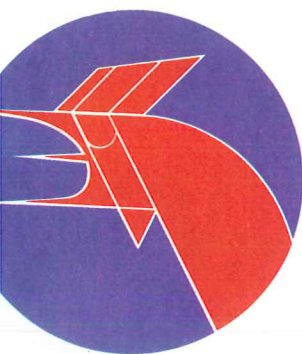




THE RACER THAT CAME OUT OF MESH

Has the Matra been a disappointment? Perhaps, because of its aerospace heritage, too much was expected of it in the first place

SOME SUPERB CARS have been produced by the aviation industry, but there have been some pretty indifferent cars to come from it too, so it need not be assumed automatically that the Matra ought to have been good because it was the work of a leading French aeronautical and missile engineering company. The one aspect of the Matra in which it was consistently in accord with the engineering traditions of aviation was that every specimen appeared to be beautifully made, although even here it is possible to think of exceptions such as the porosity of the weight and space-saving split wheels which brought a series of gentle deflations to the tyres of the MS120B Formula One car. More generally, however, there were times when the excellence of manufacture of the cars was betrayed by other shortcomings: not always designed nor always driven as well as might be wished, the cars seemed sometimes to be prey to bad luck, sometimes to bad management—and there can be few modern competition cars whose histories of disappointment offer more chances of confusion between the one kind of handicap and the other.

Perhaps the most interesting thing about the Matra

story is that it has such a strong overtone of disappointment. In the course of a serious competition career lasting no more than ten years, Matra cars dominated Formula Three racing for two years, Formula Two for the next two years, Formula One in the year following that, and the Le Mans 24 hour race for the three years commencing 1972. No other make achieving such results would inspire disappointment among its public, but perhaps no other make in recent years has promised so much more than it actually achieved.

Engins Matra grew up under the presidency of a man named Marcel Chassagny, proprietor of a small aeronautical contracting firm which before the war had been known as CAPRA. In 1942, when he was in the Free French zone, he changed its name to Mécanique-Aviation-Traction, abbreviated as Matra. At the time, he hardly knew what he would make, although his original experience was in the production of aircraft fuselages as a sub-contractor, but he resolved that his principal stock-in-trade should be brainpower and advanced technology. Immediately after the war, the French government was offering research contracts to firms ready to explore technical novelty, and Chassagny

Below: the sports-racing Matra 650 made its debut at the 1969 Monza 1000 km. The car proved extremely fast but rather unreliable



seized the opportunity thus presented to get into the manufacture of airborne armament. Matra developed its first rocket launchers in 1945, and soon became the major French producer of them. By 1951, the firm had 800 employees and moved up from classical armament to missiles, soon to lead again in self-guided air-to-air rockets. In another ten years, Matra had entered the field of space research and played a leading part in the development of a European satellite by the MESH group (M for Matra, E for Erno of Germany, S for Saab of Sweden and H for Hawker Siddeley Dynamics

development of a Formula Three racer. He certainly realised the value of motor racing as an advertising medium, but equally certainly he made things difficult for the new head of the racing division, rally driver Claude le Guezec, who was supposed to achieve all this with a staff of four working in a small room that had once been a kitchen. Eventually le Guezec persuaded the general manager to part with a budget that would allow a dozen mechanics and technicians and a move to an old wooden barracks in Vélizy on the outskirts of Paris—but in exchange Lagardère stipu-



Above: although Matra are known more for their racing activities, they have also produced a series of road-going cars. Pictured above left is the 1965 Matra Djet, developed from the Bonnet Djet following Matra's takeover of the company run by René Bonnet. The car on the right is the Matra 530, powered by a V4 Ford engine of 1700 cc

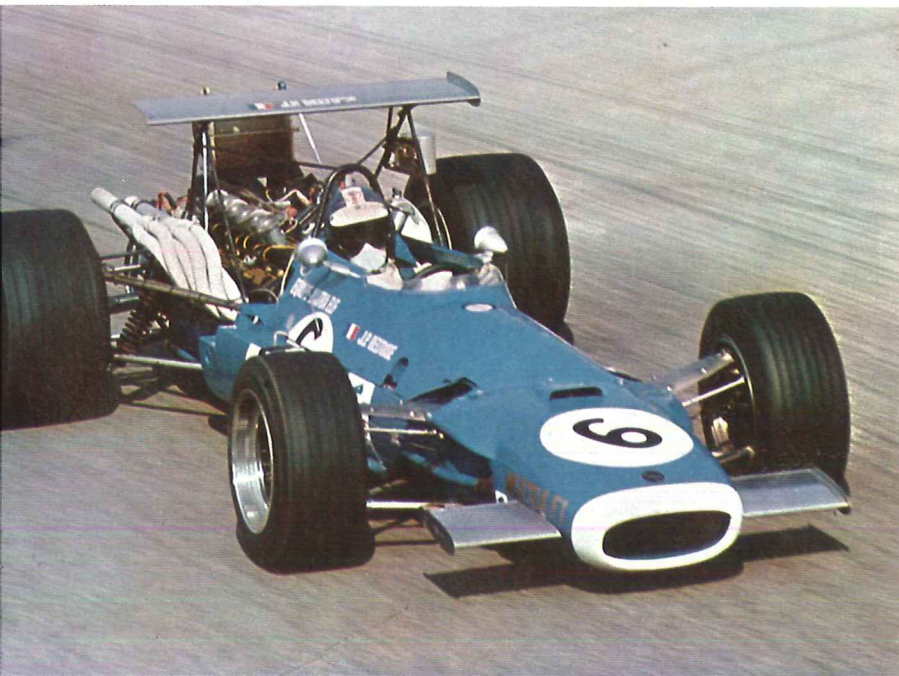
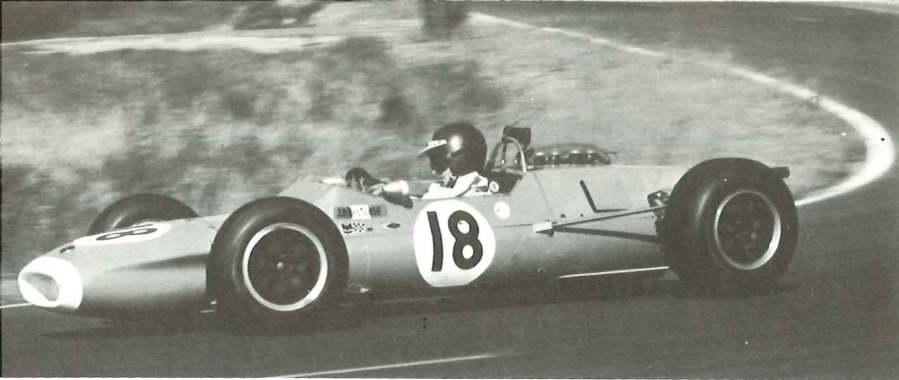
of Britain) and, like most other companies in aerospace research, Matra were not slow to exploit technological spin-off into profitable industrial undertakings such as refrigeration, automation and even the construction of plastic boat shells.

In the same year that Chassagny got into MESH, he also got into the motor industry. His friend René Bonnet had split with partner Deutsch, with whom he had made small and quite competitive sports cars, and he needed more money to start up again under his own name. A gifted technician but an unsuccessful businessman, Bonnet needed more and more finance to keep his little company afloat; Chassagny had invested money in the original partnership, and offered more when Bonnet decided to go it alone, but he could not go on doing so for ever—not with a large shareholding in Matra belonging to one of France's wealthiest and most astute financiers, Sylvain Floirat. In 1964 Matra took over the whole Bonnet outfit, lock, stock and barrel, and the Renault-engined René Bonnet Djet became the Matra Djet, produced by a brand new subsidiary of the aerospace firm called Matra Sports.

To run this subsidiary, an electrical engineer recently recruited from Avions Marcel Dassault (famous builders of military and executive jet aircraft) was appointed general manager. This young fellow, Jean-Luc Lagardère, who has been variously described as 'young and dynamic' and as a 'grey-flannelled fighting bull', gave full vent to his self-confidence (unhindered by any real knowledge of what was involved) by promptly and publicly committing the firm to a vigorous rally programme in 1965, and to the

lated that two Formula Three racers were to be built, to be operational within three months for Europe's most important Formula Three race at Monaco.

They managed it. Two French blue Matras powered by Cosworth-Ford engines started in the race, driven by Offenstadt and Jaussaud. They did not do very well, but there was little reason why they should: the cars seemed to have nothing distinctive about them. Indeed the wheelbase and track dimensions were determined by calculating mean figures from the dimensions of all the British F3 chassis displayed at the 1965 racing car show in London! Beneath the skin, however, was something that was particularly good: the Matra hull, unlike those of its rivals which were composed of two stressed-skin pontoons lined by rubber bag fuel tanks, was built according to aviation principles with tanks that were structural parts of the whole assembly. The bags were eliminated, leakage being prevented by filling all joints with a polymer resin; and with the bags out of the way, each pontoon could be braced internally by a row of bulkheads which contributed enormously to the rigidity of the whole combined body and chassis. This was the foundation for the exceptionally good roadholding that the Matras began to display in their early outings, though with disappointing results, until an inspired drive by Beltoise brought victory at Reims. It was in the nick of time, for had the Matras failed there the whole racing programme would have been dropped. Instead, the Formula Three cars went on from strength to strength, earning a national championship crown for Beltoise, and remaining highly competitive until the end of the 1968 season.



Top left: Matra's Ford-powered Formula Two car, the MS5

Above left: the Matra MS11 Formula One car driven by Jean-Pierre Beltoise in the Italian Grand Prix in 1968

Top right: the 1966 Matra 620 long distance sports-racer was powered by a 2-litre V8 BRM engine

Above right: the Matra 630 was also fitted with the V8 BRM engine. This model and the 620 before it were the forerunners of Matra's attempt to conquer the world of long distance endurance racing

By the end of 1965 Lagardère was anxious to move up into Formula Two, but conscious of a lack of the first-class driving talent that he judged necessary if the cars were to be exploited as effectively as they might be. An agreement of great long-term importance sprang from a casual meeting with Stewart's entrant Ken Tyrrell, who agreed to have his very promising protégé try a Matra at Goodwood. Stewart was so impressed by the quality of the Matra, and specifically by its ability to get its power onto the road, that the Englishman contracted for a team of Formula Two cars to be driven by Stewart and Ickx in the forthcoming season.

In that year, 1966, Formula Two governed cars of one litre displacement, and the Ford-powered Matra MS5 was clearly competitive with anything of similar power. There were, however, a brace of Brabhams, each powered by a Honda engine of exceptionally high performance, which dominated the year's Formula Two racing. Only on occasions when the Brabham drivers were otherwise engaged could the Matra display to good purpose the roadworthiness bred of structural superiority, perhaps the most important being its performance at the Nürburgring.

Matra's next step was obvious, but it was one that even Lagardère could not take alone. By coincidence he was to be partially relieved of that responsibility by a man of similar business outlook and needs—Jean Prada of the Elf oil company. This was a nationalised concern with a new brand name that had to be publicised quickly and effectively if it were to succeed in its aim of cornering one third of all French petroleum sales. Matra racing cars could help promote the required image, and so in January 1967 was announced the agreement concluded by the two companies, a 'marriage for four years'. Perhaps, after its brief and convincing novitiate, Matra would be able to move up into Formula One racing.

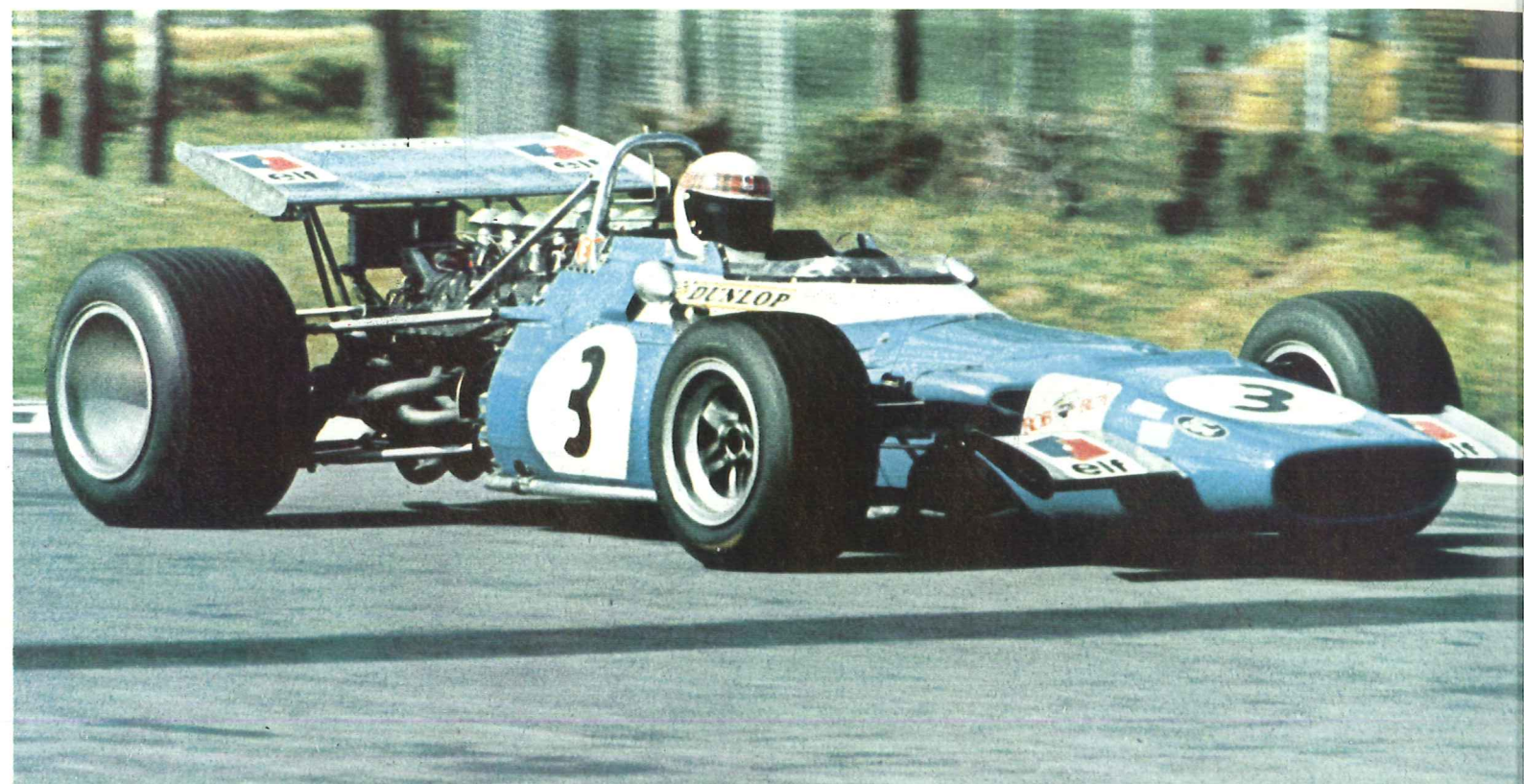
Certainly popular and patriotic sentiment was all in favour of such a move. Strong hints had already been dropped in places as high as the Chambre des Députés, and indeed Lagardère had told General de Gaulle a year earlier, in reply to the enquiry when Matra would make its own French engines, 'When you make it possible for us'. The General may not have been impressed then, but evidently he and Prime Minister Pompidou were favourably impressed now; and although there was some lobbying still to be done to overcome the strong claims of Renault for official



support, Matra's was the more convincing case, for they had gone as far as to establish an engine design team under former Simca engineer Georges Martin to produce a theoretical dossier on what the Matra Formula One engine should be like. In April 1967 it was announced that the government had lent Matra six million francs to be paid over a three-year period for the construction of a Formula One car powered by a French engine. If the project succeeded, a prestige French sports car would be built using an engine derived from the proposed racing one, and from the development of that marketing programme the government loan could be repaid.

These strictly non-technical considerations were important in determining the nature of the new three-litre racing engine. A V8 such as the new Cosworth-Ford might be adequate for racing, but a V12 would be a more noble achievement and lend an aura of greater glamour and apparent superiority to the road-going car that might be marketed later. There was also a technical point to be borne in mind: a 60° V12 could fit comfortably between the pontoons of a typical Matra monocoque hull, whereas the necessarily broader 90° V8 could only just be accommodated.

The engine that emerged from all these ponderings was attractive and intriguing, promising to bring a breath of fresh air to motor racing in 1968, and making possible an interesting comparison of what might be considered opposing schools of thought in engine design, when compared with the Ford-sponsored V8. For, whereas Cosworth in the latter concentrated on good breathing and efficient combustion to achieve power, Matra based their design on the postulate that



Above: Matra's greatest successes in the World Championship Grand Prix series were scored by Jackie Stewart and the Cosworth-powered Matra MS80. In 1969, Stewart used the MS80 to gain his first World Championship. That year, Matra also triumphed in the Constructor's Championship

ample piston area (permitting commensurately large valve area) and high rates of crankshaft revolution were the most obvious means to that end.

The first V12 Matra engine, the MS9, was uncompromisingly designed, except in so far as it was intended to stretch it to 4.2 litres for sports-car duty later on. It had a very short stroke of 50 millimetres, an impressive bore of 79.7, and the four valves to each cylinder head were splayed sufficiently to permit the inlet tracts to pass between the banks of valves, on a path substantially parallel with the bore. This was a layout that had been proven very efficient in earlier engines—but they had all been of modest or even downright old-fashioned stroke/bore ratios, whereas this Matra was decidedly short in the stroke. The corollary of a short stroke and widely splayed valves is a very poor shape for the combustion space when the piston is at the top of its stroke, and the product of this in the Matra was a disastrously low thermal efficiency manifested as an extraordinary and insupportable thirst for fuel. In its early races the MS11 car with this MS9 engine had to make refuelling stops in order to finish, something that had been unheard of for years. Its fuel consumption was in fact 37½% greater than that of the strictly comparable MS10 fitted with the Cosworth-Ford V8 engine. This imposed a severe handicap in terms of the sheer weight of fuel that had to be carried in the early stages of a race, a handicap that was all the more grave because the car was overweight already. Since it was also deficient in torque (although it enjoyed a parity with the Cosworth engine in power) and was inflexible, the drivers had no real hope of being competitive.

The most notable of the remedial measures undertaken by Matra was a change in the exhaust system, which originally had been a very elegant array of pipes, the two banks of cylinders being treated as separate six-cylinder engines whose cylinders were coupled by the exhaust pipes so that numbers 1 and 6 fed one tail pipe, 2 and 5 another, and 3 and 4 a third—something that previously only Bristol had had the wit to do with

a six-cylinder racing engine in their Le Mans cars. Thus the Matra had six tailpipes and made a splendid noise, while producing a respectable 420 metric bhp; but there were a number of inconvenient dips in the torque curve and these undoubtedly made the car very difficult to drive. The more conventional four-tailpipe exhaust removed some of these, but removed 30 bhp in the process, so that although the engine might now be more manageable and the car a little lighter it was no faster, and the only time the car produced a respectable result was in the 1968 Dutch Grand Prix when Beltoise was fortunate enough to be the only runner on rain tyres when the weather turned wet. He finished second, but Stewart beat him in the MS10 powered by the Cosworth DFV.

The MS10 had been produced specially for Stewart and Tyrrell, who had considerable support from Dunlop and the promise of engines from Ford. Needing a chassis, Tyrrell naturally went to Matra who realised that here was a perfect opportunity to hedge their bets and keep the French public happy even though the Matra V12 was producing nothing but headaches. Stewart's first car was in fact a modified Formula Two chassis built purely for testing, but he only raced this very briefly (and very fast) in the South African Grand Prix at the very beginning of the season. Thereafter the MS10 served him so well in the latter part of the season that he finished second in the drivers' championship, and this put both him and Tyrrell in a very strong bargaining position for the following season.

For this year Matra completely revised their approach to racing. The V12 engine was temporarily shelved as far as Formula One events were concerned, being set aside for sports-car events, and an entirely new Formula One car was designed by Bernard Boyer around two basic postulates: one that the Cosworth would be used, the other that the Matra system of structural fuel tanks was far too good not to be used, despite the knowledge that a change in regulations forbidding its survival into the following year would