F1 RACING

NIGEL ROEBUCK ON...

THE 'EXCEPTIONAL' MAN WHO DIED FOR HIS PASSION

MAX OFF THE CHAIN!

F1'S LION HAS CONQUERED HIS DEMONS AND MADE RED BULL-HONDA HIS TEAM. NOW TO TAKE DOWN LEWIS

IS KUBICA'S DREAM A STEP TOO FAR?

WHY HIS HEROIC COMEBACK HAS HIT THE SKIDS

Upfront with the man behind Alfa's F1 renaissance

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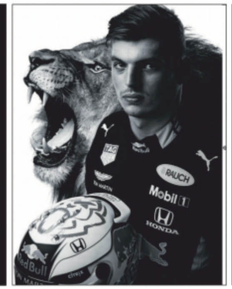
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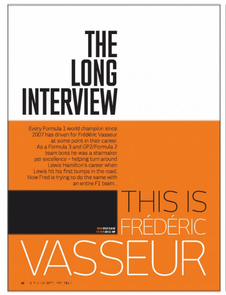
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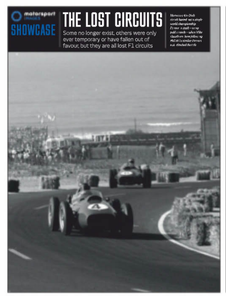


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Ben Anderson
@BenAndersonAuto
facebook.com/f1racingmag
instagram.com/f1_racing_mag

Contributors



ADRIAN MYERS
Ace photographer Adrian travelled to Belgium to capture Red Bull star Max Verstappen for our cover this month



STUART CODLING
A busy month for Stuart. He interviewed both Robert Kubica (p58) and Frédéric Vasseur (p66), on top of his usual 'Flat Chat' column (p114)



JAKE BOXALL-LEGGE
This month our techincal editor recalls the last race-winning McLaren, the MP4-27, in our 'Now That Was A Car' feature (p74)



PAT SYMONDS
Formula 1's chief technical officer delves into the scary world of artificial intelligence in his regular column on page 26

The guard is ready for changing at Ferrari

Seeing the dynamic of power shift within a Formula 1 team is rather like watching the sun rise at dawn. You first become faintly aware of a brightening of the sky as time ticks by, before the new day is suddenly there in all its glory.

We've been aware for some time that Charles Leclerc would probably, eventually – through the unstoppable passage of time as much as his sheer driving talent – become the main man at Ferrari. But the manner of his first two grand prix victories – fending off Mercedes while his four-time champion team-mate made rookie mistakes and played a subjacent role – has suddenly rendered the new dynamic at Ferrari crystal clear.

What's happening to Sebastian Vettel happens to most drivers eventually. Rather like in politics, all racing careers end in failure – once someone younger, stronger and faster comes along. Vettel's been here before of course, when Daniel Ricciardo bounded into Red Bull all sunshine, big smiles and race victories against the odds in 2014. Vettel bounced off to Ferrari come season's end. He must surely be considering whether history will soon repeat itself, especially after seeing Fernando Alonso sniffing around the Monza paddock...

Ricciardo subsequently went through something similar with this month's cover star: Max Verstappen. Eventually, Verstappen just proved too relentlessly good for Ricciardo to live with. Daniel surely became faintly aware of the balance of power shifting subtly within Red Bull, and decided to seek pastures new rather than fight the irresistible tide.

Verstappen has driven superbly over the past 12 months, to the point where Red Bull considers him F1's most in-form driver. Nico Rosberg shares that opinion, or he did until Verstappen blotted his blemish-free copybook with a first lap crash at Spa.

Rosberg claimed that first-corner collision with Kimi Räikkönen suggested Max was back to his "old self" (ie over-zealous), but that's unfair. True, Max was keen to make up for a poor start, but Räikkönen also turned as though no other cars existed. This was not the banzai Max of yore, nor at Monza either.

In any case, Rosberg has since felt the full force of Verstappen's tongue. Max has never been afraid to speak his mind and went on the attack, describing Rosberg as having "no charisma" and becoming "the new Jacques Villeneueve" by giving controversial opinions just to gain attention. Ouch!

Max was in good form too when we sat down to interview him for this edition of *F1 Racing* (see page 48), discussing the remarkable transformation he's undergone over the past year or so. It's clear he has matured, elevating him close to Lewis Hamilton's level in terms of consistency as well as pure performance. Leclerc is showing signs he too will very soon belong in that elite club. As for Vettel, well, the day is always darkest before the dawn.

Team principals
Editor Ben Anderson
Editor in chief Andrew van de Burgt
President, Motorsport Network James Allen
Chief executive officer Yavor Efremov

Drivers
Group managing editor Stewart Williams
Executive editor Stuart Codling
Associate editor James Roberts
Art editor Frank Foster

Pit crew
Head photographer Steven Tee
Technical editor Jake Boxall-Legge
Columnists Edd Straw, Pat Symonds, Mark Gallagher, Nigel Roebuck
Photo agency Motorsport Images
Director, global client success Sunita Davies
Production controller Ben Webster

Advertising
UK sales manager Ben Fullick
Editorial tel +44 (0)20 3405 8100

Subscriptions
Email: help@asm.secureorder.co.uk
Customer hotline/back issues 0344 848 8826
Digital marketing manager Kaye Benfield

Partners
Australia, Mexico, Poland, Turkey

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F1 PARADE
motorsport IMAGES

Monza christens a new Ferrari hero

For the podium ceremony at the Italian Grand Prix, I managed to photograph the celebrations from a very special vantage point: the Paddock Club suite that belonged to Mercedes.

It's always a great moment, but that is increased to the power of ten when a Ferrari driver wins their home race. The last time was when Fernando Alonso won nine years ago and I'd forgotten how passionate the *tifosi* can get.

No one can begrudge them victory. It's a little like a football crowd and the whole race was full of 'oooh's' and 'aahhh's' from the fans when the Mercedes drivers made mistakes at Turn 1.



Photographer
Steven Tee
Where Monza, Italy
When 4.46pm, Sunday 8 September 2019

Details Canon EOS-1DX MkII, 31mm lens, 1/1000th @ F4.0



F1 PARADE
motorsport IMAGES

Lewis going to the limit – and beyond

Right at the start of second practice, on Friday afternoon at Monza, I stood at the second chicane and began shooting the cars head-on.

Very quickly I noticed that a few drivers were running wide out of the second part of the Della Roggia and decided to photograph a rear-facing angle instead.

On one of his very first laps, Lewis Hamilton ran wide over the kerb and struck the gravel trap, sending stones flying up into the air. You can get an appreciation of how hard he's pushing as he's also ripped up the paint from the kerbs as well.



Photographer
Glenn Dunbar

Where Monza, Italy
When 3.08pm, Friday 6 September 2019

Details Canon EOS-1DX MkII, 600mm lens, 1/1000th @ F5.0

F1 PARADE
motorsport IMAGES

Muted applause after tragedy

Charles Leclerc ended Ferrari's win drought (which extended back to Austin last year) under difficult circumstances following the tragic accident that befell Formula 2 racer Anthonie Hubert the day before.

Unlike other circuits, there is no cool-down lap at the end of the race and the drivers round La Source and immediately drive the wrong-way up the pitlane towards the podium.

I anticipated the Ferrari team greeting Leclerc in the middle of the pitlane and moved into position a few laps before the end of the race. I managed to grab this shot on a wide angle lens and hoped my ankle wouldn't get clipped by his wing.



Photographer
Andy Hone
Where Spa, Belgium
When 4.37pm, Sunday 1 September 2019

Details Canon EOS-1DX MkII, 23mm lens, 1/1000th @ F4.0

Home hero scales heights in the hills

On a Friday morning I often spend a bit of time in the pitlane before heading out onto the track. At Spa, towards the end of FP1, I headed down the hill towards Eau Rouge and positioned myself at the end of the old pits.

There is much more restriction about where we can stand compared to previous years, so I was forced to stay in this spot until the end of the first practice session.

I arrived at Eau Rouge as home hero Max Verstappen came through at full tilt and created this shower of sparks. What I particularly like about this shot is how the colours of the Red Bull logo matched the kerbs on the side of the track.



Photographer
Glenn Dunbar
Where Spa, Belgium
When 12.24pm, Friday 30 August 2019

Details Canon EOS-1DX MkII, 600mm lens, 1/100th @ F4.0



F1 PARADE
motorsport IMAGES

A perfect view of Spa's first-lap chaos

La Source, the first corner at Spa-Francorchamps, is always one of the most notorious places on the Formula 1 calendar for incidents.

A combination of its tight radius plus the short sprint from the grid to the braking zone often causes cars to trip over each other on the opening lap of the grand prix.

This year was no exception as Max Verstappen and Kimi Räikkönen (in the air) came together at the apex.

I managed to get into a building on the other side of the track and from here you can also spot my colleague Steven Tee on the inside of La Source, as well as F1 TV cameraman Jean-Michel Tibi.



Photographer
Mark Sutton

Where Spa, Belgium
When 3.13pm, Sunday 1 September 2019

Details Nikon D5, 70mm lens, 1/1600th @ F7.1



JONATHAN NOBLE

@NobleF1

facebook.com/f1racingmag

PICTURES motorsport IMAGES



Team harmony and his early-season form were factors in Bottas securing a fourth season with Mercedes

WHY MERCEDES CHOSE BOTTAS

01

Twelve months on from the doomed handshake between Mercedes' Toto Wolff and Renault's Cyril Abiteboul that left Esteban Ocon on the Formula 1 sidelines for 2019, the two team bosses have buried their differences and sorted a deal for the French youngster to join the French car manufacturer next season. It is, in part, the future of Ocon that has resulted in Mercedes retaining Valtteri Bottas for 2020, rather than plumping for Ocon.

The scenario of Ocon moving to Renault had looked incredibly hard to believe, given that this time last year Wolff was left deeply upset when, following that handshake with Abiteboul that Ocon would be given a seat, things subsequently fell apart.

When Daniel Ricciardo suddenly came available, and Abiteboul sensed a chance to sign a big name and annoy his nemesis Red Bull, Ocon was left high and dry – and consigned to a year as reserve at Mercedes.

Sitting in the wings, Ocon was in the perfect spot to move up to a Mercedes race seat for 2020 if Bottas had not recovered from the struggles he faced in 2018.

But the resurgent form of Bottas at the start of the season appeared to put paid to Ocon's hopes, even though the Finn suffered a few 'wobbles' in his bid to get on terms with team-mate Lewis Hamilton.

Despite Ocon's clear potential, and Mercedes' belief that he has a bright future in F1, in the end the team came to the conclusion that his long-term prospects were better served if he was allowed to mature and develop elsewhere.

As Pierre Gasly has shown at Red Bull, getting promoted too quickly and being thrust into the pressure cooker environment of a race-winning car alongside an A-list team-mate, can risk crushing you if you are not ready.

That is why in the end, even though Mercedes accepts that Bottas has areas where he needs to improve, it felt better to stick with a known known in dealing with the almost unstoppable force that is Lewis Hamilton, than head into a season with all its hopes on Ocon and it then proves to be too soon for him. That was not a risk worth taking, especially with time on Ocon's side.

> "WE HAD VERY DIFFICULT YEARS BETWEEN NICO AND LEWIS, IT WAS VERY BAD IN TERMS OF ATMOSPHERE AND COLLABORATIVE SPIRIT. THAT IS ONE REASON FOR THIS CHOICE"
>
> TOTO WOLFF

Wolff is clear that for Ocon, going up against Ricciardo at a team that should be fighting for podiums, is a better step for his career development than having the pressure to pull together a title campaign against Hamilton in what would be only his third full season in F1.

"After a year without a seat, it was time to decide if we could save him," explained Wolff, who has released Ocon to Renault as part of its two-year deal. "He would have liked to be next to Lewis, who is at the top, but is this a good time? I think that the situation at Renault, as a French driver, in a French factory team, with Ricciardo as a reference, is better for his career.

"He is 22 and can have a 15-year career in F1. We forget that even very good people like Nico Rosberg spent four or five years at Williams. I'm not comparing Williams with Renault, but I think there are a lot of arguments that go well for Esteban and Renault, and a lot of arguments that go well for Valtteri, who deserves to stay in our team."

Another factor for Bottas getting the nod over Ocon is that Mercedes has been able to put behind it the conflict that marred the Hamilton/Rosberg years. A calmer atmosphere not only makes life easier for the team, but also helps Hamilton find the comfort zone he needs to perform at his very best, without having to waste negative energy on dealing with team-mate confrontations.

Wolff added: "We had very difficult years between Nico and Lewis, with controversy, rivalry and animosity. It was very bad in terms of atmosphere and collaborative spirit. That is one reason for this choice."

The move to place Ocon at Renault has left Nico Hülkenberg looking for a seat, with all the indicators pointing him towards Haas if the outfit decides it needs a change and wants to replace Romain Grosjean.

Hülkenberg had been keeping a close watch on developments at Red Bull, but the decision to move Gasly to Toro Rosso, plus the way that replacement Alex Albon has stepped in so confidently, suggests the Thai driver will likely be given more time to show what he can do before Red Bull thinks about casting its net wider.

PICTURES: GLENN DUNBAR; DOM ROMNEY; JOE PORTLOCK; ZAK MAUGER. ILLUSTRATION: BENJAMIN WACHENJE

ARE THE LATEST RULES BLACK AND WHITE?

02



The penalty after the Vettel/Hamilton incident in Canada went against the new 'let them race' attitude

They say in sport that you never notice the referee until he makes a bad call, and Formula 1 certainly does not escape from that. It is particularly controversial when it involves driving standards, as the sport constantly bounces between coming down hard on unsportsmanlike conduct and giving drivers freedom to race.

Up until last year the approach was to keep drivers on a tight leash and punish any infraction. More recently things have become more relaxed as new F1 race director Michael Masi has brought with him a fresh attitude.

When Masi began his role he had a long chat with drivers and team managers at the Bahrain Grand Prix about what they would like to see. The consensus to him ▶

was fewer penalties and to embrace a 'let them race' attitude.

Matters got clouded in Canada when Sebastian Vettel's penalty for rejoining the track and forcing Lewis Hamilton wide firmly divided opinion, but after the summer break Masi brought with him a different approach to sorting things.

Rather than the previous tactic of him reporting incidents to the stewards for them to judge if a rules breach had taken place, Masi introduced a new warning system. If, at any time, he feels that drivers have done something that is borderline, he will issue a black and white warning flag. Should the driver repeat their infraction, then a penalty will follow.

F1 is a sport where teams and drivers push to the limit and it has not taken long for the sceptics to voice concern that Masi's attitude will have unintended consequences.

After the Italian GP, when it was argued that Charles Leclerc had been willing to take more risks battling with Lewis Hamilton because he knew he'd get a warning first, Mercedes boss Toto Wolff suggested a can of worms had been opened.

"I have enough of my own problems to solve that I don't want to have Michael Masi's problems on top of that," Wolff said. "There will be more cars touching and that will be more common. In my opinion it's going to go to the point that it will end up in a collision. Until then, we let them race."

Masi does not see things that way, and says issuing the black and white flag does not prevent stewards handing out penalties for first offences if they feel drivers have crossed the line.

"I don't think they will act more dangerous," said Masi about concerns over the unintended consequences of the flag. "They may look at things more, but they are on the border and you can step over that border relatively easily. It is ultimately the stewards decision if someone gets penalised. The bad sportsmanship flag is me, but if the stewards feel there is more to it, they absolutely have the capability of issuing a penalty."



Anthoine Hubert died during the F2 feature race at the Belgian GP

HUBERT DEATH HITS F1 HARD

03 **The death of Formula 2 driver** Anthoine Hubert at the Belgian Grand Prix hit the F1 community hard, and served as a harsh reminder that the quest for safety can never stop.

Hubert died after his car was hit side-on by Juan Manuel Correa in the run off area at Raidillon, following a multi-car collision on the second lap of that weekend's feature race. Correa remains in hospital and, as *F1 Racing* closed for press, had been placed in an induced coma to try to aid his recovery.

The incident was the first fatality at a grand prix weekend that many in F1 had experienced, and was especially hard for drivers and team people to deal with.

One of those most badly affected by Hubert's death was ▶

F1 DIGEST THE MONTH'S BIG STORIES AT A GLANCE

22.08.19 Formula 1 releases first images of 2021 car windtunnel model



27.08.19 Spanish Grand Prix renews contract for one more year

29.08.19 Formula 1 confirms 22-race 2020 calendar, with seven pairs of back-to-back races

29.08.19 Teams agree to reduced test schedule for 2020

30.08.19 New race formats set to be trialled next season

30.08.19 Sergio Pérez signs new Racing Point deal, keeping him at the team until at least 2022



04.09.19 Monza secures five-year contract extension



09.09.19 Haas and Rich Energy terminate title sponsorship deal

13.09.19 Williams renews Mercedes engine deal until end of 2025

PICTURES: JOE PORTLOCK; FORMULA 1; GLENN DUNBAR; JERRY ANDRE





The Formula 1 community as a whole remembered Hubert at Spa

Pierre Gasly, who had been a flatmate of the Renault junior driver during the time they were climbing up the motor racing ladder together. For Monza, Gasly wore a special helmet as tribute to his friend.

"You're not ready at 23 to live this kind of moment, to lose one of your best mates," Gasly said. "I've grown up with this guy since I was seven in karting, we've been living in the same apartment for six years. We've been classmates, I've studied since I was 13 until 19 with him, with the same professor, [in the] private school that the federation did. I'm still shocked. I don't realise how it can go so fast."

Lewis Hamilton labelled Hubert a 'hero', while Belgian GP race winner Charles Leclerc dedicated his victory to him, as well as carrying a 'RIP Tonio' sticker on his steering wheel.

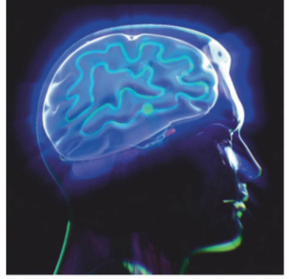
Even some of the more experienced men struggled to cope with what happened. Daniel Ricciardo, who got to know Hubert because he was part of Renault's young driver programme, confessed he had pondered not racing at Spa.

"Saturday night I was questioning morally what was correct and if we should race and if that was the right thing to do," said the Australian. "But also I went through scenarios that if I did get in the car and felt it wasn't right or felt a form of fear, then I felt it was probably not worth doing the race with that kind of state of mind.

"When I went into the car on Sunday, it didn't feel nice. I wasn't sure I wanted to be out there. Once we got going and did my laps to the grid, and went through Eau Rouge and all that, it actually felt OK. So I established it was a sadness and not a fear. If it was a fear then I wouldn't be racing."

The FIA's investigation into the Hubert accident has already begun, with F1 race director Michael Masi saying the work will take as long as is needed to understand the factors behind the crash.

> "YOU'RE NOT READY AT 23 TO LIVE THIS KIND OF MOMENT, TO LOSE ONE OF YOUR BEST MATES. I'VE GROWN UP WITH THIS GUY SINCE I WAS SEVEN IN KARTING"
> PIERRE GASLY



F1 MASTERMIND

Your chosen specialised subject: the world's greatest sport

Q1 Up to and including Monza, which two drivers have completed a 2019 racing lap in every single position from first to 20th?

Q2 Who was the last Italian to win a world championship F1 race?

Q3 Charles Leclerc's first Formula 1 win came on his 34th start. Which three of the other seven current race-winning drivers took more starts to claim their first victory?

Q4 In their first four full seasons in Formula 1, which driver finished third, second, second and first in the championship?

Q5 True or false: the last world championship F1 race to be over 250 miles in length was the 1966 US GP at Watkins Glen?

Q6 Dijon held six world championship races. Five were French GPs but what was the sixth?

Q7 When was the last hat-trick of win, pole and fastest lap in the same race achieved, and which driver managed the feat?

Q8 How many times did Karun Chandhok and Narain Karthikeyan, the only two Indians to have raced in F1, start the same GP?

Q9 How many of the 13 Portuguese GPs held at Estoril did Williams win: 5, 6 or 7?

Q10 What was the relationship between the two Winkelhocks to have started an F1 race?

Q11 Which are the only two races this season in which Lewis Hamilton has failed to lead a lap?

Q12 Three circuits have held the Belgian Grand Prix: Spa-Francorchamps and Zolder are the obvious two but which is the third?

1 Sebastian Vettel and Valtteri Bottas **2** Jarno Trulli **3** Kimi Räikkönen (35), Daniel Ricciardo (57), Valtteri Bottas (81) **4** Damon Hill **5** True, it was 253 miles long **6** The Swiss GP (1982) **7** Abu Dhabi 2017, Valtteri Bottas **8** 0 **9** 6 **10** Father (Manfred) and son (Markus). Manfred's brother Joachim never qualified for a race **11** Australia and Italy **12** Nivelles in 1972 and 1974

PICTURE: MARK SUTTON

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HERE'S AN F1 DRIVER WE MADE EARLIER...

Formula 1 teams have always coveted the next big thing; the new Senna, Schumacher or Hamilton who will lead them to the promised land of domination. But the strike rate for those who have attempted what often seems akin to alchemy by 'growing their own' has been patchy to the point where successes are few and far between. So how do you bake the perfect Formula 1 driver?

It's important to recognise how high the bar is. Top teams don't want to produce a mere 'good' grand prix driver – there are plenty of those and, in a buyer's market, they are readily available. This is about finding a gold-standard driver, someone who can not only win races, but do so consistently and put together a serious title challenge in the right car. On the current grid, only Lewis Hamilton and Max Verstappen are bankers when it comes to that, with Daniel Ricciardo, Sebastian Vettel (historically) and Charles Leclerc (emerging) also close to that strata.

Take Red Bull's junior scheme. Regularly pilloried as a savage and uncaring conveyor belt, it has nonetheless produced two of the drivers mentioned above. Considering there are only 33 world champions, to have produced Vettel and the possible 34th of those in Verstappen is a good strike rate despite the vast number of drivers who have passed through that scheme.



Red Bull's junior scheme may not have worked – yet – for Pierre Gasly but it has produced two gold-standard drivers on the grid

It does provide us with plenty of case studies. Contrary to the perception of the scheme, it's not as callously sink-or-swim as some perceive. Drivers are given access to all the support and training they need, although it does also require the members of the scheme to be proactive in using them. Helmut Marko takes a very active interest in their careers, and while he is famous for pulling no punches in his dealings with them it's correct to be demanding in the extreme. To thrive in elite sport, you have to be tough. That's why Marko respects the drivers who are able to thrive in adversity on the way to F1 – a challenge some fail to meet. You'll never become a world champion if you blame everyone but yourself.

Recently, Hamilton talked about how easy it is to underestimate just how good grand prix drivers are. He's right, doubly so when it comes to one as good as he is. They aren't superhuman, as people often say, but they are finely-honed athletes combining the physical skills – feel, reactions, fitness – needed to excel with the intellect, the mindset of champions. That's far more impressive than if they were just magically born with this ability. The seeds of talent may be innate, but they germinate and thrive based on the way they are cultivated.

Many drivers tick most of the boxes required of a great driver to become true masters of their craft, but precious few tick them all. So it stands to reason the strike rate will be poor. There is no precise way to nurture a great driver simply because of the way they are prepared. Drivers emerge with great potential at some point or another in their career, but gradually they fall by the wayside. How many superb karters never make a name in cars? How many who thrive in entry-level categories like Formula Ford lose momentum? Every new rung of the ladder asks tougher questions of the drivers until they reach the apex of the motorsport pyramid.

What is vital is that they answer them at every level, something that McLaren's Martin Whitmarsh knew while overseeing Hamilton's rise to F1. This led to a momentary separation between McLaren and Hamilton when an attempt was made to step up from F3 to GP2 a year early – before it was realised just how difficult it is to raise such a budget. Back in the fold, Hamilton dominated the F3 Euro Series and the rest is history. Perhaps there is a lesson in that for Red Bull?

Speed is a given, but most drivers in F1 can lap within a few tenths of each other on any given lap. The trick is to be as close to the ultimate lap time (defined by the laws of physics) as often as possible. While doing that, you must be capable of thriving in battle and making game-changing moves that can transform races. Hamilton and Verstappen can do that, but a driver like Valtteri Bottas can't.

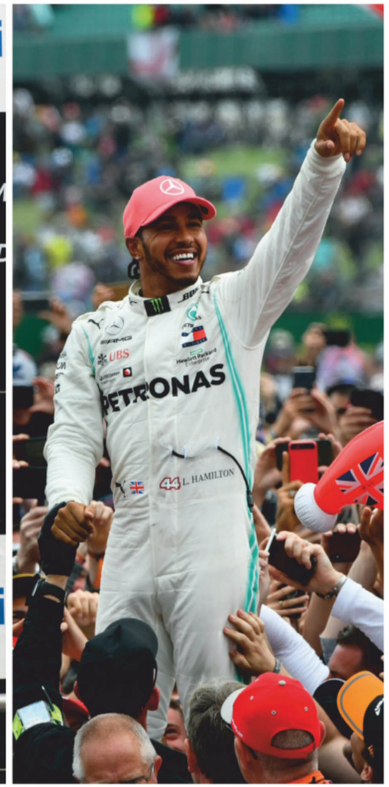
Pierre Gasly is a fascinating example of a driver who lost the plot once in a top car. He struggled to look within himself for the answers and allowed himself to be dragged into a rabbit hole of constant set-up changes, chasing the ideal balance for one corner and losing it at another. He also made seven seat changes in an attempt to get 'comfortable' – but the problem was with the man in the cockpit. Asked the toughest questions, he was found wanting. A good driver, but probably not a great one.

PICTURES: MARK SUTTON; ERCOLE COLOMBO; RAINER SCHLEGELMILCH. ILLUSTRATION: BENJAMIN WACHENJE



Teams are always on the lookout for the next 'big' thing, the next Senna, Schumacher or Hamilton





The word probably is used because coping with adversity is a vital ingredient for a great driver. It can certainly lead to improvements, as Daniil Kvyat has shown. Last time round, particularly once relegated back to Toro Rosso, he lost the plot. Even when quick, he struggled to string weekends together and ended up scoring a fraction of the points of team-mate Carlos Sainz. But Kvyat's returned this season a more rounded, capable, phlegmatic driver – and therefore more consistent. The year out of a race seat proved crucial in making him stronger.

"The results don't come in one day," explains Kvyat. "The year off for me was so important to be able to rebuild myself mentally, to find my path and to be able to follow it now every weekend."

There is no way to be sure who might benefit from a sabbatical – some will return triumphant, others will disappear. Some drivers, like Hamilton and Verstappen, don't need that kind of break to regroup, but even they have had phases of their careers where they have lost the plot and made too many errors. The trick is learning from them.

> "IT'S RARELY TEAMS' TREATMENT, OR MALTREATMENT, THAT DEFINES SUCCESS OR FAILURE – THAT COMES FROM DEEP WITHIN THE DRIVERS THEMSELVES"

For those cultivating these talents, you can never be absolutely certain. When Verstappen had his run of blunders last year, even the team recognised there was a danger he might just turn into a super-fast Pastor Maldonado. Instead, he came out of the trough an even more formidable driver.

There is no rulebook to follow. All you can do is give chances and support. It's rarely teams' treatment, or maltreatment, that defines the success or failure – that comes from deep within the drivers themselves. And that can only emerge through exposing them in battle, testing them and seeing how they respond. Most crumble eventually, but those precious few who don't are the Sennas, Schumachers and Hamiltons of this world.

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UNDER THE HOOD

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PICTURES motorsport IMAGES

SHOULD WE RAGE AGAINST THE MACHINES?

In 1999, when I was technical director at Benetton, I started a project to apply linear neural networks – the keys to teaching computers to classify information in the same way as a human brain – to investigate the relationship between car set-up and how well the driver rated the handling of the car.

In those days, we wrote our own data analysis software and indeed built our own data acquisition systems as there were no proprietary products that approached our requirements. This made it reasonably easy to embed the electronic setup sheet into the header of the downloaded data. I also devised a very precise way of encouraging the drivers to be less subjective in their description using a flow chart that related their difficulty in a corner and their perceived loss of time to a single rating from one to five.

The final part of the infrastructure at that time was a separate Oracle SQL database that held all our data, setup sheets and driver comments. It could be interrogated in many ways. This was useful in that, if you were considering trying, say, a stiffer front roll bar, you could query the database for every time you had changed from a type 1 to a type 2 front anti-roll bar and it would come up with the set-up, data and driver comments.



Data analysis is the cornerstone of an F1 team's simulations but it could go much further

In itself this was a useful tool, but it still relied on the engineer to make decisions. My dream was to automate this and hence I engaged Sheffield University to work with us on a very early form of machine learning. The aim was that once the system was trained it would look at the data – particularly the understeer curve – and the driver comments and suggest what might be the best set-up change to make.

In reality we were a bit too far ahead of our time and the software available and computing power we could bring to bear on it was nowhere near advanced enough for this first foray into exploiting automatic analytics on 'big' data. Ultimately the system was never used in anger.

Fast forward 20 years and machine learning and artificial intelligence are phrases heard in many different contexts. In Formula 1 we are using Amazon's machine learning tools to bring you the analytics that are starting to appear in real time on the television feed. This will expand in the future to provide far more insight into what is happening in the races.

Within the teams such techniques, in various guises, are now common place. For example, race strategy software has developed from the extremely simple time-minimisation calculations, through more intense statistical techniques which examined probabilities in a relatively dumb way, to complex machine-learning techniques employing a mixture of learning and game theory to suggest strategies likely to give a good outcome through changing scenarios. This has led to the number of simulations for this one aspect of race preparation increasing from around 150,000 runs 10 years ago to over 1.75 million today.

Equally, with car set-up the use of optimisation techniques has advanced rapidly and now the teams arrive at a race track with configurations that approach perfection. Friday practice sessions allow the 'old fashioned' tuning to take into account local environmental factors, such as track temperature and wind direction, to get ever closer to the consummate configuration.

However, we must question whether in sport it is correct to abrogate such decisions to machines. True our sport is a mixture of human physical endeavour and human machine design, but if we approach singularity in this domain specific arena the jeopardy that forms the prime motivator of spectator sport disappears.

Both MIT and Oxford University are setting up departments to study the ethics of artificial intelligence thanks to the ▶

PICTURES: SAM BLOXHAM; MARK SUTTON; ILLUSTRATION: BENJAMIN WACHENJE

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"You Can't Drive Money" - Jerry Seinfeld



1957 Porsche 356A "Outlaw"
Restored by 356 expert Don Emory. 100hp+ est. engine installed, with matching numbers engine included with car. Has original sales contract, owners manual, Porsche maintenance booklet.



1988 Porsche 911 Turbo Coupe
6,747 miles since new. **Matching numbers engine & transmission, major comprehensive service by Porsche Classic and Canepa.** Has service/mileage docs, Porsche COA, original window sticker.



1965 Porsche 911
Early series Porsche 911. **Matching numbers engine and transmission, three owners since new, California car for over 50 years.** 183 miles driven since a full restoration by CarParcUSA.



1961 Porsche 356B Super 90 GT
1 of 9 Super 90 GTs produced in 1961, 1 of 14 total examples built. Matching numbers, original lightweight body panels and GT parts. Award-winning nut-and-bolt restoration by Willhoit Auto Restoration.

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Computers and data are a huge part of F1 but machine learning could be a step too far

philanthropy of Stephen Schwarzman, but in this context we are not really considering ethics. Instead we are considering spectacle, probability, risk and all those other inputs that release endorphins and cause the state we know as excitement.

The neurology of watching sport has been studied in depth. An avid fan is immersed in his sport, he almost imagines he is participating in it and wants to be involved in the actions. The human brain therefore becomes a player in the game but that brain has limitations. The neurons that transmit information through the cerebral cortex fire between 350 and 450 times a second. A good laptop can process over 150 million instructions per second, so when it comes to processing vast amounts of information and drawing conclusions the human comes a distant second to any form of well-conditioned artificial intelligence algorithm.

> IT IS FOR THIS VERY REASON WE SHOULD RESIST MACHINE LEARNING IN THE DETERMINATION OF EXCELLENCE IN SPORT

It is this excellence that is abhorrent to any fan of sport, and one which I feel will rob us of all those uncertainties that provide the excitement and spectacle. We would never dream of putting stability control on a race car even though it is mandatory on road cars and intervenes whenever it detects the human in control is not up to the job. It is for this very reason we should resist machine learning in the determination of excellence in sport.

Thirty years before our experiments at Benetton, Stanley Kubrick released the classic film *2001: A Space Odyssey*. Fans of the film will know how HAL, the computer running the spacecraft, overruled the human in charge. How long before, as Lewis Hamilton turns the knobs on his steering wheel to give more corner entry differential lock to help his oversteer on turn-in at the expense of some front tyre wear, we hear the prophetic voice of a Mercedes F1 car saying: "I am sorry Lewis I am afraid I can't do that. This mission is too important for me to allow you to jeopardize it."

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STRAIGHT TALK

MARK GALLAGHER

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FROM BAD TO WORSE FOR RICCIARDO

"I'll probably wave at him when I go to lap him next year."

Max Verstappen's response last year to news of Daniel Ricciardo's move to Renault was short, succinct – and, unfortunately for the likeable Australian, decidedly prescient.

Whatever the sporting wisdom of quitting Red Bull for Renault, there was no doubting that the financial terms of his new agreement were good, reportedly giving the joyful Australian twenty million more reasons to smile.

Stepping into a car unlikely to add to his record of seven grand prix victories any time soon, Ricciardo will have had to reset his expectations ahead of this season, although perhaps not to the extent of merely battling for points rather than podiums.

Any personal despondency caused by Renault's difficult 2019 season will have been amplified by the £10m court case launched against Ricciardo by former advisor Glenn Beavis in July. This kind of legal mess is always best avoided, but it is a fact of racing drivers' lives that they can find themselves embroiled in expensive and distracting disputes against managers appointed by them in earlier times.

Jenson Button found himself in an unhappy management situation in the mid-2000s. Russell King, a partner in the agency concerned, later gained infamy as the subject of a BBC Panorama investigation entitled 'The Trillion Dollar Con Man'. King was sentenced to a second jail term of six years in May 2019, and Jenson will no doubt look back with relief at having extricated himself from that relationship as early as he did.

Finding the right representation is never an easy task, especially when young racing drivers sign their lives away to those who happen to be helping them in lower formulae. The father-as-manager route is also common, as with Lewis and Anthony Hamilton, while the mate-as-manager is another common mode.

It's all very well having a buddy giving advice when you're racing in Formula Renault, but when you reach Formula 1 and that same person is asking for big chunk of change in return for carrying your bags, reality bites.

Beavis came to the attention of many during Netflix's Drive to Survive series, appearing in Episode 4 as Ricciardo's 'advisor'. During what seemed to me to be a staged-for-the-cameras meeting, the two discussed Ricciardo's future, and Beavis said, "We're in the privileged position of having more than one option."

The use of the first person plural underlined the relationship at the time, but between the announcement of the lucrative Renault deal on August 3rd and the end of last year, Ricciardo determined to move on. To coin a phrase, hell hath no fury like an advisor scorned, so Beavis is claiming 20% of his former client's Renault income.

It's a salutary tale of friendships and professional relationships blurred. Whether a Rolex watch is a personal gift or the commission on a deal is the kind of detail that matters. When gaps are left, misunderstandings take over and can escalate into something more unpleasant.

In the meantime Ricciardo has joined CAA Sports, the management company which looks after stars including Cristiano Ronaldo and Nico Rosberg, and also holds the global sponsorship rights to Formula 1 itself. It will no doubt aid him in deciding whether to settle the Beavis case in order to avoid a protracted legal battle or, in true Honey Badger mode, continue a fierce defence in the face of what Ricciardo sees as a shake-down by a disgruntled former advisor.



It's not been a great 2019 for Ricciardo and the court case from his former advisor won't have helped

PICTURE: SIMON GALLOWAY; ILLUSTRATION: BENJAMIN WACHENJE

THIS MONTH

Jonathan Kendrick

Co-Founder and Chairman, ROK Group

The ROK Group has a broad range of interests in the entertainment and beverages worlds – including ABK, the world's oldest commercial brewery. It's recently launched a new series of ground-breaking smartphones with 3D screens – and for co-founder Jonathan Kendrick, the company's title sponsorship of the Williams F1 team has provided a fascinating connection with times past…

CV

2019 Sponsors Williams F1
2018 Launches ROKiT Phones brand
2007 ROK floated on US stock market
2004 Co-founds ROK Group with Jean Paul Dejoria
2002 Sells voucher business
1996 Starts developing electronic voucher technology with ROK brand
1992 Starts import-export business
1989 Sells distribution rights back to Yokohama
1979 Leaves Goodyear and acquires European motorsport distribution rights for Yokohama tyres
1978 Tyre engineer for Williams Grand Prix Engineering
1974 Starts working in racing division of Goodyear

INTERVIEW STUART GOOLING

F1 Racing: Yours is quite a captivating story – by becoming title sponsor of Williams you've come full circle. So how did you get into Formula 1 in the first place?

Jonathan Kendrick: Well I was born in Wolverhampton, which is a strange place… and it had one of the biggest tyre factories in the world. 7000 people worked there, it was amazing [the former Goodyear plant closed in 2015]. And by quirk of fate, the racing division was based there. Every Goodyear race tyre made outside America was made there.

I got expelled from school at the age of 15 – I've got no qualifications – blagged my way into Goodyear, and a 'gofer' job came up in the racing division, reporting to the marketing manager, a brilliant guy called Tony Gilhome.

I worked my legs off for four years and eventually they sent me to South America to look after this new team called Williams Grand Prix Engineering [1978 was the first full season the team contested, beginning in Argentina]. I was Alan Jones's first tyre engineer, so it's great to be back involved with the team again.

F1R: Times have changed a bit – you could probably have fitted the entire team in a Ford Cortina back then…

JK: Oh yes. In those days you would set up the car by taking the temperature of the tyres. You'd prod them with this gauge, and decide if you needed to change the camber or castor angles.

F1R: You then went on to become a distributor for Yokohama Tyres, didn't you? How did you go from engineer to businessman?

JK: Goodyear shut down its Wolverhampton racing division in 1979, and I left before then because I could see the end was coming. But it left a huge gap in the market, so I just knocked on as many doors as I could all over Europe, and in Japan.

I went to this one little company and told them I knew more about racing tyres in the club market than anyone else, and they gave me the UK distribution rights for their rally tyres. I then hired the former compound designer from Goodyear's racing division and we went to Yokohama and helped design their racing tyre range. They gave me Europe and I was the first sponsor of Eddie Jordan's Formula 3 team.

Yokohama backed both Martin Brundle and Ayrton Senna in 1983 when they were competing against each other in F3. We were going absolute gangbusters. I made a fortune – then I lost it again…

F1R: That's part and parcel of being an entrepreneur though, isn't it?

JK: I always say that failing isn't failure. It's just a stepping stone to the next thing that you've got to learn.

F1R: And what did you learn from that?

JK: I was only 24 and I was very arrogant. At that age you think you know everything. I got into something I shouldn't have got into and lost it all. What did I learn?

Put everything in my wife's name! She said, "You're not going to lose it all again…" And she trusts me just enough that I now have a set of keys to the house. [laughs] Seriously, though, I've gambled on businesses – not in casinos, that's a mug's game – but I always talk to my wife about it. Plus I'm more pragmatic than I used to be.

F1R: You've just entered the mobile phone handset market – a very competitive market where you're up against the likes of Samsung. What drew you to that?

JK: That's a very good question. In everything we do, we look for the "unfair advantage", to quote Colin Chapman. Our handsets are unique. They all come with life services bundled in – you can phone a doctor 24/7. Seventy per cent of all ailments can be fixed over the phone. There's roadside recovery services included too. And our high-end phone is only £249. Our 3D screen is also unique – you don't need glasses. We've got the largest library of 3D films in the world and we've got a technical partnership with NASA, too. The ultimate aim is to become the third biggest handset manufacturer in the world…



PORTRAIT: GLENN DUNBAR

THE CHANGING ROLE OF THE TEST DRIVER

It wasn't so long ago that a test driver's role was a full-time occupation that could lead to a race seat. Today, being a test and reserve driver is a different proposition that doesn't necessarily mean drivers will be match-fit when an opportunity to race arises

WORDS
JAMES ROBERTS
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Anthony Davidson (above) was a huge part of BAR as the team's test driver, but his role was very different to the simulator work that Esteban Ocon (below) has undertaken for Mercedes this year



The art of engineering a Formula 1 car to improve its performance was traditionally a job carried out by a team's race drivers. From the countless laps of Ferrari's proving ground at Modena in the 1950s, to the weeks of running in Rio de Janeiro ahead of the season starting in Brazil in the 1980s, those drivers charged with racing a car would take command of fettling it to their liking.

As technological sophistication developed through the 1990s, teams needed to dedicate more time to perfecting innovative, complex and often temperamental systems, such as active suspension and semi-automatic gearboxes. Consequently the role of the test driver came to prominence. Teams would be on the lookout for up-and-coming talent who could drive consistently, not make mistakes, and offer intelligent feedback.

When Nigel Mansell opted not to partner Alain Prost at Williams for 1993, the team decided to promote test driver Damon Hill into the race squad. He came with a decent if not stellar racing pedigree, was au fait with the FW15C's complicated electronics, and was already a popular member of the team.

Suddenly, this opened a new avenue for drivers wanting to get a race seat: cosy up to a team as a test driver and wait for the cards to fall your way. But as manufacturer involvement and spending increased, being a test driver became such a fundamental part of a team's research and development plan that it evolved into a full-time job itself.

In 2000, up-and-coming racer Anthony Davidson was appointed test driver for British American Racing (BAR), a role he kept for nearly a decade. He reflects on the work then compared with today's test-and-reserve-driver job.

"It's role that changed a lot over the years," he says. "When I was a test driver it was a much more important and active role than it is today – I would drive between 10-15,000km across the year."

Test drivers would depart a grand prix on Saturday evening and fly to one of the European circuits such as Barcelona, Jerez, Paul Ricard or Mugello to commence testing at 9am on Monday morning. After three days behind the wheel they would often be joined by the race drivers and up to three cars would circulate behind closed doors. In those days of limitless running, entire test teams with their own catering facilities ran independently from the race operation.

For testers like Davidson, getting the chance to share the circuit with the race drivers was a golden opportunity to prove his speed, but that was always balanced against the need to focus on the demands of the job.

"All the data was there for the engineers to extrapolate

Test drivers come in all shapes and sizes. For some that is as far as they will go but others use it as a stepping stone to a race seat, or a way of keeping their name in F1



and monitor your performance. Yes, you would be working on slightly different programmes to the race drivers, but it still provided a fantastic benchmark for a young driver to measure themselves.

"It was tough to avoid gunning for a laptime, because first and foremost you were there to test the car and the tyres – and it was during a tyre war," continues Davidson. "The last thing you wanted to do was bin the car in the gravel, and there were a lot more gravel traps back then... There was more jeopardy and you had to keep the thing pointing in the right direction, so there was a lot of pressure. It was a very different role to test driving today and was money-no-object – which wouldn't be allowed any more, but that meant it was full-time and it kept you sharp."

> "IT WAS A VERY DIFFERENT ROLE TO TEST DRIVING TODAY AND WAS MONEY-NO-OBJECT – WHICH WOULDN'T BE ALLOWED ANY MORE, BUT THAT MEANT IT WAS FULL-TIME AND IT KEPT YOU SHARP"
> ANTHONY DAVIDSON

By the mid-2000s the sport's governing body had become alarmed by the disparity between F1's haves and have-nots, and it acted to curtail unlimited running. To provide a more level playing field for smaller operations who couldn't afford permanent testing arrangements, permission was granted to run a third car during Friday practice sessions – where Davidson would often shine. And since he was accompanying the team to every race, he would get the nod if anything happened to either race driver.

Davidson's chance came when Takuma Sato fell ill at the 2005 Malaysian Grand Prix. Here was his golden opportunity, but it couldn't have happened at a worse venue.

"I would have jumped at the chance if was at Silverstone or Barcelona, but Malaysia was tough," says Davidson. "In those days you flew out last minute because you know you would be testing the following week, so I went on Thursday with the senior management. With the eight-hour time difference I was in bits. When I got the call on Saturday morning to say I would be doing qualifying, all I wanted to do was be in bed.

"I had about two hours sleep the whole night. I was thinking why, of all the chances I had, why here? Why now? Give me Barcelona any day."

Davidson started from 15th on the grid but barely got a chance to shine in the race – the Honda in the back of his BAR blew up after just two racing laps.

When the FIA sought further cuts in expenditure and ended in-season testing (save for a few young-driver outings) it







Paul di Resta, 59 starts to his name and Williams' reserve, was still thrown in at the deep end when he was called up for the 2017 Hungarian GP

"NOWADAYS THE TEST DRIVER ROLE DOESN'T MAKE SENSE BECAUSE THERE IS NO TESTING – YOU'RE MAINLY A SIMULATOR DRIVER AND HAVE TO RACE IN OTHER SERIES"
PEDRO DE LA ROSA

changed the nature of what it meant to be a test and reserve driver. In recent years one reserve wasn't even called upon when a substitute was required – on the grounds he had so little experience of the car.

After Sergio Pérez suffered a heavy crash in qualifying for the 2011 Monaco Grand Prix, he travelled to Montréal a fortnight later still suffering the after-effects of his shunt. That year Sauber had young Mexican Esteban Gutiérrez as its official reserve driver but, instead, the team asked McLaren if it could 'borrow' long-time tester Pedro de la Rosa for the weekend.

"When I was a test driver for McLaren, it was a really important role in the team," says de la Rosa today. "Nowadays the test driver role doesn't make sense because there is no testing – you're mainly a simulator driver and have to race in other series."

With in-season testing now at a minimum, contemporary reserve drivers essentially spend hours in the team's simulator at their base running development parts or tweaking setups. Then at races they take on PR appearances and sponsor meet-'n'-greets, even dovetailing media work for television. It's a far cry from spending thousands of hours in the car itself, keeping sharp. Also, the complicated systems on a modern F1 car makes the challenge of instantly stepping into a race seat and performing doubly hard.

When Williams reserve driver Paul di Resta was asked to step in and replace Felipe Massa at the 2017 Hungarian GP, he was significantly under-prepared. He'd spent one day in the simulator pre-season and had never driven a hybrid-era F1 car. The lack of in-season testing has had the side-effect of leaving very few drivers au fait with current machinery.

"I'd read the driver manuals and I'd kept up with briefings throughout the year, but when the decision was made after FP3 on Saturday morning, I thought it was absolutely bonkers to be going straight into qualifying," recalls di Resta. "I thought it was a big ask, but I wasn't going to say no.

"In three timed laps I was only 0.7s off Lance Stroll and I'd never driven on those tyres before. My spatial awareness wasn't there, though, and I struggled with the downforce I was losing in the dirty air of these bigger, beefier cars."

Di Resta didn't finish the race owing to an oil consumption issue, and had to drive with a steering wheel and engineering set up for Massa. But he gained credit for stepping into a virtually impossible situation and not making a mistake.

Any driver keen to become a reserve for an F1 team now doesn't have the luxury that the test driver used to have. It's no longer a viable option unless the team is keen to promote you and spend a year beforehand running you in Friday practice, as McLaren did with Lando Norris last year.

The most prominent driver in F1 not racing this year is Esteban Ocon. After he lost his Racing Point drive to Lance Stroll, Mercedes stepped in to appoint him as its reserve driver. Before every race he is on the simulator, running late into the night at European races, before flying to the track early Saturday morning. He does TV work for Canal+ and attends every debrief, listening and learning. But as he doesn't qualify for the young driver test, every day he spends out of a Formula 1 car blunts his real-world competitiveness.

"There's no better gym than the race car," says Anthony Davidson. "You can only be match fit through driving. A simulator gives you all time you need in a non-pressurised environment to learn the vast number of changes you can make on the steering wheel, and can help develop the car. So it does have its place today, but I would still prefer to have an understanding of the real car."

While Ocon has now got his big chance as a race driver with Renault for 2020, for the moment he can only watch and wait and be patient. If he was called up to replace either Mercedes driver before then, as di Resta found out, it would be difficult to get on the pace right away because there's no substitute for testing the actual car regularly. For cost reasons, that's no longer a viable option for the next generation of talent.

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TYRE ENGINEERING

While **Pirelli** must work to ensure a level playing field in Formula 1, it's also expected to help every team make the most of its products

INTERVIEW STUART CODLING
PICTURES STEVE ETHERINGTON

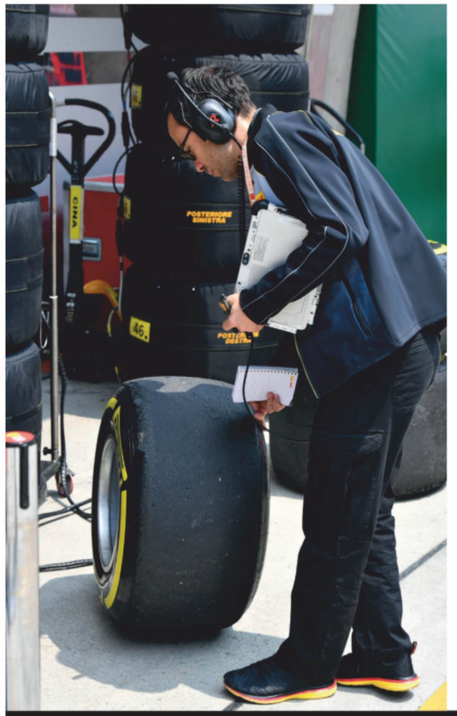
The last time one team was winning championship after championship – Ferrari in the early 2000s – Formula 1 was in the grip of a tyre war and one of the key pillars of Ferrari's dominance was its close relationship with its tyre supplier, Bridgestone. Now just one company supplies the whole grid and its products must be suitable for all – but that doesn't mean it leaves the teams to their own devices.

"We have a lot of systems in place to guarantee equal treatment for the teams," says Pirelli's racing manager, Mario Isola. "Not only the same product, but also the same level of service. Our job is to give them as much information as we can – but the same information – and all the tools to set up their cars to extract the maximum performance from the tyres.

"We assign an engineer to each team to help them maximise their potential and ensure safety. Our engineers' reports are based on a template, so there's consistency there. And we also feed back some information to the teams centrally, so for instance we provide some averages for characteristics such as wear.

"The teams agreed to this because it enables them to compare the results from their car with others in a way that doesn't compromise confidentiality – because we're dealing with averages. At the beginning [when Pirelli first entered F1 as sole supplier in 2011] we were supplying an average of all the teams, but then we were asked to refine this so we now provide what we call 'the favourite five'. Each team chooses five other teams at the beginning of the season from which it wants to receive the average. It's more useful for a team to compare itself with its direct competitors."

On the Thursday of a grand prix weekend the Pirelli engineers hold a pre-event meeting where they discuss



Each team is assigned an engineer and Mabon (below left and opposite) is Pirelli's man at Mercedes



the likely performance characteristics of the compounds that have been selected for that venue. For this season the identity of the compounds have been simplified for the fans in terms of the tyres being labelled soft, medium and hard, but these are just three of five available compounds, so there are great variations between circuits. In Monaco, for instance, the C3 is labelled 'hard' but for Suzuka it's the 'soft'. Later, each engineer will have a separate meeting with their race team to pass on that intelligence.

Peter Mabon is the Pirelli engineer assigned to Mercedes, and his point of contact in the team is trackside engineering director Andrew Shovlin. The Thursday-afternoon meeting is typically devoted to comparing Pirelli's predictions of how the track will evolve over the course of the weekend with the team's own prognostications. Senior engineering staff will be present, sometimes the strategists too.

"For me it's easier to compare if we've already used the compounds," says Mabon, "so at first I'll sort of bounce around where I think we'll be. But that's just off the top ▸


A Pirelli engineer aassigned to each team ensures consistency of information and equal treatment

"WE HAVE A SERVICE TECHNICIAN IN THE GARAGE WHO CLEANS UP THE TYRES SO WE CAN WEAR-CHECK THEM AND BUILD UP A MORE COMPLETE PICTURE"
PETER MABON

of your head. A lot of analysis goes in as well from our modelling department, in terms of the loading we expect to see. We have our starting pressures worked out, and of course the [Mercedes] team is always keen to know if we're likely to change them on Friday night.

"The strategists are most interested in the wear predictions – which axle we think might be limited, or which corner of the car could be a potential limitation. At that stage it's just a very broad overview. Mercedes are very good in that they accept that it's not set early on – we have to wait and see what happens when they're running the tyres. The virtual world is interesting but it's not one of my strengths – I prefer Friday, when we actually get going."

While many fans – and, indeed, media pundits – view Friday's two 90-minute practice sessions as superfluous and unexciting, it's here each team lays down the foundations of its race performance. It's necessarily a scientific process and a hard grind. Most team personnel will clock up over 17 working hours, whether they're operating power tools or poring over telemetry traces.

From a tyre-engineering point of view it's a key opportunity to monitor whether the track is evolving and the tyres are performing (and lasting) as expected. The Pirelli engineer's task is to connect data with practical observations.

"There's a lot you can tell from looking at a tyre," explains Mabon. "Whether there's been any graining or overheating. So, we've got that initial look, but then the useful information is the wear checking. We have a service technician in the garage who cleans up the tyres so we can wear-check them and build up a more complete picture.

"That's the main job on Friday. The team can see from their data what's happening inside the tyre so it's good for them to cross-reference that with what you can see."

Tyre management is crucial at every race although the axle, or corner, under most stress varies between circuits. Different cars put different stresses on their tyres and these observations feed in to the bigger picture of how teams understand the characteristics of their machinery. The measurements of tyre life also have a big effect on race strategies, which is why races with disrupted build-ups tend to be more exciting. Practice stoppages or big swings in the weather means there's less information for teams to work with: in effect, practice is a process of minimising uncertainty.

"From the wear profiles you can see if camber changes or other set-up adjustments are needed, so it's quite fundamental to what we're doing," says Mabon. "I wouldn't ever be so bold as to suggest set-up changes on a Mercedes F1 car, but if you home in on something that may be interesting then it's up to them to act on that information. If you're supplying the information in the correct way then it's quite clear to them what to do next in terms of set-up changes between FP1 and FP2, for instance.

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"THE KEY IS TO KNOW WHAT TO COMMENT ON AND WHAT WILL JUST CAUSE CONFUSION. THAT'S WHERE EXPERIENCE COMES IN"
PETER MABON

"Maybe in other categories of racing the tyre engineer could be expected to come up with these sorts of solutions, but it's not something I've seen in nine years in this paddock that's terribly appreciated!"

Mabon spends each session in the pitlane, checking the tyres as soon as the car comes in.

"It's nice to see them when they're hot, because even then you might see something that can feed in to the bigger picture," he says. "My role is basically to be the eyes and ears for the team, because they've got people back in Brackley as well who are working remotely. If you can fill in some of the pieces it can help them.

"The key is to know what to comment on and what will just cause confusion. That's where experience comes in."

Each team's Pirelli engineer files their template-based report on Friday night ahead of another meeting chaired by Isola in which they digest the day's findings. While the teams might feed this information into set-up changes ahead of FP3, from Pirelli's side it's another opportunity to compare predictions with reality, and it's here the company's simulator specialists might recommend a change in the minimum tyre pressures.

"If the severity of the stress on the tyres is greater than the estimated severity then we will revise the prescription," says Isola, "and we do this only on safety grounds."

If Friday has been dry then FP3 is usually given over to qualifying simulations and performance running, but even then Mercedes likes to receive a report on wear.

"That can also be a tiny little clue to some track evolution," says Mabon. "Say there's been a bit of abrasion on the front tyres on Friday, you can usually put that down to the circuit, and often it goes away. If you clean up the tyres on the Saturday and see it's improving, that's quite nice, but you have to be careful commenting on it because you don't always see a lot of laps completed in FP3."

On the grid the Pirelli engineers are responsible for checking the starting tyre pressures and blanket temperatures, which is a mandatory part of the scrutineering procedure. They'll wear-check during the race as well, but here there's more time pressure because the results of that check are likely to be germane to the strategy for the second car to pit.

"Until that first stop you really don't know for sure where the tyres are going to be," says Mabon. "I know a lot of people think it's quite predictable, but really the Friday running is just a guide. That first stop is critical for what's happening on the day so we have to turn that information around really quickly."

Such intelligence can shape the outcome of races, because even in an era where one-stop races predominate an alternate strategy can deliver victory from an unpromising position. Heartening, in modern times, that eyes, ears and experience feed into these calls as much as squiggles on a computer screen.



Visual inspection of the tyres is crucial, as is track and tyre temperature data



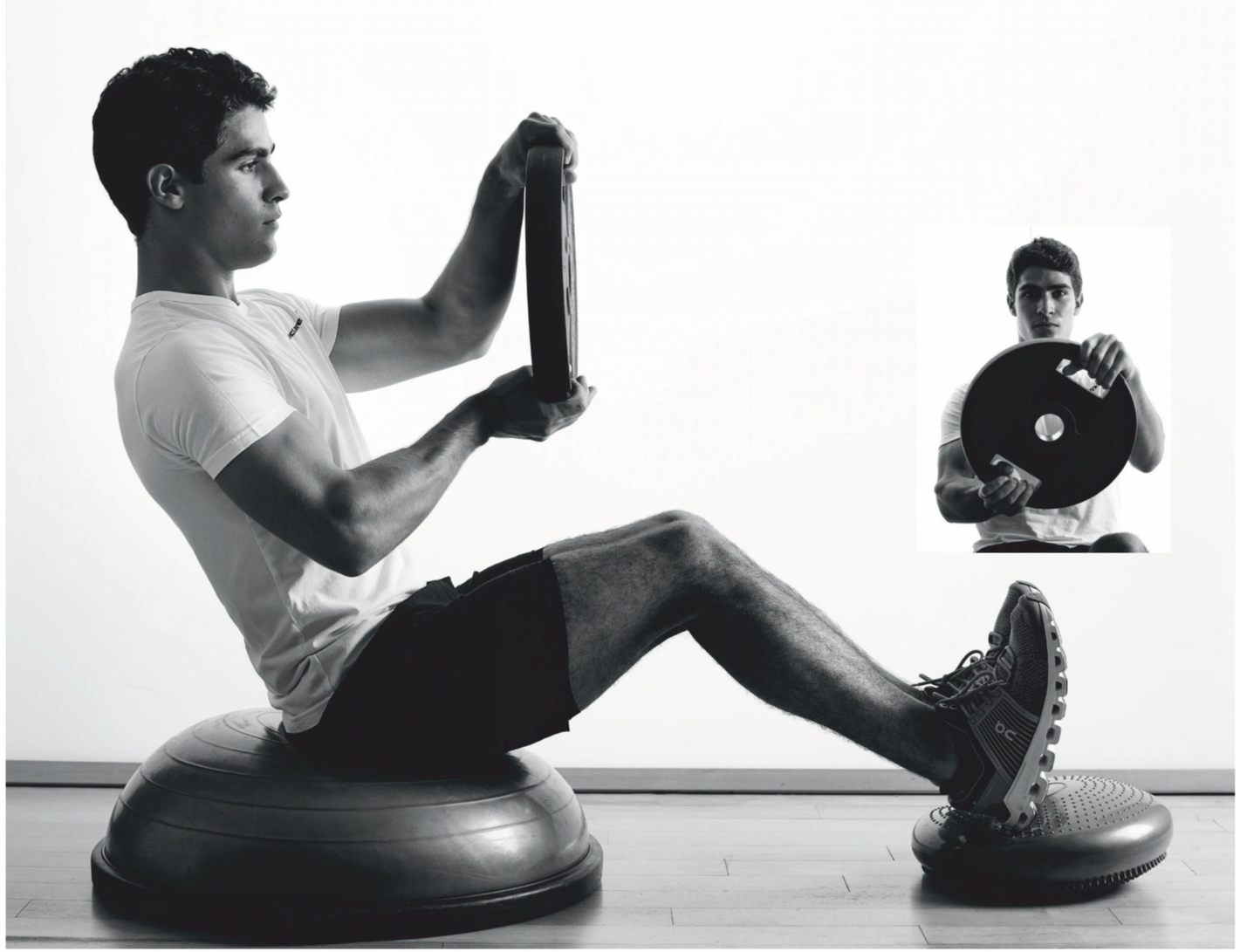


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F1 FITNESS
CORE STRENGTHENING

A Formula 1 driver's core must be able to withstand immense forces in both braking and cornering. Therefore exercises to strengthen core muscles are a crucial part of a driver's regime

INTERVIEW JAMES ROBERTS
PICTURES ADRIAN MYERS



McLaren's driver performance manager Simon Reynolds explains four core strengthening routines performed by test and reserve driver Sergio Sette Camara

STABILITY BALL PIKE

"This exercise challenges the driver's shoulder complex and core. It focuses on hinging from the hip. The junction between your upper and lower body is what we call the pivot point. The pike exercise enables the driver to brace and keep the torso fixed and robust. If those muscles are relaxed or not engaging properly, they will start hinging from their lower back – we don't want that as it creates a poor recruitment pattern of your back muscles and increases the chance of injury. It's also an amazing exercise for shoulder endurance. This makes the pike an important part of a racing driver's repertoire of exercises to prepare for competition."



SIT WITH STEERING

"We have various sport-specific exercises which replicate the driver's position and driving task. In this exercise, drivers hold a 10kg plate and sit on a half-ball which challenges their core. The core describes the intricate structure of muscles around your mid-section, the gluteal muscles in your bottom, the diaphragm and the upper back muscles. By placing a driver on the half-ball it instantly creates instability, challenging their entire body and nervous system. The addition of the 10kg plate also works their shoulder stabilisers and fixator muscles, which they need to build their endurance capacity because they are performing 100s of repetitions of steering manoeuvres during a race."

PALLOF PRESS

"The Pallof Press is one of the most integral exercises drivers perform on a regular basis in preparation for a race. In the cockpit of an F1 car drivers are heavily strapped in, to prevent them moving around. The seat fitting process, prior to the season, requires technicians to craft and mould a seat to a driver's specification. However, cornering at high speed under extreme g-force the vital organs and the spine need to be protected. The Pallof Press is therefore the perfect remedy, developing a driver's core to withstand high-speed corners. If you can resist your body rotating and keep your hips aligned, you'll be a stronger and more robust driver."



SPIDERMAN EXERCISE

"Not only can you feel like a superhero performing this exercise, but it's great for mobilising the hips. As we get older we tend to lose hip mobility. This can lead to lower back pain and restricted movement. It's not only great for flexibility, it's also a fantastic core exercise and challenges the shoulder complex. Drivers perform this exercise as part of their warm-up protocol, prior to getting into the cockpit. It's one of my favourite mobility and activation movements, which can also be combined with an upper torso and head rotation by raising one arm out to side and up to ceiling, which mobilises the cervical (neck) and thoracic (upper spinal) joint."



UNLEASH THE LION

Max Verstappen has put his troubles behind him to become a driver who could seriously threaten Lewis Hamilton. He sits down with *F1 Racing* to talk about conquering his demons and developing into F1's most feared hunter

WORDS
BEN ANDERSON
PORTRAITS
ADRIAN MYERS



#UNLEASH THE LION

MAX VERSTAPPEN strides into the room oozing the self-confidence only those in total command of themselves and their surroundings can summon. Yes, he will grant *F1 Racing* 45 minutes of his time on his busiest grand prix weekend of the season (Spa), and yes he will pose for photographs. But no, he won't roar like a lion for the purposes of our imagery: "I'm not into that…"

Fair enough. You can lead a horse to water… Or should that be a lion to his prey? Probably, because that's exactly why we're nestled within the VIP area of Red Bull's new (and supposedly self-cooling) wood-based Energy Station. It's time to talk about how Max Verstappen has evolved – from super-fast but ill-tempered wild animal into something far cooler and more calculating. And, if you're a multiple world champion named Lewis Hamilton with a big target on your back, a predator to watch warily.

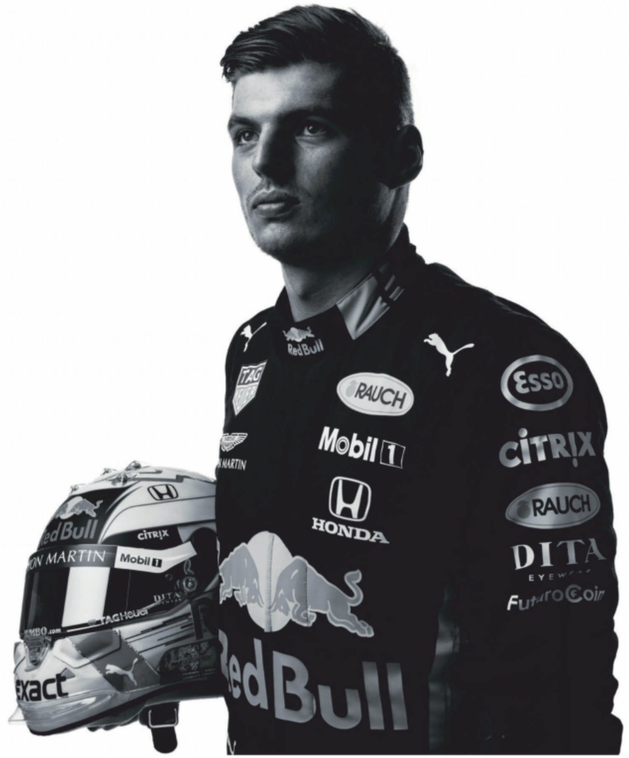
Max utilises the hashtag '#unleashthelion' and incorporates a lion logo within his race helmet design, but this is no mere glib social media strategy, mundane branding or simple nationalism at play (the lion is the national symbol of his native Netherlands). Max Verstappen has studied the lion, recognised the animal's enduring power and worked to embody its qualities. He is F1's young lion, now unleashing himself on grand prix racing with a level of focus and controlled aggression that should terrify all who stand in his way.

> # Verstappen has studied the lion, recognised the animal's enduring power and worked to embody its qualities

"It had something to do of course with coming from Holland, but then also I think the lion itself is quite an impressive animal," Max says, relaxing into his seat as he explains why the lion embodies his emerging Formula 1 persona. "It's a dominating force. Powerful, dominating – and I also found it very impressive to look at. I wanted to come up with my own version of it, so not just copy the lion's face but find a cool way with my logo of putting that inside the lion. Also, then the hashtag #unleashthelion – I think it all just came together really well. Not everyone, even being Dutch, uses that, but I think it describes me quite well in trying to dominate, trying to be powerful."

There exists a popular myth about lions being 'kings of the jungle' because they sit at the top of the food chain. They actually live on grasslands and in savannahs, which by nature are open and less densely populated by vegetation. But the truth in the myth is the lion's enduring status as an apex predator, so it can loosely be called the king of the animal domain – if, as Max points out, "you take the humans out of it".

Verstappen is not yet the undisputed chief of F1's animal kingdom, but he already possesses that kind of pulling power with the sport's fanbase. There's a growing 'orange army' populating grandstands at every race and Zandvoort's Dutch Grand Prix will return to F1 after a 25-year hiatus in 2020. Max Verstappen can put bums on seats in a way few others can.



"I'm the only Dutch driver, so I think that helps," he says. "Also we've never had it before that we're winning races. And the Dutch people are very supportive in general – they love Formula 1 and they like fast cars. Initially it was helped by the parents, who were at the time already fans of my dad [Jos]. They maybe pushed their children along and they became fans as well, like exactly what happened with me and my dad. What helps as well is we have a distinctive colour as a fanbase. Put orange on and you know you're Dutch – unless you're maybe a McLaren fan…"

Formula 1 lives by the law of nature, where only the strongest survive, so it's perhaps fitting Max carries the symbol of the lion with him, for here is a driver who lives by own rules and exists outside the norms of the F1 jungle. He is increasingly asserting his dominance over the rest of the wildlife found within. He is a deadly predator and he is on the hunt. The ultimate target: to depose Lewis Hamilton from his throne as F1's current king.

This has always been the aim, ever since Verstappen first burst onto the scene with Toro Rosso in 2015, but for a while there seemed a very real danger his own impatience might thwart that ambition. Max version 1.0 was the wild child who flouted F1's etiquette, defied its stewards and annoyed its established stars with aggressive and combative driving. He was amazing to watch but also utterly on the limit all the time. You got the sense he wanted it perhaps too much, that his eagerness sometimes clouded his judgement. The mistakes mounted and we began to wonder if the flaw was ingrained, and thus destined to destroy him.

It certainly destroyed his chances of winning the 2018 Monaco Grand Prix, where he crashed needlessly in final practice and effectively handed victory in F1's most prestigious race to Red Bull team-mate Daniel Ricciardo. This followed several other high-profile errors and incidents over the first six races of that season. But, 16 months on from that defining moment in this young lion's development, Verstappen has evolved into something else; something greater. Max Verstappen 2.0 is a calmer, more controlled, more consistent operator, and thus a far more dangerous proposition for his quarry to face.

> # Max has evolved into something else; something greater. Max Verstappen 2.0 is a calmer, more controlled, more consistent operator

"I would say Monaco was definitely the lower point," Max concedes. "Before that there were a few unfortunate situations where it's like 50/50, you know – you get away with it or it turns out badly, and they all just turned out badly for me. We were in this sort of negative spiral and I definitely hit the bottom in Monaco.

"From there onwards… I always said to myself, the speed is there and that's the most important thing. I was always quick even in those troubled races, but for me it felt like I took a step back and I actually moved forward in terms of pure pace as well, but also definitely in terms of consistency."

This has been a major part of the Verstappen evolution, realising he doesn't need to be quickest in every session, quicker each lap, or to go for every gap that appears. He is driving now like he doesn't need to prove himself. The result: a sublime run of 21 consecutive top-five finishes between last year's Hungarian Grand Prix and this year's Belgian one. Only Lewis Hamilton's 22-race run between the 2018 British GP and this year's German GP eclipses that. It's just one measure of the extraordinary level Verstappen has reached while battling the unreliable machinery of 2018 and an enduring lack of engine power compared with Mercedes and Ferrari. It's also a clear indicator he has become more measured in his own approach, no longer trying to win every race at the first corner.

"Yeah, not wanting it *that* much, just easing yourself off a little bit," he agrees. "My dad always told me in go-karting, even when I think I'm not going fast enough I'm still fast enough. I guess I just wanted it… I was too eager. Just calming things a bit made it better."

Red Bull feels the nadir of Monaco snapped Max out of his previous gung-ho mindset, forcing him to face facts. For the first time in his F1 career, Verstappen had to wrestle with the realisation he and he alone was to blame for throwing away a clear victory shot. With nowhere left to hide, Max had to react differently to this disappointment. As Red Bull team boss Christian Horner explains, Verstappen turned up for the next race in Canada without his usual family entourage in tow, and "from that point on has driven phenomenally well".

"We just spoke to him about every move not needing to be a dramatic one," Horner explains, "and I think just putting a bit more measure into his performance… the only person who could work that out is Max. He's the one driving the car.

"I think that Monaco weekend particularly hurt him. You could see it pained him a lot because he knew it's not often you get a car that good around the streets of Monaco and he knew he missed that opportunity. I think that was the catalyst that got him to think 'OK, right, I need to ▶

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Verstappen has studied the qualities and power of the lion – the Dutch national symbol – and has incorporated a lion logo into his helmet design

> "Of course when you get into the team initially you have to establish yourself and show that you're a force to be reckoned with"

perhaps wind it in a bit'. That, combined with his experience – growing, maturing as a young man – everything from that point started to come together for him."

Verstappen appears to have left behind the 'me and my dad against the world' modus operandi that defined his early career. He clearly sees he is now part of something bigger than himself – a leading part in fact – no doubt helped by Daniel Ricciardo's recent departure to Renault.

"Of course when you get into the team initially you have to establish yourself and show that you're a force to be reckoned with," Max says. "Of course over time I learned more and I think definitely last year Daniel was struggling more beside me. I think he could see that in terms of results from after the first six races, where we were definitely picking it up.

"Then of course Daniel left... Even with Pierre [Gasly] still we've had equal chances. Of course, maybe they listened to me a bit more initially when he was new into the team, with the direction on the car, because I knew the environment a bit more. I think that's normal. But, as soon as you perform and you're quick there's no reason to not listen to you."

The team goes wherever the performance is...

"Well, at the end of the day, yes," he adds, "so... yeah, I think it's a very natural thing to do – in every sport, not only Formula 1. As soon as you perform and you're quick they can't go around you. Now, this year I feel very comfortable. I know the guys really well. And of course, myself I'm getting more and more experience, so everything just clicked even better. For sure then the [overall] performance steps up as well."

Horner feels the departure of Ricciardo naturally allowed Verstappen to emerge from the shadow of his more experienced team-mate.

"Daniel is such a big character, Max was a little bit like the younger brother – a puppy-like approach," Horner explains. "When Daniel left the team Max really stepped up into this position of responsibility. Again, I felt he just matured a further step and took on that mantle with responsibility and strong leadership from within the cockpit."

Lions live in prides, so naturally the community around them is key to their flourishing. Regardless of what else has been happening off-track, perhaps the single biggest thing that's helped elevate Verstappen's level of performance this season is the switch from Renault to Honda propulsion. Endless frustration at the over-promise and under-delivery of the Renault engine programme felt by all at Red Bull is now gone, replaced by trust in basic competence and resources – and a feeling that, even though Honda also has room for improvement relative to Ferrari and Mercedes, the engine is much better built for the fight.

"Max got hugely frustrated with Renault and Renault management," says Horner, who feels Verstappen has become "the most in-form driver currently in the sport" for the level he's reached in what is clearly not the best car/engine package of 2019. "He just didn't feel they were listening to his concerns on driveability; reliability was frustrating for him. In the end, he lost faith in what he was being told.



> "It was really impressive to see the Japanese mentality – they are really focused on their job, they are not saying a lot but when they talk they are very straightforward and direct. I like that. I'm the same – I don't bullshit"

"With Honda, he went to the factory, saw the size of commitment going on behind the scenes, he felt the engineers were hanging on his every word, and he saw that desire to succeed. He very much bought into the programme – [that] this is the right step to try to get ourselves into a championship-contending position."

There is a sense the Red Bull-Honda combination has calmed Max further. He no longer seems possessed of the need to overdrive to make up for deficiencies in car performance. There have certainly been none of the expletive-ridden radio rants such as we heard in Hungary last year, incidentally the last time Max retired from a race owing to engine failure.

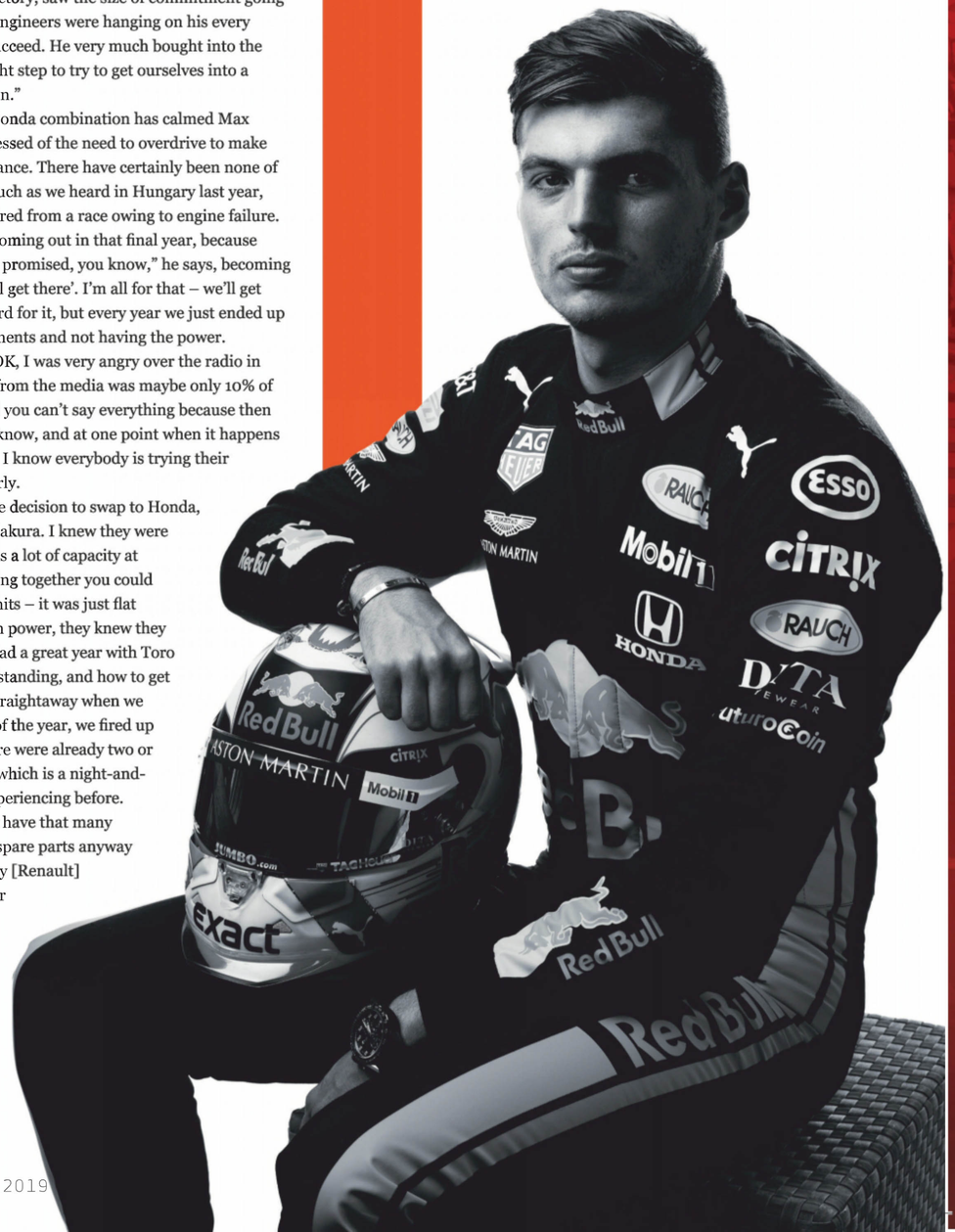
"It's three years of frustration coming out in that final year, because there were always so many things promised, you know," he says, becoming animated. "Like 'don't worry, we'll get there'. I'm all for that – we'll get there – and I'm happy to work hard for it, but every year we just ended up in the same situation, with retirements and not having the power.

"At one point it's just enough. OK, I was very angry over the radio in Hungary, but the things you saw from the media was maybe only 10% of what was actually happening, and you can't say everything because then you really are in a war, so... but I know, and at one point when it happens again in the race you are cooking! I know everybody is trying their very best but it's not enough, clearly.

"When they [Red Bull] made the decision to swap to Honda, already I'd been to the factory in Sakura. I knew they were capable of a lot of things; there was a lot of capacity at the factory. Once we started working together you could see straightaway there were no limits – it was just flat out. They knew they were down on power, they knew they weren't reliable, but I think they had a great year with Toro Rosso [in 2018] in terms of understanding, and how to get the engine on a better path, and straightaway when we started working in the beginning of the year, we fired up the engine the first time [and] there were already two or three spare engines ready to go – which is a night-and-day difference to what we were experiencing before.

"At the winter testing we didn't have that many problems at all. We had so many spare parts anyway to use if there was a problem. They [Renault] were swapping one bit to the other engine; here [with Honda] it was just a full new engine with all parts on it. The way things are connected on the engine, the way it's integrated, was night-and-day different.

"So, I was really impressed, and also by the way they were working as a group," he continues. "It was really ▸



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Happy at Red Bull-Honda, Verstappen remains confident that the team will close the gap to Mercedes next year

impressive to see the Japanese mentality – they are really focused on their job, they are not saying a lot but when they talk they are very straightforward and direct. I like that. I'm the same – I don't bullshit. I'm honest, I'm straightforward. When it's shit, it's shit and when it's good, it's good, and it should be like that."

Now the Max Verstappen and Red Bull-Honda house is getting itself in order, the focus must shift outwards – towards that ultimate goal of toppling Mercedes and Lewis Hamilton. Ferrari's recent capitulation (Spa and Monza notwithstanding) has helped clear the way, and we've finally seen Max and Lewis go properly head-to-head (Monaco's go-slow tyre preservation battle doesn't really count). Had Verstappen had a faster team-mate backing him up in Budapest, he would likely have won that contest. As it was, he was let down by Pierre Gasly, and reminded of the enduring performance deficit to Mercedes.

We understand Max has agreed to see out the final year of his current contract in 2020, but why such faith in an outfit that hasn't won a championship since 2013 and no longer necessarily stands apart on the aerodynamic front as it once did? Verstappen is frequently linked with a switch to Mercedes, which almost beat Red Bull to his signature in 2014. Surely that's the best place for him to be right now, taking on F1's current king head-to-head on his own turf?

"Well, of course it's the first year with Honda and I think there's a lot more potential to be reached there," Max counters. "Mercedes, they're not stupid, and you can clearly see over the years how they've been performing. It's very hard to beat, but I believe the team can do it."

And the aero deficit?

"We're looking into that and understanding how we can do things better in that area," he adds. "That has been Red Bull's strength even when they became world champions – they never really started the season dominant, it was always throughout the season they became dominant. But now we're a bit too far off, so we will of course look into that for the future, so that doesn't happen again."

You get the sense it's probably next year or never for this alliance, that Red Bull-Honda must deliver the goods in 2020 or F1's young lion will seek pastures new. No disrespect to Red Bull, but how great it would be for F1 to have Lewis Hamilton and Max Verstappen tearing lumps out of each other in identical cars...

"Well, I'm very happy at the moment where I am because I think it's a very exciting project," Max says. "Everybody is looking in the same direction, everybody wants the same thing – everybody wants to win, everybody in the team are winners. You can feel that mentality is there. And, like I said, there are no real limits so hopefully we will be there next year. I think the team is definitely coming on very strong, and with the help from Honda hopefully we can close that gap."

What a tantalising prospect for 2020 should Red Bull-Honda take that final step. Then F1's lion will be fully unleashed.

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KUBICA'S MOUNTAIN CLIMB

For **Robert Kubica** it's been uphill all the way in his long-awaited return to Formula 1 after a debilitating physical injury. But things are getting better, as he explains to *F1 Racing*

WORDS STUART CODLING PORTRAIT SAM BLOXHAM

ROBERT KUBICA'S FORMULA 1 COMEBACK

has been hotly anticipated for years – ever since his appalling rally accident on the eve of the 2011 season, in fact. But it's fair to say that his long-delayed return to the cockpit this season has not provided the joyous and gilded procession to glory the F1 community desired.

Kubica remains a popular and respected figure at the top of the sport. The 2019 season, though, has been a proverbial uphill struggle as this talented, grand prix-winning driver toils at the tail of the field in a car that stands little chance of troubling the top 10 during its service life. On just one occasion has the unloved Williams FW42 secured a point – in Kubica's hands – and even that result hinges on a technical exclusion that was subject to an FIA appeal as this issue of *F1 Racing* rolled off the printing presses.

There's another elephant in the room: the performance of Kubica's young team-mate, the Mercedes protégé George Russell, who has consistently shown the elder driver the way this season. The reasons for this remain unclear. Some say the lingering effects of Kubica's injury – he now drives, by his own admission, 70% left-handed – means he struggles on circuits with a predominance of slow and medium-speed corners. Others, particularly the Polish media, say the drivers have been given unequal equipment, which a noisy segment of online fandom puts down to a conspiracy by a British team to favour a British driver.

The Robert Kubica *F1 Racing* finds atop the Williams motorhome at Spa is relaxed, cheerful and confident – certainly not showing any signs of being beaten down by a first half of the season that's been characterised by fruitless toil in uncompetitive machinery.

"It was a difficult start," he says. "I would say the first part of the season... there *were* positives, but they were concealed by most of the difficulties we were having, and quite a lot of inconsistency in delivering performance, let's say. But from a personal point of view there have been quite a few positive things. If you think of where I was coming from, how many doubts there were over my physical aspects, one of the positives is that finally I've proved my limitations aren't limiting me."

This latter sentence might sound inherently contradictory, but when Kubica talks about his "limitation" he means the restricted strength and movement in his right arm, which was partially severed in that rally accident. He's had to adapt to driving in a very different way; study the onboard footage and you'll see the majority of the steering input comes from his left arm. It's this which has led many observers to conclude the problem is caused by Kubica not being able to get the tyres into the right temperature 'window' for them to generate grip at circuits with tighter corners that require lots of relatively aggressive steering movements. But both Kubica and the Williams team see it differently.

"I remember a lot of people were talking and having doubts, which was correct about Monaco," says Kubica, "but I think Monaco was one of my best weekends. And Australia was a highlight for me – although it was a difficult start to the season, from an emotional point of view it was a big weekend. Hockenheim was my first time in nine years driving an F1 car in the wet, which wasn't easy – it was tough to keep the car on the track. This year has been about single moments, personal goals and achievements rather than results, unfortunately, but we're far off where we were hoping to be."



Polish fans have been unwavering in their support for Kubica on his return to F1

"Robert's done a good job this year," says Williams deputy team principal Claire Williams. "It hasn't been easy for him – the car isn't what he would like it to be or what any of us would like it to be, so it hasn't necessarily been a good platform for him to demonstrate how strong he can be.

"That gap [between Russell and Kubica] is quite tricky to evaluate properly because sometimes it can be one second, other times it's minimal, and it's a lot to do with the car and how it's behaving. Sometimes we'll know exactly what it's doing and why, then a lap later it's doing something else. So, I would never sit here and say, 'I want to see that gap closed, Robert,' because often it's nothing to do with Robert's driving. Robert has no limitations in the cockpit. Not once have we ever heard any comments from


A relaxed Kubica freely admitted the first part of his season had been difficult





> "A lot of resource went on solving problems rather than exploring the car. Let's say our starting programme was quite a lot delayed"

him that it's too difficult at a particular track or corner."

While the FW42 has been shamingly uncompetitive – for a team with several world championships under its belt – it's gradually improving, albeit from a low base. It will never become a frontrunner, certainly not now, during a phase of the season where resources are by necessity being directed towards next year's car. What Williams is doing – and has been since the first few races of the season – is taking each grand prix weekend as an opportunity to learn and 'debug' the car.

The goal is not only to exploit what potential the FW42 has, but also cure the organisational flaws that led to it being finished late and being so disappointingly truculent. Like McLaren, Williams has recognised it has gone down the rabbit hole and must try to retrace its steps rather than blindly heading deeper into the Stygian murk. As a consequence, it isn't throwing developments at the FW42 but is devoting a substantial portion of Friday practice running to aero-rake testing, so as to establish better correlation between simulation tools and the car's on-track performance.

But that also meant upgrades arrived later than hoped to a vehicle that started its life behind schedule. The FW42 was late to pre-season testing, missing crucial mileage, then the FIA declared several parts illegal and vital resource had to be redirected at those simply to enable the car to race. Technical director Paddy Lowe also left pre-season.

"We started exploring the aero pre-season as much as we could, but then we had other issues – I don't want to go into the detail but it did slow down the understanding of the car," says Kubica. "A lot of resource went on solving problems rather than exploring the car. Let's say our starting programme was quite a lot delayed."

"So then once you're in the season, from a team perspective you try to evaluate different directions [of development] and try to understand as much as you can. I'd say I'm now making similar comments [feedback] to George, but of course an F1 car is so complex that even when something sounds simple it might require a lot of work, additional testing and digging into the problem, to make it obvious for the engineers and designers.

"Definitely aerodynamics are a big part of the performance of an F1 car, but not everything. As a driver it's difficult to judge how much time and money and effort it costs to improve different areas, so this is a team decision on where to focus. What we're trying to do is help the team with the comments and also the approach – in the end, you know, when we're so far behind it's important to understand where we can improve and how to do it.

"Where we can improve, there's no doubt. How we're going to do it and how much time it will require? This is more complicated and for sure it requires a lot of time."

Williams introduced several major updates mid-season, over the British and German GPs, and the result was a meaningful performance uptick. At Silverstone, the fastest Williams was closer to the pole time than either car had been all season to that point, and in Hungary Russell missed out on Q2 by half a tenth of a second. There were other factors in play that Saturday which flattered that performance – Daniel Ricciardo and Sergio Pérez tripping each other up, for instance – but it remains significant.

Crucially, Kubica was 1.3s off his team-mate and *F1 Racing* has never seen him so glum as he was in his post-qualifying press briefing. At this point in the season it looked as though Kubica had made a step forward only to take at least one back again. At the beginning of the year he'd been certain his car was somehow different from the other, consistently inconsistent.

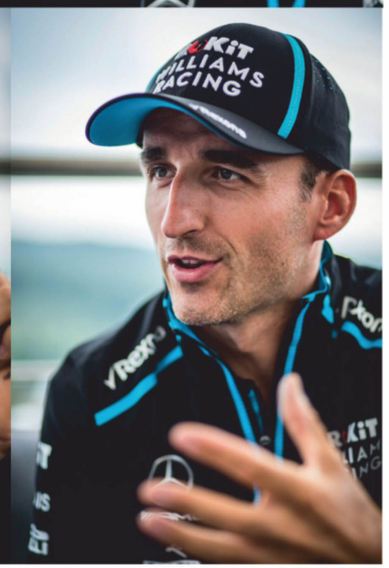


Kubica is focused on his comeback lasting more than a single season

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By now, though, his feedback to the team during race weekends was broadly in line with his team-mate's. And yet – that gap again. As Kubica said in Hungary, "There's no rollbar or ride-height change that can give you one second. It's a question of putting things together."

This brings us back to the tyre theory, that Russell is finding something Kubica isn't. The current generation of Pirelli tyres is incredibly sensitive, demanding careful preparation over the course of a slow out-lap, so they're perfectly in the temperature window at the beginning of the push lap. Russell seems to be able to arrive at that start point with grip and the confidence to push straight away, while Kubica's car is slithering as if on an ice rink. Even a driver of Kubica's greatness can't conjure a quick lap from a car with no grip.

"What I'm missing this year, with the chaotic first part of the season, is the consistency which enables you to start building up what you're looking for," he says. "You build knowledge and from there you build performance. This is one of the things that penalised me, but that's how it is – you go into the racing trying to do your best.

"Of course, sometimes you have situations where you lack performance, and three days earlier you were reasonably happy with the car but now that feeling is gone. Sometimes it's changing from day to day. When you're trying to go through a process of developing and improving the car, this brings additional confusion which is not good. This is one of the things you don't see from outside but unfortunately it's had a big influence on my consistency and the way of driving as well.

"We *did* have some differences in the behaviour of the cars, as a consequence of the issues we had at the beginning of the season. We [Kubica and Russell] had quite different routes and the cars were behaving in different ways, so we were also giving different feedback. But now the feedback is more similar. As I said, we didn't have a good consistency in the car, you feel from one lap to the other that things are changing, and when you can't explain why it makes it difficult to understand. This has been the most influencing factor in this season, I would say."

Ultimately, then, Kubica's troubled 2019 isn't a consequence of dastardly chicanery at Grove. Neither is it a case of a driver with faded powers showing himself up. It is a confluence of factors.

When Kubica last raced in F1 the cars weighed 620kg; now they're 120kg heavier, the equivalent of having a pair of teenagers – or an adult carrying a fair bit of timber – riding in the car as well. That adds up to a very different set of dynamic characteristics, on top of the abstruse and often baffling behaviour of the tyres. What Kubica needed was some consistency elsewhere in the package. Instead, the FW42 provided yet another moving target.

Kubica says all this has required a "big reset I had to do in order to forget the past and discover the new". He believes he's getting there.

"F1 has been my big goal," he adds, "and my big challenge in the past few years – a *huge* challenge after what happened. I thought I had very few chances and nobody was believing in it. Honestly I was also giving myself a very small chance.

"But at the beginning of this season I said to myself, 'The big challenge is starting now,' because if the things are running good I would like to stay in F1. It's the top motorsport category and for sure it would be nice to stay.

"For sure the comeback wasn't as smooth as I hoped. Nobody will take away what I achieved in coming back – and maybe I'll be happier with that in the future than I am now, because now I'm focused on the present."

"The big challenge is starting now, because if the things are running good I would like to stay in F1. It's the top motorsport category and for sure it would be nice to stay"

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THE LONG INTERVIEW

Every Formula 1 world champion since 2007 has driven for Frédéric Vasseur at some point in their career. As a Formula 3 and GP2/Formula 2 team boss he was a starmaker *par excellence* – helping turn around Lewis Hamilton's career when Lewis hit his first bumps in the road. Now Fred is trying to do the same with an entire F1 team...

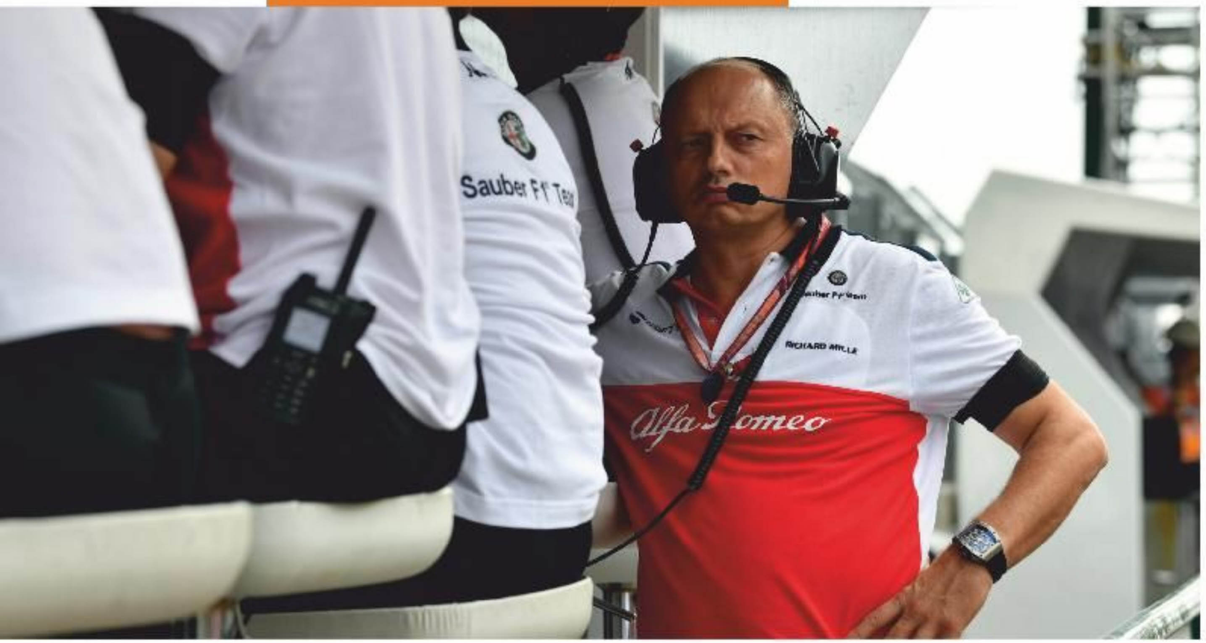
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THIS IS FRÉDÉRIC VASSEUR





THIS IS FRÉDÉRIC VASSEUR



Few of Formula 1's itinerant gin palaces have witnessed such great shifts in fortune (and ownership) as Alfa Romeo's stately tented hospitality unit, which first saw service in the mid-2000s when BMW owned the Swiss-based team. A rotating cast of characters has inhabited it since then; as *F1 Racing* ascends the stairs within the light, airy central vestibule, we pass the chair Robert Kubica inhabited when interviewed for his first cover feature over 11 years ago. This afternoon a moderately communicative Kimi Räikkönen is wrapping up an open media session in the same corner and, as the assembled scribblers stagger downstairs wondering if their voice recorders contain anything useable, a contemplative stillness returns once more.

Innumerable faces have come and gone but this place was built to last – probably for the best, since for the first half of this decade the team formerly known as Sauber was on its financial uppers. Now, with Tetra Pak money in the bank and an increasingly productive alliance with Ferrari and Alfa Romeo paying dividends on the track, this team is going places once again – thanks in part to the guiding hand of the man we've come to see.

Prodding a recessed metal button in the wall grants access to one of this unit's more cloistered enclosures, screened behind sliding doors and shuttered glass. Relaxing in his office is Frédéric Vasseur, one of motor racing's sharpest but least ostentatious movers and shakers. Apart from those currently on the Red Bull books, most of the drivers on the F1 grid have passed through teams run by him on their way to the top...

F1 Racing: What was it that set you on the road to Formula 1?
Frédéric Vasseur: It's a passion, not for F1 in itself but for racing. I started at school, doing karting, then afterwards I tried to develop my Formula Renault team. For sure it was very small and we had low resources, we were struggling a little bit, but this was an important period of my professional life. At that stage I had to cover more or less all the functions of the team – this gives you a different view of the business – and then it grew step by step.

We went from Formula Renault to French F3, working with Renault, won that championship with David Saelens [in 1998], then we had another opportunity when the French and German championships merged at the end of 2002 [to become the F3 Euro Series]. We started a collaboration with Mercedes and this was the beginning of a good journey for us – ASM won the championship six times in a row and in the middle of this period I started to develop with Nicolas [Todt] the idea of ART Grand Prix for GP2. That was a big challenge from the beginning because we were starting from scratch – we hadn't done Formula 3000 [which GP2 replaced in 2005].

We won GP2 in 2005 with Nico [Rosberg], then 2006 with Lewis [Hamilton] – and Lewis had been with ASM in the Euro Series in 2005. It was a very exciting time, but even at this stage I wasn't thinking about F1. I was really happy in the junior series and had plenty of talented drivers – Paul di Resta, Sebastian Vettel. To have drivers of this calibre was very exciting. I always want to win so this period went very well!

F1R: We've probably covered a bit more ground than we usually would with a first question – but before we rewind a bit, since you mentioned running Lewis in '05, can we ask you about that? Because that was just after he'd had his first big stumble in his career, wasn't it? The first year in the F3 Euro Series with Manor didn't go so well...
FV: That was 2004 – you'll have to check the dates because sometimes I get it wrong! – and we'd been running Jamie Green and Alex Premat [in the F3 Euro Series]. Jamie won the championship and Lewis was P5 I think.

I had a call from Martin [Whitmarsh, then COO of McLaren-Mercedes] and I'll remember this call all my life. I was at Le Mans for the Formula Renault, on the pitwall, and my phone rang – "Hello – it's Martin Whitmarsh..."

He asked me to come to Woking and that was the beginning of the collaboration. Honestly, for the company it was a great success to win GP2 with Nico and Lewis, and the others, but the important step was to win that first European championship and we did that with Jamie [who went on to drive for Mercedes and Audi in DTM]. He did an incredible job to win with ASM at the beginning.

F1R: OK, let's rewind a little further now. Presumably it's fair to say that as a youth you were quite competitive as well...
FV: Oh that's fair to say! [hoots with laughter]

F1R: ...so did you want to be a racing driver or have you always wanted to be an engineer, entrepreneur, team boss?
FV: I did karting from eight to 17 but I stopped for two reasons. The first was that my mother was the boss and she didn't like it at all. The second is that I wasn't talented enough. [laughs] I want to win, and I knew that if I was going to win in motor racing it wasn't going to be behind the wheel. I went back to engineering school, and then a year or so later, when I had to do an internship, my team-mate in karting [Franck Lagorce, who went on to start two F1 grands prix with Ligier] had started in Formula Renault and we started together like this, with me as an engineer. I was doing data acquisition – it was a big box for just two channels! This was about 1990.

> **WE WON GP2 IN 2005 WITH NICO [ROSBERG], THEN 2006 WITH LEWIS [HAMILTON] – AND LEWIS HAD BEEN WITH ASM IN THE EURO SERIES IN 2005. IT WAS A VERY EXCITING TIME**



PICTURES: LENN DUNBAR, STEVE ETHERINGTON

Vasseur (front row, far left) celebrates winning GP2 with Nico Rosberg and his ART team

F1R: Was there a particular moment that convinced you that you weren't going to make it as a driver? Frank Williams said it was when he put an Austin A35 on its roof at Mallory Park...
FV: No, when you're struggling to be P5 or P10 in Cadet karts and everybody around you is dreaming of F1, you have to be realistic that you're not going to be *the* guy at the top.

The experience in Formula Renault convinced me I wanted to be part of the circus because the first year, with Franck, we were P2 in the French championship. That was a good initial boost for me.

F1R: So, during that time you were studying at ESTACA [a French engineering school] – and then you started up an engine-preparation business before you went into Formula Renault. As we say in the UK, you had your fingers in a lot of pies at that time...
FV: Yes! [laughs] I was still at engineering school in '93 – something like this – when we launched RPM, preparing the F3 engine. This was with Marc Borgetto – he had a road accident and he's in a wheelchair now – and I had the [Formula Renault] chassis side at the other end. OK, it was a bit hard because I had to manage the studying and the companies, but it gives you a very open view on the different businesses and skills. So today I can speak about engines, chassis and aero, even if I'm not at the level of my guys – I have a clear picture and I think that's helpful.

F1R: How did you get to meet the right people to make this all happen for you?
FV: Honestly, a couple of months ago I had a lunch with Christian Contzen [head of Renault Sport from 1991–2002] and he asked me more or less the same question: "What was the first step for you?" I said, "The first one was to meet you, Christian!"

I was still a student when he gave us the project with the F3

THE LONG INTERVIEW



THIS IS FRÉDÉRIC VASSEUR

I'D STARTED WITH NO RESOURCES – AND I MEAN ZERO, WE WERE SLEEPING IN THE RACE TRUCKS! F3000 WAS TOO EXPENSIVE

engine. It was... not ambitious, it was a bit crazy. This was very important for me. Then Petrofina, the first sponsor that I had [with ASM] in '98, when we won the French championship with Saelens. Mercedes was also important – and I think the merging of the French and German F3 championships, because it gave us the push we needed to think big. The French F3 scene had been quite small in comparison. After that, it's been a case of meeting the right drivers.

F1R: How much of it has been a matter of luck – or do you make your own luck?
FV: Part of it, but... the first star we had was Lewis. Until then it had been a matter of taking things step by step. Jamie Green was the first British driver we had but he was independent, with a manager. Because Lewis was part of McLaren [in its driver–development programme] that changed the entire situation of my team. It was an important step for sure.

F1R: How big a step was GP2? You'd never done F 3000 [which GP2 replaced as F1's main feeder formula]. Did you feel at a disadvantage coming in without experience at that level? Or did the new formula mean everyone started from a blank sheet?
FV: I'd looked at F3000 for a couple of years because we'd been successful in F3 – we'd won the French championship in 2002, Macau, the Korean Superprix, and for sure when you're winning at one stage you want to go on to the next. But I'd started with no resources – and I mean zero, we were sleeping in the race trucks! F3000 was too expensive.

Then I met Nicolas [Todt]. He was already involved in driver management – he was linked with [Felipe] Massa at this stage – and he wanted to develop this other side of the business, being part of a team. It was a very clever approach. He found some sponsors, and we could make the GP2 team [ART Grand Prix] happen. Without Nicolas, for sure it would have been another story, we wouldn't have been able to develop ART.

You mentioned luck, and here we had a... correspondence of timing, because I was dominating the F3 Euro Series just when GP2 arrived, and it was much easier to convince Nico Rosberg, for example, to join ART in a new championship, with a new car, a new engine, a new promoter. If it had still been F3000 he would have committed with Super Nova or Arden, because it makes sense in a championship with stability for a driver to go to the winner. In a new championship, they can take some risks. We were a bit lucky at this stage.

We won with Nico in '05, Lewis in '06, then we had Lucas di Grassi [second in 2007], then Romain Grosjean... this was more difficult [he was fourth in '08]. And in '09 we won again with Nico Hülkenberg.

F1R: Was that after he won A1GP?
FV: Yes. We did a stint in that – we won the first race, with Nelson Piquet, running Team Brazil.
F1R: Fingers in pies...
FV: Too many pies! But just 10 fingers, huh? [laughs] It's quite difficult, but when you're a team at this level, and you want to develop the business, you can't do just one series. I think we were one of the first to be involved in many different projects, but I think it's the right approach and now many teams are doing the same thing. On the financial side, it's easier to split the overhead costs, and it's also better for attracting drivers – being successful in GP2 made us attractive in F3, and in that championship we could detect the best drivers, develop the relationship with them, and make the best selection for GP2.

F1R: Has that gone a bit too far now? Until last year Prema and Van Amersfoort seemed to have about six drivers each in F3.
FV: Half the grid, no? [laughs] I don't want to have six drivers per team. At the end of the day what's important is to develop a personal relationship with the drivers, and I think that was the key to our success. That and having good engineers. Obviously not the first one – that was me! – but later we had great engineers. One of the big assets of the company was that we invested a lot in the people, we kept the same people for many years. There are people at ART now who started with me in the 1990s. I see it the same way with Alfa Romeo now in F1, that the biggest assets of a team are its people.

F1R: You were headhunted by Renault when it came back to

THE LONG INTERVIEW



THIS IS FRÉDÉRIC VASSEUR



Vasseur cultivated Charles Leclerc in the youngster's first season in F1 in 2018

Formula 1 as a manufacturer team at the end of 2015. How did that come about?
FV: I had the first contact two or three years before. Two or three times I was not too far from going there – one time in Enstone, another time in Viry-Châtillon. It never happened because I was not also… extremely motivated [chuckles]. I had the feeling… that it was not the end of my ART story. Then Cyril [Abiteboul] came to me at the beginning of '15 and by then it was different with ART. I had Seb [Sébastien Philippe] working with me and we won with Stoffel Vandoorne that year. I was confident ART was in a good place so it was easier for me to think about something else. With Cyril the collaboration was there and it was working well, and we started like this… [he trails off into silence, looks meaningfully at *F1 Racing*, then hoots with laughter]

F1R: It's a shame our photographer has toddled off because the expression on your face would make a great picture. Why did the relationship with Renault end so quickly? Was it because the purchase happened so late in the day that it locked you into competing with the previous year's car?
FV: No, this is more for the sporting side. If it didn't turn very well for me and Renault together, I have to assume part of the responsibility. Maybe I wasn't clear enough about my expectations beforehand, and the organisation was a bit too complicated and it didn't fit.

I'm very happy today because we were able with Cyril to rebuild the relationship and we have a good one together. At the time it didn't work. It was a good exercise for me to understand afterwards why it failed, what I did wrong.

F1R: How much of it was down to Enstone being very long-established as a team and having set ways of doing things?
FV: No, I think between the team and me it was OK.

F1R: So the problem was further north in the organisation?
FV: [gently but firmly] Don't push on this!

F1R: Fair enough. How did the move to Sauber come about?
FV: I stopped with Renault just after Christmas [2016] and it was a tough period for me because for sure it had not been a success. I decided to have a break. But after about three months my wife said, "Now you have to find something else to do." [laughs] I didn't want to go back to ART because it wouldn't have been fair on Seb, who was in charge and doing very well. And I still had Spark [the constructor of chassis for Formula E] and so on.

When they [the Sauber investors] came to me, in May or some time like this, I wasn't convinced about going back to F1. There was a lot to discuss. [laughs] But I understood that I would be much more in the free-hand situation.

I was more of an advisor at first. They asked me about the [Honda] engine deal. I said that it wasn't just an engine deal – who would provide the gearbox? Step by step they convinced me they were ready for someone to have the keys to the factory, that we could have an approach that was closer to my previous life. Then I jumped in that July.

I stopped the Honda deal. Nothing against Honda – we have a good relationship, and things could have been different if we were where we are now, but back then we were four or five seconds off the pace. To start with the Honda engine, which wasn't the most powerful or reliable on the grid, at this time would have been a big error, and the gearbox would have been an issue. We had to focus on the car. That's why I pushed for Ferrari.

Monday I was with Honda, stopping the deal, Tuesday I was at the Strategy Group and that's where I spoke to Sergio [Marchionne]. This was also a key moment of my life.

I went up to him and said, "Mr Marchionne…" He said, "Mr Marchionne is my father – I'm Sergio." I told him I'd stopped with Honda and would like to talk to him. He said, "OK – you're more than welcome." We had a 15-minute discussion, I told him about the project and the investors, and we found a deal very quickly.

> TO START WITH THE HONDA ENGINE, WHICH WASN'T THE MOST POWERFUL OR RELIABLE ON THE GRID, AT THIS TIME WOULD HAVE BEEN A BIG ERROR. WE HAD TO FOCUS ON THE CAR



CV

Born	26 May 1968, Draveil, France
2017	Team Principal, Sauber/Alfa Romeo F1 Team
	CEO Sauber Motorsport AG
2016	Team Principal, Renault Sport F1 Team
2015	Wins GP2 with Stoffel Vandoorne, GP3 with Esteban Ocon
2012	Founds Formula E chassis builder Spark Racing Technology
2011	Wins GP3 with Valtteri Bottas
2010	Founds simulator/CFD specialist AOTech, wins GP3 with Esteban Gutiérriez
2009	Wins GP2 with Nico Hülkenberg, F3 Euro Series with Jules Bianchi
2008	Wins F3 Euro Series with Nico Hülkenberg (Jules Bianchi 3rd), GP2 Asia with Romain Grosjean
2007	Wins F3 Euro Series with Romain Grosjean (Nico Hülkenberg 3rd, Kamui Kobayashi 4th)
2006	Wins GP2 with Lewis Hamilton, F3 Euro Series with Paul di Resta (Sebastian Vettel 2nd)
2005	Wins GP2 with Nico Rosberg, F3 Euro Series with Lewis Hamilton
2004	Co-founds ART Grand Prix with Nicolas Todt; wins F3 Euro Series with Jamie Green and Macau Grand Prix with Alexandre Prémat
2002	Wins French F3 and Macau Grand Prix with Tristan Gommendy and Korean Superprix with Olivier Pla
1998	Wins French Formula 3 series and Masters of F3 with David Saelens
1996	Founds ASM team
1995	Graduates from ESTACA (Higher School of Aeronautical Techniques and Automotive Engineering)
1992	Founds Renault Formula 3 engine-builder RPM

F1R: Bringing the Alfa Romeo name back to F1 was huge, and much bigger than an engine deal. Was that his idea or yours?
FV: I can't remember how we started to discuss the potential collaboration with Alfa Romeo, but it went seriously on the table the Tuesday after Monza. It was ambitious from Sergio, because we were so far off the pace. For all of us it was a huge push, that confidence in our people.

But I remember my first visit to Hinwil, around June. I didn't go through all the departments because I didn't want to show my face everywhere. But I thought, "What the fuck – with this windtunnel, how can they be in this situation?" The potential, with the infrastructure, was huge. But they had been struggling like hell on the financial side before the new investors came in. When I joined, we were 280 people.

F1R: Wow! Even when Enstone was on the skids in the Lotus era there were 460 people there.
FV: Yes, it was tough. Now we're back up to 450 but we're still one of the smallest teams. I don't want to say it went well from the beginning – the step was too big and it's hard to recruit people in F1 because of gardening leave and so on. I would say that from mid-season last year we really started to improve.

F1R: Now, you're a very competitive person and you want to win – but will Alfa Romeo ever be allowed to beat Ferrari?
FV: We've never had this discussion – and in Germany on the grid we were in front of them. And I didn't ask permission!

NOW THAT WAS A CAR

No. 81

WORDS JAKE BOXALL-LEGGE
PICTURES JAMES MANN





McLAREN MP4-27

McLaren's 2012 car, with two world champions at the wheel, won seven races. Who could have predicted that, currently, it would be the team's last race-winning F1 car...

NOW THAT WAS A CAR
No. 81



McLAREN MP4-27

After four long years in the doldrums, McLaren finally seems to be clawing its way towards calmer waters. But even before its ill-fated hybrid dalliance with Honda, Formula 1's former powerhouse team had suffered two barren years with no victories (and only one podium) to its famous name.

McLaren's most recent win came courtesy of Jenson Button's victory at the rain-affected 2012 Brazilian Grand Prix, capitalising on a front-row start (sharing McLaren's most recent front-row lockout with team-mate and polesitter Lewis Hamilton) to prevail amid the chaos. McLaren got the ingredients right that year with its MP4-27, before embarking on a long downward spiral.

The 2012 car's predecessor, the MP4-26, featured an interesting U-shaped sidepod arrangement and a quickly discarded 'octopus' exhaust, aiming to take advantage of the off-throttle exhaust-blowing trend. But at the end of that season, the sidepods were also discarded after new regulations dictated how exhausts could be positioned.

"We'd had exhaust blowing first in 2010, and then there was a period of critical development and mapping development over the next two years," explains Paddy Lowe, McLaren's technical director at the time. "It was a pretty exciting period to be honest; we had cars in 2011 basically doing the full lap on full throttle, but not [receiving] full torque [all the time].

"But there were quite a few constraints on that part for 2012 – with the [engine] maps – but I think [the FIA] realised that it was all very difficult with maps, so the solution was going to be geometric, or physical in the sense of the tailpipes."

A number of teams followed the spirit of the regulations and produced exhausts with a line of fire directly into the Coke bottle section of the car. But McLaren instead set the exhausts back, which allowed the exhaust gases to drop down and circulate around the edge of the diffuser – which became known as the Coanda exhaust.

McLaren had known about the Coanda effect as an accidental byproduct of its previous attempts to blow the exhausts, as did Red Bull, and the two lobbied for an exhaust position that allowed them to take full advantage.

Worried by driver safety as F1 noses had grown increasingly higher, the FIA brought the regulation nose height down to 550mm above the car's floor, keeping it in check with the car's intrusion panels at either side of the chassis.

But the chassis rules remained unchanged, prompting the majority of teams to bridge the gap with a step in the nose. This gave each car ample space to let the air flow underneath the nose and chassis bulkhead. The MP4-27 was the only car not to feature an incongruous transition, having instead evolved its concept from the previous two seasons that already featured a low nose well within the maximum height permitted.

Immediately the car proved competitive, as McLaren locked out the front row at Melbourne having topped two of the three practice sessions. Button overhauled polesitter Hamilton at the start to snatch the lead, which he held to deliver a win at the first time of asking for the MP4-27.

McLaren couldn't convert the next front-row lock-out in Malaysia into a win, and then Mercedes took its first victory as a full works team in China courtesy of Nico Rosberg. McLaren completed the podium positions and, after the opening three rounds, Hamilton led the championship from Button. Then a dreadful race in Bahrain allowed Sebastian Vettel to vault to the top of the standings and Red Bull similarly overhauled McLaren in the constructors' championship.

In Spain, McLaren deployed a new nose package to raise it to a level consistent with the other teams – albeit still with a smooth transition. Here, Hamilton managed to hit back with pole, but this was later rescinded after he stopped on track without enough fuel to make it back to the pits. Without the requisite fuel sample for scrutineering, Hamilton was shuffled to the back. Pastor Maldonado inherited pole then fended off Fernando Alonso's Ferrari to win the race for Williams.

"IT WAS A PRETTY EXCITING PERIOD TO BE HONEST; WE HAD CARS IN 2011 BASICALLY DOING THE FULL LAP ON FULL THROTTLE BUT NOT FULL TORQUE"

A quick car, the MP4-27 sometimes struggled to underline its pace on two counts. Firstly, the 2012 Pirelli tyres were notoriously difficult to get to work consistently, and tiny setup changes could result in massive swings in performance. While Hamilton won in Canada, Button floundered in 16th having not been able to find any balance. Secondly, reliability issues began to appear in the second half of the season – with disastrous consequences.

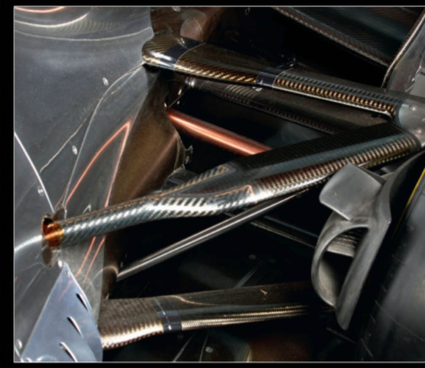
Although McLaren took a hat-trick of wins in the middle of the season – Hamilton bagging victories in Hungary and Italy to rekindle his championship and Button triumphing at Spa – Singapore ended that run in dramatic fashion. Hamilton, having taken pole, seemed untouchable around the streets of Marina Bay. Then, on the 23rd lap, his MP4-27 came to a grinding halt with a gearbox problem. Inspection later revealed that a crack in the gearbox had allowed a slew of moulding foam – left in the casing in a manufacturing oversight – to clog up the internals. Weeks later, Hamilton announced his departure to Mercedes.

Hamilton and Button scored a win each in the final two rounds to end the year on a high, but those were to be McLaren's last hurrahs. Today, the team's winless streak is into its seventh season, and it may be that the MP4-27 remains McLaren's last winning car for some time.















RACE RECORD

Starts 40
Wins 7
Poles 8
Fastest laps 3
Other podiums 6
Points 378

SPECIFICATION

Chassis Carbon fibre and honeycomb composite monocoque
Suspension Double wishbones, pushrod-activated torsion bars, rear pullrod-activated torsion bars
Engine Mercedes FO108Z 90-degree V8
Engine capacity 2400cc
Power 750bhp @ 18,000 rpm (+80bhp from KERS)
Gearbox seven-speed manual gearbox
Tyres Pirelli
Weight 640kg
Notable drivers Jenson Button, Lewis Hamilton

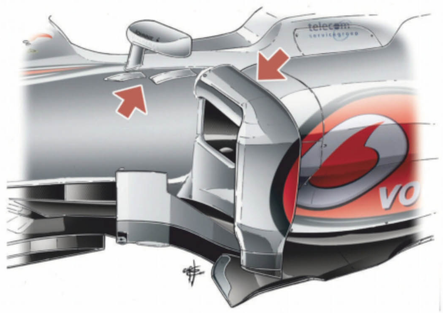


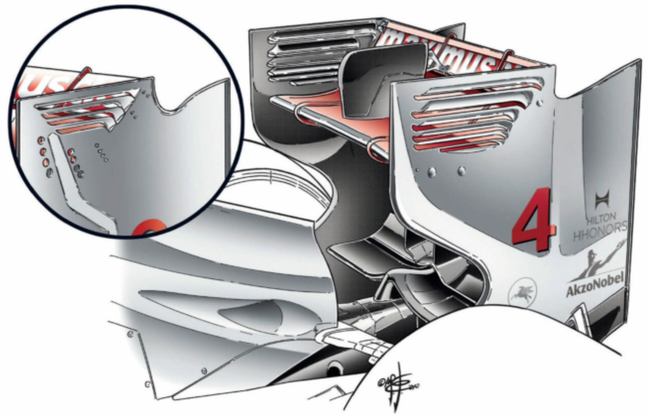
McLAREN MP4-27

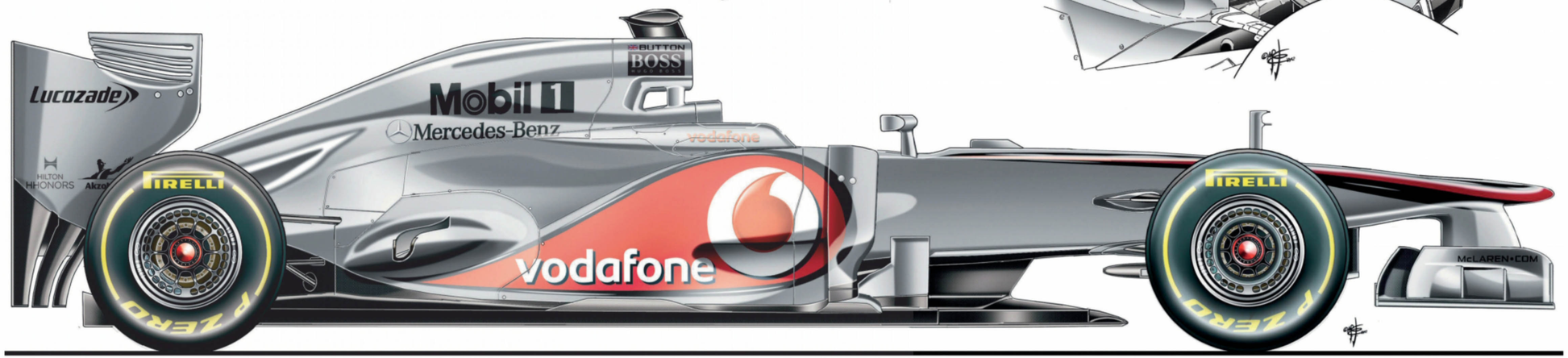
TECHNICAL ANALYSIS

WORDS JAKE BOXALL-LEGGE

ILLUSTRATIONS GIORGIO PIOLA









CONCEPT

The MP4-27 outwardly looked similar to the 2011 car, but McLaren elected to discard the U-shaped sidepods of the previous car in the interests of weight.

"I think it was one of those decisions you have to take," says Paddy Lowe, then McLaren's technical director. "You have to have a bit of faith in the technical direction. It doesn't always pay off, and that U-shaped section never really earned its keep on the car. I think it was overweight by about 6kg."

That meant the 2012 car's sidepods were more conventional, save for the positioning of the exhaust, bringing forth a stronger undercut.

Everything else on the MP4-27 was more familiar; Mercedes entered into its 18th year with the team as the engine supplier, Mobil remained as the team's fuel and lubricant provider and KERS – not yet mandatory in F1 – was also retained.

INNOVATION

Getting the Coanda exhausts right was a huge part of McLaren's early success in 2012. But, as Lowe explains, the system was conceived because of the team's troubles in 2010 attempting to get its exhaust-blown diffuser working.

"We brought our first exhaust-blowing solution in 2010, and it didn't work! We were all playing catch-up to Red Bull with exhaust blowing and ours didn't work – when the exhausts came out, instead of going straight out and onto the rear corner of the floor, which is where it was aimed, it [was] pulled in by the Coke line and travelled down it.

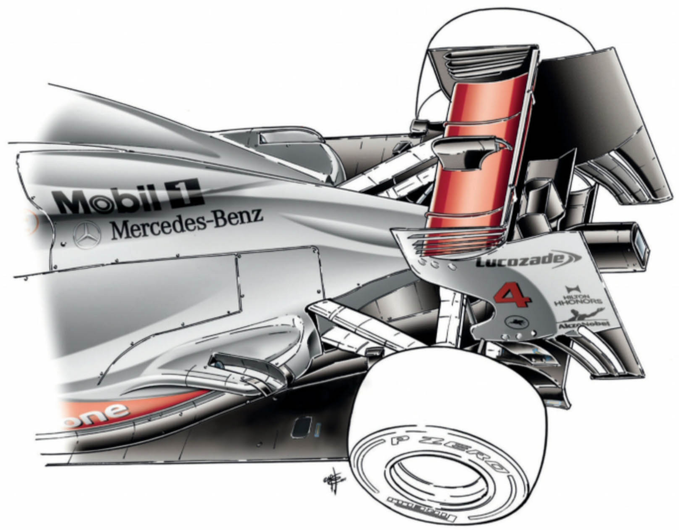
"We did a load of R&D to work out what was going on, and we'd found out about an effect called Coanda. So when we came out with the 2012 car, we got all of this Coanda working well, and we were ahead of the game because we put in a lot of work in 2010 trying to not have Coanda, so we knew the score."

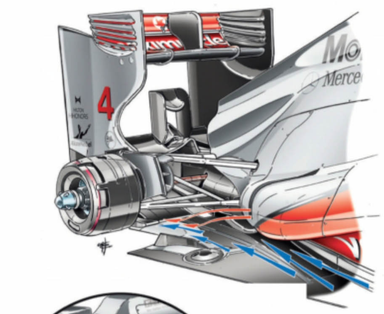
EVOLUTION

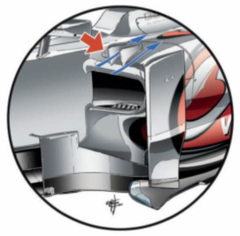
Developing the Coanda exhausts became McLaren's key focus. Lowe says the team made a three-pronged assault on getting everything working – a mixture of CFD, windtunnel and dyno testing were all integral to its early-season advantage.

"You could run a bit of floor and exhaust and everything on the dyno legally without any of the free-stream air," he explains. "So we had a three-way toolset which was perfect for developing all of this on the real car and get a measure of it.

"In the windtunnel, where the simulation of the exhaust is very poor, we developed a machine to blow air down the exhaust pipes to simulate the firing of the engine. We tried to put all three things together and create an estimate of what was going to happen. We were ahead of all the teams on that technology, and that's why the car was really strong in the first part of the season."



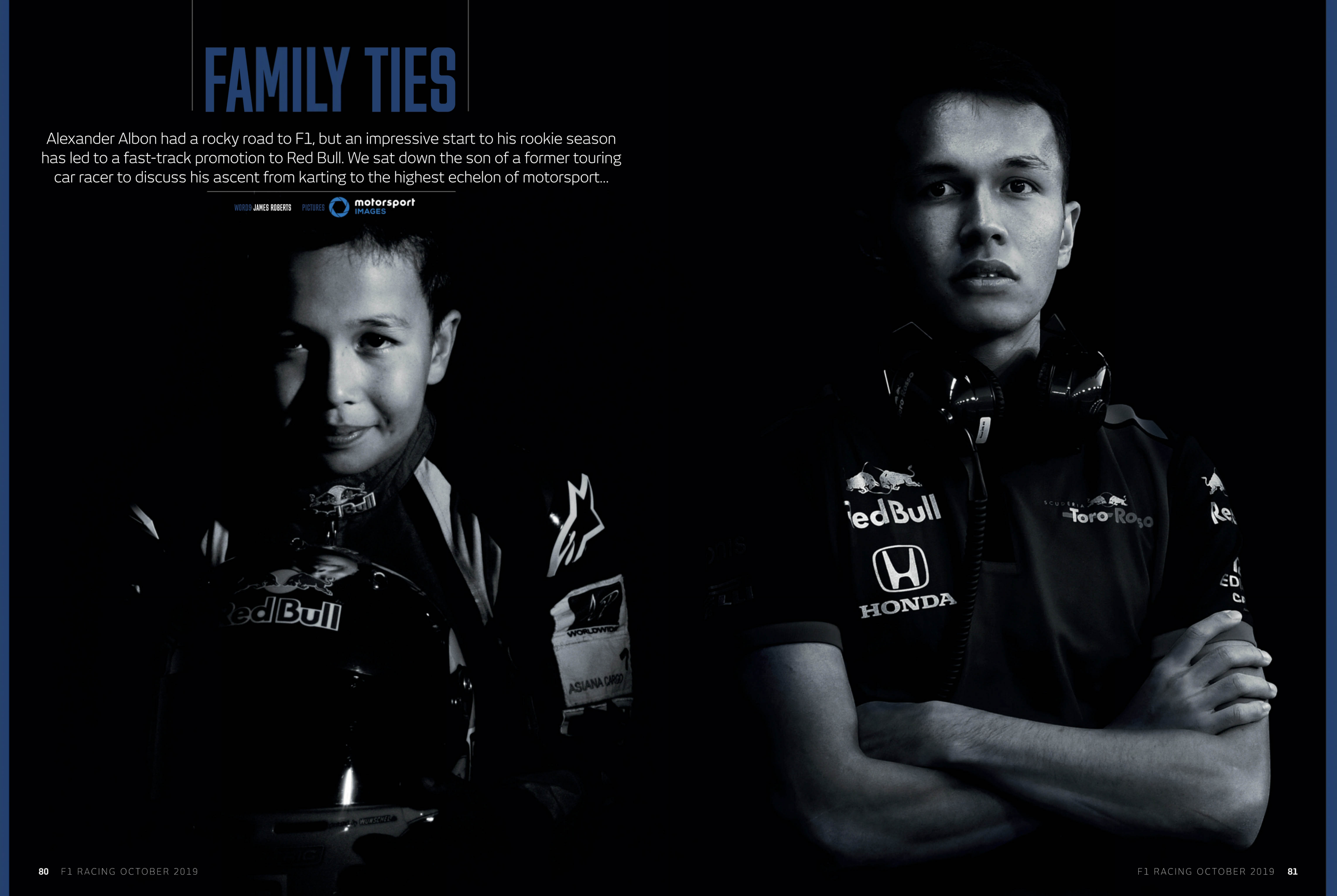




FAMILY TIES

Alexander Albon had a rocky road to F1, but an impressive start to his rookie season has led to a fast-track promotion to Red Bull. We sat down the son of a former touring car racer to discuss his ascent from karting to the highest echelon of motorsport...

WORDS: JAMES ROBERTS PICTURES: motorsport IMAGES



RACING DRIVERS who are the 'sons of' are nothing new. On today's Formula 1 grid Carlos Sainz, Max Verstappen and Kevin Magnussen have descended from highly successful drivers in their own right. But there is another current F1 racer who is the son of someone who didn't quite reach the same heights.

Toro Rosso rookie Alexander Albon is the progeny of British Touring Car racer Nigel Albon, who did one season piloting a Renault 19 to fifth place in the Privateers Cup in 1994. His best result was 12th at Brands Hatch. A few years later, Albon senior was twice champion of the Asia-Pacific Ferrari 355 Challenge but, perhaps sensibly, focused his efforts on developing the skills of his son Alex in karting.

"I was seven when my Dad first bought me a kart and we would go to our local track," recalls Albon Jr today. "He was everything for me. My driver coach, my mechanic. And that's how my passion for racing began."

Born to a British father and Thai mother, Albon and his sisters grew up in a large home in rural Suffolk and he recalls taking advantage of a plot of land to create a makeshift figure-of-eight course to practice racing on after school each day. Born in March 1996 and growing up in the early 2000s, Albon is another – like Lance Stroll, Daniil Kvyat and many of his generation – who in childhood idolised Michael Schumacher.

"One of my earliest motor racing memories was going to Silverstone for the British Grand Prix and correctly winning a competition to predict the top three finishers. I had to go on stage – I was only about five or six – and receive a signed Michael Schumacher cap and shirt. I still have them somewhere."

Albon competed in the UK karting championship and in 2008 was driving a Honda-powered kart when he had his first connection with Red Bull. Ten years later, when he made his F1 debut in Australia at the wheel of a Toro Rosso-Honda, his motor racing journey had come full circle.





From Red Bull Thailand-backed karter to Red Bull F1 driver, Albon's journey hasn't been completely straightforward

He was backed in karting through direct sponsorship from Red Bull Thailand (not the established Helmut Marko-run young driver scheme) thanks to the close links between Red Bull and the south east Asian country.

In the mid-1970s, a medicinal pick-me-up drink, Krating Daeng, containing taurine (from Taurus, the latin for bull) was introduced into Thailand by an entrepreneur called Chaleo Yoovidhya. The logo on the bottle was familiar: two charging bison head-to-head in front of a yellow sun. When, ten years later, a globetrotting Austrian marketer called Dietrich Mateschitz found the drink helped cure his jet-lag, he approached Yoovidhya with an offer and set up a company to sell Krating Daeng (which translates as Red Bull) abroad. The Thai family still have a large stake in the company, making Red Bull a successful export for the country, and from a marketing perspective it's significant a Thai driver is connected with the energy drinks firm today.

While the loss of the Malaysian GP has reduced F1's presence in south east Asia, the planned new race in Vietnam next year should help revive interest. Near-neighbour Thailand has MotoGP and Superbikes and is slowing waking up to the fact Albon is representing their country on the world stage – and is the first Thai F1 driver for 65 years (see sidebar).

"I've just come back from Thailand and the support is growing," says Albon. "Each GP weekend I spot of couple of Thai flags and although we don't race there it's amazing to see interest getting bigger. They have bike races in Buriram and that's big, but so is the tuning and drifting

"I'VE JUST COME BACK FROM THAILAND AND THE SUPPORT IS GROWING"

PICTURES: JERRY ANDRE; ZAK MAUGER





THE LAST PRINCE

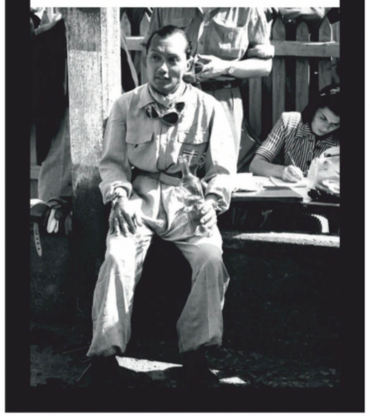
When Alex Albon made his debut this year, he became the first Thai driver to start an F1 race for 65 years

You won't catch many F1 drivers – or members of the royal family – using public transport. But a former racing prince is indelibly linked with Baron's Court station. Off to do some shopping in December 1985, Prince Bira died of a heart attack at the London tube stop.

Seventy years earlier he was born at Bangkok's Grand Palace, cousin of the King of Siam, and was given the name Birabongse Bhanudej Bhanubandh. In motor racing circles, though, he was known as B. Bira.

Bira shared a London apartment with his older cousin Prince Chula, where the pair benefitted from a stipend from the royal court of Thailand. They bought three ERAs – Romulus, Remus and Hanuman – and set up the White Mouse Stable race team to compete at Brooklands and on the continent. In 1936, in Romulus, Bira was victorious at Monaco and, after the war, he started 19 F1 races. Two fourths were his best finishes. He was the last driver from south east Asia to race in F1 until Malaysia's Alex Yoong in 2001.

"In the past few years I've got to know more about his story," says Albon of Bira. "I consider him to be like me – not that I'm a prince – but he spent most of his life growing up in the UK, lived here, and did his racing proudly representing Thailand. It's great Thailand is back on the F1 map."







Albon knows he will be in the spotlight at Red Bull but it is probably exactly what he dreamed of as a 12-year old karter (right)



PICTURES: JERRY ANDRE; STEVEN TEE

scene. Every taxi has a modified exhaust."

But having a Thai driver compete in a Red Bull-liveried car is not purely a commercial decision, as Albon's performances this year have merited his rapid promotion to Red Bull.

It's been a dramatic ascent for the youngster, who 12 months ago was contemplating a life outside F1. Albon himself admits his junior career hasn't been particularly "fluid" and has featured a few "ups and downs", but last year in F2 he finished third overall (with four wins) behind Lando Norris and George Russell. Despite the strong year, his ascent to F1 might have easily stalled if it wasn't for Red Bull young driver boss Helmut Marko giving him a call over the winter. Red Bull then had to extract Albon from a three-year contract with Nissan/DAMS for Formula E.

The start of his season with Toro Rosso was tough due to the lack of mileage, but as F1 neared the summer break he had started to outqualify team-mate Daniil Kvyat, and put in a sensational performance in the wet German GP. As Pierre Gasly struggled with his own promotion to Red Bull, it became a no-brainer to hand the keys over to Albon and initiate a swap ahead of the Belgian GP. In just 12 races he's proved he has the pace.

"I've been quite happy with my speed, surprisingly, as I thought it would take me a bit more time," he says, honestly. "It's closing in on the final 0.2s or 0.3s where the real work comes. Yes, there have been mistakes, but that is all part of the learning curve.

"I'm know I'm coming quite inexperienced, so it will just be about taking things step by step. Hopefully we might pick up some results – but that's not the focus at the minute."

As his former team-mate Kvyat and the demoted Gasly know, the environment of the Marko-run Red Bull young driver programme can be highly pressurised at times, but Albon exhibits a demeanour that looks as though he's handling the burden – and promotion – with ease.

"You shouldn't care too much about what people are saying, or keep looking over your shoulder. If you start worrying, that's when you put pressure on yourself when you don't need to. Franz Tost [Toro Rosso team boss] told me that as it's F1, I'm going to be in the spotlight the whole time. He says to not care about it, just drive *fast*."

So far Albon has been doing that and, despite his British roots, could well be the quickest driver to fly the flag from a south east Asian country. In addition to the Red Bull links, it means that Thailand could play a serious part in F1's future.

> **"IF YOU START WORRYING, THAT'S WHEN YOU PUT PRESSURE ON YOURSELF"**

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IN CONVERSATION WITH

WORDS JAMES ROBERTS
PORTRAIT ANDY HONE

DANIIL KVYAT

Unceremoniously dropped by Toro Rosso in 2017, Daniil Kvyat's F1 career seemed to be heading into the wilderness when he spent last season as a Ferrari simulator driver. Then came the shock return to Toro Rosso and, in Germany, to an F1 podium

CV

Age 25
Nationality Russian

2019
F1 with Toro Rosso (1 podium)
2018
Ferrari F1 simulator driver
2017
F1 with Toro Rosso (15 races)
2016
F1 with Red Bull (4 races); F1 with Toro Rosso (17 races)
2015
F1 with Red Bull (1 podium)
2014
F1 with Toro Rosso
2013
FP1 outings with Toro Rosso (2 races); GP3 champion with Arden

It's been an eventful summer for you, becoming a father and getting a podium in Germany. How did it feel?
It was the first podium in 11 years for the team, so it was a fantastic achievement and we were all very happy – every member of the team. When I crossed the finish line it was a very special feeling.

Personally, it wasn't easy for me to lose my seat in F1 and I thought there was no way back in for me. But since I got the call to return it's been important to be better mentally prepared. All this work is now paying off and I'm happy with the people and team around me – hopefully we can keep this going.

In your year out, how did you find it being simulator driver for Ferrari?
At the end of 2017 I wanted to take a break from racing. I had a good connection with some people at Ferrari, because in some ways I feel Italian, as I lived in Rome for a long time. They needed someone with experience to use their simulator and I was ready to give my full dedication to them for the whole year. I was grateful they found this job for me and it was a cool experience to see that legendary team from the inside.

For me, growing up watching Michael Schumacher winning races is what gave me the bug for racing and so it was amazing to be there. I even tried a car at Fiorano for a Pirelli test, so it was incredible to drive a current Ferrari. Then it came to the point, last summer, where I was desperate to come back to racing and started looking for an F1 seat.

How did it feel to be back on the grid? Did you feel mentally recharged and refreshed for this season?
I remember flying to the Abu Dhabi test at the end of last year and it felt like Christmas again. I managed to get back my love and passion for this sport. That was really important because I hadn't felt that for a while and when you don't have that you can't perform well. Now finally I have it again and when I come to the races I have this feeling that it will be great fun to drive one of the fastest cars in the world.

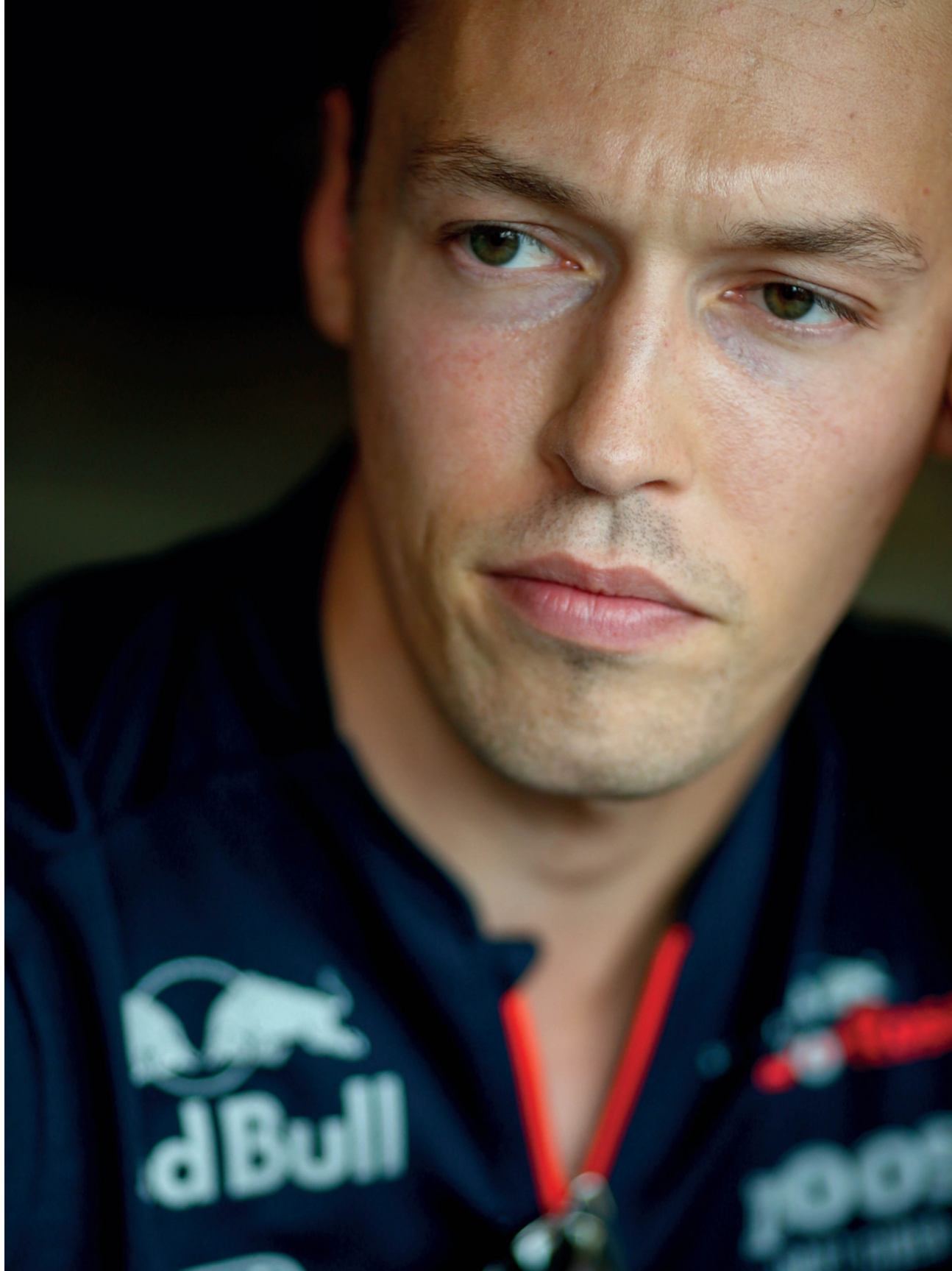
Has your mindset changed? You've been through the heartbreak of rejection, so do you go about your work less worried about that happening again?
Yes, in a way. But I still really care and want to do really well every time I hit the track, but in a way the experience has changed me and in a very positive way. It is necessary, sometimes, to go through this to get back the fire. On the negative side, I'd been out of the cockpit for a long time, so at the beginning of the year everything felt a bit new. All-in-all it has been a positive journey and I'm happy with how things have turned out in the end.

> "I MANAGED TO GET BACK MY LOVE AND PASSION FOR THIS SPORT. I HADN'T FELT THAT FOR A WHILE"

What were your feelings about Alex Albon being promoted to Red Bull mid-season rather than you?
I understand. I guess they have their reasons, that's for sure. I think my year has been very strong but I assume they want to try Alex in a competitive car to find someone who can match Max. It won't be an easy task in the remaining races of the year to jump in and straight away match Max, but nevertheless the decision was Red Bull's and I have to respect it and accept it. And the future – we will see.

Have you any idea when your future will be decided?
Some years it is decided quickly, other years it takes a bit of time. At the moment, I'm not even aware of what the market is doing right now. There can always be some surprises, who knows? We need to be patient, but not leave it too late either. At the moment I don't see any alarms because the season is going well. Sometimes you just wait and see what happens around you and then you take what is the best for you. I'm thankful that Red Bull took me back and for what they have done for my career in general. We will obviously speak first with them and then see what direction they can offer me.

This is your first time working with Honda. How impressed have you been with the Japanese manufacturer?
They are having an amazing campaign. There is always room for improvement and at certain times they are maybe a little behind the top two, but they work hard. They are closer than they were but the margins are so small that every tenth counts. In race trim we are definitely there. At Silverstone I overtook both Mercedes and Ferrari-powered cars with no issues. In the end it doesn't matter how you work or how you think, what's important is the stopwatch. Even with more things to come from Honda, the future for them is looking really good.



motorsport IMAGES

SHOWCASE

THE LOST CIRCUITS

Some no longer exist, others were only ever temporary or have fallen out of favour, but they are all lost F1 circuits

Morocco's Ain-Diab circuit hosted just a single world championship F1 race in 1958 – using public roads – when Mike Hawthorn, here following Phil Hill's similar Ferrari 246, clinched the title



The stunning grandstands overlooking the final corner of Malaysia's Sepang circuit, first used in 1999. When government-funding was withdrawn after 19 races it was inevitable that it would drop off the calendar



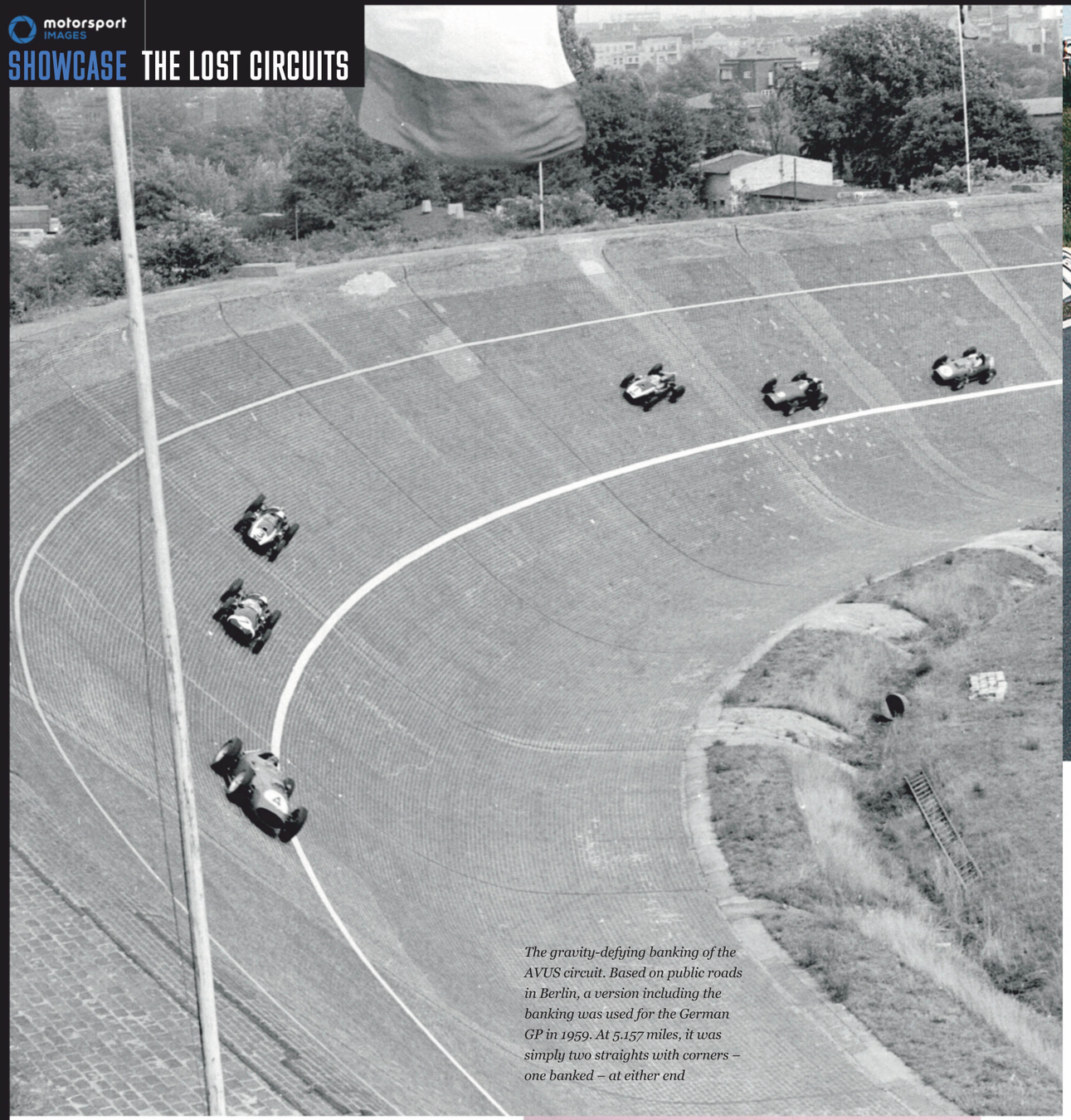
In 1978 the Brazilian GP moved to the Jacarepagua circuit in Rio de Janeiro. A further nine races followed over 11 seasons but it was last used for F1 in 1989. It was then demolished in 2012 to make way for facilities for the 2016 Olympics



Graham Hill (left), Mario Andretti and wife Dee Ann (right and far right) walk to the Watkins Glen pits in 1968. Ironically, rowdy elements of the crowd contributed to the venue of the US GP from 1961-1980 being dropped from the F1 calendar



Imola, home of the San Marino GP (1984's race pictured here), hosted its last Formula 1 race in 2006. It still holds an FIA Grade One track licence and as recently as 2015 hoped to replace Monza as the venue for the Italian GP



The gravity-defying banking of the AVUS circuit. Based on public roads in Berlin, a version including the banking was used for the German GP in 1959. At 5.157 miles, it was simply two straights with corners – one banked – at either end



Jacky Ickx (Brabham BT26A) drops a wheel in the dirt at Clermont-Ferrand during the 1969 French GP. The mountainous circuit left little room for run-off areas and the track fell out of favour during the early 1970s



The 1959 Portuguese Grand Prix was held at the Monsanto circuit, with fantastic views over Lisbon. Sadly, Dan Gurney's concentration would have been on the many challenging changes of track surface, including tramlines



One of the most picturesque tracks ever to hold an F1 race was the hilly Montjuïc street circuit, in wooded parkland just outside Barcelona. First used in 1969, the circuit was dropped after four races mainly due to safety concerns after a fatal accident in 1975



The smog seems set to envelop Jenson Button and Mark Webber as well as the grandstands at the first Indian GP in 2011. A long time coming, the race at the Buddh circuit near New Dehli dropped off the calendar after the 2013 edition



Patrick Depailler (Tyrrell P34) rounds the first corner in the 1977 Japanese GP at Fuji with the famous mountain in the background. F1 returned to Fuji for two races in 2007 and 2008 after a 20-year break



Is it an airport or a Formula 1 track? Emerson Fittipaldi gets runway clearance for his Lotus 72 at Anderstorp in 1973. The six Swedish GPs held from 1973-1978 remain, amazingly, the only F1 races ever held in Scandianvia

NIGEL ROEBUCK'S FORMULA ONE HEROES

MICHELE ALBORETO

PICTURES motorsport IMAGES





Alboreto loved racing, even when driving the BMS Lola T93/00 in 1993 (above). Monaco in 1985 (below) was one of his best races

HAD I BEEN A KID IN THE 1930s,

there isn't a doubt in my mind that my hero would have been Bernd Rosemeyer. He was ferociously quick in the treacherous rear-engined Auto Unions, single-handedly taking on the might of Mercedes, and always, apparently, with high good humour. Spectacular on track, charismatic off it, Rosemeyer had it all.

He was killed in January 1938, in a record attempt on the Frankfurt-Darmstadt *autobahn*. When the Auto Union went out of control, disturbed by crosswinds, it was travelling at 270mph.

Reading in childhood about Rosemeyer, I remember being angered that he had died in such an apparently futile way – it seemed absurd that the life of a great grand prix driver, who excelled at such as the Nürburgring, should have been squandered driving flat-out in a straight line. And in April 2001 I had similar thoughts when I learned of the death of Michele Alboreto.

After a long and distinguished career Alboreto died at the Lausitzring when his Audi R8 suffered tyre failure and vaulted a barrier, clipping it along the way. Alboreto, only 44, had been conducting straightline tests in preparation for Le Mans.

"Aerodynamics, at Le Mans speeds," he said to me, "is like a black hole – you need to have the right experience working with you. Audi has worked very hard on stability at *really* high speeds. Look at what happened to Mercedes…" This was not long after Le Mans in 1999 when the Mercedes factory cars had fallen prey to a series of alarming 'aero' accidents.

A couple of days after Alboreto's death, the Formula 1 community gathered at Barcelona, and although Michele had been out of F1 for some years, everyone remembered the lovely fellow he had been.

"Outside of the people I actually worked with," said Keke Rosberg, "there were two guys I thought exceptional, in every sense of the word. One was Elio [de Angelis] and the other was Michele. When I got home that evening, put on the TV news, and heard about his accident, it was like ripping open an old wound."

Riccardo Patrese many times tried to persuade Alboreto to retire: "He had a thousand other things in his life, and he certainly didn't need the money. But racing was something Michele just couldn't do without…"

There was no argument about that. "He had a complete *passion* for driving," said Gerhard Berger. "When I joined Ferrari in 1987, Michele was the superstar, and I'm sure I didn't make his life easy, but he was always a gentleman – a true Italian gentleman – and we never had any problems. When we separated as team-mates, we remained good friends. Maybe he should have stopped racing years ago, but he just couldn't leave it – and he died doing what he loved."

For Alboreto motor racing indeed amounted to an addiction, and on a given day he was capable of true greatness. One such was the 1985 Monaco Grand Prix: after 18 laps he went down the escape road at Ste Devote, handing the lead to Alain Prost, but within seven laps he had caught – and passed – the McLaren. Soon, though, he was into the pits with a deflating rear tyre, after which, rejoining fifth, he several times shattered the lap record, ultimately finishing second to Prost.

Through that season Alboreto was Prost's only real challenger for the world championship. In the end he had to settle for runner-up, because the Ferrari wasn't as good as the McLaren, and, in truth, neither was Michele as good as Alain. No disgrace in that.

Once Alboreto was out of Ferrari, at the end of 1988, it was inevitable that his F1 career could only go downhill, and in that situation many drivers would have called it a day, or raced in some other category, keeping pride intact.

That wasn't Michele, though. Just like Clay Regazzoni, a decade earlier, he knew he still loved driving, and really wasn't concerned about what people thought. In 1994, his final season in F1, he drove for Minardi, and if some thought that sad, well, that was their problem. Afterwards Alboreto tried a bit of this and that – he competed in the first season of the Indy Racing League, for example. But then came an offer from Audi, and a new career beckoned.

> "I HAVE PASSION FOR DRIVING – I DRIVE FOR PLEASURE AND SUCESS, NOT FOR MONEY"

At Goodwood one year he drove an Auto Union, and entered into the spirit of the thing, down to wearing 'period' overalls and cloth helmet. "Look at me," he said proudly. "Like Nuvolari!"

One of the reasons I was so fond of Michele was that, most untypically, he loved the sport's heritage, and was the kind of driver who would know all about Nuvolari. He may have won five grands prix, but was still a man who had heroes: in his youth he had worshipped Ronnie Peterson, and adopted his helmet colours.

Alboreto also idolised Mario Andretti, whom he recognised as a kindred soul – a man who would race anything, anywhere, any time, and one who retired, well into his 50s, only with great reluctance.

"For me, Mario was the perfect racing driver – an example to us all," Michele said. "For some drivers, it's F1 or nothing, but he wasn't like that, and neither am I. I don't look just for the glamour, or to be at the top. I like to win, of course, but I have a passion for *driving* – I drive for pleasure and success, not for money."

And was the pleasure in driving as much as ever?

"Unfortunately, yes!"

But were there gaps that at one time he would have gone through, and now backed off?

"Unfortunately… no!"

As nice a man as I have known in motor racing, Alboreto was smiling as he answered my questions, as if aware that, into his 40s, perhaps he should be a little more circumspect. "I have less passion for women now than for cars! Old age, you see…"

He couldn't help himself, and he knew it. "I will think about retirement," he said, "only when I wake up and have to force myself to go to the track, when I feel I'm not as good as the other guys in the team. Under those circumstances, I wouldn't want to be there."

Sadly, that day never came.



Three of Alboreto's five F1 wins came during his five seasons with Ferrari, after two earlier triumphs with Tyrrell

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PICTURES: JOE PORTLOCK. *CONTENTS MAY BE SUBJECT TO CHANGE.

Harsh words from a reader who thinks British fans should pay the "extra few quid" to watch all F1 races live on TV

Time to pay

I'm writing in response to the letter in your August issue from Jem Bruce, who states F1 races only being shown live on Sky Sports F1 "dampens the enthusiasm of fans unwilling to pay" to watch F1.

Fans of other sports such as football, rugby and cricket have had to pay to watch their sport for years – and despite being more popular than F1 none of those sports had their own channel from the outset, like F1, for years.

Without Sky, F1 would have disappeared from British TV years ago, and the quality of the service it provides is second to none.

The fact that Sky show F2 and F3 races as well during each F1 weekend allows fans to see the future talent racing, while getting ready to watch the main event. As well as seeing top quality pre- and post-race coverage.

I'm amazed that fans in Britain will happily pay high prices to attend Silverstone every year yet won't pay a few extra quid a month to watch the other 20 races live.

So, why not put your money where your mouth is and pay to watch the sport you love. Then you can enjoy it in real time with the rest of us, like you would attending a race, rather than complain about the coverage being too dear.

Paul Murtagh
By email

Is 22 too many?

The 2020 F1 season is set to be the longest on record with 22 races, including a new race in Vietnam, a return to Holland and, of course, the much anticipated saving of the British Grand Prix.

This is great news for the fans but shouldn't be done at the expense of burnout for the teams and personnel involved. A race every week may even be too much for the viewing public.

I would argue that the calendar should be a maximum of 20 races, with no country hosting more than one per year. If this means some nations are forced to alternate between years then so be it.

With clever tinkering of the schedule, this could also mean events are held every other week on a calendar and still able to incorporate a summer break.

Michael Brierley
Stalybridge, UK

Bring back third cars

I was flicking through my copies of *F1 Racing* recently and, after reading your excellent article on how data usage is affecting Formula 1's unpredictability (June 2019), I thought of a solution to help those teams towards the back of the grid: third cars.

Back in 2004, the teams finishing fifth or lower in the constructors' championship in the previous year were allowed to run a third car in Friday practice. By once again giving the lower teams the opportunity, should they want to, to run a third car on a Friday, this would allow them to gain far more data and test more parts in an attempt to become more competitive.

It also has the advantage of not hindering the top teams which I feel would be unfair. Although there would be a cost increase to running a third car, most teams would surely welcome the opportunity and, looking at the improvement of BAR from 2003 to 2004, it could give them a decent improvement in their fortunes.

Jack Jeffreys
By email

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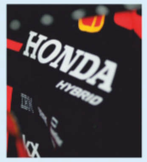
NEXT MONTH*



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Still chasing the impossible dream?



NORRIS
Lando responds to your questions



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How it got back to winning ways

ON SALE OCT 24

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> In conversation with Nico Hülkenberg
> Celebrating Ferrari's 90th birthday
> Reports from Singapore, Russia and Japan

FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 13

THE BELGIAN GP IN 3 KEY MOMENTS



1 Ferrari orders Vettel to help Leclerc win

PICTURES motorsport IMAGES



At Spa-Francorchamps the Monegasque national anthem rang out on a Formula 1 podium for the first time in world championship history. But this historic occasion was tinged with solemnity following the death of F2 driver Anthoine Hubert on Saturday, and Ferrari's Charles Leclerc confessed he was unable to fully enjoy his maiden F1 victory.

"On the one hand a dream I've had since I was a child has been realised," he said, "but on the other it has been a very difficult weekend. I grew up with Anthoine and I want to dedicate my win to him."

This race was significant not only for being Leclerc's first F1 win – Ferrari's first all season – but also because the Scuderia threw its weight behind Leclerc and not Sebastian Vettel for the first time.

As unexpectedly high tyre degradation left the red cars vulnerable to attack from Mercedes, despite being faster in a straight line, Ferrari's strategists had to prioritise Leclerc. A scrappy performance in the final segment of qualifying had left Vettel 0.7s off his team-mate's pole time and only a hundredth of a second faster than third-placed Lewis Hamilton. Vettel blamed traffic but onboard footage revealed the only car ahead (Hamilton) obstructed him not one jot.

Leclerc converted pole into the race lead and Hamilton got by Vettel at La Source, only to slip back to third as Vettel blasted by up the Kemmel Straight. The race was then neutralised owing to a first-corner shunt between Max Verstappen and Kimi Räikkönen, but when racing resumed at the end of the fourth lap Leclerc shot off again.

As Leclerc edged clear Vettel struggled to keep Hamilton out of DRS range and was one of the earliest to pit for medium tyres, on lap 15.

That seemed marginal given the expected life of the rubber, and indeed Leclerc and Hamilton stayed out until laps 21 and 22. Since they had slackened their pace to preserve their tyres, and Vettel had pushed hard on his first laps out of the pits, Vettel emerged in the lead. "Everything will be fine for the end of the race," Leclerc was informed.

Vettel stood little chance of making his tyres last until the end and in due course he was ordered to let Leclerc by. This he did with 18 of 44 laps to run, and Vettel spent the period before his second stop crucially "playing a roadblock" role to protect Leclerc from Hamilton, consigning himself to fourth at the finish. Vettel had held Hamilton up enough to enable Leclerc to pull 7s clear with 11 laps remaining.

Hamilton closed in but was stymied by having to lap the Haas cars at less advantageous places than Leclerc, and came up just under a second short.

2 Albon's Red Bull call-up as Max shunts

Alexander Albon's Red Bull debut began in a low-key way – he didn't drive the car in low-fuel trim until qualifying, since engine-change penalties meant he would start from the back anyway. From these unpromising beginnings he made excellent use of an alternate strategy to claim fifth place while his illustrious team-mate Max Verstappen failed to complete the first lap.

PICTURES: SIMON GALLOWAY; GLENN DUNBAR; JERRY ANDRE



Albon made full use of starting on medium tyres to claim fifth on his Red Bull debut

A poor getaway from fifth on the grid put Verstappen on the back foot as the field funnelled into La Source, and he aimed his car at a diminishing gap between Kimi Räikkönen's Alfa Romeo and the apex. The impact launched Räikkönen's car onto two wheels and fractured Verstappen's suspension, which gave way entirely as he went through Eau Rouge.

Starting from 17th on medium rather than soft tyres, Albon profited from the first-lap chaos to run 13th. He lost a place to Nico Hülkenberg at the restart but then regained it when the Renault driver pitted early, made a clean pass into the Bus Stop chicane on the struggling Haas of Kevin Magnussen, then broke into the lower reaches of the top 10 as the soft-tyre starters ahead began to pit.

The alternate strategy was proving profitable in terms of track position, but Albon had to scrap his way past the Toro Rosso of unimpressed former team-mate Daniil Kvyat, who was running the same strategy and had got ahead at the start, as well as the Racing Point of Sergio Pérez.

Albon sealed fifth on the final lap as Pérez inadvertently forced him to put two wheels on the grass at top speed on the run to Les Combes. It was a brave move, especially given the events further back down the hill 24 hours earlier...

3 Perez demonstrates Racing Point progress

Racing Point has been a bit-part player for much of this season because the financial troubles of its previous ownership delayed development of its car.

A combination of new aero components, a circuit that favours its car's characteristics – or flatters its shortcomings – and a little bit of luck enabled the team to claim 'best of the rest' status behind the Ferraris, Mercedes and single Red Bull ahead.

Sergio Pérez qualified seventh even though he was running an older-spec Mercedes engine after his new one went up in smoke during Friday practice. Pérez avoided the chaos at the start but had to take a wide line at La Source that enabled Romain Grosjean and Kevin Magnussen to sneak by. As Magnussen began to struggle Pérez went past on the Kemmel Straight and, after the pitstops, did the job on Grosjean.

Once the last car on alternate strategy pitted out of Pérez's way he held sixth behind Lando Norris, gained a place when the McLaren broke down on the penultimate lap – only to lose it to Albon at Les Combes. Lance Stroll started from the back after engine penalties but survived an knock with Daniel Ricciardo to finish 10th in the other Racing Point.



Pérez was able to cement Racing Point's progress with a 'best of the rest' sixth

RESULTS ROUND 13

SPA-FRANCORCHAMPS / 01.09.19 / 44 LAPS



1st	**Charles Leclerc** Ferrari	1h 23m 45.710s
2nd	**Lewis Hamilton** Mercedes	+0.981s
3rd	**Valtteri Bottas** Mercedes	+12.585s
4th	**Sebastian Vettel** Ferrari	+26.422s
5th	**Alexander Albon** Red Bull	+81.325s
6th	**Sergio Pérez** Racing Point	+84.448s
7th	**Daniil Kvyat** Toro Rosso	+89.657s
8th	**Nico Hülkenberg** Renault	+106.639s
9th	**Pierre Gasly** Toro Rosso	+109.168s
10th	**Lance Stroll** Racing Point	+109.838s
11th	**Lando Norris** McLaren	+1 lap/engine
12th	**Kevin Magnussen** Haas	+1 lap
13th	**Romain Grosjean** Haas	+1 lap
14th	**Daniel Ricciardo** Renault	+1 lap
15th	**George Russell** Williams	+1 lap
16th	**Kimi Räikkönen** Alfa Romeo	+1 lap
17th	**Robert Kubica** Williams	+1 lap
18th	**Antonio Giovinazzi** Alfa Romeo	+2 laps/crash

Retirements

Carlos Sainz McLaren	1 lap - engine
Max Verstappen Red Bull	0 laps - crash

Fastest lap

Sebastian Vettel: 1min 46.409s on lap 36

TYRE COMPOUNDS USED



Hard (C1) **Medium**(C2) **Soft** (C3) **Inter** **Wet**

CLIMATE	AIR TEMP	TRACK TEMP
Overcast	17°C	27°C

DRIVERS' STANDINGS

1	Hamilton	268pts	11	Norris	24pts
2	Bottas	203pts	11	Ricciardo	22pts
3	Verstappen	181pts	13	Pérez	21pts
4	Vettel	169pts	14	Hülkenberg	21pts
5	Leclerc	157pts	15	Stroll	19pts
6	Gasly	65pts	16	Magnussen	18pts
7	Sainz	58pts	17	Grosjean	8pts
8	Kvyat	33pts	18	Giovinazzi	1pt
9	Räikkönen	31pts	19	Kubica	1pt
10	Albon	26pts	20	Russell	0pts

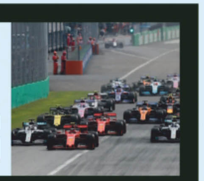
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FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 14

THE ITALIAN GP IN 3 KEY MOMENTS



PICTURES motorsport IMAGES

1 Leclerc: the new hope for Ferrari

A sea of red swamped the start/finish straight in the minutes after the end of the Italian Grand Prix. After nine long years the Monza faithful was finally rewarded when Charles Leclerc crossed the line to record his second straight victory and Ferrari's first home win since 2010.

The mechanics from Maranello climbed the fence next to their pit gantry and pumped their fists into the air. On the opposite side of the track, the *tifosi* – head-to-toe in scarlet – cheered their approval. Leclerc's victory from pole position, in front of the partisan crowd, was significant for two reasons.

Firstly, it represented the moment he came of age as a grand prix driver, not only because he had to fight for victory under the most intense pressure from both Mercedes drivers, but because he had the weight of Italy willing him to succeed.

Secondly it signalled another shift. His team-mate, four-time world champion Sebastian Vettel made an unforced error, spinning on his own accord at the Ascari chicane and finishing a lowly 13th. The momentum in the team has now swung to the youthful side of the red garage.

Leclerc was asked about the pressure he'd felt in the closing stages and explained how he was able to stay focused. "I could see activity in the grandstands and I knew how much it would mean to them," said Leclerc. "I told myself to stop looking at the crowds and focus on my driving."

When he ran onto the podium, Leclerc soaked up the atmosphere. "It felt amazing," he added. "I'd never seen a podium with so many people stretching all the way down the straight. It was 99% red and they were singing and clapping. There was a lot of emotion."

Having led from the start, when the Ferrari man made his only pitstop on lap 20 he switched to a hard tyre, while the Mercedes duo opted for medium Pirellis. For three-quarters of the race Hamilton kept Leclerc in his sights and would regularly try and close-up as the pair rounded the Parabolica. But the pace of the Ferrari power unit negated Lewis's DRS deployment as they sped along the start/finish straight. With his tyres virtually shot, Hamilton made a mistake at the first chicane and the crowd roared with delight. His Mercedes team-mate Valtteri Bottas (with his tyres eight laps fresher) inherited second with 12 laps to go and despite attacking Leclerc in the closing stages, Bottas also made a mistake at the Rettifilo and had to settle for second.

Spa and Monza have highlighted Ferrari's power advantage, but Singapore should be an altogether different story.

The *tifosi* finally got to celebrate but Leclerc was made to work hard for his second win



PICTURES: MARK SUTTON; GLENN DUNBAR; ANDY HONE; JOE PORTLOCK

2 Hamilton asks for stewarding consistency

At the previous race at Spa, Hamilton finished in Leclerc's wheel tracks, but was unable to attack the Ferrari. Monza was a different proposition when he twice came close to overtaking his rival.

Despite the straight line speed advantage of the SF90, Hamilton never allowed Leclerc to build a lead and closed on the leader as the pair neared their one and only pitstops.



Hamilton felt let down after Leclerc's robust defence of the lead wasn't penalised

Following Leclerc's stop, Hamilton hounded Leclerc around the Curva Biassono on lap 23 and pulled alongside as they braked for the Della Roggia chicane. Leclerc gently squeezed Hamilton off the right-hand side of the track and forced the Mercedes to miss the second chicane.

The stewards studied the incident and awarded Leclerc the black and white driving standards flag. The use of the flag – which has been rarely shown in F1 – has been encouraged to give drivers a warning for their behaviour without instantly issuing them a penalty.

But when Leclerc made a mistake 12 laps later and locked up at the first chicane, he was again robust in defence of his lead from Hamilton. Rounding the Biassono, Leclerc blocked Hamilton again and held his place.

Afterwards, the British driver was asked about the moves. "I guess that's how racing is today," he said. "I had to avoid colliding with him a couple of times. We've asked for consistency and there was a rule put in place that wasn't abided today."

Leclerc admitted that since Austria (where he was out-manoeuvred for the win robustly by Max Verstappen) he has been more vigorous in his on-track driving. "It's clear we can go a bit further in the way we defend and overtake," he said. "It's obviously on the limit but I'm happy to race like this."

3 Vettel in danger of a race ban

A week on from the tragic F2 incident in Belgium, when a fast-moving car struck a slow-moving one, attention was focused on a double incident on lap six of Sunday's Italian GP. In the middle of the Ascari chicane, Vettel spun by himself and his Ferrari stopped perpendicular to the racing line.

As the following cars came past, he drove back onto the circuit "in an unsafe manner" and Racing Point's Lance Stroll had to take avoiding action. The pair touched and Stroll spun, coming to a halt at the exit of Ascari.

The Canadian also returned to the circuit while the remainder of the field came around the corner and the Toro Rosso of Pierre Gasly took to the gravel to avoid T-boning Stroll.

Vettel was given a ten second stop/go penalty and three penalty points on his licence. He is now in danger of a race ban for a further serious misdemeanour as he now has nine points of a permitted 12 in the current 12-month period. Stroll was also penalised during the race and issued with a drive-through penalty.

Vettel must avoid accumulating more than three points in the next three races to avoid a ban.



Vettel's "unsafe" return to the track resulted in woe for himself, Stroll and Gasly

RESULTS ROUND 14

MONZA / 08.09.19 / 53 LAPS



1st	**Charles Leclerc** Ferrari	1h 15m 26.665s
2nd	**Valtteri Bottas** Mercedes	+0.835s
3rd	**Lewis Hamilton** Mercedes	+35.199s
4th	**Daniel Ricciardo** Renault	+45.515s
5th	**Nico Hülkenberg** Renault	+58.165s
6th	**Alexander Albon** Red Bull	+59.315s
7th	**Sergio Pérez** Racing Point	+73.802s
8th	**Max Verstappen** Red Bull	+74.492s
9th	**Antonio Giovinazzi** Alfa Romeo	+1 lap
10th	**Lando Norris** McLaren	+1 lap
11th	**Pierre Gasly** Toro Rosso	+1 lap
12th	**Lance Stroll** Racing Point	+1 lap
13th	**Sebastian Vettel** Ferrari	+1 lap
14th	**George Russell** Williams	+1 lap
15th	**Kimi Räikkönen** Alfa Romeo	+1 lap
16th	**Romain Grosjean** Haas	+1 lap
17th	**Robert Kubica** Williams	+2 laps

Retirements

Kevin Magnussen Haas	43 laps - hydraulics
Daniil Kvyat Toro Rosso	29 laps - oil leak
Carlos Sainz McLaren	27 laps - loose wheel

Fastest lap

Lewis Hamilton: 1min 21.779s on lap 51

TYRE COMPOUNDS USED

Hard (C2) **Medium**(C3) **Soft** (C4) **Inter** **Wet**

CLIMATE	AIR TEMP	TRACK TEMP
Sunny	22°C	35°C

DRIVERS' STANDINGS

1 Hamilton	284pts	11 Hülkenberg	31pts
2 Bottas	221pts	12 Räikkönen	31pts
3 Verstappen	185pts	13 Pérez	27pts
4 Leclerc	182pts	14 Norris	25pts
5 Vettel	169pts	15 Stroll	19pts
6 Gasly	65pts	16 Magnussen	18pts
7 Sainz	58pts	17 Grosjean	8pts
8 Ricciardo	34pts	18 Giovinazzi	3pts
9 Albon	34pts	19 Kubica	1pt
10 Kvyat	33pts	20 Russell	0pts

motorsport STATS

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 16

RUSSIAN GP

27-29 September 2019
Sochi





PICTURES: ANDY HONE; STEVEN TEE. ILLUSTRATION: ALAN ELDRIDGE

RACE DATA

Venue Sochi Autodrom
First GP 2014
Number of laps 53
Circuit length 3.633 miles
Longest straight 0.667 mile
Elevation change 6.234 feet
Race distance 192.466 miles
Lap record 1m 35.861s
Valtteri Bottas (2018)
F1 races held 5
Winners from pole 2
Pirelli compounds C2, C3, C4

CAR PERFORMANCE

Downforce level Medium
Cooling requirement Low
Fuel consumption 1.98 kg/lap
Full throttle 51%
Top speed 213mph
Average speed 136mph

TIMETABLE (UK TIME)

Friday 27 September
Practice 1 09:00-10:30
Practice 2 13:00-14:30
Saturday 28 September
Practice 3 10:00-11:00
Qualifying 13:00-14:00
Sunday 29 September
Race 12:10
Live coverage Sky Sports F1
Highlights Channel 4

THE MAIN EVENT

Held in the shadow of the grandstands that hosted the 2014 Winter Olympics, the Sochi circuit is dominated by 90-degree corners that circumnavigate those structures, close to the shore of the Black Sea.

In fact, the Olympic site – and now the Sochi Autodrom – is closer to the town of Adler, which is nestled in the very south of Russia, near to the border with Georgia. The temperate climate makes the area a popular tourist destination for Russian holidaymakers, but the summer heat has dissipated by the time the F1 circus visits in late September.

Sochi has a predominantly smooth surface with flat kerbs and long straights, resulting in low tyre degradation, This year, however, Pirelli is not bringing the softest of its compounds to the race, as it has done in previous seasons.

2018 RACE RECAP

Last year's race was controversial as Lewis Hamilton's victory was the subject of team orders. Mercedes team-mate Valtteri Bottas led the early laps, from pole position, while Hamilton was duelling with Sebastian Vettel for second, but when Hamilton developed a blister on his tyre following Bottas, the call came to allow the championship leader through. When Bottas asked in the closing stages how the race would finish, Mercedes indicated they would hold positions. Bottas was second, 2.5s behind Hamilton, and Vettel third.

KEY CORNER: TURN 2 Situated just after the first DRS zone, cars must scrub off more than 125mph in less than 100m, making it the best overtaking spot on the lap.



THE WINNERS HERE...



2018	2017	2016	2015	2014
Lewis Hamilton Mercedes	Valtteri Bottas Mercedes	Nico Rosberg Mercedes	Lewis Hamilton Mercedes	Lewis Hamilton Mercedes

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RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 17

JAPANESE GP

11-13 October 2019
Suzuka





PICTURES: GLENN DUNBAR; ILLUSTRATION: ALAN ELDRIDGE

THE MAIN EVENT

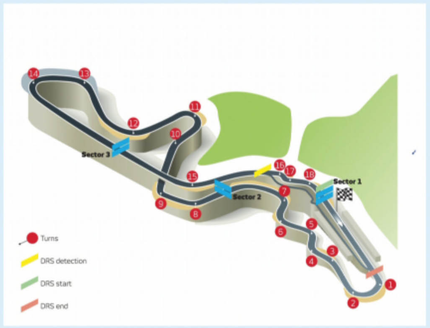
Fans visiting the Japanese Grand Prix must walk through a funfair to get into the fabled Suzuka circuit. It's a quirk that makes the event one of the most unusual on the Formula 1 calendar. The other is the fact it remains one of the toughest circuits in the world for drivers to master. As well as its fast and technical sequence of corners – uniquely in a distorted figure-of-eight layout – Suzuka is characterised by its narrow run-off areas. As a result, drivers know any mistake will be severely punished – but they all relish the high-speed challenge.

Japan in October can often be wet and in past seasons race weekends have been overshadowed by typhoons drifting in from the Pacific Ocean. With the addition of a passionate fan base, the weekend at Suzuka is always unforgettable.

2018 RACE RECAP

Last year's Japanese Grand Prix was a comfortable lights-to-flag victory for Lewis Hamilton, which put him one step closer to a fifth world championship. In contrast it was a troublesome grand prix for his title rival Sebastian Vettel. Ferrari's bizarre tyre strategy in qualifying meant he could only manage eighth on the grid so Vettel knew he had to make up places quickly in the race. But the Ferrari man spun early on attempting to pass Red Bull's Max Verstappen into Spoon curve and fell to the back of field. Despite a good recovery drive Vettel could only finish sixth at the flag.

KEY CORNER: TURN 9 Otherwise known as Degner 2, this passes underneath 130R to create the figure-of-eight layout and has very little run-off, making mistakes costly.



RACE DATA

Venue Suzuka International Racing Course
First GP 1987
Number of laps 53
Circuit length 3.608 miles
Longest straight 0.618 mile
Elevation change 132.546 feet
Race distance 191.054 miles
Lap record 1m 31.540s Kimi Räikkönen (2005)
F1 races held 30
Winners from pole 15
Pirelli compounds C1, C2, C3

CAR PERFORMANCE

Downforce level High
Cooling requirement Medium
Fuel consumption 1.89kg/lap
Full throttle 66%
Top speed 204mph
Average speed 141mph

TIMETABLE (UK TIME)

Friday 11 October
Practice 1 02:00-03:30
Practice 2 06:00-07:30
Saturday 12 October
Practice 3 04:00-05:00
Qualifying 07:00-08:00
Sunday 13 October
Race 06:10
Live coverage Sky Sports F1
Highlights Channel 4

THE WINNERS HERE...

2018	2017	2016	2015	2014
Lewis Hamilton Mercedes	Lewis Hamilton Mercedes	Nico Rosberg Mercedes	Lewis Hamilton Mercedes	Lewis Hamilton Mercedes

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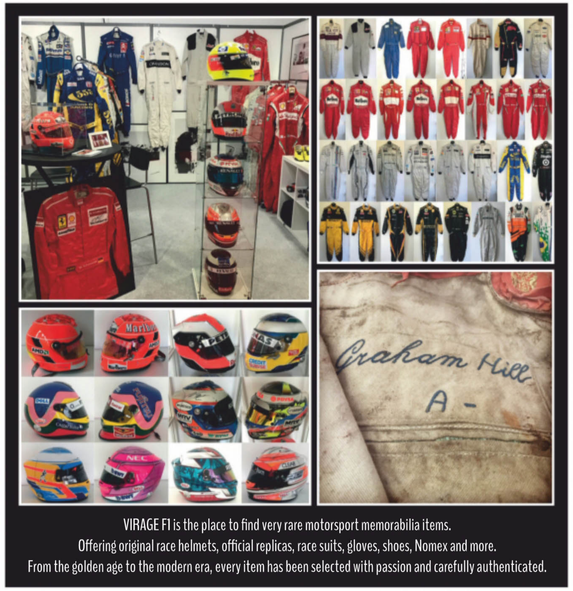
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PICTURES: SAM BLOXHAM; SHUTTERSTOCK

Melbourne's Albert Park circuit is only three miles away from the city centre

VISIT THE AUSTRALIAN GRAND PRIX

MELBOURNE, 13-15 MARCH 2020

PICTURES motorsport IMAGES

FAST FACTS

Flight time: 22hrs London to Melbourne
Currency: Australian dollar
Time zone: GMT+10
Average temperature: 24°C

YOUR GUIDE TO MELBOURNE

As the record breaking 22-race 2020 calendar has been announced, it's time to start planning which destinations you plan to watch Formula 1 at next year. And where better to start than the first race in Melbourne, Australia.

Most fans stay in downtown Melbourne when visiting the grand prix. The circuit is just three miles away from the city centre, meaning it is easily accessible by car and public transport.

Melbourne is not only the capital of Victoria but also the region's largest city. It is known as Australia's culture capital with TV, film and sport all having a strong base in the city. It's had an incredibly prosperous past, and is one of the southern hemisphere's largest economic hubs.

The city is easily traversed thanks to an extensive public transport system. The City Circle Tram is a famous, free-of-charge tram system that runs around the centre and docklands areas and will take you to the most of the key attractions.

After a quick tour on the tram, why not make your first stop a spot of shopping? In the late 1890s, when David C. Askew was commissioned to the design the Block Arcade, his task was to take inspiration from the Galleria Vittorio Emanuele in Milan and build a glittering indoor shopping plaza. The promenade is one of the city's most iconic sights and well worth a visit for any shopaholics or history buffs who want an insight into the city's Victorian gold rush.

Melbourne is brimming with sport: the nation's main cricket ground can be found here, as well as the home of the Australian Open and the birth place of Aussie Rules football. Also, housed within the Melbourne Cricket Ground, is Australia's National Sports Museum which charts the history of the country's favourite sports.

Australia's oldest and most visited art gallery sits in the centre of the city. The National Gallery of Victoria is over 150 years old and houses some of the nation's most important works as well as the world's largest stained-glass ceiling. From Correggio to Rembrandt, Thomas Gainsborough to Turner, art fans of any ilk will find something to admire in this extraordinary gallery.

Directly to the east of the gallery, you will find one of Australia's most beautiful parks. A million people a year visit the Royal Botanical Gardens in the city's Southbank area, and it's easy to see why. The 38-hectare garden is another relic of the city's gold rush heyday and the gardens slope down towards the river, making it an ideal spot to break away from the busy city and its five million inhabitants. The Fern Gully is a must as the raised wooden walkways take you into a dense jungle of towering trees and wildlife.

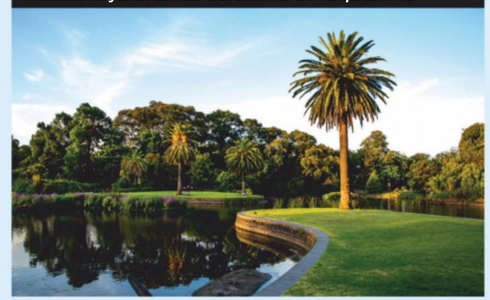
After an afternoon in the gardens head for an evening of culture and performing arts. In the north-west corner of the park is Arts Centre Melbourne. This complex of concert halls and theatres is one of the most prolific performing arts centres in the country, hosting world-class stage plays, opera and concerts from the likes of Opera Australia, Australian Ballet, Bell Shakespeare and many more.

in association with Thomas Cook Sport

The Arts Centre Melbourne contains concert halls and theatres



Visit the Royal Botanical Gardens for some quiet time



The National Gallery of Victoria is Australia's oldest gallery





ASK THE EXPERT
THE THOMAS COOK SPORT REP'S VIEW

What's your favourite part of the track?
The circuit in Albert Park is fast and flowing, especially the fast right and left opening corners in front of the grandstands named after Australian legends, Alan Jones and Sir Jack Brabham.

And what are the best things to do away from the track?
St Kilda Beach is a short tram ride from the city centre and it has a very similar vibe to Brighton. The area is known as a cultural centre that attracts bohemian groups, artists, writers and has a thriving LGBT community. It's a great change of pace from the city and there are also penguins...

What local food or drink would you recommend?
Melbourne is the coffee capital of Australia so be sure to check out the local cafes, sample great wines from the Yarra Valley or enjoy a pizza at 400 Gradi, Southbank – winner of the world pizza championships.

What is your top tip for this race and this destination?
There's a huge amount to see in this incredible city. It's my favourite spot in Australia, so stay for as long as possible. It's a long flight so make the most of what Melbourne has to offer aside from the race.

THOMAS COOK SPORT BREAK DETAILS

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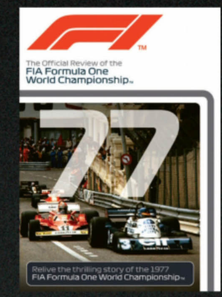


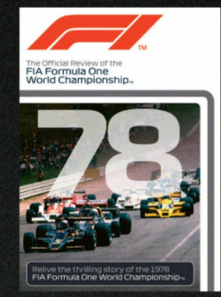




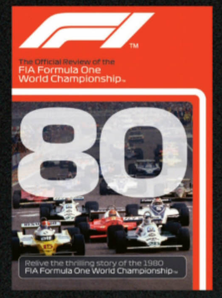




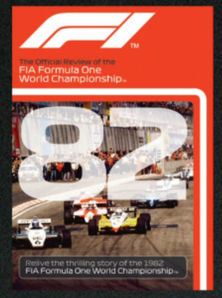


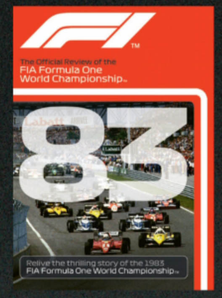






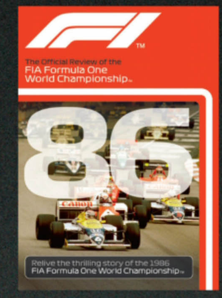
















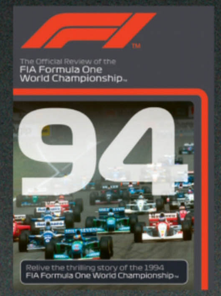












































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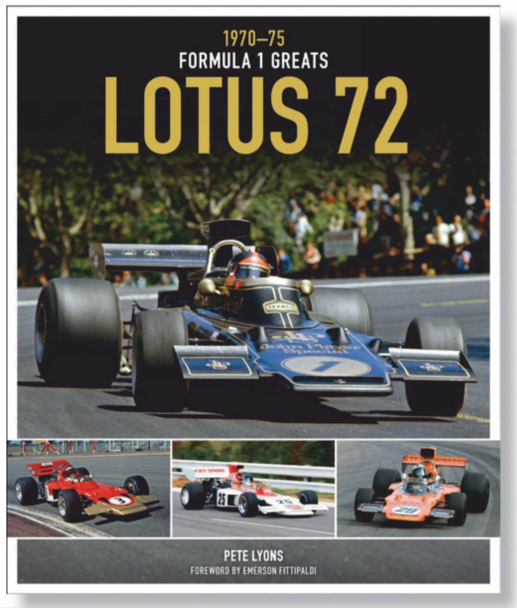
It is perhaps one of the most revered cars in the history of Formula 1. Iterations of the Lotus 72 competed in grands prix from 1970 to 1975 – claiming 20 wins and two drivers' championships – and it's apt that the most famous version of the car, a John Player Special-sponsored 72, adorns the book's cover.

At the wheel of the iconic car is Emerson Fittipaldi, who provides the foreword to this 300-page hardback. In it he describes the Lotus 72 as the "best car" he drove in his illustrious racing career.

With over 325 terrific archive photographs – mainly in colour – this is a luscious but detailed throwback to a golden era of F1.

Author Pete Lyons (formerly an *Autosport* grand prix reporter during the early 1970s), a massive fan of the Lotus 72, explores the car's race-by-race history across six seasons, reflecting on both the triumphs and tragedies of that time.

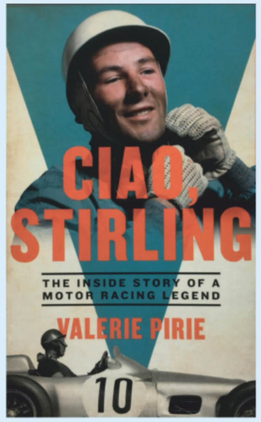
This Lotus 72 book also marks the first in Evro Publishing's new 'Formula 1 Greats' series.



CIAO, STIRLING

Price £20

bitebackpublishing.com



Author Valerie Pirie started working for Sir Stirling Moss as a personal secretary in the late 1950s. Since then she has been a lifelong friend of the legendary racing driver.

Pirie's book is a effectively a fondly written account of her recollections and anecdotes of working with Moss. During that time she took on various roles including housekeeper, chauffeur and even ran his SMART racing team.

The stories vary from nights out in London's West End to first-hand accounts of travelling to and from races at that time.

Pirie first started working for Moss when she was 18, as this was her first secretarial job after college. She then stayed in his employment until 1965. Following Moss's violent crash at Goodwood on Easter Sunday in 1962, Pirie also stepped in to help with his recovery from injury.

This friendship gives Pirie a unique perspective on Moss and this book has many surprises along the way. Highly recommended for all Stirling Moss fans.

WRC 8

Xbox One, PS4, PC

Price €49.99

wrcthegame.com



Unlike the official Formula 1 video game, which is updated every season, it has taken two years for the officially licenced World Rally Championship game to come on the market. But racing game aficionados will appreciate the delay as WRC 8 has a more realistic physics model and a revamped career mode.

The environments look sharper and denser than ever before, but the main improvement is the handling model. The extreme grip and speed of the cars is replicated to a good standard in the game, with a set of assists available for more casual gamers.

There are a number of historic cars also available to compete with, such as the Lancia Stratos, mirroring the appearance of retro machines in F1 2019.

To say WRC 8 is an improvement is an understatement. It has created a solid base for the future and although it's not quite enough to knock DiRT off its perch, it will certainly keep developer Codemasters on its toes.

2010 JARNO TRULLI HELMET

Price £5,000

race-used.com



If you're on the lookout for genuine F1 memorabilia, such as car parts, drivers' overalls and helmets, the website *race-used.com* is worth investigating. With items including a set of Alessandro Nannini's 1990 Benetton overalls for sale as well as old ex-Emerson Fittipaldi and Alain Prost steering wheels, the sellers specialise in rare collectables.

One item currently available is Jarno Trulli's 2010 race helmet, when he was driving for the Lotus (later Caterham) F1 team. This Bell HP3, painted in Trulli's striking chrome finish, features his 'JT' design and is accompanied by the red and green colours of the Italian flag. The helmet also comes with the tear-off strip from its last use, plus the radio lead.

MICHEL VAILLANT ART STRIPS

Price €1,700-4,400

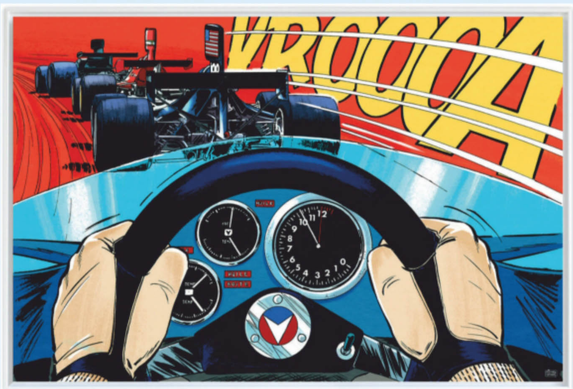
michelvaillantartstrips.com

Last month we reviewed the latest edition of the hardback comic strip adventures of fictional French racing driver Michel Vaillant, *13 Days*. Artist Philippe Graton has continued the work of his father, Jean Graton, in creating the graphic novel stories. Now a series of high-quality art strips, based on storylines, are available to purchase.

There are 47 prints to choose from, including the one pictured that depicts Vaillant chasing down a Lotus, Ferrari and Shadow from 1974. The original drawing appeared on the front cover of the French magazine *Tintin* from the same year.

Prices are based on image size and paper quality. The smallest measures 80x120cm on Plexiglas and costs €1,700, while a 120x180 print on Fine Art Paper (with wooden frame) is €4,400. Each strip is limited to 30 copies, and comes with a certificate of authenticity from the Jean Graton Foundation.

A single book containing a series of Michel Vaillant art strips is also available from the website listed above. It is a collectors item, as only 300 copies have been made, and it retails for €750.



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FLAT CHAT

{ FULL THROTTLE MUSINGS WITH STUART CODLING }

PICTURES motorsport IMAGES

MORE TEAMS? REMEMBER THE LAST TIME...

Whether or not the prospect of 24 races appeals, how about more teams? That was the tantalising post-2020 possibility Ross Brawn dropped in casually during an interview with Sky Sports F1 recently.

Brawn described the number of entities who have expressed an interest in joining F1 as "surprising". Is it really? Last time the FIA threw open the gates to new teams it was overwhelmed with pitches for the three (later four) available slots. But let's not forget mid-2009 was a politically febrile time; I remember doorstepping the late Martin Birrane (on his way out of the toilet in the Le Mans media centre) to gather his thoughts on Lola's exclusion from the final list, and many of them remain unprintable.

None of those new teams still exist, and one of them memorably didn't even make the grid, so what *isn't* surprising is that Brawn followed up with a huge caveat: "I think 10 healthy teams in Formula 1 is actually enough, and if we do get any extra teams they've got to really add to the show. We must remember the history. So many small teams came and went and didn't really add to F1."

This statement arrives so freighted with obviousness that it almost marches through the twaddle detector without setting off any alarms. After all, who in F1 fandom – or business – laments the non-arrival of USF1, the slow death of Lotus/Caterham and Virgin/Marussia/Manor, the why-did-they-bother tomfoolery of Hispania Racing Technologies, or the sundry other fly-by-nights of times past such as Andrea Moda, Simtek, Life, Kauhsen, Token, etc?

Ross Brawn casually revealed that more F1 teams could be on the cards but only if they are good...



So, is Brawn saying that new teams would be sort-of welcome, so long as they're clearly not going to be appalling? Policing that condition is going to be very difficult considering the financial commitment required just to get a foot in the door. Good luck with that, Ross.

CAN ALL THE CURRENT TEAMS BE DESCRIBED AS HEALTHY? I'D ARGUE NOT

Also, there's a weasel phrase lurking right at the very beginning: "10 healthy teams in F1 is actually enough". Can all the current teams be described as healthy? I'd argue not. The state of the prize-money distribution, a legacy of Bernie Ecclestone's gaming of the political system to keep himself in charge, has funnelled the prime cuts of money and influence to a small clique of leading teams. Seven of the 10 stand no chance of catching the leading three this year or next, and maybe not even after that, since the top teams have so much more resource to throw at the much-vaunted new rules coming in 2021.

The financial health of the paddock has improved since the Ecclestone regime, when several teams were known to be for sale or about to hit the buffers. But it's still not great. Racing Point only exists because of the largesse of a private individual – Lawrence Stroll – and his chums. Williams is having to cut its coat according to its (substantially reduced) cloth. Gene Haas is understood to be interested in selling up – and might have been out by now but for the Rich Energy farrago. Red Bull and Toro Rosso's continued existence is dependent on the whim of Dietrich Mateschitz, and there have been occasional reports of his passion for F1 wavering. The McLaren Group is now 10% owned by a Formula 2 driver's father. Alfa Romeo's ownership can still be traced back to late Tetra Pak magnate Hans Rausing, despite a restructure of the various holding companies last year.

Following the money is seldom easy in F1. But when the majority of the teams are owned or heavily influenced by corporations (which answer to shareholders) or high-net-worth individuals (who are generally steered by whim and ego), the situation isn't sustainable. Only when teams can be run as sustainable businesses will they thrive in the long term. How about that, Ross?

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