

● *Le Mans, April 6, 1963:* Richie Ginther presses the starter button, a sound—as of a gentle breeze—builds up to a scream, and the Rover-BRM whistles away, partially obscured by the heat-haze from its own exhaust. Five minutes later it whooshes past at 130 mph; a new sound has come to the motor racing circuits, a sound more common on airfields and in industrial plants, the sound of the gas turbine.

First of all, let's put it in its right perspective. The Rover-BRM is not intended to be a world-beater nor is it meant to bring about the sudden demise of the piston engine. It is an

exercise intended to hasten the development of the gas turbine for use in road-going vehicles and to prove its practicability in this context.

However fast it goes—and it cannot be expected to average much more than the 112 mph it recorded on April 6—the Rover-BRM cannot win Le Mans this year. It is running *hors classification*, its target speed being an average of just over 93 mph for 24 hours. And quite apart from all this, its performance must be related to that of cars in the up-to-2000 cc category, the Rover gas turbine being equivalent in size to a two-liter piston engine.

The Rover-BRM is a rear-engined sports car which complies with the FIA's latest regulations for GT Prototypes. Except for the power unit it is relatively conventional, with a multi-tubular chassis, double wishbone and coil spring suspension all round, rack and pinion steering and disc brakes.

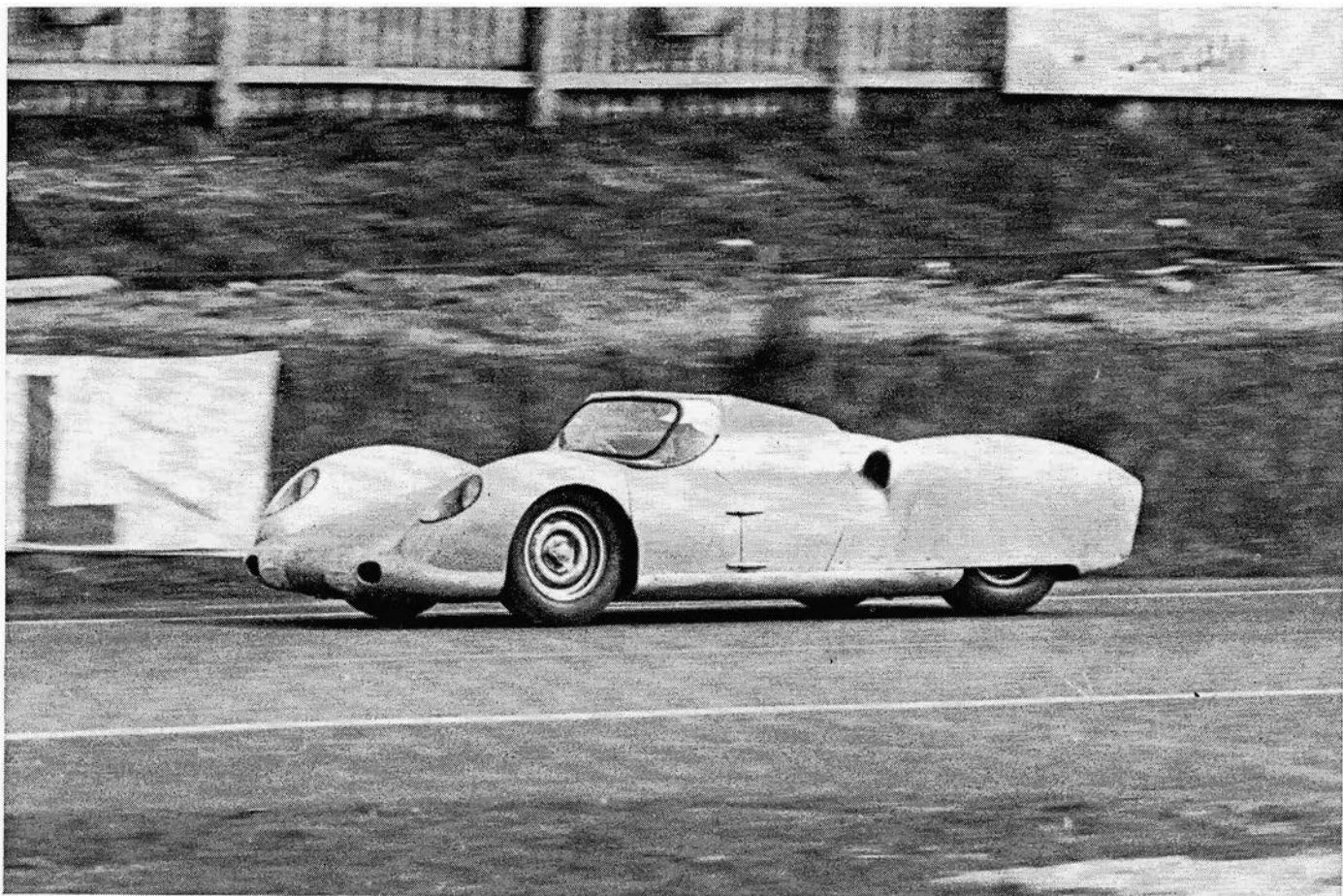
The power unit, which is designated the 2S/150, is a development of the Rover 2S/140 gas turbine fitted in the T4 saloon prototype. At Le Mans it will run without a heat exchanger, to save weight, space and complication, even though this radically increases fuel (kerosene) consumption (to around six mpg). Maximum output is 150 bhp at an ambient temperature of 59° F, and maximum rotational speeds (governed) are 62,000 rpm for the compressor turbine and 43,000 rpm for the power turbine.

The chassis is basically similar to that of the 1962 Formula One BRM, and the transmission—one speed forward and one reverse—comes from the same home. The Dunlop disc brakes are also as on the BRM, but disc diameter may be increased to compensate for the absence of engine braking. BRM-style 15 inch Dunlop wheels are used, fitted with

ROVER-BRM Le Mans Entry

BY DAVID PHIPPS

The Rover Boys in France: Richie and Graham embark on an adventure with an old chassis and a borrowed turbine engine



Looking like some sort of circa-1956 EMW, Rover-BRM had several aerodynamic problems during Le Mans practice weekend.

Dunlop R6 tires; 5.50 front, 6.50 rear. Wheelbase is 93 inches—3⅜ inches longer than on the Formula One BRM—and tread is slightly narrower at 51 inches front and rear (BRM 52½ inches front, 52¼ inches rear). The spare wheel is carried at the extreme front of the car, in the space which would normally be occupied by radiators, and there is a regulation luggage space behind the gearbox (on test days it was occupied by a large oil-breather).

The bodywork fitted for the Le Mans test days was somewhat prototype-ish, and will presumably be cleaned up and painted—but not radically altered—before the race. It is likely that a permanent spoiler will be fitted to the rear panel to improve directional stability, while a one-piece windscreen would certainly improve the car's appearance. In view of all this, its performance on the test days, when it reached 149 mph on the straight—this, remember, with the equivalent of a two-liter engine—was most praiseworthy.

Because of its engine characteristics, the Rover-BRM requires a very specialized driving technique to get the best out of it. All retardation on the approach to a corner must be

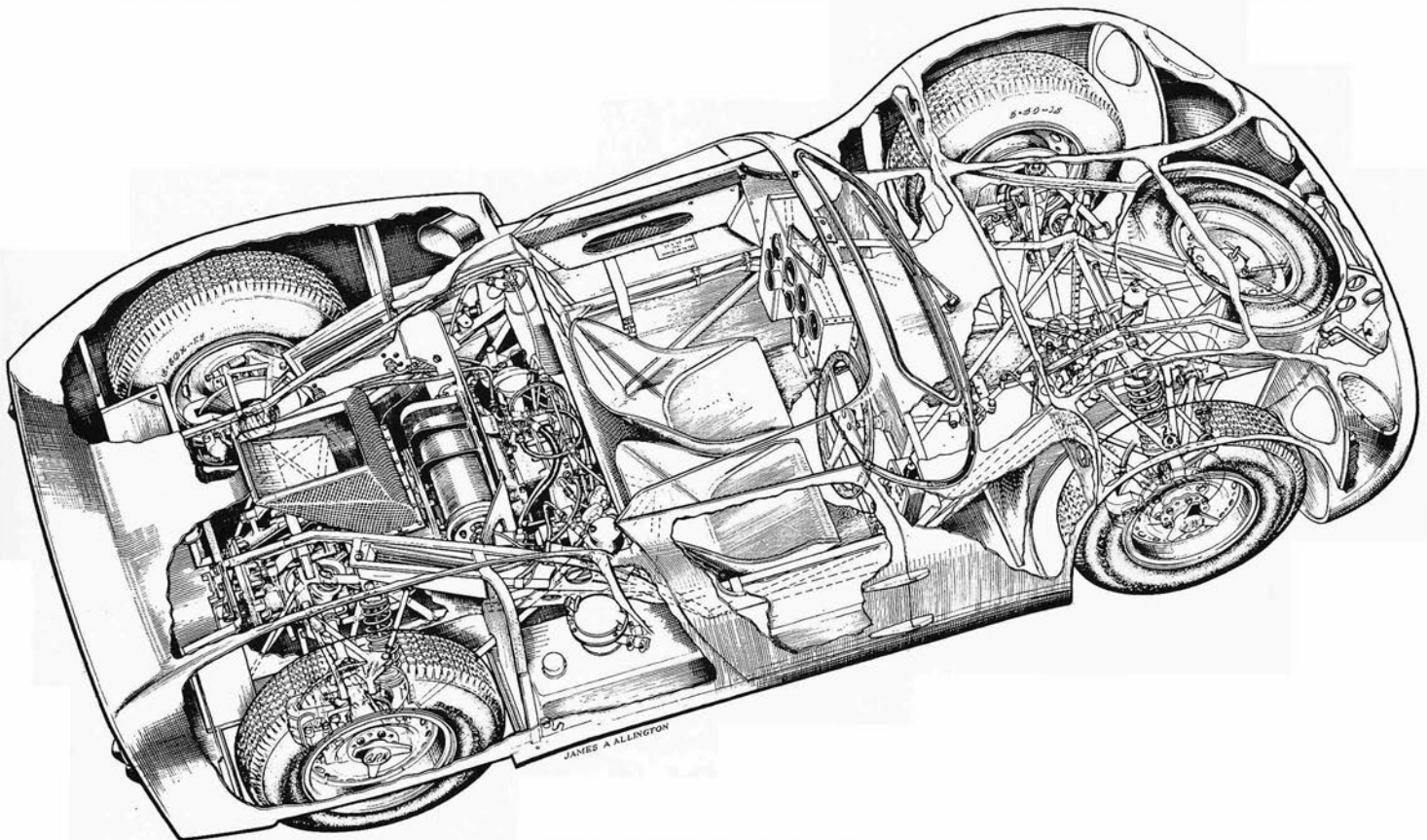
carried out by the brakes, and at the same time the throttle must be opened to provide maximum acceleration out of the corner; this calls for left foot braking, which is somewhat alien to the instincts of most racing drivers—as is opening the throttle on the approach to a turn. Fortunately, Ginther and co-driver Graham Hill are perfectly able, if not eager, to master this strange technique. Even so, the car will be something of a moving chicane to the more accelerative machinery and its exhaust haze could cause problems for following drivers.

Whatever the outcome of Le Mans, Rover will make history by being the first to race a gas turbine-engined sports car. It remains to be seen whether or not this form of propulsion has any real commercial application for passenger vehicles—even Noel Penny, who is in charge of gas turbine development at Solihull, seems unable to present a really convincing case for it. Among the chief snags are the cost of the turbine itself and of the heat exchanger, which is essential for reasonable fuel consumption; Rover's current heat exchangers are of stainless steel, and are both too expensive and too heavy.

There may be a case for a gas turbine-engined road sports car running without a heat exchanger, in which instance a power to weight ratio in the region of 8 lb/bhp might be achieved. Even so, both initial cost and fuel consumption would be relatively high, though perhaps not prohibitive in view of the car's novelty appeal.

The novelty aspect remains valid up to a point in the case of a passenger saloon, but here the power/weight ratio is lower and a heat exchanger is desirable if not absolutely essential.

In theory, the power unit has a longer life than a piston engine and requires less maintenance, but both points have yet to be proved. It is accepted that full power is available from a cold start, that there is no water to freeze and that the exhaust gases are cleaner than those of a piston engine, but a sceptical public—which has heard a lot about delayed response to the throttle and absence of engine braking, as well as poor part-load fuel consumption—has still to be convinced of the practicability of gas turbines for road use. The Rover-BRM could do a great deal for the cause at the 24 Hours of Le Mans. **cjd**



The Rover-BRM has short wheelbase, wide track, light weight, and lots of brakes. Design is blend of the current convention.