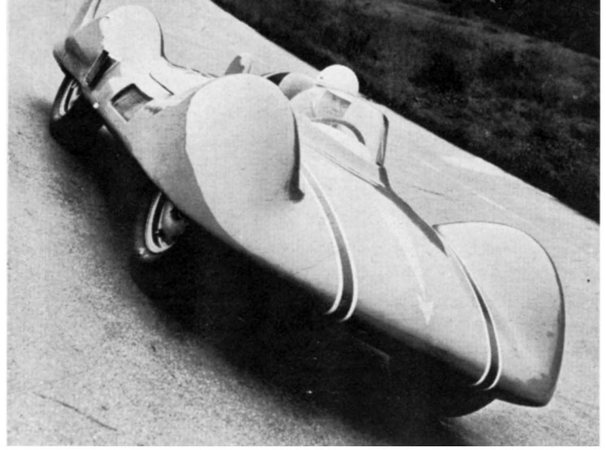
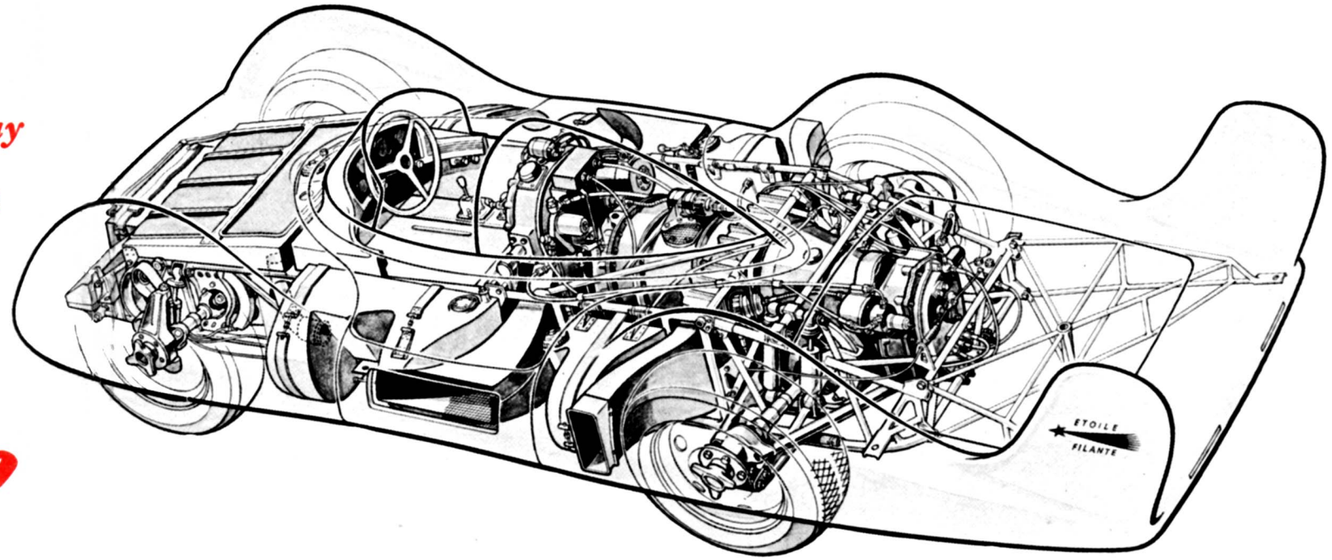


Shooting Star takes a run on test track in France. Body for this Grand Prix prototype was designed by Eiffel laboratories, pioneers in aerodynamics.

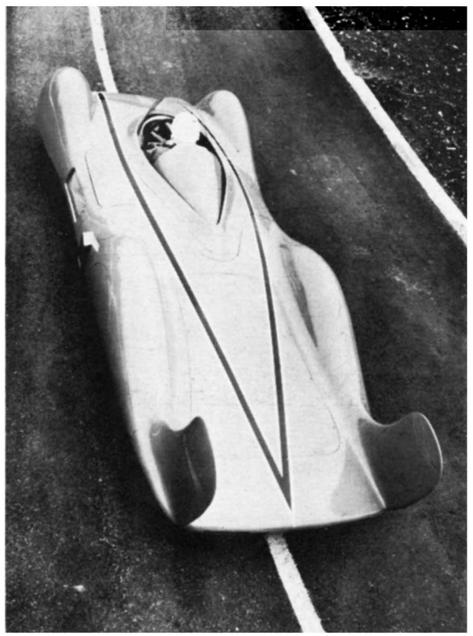
The era of turbines for International racing may already be here. First on the line is Renault's

Shooting Star

Cutaway of Shooting Star shows space frame, 35,000 rpm power plant, twin shock absorbers, and front wheels universal jointed to inboard brakes.



By KEN KINCAID



Fins on laminated "Disco" type body theoretically help directional stability.

ALFRED NEUBAUER, Mercedes-Benz racing wizard, is as sharp as he needs to be. In a French magazine article published in November, 1950, he prophesied that race cars powered by gas turbine engines would begin to become forces to be reckoned with sometime in 1956. He advised French automobile manufacturers to start taking a closer look at their vigorous aircraft gas turbine industry. "Your position is fortunate," he said. "If you exploit it you will have a big advantage over race-car builders in other nations who will have to pay dearly for licenses to use turbines of foreign make."

A few French ears were alert to this message, but the first well-financed and seriously engineered gas turbine grand prix prototype did not materialize until this year, proving the German's timetable accurate to an uncanny degree.

Existence of this new experimental turbo car was first revealed last June. It is, somewhat surprisingly, the baby of the French government-owned Regie Renault, one of the world's largest automobile manufacturers, but a firm that has taken no part in formula competition since the early years of the century.

Renault engineers' pride of authorship has not restrained them from drawing on the best talents and facilities that their country offers. They turned to one of France's most experienced producers of aircraft gas turbines, Turbomeca, for a power unit. For an ideal body they called on the Eiffel Laboratories, named for the tower-builder who was one of the world's great pioneers in aerodynamics. Leading French experts in the design of aircraft fuselage collaborated on the new car's space-type frame. The disc braking system and magnesium wheels with dural rims were contributed by Dunlop's factory in France.

Renault calls the experimental car *l'Etoile Filante* — the Shooting Star — but is so far keeping mum on its performance or just what the machine is intended to do or prove. But the makers do not hesitate to spell out its specifications in great detail. The *Etoile Filante* may well be racing history in the making; how it is made deserves to be recorded.

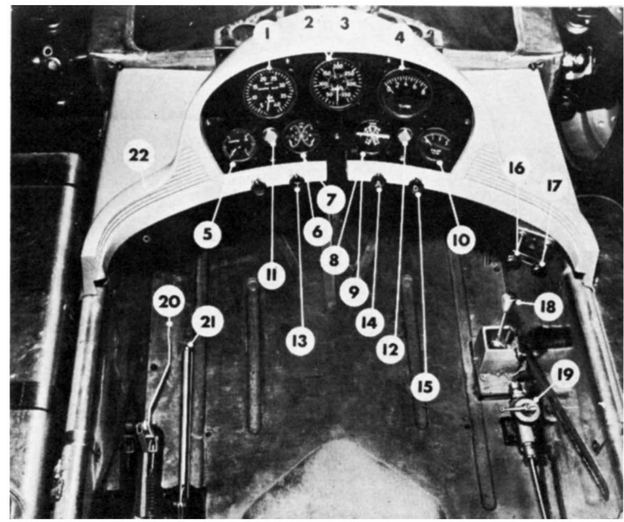
The power plant is of the free turbine type, in which there is no mechanical connection between the gasifier and driving turbines. The gasifier consists of a centrifugal compressor, a combustion chamber, a turbine wheel on the same shaft with the compressor, and a centrifugal fuel injection system. The mixture of kerosene and air is initially ignited by a spark plug, after which the combustion process is self-sustaining.

At 274 maximum bhp, the gasifier shaft turns at 35,000 rpm. The hot gas, the engine's working fluid, is ducted to the free, driving turbine which has a peak speed of 25,000 rpm. The bearings are lubricated by SAE 10 in a dry sump system.

With this turbine's full torque at stall, there is no need for a clutch or gearbox of the familiar sort. But there is a screaming need to whittle the driving turbine's incredible speed down to a useable 2,500 revs or so. This is accomplished by means of a three-stage reduction gear system which also includes a single reverse gear and a brake for halting the turbine wheel during gear changes from forward to reverse.

The power unit is mounted in the chassis on rubber blocks and the chassis frame is fabricated from chrome-moly steel tubing. A form of swing-axle independent suspension is used at the rear, torsion bars provide the springing, and all four disc brakes are inboard-mounted and are sprung weight. The Shooting Star's body is formed of laminated polyester resin and its prominent rear fins are intended to aid in maintaining directional stability. This car undoubtedly inaugurates the era of turbines in grand prix racing, which may shape up faster than any one of us thinks, except, perhaps, a few men like Neubauer. #

Tread, front & rear	49.6	ins.
Wheelbase	94.6	ins.
Length	191.0	ins.
Height (top of windscreen)	39.0	ins.
Weight, dry	2090	lbs.
Pounds per bhp (dry)	7.6	lbs.



Controls:

1. Tach for gasifier.
2. Outer dial shows road speed up to 350 kph or 217 mph.
3. Inner dial shows driving turbine revs.
4. Gas temperature.
5. Air compressor pressure.
6. & 7. Oil pressure.
8. & 9. Oil temperature.
10. Driving turbine temperature.
11. Ignition light.
12. Starter light.
13. Instrument lights.
14. Coil switch.
15. Starter switch.
16. Fuel control.
17. Oil control.
18. Reverse gear lever.
19. Three-way fuel valve.
20. Brake for driving turbine.
21. Hand brake.
22. Instrument panel of laminated plastic.