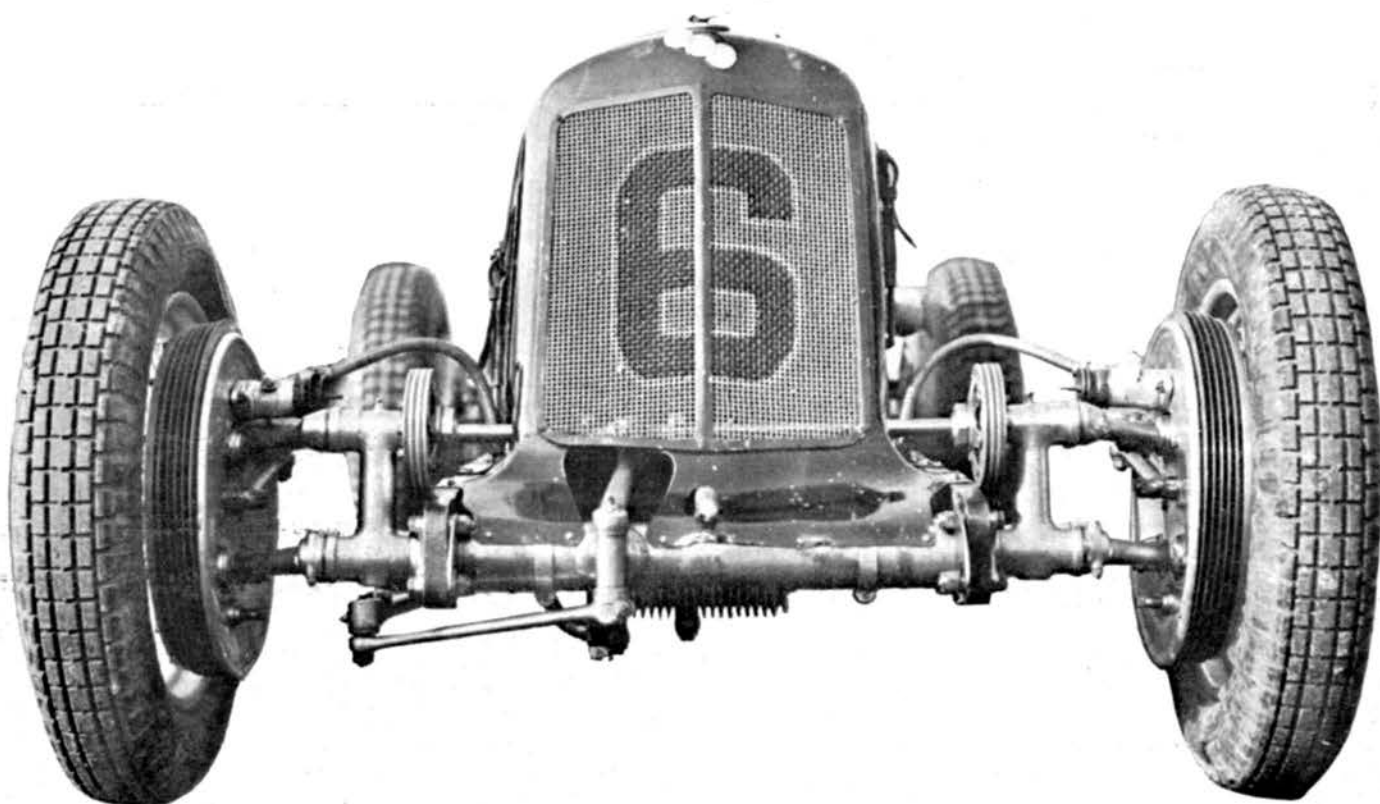
merely chucking their drivers under the chin, the bolide from Bourne came close to chucking itself and occupant clear over the parapet and into the harbor. Raymond Mays, elected to the honor of sharing the car's first public appearance, well advisedly quit training and renounced his place in the lineup.

Public appearance number two, in the same year's British Empire Trophy at Brooklands, was slightly more auspicious, if only because it proved that the men behind the new marque didn't discourage easily. When the five-minute siren sounded for the field to assemble on the grid, the E.R.A. was pushed into position with a dead engine. Around it, under it, atop of it, mechanics swarmed and sweated and swore.

(Continued on page 44)



Zoller-blown ERA demonstrates scalding getaway, leaving assorted Maseratis and another ERA astern, at start of '37 Albi GP.



C-type with trailing arm front suspension. The overlapping parallel torsion bars gave different wheelbase measurements on opposite sides.

After ERA's were released for private sale, one of the privateers was "B.Bira", who beat the works cars more than they beat him.



ERA

working like crazy to catch up on arrears of prepping. Zero hour came and they were still at it. The field departed—all except Raymond Mays and his little green tinderbox. Then, five minutes after the race had begun, a prayer and a shove brought the engine to life and Ray scrambled into the act. Sharing stints with Humphrey Cook, the man who had pledged a big slice of his personal fortune to put Britain on top in *voiturette* racing, Mays was still motoring spiritedly when Capt. George Eyston (MG) took the checkered flag 300 miles later, beating Whitney Straight (3 litre Maserati) to the trophy.

The E.R.A. wasn't placed, in fact it failed to finish within the official time limit; but the course used for that year's Empire Trophy, a track-cum-road layout with an abundance of slowish turns, had enabled it to demonstrate a characteristic that was to become a hallmark of the make: its acceleration, thanks to the flat power curve produced by the fast revving Roots blower, was out of this parish.

The genesis of E.R.A. is traceable to an earlier and more personal venture of Raymond Mays, who, in a racing career dating from the early 20s, had made a specialty of sprints and hillclimbs. For long associated with him in these activities was a former RAF pilot by name of Peter Berthon, who had a flair for making slow engines go fast and fast ones go faster. The fruits of this marriage of minds, with Mays doing the driving and Berthon taking care of development and tuning, were impressive, but the partnership had its frustrations too. Among these, in the period between 1930 and '32, was the inability to recapture for Britain the blue riband of British hillclimbing, viz., the course record at Shelsley Walsh, the tradition-loaded sprint mecca in Worcestershire. In the spring of '30, a continental star in the person of Hans Stuck, afterwards famous as an Auto Union team member in the Grands Prix, had won this prize for his native Austria, driving an Austro-Daimler.

Mays-Berthon cogitations finally led to the conclusion that, with appropriate support in cash and kind from the makers, the 1½ litre Riley could be developed and adapted into a hillclimber with what it would take to unstick Stuck's grip on the Shelsley record. When it came to scientific importunity, Mays' muzzle velocity was something to hear, and he quickly brought Victor Riley, head of the company bearing his name, around to his point of view. V. R. kicked in with a sizeable check, supplied a car as a basis to work on, and put valuable technical resources at the friend's disposal. The resulting machine, fitted with a Murray Jamieson supercharger of the pattern that was later to be featured on the earlier types of E.R.A., fulfilled all expectations and duly undercut Stuck's mark at Shelsley amid sounds of patriotic fervor. (For the record, though, it must be mentioned that the first to do so was an American on an Italian car—Whitney Straight with his 3 litre Maserati. But that's another story.)

The possibility of expanding their Riley project into something altogether more grandiose and far reaching did in fact occur to Mays and Berthon, but not with the slightest hope of the dream's practical realization. Where, for instance, would the money come from? . . .

This question, by some sort of telepathic miracle, took wing on a wavelength to which a certain Humphrey Cook was tuned in. Himself an oldtime race driver, Cook was probably the one man in all Britain who not only had the money but also a burning ambition to create and operate a stable of cars that would take the pants off the continentals in *voiturette* racing. He would really have preferred to go into business at full Grand Prix level, but was enough of a realist to see that English history only had room for one Francis Drake.

Humphrey Cook, a tall, beefy, patrician fellow with a fussy manner, a chivalrous heart and an attachment even on casual occasions, to starched white collars with the corners rounded off, as worn in Edwardian days, got onto the track of Mays and Berthon and laid his soul bare. All parties concerned being passionately of one mind, and Cook being reconciled to the principle that the financial headache was all his, a bond was cemented forthwith, and in due course formalized under the title of English Racing Automobiles Limited. Ray and Peter were made co-directors under Cook's chairmanship and the company made a home for itself in buildings erected at Cook's expense on a site adjoining Mays' home at Bourne, Lincolnshire. (Today, incidentally, the same buildings form part of the B.R.M. premises, Mays and Berthon being leading lights of this enterprise.)

Apart from the flexibility that was inherent in its channel section girders and lack of diagonal bracing, the E.R.A. chassis had less wrong with it than its Mannin Beg misdemeanors had suggested, and Reid Railton lost no time in getting the more vulnerable bugs out of it. These measures, mainly concerned with spring rates and suspension behaviour generally, paid off immediately, and during 1934 the initial batch of three cars scored a sensational run of success. Mays himself broke the world standing kilometer record with the 2 litre engine installed, took the s.s. kilometer and mile marks in international class F (1500 cc), beat Whitney Straight at Shelsley Walsh, clipped the 1500 c.c. record for the Brooklands Mountain circuit and won the Nuffield Trophy race at Donington Park. And Cook, although long past his prime as a driver, made pulp of three class G records—the international standing mile and kilometer and the Brooklands Mountain mark.

Although the company hadn't originally planned to build any cars for private owners, Humphrey Cook's ample wallet soon underwent such painful shrinkage that a change of policy became necessary. First independent purchaser was Pat Fairfield, the young South African who had learned his racecraft at the knee of the great Fred Dixon, and was afterwards killed at Le Mans; next came Dick Seaman, who was to win a place on the greatest Grand Prix team of all time—Mercedes-Benz—and crash fatally at Spa

in 1939; third in the queue was Prince Chula of Siam, manager and sponsor to his cousin, Prince Birabongse (B. Bira for short), who caught on so fast that in the long run he beat the works cars and drivers more often than they beat him; then others followed . . . Arthur Dobson, Earl Howe, Peter Whitehead and smiling Johnny Wakefield, who lost his life flying with the Fleet Air Arm in World War II.

Cook's decision to hang out come-and-buy notices, largely dictated by the fact that the British race promoters of the '30s never paid a dime of starting money to native talent, however good, was to have historic repercussions on European 1500 cc racing. With as many as eight or ten E.R.A.s in simultaneous service—taking works and independent cars together—the effective range of operations was greatly widened. When, for instance, the parent *equipe* was busy at home with an important British meeting, the privateer strength might be deployed anywhere between Sweden and Italy.

Not that European frontiers by any means bounded the battlefield for E.R.A. Peter Whitehead took his well known black car to Australia, and cleaned up. Pat Fairfield won the South African and Rand Grands Prix, while in Cape Town's Grosvenor G.P., Earl Howe scored a victory off Piero Taruffi and Luigi Villorosi with the latest and hottest Maserati. Too, E.R.A.s were easily the smallest displacement cars that contested the Vanderbilt Cup at Roosevelt Field, Long Island, in 1936, so it was certainly no disgrace for Pat Fairfield to place fifth there, behind the full-size G.P. cars of Nuvolari (Alfa), Wimille (Bugatti), Brivio and Sommer (Alfas).

Time did not stand still, of course, at H. W. Cook's knotfarm. The original design, known as Type A and already briefly outlined, underwent detail modifications in 1935 and emerged as Type B. Then, two years later, the Bourne alphabet progressed another letter to C, signifying a really substantial transformation in performance and raceworthiness. In Type C form the E.R.A. had the Maserati opposition skinned for power and speed, seldom losing a race to the Italians in 1937 and '38, except through mechanical failure.

That such failures weren't prohibitively frequent was something of a miracle, because the B-to-C change involved a 50 percent increase in power, gotten almost entirely by raising the supercharge boost to between 25 and 40 psi, depending on race duration. Maximum output from 1488 on became 240 bhp at 7500 rpm (a thousand up on the old turnover), representing a piston speed of 4700 fpm. Inside the engine itself, quite minor reinforcements were carried out and a plain center crankshaft bearing was substituted for the earlier roller pattern.

Source of the additional psi was a huge Zoller blower of eccentric vane type, fed by dual S.U.s and mounted at the extreme back of the engine, between the driver's knees. These Zollers, it must be admitted, were not paragons of reliability, sometimes disintegrating with costly results. Considering their proximity to a vulnerable part of the *pilote's* anatomy, it's a wonder a few E.R.A. veterans aren't going around talking falsetto.

(Continued on page 56)

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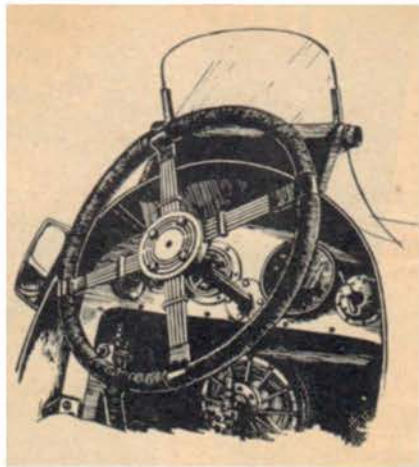
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(Continued on page 44)



Cockpit of ERA, with the Zoller blower that whirred between driver's knees.

At a quick glance, and to an unpracticed eye, the difference between the C Type on the one hand the A and B lines on the other was not strikingly apparent. The general shape of all three cars was the same, the frontal area in each case running to the almost medieval figure of 13½ square feet. A closer look, however, revealed C features of real importance and value. The chassis, although unaltered in contour, was boxed instead of open channel. Front suspension was independent, using the system of transverse torsion bars and trailing arms designed by Dr. Ferdinand Porsche for the 750 kg Auto Unions. In the brake department, hydraulic Lockheeds replaced mechanically operated Girling or a combination Girling-Lockheed tieup.

These advances, curiously enough, left the total burden where it was at around 1560 pounds unladen. Thus, power output per dry tone went up with the hitherto unknown figure of 330 bhp. Approximate maximum speeds for the A/B and C jobs were 125 and 140 mph respectively; and if this 15-per differential seems relatively small, it has to be remembered that nothing was done to improve the aerodynamic form or reduce the cross section of the C car. All alike in these respects, the A, B and C models were about as well streamlined as a Louis XIV commode.

The story of E.R.A. supremacy in European *voiturette* racing—the Formula 2 of its day — would fill fat volumes, and indeed has. At Peronne, Dieppe, Monte Carlo and Albi in France, Rommehed in Switzerland, Pescara and Turin in Italy, the Nurburgring and Avus circuits in Germany, Brno in Czechoslovakia . . . here and elsewhere across the face of the continent, Mr. Cook's English Racing Antiques gave all comers a hind view of their high, ungainly scuts. Time and again, the E.R.A. invaders filled the two top places, occasionally all three, chased gamely or lamely, as the case might be, by the Maserati competition. More rarely still,

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although with increasing frequency in '39, the Maseratis turned the tables, just as a reminder to Ye Olde Curiosity Shoppe to look to its technique.

It was on his famous black E.R.A., R.I.B., that Dick Seaman copped three straight victories during 1935, at Pescara, Berne and Brno; his speed for the Czech race, 81.40 mph, was less than a mile per hour down on Bernd Rosemeyer's winning figure on the big Auto Union in the same day's Masaryk Grand Prix over the same course. And when B. Bira, who held an English license and was therefore technically British in his racing capacity, copped the B.R.D.C.'s Gold Star aggregate award three years in a row—1936, '37 and '38—it was his assorted E.R.A.s that earned him most of his marks. (Incidentally, among the stratagems employed by Prince Chula, Bira's sponsor, was his practice of hanging out pit signals chalked in Siamese characters, known irreverently as Worms In Agony. Chula could speak and read English, and about five other languages besides, so other peoples' signals were no mystery to him.)

With the possible exception of the jinx-ridden E Type, of which only three examples were built and none was ever conclusively developed, the fastest E.R.A. of them all was the unique R.A.D. This car started life as a B Type and, after a series of mechanical reincarnations, became Raymond Mays' personal property when he severed his association with Cook in 1939. Rigged as a 2 litre, it was producing the prodigious output of 340 horsepower back in 1939 and became invincible in British hill-climbs and short distance circuit work. In the annual Brighton Speed Trials, approximate English counterpart to America's drag races, R.A.D.'s speed at the end of the standing kilometer was better than 160 mph. Considering that the same car, in identical shape apart from blower pressure, had also won several full distance road classics, including the Picardie Grand Prix, the International Trophy at Brooklands and the British Empire Trophy at Donington Park, this Brighton burst was a respectable performance. Old R.A.D. later joined the late Ken Wharton's stable, contributing about a half share to the wins that made him as nearly unbeatable in hillclimbs as Mays had been formerly.

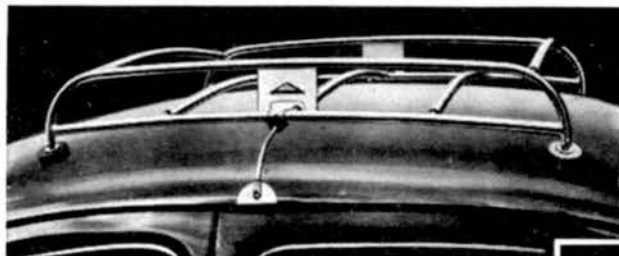
In keeping with the old-world charm of the E.R.A. itself was the spirit of chivalry that dignified the racing relationship between the Bourne works *equipe* on the one hand and the E.R.A. independents on the other. This scrupulous ethical standard was well instanced by an incident during the International Trophy at Brooklands in 1936. In the heat and turmoil of a race-long battle between Mays, Bourne's official representative, and Bira, the latter's pit manager made a vital slip in his chart keeping. Under the mistaken impression that Bira was one lap up on Mays, Prince Chula signalled his cousin to take it easy. Cook, catching onto his rival's mistake, walked around to the Siamese pit and put Chula straight on the count. If he hadn't, Mays would have won. As it was Bira did — by one second in 262 miles.

Dennis May.

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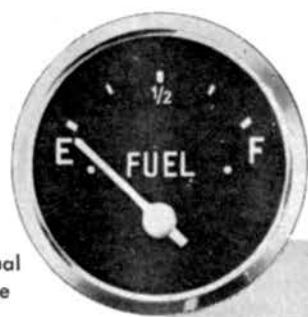
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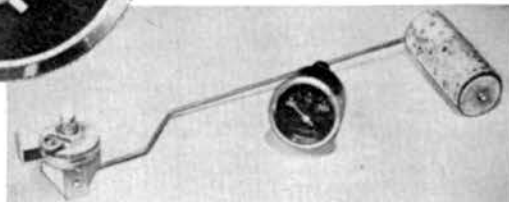
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