MOTOR SPORT

FROM THE EDITORS OF MOTOR SPORT MAGAZINE

FORMULA 1 TRACK TEST



COULTHARD DRIVES THE LOTUS 25:
'I WHOOPED ON HANGAR STRAIGHT!'

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THE MOTOR SPORT ARCHIVE

The ultimate Williams track test

As one of Formula 1's foremost teams celebrates its 40th anniversary, *Motor Sport* secured a drive in one of its most famous cars – the FW14B, back on track for the first time in 25 years – and also its latest, the FW40

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raced in Formula 1 for HRT and Team Lotus. He is currently a commentator for Channel 4, the test driver for Williams's heritage division and a Motor Sport contributor



2017

WILLIAMS FW40

ALL THE WAY through the 2017 season I've been going to races and hearing drivers talk about just how amazing this generation of cars is. The bigger tyres and more downforce coupled with the V6 turbo hybrids that are producing 1000bhp all mean that we are seeing the fastest lap times in F1 history. The drivers love the cars and I must say that, watching from the outside, I've been very curious to see just how good they are.

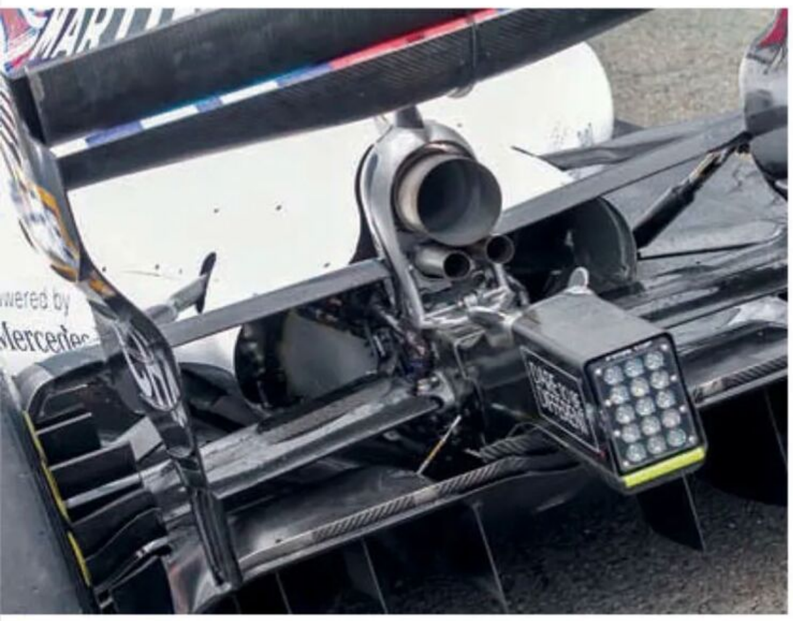
Now I was being given the rare chance to drive a current car – something that's very hard to do these days with the testing regulations and therefore I felt very privileged indeed. This was no test hack I was driving, either. It was Lance Stroll's current race chassis, which was being shipped off to Montréal at 2pm that day for him to drive in the Canadian Grand Prix!

The most recent car I'd previously driven was the 2011 Red Bull that took Sebastian Vettel to the world championship. That was of course the previous generation of V8 non-hybrid engines, still capable of producing more than 850 horsepower but not quite in the same league as the current cars.

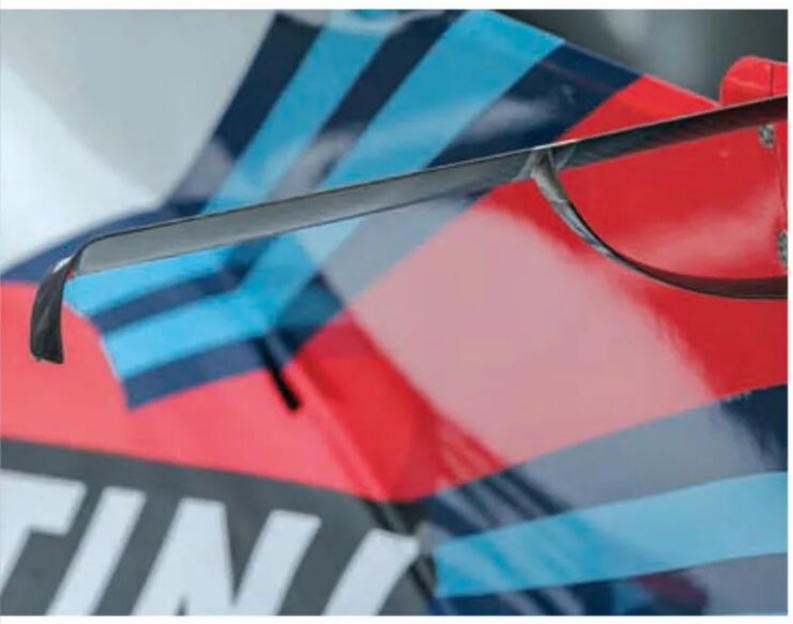
The first thing that struck me was just how much throttle travel there was. The power units produce a huge amount of torque and Mercedes has therefore created a lot of throttle travel to allow the drivers to manage all of that torque, particularly when the tyres start to wear and you need to be careful not to spin up the rear tyres and increase the degradation.

I was actually quite nervous before driving the FW40. How tricky would it be to harness that much power? There are lots of buttons to manage how to recover and harvest energy from the ERS system, how to control the brake-by-wire systems and then how to discharge the battery power in conjunction with the power

Mapped for controllability: Chandhok swiftly decided that the FW40 was the best car he'd ever driven. Once he'd finished, it was shipped to Canada for racing duties









"IT TAKES A FEW LAPS TO UNDERSTAND WHERE THE LIMIT OF GRIP IS. I FELT LIKE I WAS JUST CRUISING AROUND"

from the internal combustion engine. It's tricky stuff, but the systems engineers at Mercedes and Williams are incredibly clever people who have made maps that are relatively straightforward for drivers to adjust between the different modes without several button clicks.

As the tyre blankets came off, the cameras and people moved away and the mechanic waved me out onto the track, an altogether familiar sensation came over me. All of a sudden, things didn't feel alien. I wasn't nervous. It just felt normal and perhaps that's a reflection of the car being from my era of racing in that everything is filtered through the electronics. It didn't have the vibrations of the cars from the 1980s and 1990s and my seating position was pretty much like every race car I've driven in the last 15 years.

Turn off the pit limiter, floor the throttle and all of a sudden things aren't normal any more! The power and acceleration are just immense. Even before I've got to the tight right-hander at Abbey, the car is shouting for fifth gear. Onto Hangar Straight I unleash all of the power. Oh. My. God.

I've never experienced acceleration like it. Before I hit the brakes for Stowe, I'm doing more than 300kph, which is just extraordinary. The driveability of the power unit really stood out. As I mentioned before I was very nervous about managing all that torque and power, never having driven the V6 hybrids before, but actually the Mercedes engine guys have done a brilliant job of mapping the torque delivery. The blend of power from the internal combustion engine and the ERS units is seamless and seriously impressive.

Like any racing car, however, it's so important not to back off. You have to keep going quickly to maintain temperature in the tyres and brakes. That seems like a good excuse to lean on it through Stowe and that's where the 2017-spec downforce really shows its hand. The car has so much grip that it's actually comfortable through there. It takes a few laps to understand just where the limit of grip is, which is something Jenson Button mentioned in Monaco on his return to F1. For the first couple of laps, I felt like I was just cruising around. I wasn't, of course, but you just can't believe how much grip the car has in the high-speed corners.

The braking performance was equally impressive. F1 cars these days recover a lot of energy under braking and when you hit the anchors you hear a lot of popping and hissing from the turbo and the energy recovery unit. What's really impressive is just how good the electronic brake-by-wire system is at controlling the bias and the migration of brake effort that you get when you ease off the brakes.

Aided by the downforce and the bigger tyres, the braking distances this year are amazingly short and the electronics have to be extremely good at controlling the brake bias between front and rear wheels. The systems guys at Williams have once again done a great job of preparing the various maps because the brake system has to correct itself depending on how much energy is being recovered, which makes it really tricky to set up the ratio between brake balance, balance migration and the energy being recovered.

Like any chassis, when you're trying to squeeze out the last tenths it's going to be hard to drive, but when you compare it to the sheer physical effort required to drive the FW14B, which we will come to shortly, it's hugely different. There are a lot of toys which make your life easier.

The modern cars are a bit like other things in life – everything is in digital rather than analogue mode. Everything is filtered through some form of electronics, whereas with the older cars you get a pure and direct feeling from every input that you make.

One thing is beyond doubt, however: the 2017 Williams was unquestionably the best race car I have ever driven.





1992

WILLIAMS FW14B

I GREW UP IN AN ERA WHERE the biggest stars in F1 were Senna, Prost, Piquet and Mansell. The cars from the late 1980s and early 1990s were the ones on my bedroom wall posters. Watching Mansell take pole position at Silverstone in 1992 – 2.7sec faster than the first non-Williams – inspired me to chase the F1 dream. That sight of Red 5 charging down Hangar Straight into Stowe and the sound of that Renault V10 is something I can recall instantly – I've seen the VHS tape so many times. So you can imagine how I felt as I prepared to drive that very car on the track – the first time anyone had done so since that 1992 championship-winning campaign.

I've always been a driver who loves the engineering side of our sport. People often asked me about the best part of Formula 1 and, apart from obviously driving the cars, it was working with some of the most brilliant engineering minds in the world and their incredible technology.

The Williams FW14B sits in the garage when I walk in. Bodywork off, tyres on and, on command, the guys start flushing the system and the car starts moving up and down, flexing its muscles. I've seen it on TV as a kid, but seeing it in real life is something else. Welcome to the world of active suspension. Welcome to the FW14B – a car far ahead of its time.

The car is set with the Nigel Mansell seat and his unique smaller steering wheel that gave him a very direct turn-in but made it very heavy in the fast corners. It has a foot clutch but paddles to shift gear. You've got switches for the active ride control and today we're not running the traction control, as this car hasn't really run in 25 years and we don't want to overstress the engine. I get in it and am all set to give the command to fire up when Paddy Lowe, one of the key architects behind the active suspension program back in 1991, pops his head into the cockpit: "Remember you have to blip on the downshift - there's no fly-by-wire throttle!" Good tip, Paddy.

I pull out of the garage just after lunch during the Williams fan day and the pitlane is filled with people holding their phones out to record the moment – I spot Felipe Massa, Paddy, Sir Patrick Head, Jonathan Williams, Riccardo Patrese, Mark Webber and Geoff Willis all watching intently as I trundle down the pitlane. A quick glance to the left and the 45,000 people in the grandstand are all on their feet. The significance of seeing Red 5 back at Silverstone instantly hits me.

Floor the throttle and all of a sudden you realise that while it may not have the power of a current car or the turbos before it, 750 horsepower and only 580 kilograms is still enough to push your head into the headrest. The driveability is just incredible and such is the linear torque curve that within a couple of laps I feel as if with the traction control off I can get the rear to pivot on the throttle in the slower corners, with no surprises in the torque curve.

Onto Hangar Straight and, weirdly for me, I'm feeling quite emotional – that view of the straight widening, Stowe corner looming, the

sound of that incredible 3.5-litre engine behind me takes me straight back to being an eight-year-old child. My mind goes back to an on-board film of Nigel from 1992 and I can almost hear Murray Walker's voice.

Get to Stowe and you realise you have to look down either side of the cockpit and not in front of you as the centre of the monocoque is so high – I now understand all those videos of Nigel's head tilted to one side as he approached the corners.

I start to lean on it now, build temperature in the tyres and all of a sudden you start to feel the movement of the car from the active suspension. Paddy talked me through how it works earlier in the day – and only when you drive at speed can you fully appreciate just how revolutionary it was.

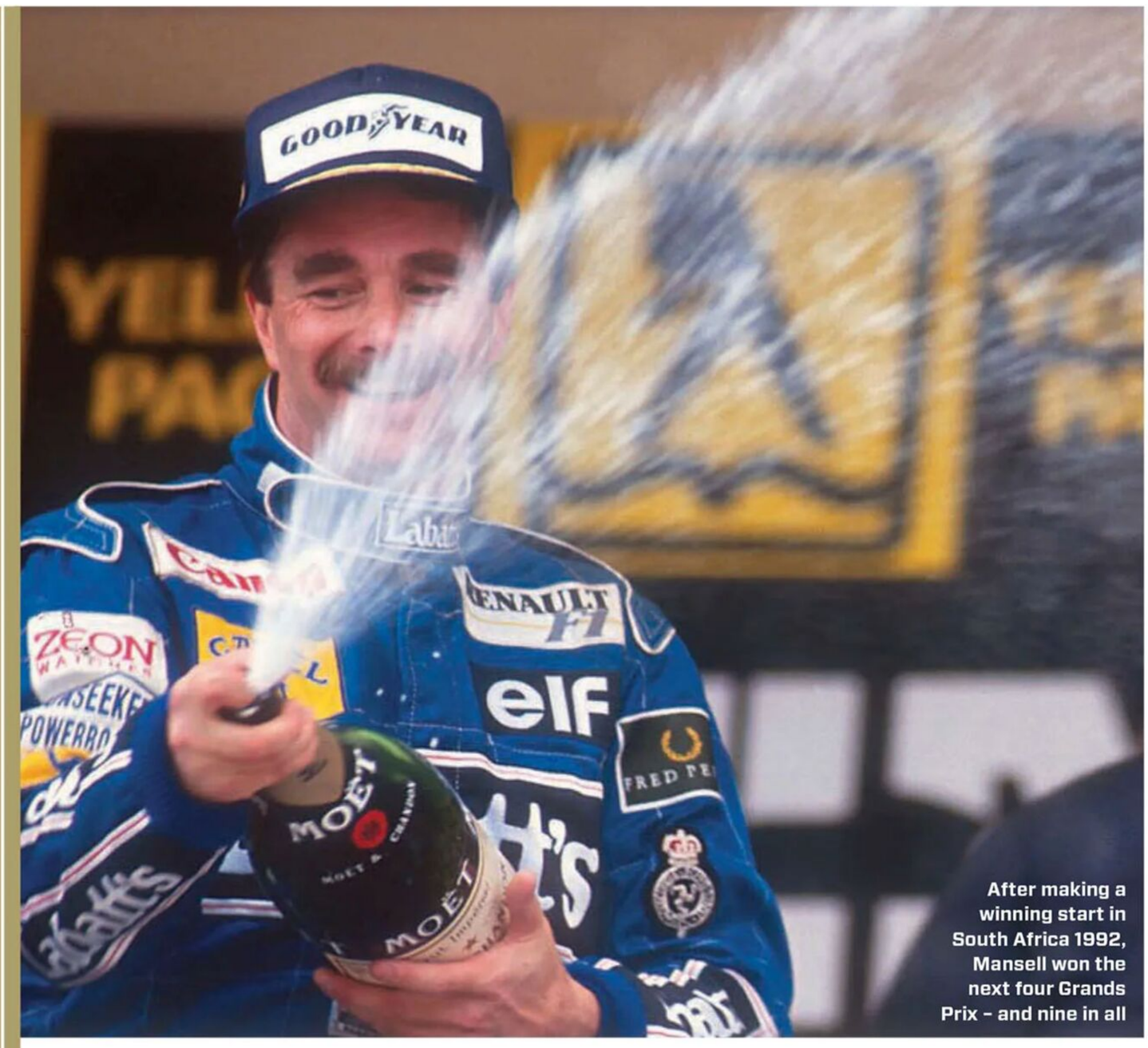
As you turn into a corner – take Stowe for example – the outside front corner (ie the left front) lifts up to counter the natural body roll and therefore keeps the platform stable and creates an incredibly sharp turn-in. It feels a bit odd because you do feel this movement and it takes a huge amount of confidence to just push on and know that the car isn't moving out of line. Having said that, the turn-in is incredibly positive and the car is beautifully balanced.

From mid-corner the nose goes down to keep the front pinned, but because the car has been designed with a blown diffuser you need confidence to really hammer the throttle from mid-corner and this will ensure that you've got the rear downforce you need to keep the back of the car stable.

Being quick and maximising the active suspension means that you really have to understand the principle behind the design. It needs a driver to have incredible inner belief and brute physical strength to hustle it around and be on top of it. The steering gets very heavy in the high-speed corners, as there's no power steering and all of this combined tells you just why Nigel, with his strong upper body, was able to extract so much performance.

I was very lucky to drive this iconic, magical car for several laps through the day. I just didn't want to stop and it was funny, as the runs went on and the confidence built, how the inner racing driver comes out; you start chasing the performance and wondering about your lap time rather than just driving around to enjoy the experience. Racing cars feel awkward when they're not driven hard – they're not designed to be driven slowly. You need to push to get temperature in the brakes and tyres. To get all of the engine and gearbox elements to work in sync, you have to push on and get the revs up.

Several onlooking drivers, including Riccardo, Mark Webber and Anthony Davidson, were all incredibly jealous that day – and I don't blame them! It was an emotional and overwhelming experience and one for which I am enormously thankful to Williams.



After making a winning start in South Africa 1992, Mansell won the next four Grands Prix – and nine in all

RED 5 SPEAKS OUT

Nigel Mansell's 1992 world title kick-started a period of dominance for Williams, the team taking the championship for constructors five times in seven years. Here he talks us through his epic season

With 14 poles and nine wins over the year, it's probably hard pinpointing highlights of your 1992 campaign. Do any particular races stand out?

"A few – not least the season-opener in South Africa, because it was important to get the year off to a good start. That gave us a bit of momentum, after which we picked up another win, and then another, and then a couple more... Cars were still quite unreliable then, of course, certainly in comparison with the way they are now. You were always half-expecting something to go wrong, so it was incredibly important to get off to such a fantastic start.

"Silverstone was special, of course, as it always was for me – but on reflection I guess Monaco was one of the most exceptional races, with me recovering after an unscheduled stop and Ayrton Senna on the defensive. I still find it amazing that we didn't touch."

Can you believe that a quarter century has elapsed since then?

"I can't, but my body can... It's amazing that everything remains so crystal clear in the mind, as though it were yesterday, but sometimes when I get out of bed I have to accept that it wasn't."

Can you recall how you felt when you drove the FW14B for the first time?

"I'd obviously driven different versions of it before we committed to race the FW14B – and that in itself was quite a difficult decision, simply because of its complexity and the potential reliability problems that might arise. We knew it offered better grip in low-speed corners, but getting comfortable through the high-speed stuff was the trick, basically because it was such an absolute monster – an incredibly physical car to drive."

On paper, a Frank Williams-led team featuring strong characters such as Patrick Head, Adrian Newey and yourself looks pretty dynamic. What was the working relationship like from your perspective?

"Very, very special – and I'm not just saying that with hindsight. That's how it felt at the time. They were wonderful days."

You were still a Formula Ford cub when Frank and Patrick launched Williams Grand Prix Engineering. Were you conscious of the team's growing stature as you moved up the racing ladder?
"Very much so. It is a huge achievement to succeed in Formula 1 as an independent entity – and all the more so to have survived in the industry for 40 years with your independence intact."

On the day that Clay Regazzoni scored Williams's maiden F1 win at Silverstone in 1979, you finished sixth in the supporting F3 race. What d'you remember about that?
"The biggest thing was probably Lotus boss Colin Chapman coming to find me for a chat – the first time we'd had a meeting on a formal basis."

You were with Williams from 1985-88 and then 1991-92. How different was the team you left from the one you'd first joined?
"I think the biggest difference was probably me, because I'd developed during my two years at Ferrari. If nothing else, I'd learned there that if you wanted something you just had to ask and it would be done! I pointed that out when I returned... I told Frank what I felt we needed and he went on the record, telling people that some of my demands were impossible, but three weeks later everything I'd asked for was in place."

After the last-minute disappointment of 1986 with that puncture in Adelaide, did you ever think that you might not get another shot at the F1 title?
"Some people were writing exactly that and suggested I might as well retire, because I was unlikely ever to be in such a strong position again. It had been hard enough losing the title in the first place, without having to put up with that kind of stuff. But you bounce back, don't you?

"I often wonder what would have happened if I'd crashed on the straight and caused a race stoppage – we'd gone far enough by then for a result to be declared and it would have been taken at the end of the previous lap, so I guess I'd still have been champion..."

And given what had happened in 1986, how sweet did it feel when finally you clinched the title in Hungary?
"I recall feeling as though I could barely breathe at the start, just because my heart was in my mouth and I didn't want anything silly to happen on the run to the first turn. I knew the maths, understood where I had to finish and drove accordingly... until I picked up a puncture, which meant having to pit and then do it all again.

"It ended up being a fabulous weekend, washed down with lots of champagne, and to this day I still sometimes pinch myself and wonder whether it all really happened – especially when you consider guys like Stirling Moss and Gilles Villeneuve, legendary names that never won it.

"Having previously been the bridesmaid three times, it felt as though I'd finally completed a journey."







Above, Nigel Mansell asks *Motor Sport*'s track tester to look after his former steed. Right, Damon Hill. Below, Nico Rosberg in conversation with Sir Frank Williams







From left, Williams alumnus Nico Rosberg with fellow world champion father Keke and Sir Patrick Head; Mark Webber was sorry to discover that the FW14B was switched off; Felipe Massa





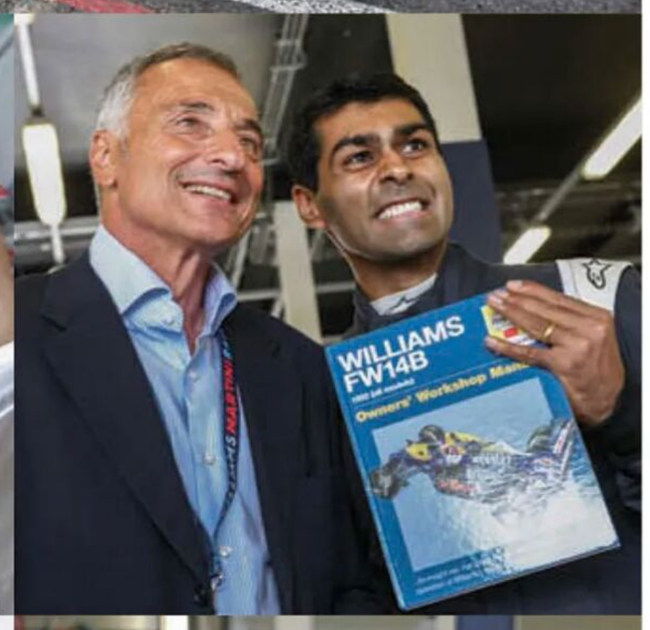


WILLIAMS FAN DAY

On June 2 Williams invited the public to Silverstone, scene of its maiden F1 win, to celebrate the team's 40 years









Clockwise from top: past and present linchpins with FW08D, FW14B and FW40; Karun Chandhok and Riccardo Patrese; a dream realised... or perhaps sparked; Ross Brawn was a popular draw; Massa signs for Williams yet again






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The greatest racing car designer of his generation was curious: how would it feel to step away from the drawing board and be let loose in two of his own creations spanning 20 years of Formula 1 evolution? When Adrian Newey asked, we were thrilled to oblige

BY DAMIEN SMITH

Driven by design

Matthew Howell





Drawn to drive: Newey heads out in RB6. Right: DC looks on as Adrian gets comfy in CG901

Early September, a couple of days after the Belgian Grand Prix and a few before the Italian at Monza. Christian Horner has just walked into the Silverstone garage, still sporting a healthy tan from Formula 1's four-week August break, and yet somehow he's milkier in pallor than we've ever seen him. The engineers and mechanics look on edge, too. Red Bull Racing is used to handling the odd bit of pressure, but this is something different. The team's most valuable asset – perhaps the most coveted in all of Grand Prix racing – is about to head out on track, putting himself at mortal risk behind the wheel of not one, but two of his own perfectly sculpted, frighteningly rapid, creations.

Adrian Newey is an F1 visionary, the most gifted and influential race car designer of the past 30 years, and the only man to draw, by hand, World Championship winners for three different teams. What he's not is a racing driver, at least in F1 terms. Sure, he's quite handy driving historics, as he'll show later in the month at the Goodwood Revival where he'll win the TT Celebration for a second time, with Martin Brundle in a Jag E. But in F1 cars, his experience amounts to... not very much. At all. "If I hurt him today, Christian's going to have my kids' fingers," mutters ashen-faced test team manager Tony Burrows.

We sympathise with Tony's concern. Truly, we do. But after the best part of three years talking about it, we're just relieved it's actually happening. As back-to-back tests go, this is special: two Grand Prix cars, conveniently separated by exactly 20 years, pedalled by a man burning with curiosity to discover exactly how it feels to drive what he drew. Here are the poles of two decades of F1 evolution.

In the 'Miami Blue' corner (or turquoise to you and me), the beautiful little Leyton House CG901, the final car of what in hindsight could be described as Adrian's three-year audition for greater Grand Prix glory. And next to it, in royal blue, the outlandish and plain-ugly-in-comparison Red Bull RB6, the car that secured Newey's unique place in history and made Sebastian Vettel the sport's youngest World Champion in 2010.

Newey takes no time at all to get to grips with the Leyton House, a car of which he remains ferociously proud. Ex-Red Bull driver and now BBC man David Coulthard tracks him in RB6 during the short run in CG901, complimenting Adrian on his commitment. Now Newey has pushed 'fast-forward' 20 years and is nestling into the Red Bull. His further commitment in the modern car will leave his friend and team principal Horner praying for it all to be over. He desperately wants his design genius back in one piece. ➤➤➤



"With Red Bull I felt I'd come full circle. It felt like unfinished business from Leyton House"

"I'd spent four years in IndyCar and [March co-founder] Robin Herd said, 'right, we're now ready to do an F1 car'," says Newey as he recalls how the adventure began. Japanese businessman Akira Akagi had forged a partnership to take racing car constructor March back into the Big Time. But the team would run under the puzzling guise of Leyton House, Akagi's lifestyle marketing exercise – based bizarrely on a colour. It wasn't just the name that was unconventional. But with youthful 'secret weapon' Newey and the promising Ivan Capelli in the hotseat, Leyton House was about to play a great F1 cameo, with lasting consequences for the sport.

"In those days F1 was a split formula," says Adrian. "All the top teams had turbo engines and at the back end of the grid they were 3.5-litre normally aspirated, down on power by about 150hp. At the time the turbo cars were really quite clumsy. People had become lazy in their design – they had so much power that to find more downforce they would just bolt on ever-bigger wings. It was all about containing that power.

"With our 650hp Judd V8 we had to find the speed elsewhere, from aerodynamic efficiency. So we designed it very much from an aero perspective, making small compromises in the mechanical packaging to achieve this. And in that way these are the cars that personally I'm most proud of. I think it's fair to say the approach changed the design direction of F1."

> "It's fair to say these cars changed the design direction of Formula 1"

In 1988, the year of McLaren-Honda near-total domination, Capelli played the plucky underdog, even passing the mighty Ayrton Senna at Estoril, and briefly leading at Suzuka. Remarkably, the 881 outscored the Williams FW12 over the course of the season to be best of the Judd-powered cars, and it also broke new ground, pre-dating Harvey Postlethwaite's high-nosed Tyrrell 019 by two full years. "The things we did with it, in terms of raising the underside of the chassis to treat the front wing, the nose and the chassis as one aerodynamic device, sculpting the front wing endplates, putting a lot of effort into the diffuser and packaging the car as small and tight as we could, it was all something that spread through the field," notes Newey.

But the following year, the good work began to unravel. Over-ambition, a lack of frontline F1 experience, Akagi's failing financial security and intra-team politics – it would all erode the early promise. The CG891, its initials added in memory of Capelli's close friend and key Leyton House cog Cesare Gariboldi who'd died in a road accident, failed to live up to expectations. And its 1990 successor, based on the same chassis with new aero, looked to be a flop, too. But a mid-season discovery would change everything, bringing a new meaning to 'fast food', as engineer Andy Brown explains on page 60. From the French GP in July 1990, the CG901 became a contender, Capelli leading 45 laps at Paul Ricard having failed to even qualify for the preceding Mexican GP. But it was all too late for Newey. Adrian had already quit the team and would start his new job at Williams the Monday after the British GP.

"I'd been in at Leyton House pretty much from the start and although we made mistakes I thought as a team we were moving forwards," he says. "Had Leyton House continued to have proper funding we could have done a decent job, perhaps – who knows – start to win races. But Akagi was clearly in financial trouble and it was pretty obvious which way it was going, which is why I left when I did. And frankly I'd had a big fall-out with the accountant [Simon Keeble] who Akagi had appointed to run the



"These are the cars I'm most proud of." Newey brought 'high nose' concept into F1 with Leyton House designs

team, and with whom I got on very badly. You can't appoint an accountant to run a race team. It's never going to work."

Akagi would later be arrested for fraud and the team, back under its March moniker, would fold on the eve of the 1993 season – by which time Newey was being hailed as the new genius of F1.

"The first two times I drove on track were both in F1 cars," says Adrian with a smile. "The first time was an 881 at Vallelunga where we were testing towards the end of the year. Both drivers [Capelli and Mauricio Gugelmin] found the cockpit cramped, which I've had a lot of stick for since! Ivan said, 'you drive it and see what you think'. So I did. I did the outlap, got as far as the final hairpin – and spun coming out. So that was my circuit debut.

"My second time was in a Williams at the end of 1993 where the team organised a day for journalists to drive at Paul Ricard, and Patrick [Head] thought it would be a good idea if he, I and Bernard Dudot from Renault had a play. Unfortunately, it was chucking it down so it was a bit daunting.

"So this is my third time in an F1 car if you discount the Goodwood hillclimb, which is not the same thing. And in preparation for this, I have to admit the guys at work – and Christian primarily – thought it would be a good idea if I tried a single-seater before being let loose in an F1 car. So I went up to Snetterton last week and jumped into one of Jonathan Palmer's F2 cars. My head was hanging off after about 15 laps, just from not being used to driving cars with a significant amount of downforce."

Newey's short on experience, but not in confidence. He looks at home in the car almost immediately, and as you can see from our pictures, his confidence was inspired by its immaculate preparation, thanks to owner Patrick Morgan and his Dawn Treader Performance team. At the Festival of Speed this year, former F3 racer Gary Ward set the fastest time of the weekend in this car. Both Adrian and Coulthard, who also enjoys a few laps during our session, relish the chance to backtrack to a 'purer' time when racing cars were made in the right proportions, and weren't littered with the turning vanes and aero flaps Newey himself must specialise in today.

"It actually felt very comfortable, funnily enough, considering I haven't driven a car




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like that," says Adrian. "Good visibility all round thanks to the low cockpit, which from a safety point of view you could say left the drivers quite exposed. A very tractable engine, and the physical act of driving the car is simple. Obviously it's Patrick's car and I didn't want to take any chances with it, but it felt beautifully balanced: direct steering, good brakes and very little buffeting, which was surprising because I'd had a lot in the F2 car. It just felt like an old glove, which is peculiar given that I'd never driven it before."

We were just relieved he'd been able to squeeze into the v-shaped cockpit, given how infamous his Leyton House designs were for their shrink-wrapped proportions. It helps that Newey shows no visible sign of having any hips. "Yes, Ivan and Mauricio did complain about cramped cockpits and the difficulty in changing gear, which we made a lot better on the 891 and the 901," he admits. Patrick points at a blister bubble on the right flank – a rare aero concession to the drivers and the skin on their knuckles when changing gear. Newey smiles. "For me at my size there was enough cockpit space. I don't know what they were all moaning about!"



Mauricio Gugelmin provided defining image of Leyton House with this flip at 1989 French GP. Helmet still bears the scar (above)

C901 never won a race, but its importance to Newey and F1 as a whole is obvious if it is compared to the Williams FW14 of 1991.

"Certainly from Leyton House to Williams, it was very much the same aerodynamic philosophy," says Adrian. "As I joined Williams in July 1990, I had a relatively short time to get on with designing the following year's car. Basically I brought with me the knowledge in my head – not the drawings – of what would have been the Leyton House 911 had I stayed there." Note the important clarification within that sentence.

"Obviously, Williams had much bigger resources compared to Leyton House, and all the experience, particularly on the mechanical side. But I think it's fair to say that aerodynamically what we were doing at Leyton House was much more advanced than what they were doing at Williams at the time. So if you sit an FW14 beside a 901 you'll see more than a passing resemblance."

With the 'active' FW14B of 1992, Newey claimed his first World Championship, with beefy Nigel Mansell strong-arming his way to a dominant drivers' title. But in defiance of popular belief, Newey believes Williams didn't use the best active ride system that was available. Again, his experience at Leyton House told him differently.

"Our R&D man Max Nightingale began work on a system in '89," he says. "Of course Lotus and Williams had done their active systems very differently. Full active on the Lotus, and a sort of cobbled-up AP system at Williams. At Leyton House we worked on a platform control system, which is purely aimed at trying to control ride-height through speed and downforce variation as opposed to trying to deal with road inputs, and left conventional springs and dampers to deal with those. I believed that was the way forward. Small as we were, we were probably over-ambitious to start an active system. Ironically, it was the system that McLaren went on to use in 1993.

"It was the first research I'd done into active ride, but we continued with the AP-based 'three-legged' system at Williams for the 1992 car, which I don't think was as good as the platform control system. It basically had two front springs and a single rear spring. And then the bump side of the single rear actuator was connected to the rebound side of the front actuator, and that's what gave you the roll stiffness.

"It provided what we wanted in terms of compensating for downforce, but in the process of hydraulic tripod linkage you compromise the ride a bit, and that was what used to give Riccardo [Patrese] in particular some problems.

"The McLaren system which we'd used on the Leyton House was very simple. You put an actuator under the spring platform, and compensated the spring and tyre squash by extending the actuator. It was the better system. Had active not been banned at the end of 1993 Williams would have ditched the three-legged principle to go to a platform control ›››



LAT

system, but with the actuators on the pushrod instead of under the spring perch."

Newey's enthusiasm for the 'active era' is obvious. How frustrating was the ban on such devices at the end of 1993? "Very," he says. "It's a shame because I think it was a great time, that electronic era, and it wasn't just active suspension. By the end of '93 we had four-channel ABS, electronic power steering, traction control, active ride and we had built and run the CVT, which was effectively a DAF Variomatic transmission system. We actually ran it here at Silverstone, it did a few laps. It sounded very weird to hear an engine at near-constant rpm. But that was banned too. Unfortunately it was a case of 'Ferrari International Aid'. Ferrari and the FIA got together, and it was the usual Ferrari *modus operandi*: if they couldn't get something to work they got it banned. They couldn't get active to work, they certainly wouldn't have got CVT to work in a short space of time. So as a consequence the whole thing got closed down."



What he says next on the 'passive' FW16 of 1994 is fascinating, in the context of May 1 and the death of Ayrton Senna. The electronics ban hit Williams particularly hard, he says. "It was a big step back for us. We'd been on 'active' for two years, at least one year longer than our rivals. We had of course developed the aerodynamics around it, so when we went back we were a bit slow, in truth, to appreciate the problems of having a platform that was moving around a lot more. So the FW16 was aerodynamically unstable, frankly. The sidepods were too long, it would get into this huge floor-stall, and there was no way out of it. If you ran the car high you could avoid the floor-stall, but you lost downforce. If you ran it low it was unstable. It was a bit of pig at the start of the season, and it wasn't until we shortened the sidepods at Magny-Cours [in July] that we really got it sorted."

> "There was a huge amount of politics at McLaren, a lot of posturing"

In 1997, as Jacques Villeneuve headed towards Williams's fourth Newey-inspired drivers' World Championship in six years, Adrian quit the team for a fresh start at McLaren. When his elegant MP4-13 won the opening race of the new narrow-track era in '98, the transition from one team to another appeared to be as seamless as the gearshift technology that would be a feature of his McLarens.

"The transition certainly wasn't easy," he counters. "To work at McLaren compared to Williams felt very different. Williams is very much Frank and Patrick's hobby shop, which could be frustrating at times. But it had that sort of homely feel to it, and Patrick was very good to me in the freedom he gave me. McLaren is a little more IBM-like. Not that I've worked at IBM, but it feels like a big company that has methods and standards, and this is how you must operate.

"I joined on August 1, 1997 so it was a really tight design schedule for the new car. Through August to October I worked 12 hours a day, seven days a week to catch up. The big regulation change was a chance to do something different, which was definitely an advantage. Had I joined with stable regulations for the following year it would have been much more difficult."

His struggles with life under Ron Dennis are well documented. In 2001 he came close to leaving McLaren to join his old friend Bobby Rahal at Jaguar – which would of course eventually become Red Bull – only to pull out late in the day (see p62). "In truth, I stayed at McLaren a couple of years too long," he says. "The 2002 car was decent, but David [Coulthard] only won a single race in it, and it wasn't a championship winner. I made the judgement mistake of trying to be aggressive with the 2003 car, and that was the MP4-18 that never raced. But there was a lot going on at that time..."

Patrick Morgan, who worked for Ilmor, the company that builds Mercedes' F1 engines, interjects: "I remember we had 16 different specs of crankshaft at that time, and we were doing a rotary-valve engine that never raced and was banned before it made it into a car. Then there was the 'M' engine to support the MP4-17 which was raced in 2002 and '03, and the 'P' which was your low centre of gravity engine for which we drew up that weird connecting rod for you. And then there was the development of the twin-clutch going on at the same time, plus the carbon gearbox...

"Yeah, it was too much," says Newey. "And the 18 was the result. It was over-ambitious. Ferrari had come up with a great 2002 car [it won all but two of the 17 races], I felt we needed to make a big step, and we made mistakes. Aerodynamically it was unstable for a reason that didn't show up in the tunnel but showed up quickly on track. Kimi [Räikkönen] had a massive accident in the last turn at Barcelona, just through the car being aerodynamically unstable at low ride-height. We realised what the problem was and we canned the car.

"Towards the end of that year I wanted to do a new car to get on top of those problems, but Martin Whitmarsh and some of the other engineers believed the car that didn't race could be made quicker by putting the twin-clutch gearbox on it and so on. Frankly, I got over-ruled and I should have left then. There was a huge amount of politics at McLaren and a lot of posturing. At that point we raced what became MP4-19, but was in fact the 18 with a different badge on it, and of course it wasn't a very good car. But the 19B, which made its debut mid-season and won at Spa, that was a big step forward, a decent car. Had we had it from the start of the year we might have been able to challenge for the championship. But it all left a bad taste."

The 2005 McLaren would be Newey's last at the team, and again Newey offered innovation in the so-called 'zero-keel' suspension configuration. Despite 10 wins shared between Räikkönen and Juan Pablo Montoya, another title to add to those claimed with Mika Häkkinen (with Newey, left) in '98 and '99 slipped away. It was time for a new challenge.

"With Red Bull I felt I'd come full circle," says Newey. "The attraction was it felt like unfinished business from Leyton House. Here I had a chance to join a team more or less from its start, develop with it and get to the point where we could perhaps win races."

Newey, famously, still works at his drawing board, just as he did at McLaren, at Williams, at Leyton House and March, at Fittipaldi and at Southampton University from where he graduated in 1980.

"I'm too much of a dinosaur," he smiles. "Really since the March days, including the Indycars, I've always started the layout of a car by considering the aerodynamics first and then trying to fit the mechanicals around it. I've never quite understood how people operate differently. I guess things are changing now because the regulations are so tight and restrictive that to some extent the car does lay itself out for you. But I've never really understood how you can have a mechanical department that doesn't work in a very integrated way with the aerodynamic department. And you see it. ➤➤➤



1988 LEYTON HOUSE MARCH 881 JUDD



1989 LEYTON HOUSE CG891 JUDD



1990 LEYTON HOUSE CG901 JUDD



1991 WILLIAMS FW14 RENAULT



1992 WILLIAMS FW14B RENAULT



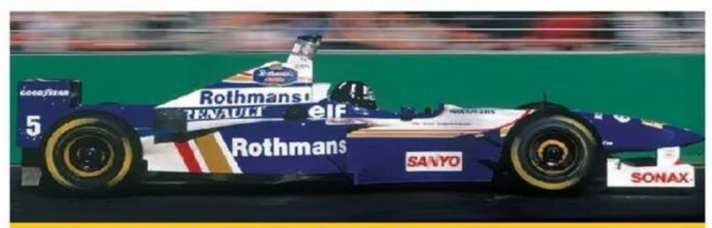
1993 WILLIAMS FW15C RENAULT



1994 WILLIAMS FW16B RENAULT



1995 WILLIAMS FW17 RENAULT



1996 WILLIAMS FW18 RENAULT



1997 WILLIAMS FW19 RENAULT

The changing shape of Formula 1, by Adrian Newey. The career stats of his Grand Prix cars, up to the 2012 Japanese GP, read as follows:

RACE WINS: 131
Williams 59; McLaren 41; Red Bull 31

POLE POSITIONS: 151
Williams 67; McLaren 42; Red Bull 42

FASTEST LAPS: 143
Williams 63; McLaren 55; Red Bull 25

DRIVERS' WORLD CHAMPIONSHIPS: 8
Williams 4; McLaren 2; Red Bull 2

CONSTRUCTORS' WORLD CHAMPIONSHIPS: 8
Williams 5; McLaren 1; Red Bull 2



1998 McLAREN MP4-13 MERCEDES-BENZ



1999 McLAREN MP4-14 MERCEDES-BENZ



2000 McLAREN MP4-15 MERCEDES-BENZ



2001 McLAREN MP4-16 MERCEDES-BENZ



2002 McLAREN MP4-17 MERCEDES-BENZ



2003 McLAREN MP4-17D MERCEDES-BENZ



2003 McLAREN MP4-18 MERCEDES-BENZ



2004 McLAREN MP4-19 MERCEDES-BENZ



2005 McLAREN MP4-20 MERCEDES-BENZ



2007 RED BULL RB3 RENAULT



2008 RED BULL RB4 RENAULT



2009 RED BULL RB5 RENAULT



2010 RED BULL RB6 RENAULT

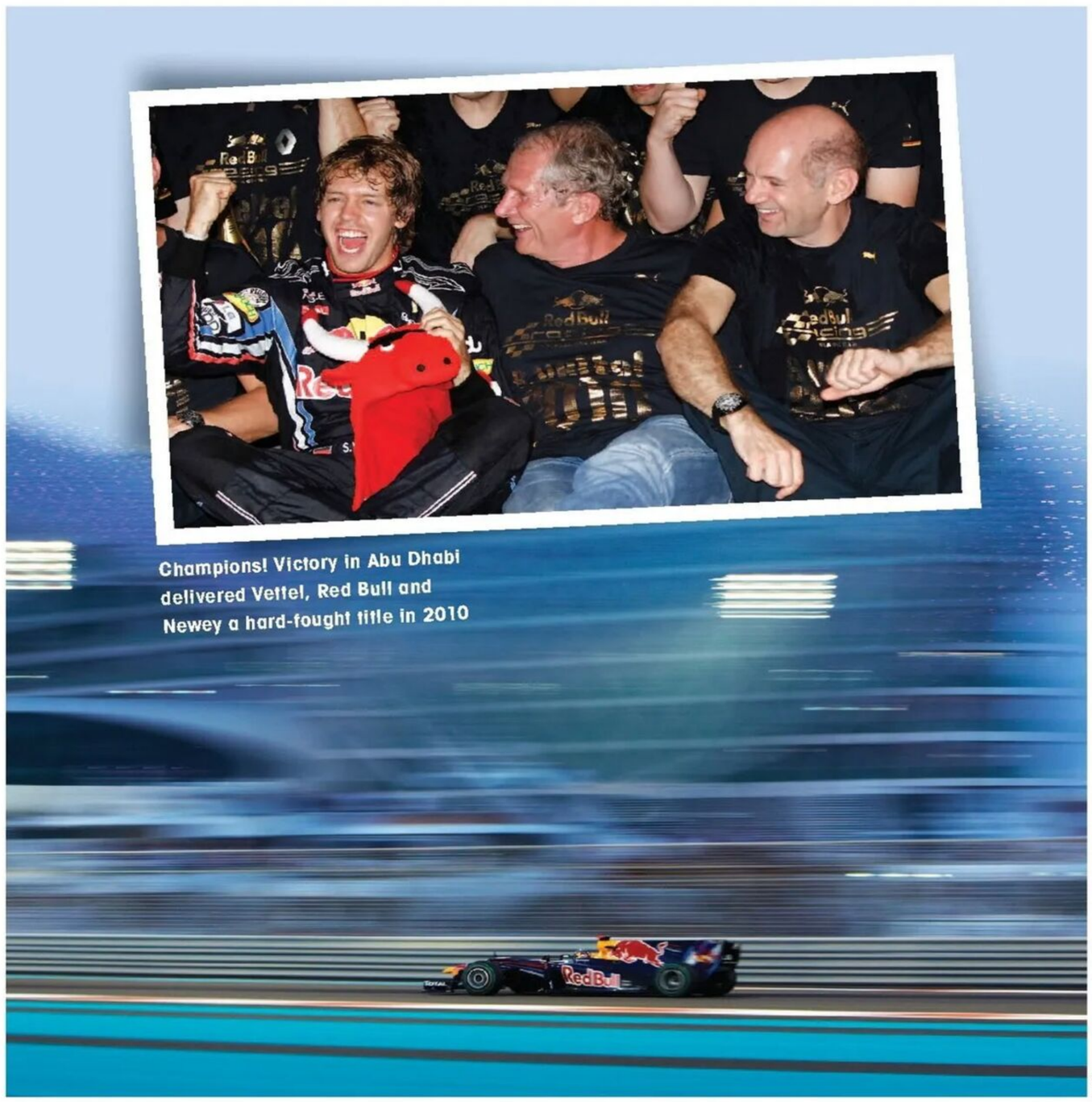


2011 RED BULL RB7 RENAULT



2012 RED BULL RB8 RENAULT

LAT



Champions! Victory in Abu Dhabi delivered Vettel, Red Bull and Newey a hard-fought title in 2010

LAT









You see cars where the aerodynamicist clearly hasn't communicated with the chief designer, and the thing looks like a camel.

"I graduated in 1980 long before CAD [computer-aided design] was even thought of in motor racing circles. CAD systems started to be used in racing in the very late 1980s, early 1990s. Probably with the exception of mine, all the drawing boards had disappeared from F1 by the mid-90s. It was a quick transition.

"To some extent the drawing board doesn't matter. For me, it's just a way of taking your thoughts, putting them down in a medium, developing them using that medium and then if it's an aerodynamic idea it's taken off to CAD and the wind tunnel. And I'm lucky enough to be in a position where I have two or three surfacing guys who scan my drawings and then turn them into solid models. But these days we couldn't, as a business, accommodate too many people like me because it would simply be too head-count intensive."

By 2010, 20 years after he'd left Leyton House and his CG901 for Williams, Newey felt his 'new' team was ready to win a championship. Success had been far from instantaneous. Even Adrian's genius would take time to come into effect at a team that, under its previous guise of Jaguar, had been mismanaged so badly. But now, with the RB6, the team made its breakthrough.

"The RB5 was in truth pretty good," he says of the car he designed for the new supposedly 'downforce-lite' regulations of 2009 – only for Brawn GP and its controversial double diffuser to reset the parameters. "Unfortunately there are no classes in F1, but it was the quickest single-diffuser car. We got into the whole politics of whether a double diffuser was legal or not. But the decision was nothing to do with the technical regulation, it was part of the war between Max Mosley, McLaren and some of the other teams. We got caught up in that.



DC was on hand to advise, while a concerned Horner turned up to make sure his technical director remained in one piece...

"Anyway, as a team we were too young. Sebastian was very young, Mark [Webber] was doing a great job, but had some bad luck and made some mistakes. And as a team we were making errors all over the place. The car wasn't reliable, our race strategies weren't often all that clever. So we needed another year at the front to learn how to do it properly."

Then in 2010, Vettel and RB6 came good – after more than a few stumbles along the way. "I've got good memories of this car. We had a frustrating start with a lot of DNFs through silly things – a wheel nut coming loose in Melbourne, Sebastian getting involved in incidents perhaps through inexperience. But in the second half of the year it all came right."

Vettel's late run of form and Fernando Alonso falling foul of Ferrari's strategy errors at the Abu Dhabi finale took them to that magical title. To show his gratitude, Red Bull owner Dietrich Mateschitz presented Newey with an exceptional gift: the RB6 you see here.

Horner's relief is palpable as Newey steps away from the car, and the effects of his summer tan are once again noticeable. Now it's all smiles in the garage. Newey sounded committed through Woodcote, although as a genuinely impressed Coulthard points out, dropping a couple of cogs for the usually seventh-gear Copse is a tell-tale that he's not quite ready to replace Vettel and become F1's only modern-day designer-driver just yet.

"I have driven a Red Bull a couple of times up the hill at Goodwood, so it's not the first time," says Adrian. "You forget how different it feels just sitting there. It's much more claustrophobic than the Leyton House because the cockpit sides are high, your feet are up in the air and the pedals are different: you've got a hand clutch and you have to left-foot brake. It feels much less familiar, more alien. The power delivery is impressive. It's a big kick in the backside. The Leyton House does that too, but this is even more again. And of course the engine note is completely different to anything you're used to. But that all fades after a lap; it's amazing how quickly you get used to it.

"It feels more of a fairground ride. To get to the point where you can slow things down in your own mind to drive that car quickly would take quite a while." But still, you were totally committed, we say. "Yes," he replies with that familiar enigmatic smile. "But then again I do know exactly what it should do." When you're Adrian Newey, you've got a right to have faith in your own work.

Our thanks to Adrian Newey, Patrick Morgan and Dawn Treader Performance, Christian Horner and Red Bull Racing, and Silverstone for their help with this feature.

ALWAYS MEET


19
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ERREGI
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YOUR HEROES...

It's 40 years since Senna arrived in F1. **James Elson** joins Pierre Gasly as the Alpine driver takes Ayrton's first Toleman on the track

PHOTOGRAPHY: JAKOB EBREY









Clockwise from left: no paddle shift; "stoked" Pierre Gasly; 1.5-litre Hart 415T gives 800bhp



Ayrton Senna's first podium came at the 1984 Monaco GP – when Toleman was robbed

Gasly proudly sports the Senna-style helmet. Left: tips from Martin Brundle for Gasly and Naomi Schiff

The tension's almost unbearable as a chilling breeze sweeps down the old Silverstone pitlane. Will it, won't it? Silence descends for a second, and the atmosphere ratchets up one more notch, before being brutally shattered: an 800bhp turbo beast roars into life.

The machine in front of us is the Toleman TG183B – Ayrton Senna's first grand prix car. We're here to see it run today, as Sky F1 shoots a tribute film signifying 30 years since the F1 legend's death to air over the Emilia-Romagna race weekend. It's a precursor to the car joining a bumper Senna demonstration at this summer's Silverstone Festival.

Fears allayed that the 1980s monster might not stir, the man sourced to get behind the wheel is nothing less than a bona fide Senna fanatic – grand prix race winner and current Alpine driver Pierre Gasly.

"I'm so stoked," he says beforehand, clutching his special-edition Senna crash helmet. "I get the chance to drive this beautiful piece of engineering."

The future three-time world champion, already a man to watch when he made his 1984 F1 debut, first raced the TG183B in anger at his home race in Rio de Janeiro, before scoring a first world championship point next time out in South Africa, and another at the following race in Zolder. In historic racing terms, this is a highly significant car.

Also making his grand prix bow for Tyrrell that Brazil weekend was Senna's British F3 archrival from the previous season, Martin Brundle. More than a little *au fait* with slightly unwieldy turbo grand prix cars, the Le Mans winner, F1 veteran and broadcaster is on-hand – along with Sky presenter and racer Naomi Schiff – to give Gasly a few pointers, while key Toleman figures are also present: team manager Alex Hawkridge, press man Chris Witty and mechanic Barney Drew-Smythe.

This track test has an added poignancy in that team founder Ted Toleman died in April, highlighting the impact his small band of racers had on F1, going from serial DNQ-ers to podium finishers in just four seasons – not to mention giving a debut to the driver many view as racing's greatest. Helping Senna make that first leap into F1 was chief designer Rory Byrne as well as engineers John Gentry and Pat Symonds – a stellar line-up.

It's now 40 years since that landmark season, but the memory of Senna's arresting presence and searing pace is still clear as day for the former Toleman charges.

Not only was the intense South American immediately at one with the car, he fitted in with the driven privateer outfit when hired as a replacement for Derek Warwick, the team's talisman who had moved to Renault.

"It was going to be Rory's decision effectively, and Ayrton tested at Donington with us after he'd already done so for Williams and McLaren," says Witty.

"Ayrton and Rory immediately clicked. There was no telemetry then – the only interface to make the car go quicker was driver to engineer – and Rory was able to talk to him like he did with Warwick.

"It was something extra special, his ability to remember minute details for feedback. Rory just said to Alex: 'You've got to do everything you can to sign this guy.'"

"I'd been following him since karting," adds Hawkridge. "We knew that he was super-quick. There was no surprise with his speed [but] his competitiveness was unbelievable. He just couldn't come second. I'd never seen that intensity before in a driver."

The car Senna was presented with to both test and make his F1 debut is the one Gasly drives today. However, the design is from the 1983 season, and was used to tide over the Brazilian and team-mate Johnny Cecotto

"There was no surprise with Ayrton's speed but his competitiveness was unbelievable"



Shades of '84 as Gasly channels the spirit of Senna for the Sky cameras

PAUL-HENRI CAHIER/GETTY IMAGES

"Gasly is immediately comfortable with a car built 13 years before he was born"



until the new TG184 was ready for round five – the French Grand Prix.

While its successor was a more considered concept, the TG183B was a last-minute effort conjured up by Byrne and co under high-pressure circumstances. It went through the same crisis-management that most other teams faced at the start of '83 – the FIA banned ground effect on the eve of the season, meaning all participants had to come up with a new design overnight.

With its quirky features such as a radiator located in the front wing, aggressive floor aero down the side of the car and double rear wing structure, the TG183B was one of the most creative solutions to the conundrum.

"We produced a ground-effect car at the end of '82 called TG183 which was going to be our car for the following year – it raced at Monza and Las Vegas [in '82] – which had sliding skirts and everything," explains Witty.

"Pat, Rory and John had done some really nice work with the 183 – it had a pointed nose, with a little radiator inlet at the front – and then they had to redesign the car.

"It was just downforce, downforce, downforce and because its Hart engine was an aluminium monobloc design, it needed a lot of cooling."

The aggressive approach to aerodynamics is stark as the car sits in the old Silverstone pits, giving off a menacing air – not that it would intimidate the old hand Brundle, who looks on the car of his '80s nemesis Senna with slightly misty eyes.

"It's just a big Formula Ford car really, isn't it?" he says. "And seeing that helmet design with that livery is a bit eerie..."

Looking the part, Gasly is now ready for his first run. The Brian Hart 1.5-litre turbo sounds pitch perfect, and the Frenchman wastes no time in getting up to speed.

It's a cool 9°C as Gasly runs on grooved tyres, but the GP winner appears immediately comfortably with a car built 13 years before he was born. It harrumphs down the straight before the driver launches into Copse with full enthusiasm, clearly making use of an increased sightline with no halo, cumbersome wheel covers or extra-large tyres in the way – he can actually see the apex!

The clear joy from behind the wheel is almost immediately transmitted to the small crowd on the pitwall, all suitably thrilled by seeing such a visceral machine in action up close. Forget the fact Gasly hasn't used an H-pattern gearshift in a racing car before, or isn't supported by all the usual electronics,

he hasn't ever driven a vintage competition prototype of any kind at all. And yet he doesn't miss a beat. Once out of the car following that first blast, the Frenchman is positively bouncing.

"It's just exceeded my expectations – it's my first ever time running in a car that was built before I was even born," he enthuses. "It's obviously a piece of history, just seeing how different it is to what I'm used to. No dash on the steering, just plain, so pure – gearstick, steering, clutch, brake, throttle, and that's it! I just love the raw driving, no buttons, not looking at the dash – you're just there, yourself and the track. It gave me a feeling which I've never experienced before."

Despite the quirky aero solutions, 183B is an F1 design from a more unreconstructed racing age, and Gasly reveals that getting to grips with the 800bhp rocket in the back is one of the trickiest aspects.

"The turbo was quite particular in the way it kicks in," he comments on a car which weighs in at just 540kg – a third less than his own modern-day Alpine. "I've always been used to paddle shifts. Using an H-pattern is very unusual for me. With the clutch, the way the car behaves in relation to the gearshifts is also quite different."

Schiff, who also tries out the car, concurs: "You've got to really throw it into the downshifts. It's a long time since I've done heel-and-toe!"

Would Gasly like to have been racing in the '80s era of fire-breathing turbos among heroes like Senna, Alain Prost and Nigel Mansell? He concedes the TG183B might have had a profound effect on his thinking.

"I'm not gonna lie, I wasn't ever really attracted by classic old cars," he says. "I'm very into all the latest [road-going] hypercars. However, this experience made me feel something unique. In my generation, any time I've jumped in a car I've never really thought about safety – even if sometimes it's thrown right in your face with some tragic events. Generally these days things are safer.

"I was thinking these last few days about driving in this car. Back then the safety was different. You respect the machine even more. I was pushing, getting closer to the limit – but then you have this sense of [the relative] safety [or lack of] which comes to the back of your mind."

The emotion is clear for Gasly in emulating Senna in some small way – so why did he gravitate towards the Brazilian and not French hero Alain Prost?

"Obviously, Alain Prost is one of the most successful F1 drivers of all time, and in France, of course, he's a legend," acknowledges Gasly. "His and Ayrton's rivalry is probably the most iconic in F1 – whenever you'd hear about Alain, Ayrton's name would usually be mentioned.

"I started to watch documentaries and learn more about Ayrton. I really like the personality you had inside the car, but also outside it: his values, his beliefs and what he was giving back to his community in Brazil. You could see how huge he was and how many people were impacted by the accident in Imola. You still see it now around the world at race tracks, people screaming his name. He was more than just an F1 driver."

It also isn't lost on Gasly that he is now driving for a team whose lineage – via Renault, Lotus and Benetton – owes itself to Toleman. It's essentially the same team at which Senna started his career. A handful of people who were there at the start in the early '80s are still working at Enstone today.

"You think about it, the legacy is really, really cool," Gasly says. "There are some original Toleman people here today, it's crazy – I'm working with team members that actually worked on Ayrton's car 40 years ago! It's a lot of history."

Senna was nothing less than a whirlwind in the TG183B. After helping Witty get the F1 car resprayed in the Rio favelas following a late promotion of Segafredo to title sponsor, the young charge would haul the car as high as 13th on his debut before the turbo let go.

However, there was improvement in the following two rounds at Kyalami and Zolder. In South Africa, Senna scored a point through what Witty describes as "sheer bloody mindedness" after his front wing was smashed to pieces on lap one, and he was promoted into the points in Belgium after Tyrrell was later thrown out of the world championship – retroactively disqualified due to its trick water refilling system.

Senna would then fail to qualify – for the only time in his F1 career – at the San Marino Grand Prix after a deluge soaked Imola, but he was undeterred.

Next would come the TG184's arrival in Dijon, the famous Monaco podium, his departure for Lotus and everything else. But it all started with the Toleman TG183B.

For Hawkridge and Witty, 40 years on from that landmark season with Senna, the car represents both the start – and end – of something special, with Toleman lasting just one more year before selling to Benetton.

"I'd achieved everything I wanted to do in F1," says Hawkridge. "We never won a race – *but we did*. We were 'winning' Monaco '84 [when Senna was bearing down on Prost], and they red-flagged it. It was a stitch-up, and I lost my appetite."

Team Toleman would taste title glory in future incarnations, and with some of the original figures involved with the TG183B. As Witty concludes: "It was just a great, great team with some great, great people."

In what will be the biggest demonstration parade and display of Ayrton Senna competition cars ever seen, the Toleman TG183B and many more of the Brazilian's racing machines, including McLarens, Lotuses and pre-F1 cars, will run at this year's Silverstone Festival (August 23-25) to mark the 30th anniversary of his death and 40 years since his arrival in F1. For ticket information visit silverstone.co.uk

"I really like the personality you had in the car, but also outside it"









Clockwise from left: Senna in ’84; the Brazilian raced No19 for his first F1 season; Pierre, you have some work to do

Chassis 05 is the actual car Senna raced. Below, from left: Barney Drew-Smythe, Alex Hawkridge and Chris Witty







No Pierre, you can’t swap this Toleman for your Alpine for the rest of the F1 season...

PAUL-HENRI CAHIER/GETTY IMAGES

The car that changed FORMULA ONE forever

THIS IS THE MOST FAMOUS OF ALL LOTUS 49S. SHAUN CAMPBELL GOES TO HETHEL TO REUNITE JOHN MILES WITH THE CAR THAT TOOK HILL'S FIFTH MONACO WIN

• • • • •

JOHN MILES BECKONS ME OVER WITH A crook of a gloved index finger. He points to a smear of blue paint on the inside of the monocoque. "See that? This was the car I was to drive at Monaco in 1970. I didn't qualify – it was my first time there – and we lent the car to Rob Walker's team for Graham Hill to drive. So they painted it blue overnight and he ran it the next day."

It's a day full of moments like that, a day not so much for memories as vivid flashbacks – of sights and sounds, men and machines – that you thought were forever in the past. It's a blustery, misty morning at a rough old airground in Norfolk, a far cry from a sunny afternoon in Monte Carlo, but it's no less image-invoking for that. For this is Hethel, home of Lotus, and there's a Lotus 49 to be shaken down in preparation for the new season, under the critical eye of engineers who have been up most of the night making everything ready. It must have been very like this 30 years ago...

The Lotus 49's place in motor racing history cannot be judged by results alone, impressive though they were. Twelve Grand Prix wins between 1967 and 1970, the Drivers' World championship for Graham Hill in 1968 and the Constructors' title for Lotus in the same year stake its claim as an outstandingly successful Formula One car. But it was also a pioneer, at the forefront of the revolution that swept through Grand Prix racing in the late 1960s.

The Lotus 49 was the car that introduced the Ford Cosworth DFV to Formula One, that was at the cutting edge of those first stumbling experiments with aerodynamic technology, and that blazed the trail for commercial sponsorship. It left Grand Prix motor racing a very different sport from the one it had entered.

The curious thing was that it was never intended to be a revolutionary car. The brief that Lotus founder Colin Chapman laid down for his chief designer, Maurice Phillippe, was to produce something relatively straightforward, a car simple enough to allow the team to concentrate on sorting out the inevitable teething problems associated with a brand new powerplant.

But the simplicity of the original 49 was sublime. Even its most notable feature – the engine being used as an integral part of the car, bolted on to the rear of the monocoque with the rear suspension subframe mounted on to the block and cylinder heads – was something Lotus had tried with its 1966 challenger, the BRM H16-engined 43. On the 49 this feature was emphasised by the lack of body covering for the engine, giving the car a distinctly naked look from the rear of the cockpit.

However, where the engine, transmission and rear suspension alone of the Lotus-BRM 43 exceeded the minimum formula weight of 500kg, the light and compact Keith Duckworth-designed 'Double Four Valve' engine allowed the 49 to tip the scales almost bang on the weight limit. In fact, the complete car was scarcely bigger than the old 1.5-litre type 25/33, a point clearly demonstrated when the bodywork of a 33 was used on a 49 chassis that had been hastily repaired after a huge practice shunt for the 1967 British GP.

The 49 wasn't just small and light, though: it was also powerful. Cosworth reckoned the original DFV to be good for 400bhp at 9000rpm, which put it right on the level of the heavier Ferrari and Eagle-Weslake V12 units and well ahead of Cooper's venerable Maserati V12 and Brabham's homely Repco V8.

The mere sight of this elegant new design, when the first two examples were rolled off the Team Lotus transporter in the Zandvoort paddock on 2 June 1967, was enough to have the rival teams worried. When it took to the track, they must have despaired. Graham Hill put it on pole position with a time that was six seconds under the lap record. Jim Clark, whose self-imposed tax exile had precluded him from any testing, had problems in practice, and qualified only eighth.

In the race Hill led for 11 laps until the DFV's camshaft broke, whereupon Clark swiftly moved through the field, passed Brabham to take the lead on the 16th lap, and drove to an apparently effortless victory. It was a debut to be ranked alongside Mercedes-Benz's victory with the W196 and Fangio at Reims in 1954, a crushing display by a new car that had in one fell swoop rendered ➤

Ian Dawson



Former Lotus Grand Prix driver John Miles gets reacquainted with the pioneering Lotus 49

all other challengers obsolete.

The superiority of the Lotus 49 during that first season is hard to reconcile in the more modern world of Grand Prix racing when advances are reckoned in tenths, if not hundredths, of seconds. At Spa-Francorchamps, the old 8.76-mile Spa, Clark qualified on pole with a lap that was 7.5 seconds under the unofficial record, set by Phil Hill in the mighty 7.0-litre bewinged Chaparral 2F during practice for the Spa 1000km sportscar race the month before. Clark's *average* speed for that lap was 151.56mph, on a circuit which he frankly admitted gave him the willies. Eddie Dennis, the man largely responsible for restoring the car photographed on these pages and a mechanic for the team that season, remembers Clark coming through at the end of the first lap of the race so far ahead that those in the pits were convinced that the rest of the field must have been wiped out in an accident.

If Spa demonstrated that the Lotus 49, especially in Clark's hands, was in a class of its own in terms of raw speed, it also revealed that it was far from reliable. Hill's car was retired after just three laps with no clutch; Clark had to stop twice to replace disintegrating spark plugs and finally took sixth place. But a pattern had been set that would last right through until the fourth round of the World Championship the year after. From Zandvoort in 1967 to Monaco in 1968 – 12 Grands Prix – the Lotus 49 would start from pole position, lead the race and, unless mechanical problems intervened, it would win. It actually won seven of those first 12 starts, including two one-two finishes. Although it would continue to win races after that it would never again enjoy quite the same superiority, largely a result of the Cosworth DFV engine being made available to other teams, notably Ken Tyrrell's Matra driven by Jackie Stewart, and the fact that Clark was no longer there to drive it...

Throughout 1968 the car steadily evolved. The most dramatic difference was first seen during the pre-season Tasman series, when the green and yellow official Team Lotus colours gave way to the garish red, gold and white of the John Player brand of Gold Leaf cigarettes. Then came the 49B, unveiled for the Monaco GP, with modest fins on the



Above: Miles leads Jochen Rindt during the South African GP in 1970. It was the Briton's only points finish. Below left: Clark's 1967 Dutch win was the first for a DFV. Below right: Hill at Monaco in '69 - his fifth win





nose and a wedge-shaped tail to provide downforce at the rear.

How effective these primitive aerodynamic add-ons at a slow-speed circuit such as Monaco were is a moot point, but within a few weeks the wedge tail had been replaced by an enormous rear aerofoil mounted on struts over the rear and controllable from the cockpit to provide maximum downforce through corners and 'feathered' for minimum drag on the straights. Wheels and tyres grew wider, the original five-speed ZF gearbox gave way to a Hewland unit and the oil cooler was moved to the rear.

Later in the season McLaren-type 'nostrils' were added to the top of the nose to channel away the air from the front radiator. A chassis was sold to Rob Walker's team for Jo Siffert to drive and became the last customer car to win a Grand Prix when the Swiss driver staved off Chris Amon's Ferrari 312 by a handful of seconds to win at Brands Hatch, after the works cars of Graham and Jack Oliver both retired when leading.

In Mexico, the last round of the 1968 series, Graham Hill notched up his third win of the season to clinch his second world drivers' title. It gave Lotus something to celebrate after a year clouded by Clark's death in an F2 race at Hockenheim and Mike Spence's fatal crash when testing the gas turbine-powered Lotus 56 at Indianapolis.

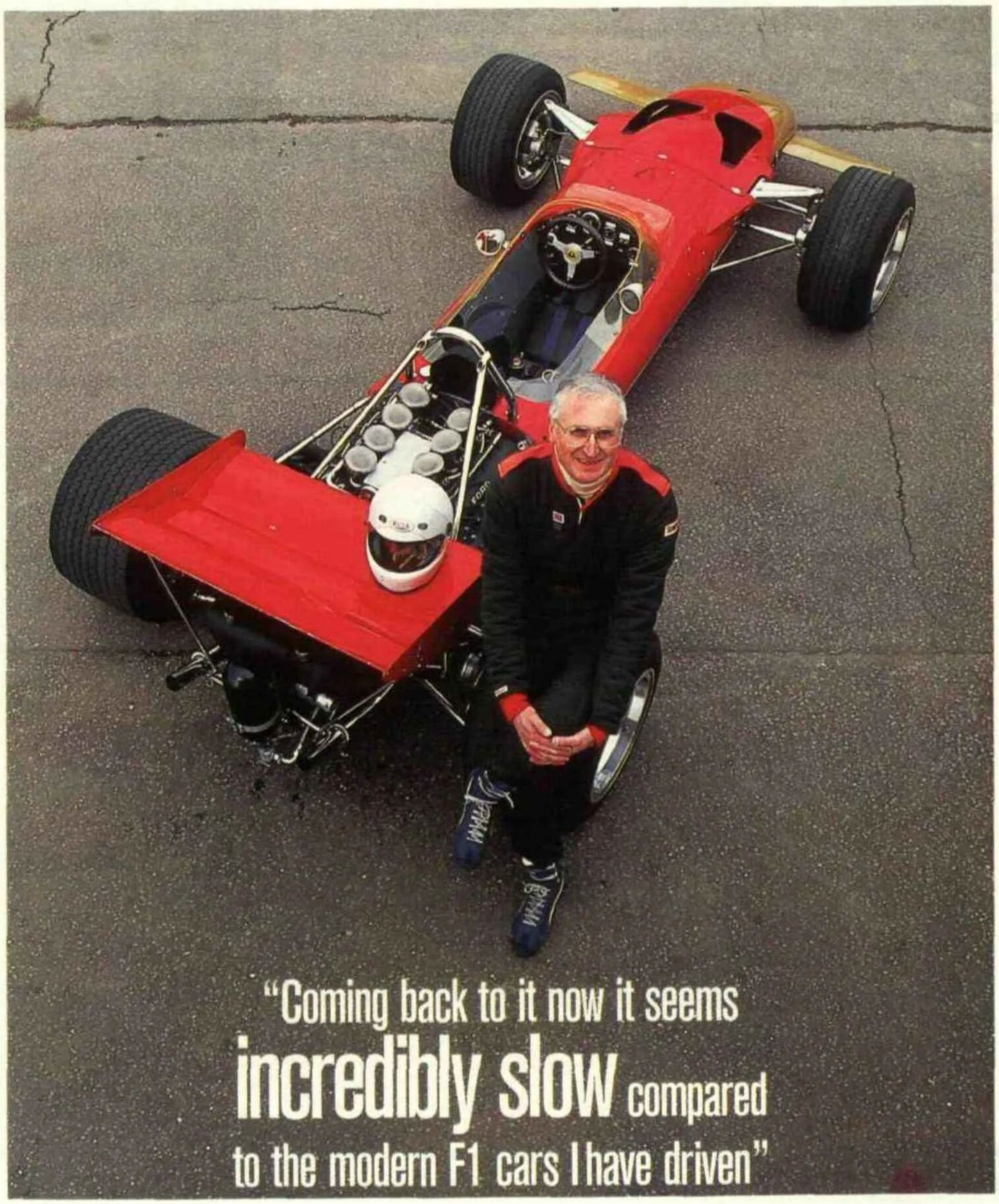
For 1969 the plan was to replace the 49 with the four-wheel drive Lotus 63, but the new car proved neither particularly competitive nor reliable and the 49 remained in service throughout the year. It had to be hastily modified after both the works cars of Hill and new recruit Jochen Rindt crashed heavily at Montjuich Park for the Spanish GP when their rear wings collapsed. The inherent dangers of the immense downforce created by these rather flimsy structures prompted an untypically firm move by the governing body, who banned the use of high wings during practice for the Monaco GP two weeks later. Which didn't prevent Hill from notching up his fifth win at Monte Carlo.

The concentration of effort on the 4wd 63 meant that the 49 lacked development during 1969, but it was still a car to be reckoned with, especially when Rindt was on song. His long wheel-to-wheel battle with Stewart's Matra MS80 during the British GP at Silverstone was one of the highlights of the season, and he won his first Grand Prix at Watkins Glen in the 49 later in the year.

The story of the Lotus 49 should, by rights, have finished there but it was still needed for the 1970 season, when the new 72 proved in need of substantial reworking. The 49's swansong came at Monaco, where Rindt drove a spectacular race snatching victory at the last corner of the last lap when Jack Brabham, his mirrors full of red, gold and white, was pressurised into a mistake at the Gasworks hairpin. If the race was lost by Brabham rather than won by Rindt, it's worth remembering that the Austrian completed his last lap 2.7sec quicker than his qualifying time and 0.8sec beneath Stewart's pole-winning mark. That win was a tribute not only to Rindt's brilliance, but also to his confidence in the car.

For John Miles, who failed to qualify that day, the 49 represented an island of calm in a turbulent sea. Throughout 1969 he had struggled with the 63 and for most of 1970 he wrestled with the 72. He raced a 49 only once, at South Africa in 1970, where he scored his only Grand Prix point-scoring finish with fifth place.

Now, 27 years later, he wriggles back into the car again and the memories come flooding back. This is the car he drove at Kyalami, and which also marked the 49's final appearance for the works team – at Austria in 1970 in the hands of Emerson Fittipaldi. His task today is to give the lovingly refurbished and refettled car its first shakedown run, in preparation for a fuller test at Snetterton, after which it is destined for the Pre-'68 GP Historique at Monaco, driven by Joaquin Folch. 'Pre-68' is perhaps pushing the dating of this car a little far. According to the Lotus records it started life as chassis R2, the car Clark drove to its maiden victory at ➤



After over 20 years away, Miles was amused by how forgiving the 49 felt





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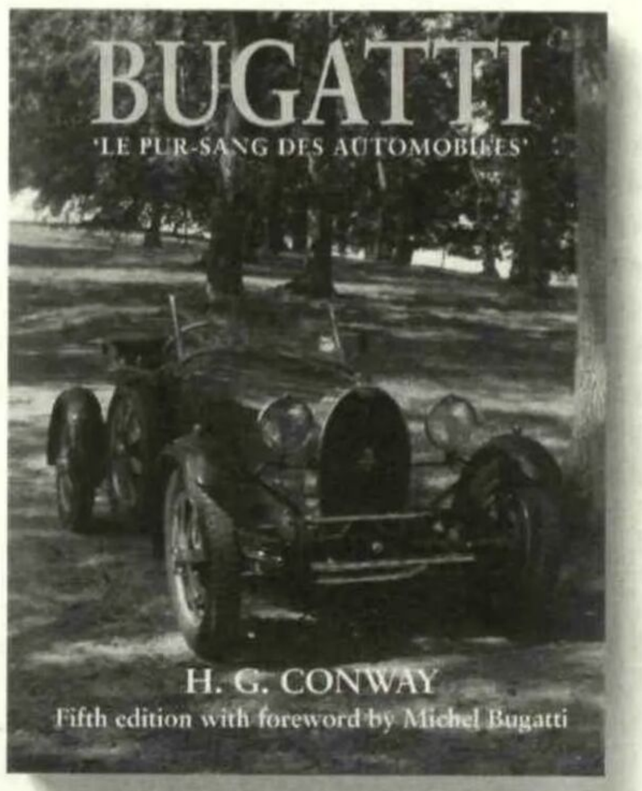


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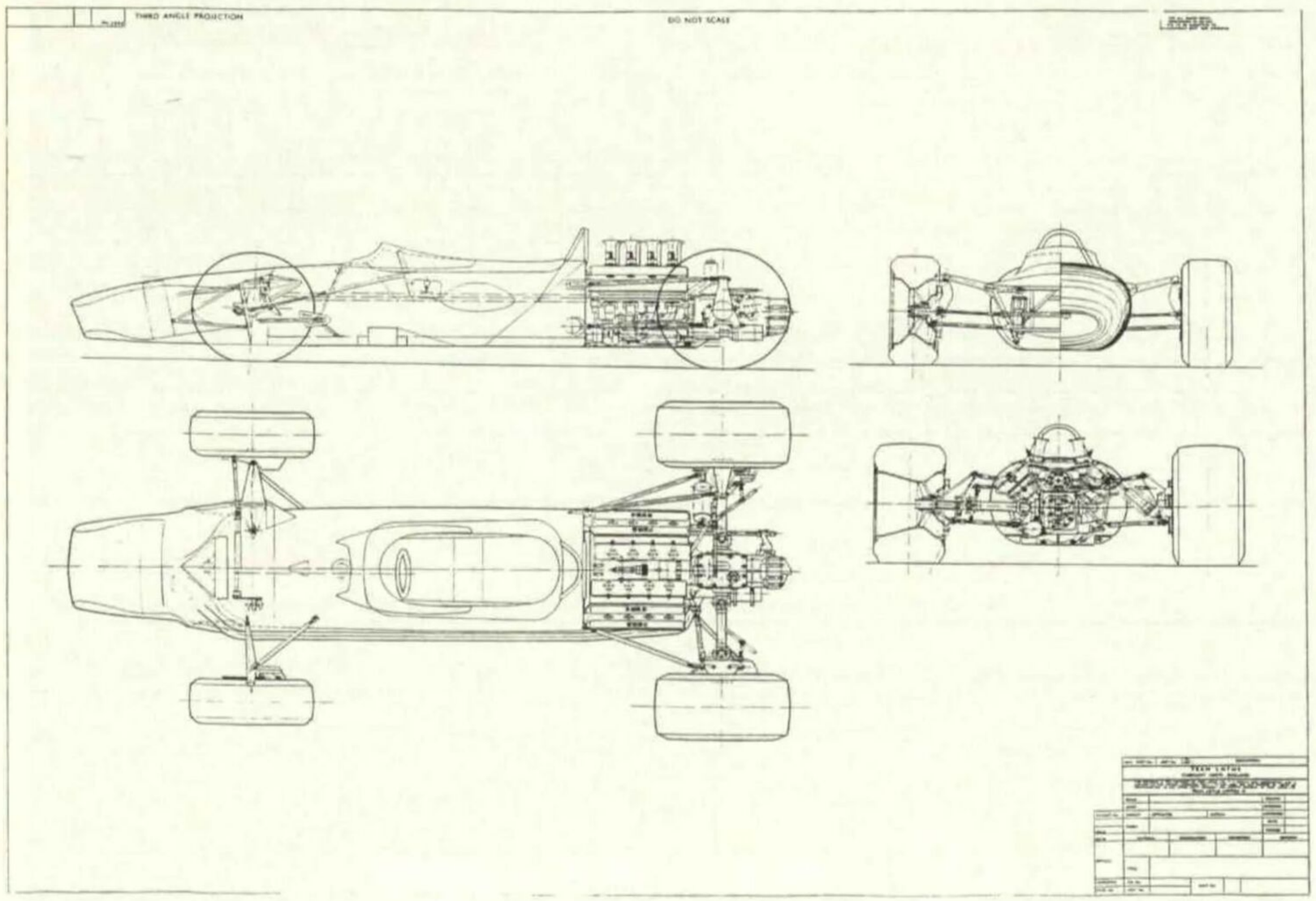
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Lotus 49 Grand Prix wins

1967			
4 Jun	...	Dutch GP (Zandvoort)	Jim Clark
15 Jul	...	British GP (Silverstone)	Jim Clark
1 Oct	...	United States GP (Watkins Glen)	Jim Clark
22 Oct	...	Mexican GP (Mexico City)	Jim Clark
1968			
1 Jan	...	South African GP (Kyalami)	Jim Clark
14 May	...	Spanish GP (Jarama)	Graham Hill
26 May	...	Monaco GP (Monte Carlo)	Graham Hill
20 Jul	...	British GP (Brands Hatch)	Jo Siffert
3 Nov	...	Mexican GP (Mexico City)	Graham Hill
1969			
18 May	...	Monaco GP (Monte Carlo)	Graham Hill
5 Oct	...	United States GP (Watkins Glen)	Jochen Rindt
1970			
10 May	...	Monaco GP (Monte Carlo)	Jochen Rindt

19 pole positions (Clark 7, Hill 5, Rindt 5, Siffert 1, Andretti 1)
15 fastest laps (Clark 6, Rindt 3, Siffert 3, Hill 2, Oliver 1)
185 points (Hill 83, Clark 50, Rindt 31, Siffert 27, Oliver 6, Fittipaldi 3, Attwood 3, Miles 2)
(Clark also won the 1968 Tasman Championship with sleeved-down 2.5-litre Lotus 49T)

Lotus 49 drivers Mario Andretti, Dickie Attwood, Giancarlo Baghetti, Jo Bonnier, Bill Brack, Jim Clark, Dave Charlton, Emerson & Wilson Fittipaldi, Graham Hill, John Love, Pete Lovely, John Miles, Jack Oliver, Brian Redman, Jochen Rindt, Alex Soler-Roig, Jo Siffert, Moises Solona, Tony Trimmer, Eppie Wietzes
Debut 4 June 1967, Dutch GP
Last works appearance 16 August 1970, Austrian GP

Zandvoort in 1967. It was rebuilt to 49B spec in 1968, then renumbered as R10, providing the mount with which Hill won at Monaco in 1969, and then rebuilt again after Hill crashed it heavily at Watkins Glen in 1969. How much of R2 remains within it is uncertain, but the essential integrity of the car should not be doubted. If it's not *the* Lotus 49, it's certainly *a* Lotus 49, rebuilt to go racing, not win authenticity awards.

Since that final outing it's lain under wraps in the workshop. It hasn't turned a wheel since 1978; when it was wheeled out to commemorate Mario Andretti's world title in a parade through Norwich and then it had to be towed. Since then it's been restored by two former Team Lotus stalwarts, Chris Dinnage and Eddie Dennis, to run under the Classic Team Lotus banner managed by Colin Chapman's son, Clive.

It looks fabulous, though so much smaller, lower and slimmer than contemporary F1 cars as to make it seem fragile and somehow insubstantial. That impression is exploded when the DFV is sparked into life and the Hethel test track reverberates once more to the familiar fierce crackle of the Cosworth V8. And after a couple of cautious, exploratory laps Miles returns with something approaching a grin.

"It feels very much as I remember it," he says. "It has that same kind of debugged feel. When I first drove the 49 it had the benefit of three years of development and it gave you the impression that it would never let you down. The whole team knew the car inside out and it was very well sorted and organised."

If the 49's good points come quickly back to mind, so do some of its trickier qualities. Miles remembers how he had to reverse his hand for the fourth to fifth gear change, and the narrowness of the footwell. "Because I was tall, I found it difficult at times. Colin had very small feet – size six and a half – and size nine was the absolute maximum if you wanted to drive a Lotus."

I discover precisely what he means when I try out the cockpit for size myself. Even at 5 ft 7in, a little over 10 stone and with size eight feet, the 49 still seems a pretty tight fit. "You're about the right size," says Miles, "but you have to remember that this is generous compared to today's cars. I ➤

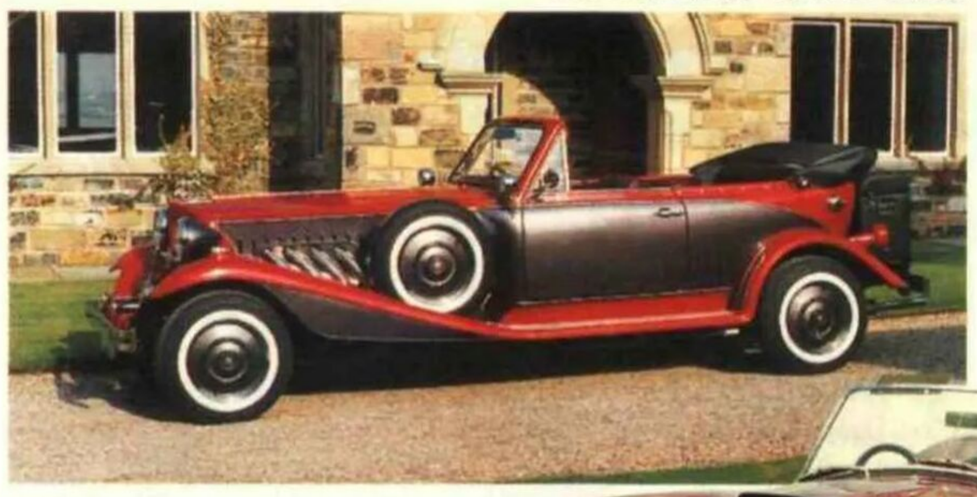


The tiny Lotus cockpit seemed to be tailored with the diminutive Chapman himself in mind

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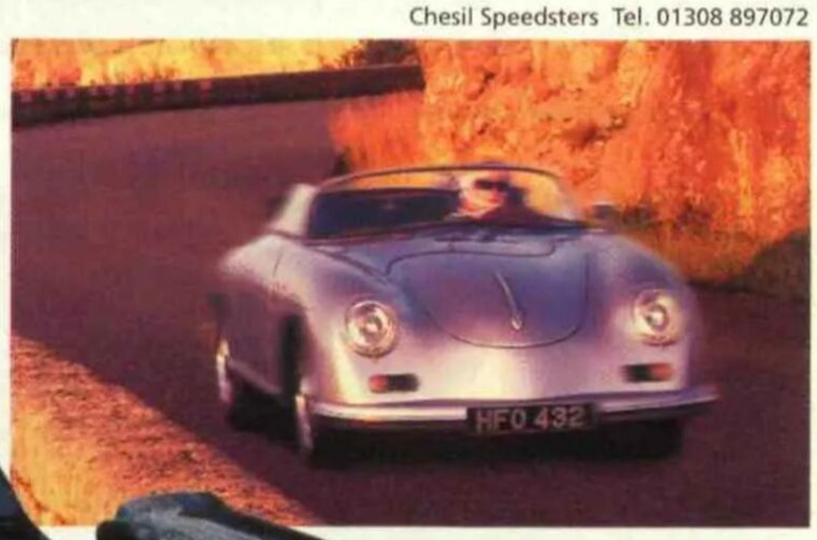


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don't know how Mika Hakkinen ever managed to drive the Lotus 102. He had his knees right up on the dash-hoop, to the extent that he even managed to knock off the steering wheel a couple of times. The gearlever was right back under your arm because the cockpit was so short. Frankly, I thought it was an environmental disaster. Really inhibiting."

The 1967 vintage DFV had a reputation for being somewhat on the peaky side, but by 1970 the power curve had widened considerably and Miles remembers it with affection. "The engines I drove were incredibly docile – nice spread of torque and the throttle control was really good. There was nothing vicious about it at all. Coming back to it now it seems incredibly slow, compared to the modern F1 cars I've driven. There's time to rest between gearchanges whereas now you're just up and down through the 'box so fast. That's the difference between having 450bhp and 700bhp, I suppose. It does make a hell of a difference.

"The other thing you're aware of is how soft it feels, how much more it rolls. Today, it feels only one step up from a road car, really very comfortable. The only thing I can compare it with was the Lotus 107 with active suspension. That was like a road car too, in the sense that it gave you a comfortable ride. I remember that even when we were having a lot of problems with the active car, Johnny Herbert didn't want to go back to the passive suspension because he knew he was going to get beaten up again."



"Quite a physical car to drive"... Miles gets back in tune at the Hethel track

Miles has his nostalgia on a drip feed. The delay between opening the throttle and the rev counter registering the movement leaves him laughing at the primitiveness of it all. At the moment he's more concerned with trying to generate enough heat in the tyres to prevent terminal understeer. Understeer is not a word that springs to mind when you think of Clark, Hill, Rindt and Siffert driving the Lotus 49. "I think that was just the way people like Rindt and Siffert preferred to drive," he says. "They liked to fling it around. It was quite a physical car to drive." And then, with a self-deprecating smile: "I was always looking to expend the minimum amount of energy. But this has a lot to do with how much confidence you have and, politically, how you have to play the race. If you're a newcomer to the team, as I was, there's obviously no point in throwing the car off the road. I never got results from trying to drive harder. I usually got results by making the car good. For me that was the interesting bit; developing the car so that the race was won before you even turned up for the meeting. My objective was to go faster, I found all that wheel-to-wheel racing a bit of a pain to be honest."

It's easy, rather too easy, to get romantic and misty-eyed about the sight of a Gold Leaf Lotus 49 being driven around Hethel – and at not inconsiderable speeds, too – by a man who raced it in its heyday. But there's another side that hits home harder when talking to Miles, or Eddie Dennis, who was both Jochen Rindt and Ronnie Peterson's mechanic, or Chris Dinnage who performed the same job for Ayrton Senna. The memories flood back and some of them are painful. "I first drove round here in 1967," says Miles hesitantly, questioningly. "Now I'm back, still going round all these years later in the same car. The difference is that then everyone was still alive." M



The most famous F1 engine ever? The lightweight Ford Cosworth DFV gave Lotus a headstart in 1967



F1 INNOVATION

BI-LATERAL

When Tyrrell sought an 'unfair advantage', there was an ingenious solution: two extra

When I say there will never be another track test like this, I say so with a confidence inspired not simply by the subject's unique, six-wheeled selling point. It's also because what I'm sitting in can be seen almost as more a historical document of record than a racing car.

I'll explain. What you're looking at here is Tyrrell-Ford P34/2, the first of the six-wheeled racers (P34/1 being the unraced prototype) which made its debut in May 1976 at the Spanish Grand Prix at Jarama, the fourth race of the season, and effectively retired to unused T-car status after the 1977 US GP West at Long Beach a little less than a year later. And while it didn't win any of the 14 Grands Prix it contested, it did put Patrick Depailler, the only man ever to race this car, on the podium on five of those occasions. So we can agree it is quite an important car. Combine this with the five podiums scored by Jody Scheckter's P34/3, including a top step at Anderstorp, plus four more achieved by three other P34 chassis, and what we have here is not quite the failure that history suggests it was.

But even this is not really the point. The thing about P34/2 is that after its final season it became frozen in time, ending up as a long-term exhibit in the Donington Collection. Every single thing you can see on or in this car with the sole exception of the tyres was there in 1977. And I don't just mean engine, gearbox and chassis, I mean wishbones, wings, wheels and wiring, seat,



THINKING

wheels. We drive the time-warp car Patrick Depailler loved

BY ANDREW FRANKEL

belts, switches and dials. It is a time capsule.

Of course there are other cars in other museums in similar condition. The difference here is that this one runs. Bought by Roger Wills after the death of Tom Wheatcroft, he commissioned WDK Motorsport to see if they could get it going in time for the 2010 Goodwood Festival of Speed. "We cleaned out the fuel system as best we could, changed the oil and put a match to it," says WDK's Ian Cox only slightly metaphorically. Somewhat remarkably, P34/2 sparked up as if it had been days, not decades, since she last ran. Roger and Joe Twyman drove it up the hill and now it's sitting in the Silverstone pitlane waiting for me.

It looks frail, probably because it is. The 1977-spec bodywork with its front oil coolers is scored, pitted and blistered. The foam headrest support has perished almost entirely, and when the body comes off, exposed and ancient wiring makes me pleased this is a gentle test at a wide and safe Silverstone. At least I don't have to think about the state of the suspension; this is one test where caution will be my watchword.

What has occupied my thoughts, not just in the run-up to driving the P34 but for years beforehand, was the thinking that led to its creation. Even our own Denis Jenkinson, who was never short of a sentence, admitted to being 'speechless' when he saw it for the first time.

Like many others I had bought the line that it was all about reducing frontal area, but a quick chat with its designer, Derek Gardner, soon set me straight on that. "We found ourselves in a straitjacket. Almost everyone had the same engine, gearbox and tyres; we needed an »»»

Stuart Collins



Only P34/2's tyres were fresh at Silverstone – the rest was exactly as Depailler left it in '77

unfair advantage, and the six-wheeler was it. But it was never about frontal area: that was determined by the width of the rear tyres."

Instead it was about grip. Four small wheels put more rubber on the road than two conventional wheels; you also gain a greater swept area of brake disc. Better, because a wheel and tyre exposed to a moving flow of air will generate a force at right angles to its cylindrical axis, and the size of that force is directly related to the size of wheel and tyre, so the smaller the wheels the lower that force will be. In short, small wheels meant less lift, which meant more grip. It was pure genius.

The driving forces behind the car were not just Tyrrell and Gardner, but Depailler too. While Scheckter was and remains to this day dismissive of the P34 – he told me he thought the car was rubbish, except his language was a little more colourful than that – it was Depailler, a lover of all things mechanical and experimental, who urged it on. The fact that it was known merely by its project number, rather than as the next in the line of '00' racers, demonstrates how unsure Tyrrell was about its viability, and Jenks cites Depailler as the man who provided the 'real impetus' to go racing with it.

It's such a shame Patrick is no longer with us, and not just because his broken Alfa Romeo at Hockenheim deprived the world of a driver who, if greatness was measured by how good a driver was to watch, would have been up there with the best in the world. With his 1977 team-mate Ronnie Peterson gone too, and Scheckter indifferent to the point that it and the dreadful Ferrari 312T5 are the only significant cars from his Formula 1 career which he doesn't own, there is no one who drove it in anger in period to speak on its behalf.

If you go onto YouTube and look at the on-board footage of Depailler hoofing it around places as diverse as Monaco and the original Kyalami, flinging this very car into extravagant drifts at ludicrous speeds just because he could and, I suspect, because he knew there was a camera on the car, you'll know man and machine rarely achieved a more harmonious union than this. He once told editor-in-chief Nigel Roebuck: "I run all the time at the limit. I like to run at the limit, to push things as far as I can. I am the same at everything. If I decide to do something, I give it everything. All the time." See that footage of him and the P34 together and you won't doubt his word.

> "The driving forces were not just Tyrrell and Gardner, but Depailler too"

But today, some 35 years after it was first unveiled to a disbelieving Jenks on the lawn of Tyrrell's house in West Clandon, and despite the fact that I still own a rather battered die-cast model bought as a child, it remains a strange beast. It's sitting in a garage full of other period racing F1 cars, but so far as the attention they're getting from onlookers relative to the P34 goes, they might as well not have been there. If you hold up your hand and block off the front at the cockpit, it seems conventional, less pretty in its 1977 First National Travelers Checks (sic) livery than simple 1976 Elf blue, but normal enough. But move your hand to obscure the rear and reveal the front and what you're looking at might not even be a racing car, but something as likely to be designed to function on the moon, or the seabed. No wonder words failed our intrepid Continental Correspondent all those years ago.

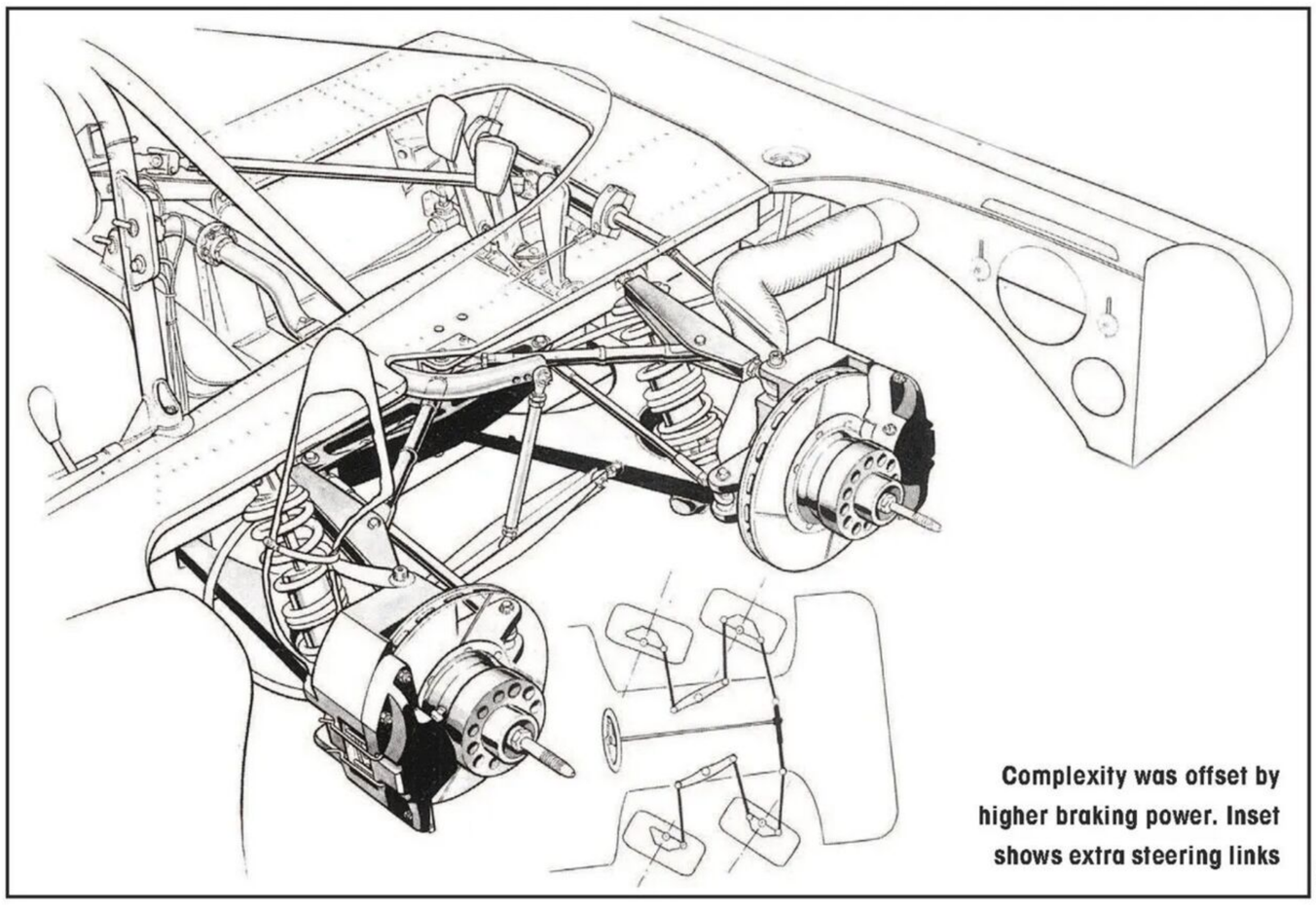
Those diminutive 10-inch front wheels, the same diameter as those used on a 1959 Mini, are nothing like so interesting as the miniature double wishbone suspension system behind each one and the tiny ventilated discs they carry. I've not seen the data but for all they brought in terms of mechanical and aerodynamic grip, the price was paid in mechanical complexity and, surely, unsprung weight.

It's a surprisingly and, some might say, needlessly spacious car. No modern aerodynamicist would allow such a wide aperture for accommodating a component as easily adaptable as a driver, even if he was the size of Ronnie Peterson. But as someone used to driving such cars in agony, if at all, it's a blessed relief. We need to remove Patrick's seat (how strange it is to write that...) but once installed on the bare aluminium tub there's room aplenty for my shoulders, feet and elbows. Even his now somewhat threadbare belts fit.

Most of what I can see represents standard thinking of the day. Indeed the driving environment could as easily date from the early '60s as the late '70s – as if, shark-like, it had evolved to a point where there was no practical room for improvement.

That seems laughable now as, just for a start, the dials are so small you almost have to squint to see readings for fuel and oil pressure, water and oil temperature. The rev-counter is larger and straight ahead but still needs to be consciously looked at, rather than assimilated in your peripheral vision. But that's just one of many differences between now and then: we watch gauges like hawks because these are old cars and expensive to repair; they just went flat out because nothing else mattered.

There's a stubby, wood-topped gearshifter exactly where you would expect, less than a hand's breadth from the small, black steering wheel, and then there's a porthole. Yes, a porthole, through which I can see not one but two front wheels. Back then the ports were cut into the P34's body to allow the driver to aim the car more accurately and, some say, monitor front tyre wear. Now they serve only to remind me that the rearmost set of front wheels are approximately parallel with my knees. I've never driven a car that can't provide a straight answer to a question as simple as: 'what's the wheelbase?' »»



Complexity was offset by higher braking power. Inset shows extra steering links

LAT



"It feels bloody strange. It's so reactive the wheelbase seems even shorter than it is"

Time to go. Master, pump and ignition on, throttle on the floor, press the button and the DFV explodes into life much like any other. Except the pistons shuttling up and down the bores of this one as it warms up at an even 4000rpm are 33 years old, meaning they have exceeded their life expectancy by at least 32 years.

To say I am mindful of this is to understate the obvious. This P34 is about to go into a year-long front to back restoration, and as the last person to drive it in original form the fear of damaging its ancient internals informs my every action more even than the usual fear of taking to the track in someone else's F1 car with a power-to-weight ratio approximately double that of a Bugatti Veyron.

The clutch needs pumping before it will give me a gear, which is less than encouraging, but with a bit of gentle rocking first engages and with a surprising lack of drama the P34 eases out into the pitlane.

The first lap is a voyage of discovery but not for reasons I had expected. With tyres still cold I'm not going to do much more than guide the car around the track, but what strikes me first has nothing to do with its unique configuration. It's the delightful ease with which the engine and gearbox can be used. I've been lucky enough to have had a few DFVs under my right foot over the years, but none as tractable as this, suggesting a degree of drivability which has been sacrificed in more modern times in the pursuit of raw power. It pulls very nicely from under 5000rpm and starts climbing properly onto the cam from as little as 6000rpm. I drove one once that would scarcely function below 8500rpm…

And the Hewland five-speed gearbox is as nice and light as any I've tried. It may be that this one was particularly sweet when new and is now well run in, but once you've retuned your brain to accept just how close the gate is, you don't have to think about it again because with two such well-defined planes, and first a safe distance away to your left, wrong-slotting seems inconceivable.

So it seems safe to up the effort level a little. Back in its day Depailler would have revved this engine to 10,500rpm or more, and until I'd discovered just how flexible this motor was, I'd worried about the unavoidable need to stay well shy of such numbers. In fact, because it comes on song so early you can gain a good impression of its raw speed without running the risk of decorating the Hangar Straight with its insides.

The punch of this era of F1 car is a novelty that must never wear off. Even this old Tyrrell, being driven necessarily gently and defensively, is so fast I can hear myself cackling in my Arai even above the exquisitely ugly din of the DFV. Coming out of Luffield in second it eats gears so fast that, even on the short pit straight, there's all the time in the world for it to consume third, fourth and all the revs we'll be using in fifth before you're heading into Copse.

We sail through in fourth – I'm sure that on fresh rubber, with new suspension and a driver better versed in such cars it would get through in top – and head to the series of curves at Becketts.

This is the bit I really wanted to get to: I was interested not so much in how it behaves on the limit because that was one place we'd not be visiting today, but simply how the six-wheeler addresses the road through the sweeping series of alternate lefts and rights.

And to be honest, it feels bloody strange. It's so reactive to your every input the wheelbase seems shorter even than it is. It appears that you need do little more than look at a corner for the car to want to turn into it. Moreover the car plays a trick on you, I think because your mind is given the wrong impression of where the front wheels are relative to the rear and where, ›››

Tyrrell is a car of two distinct halves. Below (l-r): DFV pulls from under 5000rpm; only thing smaller than the front wheels are the dials...



P34/2 was first to be raced, and Depailler's favourite. After restoration it will race again

therefore, the yaw axis should be. But because – most of the time at least – the wheelbase has to be determined by the distance between the rear wheels and the aft pair of front wheels, that axis is further back than you think.

I imagine it's a car that even someone who's raced many F1 cars of this period would need to build up to; it may even provide some clue as to why a driver as gifted as Peterson never felt entirely at home behind its wheel. I suspect it's a taste you either acquire, like the free-spirited Depailler, or don't. Even the iron-willed Scheckter who mastered this car better than anyone never really got on with it, singling out the brakes for special criticism: "As soon as one set locked you had to lift off. It only really worked on very smooth surfaces, and back then there just weren't many of those around." He has a point.

> "None of the P34's apparent shortcomings were responsible for its downfall"

Happily these are issues that will never concern me. I'm just astounded to be sitting here, guiding this car through Silverstone's twists, watching those tiny wheels bob up and down, wondering about what might have been.

What appears beyond dispute is that none of the P34's apparent shortcomings – its extra weight, mechanical complexity, variable wheelbase and unchanged frontal area – were responsible for its downfall. Instead it was undone by its tyres, specifically Goodyear's inability or unwillingness to develop the fronts, unique to Tyrrell, at the same speed as the rears, which were the same as every Goodyear runner on the grid (see right). Anecdotally it's been suggested that by the end of '77 the P34 would have been over a second a lap quicker if its front tyres had been able to keep up with the rears.

But it was not to be: Scheckter left the team at the end of '76 despite the P34 coming home a mere three points behind McLaren in the Constructors' Championship (whose driver James Hunt was champion too) and soon after Gardner jumped ship. Maurice Phillippe came on board and moved the oil radiators forward and widened the front track, but all to little avail. As Gardner told me, "by then the car was fundamentally unbalanced front to rear", and the results spoke for themselves.

The great irony of the P34 is it was undone by front-end grip, the pursuit of which had sparked its creation in the first place. But as has since been suggested in historic racing, where another P34 driven by Martin Stretton has proven the class of the field thanks to Avon making front tyres that are just as good as the rears, its story could have been very different.

The good news is that P34/2 will race again, too. Roger Wills feels disinclined to let it remain a museum piece so will have it sympathetically restored, keeping every nut and bolt that can't be used but making it safe to do once more what it was born to do. He's even invited me back to have "a proper go in it". I can scarcely wait.

Thanks to Roger Wills, Joe Twyman, Ian Cox of WDK Motorsport (www.wdkmotorsport.com), the HSCC and Silverstone Circuits for making this feature possible.

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"I actually whooped on Hangar Straight! I've never done that

One Grand Prix winner snuggles into another as David Coulthard gets to grips with the Lotus 25, a car synonymous with his compatriot Jim Clark. Within but a few laps of Silverstone, he's completely smitten...

writer GORDON CRUICKSHANK | **photographer** MATTHEW HOWELL


before in a car...”



"IT BECOMES PLAIN THAT THE ENTHUSIASM IS REAL, THE PLEASURE UNFEIGNED"



DAVID COULTHARD CUTS the ignition, wiggles the red leather steering wheel and folds his arms. "Well, if you'd just like to put me in the back of the truck I'll stay in here. Tell the wife and kids I love them, but I might not be home." It's a nice soundbite from the professional broadcaster; maybe he composed it on the run down the pitlane, aware cameras were waiting, that the BBC crew has him miked up in the car. But it becomes plain later that the enthusiasm is real, the pleasure unfeigned. One Scottish driver who took the chequered flag here at Silverstone connecting with another Scotsman who did the same 50 years ago, one brick in an over-arching year that made him champion. This is Jim Clark's Lotus 25, a revolution in design that fulfils a well-used phrase. It really did make all other racers obsolete overnight.

This is an appropriate place for DC, retired Formula 1 driver and popular BBC commentator, to experience his countryman's view over that minimal screen: Coulthard twice won the British GP here, in 1999 and 2000; Clark did so three times – '63, '65 and '67, and the upcoming Silverstone Classic will honour the late double champion with a commemorative dinner and two Jim Clark Trophy races. But if a Chapman Mk9 time machine (that restless innovator would have got around to one eventually) dropped Jim here today he'd not know where he was, blanked off by barriers, constrained by concrete. Yet he'd learn the updated track in a couple of laps, and similarly DC soon has the feel of the gearchange, the light steering, the airy ride of a car that, aerodynamically, performs worse rather than better as speed soars.

What Jim would recognise instantly is his car. Yes, like all racing cars it had an afterlife, especially when Chapman wouldn't sell new 25s to his faithful customers, lumbered unknowingly with its spaceframe sibling, the 24. Customers like Parnell, which got its hands on this only once Chapman and Len Terry had already schemed the similar but uprated 33, and then modified it trying to keep up. But Jim Clark drove this car first, and in his delicate hands it was a Grand Prix winner. Now returned to 25 spec, this is the car you've seen Andy Middlehurst race at all the big meets for owner John Bowers. It's prepared and maintained by Classic Team Lotus, which means that the guys who built it in 1962 still look after it; not just the firm, the same people. In our quiet corner

of the Wing pits – although this is Media Day for Silverstone Classic the crowd hasn't yet twigged DC's presence – Bob Dance is preparing the car. From the 1950s Bob was one of the bolts holding the Lotus race team together, and he literally knows this thing from the inside out. We're sharing this drive with the BBC, and while Bob is busy, DC is doing pieces to camera, supermodel-slim in his white overalls. Bob props a hair drier on the Climax FVMW, making a tent of his Lotus jacket over the intakes, to warm up the fuel metering unit. It's practically the entire Team Lotus crew here: Derek Wild, Willy Cowe and Cedric Selzer, Clark's mechanic for many years. Jim would know them all.

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I ASK CEDRIC ABOUT CONSTRUCTING the 25's ground-breaking monocoque. Chapman already had experience with the eggshell principle through the Elite, but as he squeezed his single-seaters from slabby 18 to smooth 21 to slim, low 24, the chassis, driver and fuel tanks all battled for the same space across the cockpit. Sheet ally and structural fuel tankage, plus the fact than you can squeeze drivers' bodies as he'd proven with his 'compressibility of bums' theory over the 22's flat-bottom seat, would resolve this. Lighter and stiffer than steel tubes, the riveted aluminium structure slides the driver way down between two large D-shaped tubes containing bag tanks, connected by welded bulkheads and stressed floor. Two deep sponsons carry engine and rear suspension, and a wedge of tank puts a few more gallons behind the seat. Did Chapman explain it to the team? "Not much," says Cedric "He just did a GA [general arrangement] drawing – he was a marvellous draughtsman – and we expanded from that and some vague sketches. It was trial and error. No one knew if it would work. The big problem was fitting in enough fuel: Dick Scammell and Ted Woodley had riveting experience – at that time we couldn't weld that hard ally – and made the tanks bigger and bigger and the cockpit smaller and smaller, with Jim trying it each time. We really didn't know if it was a leap forward until I did the torsion tests, when it was obvious it was far more rigid than the 24."

"Mind you," adds Bob as he checks panel fastenings, "the drivers said the 25 was better on corners but the 24 was more forgiving." DC strides past to change into sponsor's overalls for another task and pauses to introduce himself to me, not the other way around. "Let's talk after the drive."

There are earlier contenders for the first racing monocoque, but this is the car that in one unveiling moment sent every other designer to his drawing board, and Colin Chapman to the front row of the design grid. No, it didn't win first time out, and spaceframe BRMs,



Coulthard swiftly acclimatised to the 25's slender splendour. Top right, Bob Dance takes the helm to warm the V8 for his new charge. Below right, lights, cameras, action...

"CHAPMAN DID A DRAWING AND WE EXPANDED FROM THAT AND SOME SKETCHES. IT WAS TRIAL AND ERROR"

Coopers and Porsches still scored victories in 1962, but this was a balance-tipper: if you didn't follow you were going to be left in the wilderness. By 1964, four of the six constructors would be running monocoques.

"Everyone at Lotus knew about the secret car," recalls Cedric, "but there were no leaks. We took it straight to Zandvoort in 1962 without even a test run. And Dan Gurney said, 'With a car like this we could win Indy'." Among the dunes Jim's clutch failed and Trevor Taylor's 24 followed Hill's BRM to the flag, but in the revolutionary machine Clark would score another three championship wins at Spa, Aintree and Watkins Glen, almost enough for the title as he led at East London in South Africa – until the oil escaped from the Climax and a season-long tussle fell to Graham Hill. For 1963 there would be no doubt at all. On smaller, fatter 13in wheels and with improved suspension geometry, this slim panatella of a car would in the shy Scotsman's hands reel in pole after pole, seven Grand Prix wins and five non-title victories and make Clark champion for the first time. The greatest driver of the era (*pace* the injured Moss) had squeezed into the cleverest car and no one could stay with them.

Coulthard is back for a seat fitting, now in white overalls once more. It's hard work, being famous. Abandoning the seat padding he wriggles down between those tanks, asking Bob if this is how Clark sat, click-clacks the gear lever, practises heel and toe. "Have to think myself back to the 1980s," he grins, arms and broad shoulders spilling over the car until Bob and Derek cap him off with the bodywork. Everyone decides this will work, the body comes off and he clambers out. "I can almost get my hands on the ground!" he exclaims, used to being ears-deep in carbon fibre. He has questions: he's been reading up about the 25, asks about fuel capacities, seat position, whether drivers complained about heat from the front radiator. He's never sat behind one in

a racing car – a hotshoe who's never had hot shoes. "They just put up with it," shrugs Bob. Film crew collars him again; Bob removes the hair drier, climbs in (pretty spry for 77), flicks on pumps, checks for neutral, hits the starter. Everyone except Bob jumps as the V8 bark echoes round the pit. DC looks over and smiles.

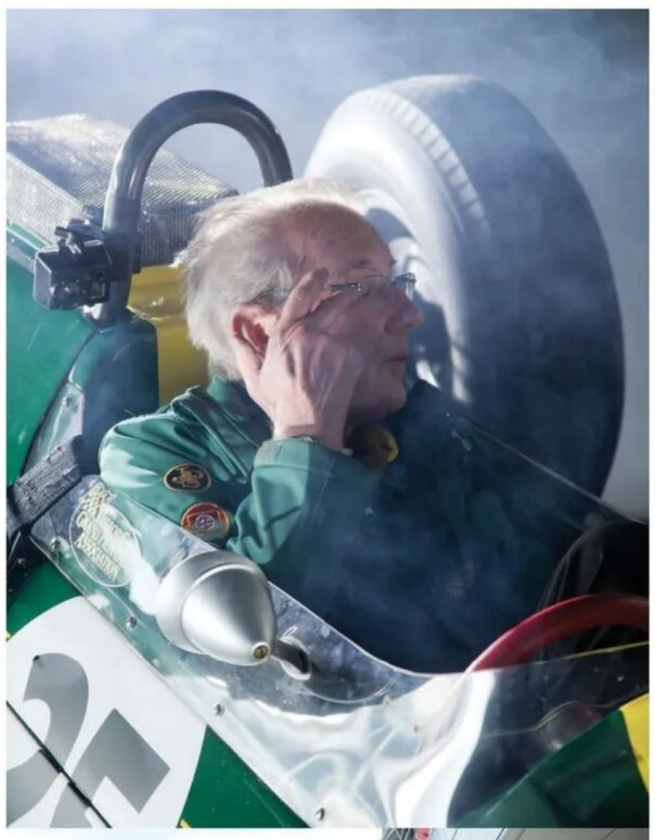
While the Climax warms, Cedric has produced a photo album and the Lotus boys, plus team photographer Peter Darley, still snapping 50 years later, trade stories about all-nighters, relentless lorry drives to Italy, practical jokes shared with the Grand Prix stars in their hotels. The thread to the current Lotus F1 race team may be long since broken, but if Team spirit continues it's among the lads who are still part of CTL.

Ten minutes later the temperatures are up. Bob cuts the engine, the car is pushed to the pit door and DC gets out goggles and helmet – not the one we know, but an open-facer painted with the Scottish saltire especially for today. "I couldn't drive Jim's car in a full-face job," he smiles. Belt buckles lock him down and he looks up at Dance. Suddenly a man you'd pass in a crowd and a man who creates a crowd have swapped authority: Coulthard is the tyro, Dance the expert in charge. He's strapped in a hundred drivers before; this is just another Grand Prix winner. He nods, the V8 barks and DC propels the green and yellow machine smoothly down the pitlane.

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A GENTLE LAP, A FIRMER ONE, THEN open throttles as he explores how a car moves on tyres with large slip angles, how it dances on those soft springs. When he returns for a check there's a big crowd – finally word has got around. Helmet off, he lets every lens catch his smile, ever the professional, before Bob checks everything and he goes out again, some laps for the Beeb, some for our photographer, some for himself.

"That was brilliant! Really cool! Never thought I'd be so excited. I feel completely at home. For a moment I almost felt like Jim Clark – then I woke up." The car is back, engine ticking as it cools, shutters clicking as DC extricates his lengthy frame, pulls off the crash hat, tidies his hair in the mirror. "Got another wig somewhere. Oh no, it's Eddie's." All laugh, and the public performance is over; the roller shutter lowers and car and star are secluded inside for our debrief and photo shoot. Photographer Matt Howell wants to catch DC inspecting the Lotus; that's no effort as he's already asking Cedric and Bob about damper placement, sliding-spline driveshafts, the ducted air screen. Maybe it's for his BBC piece, but then he gets out his phone and takes his own pictures. Later I ask Cedric if Clark was *au fait* mechanically. "I wouldn't say he had trouble holding a screwdriver, but..."





The BBC steals David back, an unspoken tug of war between us. The cameras are insatiable; a tense director orders DC to walk around the car looking pensive, then the other way, to redo his lines describing that first-lap moment at soaking Spa in '63 when Jim Clark surged from eighth to first to eternal legend, first victory for the 25 that steam-roller season. DC is patient until he makes the same fluff four times and bad words erupt. Maybe he prefers working live, quizzing his peers on the grid, no lines to learn.

My turn again, asking about sitting in such a slim car. "You have great visibility but I did feel exposed," DC says. "You feel that at Monaco you could almost reach out and touch the barriers. I was very aware of the tanks wrapped around me, and the hot air blowing up from the cooling system."

"Everything was packed tight inside," adds Cedric. "With the 1½-litre engine Colin wanted the smallest frontal area so everything came inboard, including the dampers."

"Now I see how drivers from that period drove with straight arms," DC continues. "There's not a lot of load in the steering. A huge amount of lock, but not much load. In a modern GP car there's so much load and feedback it self-centres; this doesn't, or at least not with the same force, so you have to centre it yourself and be delicate. Hence the straight arms. Made me feel like a real racing driver. Haven't felt like that before..."

A bit of a squeeze, though? "It was, like the Leyton House I drove for you guys last year – ridiculously small cockpit but once you're doing your thing you don't think about it. It was difficult for me to get to fifth – I had to do a reverse-hand upshift. That would have cost me time in a race."

Did he reach for a shift paddle? "Ha, ha! Not once. Thankfully I'm long enough out of F1 that that's no longer my default setting. But the first F1 car I drove, the McLaren in '91, had a manual shift anyway. That V8 – it's not a young engine, but it's smooth and it delivers. They said I could go to 9000 – I only went to 8½ but that was useable rpm. For the grip it had it could handle more power; that's just under 200 and it would comfortably handle 50 more. But that's what they had at the time."

So he didn't get it sliding... "Nope. Generally it pushes a little at the front. I almost had it drifting at Stowe where it's fast, but I didn't want to find out I'd got that wrong! I'm used to downforce pushing the car into the ground, but without that it moves around so much more. You can feel air under the car. Presumably it generates lift at speed?" he asks Bob.

"If you go fast enough."

"The idea of the high ride level was to get the air passing underneath," explains Cedric.

"And it's softly sprung," adds Bob. "The Old Man used to say 'there's no substitute for wheel movement'."

"It certainly moved laterally in a straight line, more affected by the wind than I expected, almost as if it's floating on a current of air. It made me feel a bit uncomfortable in Turn 2, the long, fast left-hander. I'm sure in a classic expert's hands it would be flat, but I didn't want a high-speed rotation. But you'd get used to it; that would be your reality. In the low-speed corners I was starting to play a little with the brakes and the downshift, feeling really pleased to be behind the wheel.

So it was a pleasure?

"Yes – it's a racing car! Any road car on the track, even the DTMs I've been racing, is still a compromise. This is designed from the start as a racing car, designed to win Grands Prix. There may be less road feedback, but it delivers both low- and high-speed grip in proportion. A modern GP car develops grip in an ▶

out-of-proportion way – at low speed there is relatively little because there's no downforce, but at high speed the level of grip is difficult to comprehend. So a normal person jumping into this could quickly get the feeling of the low-speed, medium and high-speed grip. It would still take one of the greats like Jim Clark to balance the lateral forces against the extremes of tyre adhesion, though."

I'm conscious he has a plane to catch, but as we talk he never looks at the enormous watch under the sleeve of his tailored blue shirt, his fourth clothes change so far.

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"WHAT STANDS OUT," HE RESUMES, "is the drivability of that little V8. A modern F1 engine is peaky – you have to rev it constantly and it's annoying. This has only five speeds but you get a journey through the gears that is 100 per cent more pleasurable. You feel the dog going in and you think 'I've just rounded the corners of the dog a little bit and I've got two hours to go...' I know when Jim won here it was 2hrs 14min, where most of my races were 90 minutes."

Clearly he's been doing his research. "I wanted to learn the 25 story because I didn't know it in detail. My racing history is pretty good from the '70s on when I was watching with my dad, who was a fan of Jim and got his autograph. But I don't have anything from that period in my own museum, not like Dario [Franchitti]. I rang him to boast about this because he's a big, big Clark fan. But the legend is there for good reason. It was a remarkable period in the development of motor sport; the genius of Colin Chapman and the great driving qualities of Clark."

What about some historic racing?

"This was brilliant, but with my lifestyle, all the GPs, not seeing enough of the family, I'm not tempted. But beyond my current career? Why not? I'm a racer. We're sitting at a track and it may be in the nice comfortable Silverstone Wing, but if it we were sitting on plastic chairs at the side of the track we'd still feel comfortable because racing people go to racetracks. I've been going since I was a kid and I hope to be doing it as an old man."

DC and JC both took the chequered flag here. Did he feel the connection?

"Very much. I actually whooped on Hangar Straight! I've never done that before in a car. It's just how I felt. Pleased and honoured, connected with a piece of history that guided the path of Jim Clark and many British drivers. I'm proud to have done it."

It's airport time. DC punctiliously shakes hands with everyone and strides off towards Spain. Bob and Greg the driver strap down a priceless element of British racing history in the lorry and head for Norfolk, three hours away. Getting up at 5am is nothing new for the Lotus lads – even if they've been doing it for six decades. Ⓜ



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JIM CLARK'S FIRST CHAMPIONSHIP year and the centenary of Aston Martin form twin flags that Silverstone's enormous Classic will fly on July 26-28, when the Northamptonshire circuit reverberates to the sound of more than 1000 cars in a crammed 24-race programme. Famous names, 7000 classic cars, two evenings of rock and a parade of entertainment make this the world's biggest classic festival.

Pre-66 F1 cars which the talented Scot raced in and against will contest the new Jim Clark Trophy, while a BRDC dinner on the Saturday honours the double World Champion at the track where he won two British GPs. Grand Prix cars from the 1920s to 1985 will also be in action, including the FIA Masters series for 3-litre F1 cars, while Saturday's two dusk races will test the lights of Group C cars and pre-66 GTs in a 58-car field packed with Cobras, E-types, Astons and Ferraris. Sunday's



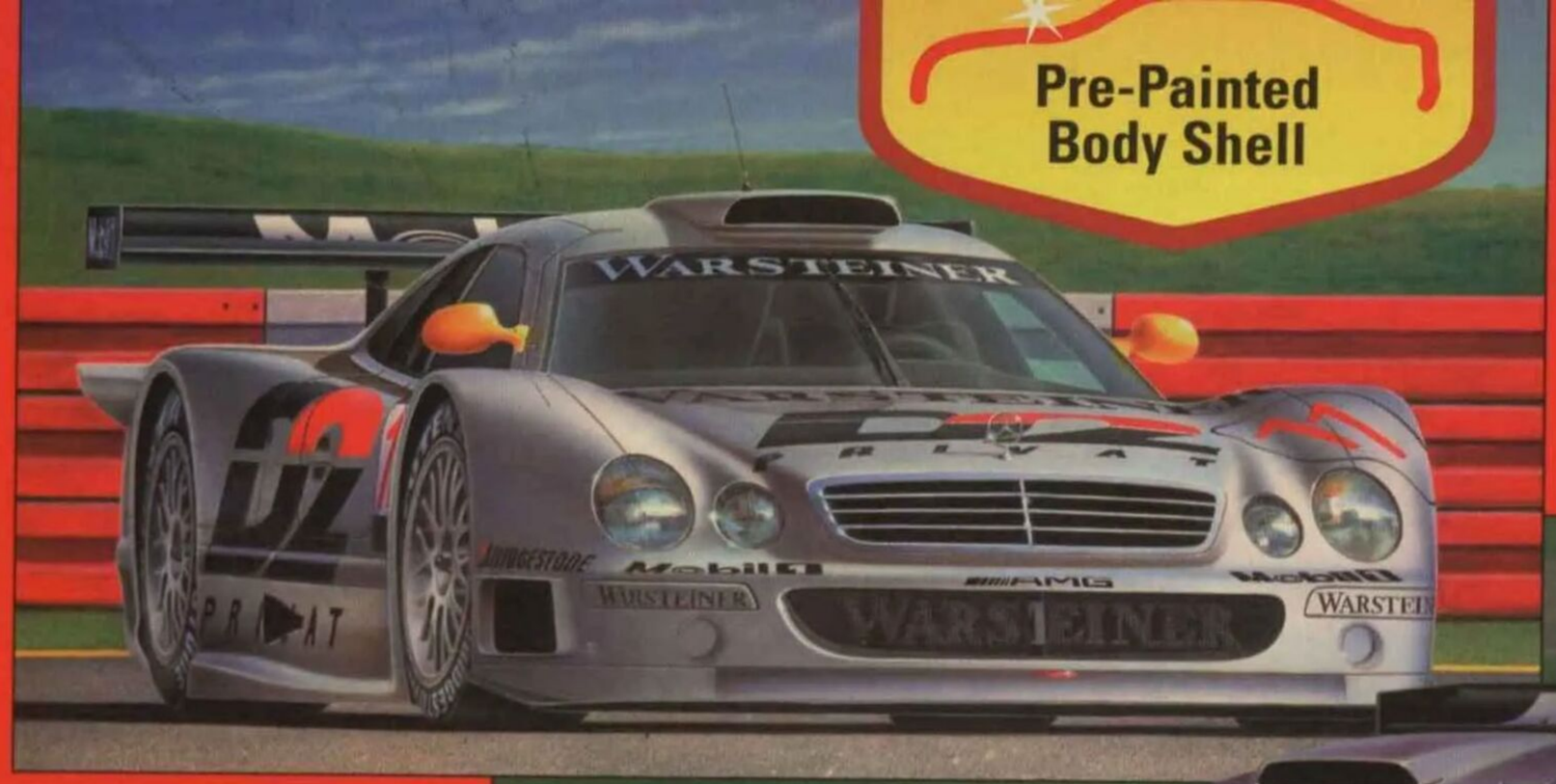
RAC Tourist Trophy pitches the finest GT cars together, and Pre-61 and Pre-58 sports cars will chase the Stirling Moss and RAC Woodcote trophies respectively, backed up with Le Mans-type cars in Historic Sportscar Masters, where saloon legend Steve Soper makes a racing comeback in a GT40.

Historic FF and Formula Junior events are certain to offer fierce slipstream racing, as will the U2TC field. And cover your ears for the Trans-Atlantic Touring Cars, celebrating the appearance 50 years ago of Jack Sears' huge Ford Galaxie. After last year's successful inaugural race, the sensational Super Tourers return, featuring John Cleland, Patrick Watts and current BTCC front-runner Frank Wrathall.

In between the action, Aston Martin and Lamborghini celebrate anniversaries, while organisers plan to get 911 Porsche 911s on track at once. Look out, too, for the funfair plus many other displays and sideshows.
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SIMPLY THE BEST

SIMPLICITY WAS THE KEY TO THE SUCCESS OF BRABHAM'S BT49. ANDREW FRANKEL CLIMBS ABOARD THIS SEMINAL 1980S F1 CAR TO DISCOVER ONE OF THE MOST ENIGMATIC (AND UNCOMFORTABLE) RACERS OF ALL TIME

IN THE END, IT IS JUST A CAR. YOU SIT WITH A STEERING WHEEL IN your hands. You change gear by shifting a lever fore and aft, working your way across a gate while depressing the furthest to the left of the three pedals at your feet. The one in the middle makes the car stop while on the right is one to make it go. It is that simple. There are no electronic instruments, no paddles for changing gear. The steering wheel is entirely circular. In theory, anyone with a driving licence could drive a Brabham BT49.

The practice is rather different and while I will come to that shortly, just to give you an idea for now, lodge in your head that this car, a 1982 BT49D weighs about 530kgs and is powered by a Cosworth DFV engine producing about 530bhp. That's a nice, round 1000bhp for every tonne of car or, to put it another way, just about double the power to weight ratio of the world's fastest road car, the 240mph McLaren F1.

That's for later. Now I am simply sizing the car up in the pits at Donington during a test day for Thoroughbred Grand Prix competitors. The car belongs to Ian Giles who, as well as proving exceptionally relaxed out of the car and hugely quick on board, is also about the same size and shape as a conventional Grand Prix driver whereas I, sadly, am not. He has agreed to let me drive with no restrictions but seems as curious as I am to see how I am physically going to get myself on board.

Right now, however, we have another problem with which to contend. Giles's two man crew are rather less keen to see me in the Brabham and are not shy about showing their feelings. It is made crystal clear our photographers are not welcome while replies to questions come, at best, in single syllables, usually in single words and, once or twice, not at all.

I sit out the morning watching others howl around the track, wondering what I have taken on. My colleague, Matthew Franey is having a ball in an ex-Alboreto Tyrrell 012, Bob Berridge is awesome in his Williams FW08 and when Giles drives the Brabham, I realise his claim that it will take the Craner Curves flat in sixth

Below: Brabham around Donington during testing for MOTOR SPORT. Car weighs 530kg, engine produces 530bhp giving 1000bhp per tonne. Right: Patrese (far left) having brought this car to second place in the 1982 Canadian GP behind winner Piquet. It was Brabham's last one-two and BMW's first GP win but no one is smiling. Riccardo Paletti died on the grid when he slammed into Pironi's stalled Ferrari



gear is not idle. You can hear the DFV right around the lap and not once between Redgate and the Old Hairpin does its note falter.

Mention the BT49 to its designer and, even for a man with a track record such as Gordon Murray's, it's clear it is a car of which he remains exceptionally proud to this day. "What I love about it is its simplicity and elegance. There is nothing in the least bit complicated on the car – it all just worked. We ended up using it for four seasons, from 1979-82."

It may have been simple but it worked. Introduced too late in 1979 for its true effect to be felt, the next season Piquet came second only to Jones' Williams, claiming the first of his three titles the following year. It was finally overcome in 1982 by the turbo revolution and, then, the ban on skirts, the latter a move the BT49 felt more than perhaps any of its opponents.

Nor did its design lack innovation. As Murray points out, "it was the first F1 car to use carbon-fibre in its tub and though it was also part aluminium, we used carbon-fibre in the car's structure two years before McLaren."

"When we had to run a flat bottom, we lost two-thirds of the downforce in an instant"



That, however, was not the BT49's secret weapon, the reason which made the car the class of the F1 field and gave Brabham its first driver's title since 1967. The ace up its elegant sleeve, says Murray, was downforce. "It just had more of it, more than any other car out there and it all came from the ground effect. We ran the car with no front wing at all and scarcely any at the back. It all came from under the car and it generated more pure downforce, I think, even than the Williams. When we had to run a flat bottom, we lost two-thirds of the downforce in an instant."

Its engineering simplicity did, however, play a key role. "It was the most reliable car of its era. In Nelson's championship year he never failed to finish through mechanical failure." The books support this: fifteen starts, ten finishes, four accidents and one mechanical failure when his engine blew at Monza on the last lap relegating him to sixth.

The elegance and simplicity Murray refers to is not simply beneath the skin. To my eyes, the Lotus 79 is the only one of its contemporaries with a claim to greater beauty. It's at its best seen from ➳



dead head-on, where the downward curve of its gently sloping side pods have elements of Concorde's wing profile. The nose sharpens to a defiant point, there is nothing to interfere with the airflow over the body save the mirrors and driver's head while the Parmalat livery is one of the smartest of all.

Beautiful, however, does not mean big in this case. The BT49 was the first GP car Murray had designed which was unable to accommodate his six foot four frame. "Our big drivers like Watson had all left the team so I chopped three or four inches out of the monocoque. How on earth did you get in?"

By removing the seat and bodywork that's how. The elegant body is, in fact, all one panel and lifts off easily. I could then just about cram myself into the tub, rear seat-belt mounting points dug deep into my back and strap myself in before the bodywork was replaced. If I'd had an accident or had to get out of the car in a hurry for any reason at all I would have stood no chance at all. Someone plugged in a starter and, with a whoop and a bang, eye-wateringly loud through a helmet, balaclava and ear-plugs, the Cosworth fired up.

This DFV sounds different to most hammering around the track, reflecting its extreme state of tune. It's note is more melodic, smoother and exciting than usual. Giles cautions me never to let it run below 6000rpm, suggests I shift at 10,500rpm to give myself a little room for error (he takes it to 11,200rpm) and advises that it only really gets going above 8500rpm.

"What I had hoped would be a great experience was turning into a misery"

The first couple of laps were easy enough. The Hewland six speed box is one of the best I've used, the tyres were already warm and my only interest was making sure I found my way around the track without getting in anyone's way. Two thoughts occurred: first, it was only with the greatest effort that I could lift my right foot sufficiently for it to disengage from the accelerator and move across to the brake and, secondly, I was not sure I had ever been more uncomfortable in my life.

What I had hoped would be one of the great experiences was fast turning into a misery and much as I would like to blame anyone else, the real reason was me. I simply did not fit this car and should have given up the struggle, saving myself a great deal of pain and making the day of at least two people back in the pits.

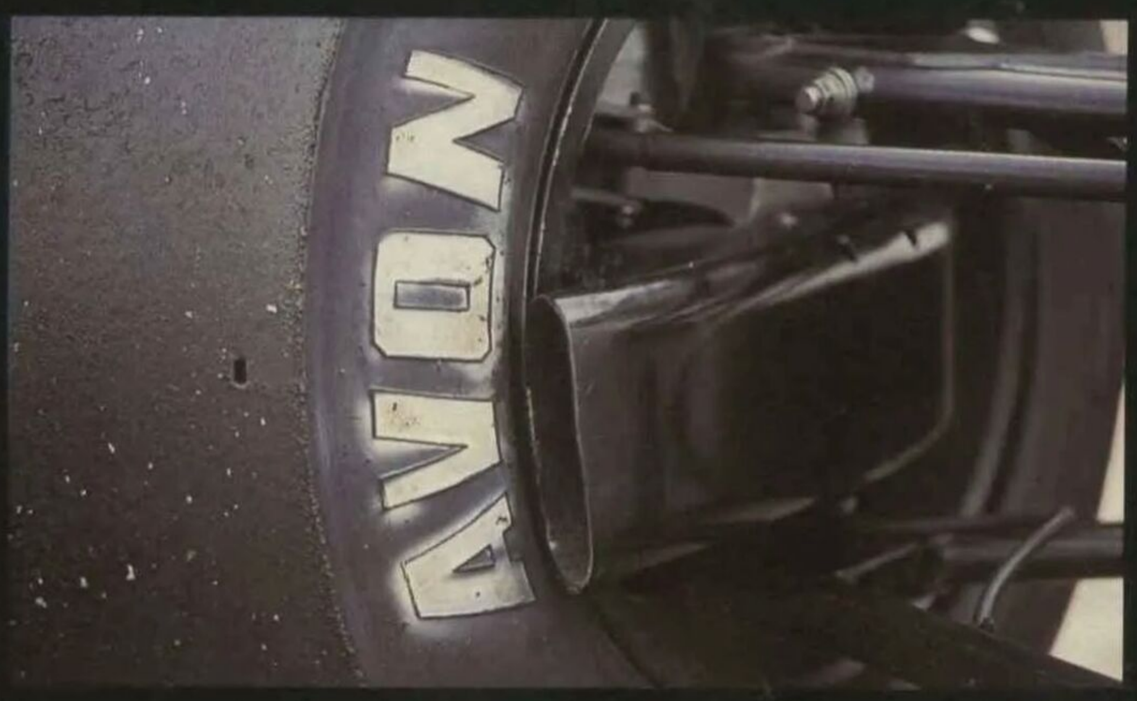
It was only the knowledge that the experience would remain long after the bruises had faded that kept me out there. On lap three, I started to drive the Brabham rather faster and, as the rev-counter swept past 8500rpm, so all thoughts of how I had got myself into this situation in the first place vanished. Funnily enough, it didn't seem to hurt any more either.

Suddenly I was busy, more busy than I remember ever being in a car. In this car, there are no straights as such. Straights are where you relax, change gear every so often, check instruments and

Clockwise from top left: Frankel struggles to get on terms with Brabham at Donington; one reason is that monocoque was built for Riccardo Patrese who is nearly a foot shorter. Cockpit stunningly uncomfortable. Rev-counter starts at 4000rpm though engine only works above 6000rpm, revs to 11,200rpm; Avon slicks are control tyre for TGP championship; Parmalat was enduring Brabham sponsor









think about where the traffic is, how many laps remain and such like; straights are called straights because they are where you straighten up those affairs left untended while your concentration is required in the corners.

Not in this car; coming out of Coppice in third (I expect the truly brave use at least fourth) the usually long stretch to the start of the Melbourne loop seemed to have gone missing, absorbed into a frenzy of gearshifts, tachometer needle flicking into five figures time and again and, more than anything else, utter determination to arrive in the braking area in good shape to lose three gears and 100mph in time to angle into the Esses.

I was surprised to feel the Brabham under and oversteer in the hairpins that led back to the pit-straight, feeling restless but not uncomfortable on departure from the Melbourne hairpin, and using every inch of track at Goddard, simply to get around the corner. Giles had noticed as much when he was driving and suggested it probably had more to do with a quirky differential than anything I might be doing. In the faster corners, despite no longer boasting the skirts it once used to such effect, I got nowhere near to the limit.

"This car's finest hour coincided with one of Grand Prix racing's darkest"

I returned the Brabham to its owner and pulled up outside the pit and thought back to this car's finest hour. It coincided with one of Grand Prix racing's darkest. The 1982 Canadian GP will only ever be remembered for the death of Riccardo Paletti, coming scarcely a month after the loss of Gilles Villeneuve. It marked a water-shed in attitudes to on track loss of life and, to date, there have been just three deaths in F1, one in testing, one in practice and one during a race.

Brabham had used a mix of DFV and BMW turbo power all season, the latter having hitherto finished just one race to date. Piquet had a 1.5-litre BT50, Patrese this BT49D. Nelson led from lap nine to win, Riccardo running home to an unchallenged second. It was BMW's first Grand Prix win and, as it transpired, Brabham's final 1-2.

Driving it was an experience you only appreciate once it's over. On the track, there was simply too much to do to enjoy it at the time; if you knock back a drink without pausing for breath, you only taste it once it's gone down; so it proved with the Brabham. Sitting in the pit, waiting for the bodywork to be removed to allow my escape, I was both aghast and relieved the experience was behind me. Driving back to London, I started to appreciate the extraordinary privilege that had been afforded me and the generosity shown to and trust placed in me by its owner. Some months later, I now know this day that had started so badly will be one I will cherish for years to come. All in all, I would not have missed it for anything.

Our sincere thanks go to Ian Giles for trusting us with his car and to Thoroughbred Grand Prix (01451 810855) for providing the track time. ■

Running out of the Craner Curves, which this Brabham can take flat in sixth but not with our man at the helm. Front wings were rarely used originally but are vital today as BT49 is not allowed to run with its original skirt system in the Thoroughbred Grand Prix championship. Car remains today in the identical Parmalat livery used when it was a contemporary Formula One contender



Williams

Okay, so the contract for 1994 may not be in the post, but when I got the chance to drive the championship-winning Williams I really wanted to make a good impression. After my first five laps, I rolled to a halt and lifted my visor. The guys came running up to me, and I was desperately searching for something subtle to tell them. When you've had ear plugs in, and a lot of noise around you, you raise your voice a little, and the only thing I could come out with was what you might politely call a Dutch version of 'Oh dear'! I couldn't think of anything else to say. They dissolved into laughter . . .

As soon as I found out about the test, I phoned up Henny Vollenberg at Vortex and said, 'I'm driving the Williams, can you give me some laps?' I did about 17 laps in Henny's F3000 Reynard at Nogaro. More than anything, I wanted to feel its power so that I wouldn't be too amazed when I drove the F1 car. It didn't work; I was still astonished! The first time you go into a second-gear corner and you floor it, you really don't know what's happened. The thing just takes off. It's like hitting the eject button.

Before I went out, Damon Hill said: 'Allard, just be careful.' Johnny Herbert said, 'Don't worry, there's plenty of grip, plenty of power, so you'll be all right.' David Coulthard gave me some really good advice, and we went round and had a look at what Derek Daly was doing in his stint. I'd had quite a long chat with Jan Lammers too, and everybody at Williams and Renault was very supportive. They said, 'Don't worry about it. We're not here to break any records, or to prove anything, just to have a good time.' Mind you, not everybody was as supportive as Johnny. He said, 'Go out there, and when you get to a corner it's going to be phenomenal. Don't worry, buddy, just nail it!' As I drove off, Williams' PR star Annie Bradshaw looked a bit worried . . .

Once you're in the car, there is actually a surprising amount of room. It's very comfortable: you can move your legs around – I was wearing kneepads because you don't want to bang against the sides of the bulkhead – and there's enough room to move your arms. There is more room than in a Formula Three car.

I had a fitting in Riccardo Patrese's seat from last year, and there was plenty of room

the conqueror

Eurosport F1 commentator and FF1600 and F2 racer Allard Kalff takes us behind the wheel of the World Championship-winning FW15C

in that too, so perhaps I'm not as fat as I thought I was. I took the seat and put it in the car we were going to use, and we did up the belts. The guys said, 'Alright, is that comfortable then?' I said, 'Yes, brilliant,' and I was thinking I'd get out, have a cup of coffee and have another half hour to get nervous, because we were just making sure that I fitted all right. Suddenly they gave me the helmet, and the next thing I knew I was being pushed out of the garage, started, and was on the main straight! Well done boys.

I wasn't *that* worried about adapting to a semi-automatic gearchange – although I admit I had taken one of the steering wheels for lunch and played with it under the table! It sounds cocky, but I didn't actually find it confusing at all. After two corners it came so naturally that it was amazing. In the whole 10 laps I didn't once feel like I had to go for a gearlever. I spent more time thinking, 'Do I change with my middle finger, or index finger?' than I did actually worrying about the system itself.

It's semi-automatic, which means you can also be on the brakes or full on the power. To change gear you use a lever, although it feels like a button because it's very light. You don't have to pull it with the whole hand or anything, it's literally a one finger job. To change up you pull towards you, to change down you pull towards you with the other hand.

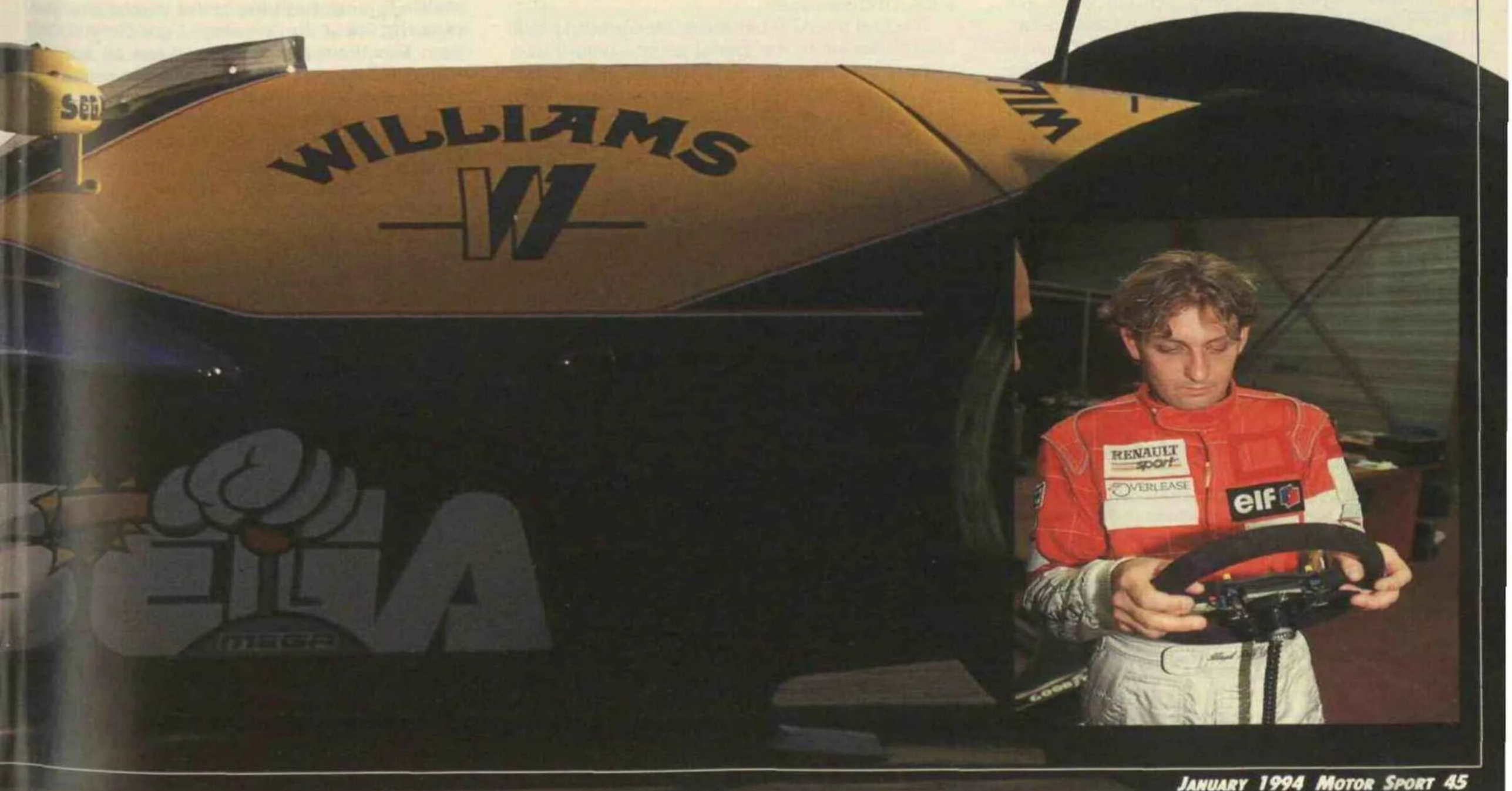
If you use the software for an automatic downchange or upchange, it will change at the optimum point, although Damon said it's more fun without it. There is also a programme where it will do all the gearchanges by itself! I'm not sure I would like to have it *all* done for me.

What struck me most about the gearbox was that after Signes you've got a double right-hander where you're braking in the corner and you've got to change down. You're hard on the brakes – and the deceleration is phenomenal – yet you just pull with your index finger, one click, and it changes down a gear and the car doesn't even move.

The changes are very smooth. Coming out of the slow corners, within 100 metres you have changed up from second to third and third to fourth. In maybe 1.8 seconds you've gone through two gears. If the drivers are going to do that manually, I feel sorry for them. They must be losing quite a lot of time into the bargain. The computer will take away the throttle, change gear, and apply the power again in about a millisecond!

There are three lights on the dashboard, and the car accelerates so fast that when the second light is on you have to change gear, and when the third is on you're on the limiter. Going from second to third, as soon as the second light was on you were calling for the gear but would actually touch the limiter because the engine was revving so fast. (Around 240 revolutions of the crankshaft, rods and pistons every second!) If you do that manually, you are definitely losing time.

After a while you get so used to the button that you are actually anticipating the change; you know you're going to go up, so you might as well get the finger in position instead of having to get it stretched and behind the lever at the last moment. It's remarkable that so soon you are concentrating on shortening



that time as well.

You still use the clutch to drive away. In fact you *only* use it to drive away. For the remainder of the time, the left foot is on the foot rest. You're not even allowed to use the clutch on the circuit. They made these things so very clear to me . . . The first couple of laps I just pressed very hard against the footrest, after that it was fairly natural.

Ricard was the first time I've driven anything with traction control. Watching Derek Daly go round in the morning, he would feed the power in like he always used to do when he was racing in F1, IndyCar and IMSA. I was watching with Coulthard, and he said, 'Allard, don't do that. You can just turn it in and nail it because the traction control will take over.' I tried that, and it literally does. Because of it, there wasn't any oversteer on the entry to a corner. There probably would be if you took wing off (we were running a lot) and a little bit of traction control out – because you can see on television that they *do* slide – but the car being set as it was, you just pointed it at the apex, gave it full throttle, and it would go to the outside but it wouldn't break away. You just take off. You could really feel the traction control working. The funny thing is, you can hear the misfire but you're still ejected horizontally!

I knew Ricard was a fairly smooth place, but I didn't know they'd taken out *all* the bumps. The active ride was very, *very* good. You could actually feel the suspension move. Amazing.

I suppose if the active's not working properly, it's just as hard to drive as a passive car. But this was working properly, and it gave a very smooth ride. Even when you get on to the kerbs you don't notice them.

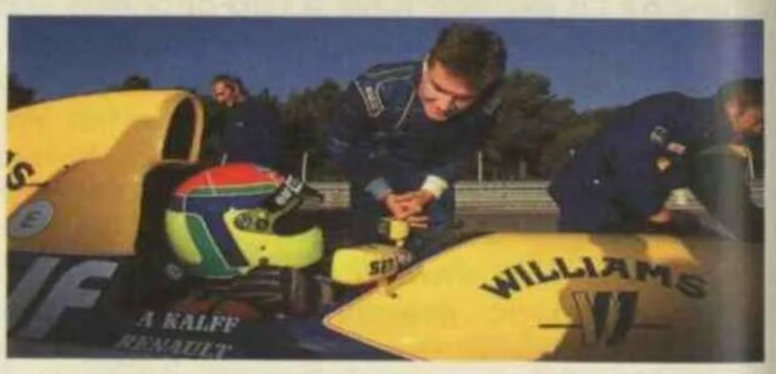
The car gave me so much confidence that I wondered where the limits actually were. For someone who has never driven a passive car, it could well be a little dangerous *because* it gives so much confidence. It's a little like driving a four-wheel drive car in the snow, where you can get away with murder. Until it goes wrong . . .

The Williams gives you so much confidence, until you step over the line, and then you must be in deep trouble. The good news is that as a World Championship-winning car it probably has a fairly big window in which it would work. When David went round in the morning the team was making small changes; not that big, but it seemed to please him whatever they were doing. I would say it's positive to changes, rather than sensitive to them. You don't want a car which will only work on a very tight line, because it will fall off the line too easily.

You have to be committed to get the best not only from the active, but the whole car. You have to have the tyres up to temperature, the brakes up to temperature. You only get that if you're going in fully committed. Nigel Mansell and Damon Hill are the same in that they really had the confidence in the car. They could drive it so well because they knew what it would be able to do.

Ricard was my first time with carbon brakes too. You hit those brakes and your eyeballs come out of your head! It is unreal, especially on the pit straight. There you have a very slow right-hander at the end, you're coming down





Even with the prior benefit of F3000 experience to get used to real power, the Williams-Renault's performance was truly astonishing (above). Friendly advice from David Coulthard (right).

from something like 270kph to nearer 120, and you're saying to yourself, 'You've got to brake *now* . . .' You know it has mega stopping power, but you still actually hit the brakes about 30 yards too early. The first time you do that you nearly come to a complete standstill. Someone said the FW15C goes from zero to 200 clicks, and back to zero, in something silly like five seconds. I think under braking it was like 3.9G, which I think is quite a lot. Unbelievable.

You feel the ABS because the car stops, but I didn't feel it in the pedal as you would in a normal road car. I didn't hear it, and didn't feel it, but perhaps that's the way it should be: I don't know it's there, but thank you very much!

The car also has servo brakes, so you don't even have to push the pedal very much. In a way, all these things make the FW15C less physically demanding to drive. Although the G loads are still very high, and when you're loaded up on high downforce the steering will be fairly heavy, things like not having to press the brake pedal with Heaven knows how many millions of pounds, make it easier to drive.

Of course, I did have my neck strap on, and I did make sure that under acceleration I rested my head against the headrest! But I got out after 10 laps and thought, 'This is okay, maybe I could do another 10 or another 20.' Or at least I did until I woke up the next morning! The muscles at the front of my neck, which took the load under acceleration, were very sore. But not as sore as my neck would have been if I hadn't worn the strap: I didn't worry what people would think; I didn't know what to expect. I thought it was better to put it on and have everybody laugh about it, than not put it on and find out that my head would fall off.

Where you really notice the G force is when you go round the horseshoe, where you're turning in third gear and that neck strap is being loaded to its maximum. Then you accelerate, and your head is not only being pulled to one side, it's being tugged back at a funny angle as well. That is a definite killer.

The strange logic of downforce was something I was very conscious of. Johnny told me, 'Whatever you do, don't lift off in the middle of the corner, because you'll take away some of the downforce.' The faster you go, the more stable it is up until the point where you step over the line; I don't believe I got close to this line. The team had promised me all sorts of things if I shunted it, none of them nice!

Going quicker is funny, because you get to the point where you're not sure where you should go faster, because the car feels unstable. But when you actually do go faster, it makes it *more* stable. You have to get over something of a mental block.

I keep saying things are fabulous and amazing, but one thing struck me above all: *le moteur, c'est incroyable*! It was incredibly quick, incredibly powerful, and incredibly smooth. You could go fairly low on revs and it would still accelerate like a bullet. It was revving to 14,000 plus. How much plus, you ask? Unfortunately, we can't tell you that, but the plus was plenty enough for me . . .

I was talking to Jos Verstappen after his first run in a Formula One car, and he said you can't believe a car can actually accelerate that quick. I thought of him when I first accelerated out of a corner in the Williams. *That* was just incredible. The sheer acceleration in second, third and fourth gears is unreal. It is absolutely mind-boggling.

You try to make comparisons beforehand, think what would it be like: you're taking off in an aeroplane and you think, 'If I do this by two, will that come close?' You try to visualise that acceleration. But then the first time you actually floor it, you know that whatever you had come up with, it would have been

nowhere near what the feeling actually is.

The good thing is that although the acceleration is phenomenal, it's all very smooth. The car's very driveable. It didn't particularly surprise me; it was more a relief that it wasn't like a beast trying to control a beast. If you get into even a road car and go halfway round a roundabout and floor it, you can find out it's a beast and you're struggling to keep it on the black stuff. You think that is quick. With the Williams you're getting into something which is probably four times as quick, yet probably 20 times easier to control!

It's 800 brake horsepower, 550 kilos, and it just takes off, but still inspires so much confidence that you have no fear of getting to a corner, giving it full throttle, and finding that it does something vicious.

Doing 299kph down the straight and having to turn into a corner wasn't really a scenario I was sure about. One of the most important things with this car is that you're concentrated a thousand per cent all the time. In the end the car makes sure you won't get into a false sense of security but because it is so quick, and because it gives you confidence – it's very positive, when you touch the brakes it actually stops, and when you turn the wheel it goes left or right, and when you touch the throttle it moves forward – you have to be with the programme every millionth of a second. If you're not, you'll pretty soon be ejected from the programme.

There was a switch for high or low revs, which I was allowed to use on my second run. I don't know how many more revs I gained because you change gear on the lights, and as soon as you switch the button the lights will change accordingly.

When I first sat in the cockpit, I thought 'Heck, all these knobs and buttons,' but while you might be searching for them for a couple of runs, I reckon you would actually get used to them pretty soon.

It's a little bit like an aeroplane cockpit with all the instrumentation. That includes tyre puncture, gearbox failure, and active failure lights. Yes, they really *do* work. I did a photo shoot after my run, and was driving round slowly on an old set of rubber when the tyre warning light came on. It senses the temperature in the tyres on the left and right, and if they differ more than the norm should be, the light immediately comes on. I thought that was very impressive.

There were four buttons on the steering wheel: the 'levers' for automatic upshift and downshift, an all-stop button, and one for low drag. They can use that on the straights. As I understand it, it raises the car and breaks the undercar aerodynamics to make them less effective, so the car is not sucked to the ground as hard as it is around the corners. That way you are able to move quicker through the air because there's less drag. I think all the active cars have such a system, and when you watch the onboard camera you can see the drivers pressing the button. The classic one is Schumacher, who seems to press it on just about every straight he can!

Then, of course, there are the normal radio knobs, ignition switches and switches to activate the hydraulic system for the gearbox and suspension. There are more knobs to tweak the engine, lean off the mixture. On the right-hand side of the cockpit, actually under your right elbow, there are knobs you can turn to change the active. We weren't allowed to touch them, but I assume they change the characteristics of the car just slightly. If you get different conditions during a race, you will be able to fine tune the active a little bit.

Like everybody else, I've heard and read the comments suggesting that because of all the technology the cars can effectively drive themselves. The way I see it is that you're talking about going round say a double left or right-hand corner where you've got to brake, change down a gear, accelerate, brake, change down again and accelerate, and it's probably easier to do it in this car than one which doesn't have those automatic or semi-automatic capabilities.

You could very easily think that it detracts from the driver, but because you've got all those things you can go round that corner faster. You've still got to do that. I think people are too quick to say that driving a Formula One car is now so easy that a monkey could win. That is definitely not the case; you still have to drive it, steer left and right, and brake at the right point. It will take away some of the physical stuff, very definitely, and the drivers will probably say it will take away an element of the fun. But you must never forget that part of that fun is going round the corner as fast as you can.

You can definitely go round faster than if you have to do a lot of things manually. But if you are going faster, it all happens faster, so your brain has got to be in top gear to handle that. Could a monkey drive the car? Maybe yes. But the monkey won't be able to win a Grand Prix . . .

Before the test I talked about it and people said, 'Ah well, it's an amazing car and it does everything very well.' When you actually get in it, you expect 'very good' to be very good. But I never envisaged 'very good' to be *this* good.

It would be understatement to say I enjoyed it immensely. It was an amazing experience and, yes, I would like to do it again. I've been looking at my fax machine a lot lately! A big thank you to all the Williams people, and everyone at Williams-Renault for making this happen.

I realise now just why top drivers such as Alain or Damon are amazing. They are going at a speed that is mind-blowingly fast, they've got to do the same thing every lap, at those speeds, and under those G loads, they have to do the same things under very difficult circumstances. Not only do they have to do every little thing right, they also have to realise what they're doing and tell the engineers what the car is doing. And they have to do all that while racing other competitors. That is a real feat. To be able to do all this and *win*, you must be an outstanding racing driver.

All of us who drove the car – myself, Derek Daly, Jochen Mass – stalled the car. Only my fellow *Eurosport* commentator John Watson didn't, but I must say that after a couple of times, once you've got the feel, it's a very smooth and fairly easy getaway. David did a 1m 5.5s while warming the car up for us. Jochen did 1m 6.6s, I did 1m 7.63s, Wattie 1m 7.9s and Derek 1m 8.7s.

I 'phoned Frank as soon as I got out of the car, and said, 'Thank you very much.' He said, 'Allard, the pleasure was mine.'

I said, 'No Frank, it was *mine* . . . **AK**

A lap of Paul Ricard

Past the start/finish line you're in sixth gear and get up to 280kph before you brake hard for the very tight right-hander at the end of the straight. When you turn in you go over a hump which is also a camber change and is, I think, the only *very* tricky bit of the circuit. It's too big even for the active to iron out! The road falls away, but when you put your foot down the traction control will make sure you just accelerate rather than sliding off.

Then a very short burst, second gear, a quick brake, and the road will drop down on you and you're on to the the long Mistral straight which is hard acceleration, through all the gears. My top speed was 300 kph . . .

Yes, I know the Signes kink should be flat, but it wasn't for me. Jochen Mass was the only one of the testers who managed it; full credit to him. The corner comes up very, very fast and then you have to concentrate hard on your turn-in point because it is absolutely vital to get that right. Once you've done that, you've got a lot of space and the kerbs on the exit are very low so you're able to use them.

It's a short burst to the horseshoe, the double right-hander. I turned in and braked at the same time actually, then down two gears to fourth, accelerate a little bit towards the second bit of the horseshoe, brake, go down to third. As soon as you turn in the car bites, so you can just nail it and let the car do its work. You make sure you don't hit the kerbs on the outside, because they're fairly high and will spin you off as soon as you hit them.

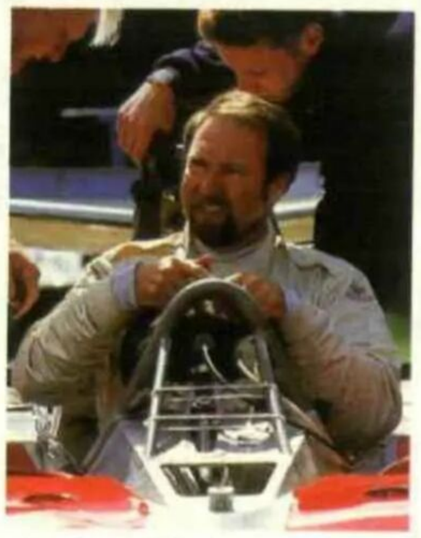
The horseshoe was amazing. There you could really see what the car and engine were capable of, because you're braking, changing down, accelerating, braking, changing down, accelerating again, and yet all the time you're going right. The stability was just amazing. It shouldn't have been happening.

After that it's through the wiggly bits, the chicane – still in third – left, short acceleration, down to second and another very tight left- hander. As soon as you turn in there it's hard acceleration, up to fifth, going right at the same time. It's a right-hander, but you're accelerating all the time, up to about 260kph. Then it's hard on the brakes, turning left, turning in to the corner on the brakes, down two gears, and quick acceleration for the very last right-hander where you avoid all the kerbs on the inside. Again it's very important to get the turn-in right. As soon as you do that, you can unwind the lock, floor the throttle, avoiding the kerbs on the outside because the tyre wall is very close.

Then it's into another glorious lap . . .

The car that Gilles drove

THIS IS THE FERRARI 312T3 THAT TOOK GILLES VILLENEUVE TO HIS MAIDEN GRAND PRIX VICTORY, CONFIRMING A TALENT THAT WAS TO BECOME ONE OF THE GREATEST OF ALL. MARK HALES CLIMBS ABOARD TO PAY HIS RESPECTS



Hales in the 312T3's too snug cockpit: "Today is going to be very special in my life"

LAT Archive

Long Beach '78: Gilles and 034 lead a GP for the first time. Before the season's end, they would win. Brambilla's Surtees can only watch

THE CAR THAT GILLES DROVE

The last Formula One car I drove was a March 891. It was powered by a 3.5-litre V10 motor built by Ilmor, the people who build the Mercedes engine in today's McLaren. It was about halfway into the electronic and aerodynamic revolution that led to the space-age missiles of today, but its technology was only for the small of stature. I could only fit in the one-piece carbon-fibre tub after the seat, moulded to fit Austrian comingman Karl Wendlinger, had been removed. Even then I stuck out of the cockpit like a duck coming up from a dive and couldn't bend my elbow enough to reach the gearlever properly. The engine could only be started by a technician with a briefcase and the tyres had to have warmers to be safe on lap one. The chassis preferred minute attention to aerodynamics, rather than alteration of roll bars or springs or other old-fashioned stuff, and it was so close to the ground and had so little droop travel on its suspension that the tub beached on the yellow lines between paddock and track.

Once out there, I was allowed to rev it to a conservative 14,000rpm as the combination of wind battering my protruding helmet and a brutal mix of 750bhp and 3G lateral acceleration or thereabouts through Club Corner was enough to wilt my neck muscles inside 10 laps. I've never experienced anything quite like it, before or since.

Awesome, both technically and physically, but... it was a March. A good car; a successful car. But a hybrid. It was a mix of clever people's ideas and someone else's engine and gearbox. It wasn't a Lotus or a Williams which, while similarly configured laid claim to a greater pedigree and it was not, definitely not, a Ferrari.

Nobody I know can successfully explain what it is about Ferrari, but they all acknowledge there is definitely *something*. It's the something which makes every driver with the talent long to drive the red cars – with the famous exception of Tony Lanfranchi, who passed up the opportunity because Enzo Ferrari wouldn't pay for a plane ticket to Fiorano and besides, Tony would have had to give up fags, booze and birds. What Tony eschewed was enough to make Schumacher senior pass up the chance of a third consecutive championship with Benetton. It wasn't just the money, whatever the press might say.

The March experience was a few years ago now, but today's job would be at the same venue – Silverstone's South Circuit. Today though was to be very special in my life. Today I would drive a Formula One Ferrari. Today I would sit in a cockpit once occupied by Gilles Villeneuve, the man who was so uncomplicated in his love of driving that everybody loved him for it. The man whose touch in adversity helped carry the prancing horse through bleak times and who struck his rivals a psychological blow whenever it rained – just as Schumacher does now. And it was in this very Ferrari 312T3, chassis number 034, that, in 1978, Gilles steered to victory at his home Grand Prix in Canada.

Pensioned off by the factory in '79 in favour of the ground effect T4, 034 had been sold to an American collector and became the high profile subject of a massive bankruptcy in the mid '80s before it was rescued by racer and musician Nick Mason. It then endured a shipwreck while en route from a museum in Canada which soaked it in salt water for days before it was rescued again, rebuilt and restored to corrosion-free health once more. A few years in the tender care of crew from Mason's Ten Tenths company gave the car a good home and regular exercise before it had a huge accident at the 1994 Goodwood Festival of Speed which cartwheeled it end over end, shattering the front end of the car and worse still – the ankles of former BRM Grand Prix driver Mike Wilds.

Today's job was to drive it for the first time since the Maranello factory had lovingly replaced the crumpled aluminium sheet and and after Ferrari specialist Bob Houghton had repaired the bodywork and John Dabbs and Dave Griffiths at Ten Tenths had carefully reassembled the car.

Before I drove, I spent a few moments just looking at the car; appreciating that Ferrari made not only the car, but the engine *and* the gearbox, an effort that remains unique in F1 to this day. I study the 312's hunched forward stance which seems to place the driver so close to the front wheels. Size up the polished aluminium, double triangle rear wing which tops a vertical post sticking up from the transverse five-speed gearbox and which looks so much smaller than the long wide front wing, mounted on the very apex of the nose like some space-age snowplough. No doubt about it, the 312T3 looked so very different to its contemporaries at the time. Two decades later, it is still a very distinctive machine.

It is also so much wider than the needle-thin projectiles of today. Each of the sidepods contains a radiator and its exhaust ducts and these pods almost fill the gap between front and rear wheels, rather like a sportscar's body. Climbing in also proves a simple affair after the March; a handful of strategically placed turn and lock fasteners release the top bodywork which lifts to reveal a shallow, gleaming aluminium tub. Legs disappear under the steering wheel, your upper body is firmly wedged by the braces for the roll over hoop and belts clamp torso, crotch and shoulders with vice-like grip. The diminutive Villeneuve would doubtless have had a moulded seat to fit him, but I seem to fill the bare aluminium just about right. Apart that is, from in the footwell. Gilles must have had tiny feet, because mine wedge solid before they can even reach the pedals. The only solution is to remove fireproof boot and tape up stockinged foot.

Bodywork on, belts tight. Booster battery connected. Click on master switch and low pressure fuel pump. Wait for the needle to flick up, then hit the starter. Start the flat-12 spinning, then turn on the ignition. The engine catches instantly, but you must then hold a good 2,000 rpm while it warms up. Let it drop for any more than a few seconds without the booster battery and the minimal on-board electrical system cannot feed both sparks and fuel pump. The engine stops. This happens regularly and occasions tutting and shaking of heads from the assembled crew who then have to wheel over the slave battery and go through the starting litany again.

Engine warmed and ready, the gearlever falls to the right hand and the clutch is light underfoot although its travel is minimal. Gear lever *down* then *left* and back for first with a gentle grate as the gears stop stirring. To move off, hold the engine at about 3,500, then just relax the left foot the merest amount. The clutch grabs fiercely with the tiniest movement and the car starts forward like a pouncing cat, but don't give up. Just hold what seems like far too many revs and don't relax the foot until the car is well and truly on the move. It's a simple and easily forgotten technique ➤



Starting to push... Hales gaining T3's trust

RACE RESULTS 1978

Ferrari 312T3 Chassis No: 034

S. African GP	...	DNF/oil leak
USA West GP	...	DNF/accident
Monaco GP	...	DNF/accident
Belgian GP	...	4th
Spanish GP	...	10th
Swedish GP	...	9th
French GP	...	12th
British GP	...	DNF/drive-shaft failed
German GP	...	8th
Austrian GP	...	3rd
Dutch GP	...	6th
Italian GP	...	7th
USA East GP	...	DNF/engine failed
Canadian GP	...	1st



"You can feel the flat-12 engine behind you spitting and snuffling in protest"

The T3 eating Silverstone alive. Stowe is approached at close to 170mph but brakes even more impressive than acceleration. Slides about a bit despite wings



Dash dominated by emotive Ferrari rev-counter. Gilles would use 12,500rpm



Screaming 3-litre flat-12 pumps out a healthy 510bhp. All of it is useable



Gearbox has exposed gate, needs care and, ideally, luck to work properly



No-nonsense exhausts protrude beside rudimentary bad-weather light

"You forget you are a **human** addition to the **cockpit** and become part of the car's fabric"

With enough heat in the big rear tyres, the Ferrari becomes an entirely different beast. Nervous twitches make way for precise, positive and fast handling



En route to 4th at Zolder, four years before the circuit would claim the driver's life

were claimed by Lauda's Brabham – using in Sweden the subsequently outlawed 'fan car' – and inheriting a win at Monza after Andretti and Villeneuve received time penalties.

Though it led for 39 laps at Long Beach, the claim to fame of 312T3 chassis number 034 will always be Villeneuve's first Grand Prix victory, on Canadian home ground at the newly configured Notre Dame circuit in Montreal. To be fair Jean-Pierre Jarier, taking over the second Lotus seat from the late Ronnie Peterson, looked the likely winner having stormed the 79 to pole position and leading for the first 47 laps. An oil leak denied Jarier victory and, egged on by an exultant crowd, Villeneuve crossed the line 13 seconds ahead of Scheckter's Wolf and 20sec ahead of Reutemann's Ferrari. **AF**



Team-mate and wife at the first victory

THE 312T3: BETTER THAN THE BOOKS SUGGEST

Ferrari has Colin Chapman alone to blame for the fact that the 312T3 has not been remembered as a landmark Ferrari in the same way as the championship winning 312T, T2 and T4. It won five races in 1978, more than required by Williams to walk the constructor's championship in 1980. But the might of the extraordinary Lotus 79 with its unsurpassed ground effect aerodynamics meant Carlos Reutemann ended his Maranello days just third in the championship, with the young Villeneuve a distant ninth and Ferrari runners-up but effective also-rans in the Lotus-dominated constructors championship.

The T3 was, as its name suggests, an evolutionary car which was both longer and wider than the T2 and heavier too. Unlike the Lotus, there was nothing radical about its design though it had an effectively new chassis with the engine lowered in the car and the suspension revised to cope with the Michelin radials it would carry in place of Goodyear crossplies.

The simple truth was that, like every other Grand Prix car of its era, it was no match for the Lotuses. But when they failed, such as during Reutemann's epic drive to victory at Brands Hatch, the T3s were almost invariably there to pick up the pieces, cleaning up between them all bar three of the remaining races. Two of these



Kyalami: first race for 034. It retired on lap 55

– you can stall the engine repeatedly if you don't get it right. Out now towards the track, surging and stuttering as the right foot jerks in sympathy with the lumps and bumps which 50 passing years have wracked from the few remaining pieces of wartime tarmac.

Smooth tarmac gained, you can feel the flat-12 behind you spitting and snuffling in protest, thrumming and tingling through the tub, buzzing through your back and tickling your hands through the wheel's rim. Squeeze the silken throttle pedal some more.

Now the car is on the move, the revs are higher and it leaps forward in response as if a giant gust of wind has just swept it along. The tachometer needle whips up to 8000rpm in an instant, so quick that you must remember to shift up. Guide the lever forward and across to second. Fumble as it hits the edge of the gate... The Italian cars were possibly unique in having a slotted metal guide around their shifters, added to which there is a positive stop detent. This means you have to go all the way up – or down – in sequence. The idea was to prevent drivers getting the wrong slot and detonating the engine in the heat of battle. The theory is fine and it probably worked well when it was new...

Second to third and third to fourth is a straight fore and aft flick and as confidence grows and arms relax, you can snick the lever up and down as fast as you like, like a switch. The motor meanwhile assumes a different persona as it climbs up the scale. At about 6000rpm, the hoarse-throated braying from behind suddenly develops a harder edge. The tingling and buzzing disappears and the shove becomes a kick. The note washes through your senses and you forget the air roaring and hissing round your helmet. Push towards a still conservative 10,500rpm – our limit for the day – and the wail becomes a chainsaw's howl, braying screaming and rasping all at once. It's a noise that only a flat-12 Ferrari can make and the soundtrack alone can make you forget that you are in sole control of this piece of history, now drawing close to flat out in fifth gear and approaching Stowe corner.

Lift, brake and shift down. The car slows even more quickly than it accelerates, and I find myself cruising up to the corner on a trailing throttle. Turn the wheel to the right and the car leaps instantly into the corner. Too much. Regain the line and relax. The next corner is Club and again I use more lock than needed and twitch the nose. It's as if the car has castors at the front: There's an initial, instant swivel and then it settles. I can at least give the engine its head through the safety of Club's long, wide sweep. Once it's aimed and settled, the front pushes wide, and then the tail skips to the left, revs rising as it goes. It's easy to catch, but once again, I use too much lock and the car darts back the other way.

So far not elegant, but at least we're still motoring. I can drive this Ferrari. In fact almost anybody with a licence could. So far the hardest thing has been managing the idling engine, then moving off. The gears need a relaxed hand and some planning while the steering is so sharp you need a gentle touch, but nothing anyone who has driven a kart won't understand. But, the T3 is driveable. Just driving, though, is not what a Formula One Ferrari is meant for.

The hardest thing now is to work out how to dig safely into the T3's reserves. Was that slithering tail a pointer to bigger scares in store? Was it warning that if you press harder the slide will become a spin, and was that darting nose another caution? Would it grow yet more insistent with speed and upset the tail further? Difficult... But you must have confidence in the car's ultimate capability, even if you may not reach its limit. Villeneuve had a gift not given to many, but even he could have done little without some help from the car. So you must trust it, but before you do, you must, simply must, get the tyres hot enough to work. The rears are over a foot wide and unless you heat them throughout, the Ferrari cannot work. This is the trap. Cold slicks make a thoroughbred like the 312 feel frighteningly horrible, but how to go fast enough to warm them without crashing? Maybe those tyre warmers weren't such a sissy idea after all.

So do it gently. Just carry more speed into the corner but don't do anything sudden. Don't try and brake too hard, but *lean* on the front tyres rather than attack the corner with them. Then pour on the power and feel that flat-12 closing on its 510bhp peak. And as you step up the speed, warm the slicks and ease the car into its envelope, it begins to flow. The steering stops darting and becomes a precision tool. Turn-in is still sharp, but you can use it to point the car towards a more distant apex. Then there's just a hint of push which prompts you to nail the throttle. The skip and yaw from the tail is now merely a suggestion but this neatly sweeps the rear round the corner as you ease the wheel straight. Belted in so tight, you forget you are a human addition to the cockpit. Instead you become part of the car's fabric and aim through the entire corner rather than trying to drive it in sections. The process seems more relaxed and you look further up the road, point the car further round the bend, carry more speed in, and out.

Sadly, my relationship with the gearshift does not develop at a similar pace. Moving the lever fore and aft is as fast as you can move hand and foot, but moving it across the gate is something of a lottery. I tried doing it fast, doing it slow, guiding the lever and letting it guide itself, but without consistent success. At least the detent meant I was likely to get neutral (irritating but not expensive) rather than the next one down (potentially expensive as well as likely to lock the rear wheels). Dabbs and Houghton did say the accuracy of the box varies according to temperature and fine adjustment, but I can't help thinking that the Hewland method of a wide throw but no gate, is easier to live with. You just aim the lever and it finds the slot for you.

Fortunately, that wonderful engine was usually willing to lug the next gear up which was preferable to a fistful of neutrals while I tried to find a rhythm. Each lap brought more temperature to the tyres and the confidence that the next lap could be faster still. You start to sense the forces at work, especially through the faster corners. The T3 has a lot less grip than the March, reflecting some 10 years of tyre and aerodynamic progress, but it was sufficient to begin tugging at the helmeted head, enough to make those neck muscles tingle once more after a 15 lap session.

All too soon this fascinating experience was over. It had not been so brutal as the later car, but all the better for it. The Ferrari communicated better, slid more and gave more time to plan ahead. And it had a better, more individual noise. Yes, almost anyone could drive a 1970s F1 Ferrari. Only a select few, though, could win races with one.

Mark Hales and Nick Mason are in the process of producing a book of track tests covering Mason's extensive collection. It is due to be published in the spring of 1998. M

SPECIFICATIONS

ENGINE

Type	Water-cooled 180deg V12 dohc, 4 valves per cylinder
Capacity ...	2991.8cc
Bore/stroke ...	80 x 49.6mm
Induction ...	Lucas indirect fuel injection
Max power ...	510bhp at 12,200rpm
Specific output	170bhp/litre
Power to weight	856bhp/tonne
Transmission	Transversely mounted straight cut Ferrari 5-speed with sequential interlock

CHASSIS

Construction ...	All aluminium monocoque, tubular steel strengthening
Steering	Unassisted rack and pinion
Brakes	Ventilated discs, 4 piston calipers all round
Front suspension	Double wishbones, coil springs, anti-roll bar
Rear suspension	Double wishbones, coil springs, anti-roll bar

DIMENSIONS

Length	168.3in
Width	83.8in
Height	40.0in
Wheelbase ...	100.8in
Track f/r ...	63.8/61.4
Weight	1312lb



The Shark

FERRARI'S 555 RACER WAS CHRISTENED 'THE SHARK', BUT IN THE 1950s IT WAS MORE MINNOW THAN MAN-EATER. NOW, FORTY YEARS ON, WILLIE GREEN TAKES ON MASERATI'S FABLED 250F AND FINDS THE SUPER SQUALO FIGHTING BACK

photography by Andrew Yeadon



bites back



Italy, 1953.

Ferrari designer Aurelio Lampredi wheels out Maranello's answer to Mercedes' W196. Sleek and low, with curvaceous side-tanks, the 553 Squalo looks like a mean rival to the silver cars. Within 18 months it will be forgotten.

In one of his rare interviews with the press, Enzo Ferrari was once asked what he considered to be his most successful car. In typical fashion he replied: "I can't lay my finger on the most successful car in an absolute sense, because as soon as the latest product lets out its first infant sounds, I always feel the dissatisfaction of the engineer. It has to be that way. The most successful Ferrari is the one which has still to be built."

At the end of 1953, Ferrari must have felt that dissatisfaction more strongly than ever before, for two years of world championship domination were about to be swapped for a sustained period in the wilderness. Mercedes-Benz was due to unleash its unstoppable W196, and the Scuderia's riposte was a mixed bag of racers – none capable of holding off the German challenge.

For that difficult '54 season, Lampredi had set to work on an unusual new car that he hoped would bring the team the kind of success it had enjoyed with Alberto Ascari during Grand Prix racing's Formula Two period. With the 2-litre, four-cylinder Type 500, the brilliant Italian had dominated two world championships, and for 1954 – the advent of the new 2.5-litre formula – Lampredi hoped to keep that run going with the innovative looking Squalo – the 'Shark'.

LAT



The 555 Super Squalo was not the evil handling beast that Green expected

In its early F2 guise, the car developed 190bhp from its 2-litre four-cylinder engine. With the extra 500cc allowed under the '54 rules, that figure rose to over 250bhp – the first unblown Ferrari engine to develop in excess of 100bhp per litre. The new Squalo raced in conjunction with another Maranello chassis, the Type 625 – itself a direct evolution of Ascari's 500 – yet despite the obvious strengths of Lampredi's engine, the car enjoyed only limited success. Never as forgiving a racer as the 625 and certainly no match for its rivals, the drivers pointed accusingly at the short wheelbase and low slung, side-mounted fuel tanks, which gave the car its unusual head-on appearance, and complained of instability and handling problems.

Mike Hawthorn drove the 553 Squalo to a lone victory at the end-of-season Spanish Grand Prix, but for 1955 Ferrari modified its unresponsive chassis to become the 555 Super Squalo, with a yet lower profile, increased compression ratio and 270bhp. Like its predecessor, it was no match for Juan Manuel Fangio and the W196.

Although the Super Squalo raced through the '55 championship, its death knell had already been sounded. For in May of that year Ascari was killed while testing a Ferrari sportscar at Monza. His Lancia team opted to withdraw from the Grand Prix scene and Gianni Lancia gave six Type D50 cars to his rival Ferrari who, with the newly acquired J-M Fangio on board, went on to win the 1956 world championship. The Super Squalo was quickly consigned to the scrap heap.

LAT

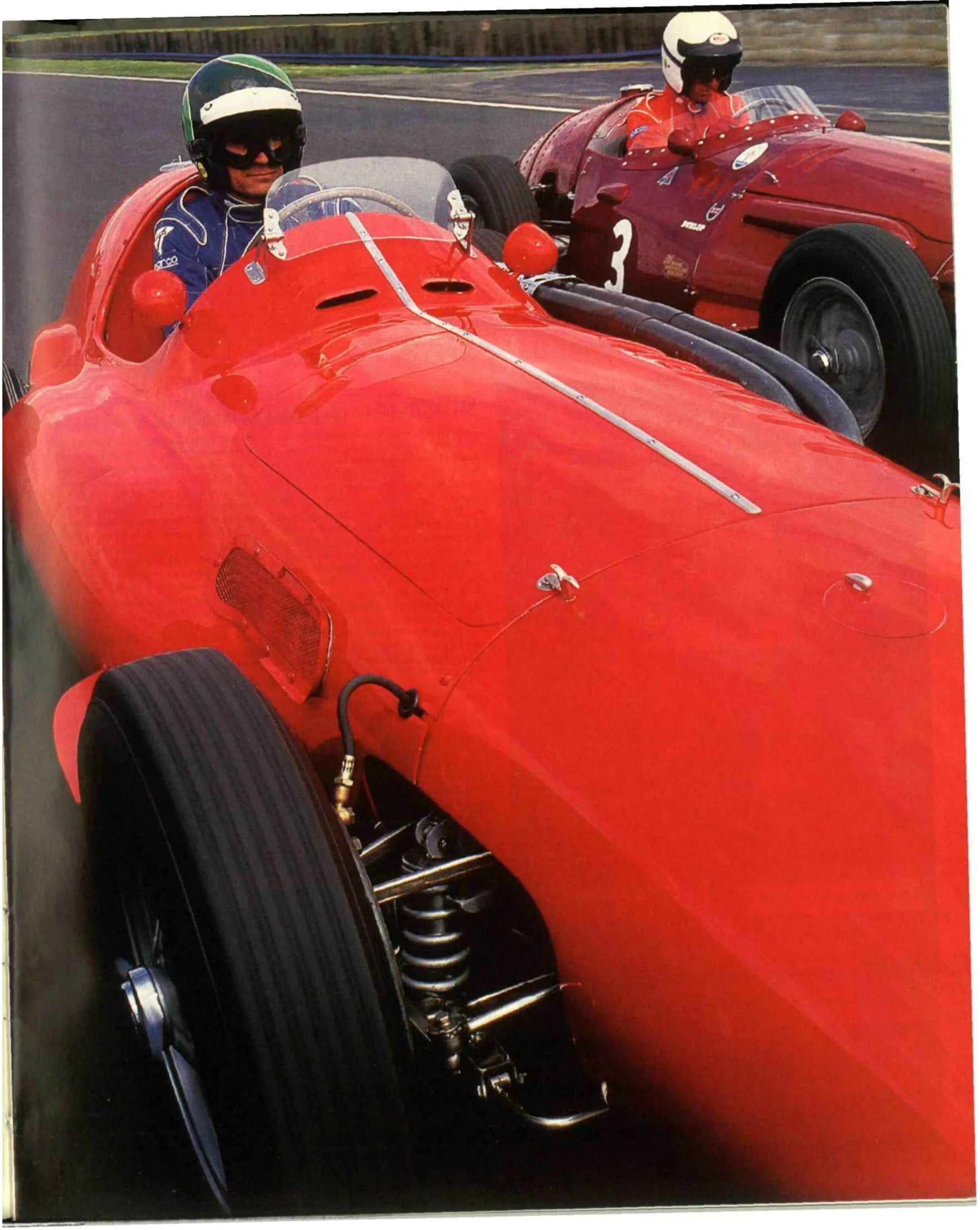


Beautifully proportioned Maserati 250F took Behra to four GP podiums

Maserati's answer to the Ferrari/Mercedes battle of the period was the six-cylinder 250F. Like the Ferrari 555, the Maserati was an evolution of its F2 antecedent, the A6SSG. But unlike the 555, the six-cylinder 250F would remain at the forefront of the 2.5-litre formula for several years. In the early 1950s Maserati had stuck rigidly to a solid rear axle on its Grand Prix racers, but with the 250F, the marque relented and with a De Dion axle, single-unit rear-mounted gearbox and differential, the car was a joy to drive. A winner on its debut in Fangio's hands in Argentina, the 250F won seven further races before bowing out in 1958. Thirty-four 250Fs were built between 1954 and 1958, and Fangio took his fifth world title in one in 1957.

By which point the Super Squalo was just a distant memory in the minds of Maranello. The model did finally have its moment of glory, though. Two of the cars were fitted with 3.5-litre 860 Monza engines and shipped round the world to Australia, where they were raced with great success by Peter Whitehead and Reg Parnell.

One of those cars, chassis 555/1 (renumbered FL 9001, for Formula Libre) then went to New Zealand, where during the 1960s stock-car driver Garth Souness shoehorned a Chevrolet V8 inside, unbelievably bolted a Morris Minor body onto the frame, and took it saloon racing. In the early Seventies the original 2.5-litre power unit was discovered, and both engine and car came to rest in the Hayashi collection, eventually making their way to the workshops of Tony Merrick where Super Squalo 555/1 now rests, perfectly restored.


3

England, 1997.

Chassis 555/1 stands ready to run on Silverstone's South Circuit. Alongside it, Jean Behra's Maserati 250F. For the first time since the mid-1950s, the Super Squalo is about to undergo direct comparison against one of its most illustrious contemporaries.

Super Squalo 555/1 raced in five Grands Prix, its best result coming at Spa in the hands of Paul Frère, who finished fourth, although Hawthorn, Giuseppe Farina and Piero Taruffi also raced it. The 250F on hand for comparison is an ex-works machine that Behra took to four podiums finishes in the 1956 season – Spa, Reims, Silverstone and the Nürburgring. Both are immaculate. Both are set to go head-to-head to see just what makes the archetypal 1950s monoposto racer. The results, as you will see, prove that you should not believe everything that you read in the history books.

A visual comparison gives early clues to just what one might expect from the two chassis. Parked side-by-side there are many similarities – front engine, rear transaxle, drum brakes, seat on top of the propshaft. But the 250F is more graceful to look at; a clean sweep of the designer's pen takes the eye from nose to tail. The Squalo is shorter and fatter; its 'sidepod' fuel tanks giving the impression of a wider track. The figures are, in fact, very similar.

A closer inspection of the two cockpits reveals further differences. The Squalo's nose rises sharply to an aeroscreen mounted on two swivelling hinges. The whole appearance is more aggressive, more purposeful; the flared cockpit concentrating the eye on the driver at work.

The Ferrari comes out ahead on points when you take a look inside the cockpit as well. You slide down into the beautiful, tan corduroy seat, your feet at least six inches further apart than in the 250F, yet still very comfortable. Ahead of you the dashboard is the work of an ergonomic master, all around the chassis reveals the work of a master craftsman. The attention to detail on every rivet, every fold of aluminium is outstanding. In front of you a huge Veglia rev counter fills your vision, as your hands grasp the wide, wooden wheel with the faded

LAT



Le Mans winner Paul Frère got his Ferrari drive simply by asking

REFLECTIONS ON A TEAM IN TURMOIL

Grand prix racer, Le Mans winner, journalist. Paul Frère's *curriculum vitae* is something to boast of, but even he recalls how difficult it was to come to terms with the Ferrari hierarchy on his debut for the marque in the 555 Super Squalo at Monaco in 1955.

"I was the new boy in the Ferrari team. It was my first drive for them and during practice I came into the pits and asked whether they would allow me to try the Super Squalo with the front anti-roll bar disconnected. The car was understeering terribly – the last thing you need around there – and I wanted to get some roll transfer to the rear and produce more front end grip.

"My engineer was almost terrified by my request and said, 'No! That's part of the design and we cannot touch that.' So that is how we went into the race.

"I don't think that the Super Squalo was an inherently bad car. At that time I just don't think some of the people at Ferrari had any idea how to set up a racing car. Aurelio Lampredi, who designed it, was a most interesting person and I liked him very much. He was very, very charming, courteous and helpful. He really knew all you need to know about engines, but he didn't seem to know much about handling!"

With four decades of hindsight it is clear to Frère that this little anecdote was symptomatic of the attitude of Ferrari at the time. A time when it took just a polite request to get a drive for the greatest team in history.

"In the 1954 German Grand Prix I had done some very good practice laps in my Gordini," he recalls. "I was consistently quicker in practice than Jean Behra but in the race my front wheel flew off together with the brake drum. Fortunately I was running up hill so I could roll to a halt.

"As I climbed out I swore that I would never drive a Gordini again and after the race I went to see Nello Ugolini, who was Ferrari's team manager at the time, and asked him if he could find a place for me in the team at the Nürburgring 1000Km. He didn't say no. But he didn't say yes, either. He more or less had to ask the big chief but before I got a response the race was cancelled. Later that winter I got a letter from Ferrari himself inviting me to test at Imola.

"I went along to drive with Maurice Trintignant and Harry Schell. Farina had set a bogey time for the three of us and after the test I was called into Ferrari's office. I announced immediately that I did not have any intention of doing the whole season as I was 38, had a good job as a journalist and a family as well. I didn't want to be a full-time driver. They agreed and said that they would call me whenever they needed me.

"So I got the call to go and race for them in Monaco, which I wasn't too happy about as I didn't like driving there. As it turned out there was no pressure for me to perform in the race as I was sharing the car with Taruffi and we lost 15 minutes with gear linkage problems."

Following Monaco, Trintignant took the Squalo away for testing and by the time of the next Grand Prix at Spa, Frère was struck by the improvements that had been made to it. So much so that the drivers opted to run the supposed ill-handling beast rather than the tried and tested Type 625.

"When I drove the car in Belgium it was transformed. It was so much better to drive. I had the opportunity to try the Type 625 and the 555 and both Farina and I opted to race the Super Squalo. In those long, fast curves it was just easier and more stable. The fact that it understeered meant that it gave you more confidence in the quick turns. The 625 was apt to snap to oversteer which you could do without at Spa."

The Belgian race was chassis 555/1's finest hour, Frère taking the little, squat Ferrari to a fine fourth place behind the two Mercedes W196s and his team mate Farina. But the car was never the target of great affection from its drivers.

"The next year we drove the Lancia-Ferrari D50. It was a much better car," admits Frère. "It was designed by Vittorio Jano and modified again by him when it went to Ferrari. He really knew something about handling. If Mercedes had not withdrawn from racing at the end of 1955, I genuinely believe that the D50 could have been a match for it.

"Overall I enjoyed my period racing for Ferrari. It could be quite a funny time. Once we got called into a drivers' briefing and Ugolini told us, 'We all know that the Mercedes will be unbeatable. But that doesn't matter. What is most important of all is that we beat the Maseratis!'"

Some priorities, it seems, never change.

Matthew Franey

yellow Prancing Horse strident in the centre.

The Maserati's cockpit and dash are less pure, more functional perhaps. Far fewer dials grace the panel ahead of you; just a rev counter winding its way to 10,000 revolutions per minute (2,000 more than the Squalo) hints at the difference in engine configuration. Both cars carry a five-speed gearbox, the Squalo's shift mounted low down to the left, the Maserati's more conventionally on the right.

Still set up to run methanol fuel, it took a little gentle persuasion to kick the Ferrari into life. Large four-cylinder racing engines always seem rough at low revs, but with a bit of throttle the exhaust note cleared to a crisp, even tone.

Heading out onto the South Circuit and down the Hangar Straight, the Ferrari pulled cleanly and powerfully through the range. There didn't, however, seem to be much above an indicated 6,000rpm – perhaps hinting at the rev counter running a tad slow. In reality the 2.5-litre block was probably pulling cleanly round to about 7,200. Nevertheless, the power was definitely there and allied to a smooth gear change – even if the lever seemed quite a long way away – progress was satisfyingly rapid.

The original 555 Super Squalo was fitted with a four-speed gearbox, but towards the end of its life the legendary designer Vittorio Jano added an extra ratio, something that transformed the car and – allied to improved handling – helped Eugenio Castellotti finish a brilliant third behind the two Mercedes of Fangio and Taruffi at the Italian GP. The Italian may have come in over 40 seconds behind the two German machines, but when you consider that fourth-placed Jean Behra's 250F was three minutes further adrift, the qualities of the much-maligned Super Squalo are put into some perspective.

At the end of the Hangar Straight the drum brakes seem adequate as you slow the scarlet machine for the right-hander at Stowe, but modern circuits can create a major problem for historic cars. Repeated chicanes and slow corners don't give brakes time to cool and as a result I never tested them to their limit.

It is as you turn quickly into Stowe corner that the first obvious difference between the two cars becomes apparent. The Ferrari seems to go into ➤

Ferrari 555 Super Squalo Chassis No 555/1

1955		
Bordeaux	Farina	DNF
Monaco GP	Taruffi/Frère ...	8th
Belgium GP (Spa)...	Frère	4th
Dutch GP (Zandvoort)	Hawthorn ...	7th
Italian GP (Monza)...	Hawthorn ...	DNF
1956		
Olympic GP (Melbourne, Aus) ...	Whitehead ...	3rd
1957		
New Zealand GP (Auckland) ...	Whitehead ...	2nd
Lady Wigram Trophy (Christchurch)	Whitehead ...	1st
Dunedin Trophy Race	Whitehead ...	3rd
NZ Championship Road Race ...	Whitehead ...	1st
Christchurch Fest Road Race ...	Tom Clark ...	1st
Hudson Trophy Race (Levin) ...	Clark	1st
1958		
Australian GP	Clark	DNF
1959		
New Zealand GP	Clark	10th
Lady Wigram Trophy	Clark	DNF
Hudson Trophy Race, Levin ...	Clark	1st
Teretonga Int	Clark	5th
Molesworth Trophy Race ...	Clark	3rd
1960		
New Zealand GP	R Smith	DNF
1961		
Dunedin	Smith	10th
Teretonga Int	Smith	12th
Waimate 50	Smith	10th



Chassis 555/1 understeered its way to 8th at Monaco with Taruffi and Frère in 1955

LAT



Frère chose the Super Squalo over the 625 at Spa and earned his best finish – fourth

LAT

Maserati 250F Chassis no 2521

1956		
Monaco GP...	Jean Behra ...	3rd
Belgium GP (Spa)	Jean Behra ...	7th
French GP (Reims)	Jean Behra ...	3rd
British GP (Silverstone)	Jean Behra ...	3rd
German GP (Nürburgring) ...	Jean Behra ...	3rd
Italian GP (Monza)...	Jean Behra ...	DNF
1957		
Italian GP (Monza)...	Bruce Halford ...	DNF
Int'l Trophy (Silverstone)... ...	Bruce Halford ...	7th
Modena GP (Modena)	Bruce Halford ...	7th
Moroccan GP (Casablanca) ...	Jean Lucas ...	DNF
1959		
Monaco GP	André Testut ...	DNQ



Maserati 250F/2521 drifts around Monza in the hands of Jean Behra

LAT

LAT



Side fuel tanks with gill-slits plus short wheelbase led to the 'Shark' nickname. It also gives the Super Squalo a tendency to roll oversteer according to Green



Enormous Veglia rev counter dominates the beautifully contoured cockpit



Flared cockpit rim and mini screen gives aggressive edge to Squalo's look



Incredible rivet work catches the eye as well as left-mounted five-speed 'box



Four-cylinder block no aural masterpiece but still gave over 100bhp per litre

roll-oversteer on approach to a corner; a complete contrast to the Maserati, which slides the rear-end dependent on the amount of throttle applied.

Do not, however, be fooled into thinking that the Squalo is a bad-handling car; it is still very quick round corners, and remains easy to control with a combination of steering and throttle inputs. Maserati 250Fs have been developed over the last 30 years in historic racing and the experts know them inside out. This Ferrari has had little serious testing and is far, far better than I had anticipated. With just minor development it is easily capable of running in the midfield with the mid-'50s GP cars raced today.

I have driven about 15 Maserati 250Fs in the past and this one, chassis 2521, was one I hadn't sat in; so it was a definite bonus. It was great to drive and you quickly remember how much fun they are. You don't really sit in a Maserati when you are out on the track, it's almost as if you are wearing it.

This car is raced regularly by its owner Burkhard von Schenk and on this track, with the historic section at Club Corner, you can really drift and enjoy it; you don't need a steering wheel – you can steer round the corner using the throttle alone and the chassis balance is near perfect. The true indicator of quality, of course, comes when the two cars go head-to-head and with fellow historic racer Martin Stretton at the wheel of the Ferrari, we had the perfect opportunity to compare the two cars sideways by sideways.

It was fascinating. The Maserati had much more power, probably 30 or 40bhp (the car has a state of the art Embrey-prepared engine developing at least 270bhp) but when it came to good, fast corners the Super Squalo stood its ground with comparative ease. Stretton and I seem to have similar driving styles, and pressing hard through corners like the quick Becketts complex there was genuinely very little in it. In fact I was having to try very hard in the corners to stay with the Ferrari.

Staring down its exhaust pipes from the cockpit of the 250F, the Super Squalo actually seemed to have slightly more grip, and certainly appeared to be as comfortable as the 250F at the same speeds. In a longer, faster corner than Club, the Maserati would arguably have an advantage, mainly because of its longer wheelbase and better balance, but it certainly shook me how competitive the car from Maranello showed itself to be. In slow corners, in fact, I would suggest that the Squalo is better at transmitting the power to the road, even allowing for the fact that it had slightly less to transmit.

'Do not be fooled into thinking the Squalo is a bad-handling car; it is still very quick round corners'

With hindsight, it is easy to blame outside events for the short life-span of Aurelio Lampredi's 555 Super Squalo. Mercedes W196-beater it most definitely wasn't. Neither was it a Grand Prix failure. The low-riding, wide-bodied 'Shark' was arguably just races away from being developed into a consistent, front-running racer when Lancia's altruistic gesture halted any further development.

So next time you glance through the history books and read about the ignominious period that Ferrari went through in the mid-1950s, don't blame it all on the Super Squalo. It really wasn't that bad...

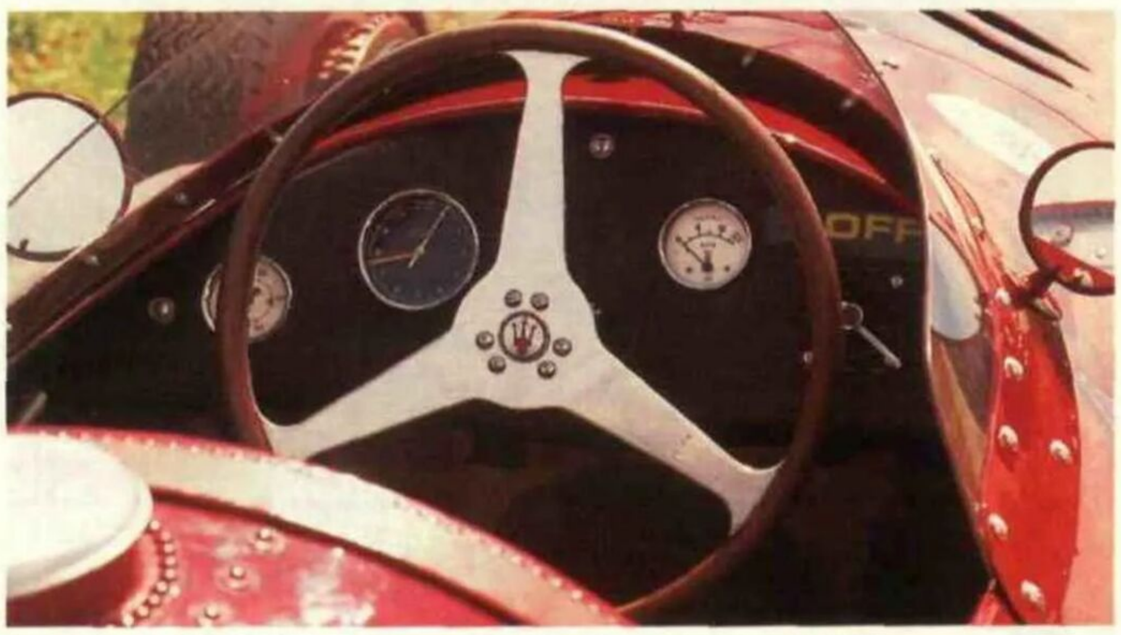
Thanks to Nick Harley, Burkhard von Schenk, Silverstone Circuits Ltd (01327 857271) for the loan of the track and the organisers of the Coys International Historic Festival. M



Maserati's 250F is perhaps the archetypal monoposto racer of the 1950s



Air deflector less crafted than Super Squalo version but effective nevertheless



Spartan cockpit is complete contrast to Ferrari. Note 10,000rpm on counter



Roar of 2.5-litre six has the edge over Squalo. It is up in power stakes, too