

the

# "try anything once" RILEY

By DENNIS MAY

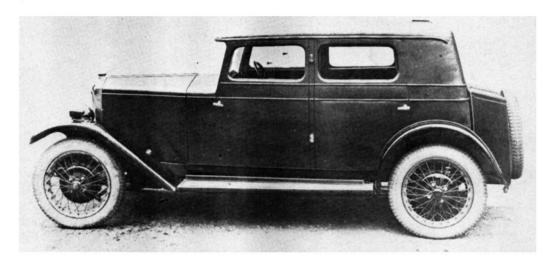
In automobile practice, originality has always been a red rag to John Bull — hence the reliance of British motoring writers on the euphemism "well tried" when what they really mean is "out of date." It is therefore a minor marvel that the Riley people didn't innovate themselves clear out of business years ago. In the late 30's, indeed, they did make a short stopover in the Valley of the Shadow of Debt, probably as the result of their well meant efforts to surfeit the customer with novelty. Lord Nuffield, it may be remembered, lowered the lifeline that rescued them from this jam, and under the rationalizing influence of the good viscount and his cabinet, Riley folks have subsequently kept their feet on safer design paths.

Naturally, not all of Riley's departures from convention drop neatly into the pure classification, invention. When,

as inevitably happened once in awhile, the Muse ran her batteries down, they weren't above exhuming and dressing up an old idea that somebody else had tried and either junked or failed to develop effectively. Yet the fact remains that their record of bona fide pioneering is probably unsurpassed by any British marque except Lanchester.

In 1896, Riley scored a world premiere with mechanically operated inlet valves. Eight years later the company originated the centerlock wire wheel. The first Riley built after World War I, in 1919, had brakes with automatic takeup and turbo cooling. This model also featured adjustment for steering column rake and two-plane regulation for the position of the front seats.

The famous Riley Nine, born 1926, put rubber engine mountings on the map, seven years ahead of Plymouth with The Riley Nine was designed purely for family use but by the time the knot-farmers, both professional and amateur, were through it had given the MG people fits and copped a still unbeaten LeMans record.



The 1929 Riley Nine Monaco was the sensation of its day, and is remembered as the car that split Riley history into two categories—pre and post 1926. First editions of the Nine had separate cylinder and crankcase blocks.

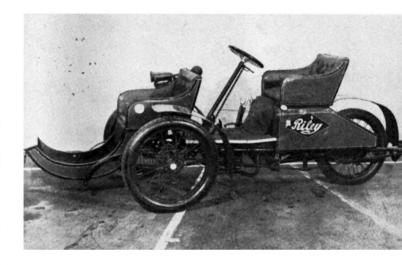
their much acclaimed Floating Power system. Every Riley built since W. W. I has had four-speed transmission, and the original Nine (its name derived from a quaint system of nominal horsepower on which automobile taxation used to be based in Britain) was the first British car with a silent third ratio.

As far back as 1930 Riley had grouped and centralized nipples for chassis lubrication, with a network of ferrous arteries that took care of everything except the wheel bearings and one end of the front springs. This was superceded shortly afterwards by an authentic one shot system fed from an under-hood oil reservoir and animated by a plunger alongside the steering post. Almost a quarter of a century later, in 1956, Packard expected Clipper owners to use the hand gun on no less than 28 individual fittings — involving quite a feat of pedestrianism — once every thousand miles. (Meanwhile, it is only fair to add, Riley has long since abandoned its homely essay in automation; its sole model in current production, the 2½ liter Pathfinder, has to be gunned at 16 points at 1000-mile intervals.)

Technically, Riley history falls into two distinct chapters; pre and post-1926. It was in the fall of '26 that the small but enterprising plant at Foleshill, Coventry, tossed their existing engine blueprint on the fire and came up with the hemisphere-headed layout that has distinguished every Riley built from that day on.

Invention, as such, played no part in this metamorphosis. Anyone wishing to play it down could point to the fact that an engine of roughly similar architecture had powered the Belgian Pipe racing car of 1904. Long before '26, moreover, it was regular practice in the motorcycle world for ohv engines to have their valves sharply angled in a hemispherical head. Too, Henry's twin-camshaft Peugeots of around 1912 had established this combustion chamber shape as the optimum for output relative to displacement.

But it nevertheless was left to Percy Riley, designer of the Nine and its closely related descendents, to devise an interpretation of the classic top-end form which would reconcile

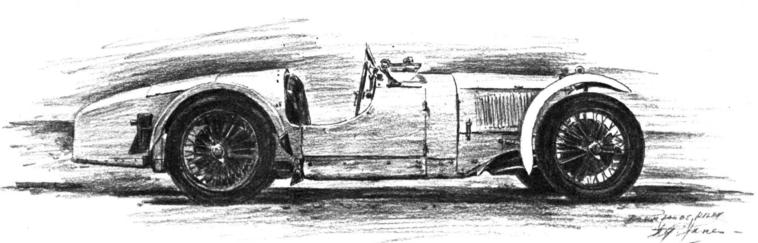


The Bi-posto Riley trike of 1905. The passenger, whoever he or she was, rode nearest the accident.

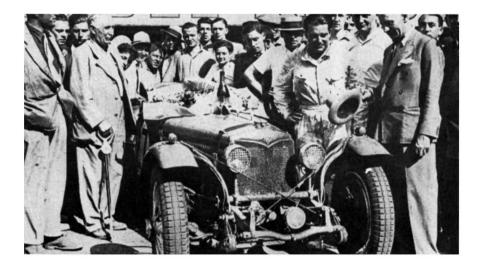
the conflicting demands of high efficiency, simplicity of manufacture, easy servicing and reliability.

First editions of the Nine had separate cylinder and crankcase blocks, these units being thereafter combined in one casting. Evidently forseeing a future for his engine in the racing and record breaking fields, Percy Riley dimensioned it at 60.3 by 995.2 milliameters, making the capacity 1089 cc and putting it just inside the international Class G limit. The four-throw crankshaft was supported in two bearings only, the front one and its housing being detachable, and leaving a porthole big enough for the insertion of the crank from this unusual direction during assembly.

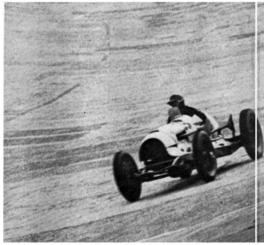
The two camshafts, carried high in the shoulders of the block, were driven by helical gears from the nose of the crank, via an intermediate idler wheel. The cast-iron head was detachable and carried two valves per cylinder, inclined



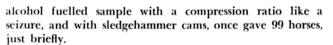
Designed by JG Parry-Thomas, the Brooklands Riley was one of a string of hot-rodded Nines that scourged the 1500 class.



This 1933 Riley at Le Mans was the smallest engined car ever to finish in the first three in overall classification. The car gained the highest index figure of any car in the history of the Le Mans 24 hr. race.

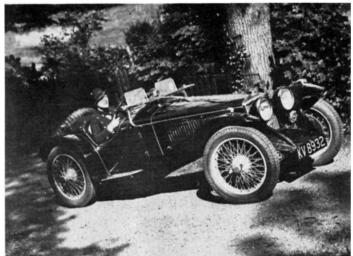


At the old Brooklands track, a supercharged ERA chases an offset bodied single seat unblown Riley.

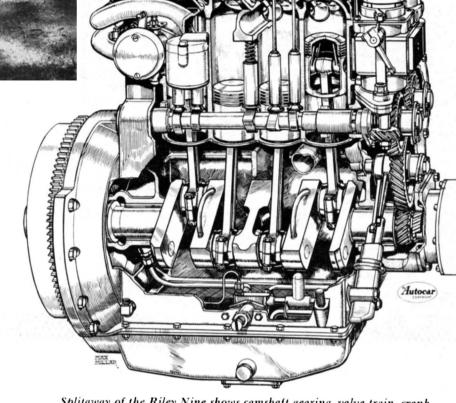


These yields all relate to unblown engines with the normal two bearing crank. It is a reasonable guess that the test personnel donned shining armor and retreated into the outskirts of Foleshill during that 99 bhp burst, because the crank, without benefit of midship support, was milling around at 6300 a minute. To the best of my memory and researches, only one 1100 cc Riley was ever modified to take a center main bearing; this was a spring rig known as the Appleton Special, which, with Zoller blower, produced the consoling output of 185 bhp at 8500. As the make-over cost constructor John Appleton the sterling equivalent of more than \$15,000, no doubt he needed some consolation. Although, of necessity, very narrow, the customized middle bearing was no less than  $5\frac{1}{2}$  inches in diameter.

While the crank and con rods of the Nine were on the slight side from the modern point of view (journal diameter, 1½ inches) and must have assumed free-form shapes under heavy load and high turnover, the main engine casting cer-



One of the most rakish cars of the '30's was the Riley Imp eleven-hundred.



Splitaway of the Riley Nine shows camshaft gearing, valve train, crank throws, and two main bearings. Note long con rods giving long stroke.

tainly wasn't short on rigidity. The symmetry lent by the disposition of the two camshafts made it unusually resistant to heat distortion, and bore wear was slow in consequence. The same goes for the two sizes of post-war Riley engine, which inherited the old Nine's basic design; an *Autocar* reader has told, in circumstantial detail, how his 1949 1½ liter model went 128,000 miles on its original bores. Bigger, slower turning Detroitware would naturally beat that for longevity, but direct comparisons between such fundamentally different plants are hardly valid.

Percy Riley's flexible engine mounting, like so many of his works, bore an individual stamp. A crossmember fixed fast to the chassis on each side, ran right through a tubular housing in the crankcase, the weight of the engine being carried on conical rubber bushings surrounding the crossbeam. Stern support, aft of the four-speed gearbox, which was built in unit with the engine, was also on rubber. This arrangement, while certainly lacking the rock-and-roll flaccidity of current counterparts, was flexible and did pioneer true insulation of the power unit from the chassis.

Further evidence of Percy Riley's concern to soothe the

savage breast of his creation was seen in the pulsation damper he devised for his camshafts. Each shaft carried a supernumerary four-lobed cam which worked against a spring loaded plunger. A secondary function of this trivet was to abate noise from the timing wheels when they became worn.

Alex Taub once remarked in a scholarly appraisal of the hemispheric cylinder head that, for all its undoubted merits in terms of combustion and breathing, it had a "high roughness probability." Up to a point, this probability has been realized in all productions featuring the P.R. head. In fact, prior to 1951 and the birth of the Fire Power Chrysler it appeared that "inevitability" rather than "probability" would have been the mot juste. All down the line since 1926, Rileys of every size and type have produced better than average performance for their displacement; but it would be silly to deny (as no doubt the makers would deny, with ears laid back and the whites of their eyes showing) that their bigger bangs incur a certain loss of refinement.

The Nine engine's original mission was to power a small

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between the neat and symmetrical rocker boxes, and thus completely accessible.

Early Nines had a single carburetor at the aft end of the manifold, probably resulting in marked peculiarities of charge distribution. Later models sited the carburetor or carburetors — two were fitted on sports variants — more rationally. Similarly, in the ignition department, the founders of the Nine line drew high tension current from a gear driven magneto, but a switch was soon made to a coil and

at a right angle to each other. Inlet and exhaust rockers ran

on separate spindles and were operated by solid pushrods.

Combustion chamber roofs and both batteries of valve ports

were machined to a finish that most manufacturers today,

on either side of the ocean, would probably consider un-

economically hygienic, but which was no better than aver-

age by the standards that Riley (Coventry) Limited prided

themselves on in the 20's. Spark plug position was central

Standard output was 34 bhp at 4000 rpm, raised to 41 horses at 5000 with twin carbs. Racing engines running on ordinary gas would turn up 55 bhp at 5500 (while an

distributor.

#### Riley

(Continued from page 19)

sedan known as the Monaco, which rapidly created the biggest demand in Foleshill's lengthy annals. Then, within months of this debut, there were repercussions in the competition world. When a pretty girl walks along the avenue, passing aesthetes are apt to take a covert hinge and figure to themselves how she would look in a bathing suit, or better still, without one. It was something like that with Mr. Riley's small automobile. At the amateur and professional level both, speed practitioners began visualizing the effects of trading the closed body for a featherweight two-seater, souping the already wide-awake engine and putting suitable reefs in the existing chassis.

First to translate these dreams into reality - with the consent and collaboration of Riley (Coventry) Ltd. was a rising knotfarm at Brooklands track known as Thomas Inventions Developments, Ltd. Partners in this enterprise were J. G. Parry Thomas,

three-time holder of the Land Speed Record, and Reid A. Railton, who was later to design several of Campbell's LSR-breaking Blue Birds, and also John Cobb's two Napier Railtons.

Result of the Thomas-Railton teamwork, unveiled late in 1927, was the ground-grazing Brooklands Riley, one of the sauciest British eleven-hundreds ever built in the classic inter-wars design tradition. Thomas, unfortunately, didn't live to see the launching. He was killed six months earlier in an attempt to add a fourth LSR notch to his screwdriver handle.

The standard chassis had been bisected amidships and rejoined with a foot and a half of each side rail missing, reducing the wheelbase to 911/2 inches. The rear springs, normally set below the frame, were placed alongside it, resulting in a radical lowering of the whole car. To shift weight onto the back wheels the engine was shunted rearwards and the radiator mounted behind instead of above the front crossmember. The occupants sat just six inches off the ground and could easily touch the pavement by hanging an arm out over the low-cut body sides. Two Solex carburetors and a four-branch exhaust manifold were added to the engine, as was a coolant (Water circulation was by

thermosyphon only on the Monaco). Presumably the compression ratio was increased, and certainly the oil pres-

Although the Brooklands Nine, in its own right and without advanced modification, ran up a considerable total of speed successes in many parts of the world, its Class G score was surpassed by unrecognizable variants developed independently of the parent factory. Best known of these was the work of the legend-haloed Fred Dixon, whose 1100 cc track car, known as a Riley for want of a better name, was almost 100 percent Dixon in everything but its engine-gear unit; and even the engine, as regards its cams, porting, pistons and carburetion, started about where Foleshill left off. In 1932 during a continuous downpour of rain it broke five international Class G records between 50 and 200 kilometers - including the hour - at speeds ranging above 111 mph. The significance of this feat, at that time, was that the Mongrel Riley was unblown. whereas the MG's, which had hitherto largely dominated the class, were very much blown.

Incidentally, it is probable that this Dixonized Riley was the first car in the world to feature the low-level hori-

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#### (Continued from page 54)

zontal air entry slot which is now universal race practice. Mercedes is often credited with pioneering this shape and for the intake, first using it on its three liter Grand Prix cars in 1939. Dixon was seven years ahead of them. Contemporary Brooklands railbirds scoffed when he turned up with a pouty little slot measuring only 22 inches by 1½, foretelling chronic overheating. His ducting was so efficient that the car actually ran cooler than with a fully exposed radiator.

In the carburetion department, too, Fred Dixon was far ahead of his time. All his track Rileys, both fours and sixes, had a separate S. U. carburetor to each cylinder; and in 1934 his sixes anticipated Jaguar's 1956 thinking — vide the f.i. cars at Le Mans — by having a single sliding plate throttle.

#### FIRST SIX

The first six-cylinder Riley, put out in late '28, had an engine with identical dimensions with the Nine, making the displacement 1633 cc. In spite of its efficient head shape, porting and valve gear — again a repetition of the Nine theme — this one was a somewhat dim performer in its family carrying form; but it turned over a new leaf when they down-scaled it to  $1\frac{1}{2}$  liters and installed it, after suit-

able souping, in a sports racing chassis for events like Le Mans and the Tourist Trophy. Its finest hour was undoubtedly the 1934 Grand Prix d'Endurance, in which the little sixes from Coventry placed second and third on general classification (the only time in Le Mans history that cars as small as 1½ liters have been placed) and scored five finishers out of five starters. The only other Riley in the race, a Nine, copped the Index of Performance handicap.

In the T.T., which ranked as Britain's grande epreuve back then, Riley chalked up a record which wasn't equalled by any make, of whatever nationality, until the post-war emergence of the Jaguar. Their first victory, by a Nine in 1932, was at the highest average put up to that date; beating the race record that Rudolf Caracciola had set in '29 on a supercharger Mercedes, some six times bigger in displacement than the Riley.

Both of Riley's subsequent Tourist Trophy wins, in 1935 and '36, were gained on the four-cylinder 1½ liter engine which, early in '35, took over from the six of the same capacity in the sports racing field. On vitesse pure ground, meanwhile, meaning at Brooklands in England and Montlhery in France, Rileys of all calibers continued to put international class records

through the mincer at an insatiable rate. Some of the best of these marks were the work of George Eyston and associates, whose exploits included a thousand miles at 102 mph, in 1934, on a 1500 cc six. This was the fastest thousand miles to date by a British car of any size.

It was that year, it may be remembered, that the E.R.A., all-time's most successful British contender in Continental road racing, made its appearance. And the E.R.A. engine, it is well to remember, was a direct development of Percy Riley's masterpiece, infallibly recognizable by the layout of its cylinder head and the manner of hoisting its valves. In the two liter version, Zoller blown at something around 26 psi, the E.R.A. engine generated 330 horsepower in the late 30's.

Policy on transmission, to take one example, seemed to be decided on an eny-meeny-miny-mo recitation. In 1926 they brought in the serviceable silent-third gearbox mentioned earlier. Then, in '33, came a preselector box with column shift and a centrifugal clutch—a laudable step in the direction of simplified motoring, even if the box did develop a grumbling appendix in middle age. Four years later, again, an ordinary gearbox reappeared, but with

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#### (Continued from page 57)

embroideries in the form of a freewheel and Borg-Warner automatic overdrive (making Riley Europe's first B-W customer, incidentally). Finally, on the Nuffield takeover all these underfloor delights went out through the window and the customer was stuck with a hardy but orthodox four-speed synchromesh transmission.

Pre-war, when British body designers still had souls of their own and weren't forever swiveling one eye towards Milan and the other at Detroit. Rileys were always a comely breed. All their bodies - sports, convertible or sedan, had a balance and grace that usually put them at the top of their class in Concours D'Elegance. The Monaco of 1926 was one of the first non-custom bodies in the world with a built-in trunk of a shape containing the germs of the notched back fashion. Six years later the Kestrel sedan pioneered the follow-through arc from the highpoint of the roof to the rear bumper-a style immortalized in Riley huckster jargon as Aero-Line Design and illustrated with pictures of visible air obediently parting itself down the middle and cocooning the Kestrel in a vacuum. The Falcon of 1934 had two upward hinging roof panels which automatically lifted when the front doors were opened and shut down

when they were closed - an anti-scalping measure which may conceivably have been the inspiration of Mercedes' gullwing port cullis on the 300 SL.

The three habitable sports twoseater Rileys of the 30's - as distinct from the stripped-for combat Brooklands types-had a purposeful beauty of their own, too. These were the eleven-hundred Imp and the six-cylinder M.P.H. of 1935, with long, narrow hoods widening rearward to duck'sfanny tails; and the wieldly Sprite which superceded them in '36 - a 11/9 liter four developing 60 bhp and embodying many of the mechanical features of the previous year's T.T. winner.

The Sprite was the last sports car ever marketed by Riley, if you don't count the post-war three-seat, tail-heavy roadster introduced in 1948 and dropped after an unspectacular production run of about three years duration. The roadster had the present 21/9 litre four-cylinder engine and was good for a genuine 100 mph. This I know because the one road I tested on the Jabbeke Highway in September of '48, immediately in the wake of Goldie Gardner's international mile and kilometer records with the Jaguar powered version of his streamliner, seized solid at almost exactly the century. (A core plug had dropped out, emptying the cooling system.)

A study of Riley specifications over the past couple of decades reveals that in the engine department at any rate the marque has broken records for continuity. The dimensions of the '56 Pathfinder, which is the sole production of Riley's present-day plant at Abingdon, Berkshire, are precisely the same as those of the Foleshill-built Blue Streak of mid-1937: namely 801/9 by 120 millimeters. These Swanee whistle measurements also show that in this age of the square and oversquare engine, Riley is not to be intimidated by bogeyman talk about relative piston and highway speeds. The typical Riley owner, encouraged by standards of roadability that are well above average in any country's language, drives fast.

Riley's oldtime zeal for experiment and novelty did not extend to suspension matters. Special racing rigs excepted, it wasn't until post-war times that they discarded the "well tried" beam front axle in favor of Independent Front Suspensions. Currently, however, the Pathfinder, with its torsion bars at the front and coils in back, at least can claim to be "all independent of the leafy spring," in Keats' convenient phrase. Dennis May

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