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OF McLAREN'S TOP DOG

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OF TURMOIL**
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AND BREAKING RACES

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SPECIAL INTERVIEW

ALONSO

FORMULA 1'S

UNFINISHED

BUSINESS

WHY HE NEEDS
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HOW HE PLANS
TO GET IT

WHAT F1
MUST DO
FOR HIM





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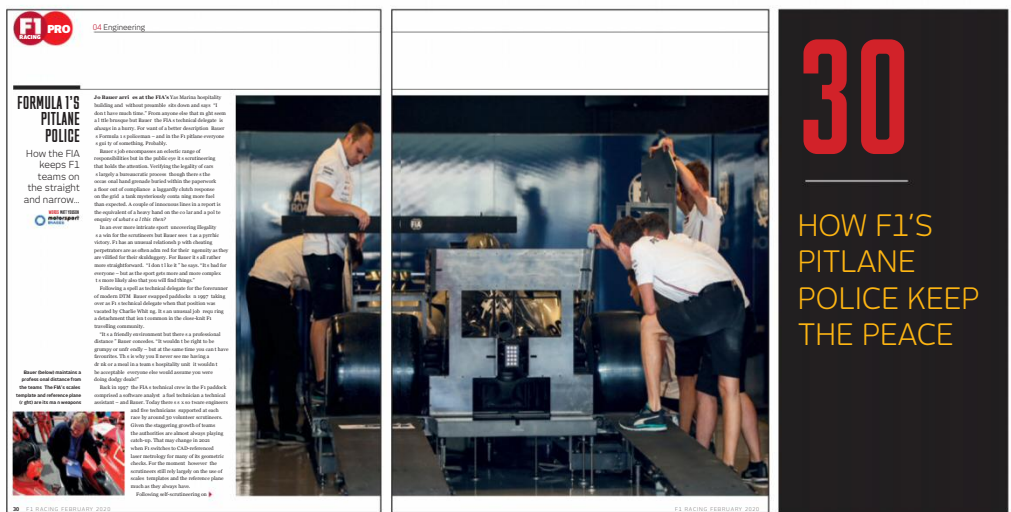
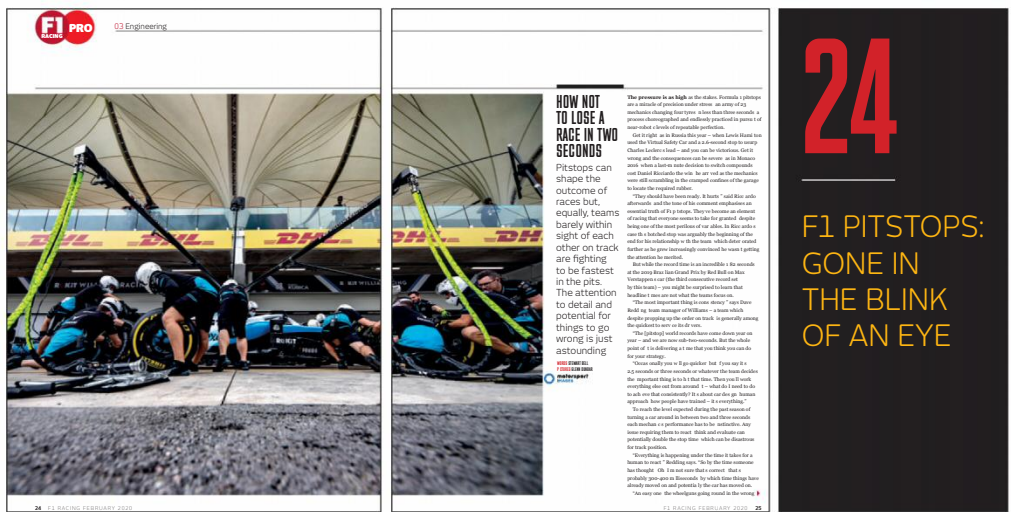
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Change coming for Alonso *and* F1 Racing

Fernando Alonso is clearly a very patient man. Even at the ripe age of 38 he's prepared to play the long game, waiting for the right opportunity to make his return to Formula 1 and claim the third world championship title his talent (but not always his circumstance) merits.

Alonso believes 2021 will present that chance, when sweeping new rules designed to transform F1 into a more egalitarian competition will come into force. Alonso has stayed sharp by using his sabbatical to race in sportscars, IndyCar and most recently the Dakar Rally.

But he is a man who craves success at the highest level. That's why he yearns for a return to grand prix racing. And, as Fernando explains eloquently in our lengthy, no-holds-barred interview (page 42), he believes he is still the driver best equipped to take F1's current champion down, having identified a clear chink in Lewis Hamilton's armour.

To achieve his ambition, Alonso is banking on fundamental change within F1. As the 2020 season approaches, the same is also true of *F1 Racing*. In our November 2019 issue we explained the magazine, founded in 1996, was in the process of being sold.

Negotiations went on for several months, but eventually it became increasingly clear that the best outcome for the magazine and its many fans would be for us to continue operating inside

Motorsport Network, whose stable also includes Autosport, Motorsport.com and Motorsport Images. Consequently, February 2020 will be the final edition of the magazine published under the *F1 Racing* banner. Next month, *F1 Racing* will be rebranded and become *Grand Prix Racing*.

This is an important and necessary step to secure the magazine's future and safeguard our coverage of F1, bolstered by exciting new opportunities to grow our presence in digital and social media.

The magazine was put up for sale because making a viable business out of print publishing is becoming increasingly difficult. The licence fee we were required to pay to Formula 1 simply to exist as *F1 Racing* was a major part (though not all) of the reason for that struggle.

This simple name change will allow us to spread our wings a little more freely, while maintaining the magazine's position as a leading independent editorial voice at the pinnacle of motor racing.

The way things were headed, it would not have been sustainable for us to continue reporting on Formula 1 in this way without significantly increasing the price of the magazine, substantially reducing the physical quality of the product, or sacrificing its editorial independence.

So, we have decided on a new name for a new season. From March 5, look out for *Grand Prix Racing*, and please keep reading.

Contributors

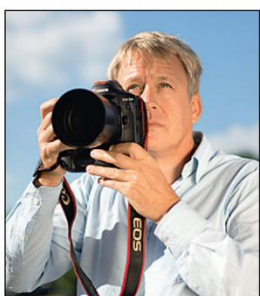


JAMES ROBERTS

This month our associate editor will be braving the arduous commute from Littlehampton for the final time as he enters the world of freelance. 'Jimmy' has been part of the fabric of *F1 Racing* since 2007 and has written innumerable stories, most famously getting to drive an F1 car at Paul Ricard



(above, left) but then coming back to the pits two laps early – should have stuck to toy cars...



STEVEN TEE

He's known Fernando Alonso and covered his career for 20 years. This month Steven photographed Fernando in Oviedo (p42)



MARK GALLAGHER

Is Lawrence Stroll's interest in Aston Martin just hot air or a piece of fantastic strategic thinking? See p21 for our columnist's view

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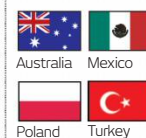
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LECLERC AND VERSTAPPEN LOCKED IN

01 **Two of Formula 1's three top teams** have tied up their hottest talents on unusually long contracts that will take them well into the next rules cycle.

Charles Leclerc has aligned himself with Ferrari for the foreseeable future, agreeing a remarkably long-term deal which will keep him at the Scuderia until the end of 2024. The contract extension underlines Ferrari's faith in him after a season in which he clashed messily with team-mate Sebastian Vettel on-track, and it indicates that Leclerc is

considered a future team leader once Vettel departs. It's a clear warning to rivals to keep their hands off.

Max Verstappen's circumstances are slightly different in that he is indubitably Red Bull's number one driver but, up to now, he has been ostentatiously keeping his options open. Red Bull has struggled to be consistently competitive for wins in the hybrid era and its move to Honda power rendered last season a transitional one. Verstappen's three-year contract extension is similar to his last one – signed while Mercedes was courting him mid-2017 – and places him at Red Bull until the end of 2023. Significantly, that is two full seasons beyond Honda's stated commitment to F1, though the Japanese manufacturer is keen to stay on provided costs do not spiral out of control.

It's rare for teams to lock in drivers over such a long term since short contracts generally act as a sharper motivator. Leclerc's deal, like Verstappen's, will undoubtedly be



garlanded with performance clauses on either side, but the tacit assumption is that he will continue to give his all for the duration of the contract. The barometers of that will be data and the occupant of the garage next door – although the identity of that person post-2020 has yet to be decided.

Vettel's contract expires at the end of 2020. His stock has dropped since Ferrari swapped Kimi Räikkönen – the model number two driver – for Leclerc at the beginning of 2019. Vettel may renew for one or more years, but that will depend on performances – and the ground rules will have changed. Team principal Mattia Binotto explicitly stated 12 months ago Ferrari would prioritise Vettel as its number one contender for the title. Vettel failed to deliver and the team lost a degree of patience with him as it struggled with the fallout of Leclerc asserting his authority.

But who might slot in as Leclerc's team-mate if Vettel gets the heave-ho? Lewis Hamilton remains a possibility,

VERSTAPPEN IS INDUBITABLY RED BULL'S NUMBER ONE DRIVER BUT, UP TO NOW, HE HAS BEEN OSTENTATIOUSLY KEEPING HIS OPTIONS OPEN

though whether a driver at this stage of his career would voluntarily jump into a new team alongside a sitting favourite 13 years his junior is open to question.

While historic precedent – including Ferrari's own 2019 season – bears out the perils of partnering number-one drivers, there's a sweet spot to be found between this and the equally undesirable state of affairs in which the number one is unchallenged and grows lazy. Who, then, could be Ferrari's Valtteri Bottas, quick enough to win without crashing into their team-mate, but savvy enough to swallow team orders without complaint? Ferrari's own young driver ladder has a shortfall in this department.

Antonio Giovinazzi did enough at Alfa Romeo last year to warrant a one-season contract extension but little more. Indeed, it's understood that one of the reasons for him remaining in situ is that none of the Ferrari Driver Academy hopefuls was considered ready. Mick Schumacher, for instance, wasn't sufficiently impressive in F2 to warrant immediate promotion to F1. Last month Binotto said of Schumacher, "We are pretty sure he's a good candidate for F1 in the future." But he stopped short of saying he would drive for Ferrari, and pointed out the new cars coming in 2021 would require drivers with "some experience". Even if Schumacher lifts his game, he's most likely to follow Leclerc's path, going to Alfa Romeo first.

Red Bull has more options than Ferrari, provided Alex Albon's development follows an upward trajectory and Pierre Gasly continues to rehabilitate himself at Alpha Tauri (as Toro Rosso will soon be known). But while Verstappen will remain its undisputed number one, what Red Bull urgently needs is for the number two to be closer: don't forget that Verstappen lost the 2019 Hungarian GP because Gasly's absence from the sharp end left a huge gap that Mercedes exploited tactically.

HAMILTON AND ROSSI SWAP RIDES



Long deals have been confirmed for Verstappen and Leclerc (left) as the man they want to depose, Lewis Hamilton has been having fun with MotoGP star Valentino Rossi (above)

While the young generation aiming to knock Lewis Hamilton off his perch attended to contract matters, Lewis pursued his usual off-season agenda of enjoying himself and decompressing from the F1 bubble. In a test orchestrated by mutual sponsor Monster Energy, Hamilton and seven-time MotoGP champion Valentino Rossi swapped machinery at the Ricardo Tormo circuit near Valencia in December.

Hamilton saddled Rossi's Yamaha YZR-M1, while Rossi drove the 2017 championship-winning Mercedes W08. While Lewis has a penchant for high-powered motorcycles, having owned and lent his name to several



special-edition MV Agusta models, MotoGP bikes are highly specialised machines requiring rider aids such as traction control. The Yamaha's 1000cc four-cylinder engine produces around 240bhp and the 'dry' weight of the bike itself (ie without fuel and oil on board) is just under 160kg.

Rossi has competed in cars before, appearing at the Monza Rally and achieving some success in the annual Race of Champions. He's also tested a Mercedes DTM car in the past as well as completing several tests in Ferrari F1 machinery, most recently in 2010.

The event took place behind closed doors although it was filmed for promotional purposes by Monster Energy, and a Sky Sports reporter was present. In the following days rumours emerged in the Italian media that Lewis had crashed the motorbike, which he later confirmed.

"I had one little spin with it but otherwise brought it back in one piece," he said.

It's understood the accident was a relatively innocuous 'lowside' in which the front end loses

grip under combined braking and steering efforts, causing the bike to slide. Hamilton has previously had a small 'off' while enjoying himself on two wheels, at a Jerez track day in 2018. Rossi had several spins in the Wo8.

Rossi ended the Valencia session 1.5s off the pace of a benchmark lap set by Hamilton, while the F1 champion was four seconds off Rossi on the bike – highly respectable given the number of hairpin-style corners and challenging traction/braking events at the Valencia circuit.

“IT WAS WINDY SO AT ONE POINT I THOUGHT IT WOULD BE DIFFICULT FOR LEWIS TO CONTINUE. BUT HE WAS BRILLIANT ON THE BIKE AND HIS POSITION WAS GREAT”

VALENTINO ROSSI

Valencia was the venue for the Hamilton/Rossi swap. Despite one spin from Hamilton and a few from Rossi, each acquitted themselves well with the other's machinery



"Technically Valencia is a hard track," said Rossi, "and it was windy so at one point I thought it would be difficult for Lewis to continue. But he was brilliant on the bike and his position on it was great. I think he had loads of fun which is the main thing."

"It's so awesome to see a legend like Valentino in the car," added Hamilton. "I'm excited for him, for discovering the car for the first time. It reminds me of my first time in an F1 car. When you see all the team around you, it's just a different animal."



F1 DIGEST THE MONTH'S BIG STORIES AT A GLANCE

03.12.19



Esteban Ocon makes his debut appearance for Renault on the opening day of the Abu Dhabi Pirelli tyre test

05.12.19

The FIA changes the rules so teams can no longer hide their new cars from

fans and media during pre-season testing

10.12.19

F1 to stick with 2019-spec tyres this year after the teams rejected the 2020 tyres prepared by Pirelli

12.12.19

Ferrari is the first team to unveil the date of its 2020 car launch, committing to a reveal on 11 February

17.12.19

Ex-Red Bull junior Dan Ticktum joins Williams as the team's new development driver

24.12.19

Williams agrees to sell a majority stake of sister

company Williams Advanced Engineering to a private equity firm

01.01.20

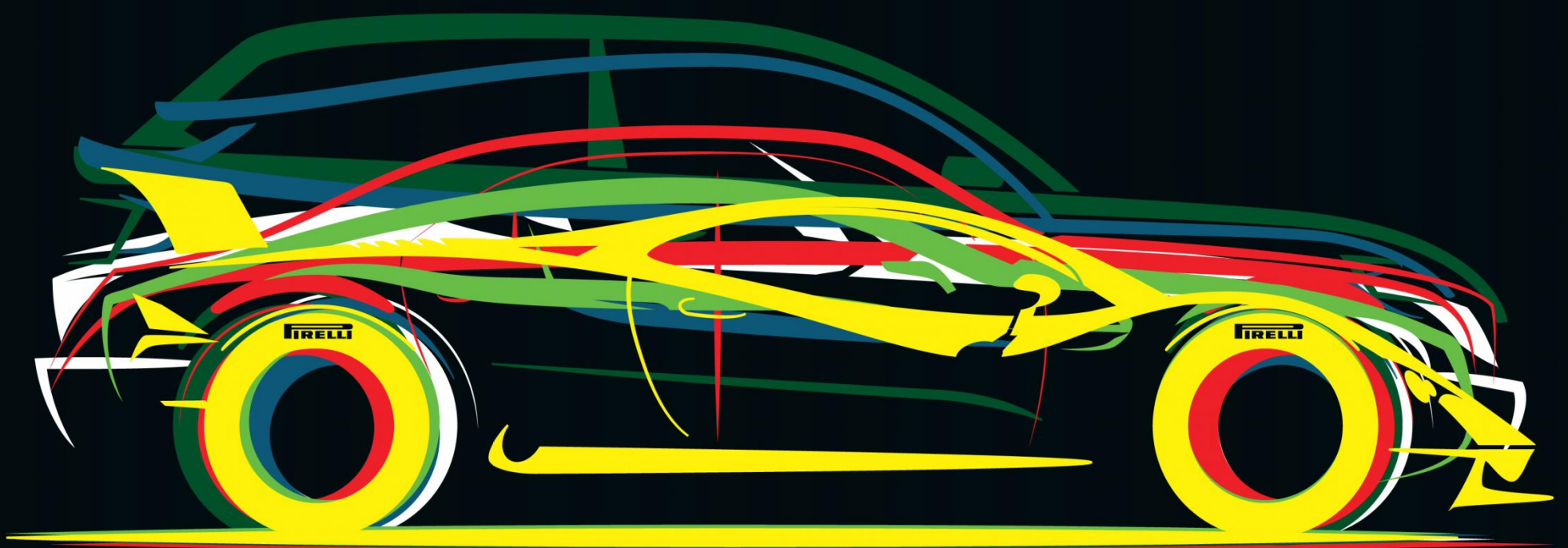
Robert Kubica's reserve driver role at Alfa coincides with his backers PKN Orlen becoming a co-title sponsor of the team

02.01.20

A reshuffle at McLaren promotes engineering chief Andrea Stella to the role of racing director



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POWER IS NOTHING WITHOUT CONTROL

EX-RENAULT CHIEF LINKED WITH WILLIAMS

03

Former Renault chassis chief Nick Chester is widely expected to fill the chief technical officer role at Williams that has lain vacant since Paddy Lowe's departure last season. Lowe went on an extended leave of absence before the Australian Grand Prix after a string of mishaps afflicted the team's pre-season preparations. It was announced in June that he would not return.

Aero chief Doug McKiernan has fulfilled the most senior engineering role in Lowe's absence, while former technical director Sir Patrick Head has returned part-time as a consultant. The team has undergone a long period of soul-searching about its technical concept; the FW42 failed to use the tyres well, and had the toxic combination of being draggy in a straight line while lacking downforce. This year's car will be an evolution in which the team hopes to have removed many of the bugs, but whoever occupies the vacant role will arrive too late to influence it.

Chester departed Renault in December as that team underwent another technical reshuffle following a season in which it failed to meet its expectations of finishing fourth on merit. He occupied several roles with increasing seniority at 'Team Enstone' since joining it in its Benetton incarnation as an engineer for Alex Wurz in 2000.

Renault's head of aerodynamics Peter Machin also left, to be replaced by Dirk de Beer, who quit Williams in May 2018 after the problematic debut of the FW41. De Beer had a five-year stint as head of aero at Enstone before leaving for Ferrari at the end of 2013.

Further up the grid, McLaren drove the final nails into the coffin of its previous 'matrix management' structure over the winter, as team principal Andreas Seidl completed the leadership team by promoting performance director Andrea Stella to racing director. Seidl's aim has been to replace the previous arrangement, viewed as disobligingly Byzantine by many, with a traditional three-pronged structure giving obvious reporting lines.

Stella will be responsible for all trackside operations while technical director James Key will lead design. Production director Piers Thynne – in that role since July – oversees manufacture. McLaren's restructuring process began in mid-2018 with a raft of departures at senior level, but the arrival of Key and Seidl was delayed by them serving long gardening-leave terms. In the interim, former McLaren and Ferrari engineer Pat Fry consulted on the design of the 2019 car. He has since left and is to return to Renault in an as-yet-undefined role – but likely to be the one recently vacated by Chester.



Having left Renault at the end of 2019, Nick Chester is thought to be bound for Williams

F1 MASTERMIND

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- Q1** In which year did Imola last host the San Marino Grand Prix?
- Q2** Which driver took his first of three wins at the 1989 Canadian Grand Prix, driving for Williams?
- Q3** Which Japanese driver made his first F1 appearance in practice at his home race last year, at the wheel of a Toro Rosso?
- Q4** The winner of both the 1982 Austrian GP and the 1985 San Marino GP was born in Rome in March 1958. Who was he?
- Q5** Who took pole position at last year's British Grand Prix?
- Q6** Which driver took the Brabham team to its last victory in Formula 1?
- Q7** In which year did the Sepang International Circuit first host the Malaysian Grand Prix?
- Q8** Who replaced Kimi Räikkönen at Lotus for the final two races of the 2013 Formula 1 season?
- Q9** Which country held six F1 races between 1973 & 1978? The first race there was won by Denny Hulme in a McLaren M23.
- Q10** Which team won the constructors' title in 1959?

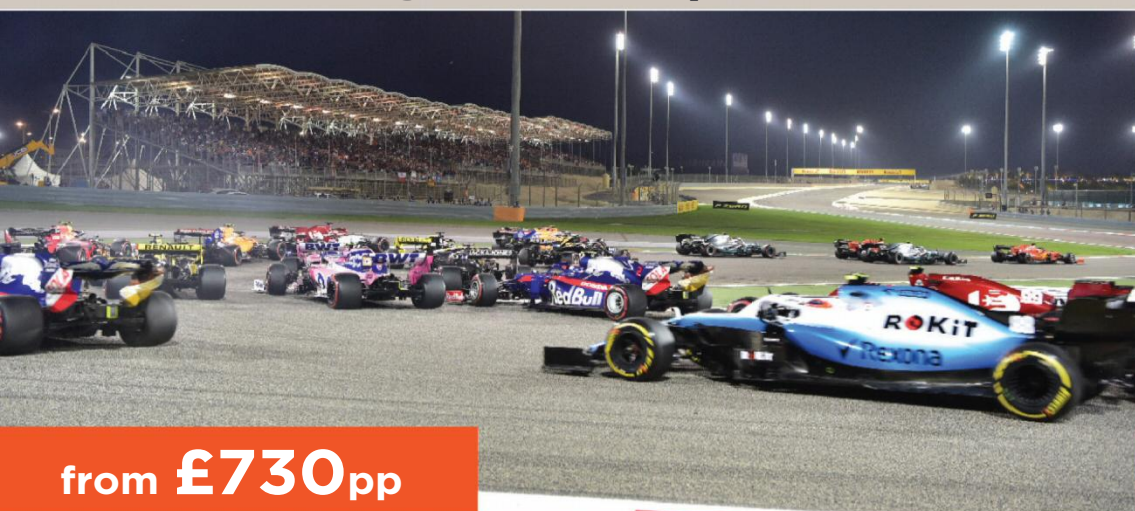


1 2006 2 Theiry Boutsen 3 Naoki Yamamoto
4 Elio de Angelis 5 Valtteri Bottas 6 Nelson Piquet
7 1999 8 Heikki Kovalainen 9 Sweden 10 Cooper

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THE F1 ANALYST

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but Seidl has brought a sure-footedness to the team. He has a clear understanding of what his job is, and what it takes to make a successful motorsport organisation. His success with Porsche in sportscars, where he led a big-budget operation to great heights in a hugely competitive era, proves that beyond doubt. He arrived at McLaren determined to do things the right way, eschewing some of the more political shenanigans favoured by some who come into leadership roles and prioritise consolidating their own position at the expense of the greater good. There will be no short cuts, just a long, hard slog to get the front by doing things properly. The less accomplished might seek magic bullets and quick fixes. In short, Seidl *gets it*.

The long-term strategic decisions are the most encouraging: commissioning a new on-site windtunnel at Woking, green-lighting a next-generation simulator and signing a deal for Mercedes engines from 2021. These are long-lead-time projects that cannot confer an

instant gain. The payoff is measured in years, not months, and that is what has restored credibility to McLaren's aspirations to re-establish itself as a major player.

Seidl has also had a clear impact on the here and now. Those on the shop floor respect the fact he is actively engaged with those doing the work rather than falling into the trap of many in leadership positions of creating a management silo where everything is politics and polemics. That influence has played a part in ensuring McLaren built on its solid start to last season and became stronger as the year progressed.

The restructuring is ongoing, the latest move being the promotion of Andrea Stella – another coherent, intelligent and effective operator – to racing director. Onwards and upwards is the motto for a team that must not treat fourth in the constructors' championship, or that one-off podium result at Interlagos last November, as a triumph. As Seidl himself says, it's important to let those who have been through the difficult times, or perhaps even joined the team since their slide from the glory days, enjoy these moments. But he won't let anyone forget these modest successes are only a waypoint on a far bigger journey.

In 2020, McLaren's objective is to do what Renault could not and build on its success. Since breaking into the top three is impossible for now unless one of the big teams drops the ball spectacularly, McLaren must not only hold onto fourth in the constructors' championship but do so more emphatically. That will be a result of closing the pace gap to the top three, improving reliability,

WE'RE ALL RIGHT BEHIND YOU, BOSS...

Formula 1 team bosses are a heterogeneous bunch. The nature, style and impact of the role varies between outfits depending on the skillset of the individual holding the position and those around them. As a group, they are second only to the drivers in terms of public profile and although there have been cases where their visibility outstrips their effectiveness, they can have a profound impact – for better or worse – on the teams they lead.

To draw a footballing analogy, they are the managers: high-profile, conspicuous mouthpieces who can, rightly or wrongly, be blamed for all the goods and ills of their teams. Succeed and you are lauded, fail and there are calls for your head. Both are unrealistic extremes but, like the best football managers, the most effective team bosses can imbue their outfits with a culture, strategy and way of working that delivers success while simultaneously creating an environment that allows the excellence of the staff to shine through. But it can be difficult to distinguish cause and effect.



Although 2019 brought some colour back to McLaren's cheeks it must only be seen as a stepping stone to greater success

Take McLaren's 2019 revival. Andreas Seidl arrived as team principal at the start of May last year. A *post hoc ergo propter hoc* reading would conclude that his arrival led to the change of fortune and confirm he has the magic touch. But, like new technical director James Key, Seidl took every opportunity to distance himself from the turnaround and credit significant changes made the previous year. He was right to do so. Seidl's impact is set to prove to be profoundly more important than simply elevating a fallen giant to the level of leading midfielder.

Under Seidl, McLaren has become a far more assured, confident organisation. That latter adjective might seem misplaced given over-confidence contributed to its previous malaise,

Since arriving at McLaren in May 2019, team principal Andreas Seidl has been determined to do things the right way and not take short cuts



eliminating costly pitstop errors – chipping away at every area.

There's also talk of a change in car concept, which at face value sounds risky but is a logical move aimed at unlocking greater performance and – more importantly – allowing the technical team to build understanding of the underlying science long since mastered by the top teams. While this falls under the remit of Key, it reflects the Seidl culture. If there's a reason, a long-term gain in taking a certain approach, it will be done. The old, over-confident McLaren would simply have continued mining the same vein

“THE OLD, OVER-CONFIDENT McLAREN WOULD SIMPLY HAVE CONTINUED MINING THE SAME VEIN LONG AFTER IT HAD GIVEN UP MOST OF ITS JUICE”

long after it had given up most of its juice.

Seidl's public messaging is consistent, and by all accounts is the same internally. There are no guarantees McLaren will make its way back to the front under his stewardship, but the strategy is right, the decision-making logical and this once-

great team does have the potential to haul its way to the front over the coming years. Just 12 months ago, that would have seemed a ludicrous thing to say. It says much about Seidl, and by extension those steering the company who appointed him and started the process of renewal.



UNDER THE HOOD

PAT SYMONDS

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PICTURES **motorsport IMAGES**

cassette with the intention that teams should build this into their own interpretation of a gearbox case, which would carry the rear suspension loads as well as the rear wing and crash structure. This wasn't popular with some teams, who were concerned about both reliability and the possibility that it may constrain design freedom. A lot of excellent work was put in by some of the transmission suppliers working in conjunction with the teams but ultimately, and much to my surprise, the teams felt that the cost savings that could be achieved with a common gear cluster are insignificant.

Brakes also came under scrutiny. The current carbon discs are remarkably effective and the cooling problems of some years ago

are rarely experienced. This is mostly because the large cooling vents once commonplace have been replaced by over 1000 small-diameter cooling holes which increase the heat transfer area – as well as the cost – very considerably. The implementation of 18" wheels allows an increase in disc diameter and creates an opportunity to restrict this expensive machining. The brake ducts themselves were also simplified to achieve both the desired wake characteristics and to limit the myriad configurations used for thermal management of rims and tyres. This went hand-in-hand with a new standardised wheel.

There was heated debate around the suspension. A working group from the ►

NOT EVERYTHING MADE THE FINAL CUT FOR 2021...

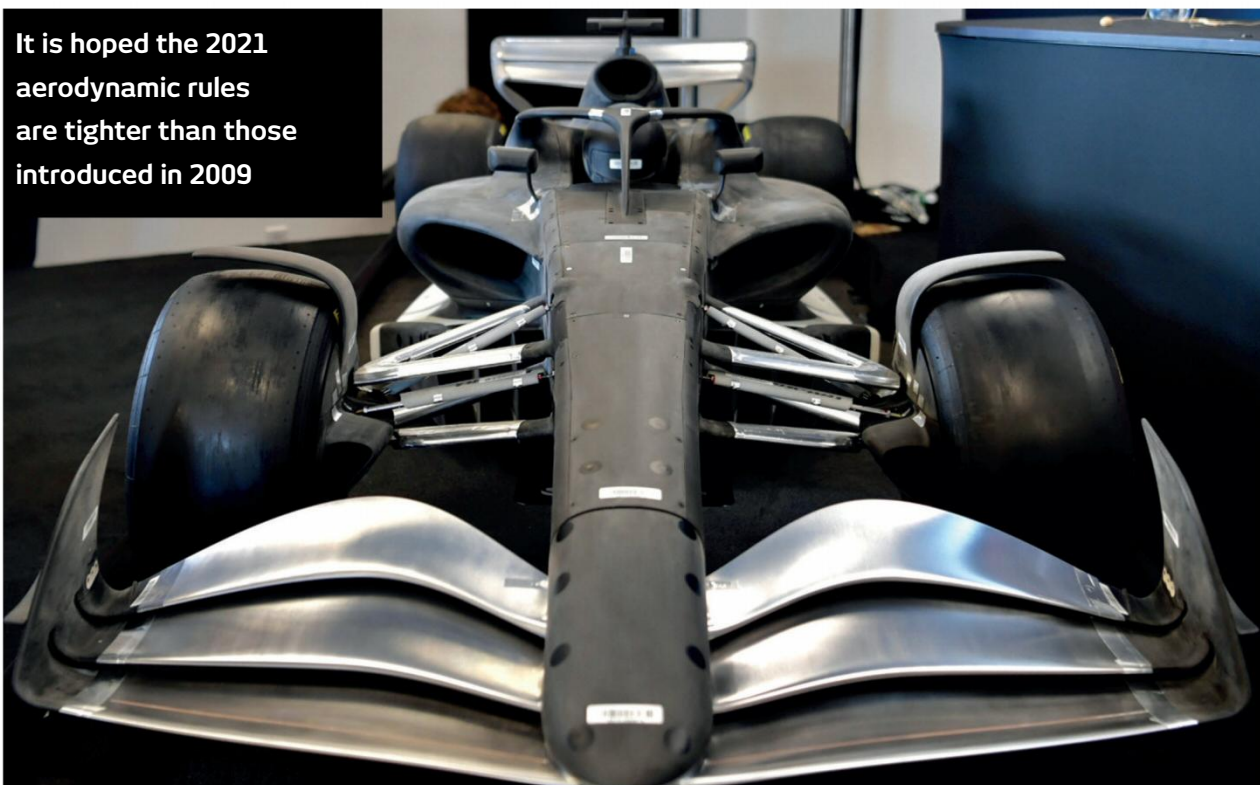
In last month's column we considered some of the philosophy behind the 2021 regulation changes and discussed the implementation of the rules that govern aerodynamics. This month we delve deeper into the aero objectives and look at some of the other technical aspects that were considered – not all of which came to fruition.

Starting with the aerodynamics, it's well known that the primary objective is to allow cars to follow each other closely in the hope that this will lead to more natural overtaking opportunities. But how can we implement this? Essentially there are two elements that lead to the difficulties experienced by the car behind. The first is that the wake of disturbed air behind the leading car has very low energy which robs the trailing car of downforce, and the second is that the trailing car has aerodynamic surfaces designed to work most effectively in clean air. Unfortunately this low-energy wake is intensely turbulent and therefore anything but clean.

The objective of the 2021 rules is to produce

body shapes that loft the low energy air over the top of a following car, while also ensuring that the surfaces on the car behind are less affected by poorer air than the current generation of cars. Test results show this has been done with a fair level of success, but we must always remember how the good intentions of the 2009 aerodynamic regulations were thwarted by clever interpretation of the written word.

In other areas the objectives were more focused on cost-saving although not all of the hoped-for savings actually materialised. A lot of work was put into providing a standard gear



It is hoped the 2021 aerodynamic rules are tighter than those introduced in 2009

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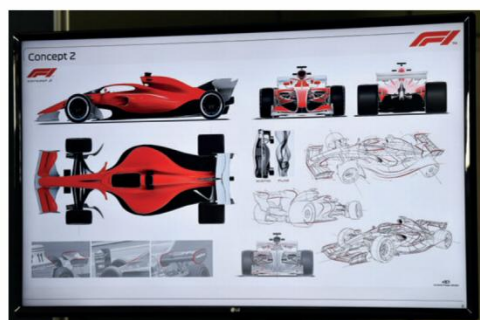
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The gestation of the new regulations was difficult but finally Formula 1 can look to move forward in 2021

teams was set up to evaluate whether a relatively prescriptive active suspension should be introduced as a cost-saving measure. It was decided that too close a control of the chassis may lead to exploitation of extreme aerodynamic solutions, which may have defeated the objective of the bodywork regulations. So this proposal wasn't adopted, and instead passive suspension will be retained but further simplified by the banning of hydraulic connections and mechanical inerters (acceleration-sensitive damping devices which, although extremely clever, aren't road-relevant and don't add to the show).

The other big change on the chassis side was very much a concession to the teams. Initial thoughts centred on pushing teams to design more of their cars, but many

of those who share components at the moment found this unpalatable. The so-called 'listed parts' that previously defined a constructor have been expanded into several lists, some of which now contain standard parts, prescribed-design parts and open-source-design parts. The objective is to save the teams money by removing the need to constantly redesign parts for marginal gain, while still allowing donor teams to gain income from selling parts to others – and allowing teams

which didn't want to increase their engineering staff to purchase components at a reasonable price. Ensuring fair treatment for all teams under the financial regulations while implementing this was more difficult than writing the technical regulations that governed the components themselves.

The prescribed-design components also brought a new dimension to F1. The veil of secrecy that has always surrounded the design of the cars was thrown open and teams actually collaborated to share their designs and arrive at a common solution for the good of all. Interestingly, this mirrors trends in the automotive industry where the large manufacturers often share platforms and tier-one assembly designs.

The ultimate success of these rules will be judged during 2021, but at last the regulation-setting process has been based on sound research and evidence-based decision-making, as well as a remarkable degree of inclusivity from the teams. There's always an element of resistance to change but I believe the regulations had reached a point where a root-and-branch approach was needed to allow for future stability.

A lot of responsibility now lies with the teams to bring the process to an effective conclusion for the common good of the sport. The regulator and the commercial rights holder have every faith they will.

“ A LOT OF RESPONSIBILITY NOW LIES WITH THE TEAMS TO BRING THE PROCESS TO AN EFFECTIVE CONCLUSION ”



TOM HARTLEY JNR

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STRAIGHT TALK

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The news, revealed by *Autocar* in December, that he has targeted a takeover of Aston Martin makes complete sense. This is a man who thinks big and has spent his career unlocking the value in brands.

A former Ralph Lauren executive, Stroll first partnered with Hong Kong investor Silas Chou in 1989 when they set about turning Tommy Hilfiger into a global success story. Through their investment company, Sportswear Holdings, they later added Michael Kors to their portfolio, floating it on the New York stock exchange in 2011 and selling their remaining 5.7% holding in 2014, by which time the business was worth almost \$15 billion.

All the while Stroll has been able to invest some hobby money in his passion for racing. Purchasing Canada's Mont-Tremblant circuit in 2000 was one such move, another his creation of a to-die-for collection of Ferraris.

The bid to acquire a stake in Aston Martin is a typical piece of strategic thinking on Stroll's part, showing that his business instincts have not been clouded by his love of the sport. On the contrary, it shows he is on the lookout for deals that are good for business and

great for the team.

Racing Point has always punched far above its weight, usually in spite of rather than because of its shareholders. Setting aside changes of names and ownership, the team has finished in the top six in the constructors' championship 16 times since 1991 – remarkable considering its financial plight on occasion. A future as Aston Martin would enable it to take on a branding status on par with its proven racing ability.

Stroll has seen an opportunity because Aston Martin's high-profile stock market flotation in October 2018 proved to be, as analyst Jordan Hiscott of Ayondo Markets succinctly described it, 'an abject failure'. It launched at £19 per share, that figure was halved within six months, and then it fell off a cliff last July when the company posted a £78.8 million half-year loss – due in part to the £136 million cost of going public. It was forced to take on additional debt, and further losses in the third quarter of 2019 left Aston Martin looking decidedly vulnerable with 70% wiped off the company's value since flotation.

Aston's partnership with Red Bull Racing, championed by its CEO Dr Andy Palmer, is in jeopardy if Stroll gets his way, but it could result in a rebranded Racing Point vaulting into the big time. For a man with 30 years of experience in transforming companies it's a tantalising opportunity to take Aston Martin to the next level and simultaneously threaten the status quo in Formula 1.

WHAT LAWRENCE STROLL SEES IN ASTON MARTIN

Not long after my lodger-turned-Formula-1-driver Eddie Irvine left Jordan to join Ferrari, Eddie Jordan got to know the then-40-year-old Lawrence Stroll, whose Tommy Hilfiger fashion company was sponsoring the Scuderia. Never one to waste time, there soon followed the inevitable

request from EJ to produce a proposal, dispatched to Stroll, inviting him to bring his financial support to Jordan Grand Prix.

I still have the document on a 3.5-inch floppy disk somewhere in my garage.

Although Stroll declined, 20 years later it is one of life's neater outcomes that the Canadian billionaire has ended up owning the team outright. It's a good thing he has a passion for our sport, for his money came in handy at Williams a couple of years back before he saved Force India – or at least its assets.

Lawrence Stroll (centre) saved Force India, which became Racing Point, and is now targeting Aston Martin



THIS MONTH

Serguei Belousov

Chief executive officer, Acronis

Knowledge is power in Formula 1, so teams are permanently on guard against the IT threat posed by cyber criminals who could infiltrate their systems and hold them to ransom – or pass their intellectual property to unscrupulous rivals. Serguei Belousov, founder and chief executive officer of cyber security specialist Acronis, explains how digital transformation will affect F1 in the coming seasons



2013 - Present
Chief executive officer, Acronis

2012
Founder of Qwave Capital and Phystech Ventures

2010
Senior founding partner, Runa Capital

2007
PhD in Computer Science

2001
Founded Acronis

2000
Founded Parallels

1995
Masters in Theoretical Physics and Electrical Engineering

1994
Founded Rolsen

F1 Racing: Acronis is a sponsor for both Williams and Racing Point in Formula 1. Can you describe what your company does?

Serguei Belousov: Acronis offers software and services for cyber protection. We are headquartered in Switzerland and Singapore, employ over 1,500 people and have \$250million of revenue. I became CEO of Acronis six years ago and since then the focus has been on cyber protection. This means that data is always accessible, anywhere and at all times, but its privacy is controlled.

We work in Formula 1 and with many other sports including football and with teams such as Manchester City, Arsenal and Inter Milan, as well as the Boston Red Sox in baseball. The reason is that all sports are going through a digital transformation. Whether it is engaging with fans or managing the sport they're involved in, these teams are leveraging data to make better decisions. In turn this makes them more competitive.

F1R: What benefits do you get from working in Formula 1?

SB: What attracts us to Formula 1 more than other sports is that efficiency directly translates into performance. If you're collecting data, then you need applications and systems – and those need to be protected. We provide the software for that protection in return for money or other marketing benefits.

During a race weekend there are several terabytes of data that are collected, mainly from managing the cars. While at the factory, designers and engineers are increasingly using data to develop next year's car.

There is a much higher concentration of data per dollar than in any other sport. That's because there is a limitation on how much physical testing you can do on the track.

F1R: What are the biggest concerns for Formula 1 teams with regards to data?

SB: It's hard to predict the future, but there's one thing we can be absolutely sure about. There will be more cyber

INTERVIEW
JAMES
ROBERTS

attacks next year than this. And there will be a whole lot more cyber attacks in five years and they will be much more sophisticated. Acronis is at the frontier of helping customers and governments defend themselves against those attacks. It's important to understand that there is no way to be 100% secure.

What companies need is an immune system for their information technology. This immune system has to allow their infrastructure to recover from being penetrated since malware attacks in the future will have no cure.

These cyber attacks are likely to come from people who want to make money. Ultimately, Formula 1 is big business, with several billion dollars in revenue, so it's a good target for an attack.

If you imagine a ransomware attack by cyber terrorists or criminals on any of the Formula 1 teams or the FIA, it would be catastrophic for the sport – that's where Acronis is helping to prevent this from happening.

F1R: What is the future for Acronis and the wider business?

SB: Data is being created with accelerating speed. There will be more data created in the next 12 months than was created in the last 12 million years. That means that if something is not recorded it is lost forever. But if it's recorded it can be analysed. We can help our customers make sense of the data to make them more efficient.

We rely on the trend that there will be more devices and more data in the future. With that will come more and more systems, and more and more applications. But also as we move forward and enter a period of new regulations for F1 in 2021, teams will have to operate with a limited budget.

As a result they will use more autonomous design mechanisms since it's much cheaper to have more data than more people. Our goal is to grow five to ten times bigger than we are now in the next five years. We just want our customers to collect as much data as possible but to make data usage more efficient, more reliable, safer and more secure.







HOW NOT TO LOSE A RACE IN TWO SECONDS

Pitstops can shape the outcome of races but, equally, teams barely within sight of each other on track are fighting to be fastest in the pits. The attention to detail and potential for things to go wrong is just astounding

WORDS STEWART BELL
PICTURES GLENN DUNBAR



motorsport
IMAGES

The pressure is as high as the stakes. Formula 1 pitstops are a miracle of precision under stress: an army of 23 mechanics changing four tyres in less than three seconds, a process choreographed and endlessly practiced in pursuit of near-robotic levels of repeatable perfection.

Get it right, as in Russia this year – when Lewis Hamilton used the Virtual Safety Car and a 2.6-second stop to usurp Charles Leclerc's lead – and you can be victorious. Get it wrong and the consequences can be severe, as in Monaco 2016, when a last-minute decision to switch compounds cost Daniel Ricciardo the win: he arrived as the mechanics were still scrambling in the cramped confines of the garage to locate the required rubber.

"They should have been ready. It hurts," said Ricciardo afterwards, and the tone of his comment emphasises an essential truth of F1 pitstops. They've become an element of racing that everyone seems to take for granted, despite being one of the most perilous of variables. In Ricciardo's case this botched stop was arguably the beginning of the end for his relationship with the team, which deteriorated further as he grew increasingly convinced he wasn't getting the attention he merited.

But while the record time is an incredible 1.82 seconds, at the 2019 Brazilian Grand Prix by Red Bull on Max Verstappen's car (the third consecutive record set by this team) – you might be surprised to learn that headline times are not what the teams focus on.

"The most important thing is consistency," says Dave Redding, team manager of Williams – a team which, despite propping up the order on track, is generally among the quickest to service its drivers.

"The [pitstop] world records have come down year on year – and we are now sub-two-seconds. But the whole point of it is delivering a time that you think you can do for your strategy.

"Occasionally you will go quicker, but if you say it's 2.5 seconds or three seconds or whatever the team decides, the important thing is to hit that time. Then you'll work everything else out from around it – what do I need to do to achieve that consistently? It's about car design, human approach, how people have trained – it's everything."

To reach the level expected during the past season of turning a car around in between two and three seconds, each mechanic's performance has to be instinctive. Any issue requiring them to react, think and evaluate can potentially double the stop time, which can be disastrous for track position.

"Everything is happening under the time it takes for a human to react," Redding says. "So by the time someone has thought, 'Oh, I'm not sure that's correct,' that's probably 300-400 milliseconds, by which time things have already moved on and potentially the car has moved on.

"An easy one: the wheelguns going round in the wrong ►

direction. That's not obvious straight away to the person – so he's got to think, 'Oh, hang on a minute.' And then you've got to correct it and go through the process again. Each time anybody is thinking or has to correct something, that's going to be one second gone – which is 50% of your time."

The teams use new wheel nuts for every race to avoid any potential problems arising from wear. The real challenge is in getting them properly seated and "as tight as you can know". But the list of other potential issues is extensive because each corner of the car requires a number of separate operations to come together in a fluid whole: the car has to be jacked up quickly and precisely; each wheelnut has to be undone and then the old wheel removed; the new wheel has to be seated with speed and precision – which is particularly difficult – and then the nuts have to be re-seated and tightened properly.

"Some of it is the [pneumatic] guns going in the wrong directions, so you go to undo it and you actually do the wheel up," Redding adds.

"FOR THE DRIVERS, IT'S ABOUT HITTING THEIR MARKS – OR IF THEY CAN'T, SINCE F1 PITLANES VARY IN CONFIGURATION AND SURFACE QUALITY, THEY MUST ARRIVE IN A CONSISTENT PATTERN SO THE PROCESS CAN BE ADJUSTED"

DAVE REDDING

"Some of it is the nuts are crossed. It could be the car is slightly out of position, so the wheel doesn't come off and it catches, or the other wheel going on catches. Or the car rocks on the jacks."

Without discipline and procedure, errors can creep in elsewhere too. Williams experienced the nightmare scenario in 2015 in Belgium, where it sent Valtteri Bottas out with mismatched compounds – three softs and a medium. Redding says this couldn't happen again.

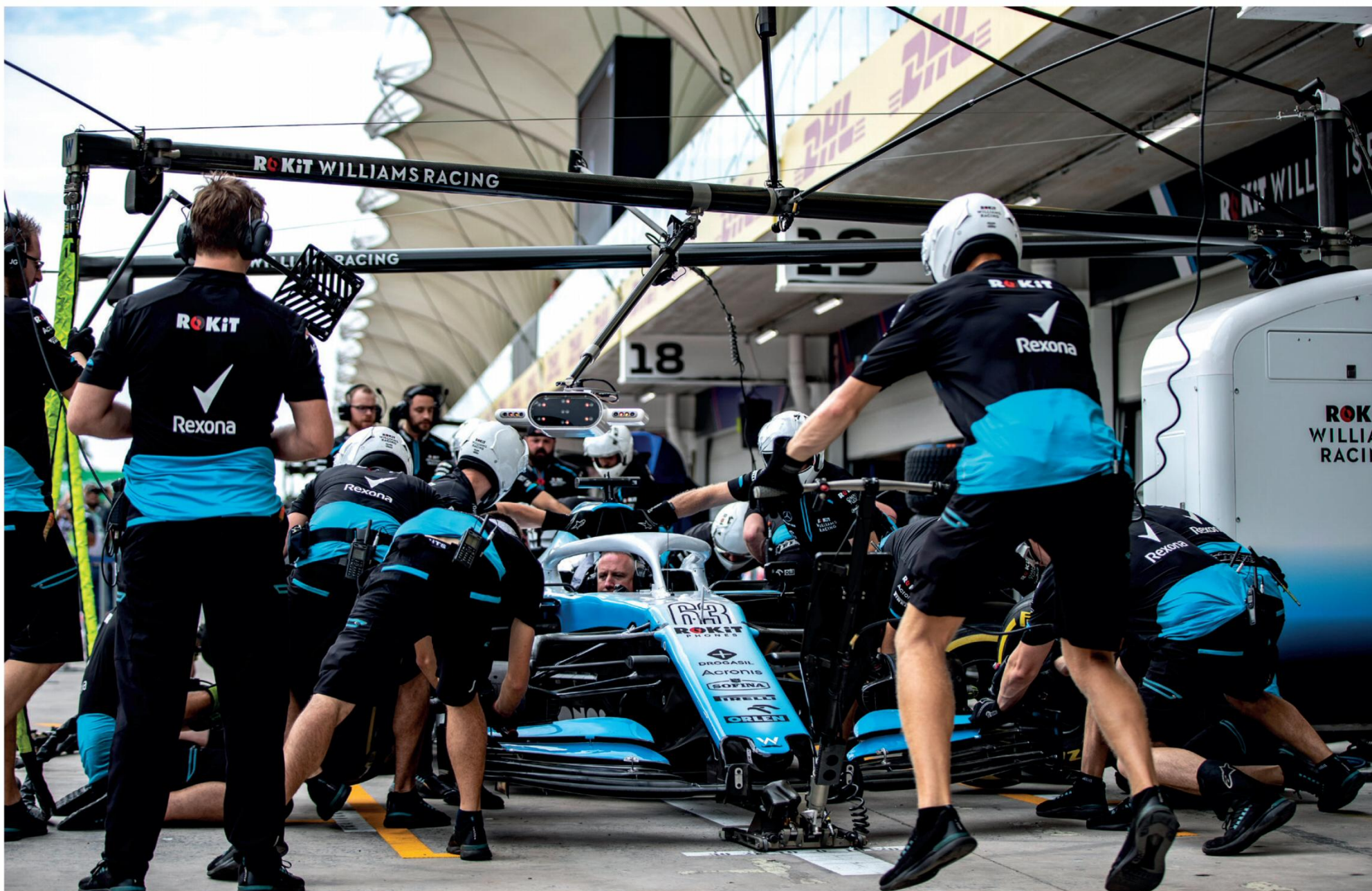
"There's just numerous checks built into the process [now] before the tyres end up on a stack that can go on the car," he says. "Each stack has a light next to it, so if the radio breaks down or there's a loss of communications, the driver comes in and that light is on and those are the tyres on the car."

"If that light changes, so we change – when the car's coming down the pit lane, there's a warning tone to say we've changed the [selected set of] tyres."

For the drivers, it's about hitting their marks – or if they can't, since F1 pitlanes vary in configuration and surface quality, they must arrive in a consistent pattern so the process can be adjusted. At every race weekend a team will practice pitstops and rehearse drivers overshooting or falling short of the marks.

Arguably the most important element of all is the mechanics who perform the stop. Teams treat them like athletes, making cardio and gym classes and other exercises like Pilates part of their work time. ▶

Practice during a race weekend is vital to identify any errors or underperformance



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They'll also provide support in terms of personal health, nutrition and hydration, and the expectation is that members of the pitcrew have to stay in shape.

Fatigue, jet lag and illness are all attendant risks of the globetrotting F1 calendar, so most squads have a "substitute bench" to replace anyone who experiences health issues or needs to take personal leave. To ensure consistency the teams build systems which are robust enough to withstand personnel swaps, even employing biomechanical analysis to build a picture of best practice (or winkle out previously invisible mistakes).

And when a squad isn't fighting for wins on track, swift and consistent pitstops can be a powerful morale-booster for the core of the travelling team. A strong, cohesive unit will also be an asset when the factory delivers

a more competitive car, the better to translate latent potential into results.

"It's all relative, but when you're at the back it's nice to have some things to cling on to – to keep everybody involved and motivated," Redding says. "And, obviously, they feel like they're contributing to the result, which they are."

Given stable technical rules, pitstops grow faster by increments as teams develop new methodologies and chip away at impediments to progress. We're likely to see that process begin again in 2021, when pitcrews will have to adapt to the presence of new mandatory aerodynamic furniture as well as 18-inch wheels. And they'll have to do so without the bespoke equipment developed at great cost over the decade since refuelling was banned – the rule change that kickstarted the quest for faster wheel changes.

"The wheel wake control devices, I think they will have an effect," Redding says.

"The wheels are going to be heavier and have slightly different circumference. We will have to go back to the drawing board and start with the biomechanics again.

"We'll probably need different training – because they will be using different muscles and strength, so you've got all that to take into account. The last thing in the mix will be the

"THE NEW WHEELS ARE GOING TO BE HEAVIER AND HAVE SLIGHTLY DIFFERENT CIRCUMFERENCE. WE WILL HAVE TO GO BACK TO THE DRAWING BOARD AND START WITH THE BIOMECHANICS AGAIN"

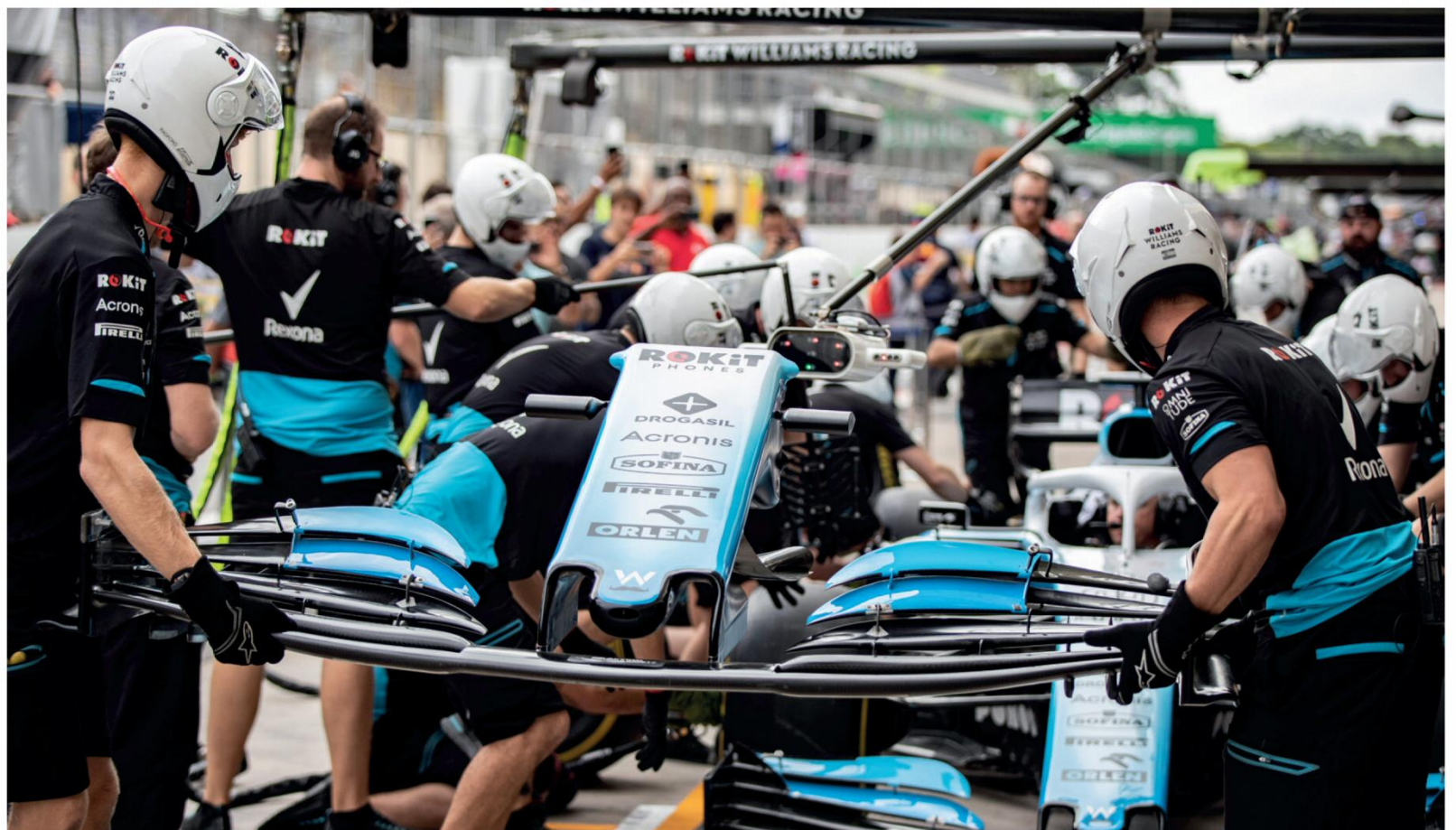
DAVE REDDING

standardisation of equipment."

So while we wait to see if cost-controlled pit equipment has a beneficial effect on the racing as well as the balance sheet post-2020, savour this last season of the pitlane's technological arms race... **F1**



Potential pitfalls include wheelguns going in the wrong direction, but all scenarios are anticipated



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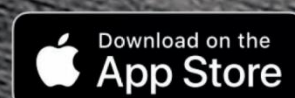
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FORMULA 1'S PITLANE POLICE

How the FIA
keeps F1
teams on
the straight
and narrow...

WORDS MATT YOUSON
motorsport
IMAGES

Jo Bauer arrives at the FIA's Yas Marina hospitality building and, without preamble, sits down and says: "I don't have much time." From anyone else that might seem a little brusque but Bauer, the FIA's technical delegate, is *always* in a hurry. For want of a better description, Bauer is Formula 1's policeman – and in the F1 pitlane everyone is guilty of something. Probably.

Bauer's job encompasses an eclectic range of responsibilities but in the public eye it's scrutineering that holds the attention. Verifying the legality of cars is largely a bureaucratic process, though there's the occasional hand grenade buried within the paperwork: a floor out of compliance; a laggardly clutch response on the grid; a tank mysteriously containing more fuel than expected. A couple of innocuous lines in a report is the equivalent of a heavy hand on the collar and a polite enquiry of *what's all this, then?*

In an ever more intricate sport, uncovering illegality is a win for the scrutineers but Bauer sees it as a pyrrhic victory. F1 has an unusual relationship with cheating: perpetrators are as often admired for their ingenuity as they are vilified for their skulduggery. For Bauer it's all rather more straightforward. "I don't like it," he says. "It's bad for everyone – but as the sport gets more and more complex, it's more likely also that you will find things."

Following a spell as technical delegate for the forerunner of modern DTM, Bauer swapped paddocks in 1997, taking over as F1's technical delegate when that position was vacated by Charlie Whiting. It's an unusual job, requiring a detachment that isn't common in the close-knit F1 travelling community.

"It's a friendly environment but there's a professional distance," Bauer concedes. "It wouldn't be right to be grumpy or unfriendly – but at the same time you can't have favourites. This is why you'll never see me having a drink or a meal in a team's hospitality unit: it wouldn't be acceptable; everyone else would assume you were doing dodgy deals!"

Back in 1997, the FIA's technical crew in the F1 paddock comprised a software analyst, a fuel technician and a technical assistant – and Bauer. Today there's six software engineers and five technicians, supported at each race by around 30 volunteer scrutineers. Given the staggering growth of teams, the authorities are almost always playing catch-up. That may change in 2021, when F1 switches to CAD-referenced laser metrology for many of its geometric checks. For the moment, however, the scrutineers still rely largely on the use of scales, templates and the reference plane, much as they always have.

Following self-scrutineering on ►

Bauer (below) maintains a professional distance from the teams. The FIA's scales, template and reference plane (right) are its main weapons







Teams factor in a random visit to the pitlane weighbridge but Bauer and his team will also be on the lookout for anything new

“THERE IS ALWAYS A TEAM AT THE FRONT, AND THE AUTOMATIC ASSUMPTION FROM EVERYONE ELSE IS THAT THEY’RE CHEATING”
JO BAUER

Thursday (think of it like a supermarket self-checkout), the process moves onto legality checks when the cars hit the track on Friday. Via telemetry and data analysis, the FIA’s software wonks begin looking at code, while cars returning to the pitlane are subject to random inspection, usually a trip to the weighbridge but including other physical checks if the FIA sees fit.

Exactly how random is random? Not very, it transpires. “There is a randomiser but we’re in the pitlane all the time, and when we see something new, or something strange, then that car will certainly be selected for scrutineering,” says Bauer. “Also, many of the checks we do will be circuit-dependent. Here, at Yas Marina, we’re on an aero circuit, so we’ll be looking carefully at parameters such as aero-elasticity; at a circuit with hard kerbs, we’ll be paying close attention to floors.”

Live checks, and the more leisurely tests carried out after FP2, are largely a prelude to the real work, which takes place once qualifying begins and the cars are in parc fermé conditions. Everyone factors a call to the weighbridge into their timing calculations – but even so, there’s usually a frisson of panic in a garage when, with four minutes of the session remaining and a laptime on the cusp, the car is stationary at the wrong end of the pitlane.

Post-qualifying, scrutineering the field will take between two and three hours. This is the most significant compliance session. The cars are under parc fermé conditions until the end of the race, so comprehensive checks after qualifying

keep the post-race scrutineering process brief, allowing (usually) the provisional result to be swiftly ratified.

On Sunday morning the cars are weighed. Despite fiendish geometry and miles of code, the scales remain the number one tool in the scrutineers’ armoury. “As trivial as it sounds, car weight is still the best and the cheapest thing to cheat,” says Bauer. “10kg is worth around 0.3s per [datum] lap, which is why even the drivers are weighed whenever they have finished qualifying or the race and, in addition to random checks, every car is weighed after qualifying, and the scoring cars are weighed after the race.”

Every so often the process catches an offender. The hit rate, however, doesn’t bear much relation to the often febrile paddock seeing mischief in every corner. The disparity, says Bauer, is inevitable for a confined space filled with over-achievers. “There is always a team at the front, and the automatic assumption from everyone else is that they’re cheating,” he says with a world-weary sigh. “Everyone pays their engineers to win the championship, and, with the big money, the manufacturers and their reputations, some of them cannot imagine being second. Nobody will admit another team has simply done a better job and so we have this kindergarten game of whispers and whistleblowing.”

If Bauer and the FIA technical department are the paddock’s police service, then they are abetted by an active and engaged Neighbourhood Watch. Teams study their rivals to the point of obsession and, like the twitching curtains of a close-knit village, this can be as big an irritant to the ▶

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authorities as to the neighbours.

“Nobody wants to be seen as the bad guy,” admits Bauer. “They don’t want to be blamed for being nasty, and so, rather than come to us, they prefer to talk to the press, and we have to react to a rumour rather than a protest.”

The demi-monde of hints and allegations that lie under the surface of F1 tend to mirror the dominant technology battles of the day. In the V8 era, with closely matched engines, questions of aero-elasticity dominated: bendy wings and flexible floors took centre stage. In modernity horsepower dictates, and it’s fuel flow under the microscope – or boroscope. Occasionally there’s a more straightforward matter for consideration – such as Racing Point’s protest of Renault’s brake-bias system in Japan.

Bauer discusses this with something approaching fondness. “This is how teams should act. They saw something; we didn’t see it; they protested rather than going to the press. This should happen more often: stirring up rumours is not sport.”

After exclusion, Renault candidly claimed the system

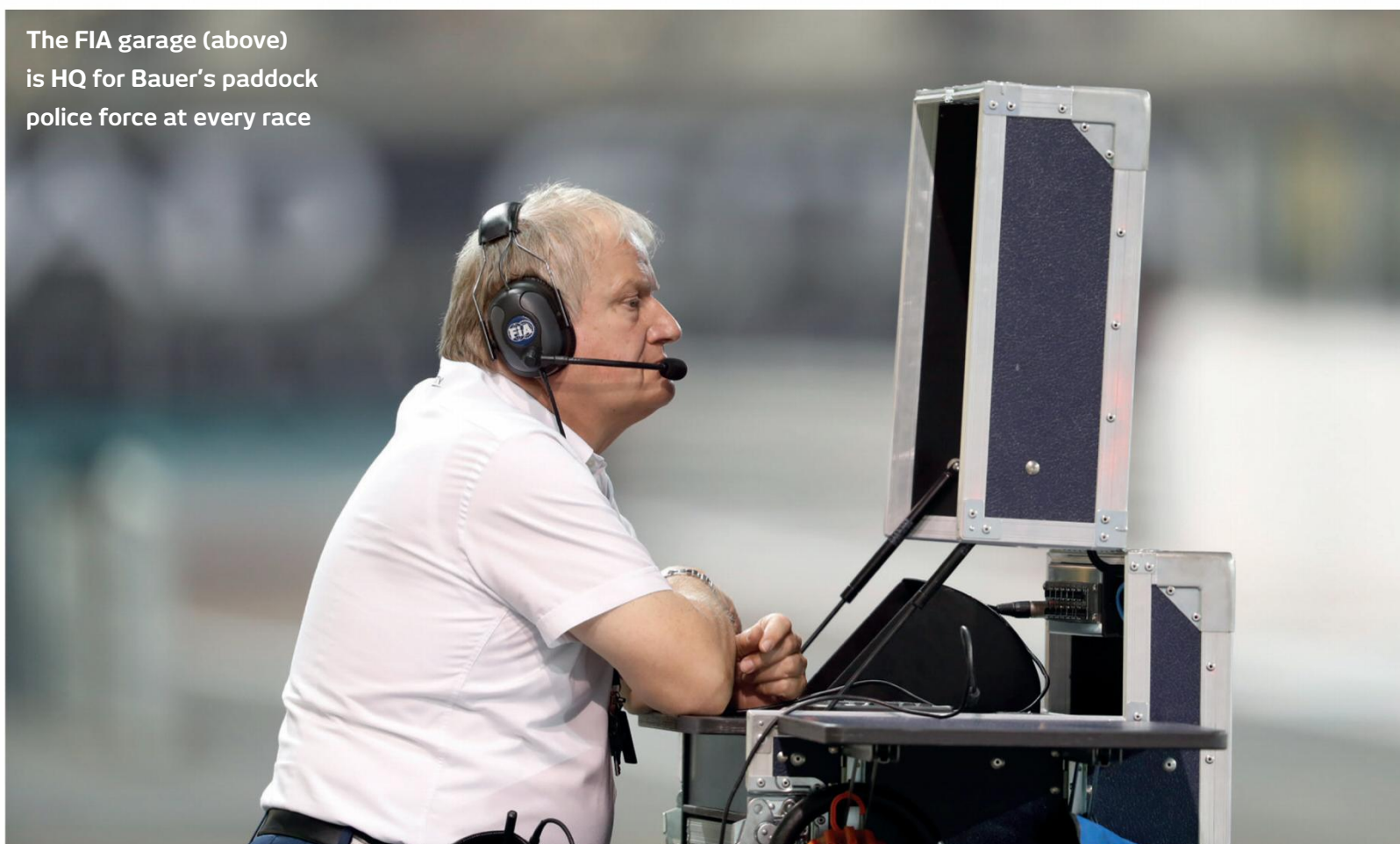
had been unchanged for years – which raises the thorny question of why it wasn’t spotted earlier. “We didn’t see it because we weren’t looking for it,” says Bauer bluntly. It’s an illuminating answer.

“This is like life,” he continues after a short pause. “The police cannot look at everything. If we were to check a car completely – check every piece of hardware, every line of software – that process would take half a year. This is why motorsport allows protests. If you’re not happy, you can go to the stewards.”

And with that, Bauer is away, back to the FIA garage, keeping F1 – sometimes unwillingly – on the straight and narrow. A few hours later his team will discover Charles Leclerc’s Ferrari contains rather more fuel than it is supposed to, fanning the flames of a long-running controversy that will keep F1 fans warm in the off-season – but this isn’t Bauer’s problem. He records and reports evidence: decisions and sentencing fall under the aegis of the stewards. Once the paperwork is filed, he moves on – the good copper back on the beat. 🏁



The FIA garage (above) is HQ for Bauer’s paddock police force at every race



“THIS IS LIKE LIFE, THE POLICE CANNOT LOOK AT EVERYTHING. IF WE WERE TO CHECK A CAR COMPLETELY – CHECK EVERY PIECE OF HARDWARE, EVERY LINE OF SOFTWARE – THAT PROCESS WOULD TAKE HALF A YEAR. IF YOU’RE NOT HAPPY, YOU CAN GO TO THE STEWARDS”

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THE LIFE OF A FORMULA 1 SIM DRIVER

As the last rays of sun bathe Yas Marina on Friday at the Abu Dhabi GP, it's a chilly winter midday in Brackley as *F1 Racing* enters the Mercedes F1 facility. For Stoffel Vandoorne it's another shift in the simulator that will play an essential role in Mercedes' race effort

WORDS STUART COOLING
PICTURES ANDREW FERRARO

Vandoorne is used to long days – and nights – in the Mercedes simulator, depending on the race that he is shadowing

Only the sign outside distinguishes the simulator building from those around it. Upstairs there's a swathe of grey carpet, grey sofas, and three rows of desks with computer screens and intercoms. These will not all be occupied today; normal simulator procedure only requires three or so personnel. It's only when the likes of Lewis Hamilton and Valtteri Bottas are in the sim that this room attracts a full house of trackside engineers and a delegation from the Brixworth engine facility.

Stoffel arrives, bids us good day, then asks if he can briefly be excused for lunch. It's going to be a long day – but not as long as some, as he explains upon his return.

"This race is pretty good," he says, "because we won't go into... the really bad hours of the night, let's say. Normally I'll come in towards the back end of FP2. Lewis and Valtteri will have their debrief afterwards, and we'll usually listen in to that, hear all their comments, try to understand what's missing from the car.

"Then we generally start our day after that. I'll get in the simulator, do a few baseline runs to try to match the simulated car to the track in terms of balance, tyres, everything. We try to make sure everything is well correlated. Then we'll generally have received a complete list from the engineers at the circuit of the test items they want to try. It could be setup changes or aero options, anything they're allowed to change on the car.

"Depending on how many options they send through, some races are busier than others. It's an eight or nine-hour day. Today we're starting at 3pm and we'll probably finish at midnight or one o'clock."

Once the simulator crew's day is done, all their data is fed back to the engineering team at the circuit in the form of a detailed briefing document. Then it's up to them if they want to make changes based on the simulator runs or not.

"You might find something that yields the same laptime but gives the more raceable car," says Stoffel, "or something that's a little bit quicker and may be suitable for qualifying."

The simulator is a means to an end, and the accuracy of its alignment with real life is the crucial difference between it being a useful element of the race effort rather than an expensive toy. There are still those within the F1 fraternity who view simulation as frivolous. Here at Mercedes, any frivolity exists in the margins – such as the task schedule on the main computer screen which lists 'fluffing' as one of the activities to be accomplished. This innocent-sounding gerund has an entirely different meaning in the adult film industry and here, too, it defines a process of – ahem – readying the necessary equipment for action.

After 'fluffing', the baseline runs begin – though on a race weekend these are generally brief box-ticking exercises, for the hard yards will have been accomplished over months and years of scrutiny, measurement and fine-tuning. For the driver – or, as the sim crew jokingly refers to them, ►



The Mercedes simulator features a halo, fitted at Esteban Ocon's request when he undertook sim duties for the team

the "carbon-based wheel spacer" – one element of the job is to help identify poor correlation. Mercedes rates Stoffel highly for his ability to explain differences between the on-track data and the simulation.

"There's a lot of work done pre-event either by me or the other simulator drivers to make sure the car has a really good baseline," he says, "and usually it correlates quite well to the circuit. And then it's more the track conditions we're adjusting to – the track temperatures to make sure the tyres are matching up, straightline speeds, all that kind of stuff."

The simulator itself is on the ground floor, and is a thoroughly impressive piece of kit: an ersatz F1 cockpit, complete with halo, mounted on a sliding platform and facing a curved panoramic screen. The halo, we're told, was fitted at the request of Esteban Ocon, Mercedes' former chief sim jockey, now on loan to Renault. He was determined to keep the cockpit sightlines as near to reality as possible during his season out of actual racing. Vandoorne juggles his simulator duties with racing in Formula E, which has also adopted the halo, so for him it's merely an impediment to getting in and out.

A rack of projectors above the cockpit transmit the

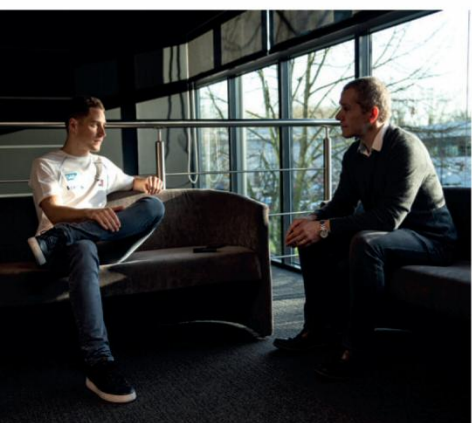
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100% PERFECT,
WE SIMPLY
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HAPPENING
WITH THE CAR"**

STOFFEL VANDOORNE

imagery to the screen and there's a speaker in the cockpit, along with a camera and an intercom so the driver can communicate with the operators. Although the computing horsepower behind it is confidential, the simulator runs the rFactor engine with which many *F1 Racing* readers will be familiar. It's the gold standard of racing sims on account of its fidelity with real-life tracks, right down to the cambers, and its ability to model tyre behaviour.

The steering wheel approximates that of a real F1 car and the pedals are the same as those in the W10, down to the brake travel and feel. But obviously the forces experienced by the driver are different.

"It's a simulator so it will never be 100% perfect," says Vandoorne. "We simply don't have the g-forces on our bodies to feel everything happening with the car. But there are a couple of clever things in the simulator in terms of the cues they give to you, to be able to deal with certain handlings of the car. You feel a lot more ►





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Vandoorne talks through his tasks for the session. Once completed, the data will be fed back to the team at the track

through the steering, for example.

“Sometimes it’s better to have the short, sharp movements through the platform rather than very big ones. A lot of simulators make you feel ill. That’s generally when the cues are wrong. Sometimes it’s better to miss them rather than have them in there and be wrong.”

Michael Schumacher, famously, didn’t get on with an earlier iteration of the Mercedes simulator. Many people experience symptoms akin to motion sickness in sims and when playing video games such as *Call of Duty*, and there are many different theories to explain it, the most compelling being that the brain reacts adversely to a conflict

“A LOT OF SIMULATORS MAKE YOU FEEL ILL. THAT’S GENERALLY WHEN THE CUES ARE WRONG. SOMETIMES IT’S BETTER TO MISS THEM RATHER THAN HAVE THEM IN THERE AND BE WRONG”

STOFFEL VANDOORNE

in sensory information: some inputs are indicating movement, others aren’t. Some scientific studies have found that symptoms diminish with time – and even that the subject’s enjoyment of the sim has an effect. So, this isn’t a job for newcomers.

“To find consistency isn’t always easy because of the differences in the cues between the simulator and reality,” says Vandoorne. “I’ve played games since I was very young so I know how to

deal with that to get the consistency – but for someone new coming in, they might be able to do one lap but they might not be able to repeat it because they haven’t been able to create the feel for it. You need a different mindset compared with a real car.”

It’s this consistency that’s key to effective simulator work: unless the engineering team at the circuit has total faith in the accuracy of the virtual test sessions at Brackley, they won’t be confident in pushing changes through to the real car. Without that explicit and tangible connection between simulation and reality, Stoffel may as well be sitting at home on his sofa playing *Forza*, with a cat on his lap... **F1**





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FORGET ME NOT

It was sad to see Fernando Alonso leave Formula 1 with his McLaren-Honda ambitions frustrated; sad too for F1 to wave farewell to a double champion still operating at the peak of his powers. Fernando is gone, but he is not forgotten, and is working on plans to make a sensational return. It's time to put the word out, and he wants *F1 Racing* to do it...

WORDS JAMES ROBERTS

PORTRAITS STEVEN TEE





COMING IN FROM THE COLD

QUIET PLEASE. FERNANDO ALONSO has something to say. During his time in Formula 1 the double world champion was always vocal, but now he's determined to set the record straight. He wants to rectify injustices. In the past his words and actions were twisted by knaves and used against him. And he can't understand why.

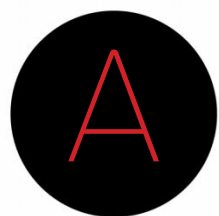
Alonso famously once said "Formula 1 is no longer a sport". It's a sentiment he still holds today. But he hopes far-reaching changes to the regulations for 2021 will redress the balance and offer him a chance to make a sensational return to a top-line Formula 1 drive. The passion for winning burns as fiercely as ever...

We travel one winter's morning to northern Spain to meet Fernando in his home town of Oviedo. With the snow-capped Asturias mountains as a backdrop, *F1 Racing* heads to his karting circuit and museum, on the outskirts of the city.

As a chill wind blows across the track, Fernando ushers us inside, into the warmth of his museum. Here we get a personal guided tour. From his very first pedal kart to the race-winning Renaults, McLarens and Ferraris, the wealth of machinery on display makes it one of the largest private collections of F1 cars in the world.

As Alonso reflects on past glories and missed opportunities, he talks honestly about his mistakes, his competitive hunger, the passion for speed, and where he sees weaknesses in his rivals – Lewis Hamilton in particular. This is where we get to see the real Alonso, alone and uninterrupted. There are no time pressures, no media handlers or agents correcting his answers or rushing him to his next meeting. No subject is off the record.

Over the course of the morning, Alonso speaks frankly and revealingly about his current challenges, his desire to return to F1, and his most memorable and career-defining moments. Silence please. Mobiles off – even you, Fernando.



LITTLE OVER TWELVE MONTHS have passed since Alonso last raced in Formula 1 and he's keen to remind us what was written on his McLaren at the 2018 Abu Dhabi GP. It read *Hasta luego* which translates as "see you later" not "adios" or "bye-bye."

"I'm not done with F1," confirms Alonso. "2021 is a good opportunity and I feel fresh and ready now. It's something I will explore."

Before then, the two-time F1 champ and Le Mans 24 Hours winner will have attempted the Dakar Rally, which will just have concluded as you read this. He also wants a third crack at the Indianapolis 500. By the summer, he plans to focus his energies on securing a top-line return to F1. Remember, only Ferrari (Charles Leclerc), Red Bull (Max Verstappen), Renault (Esteban Ocon), Racing Point (Sergio Perez and *we assume* Lance Stroll) and Williams (George Russell) have drivers already signed for 2021, the season the new technical,

"I'm not
done with
F1, 2021
is a good
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sporting and financial regulations come into force.

The key question is, which team would employ a driver at 39 years old who has spent the best part of two years out of a Formula 1 cockpit?

"I don't think age will be a problem," Alonso fires back. "These cars, with no fuel stops, are not so demanding. You drive seven or eight seconds [a lap] slower on a Sunday than you do on a Saturday. Also, with the new 18-inch wheels it will change the handling of the car and everyone will need to reset the way they drive."

It might be worth recalling 2010 when Mercedes hired Michael Schumacher, who had then been out of grand prix racing for *three* seasons, and had turned 41...

"Michael came back to F1 in an era of Pirelli [2010 was Bridgestone's final season] when the tyres were very sensitive," Alonso adds. "We had developed skills to take care of the tyres and not overheat them and he was struggling more because of that. In 2021 this won't be a problem for me." ▶

WORKING ON HIS COMEBACK



Having spoken closely with F1 sporting boss Ross Brawn and given his thoughts on the new formula, Alonso believes that for both the 'show' and the drivers, the regulations are a move in the right direction. It should offer him a better chance to be competitive because the regulations are designed to close up the competitive spread between the teams while enabling drivers to race one another more closely.

"The problem with this sport today is that it's cruel," Alonso says. "There is no hope [if you are in a bad car]. It does happen in other sports. Chelsea or Man City *can* lose to a second division team, but in F1 it is impossible."

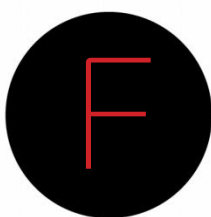
If you needed reminding, Alonso's last Formula 1 victory was for Ferrari on Fernando's home turf in May 2013.

"Formula 1 is unfinished business because people think that we deserved more than we achieved – especially in the last few years," Alonso continues. "In the museum there are cabinets with a lot of trophies, but nothing recently and that seems a bit weird."

"The only problem with new rules is some teams could interpret them differently to others. You can join a team that is winning now, but if they make a mistake with the regs will people say I made a bad decision again?"

EYING THE BEST SEAT IN THE HOUSE





FOR 2021, ONE THING IS CLEAR: Alonso isn't interesting in returning to Formula 1 to make up the numbers. He wants victories and a shot at a third world title. But which, if any, top-tier F1 outfits will hire the Spaniard?

Given the fractious end to the Honda-powered McLaren era, a Honda-powered Red Bull would surely be an impossibility?

He laughs: "I've had a lot of meetings with Red Bull in the past. I think the first was in 2007 when I left McLaren. I met Adrian [Newey] and Christian [Horner]. And again in 2008 before Sebastian [Vettel] moved from Toro Rosso to Red Bull, we had another two or three meetings."

Fernando doesn't dwell on Red Bull any further, so what about Mercedes then?

"They have been dominating for many years and have a strong team right now," he says. "If they decide to make a change it would be difficult to see. When you are winning you don't like to alter things, but let's see how next year goes."

Last summer they had some doubts between [Valtteri] Bottas and [Esteban] Ocon. Next year, if they have the same doubts..."

Before considering the option of Ferrari, while we are on the topic of Mercedes drivers, it's worth enquiring what Fernando has made of Lewis Hamilton's achievements. Let's not forget that one of the most explosive periods of recent Formula 1 history was the 2007 'Spygate' season when Hamilton, as a rookie, came up against – and finished the year level on points with – Alonso.

"He's raised the level in the last couple of years, especially in 2019 when the car has not been as dominant as other seasons," Alonso says. "If he cannot win, he's a very close second – not 20 seconds further back, which is what happens a little bit with Valtteri. A weekend when the car is not as competitive, Bottas is fifth or sixth or a minute behind – but Lewis is not. He's made a step forward, he is more competitive, more prepared. He still has some weak points that have not been stressed yet – no one is pressing that button, that weakness."

Do you know what that weakness is, Fernando? He laughs. "Yes." From when you were team-mates in 2007? "No, from now. If you study Lewis's season there is always a common trend.

He starts the year slowly and no one takes the benefit of that. We all get excited

that it will be the year of Bottas, but it's not. It would be nice to compete against him [Lewis] in a proper fight. Maybe his weak points are not real and everything is calculated but it would be nice to discover.

"When you have a good package and the other guys crash and you extend your championship lead, everything seems calm. If you are only one point ahead or ten points behind, the stress is different. The mistakes are different and your radio communications are different. We need to see him when the pressure is on."

But can you really imagine Mercedes unsteady the ship? Toto Wolff has spoken regularly about the damage warring team-mates can cause. Ferrari is now discovering that. But what if Brackley was free of Hamilton, as a courtship between the British driver and Maranello develops? Too many ifs, buts and maybes...

During our interview Fernando's mobile rings and he displays the screen that reads: 'Flavio B'. He turns his handset off and continues to talk. A little later he reveals an amusing WhatsApp video of his former team boss Briatore, who is chatting to none other than... Toto Wolff. They joke about how they've signed a contract together. There's no basis for them actually having done so – but just imagine for one moment, 'what if...?'

But, *maybe*, there is another scenario that is equally tempting. What about a return to Ferrari? Or another of his former teams? Surely not possible...▶



Fernando shows F1 Racing his karting circuit, which contains every type of corner you would want



THE BEST OF TIMES, THE WORST OF TIMES



ONE OF THE STANDOUT performances by any driver in recent times was Alonso's 2012 season.

In a Ferrari that was the fourth-fastest car that year, he led for much of the campaign and was unlucky to be taken out in first-corner incidents that were not of his making. He lost in the season finale in Brazil when Vettel miraculously recovered from a first-lap crash that punched a massive hole in the side of his Red Bull. It was the second title decider in three years in which Alonso came up fractionally short (the 2010 Abu Dhabi strategy blunder being the other). But despite the heartache, he says he looks back on his time at Ferrari with "a smile on my face."

"I know we didn't achieve the championship, but we fought and gave everything we had," he says. "We really worked very hard for every result and life outside the car was great. It was a good time in my life, living in Maranello. I had a lot of friends there, with Felipe [Massa], and Jules [Bianchi] who was with the Academy. Every Friday evening we would play football together with the mechanics and engineers."

"It was emotionally intense. Being a Ferrari driver gives you a lot of satisfaction both in and out the car. We just missed the championship by a couple of points as we hit Red Bull's dominating era."

In the Interlagos pitlane, as Vettel was atop his Red Bull celebrating the 2012 title like a rodeo rider, the camera cut to

Alonso, ashen-faced staring straight ahead. It looks as though he was rueing the conclusion of his season. Haunted by grief.

"There are lies about my career that are not the truth," he says now. "I got out of my car and I was looking at Felipe, who for some reason could not stop crying. He was with his mechanics and wife, so I was standing there waiting for him, seeing if he was okay. The story was that I was in shock or sad – no I didn't care that much. I wanted to give Felipe a hug."

"I've heard people say that I was selfish in my career. At Ferrari and at other teams I always used to share my prize bonus with my mechanics. I thought if we were getting a podium or race win, it was not only me but team work. So, if I won \$30,000 I would share it with my team."

"When I join a project, I commit 100% with that team and I dedicate my life to that team and those guys and they appreciate it. The last thing that I am is selfish. Why is it that I have performed better than my team-mates? I cannot say sorry for that."

Alonso says he never wanted to leave Ferrari but after Stefano Domenicali departed in early 2014, there was more criticism that Fernando was responsible for poor results.

The previous summer, Alonso memorably told the media that for his birthday he would like "someone else's car" – a statement that enraged Ferrari president Luca di Montezemolo, who threatened to turf Alonso out of the team. ►



"There are lies about my career that are not the truth"

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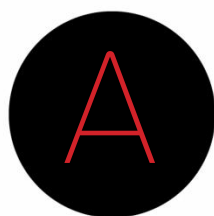
“No, I said I wanted the *fastest* car,” Fernando counters. “I was 0.8s slower in the Ferrari and Italian TV asked if I had a wish for my birthday and I said to have the fastest car. The headlines the next day said I wanted a Red Bull. Which, arguably, yes, as it was the fastest car I did, but I didn’t want to paint the Ferrari blue. There is a difference. I wanted an extra push as we were fighting for the championship. Massa was saying the same thing – or even worse.”

Alonso’s eventual departure from Ferrari led him to be reunited with Ron Dennis at McLaren. The pair had put their differences behind them following the damage of 2007. McLaren believed the only way to beat Mercedes and Ferrari was to forge a new relationship with a rival manufacturer, but having Honda as power unit supplier was doomed from the off.

Reliability, top speed and driveability were poor and frustration quickly grew. Racing at Honda’s home track of Suzuka in 2015, Alonso memorably described the power unit as a “GP2 engine”. It’s a comment he now regrets: “It came from a place of frustration and maybe I should not say that, but I didn’t say it in the TV pen or the press conference. I was talking to my engineer in a private conversation [which was broadcast]. It was not meant to be public.

“But the engine *was* very bad. The first year in Jerez, in four days we did seven laps. Now Honda wins a race and I receive a lot of messages that read: ‘GP2 engine wins now, it should be a sad day for you.’ I’m very happy, but the engine I had in the car was not the same as the one winning in Brazil.

“If a top driver today goes through the performance that I went through, I could not imagine what they would say. In 2015 I was always fighting to get out of Q1 and had 575 places of penalties. I say things that I think and that I believe. That’s because I believe those things are the truth. Sometimes I can be wrong. But I don’t see things that I do that others are not doing. I don’t read extra things from what others are saying, but I see mountains and mountains of the things I say...”



ALONSO IS KEEN TO RETURN to new-look F1 in 2021, but it might be too late if the doors to Maranello, Milton Keynes, Brackley, Woking or even Enstone are slammed shut in his face. But he feels a break from F1 has done him a world of good. Do we see a wiser Alonso before us today, whose motivation has been rekindled?

“I had to breathe last year when I finished and I decided to stop because F1 is a very demanding sport,” Alonso says. “When you have been racing for 18 years, you have no time off to relax. You need to eat, sleep, train – everything for F1 and I had to take that weight off my shoulders.

“People have told me I can start doing what I love now I’m not in F1 and I say, ‘What I love is to drive and where do I want to drive? Monaco, Suzuka, Silverstone, these are the races I love to do’. Speed and adrenaline fires my passion. When I ski, I avoid cornering because I want a clear view and empty piste to go down as fast as possible. I even hold a bicycle computer to record the speed and try and achieve the maximum I can.

“When you do events like Dakar you meet different people with different philosophies I will be ready to come back [to F1] stronger and, if in the right package, [I] will win.”

With his love of racing and desire for success, Alonso is not yet ready to give up on his dream of returning to the top of the sport and *winning*. He admits he competes in other sports with trepidation if he feels he doesn’t have a chance of coming out on top. He regales us with an anecdote about a doubles tennis match and he’s nervous about contesting it in case he loses. Failure is not an option for Fernando, it hurts too much.

But there is one sport he has no doubt about being victorious in. The only question is whether he will get the opportunity to test his mettle one last time. “With driving it’s different,” he says. “I have so much self-confidence that I know I can take any car and if everything goes well, I should win. Driving is the only thing in life that I know I do well at.” 🏁



“What I love is to drive and where do I want to drive? Monaco, Suzuka, Silverstone, these are the races I love to do”

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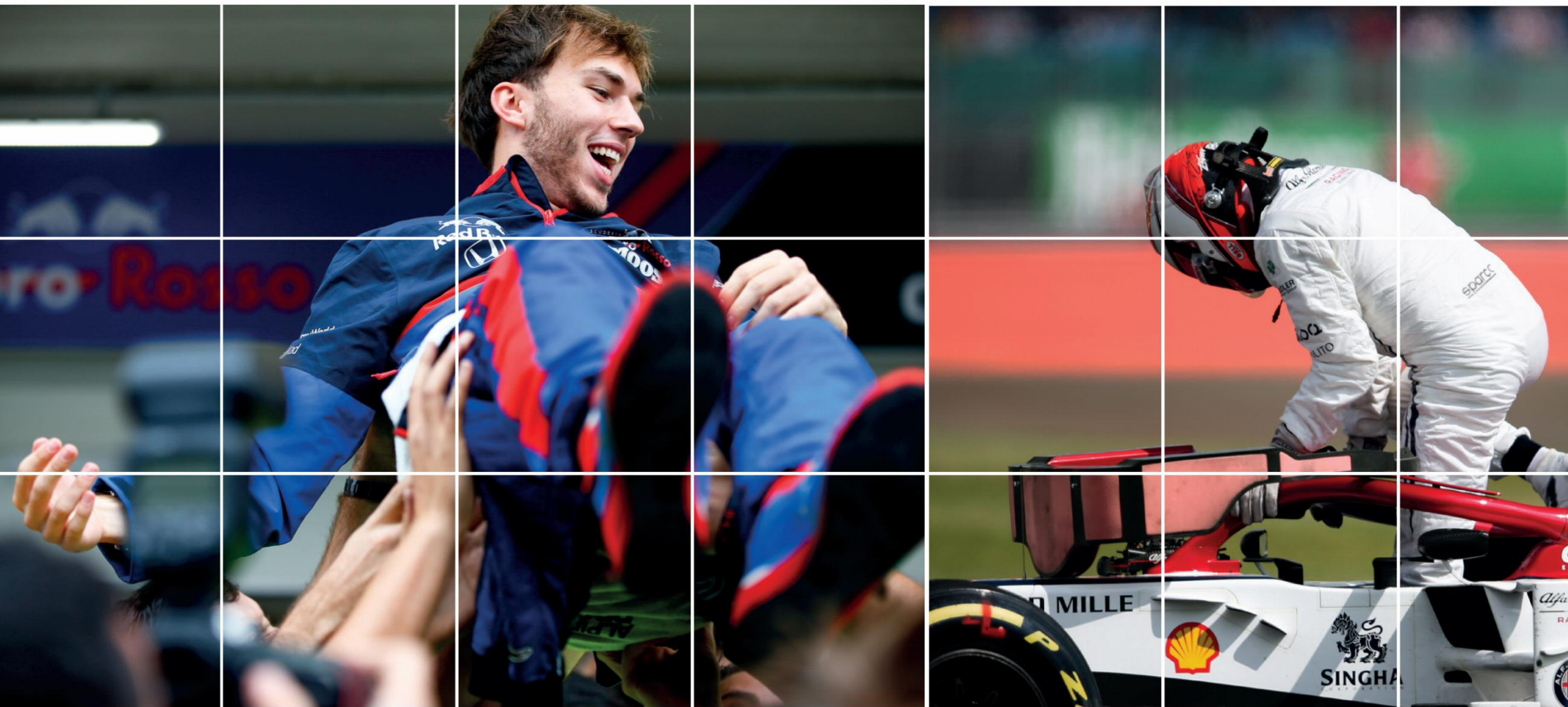
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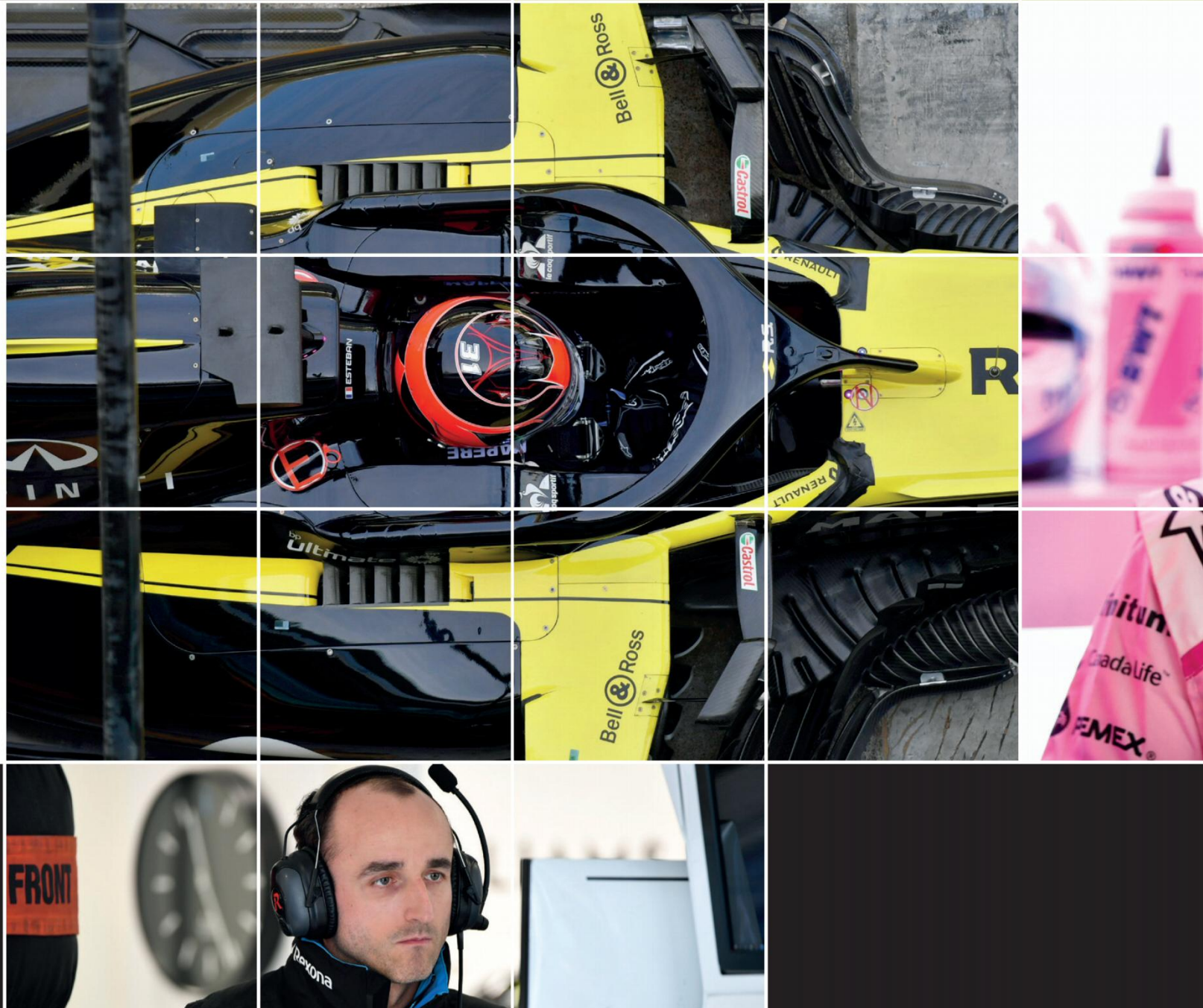


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A TALE OF SEVEN TEAMS

Behind Mercedes, Ferrari and Red Bull there was an epic fight in 2019, featuring drastic swings in performance between teams which gives a strong indication of form heading into 2020 – and shows how tough it will be for F1 to eliminate its unofficial 'Class B'



WORDS

EDD STRAW

PICTURES

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W

ERE FORMULA 1'S UNOFFICIAL 'CLASS B'

pack engaging in battle up front, the past three seasons would be celebrated as a time of dramatic performance swings, unpredictable races and ebbs and flows that made calling a winner on any given weekend almost impossible. It's a difficult web to untangle. After all, how can you explain Ferrari-affiliated Haas slumping from fifth in the overall championship in 2018 (with the fourth fastest car) to ninth in 2019, while Toro Rosso – also a small team benefiting from an alliance with a large operation thanks to it being Red Bull's junior team – had its best season in a decade and leapt from ninth to sixth with two podium finishes?

Understanding why some midfield teams succeeded and some underachieved reveals much about the art of making an F1 car, highlighting the differences between the three giants and the rest as we head towards a new season under a largely stable rules set.

The first factor is how closely matched the midfield is. In 2019, judged by qualifying pace and excluding the woefully-off-the-pace Williams, the six midfield teams were covered by 0.717%. That's narrower than the gap between the front of the midfield and the big three. So, performance swings can make a big difference and move a team in and out of contention.

Even this does not explain Haas, as it was just over a tenth of a percent slower in 2019 than 2018 relative to the front. Rapid throughout pre-season testing and in the season-opening Australian Grand Prix with a car developed aerodynamically by Dallara using the Ferrari windtunnel, the team's problems began to show in the second race in Bahrain, where Kevin

Magnussen slumped from sixth on the grid to 13th at the chequered flag. Initially blamed on struggles with the tyres, it was eventually chased primarily to an aero issue that interacted problematically with the rubber.

"It was a combination of tyre and aero as they affect each other," says chief engineer Ayao Komatsu. "I'd say it was down to concept and correlation. The problem only became obvious when we got to hotter tracks. The consistency goes as we cannot keep the rear tyre working with the characteristics we have."

This manifested itself as a car with a strong front end, but which didn't deliver the anticipated downforce in slower corners even though things worked well in quick ones.

"The front is actually pretty good, but that gives you a problem with the balance as you have so much more oversteer," adds Komatsu. "When the tyres are new in qualifying, it's great and you can perform but in the race you can't keep the rears alive because it's not consistent through the corner. If you took that front end away, in the mid-corner you'd just have horrendous understeer so it couldn't be quicker. It goes back to correlation and concept."

The changes to the front wing regulations for 2019 – simplified wings with limited endplate geometry – is

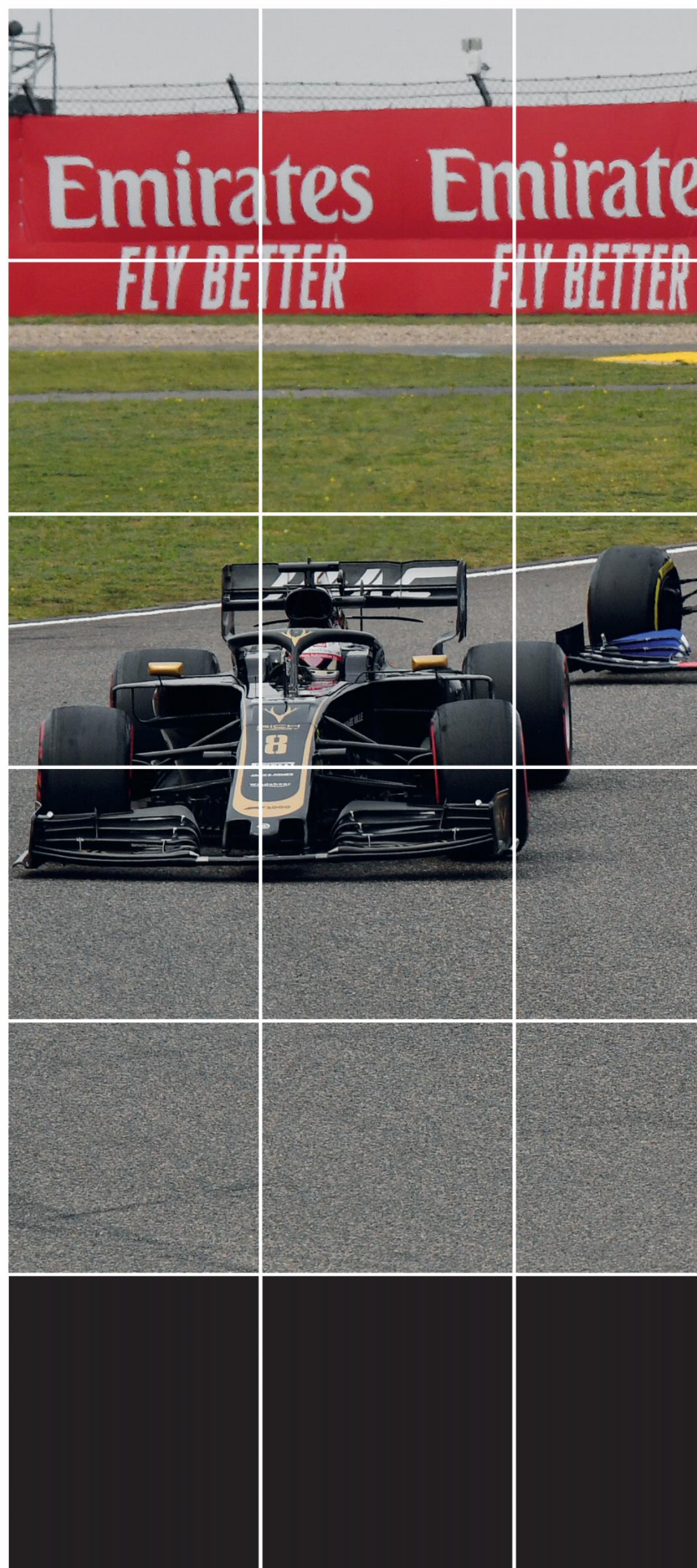
potentially the root of the problems, as Haas was locked into a car concept that it couldn't resolve. The situation was made more complicated by the fact the Spanish GP update made the problems worse and the team spent the middle stages of the campaign experimenting with early-season specs, which continued to run to the end of the year.

The team opted for the loaded outboard front wing concept, which offers greater potential for controlling the all-important aerodynamic wake off the front wheels but is more difficult to make work. It's no coincidence that this was the path taken by Renault, Haas, Racing Point and Williams – four midfielders that all struggled. It's not the wrong concept, just trickier, as Mercedes and Red Bull both thrived using it.

Toro Rosso's season was all about keeping things simple.

"BEING SUPPLIED WITH PARTS ALLOWED US, AS A SMALLER TEAM, TO FOCUS OUR RESOURCE ON PERFORMANCE"

JODY EGGINGTON (TORO ROSSO)



PICTURE: MARK SUTTON

This was its best season since 2008, matching its sixth place in the constructors' championship with what might be termed a lo-fi approach under new technical director Jody Egginton. Toro Rosso focused on maximising the use of non-listed parts (components that teams don't have to design themselves to qualify as a constructor), running the 2018 Red Bull gearbox and rear suspension – as well as the front suspension internals. This allowed Toro Rosso to focus on aero, as well as having a more reliable car. This pragmatic approach paid dividends with a car that was also more consistent than previous iterations.

“It comes down to a number of things,” says Egginton of the squad's strong season. “The first thing is, it was the second year with Honda and starting earlier means you can really get the basics of packaging as you want, which gives you aero freedom.

“The parts we got from Red Bull and the synergy with them, even though it was from last year's car, allowed us not to worry about redesigning the gearbox main case, so that's the other benefit. It means you can redeploy that resource elsewhere in developing the car. Being supplied with parts allowed us, as a smaller team, to focus our resource on performance.”

McLaren took a very different approach for its revival, which it hopes is the first step on a long-term plan to return to the very front. This was the result of some deep soul-searching, as well as major restructuring undertaken in June 2018. The arrival of team principal Andreas Seidl in May 2019 and technical director James Key shortly before that have contributed, but they are quick to underline that much of the firefighting had already been done. ▶

Williams aside, the midfield was very closely matched in 2019 and the scrap for Class B honours offered more surprises, twists and turns, and ups and downs, than the narrative at the sharp end of the grid





Consolidation or, in some cases, vast improvement will be the aim for the midfield teams this year, ahead of the new rules in 2021

“I only joined in March, but the team did a really good job of stepping back and having a very honest look at what the issues were,” says McLaren technical director James Key. “It was a mix of some concepts that didn’t really work aerodynamically or for what the car really needed – missing a few important points to where the trends were going. It’s not necessarily a correlation issue, it’s more that parts being brought maybe weren’t relevant to what the car really needed. The team did a good job of stepping back from that and thinking, ‘What did we get wrong, let’s really understand this’.

“When I joined, it was still early days but the directions emerging were quite strong and seemed to be far more

relevant to the balance characteristics the car needed. It’s been a case of continuing down that road.”

Renault’s story is the inverse of McLaren’s. While Toro Rosso was artificially close in the final standings due to two unlikely podium finishes, this was a season that failed to produce the anticipated progress for Renault. Team principal Cyril Abiteboul’s pre-season target was to finish a stronger fourth and edge into the no-man’s land behind the ‘big three’. But the team slipped backwards – even though its pace relative to the front was actually fractionally better.

“It is not only front wing, it’s front wing, it’s nose, it’s chassis winglets, bargeboards and everything – that whole

system needs to work together,” says Renault executive director Marcin Budkowski. “There’s a trend towards unloaded outboard and it’s fair to say we might have missed something there. The problem when you develop the front of the car around a concept is it’s difficult to change. It’s not changing the front wing as that’s going to make you slower, you have got to change the whole front of the car.”

This exposes the scale of the challenge for any team aiming to strike out towards the ‘big three’. The vast amount of detailed aerodynamic science F1’s big teams have built up is key to mastering this concept and Renault fell short. Upgrades didn’t deliver what was expected, critically with the influential bargeboard area hitting a brick wall in terms of improvements. This, on top of the fact Renault is a rapidly expanding F1 team under huge board-level pressure to achieve, added up to a difficult year as it attempted to run before it could walk.

Racing Point didn’t fall foul of this, but its necessary conservatism held it back. It only really picked up the pace in the second half of the season, performing well at Spa and Monza then, off the back of a Singapore GP aero update, for the rest of the year. Sergio Pérez was the top-scoring midfield

driver after the summer break, missing the points only once, but it was too little, too late.


“The whole change of ownership was happening around July/August [2018], and at that point you’re making decisions on the architecture of next year’s car,” says technical director Andrew Green. “We didn’t know what our resources were going to be so we made the decision to be safe and make sure we had a car on the grid and carried the concept of the chassis over, and a few other key concepts. We’d have been OK if we’d not had the change in wing regs as well. We didn’t have the capacity to do a big study.”

In the first half of the year, the problems manifested themselves as struggles in long corners, plus instability at corner entry – partly as a result of not having full control of the aero centre of pressure in the braking/turn-in phase, another area where the big teams have built vast knowledge.

Alfa Romeo started strong but faded and put its struggles down to being a ‘young’ team. While Sauber has been on the grid since 1993, it is in a rebuilding phase. But the team didn’t build on a strong 2018. One factor that played a part is the struggle of replicating the performance of the tyres in windtunnels – using 60% models with a construction of tyre that changed in 2019. This is yet another area where the big teams found it easier to adapt.

“We struggled much more with the tyre deformation,” says team principal Frédéric Vasseur. “It’s not easy to find a good compromise for the tyres in the tunnel and sometimes you can make a choice that can impact drastically on very slow corners or in the high speed.”

As for Williams, much was wrong here. There were clear problems with Paddy Lowe’s technical leadership of the team – hence his departure ahead of the season – with a big change in aerodynamic concept not delivering as hoped. The team, like McLaren, has taken a long, hard look at itself and anticipates at least being at the back of the midfield in 2020 – but it’s so far off the back that it needs a big step. It’s a reminder that, while some of the ‘real’ midfield teams hit troubles, it is possible to get things profoundly wrong. While others had the odd key failing, Williams suffered multiple problems.

That’s the challenge for midfielders. They have fewer resources, therefore can do less research, understand less and struggle to respond if things go wrong – part of the reason that escaping F1’s underclass is a huge challenge, even with the chances presented by the forthcoming 2021 rule changes. 

“WE DIDN’T KNOW WHAT OUR RESOURCES WERE GOING TO BE SO WE MADE THE DECISION TO BE SAFE AND MAKE SURE WE HAD A CAR ON THE GRID AND CARRIED THE CONCEPT OF THE CHASSIS OVER, AND A FEW OTHER KEY CONCEPTS”

ANDREW GREEN (RACING POINT)

PICTURES: JERRY ANDRE; MARK SUTTON; ANDY HONE; ZAK MAUGER; STEVEN TEE; JOE PORTLOCK

A POINT TO PROVE

George Russell was the only driver not to score a point in Formula 1 in 2019, yet behind that derisory statistic lay the performances of a potential future superstar – no wonder Williams is looking to him to lead the way in 2020



George Russell drove in Formula 1 last year. This year, he needs to *race*. Many will have registered Russell's ungainly Williams only when it was being lapped, or perhaps when he put in the occasional cameo, for example almost reaching Q2 in Hungary. But the FW42 was so bad that he was mostly nailed to the back row with nobody to fight except team-mate Robert Kubica, whom he outpaced comprehensively. Yet Russell has come out of a pointless season with his burgeoning reputation enhanced, despite it being difficult to spot the difference between a driver with prodigious potential in a tail-end machine and a mediocre one, given the results look very similar.

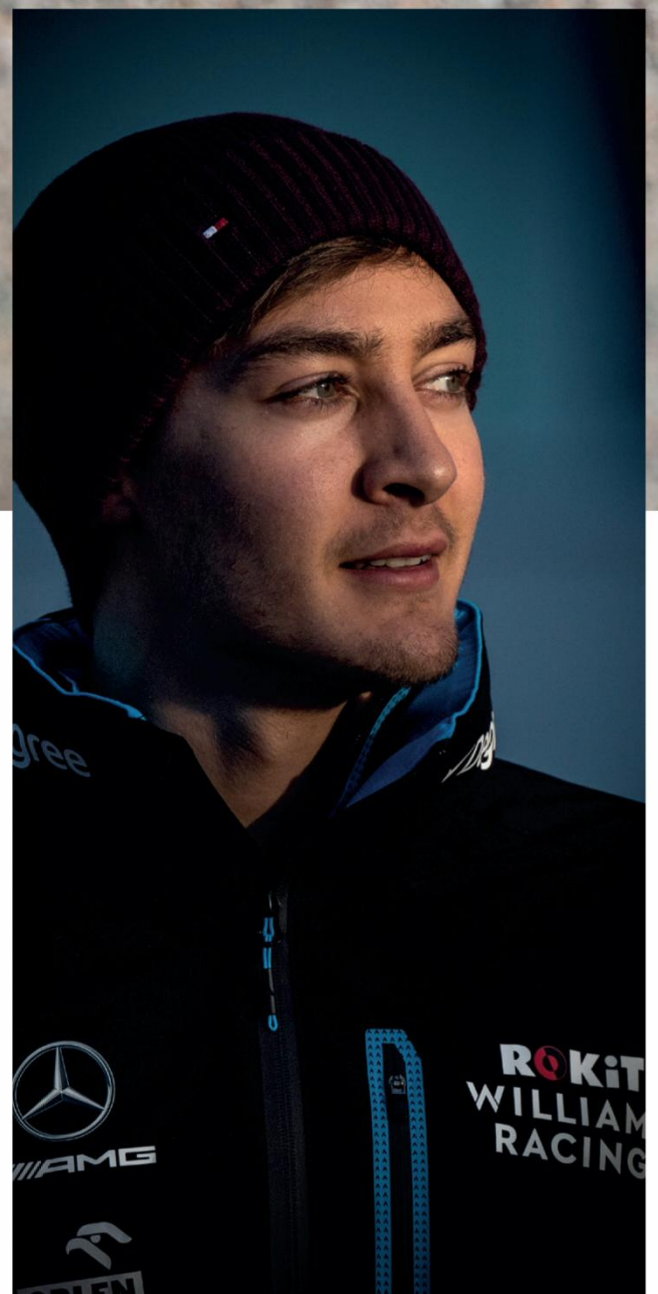
Russell has shown enough to suggest this might be one of those rare occasions a star of the future excels in the shadowy fringes of F1. Fernando Alonso's 2001 rookie season with Minardi is a valid comparison given he too went pointless but impressed those paying attention, and was on a pathway to a drive with a Renault team that would become a race-winning force once he joined. Russell is Mercedes-affiliated, and is on a journey that might lead to a Silver Arrows seat. That those beyond Mercedes and Williams also hold him in high regard shows there is more to Russell than the unavoidably poor results suggest.

"It's reassuring that there are people outside of Williams who are noticing what I'm doing," says Russell. "I believe I've done a good job, but I don't believe I've done a perfect or excellent job and still believe I can improve. I've had some really strong performances but I'll become a more complete driver in 2020 and I'm really looking forward to that, not purely because I believe the car will be much stronger but just to see what I can achieve."

"I'm learning how to extract more out of the machine and that's why I'm excited, to see if I can achieve the levels that I believe I'm capable of."

Russell has a little of the Alain Prost about him. He's eloquent, intelligent and drives in an economical way that works with the car rather than against it. He set out his stall to approach his rookie season professionally

Despite not scoring a point in 2019 Russell had a rookie season to be proud of, and is looking to kick on with Williams in 2020



PICTURES: ZAK MAUGER; SIMON GALLOWAY



and to do everything he could to help raise Williams from the depths. There was no evidence of him wallowing in self-pity, which some more entitled operators might have done.

That the car remained painfully slow is not down to any failure on Russell's part and, after using the four early-season flyaways to settle in, he promptly established himself as the focal point for the squad given his pace – and Kubica becoming somewhat truculent on the other side of the garage. Those in the team working with the drivers don't get behind 'their' driver because management tells them to, they do so because they enjoy working with them and see a little magic in the cockpit. It's a formidable barometer of a driver's contribution, and George's enthusiasm proved a galvanising force.

He's not the finished article, how could he be at 21? But the mention of him in the same breath as Prost is not fatuous. Witness Russell's reaction

to qualifying 16th in Hungary: rather than reveling in his pace he talked in depth about a breakthrough in tyre understanding.

The lack of any real yardstick to compare him against – steamrolling any team-mate is impressive but Kubica struggled – and the absence of many razor-edge turning points, when excelling might make the difference between success and failure, is troubling. The only time there was a point on offer in the German Grand Prix, it was Kubica's. That was one of only two races where both finished and in which Kubica was ahead, the result of repeated Safety Cars, Russell not being allowed to pit for slicks when he wanted to and then making a mistake that let his team-mate past.

Errors in races were relatively rare, although they did usually happen in battle with Kubica – wiping out a marker bollard at Paul Ricard, and striking his team-mate a glancing blow after a botched overtaking attempt on the ►

DRIVERS WHO ATTEMPT TO SHROUD PROBLEMS OR BLAME THEM ENTIRELY ON EXTERNAL FORCES TEND TO BE THE ONES WHO NEVER FULFIL THEIR POTENTIAL. RUSSELL IS CHARACTERISTICALLY CANDID, AN ENCOURAGING SIGN

first lap in Abu Dhabi. The latter moment exposes the biggest weakness in Russell's game, as 11 times in 21 races he finished lap one behind Kubica.

Asked about this in Abu Dhabi, Russell gave a characteristically candid answer, an encouraging sign. Drivers who attempt to shroud problems or blame them entirely on external forces tend to be the ones who never fulfil their potential, but Russell accepted this as an area he has to work on. While there is a small caveat to be added in that there were times when Williams was perilously light on spares, how he responds to this weakness will be the acid test in 2020. His launches were decent enough, but often his choices in crowded starts, unfamiliar to him due to spending most of his single-seater career at the sharp end, were poor.

If he doesn't improve on that, he'll be badly exposed in the cut and thrust of the midfield that

he hopes to occupy. But while there were too many races where he was parked behind Kubica for lap after lap, when Russell did get past he usually dropped Kubica at a startling rate, particularly as Russell's ability to manage the tyres improved over the second half of the season.

But the central question of how much potential Russell has is how fast he is. His rookie season proved decisively that he is at least *very* quick, but we knew that from his junior career. While Williams is confident he extracted the most from the 2019 car when the capricious tyres were in the correct temperature range, Russell has not yet been tested down to the final tenth or two that makes the difference between a superstar and a journeyman.

He's closer to the former end of that spectrum – his largely unnoticed pace in a difficult car at the great driver's circuit Suzuka confirms that. But having passed his rookie test with flying colours it's time for the next exam. **1**



PICTURES: GLENN DUNBAR; SIMON GALLOWAY; SAM BLOXHAM

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RO
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A FULL RECOVERY

WORDS JACK BENYON
PICTURE WILLIAMS F1

In 2018 a mystery illness threatened to derail Nicholas Latifi's career. He bounced back and is now set to follow his F2 rivals Alex Albon, George Russell and Lando Norris into Formula 1

NICHOLAS LATIFI CV

Born Montréal,
29 June 1995

2019

Second in Formula 2 with DAMS, two wins. F1 testing with Williams (four days), FP1 outings with Williams (six GPs)

2018

Ninth in Formula 2 with DAMS, one win. F1 testing with Force India (three days), FP1 outings with Force India (five GPs)

2017

Fifth in Formula 2 with DAMS, one win. F1 testing with Renault (one day)

2016

16th in GP2 with DAMS

2015

11th in Formula Renault 3.5 with Arden, 10th in European Formula 3 with Prema Racing. Also raced in GP2 and Porsche Carrera Cup GB

2014

10th in European Formula 3 with Prema. Fifth in the Macau Grand Prix with Prema. Outings in Formula Renault 3.5, GP2 and Porsche Carrera Cup GB.

2013

15th in European Formula 3 with Carlin. Fifth in British F3, also with Carlin

2012

Seventh in Italian Formula 3 with BVM Srl

As he lay in a hospital bed at the beginning of 2018, Nicholas Latifi must have worried his racing career would be over. Or at least that his F1 dream would now be unreachable. But fast forward just shy of two years and he's turned a nightmare 2018 into a Williams Formula 1 race seat. Quite the turnaround.

Latifi was set for 2018. This was his year. Having spent the second half of 2017 fighting Charles Leclerc for wins, Latifi was going well in Formula 2. Returning for a third season at DAMS meant he had to be one of the title favourites. But the mystery illness that cost him crucial winter testing time ended up ruining his season too.

The new F2 car introduced for 2018 was a much different beast from its predecessor, so that pre-season seat time was even more important than usual. When Latifi returned to action, he and DAMS worked on adapting the car to Latifi's style, which led them down a set-up rabbit warren where nothing clicked. Meanwhile, team-mate Alex Albon claimed three straight pole positions starting from the second round of the season, eventually taking third in the championship which led, ultimately, to a Toro Rosso F1 seat.

Latifi languished ninth in the standings, nowhere near contention, and had a long, hard look at himself.

"My driving style was always quite aggressive, generally I'm quite late on the brakes," he says. "The way our car was in 2017 allowed for that and, if anything, it spoiled me. With this car [the F2 2018], from very early on last year I wasn't getting the same feeling. At a certain point, nothing was working so I took a really hard look in the mirror.

"It was clearly me, not driving it properly, because Alex was able to do it and we had polar-opposite driving styles – I'd say the most different of all my team-mates. It was enlightening because it was an even bigger slap in the face that he was getting the results and I wasn't. He was probably the team-mate I learned the most from in my junior single-seater career."

Latifi's journey to F1 wasn't as simple a climb as most. He bounced around series at a young age, rarely committed to genuine title assaults until reaching GP2, and the Porsche Carrera Cup GB is not something you expect to see on a potential F1 driver's CV. Nicholas didn't start racing until he was 13, and the jump into F3 in 2012 probably came too soon. Eventually, 2018 should have

been his time, but it didn't go well.

"In hindsight, it's something that I try and look at as a positive that it happened now," says Latifi. "Of course I would have preferred to get the results straight away and fight for the championship. But the way I analyse it is, there was something I was missing at the start of the year [2018], clearly, in my – let's call it driver toolbox.

"I wasn't able to do it consistently. In Formula 1 the car can be different every year. I've driven so many F1 cars now, a lot of the time they have inherent tendencies that it doesn't matter which track you go to, they would feel the same. Some good, some bad.

"If the 2018 car had been like the 2017 car and I'd won the F2 championship and then arrived in F1 with a team that maybe wasn't competitive, would I have been able to adapt straight away in F1? Probably not. There's even more pressure. The cars are even quicker and on more of a knife edge. It could have been a one and done year..."

That ability to look inward is one of the reasons Williams has thrown Latifi in to replace Robert Kubica. He never claimed a pole in Formula 2, so qualifying is likely to be an issue for Latifi against George Russell in 2020 – as it was for Kubica – but Latifi's self-awareness should allow him to learn quickly.

Williams was genuinely delighted to have Latifi as a test driver in 2019, following his time spent in similar roles with Renault and Force India. Latifi's fighting spirit, positivity and general all-around nice guy persona have made him an instant hit with the Grove outfit. And after his FP1 outings with the team in 2019, he knows what's expected of him in the car.

Yes, Latifi brings cash – €15million of it reportedly. Latifi's father Michael has also invested £200million in McLaren, unrelated to his son's racing. Sure, money isn't a problem, but that doesn't mean Latifi is just the latest in a long line of wealthy 20-somethings with a sense of entitlement entering F1. He wants to earn his place, and is a pleasant and self-aware person.

Second in F2 in 2019 was a strong rebound from that nightmare 2018 – even though it came against a weaker field than the previous Russell/Norris/Albon season. But the lessons Latifi has learned on his peculiar path to F1 make him the kind of self-critical, intelligent driver that won't be as much of a pushover as his CV might suggest.

SURE, MONEY ISN'T A PROBLEM, BUT THAT DOESN'T MEAN LATIFI IS JUST THE LATEST IN A LONG LINE OF WEALTHY 20-SOMETHINGS WITH A SENSE OF ENTITLEMENT ENTERING F1



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FERRARI 312B

A return to form
that fell short
of greatness



Throughout the 1960s Ferrari's focus on Formula 1 slipped as money grew tighter and engineering resources were increasingly directed towards sportscar racing and Le Mans, a fertile ground for selling cars to customers – and a rare European playground for American interests. Indeed, Enzo came close to selling out to Ford before ultimately reaching terms with the Fiat empire to sell a 40% share of his business.

The upshot was that Ferrari's first car for the three-litre era, the 312, was overweight and underpowered, having inherited its engine from a sportscar. Frustrated by both this and the annual failure to get any meaningful F1 development work done until after Le Mans, John Surtees left after a bust-up with the team in 1966. Successive iterations of the 312 failed to deliver the goods on track as the powerful, flexible Ford-bankrolled Cosworth V8 became ubiquitous.

The 312 (three litres, 12 cylinders) designation served Ferrari for 14 years and covered many cars, including four carrying the B designation (one of which would never race). During the service life of the B models, Ferrari's very commitment to F1 would come under threat. 1969 proved to be a pivotal year as Fiat bought in and work began on an all-new engine to replace the V12, which soldiered on in a greatly revised form that finally achieved competitive power outputs – but at the cost of prodigious thirst and unreliability. It was a one-car entry for most of the season and failures cost lead driver Chris Amon several decent results. When Ferrari skipped the 1969 German Grand Prix rather than face further humiliation, and Mauro Forghieri's new flat-12 engine showed a similar appetite for self-destruction in early testing, scuppering plans to introduce the 312B at Monza, Amon also walked before season's end.

Once its development problems had been expunged, the flat-12 would go on to support Ferrari's F1 programme throughout the 1970s. Essentially a flattened out V12 rather than a classic 'boxer' (in which the opposed cylinders are always travelling

NOW THAT WAS A CAR No. 84



FERRARI 312B

in the same direction), the new engine was both lighter than the old lump and offered a lower centre of gravity. In trying to minimise the internal frictional losses – naturally greater in a 12-cylinder engine than an eight-pot – Forghieri sought to get away with just four main bearings and it was these, along with crankshaft vibrations and oil starvation, that were the source of the initial blow-ups. A change of bearing type, and a one-piece machined crankshaft with rubber cushions at the flywheel end, cured many of the issues and Fiat investment provided a new tilting dyno, which helped with taming oil surge.

Ferrari still lacked the necessary funds and expertise to build a monocoque chassis, so the 312B followed Forghieri's practice of embellishing a spaceframe structure with alloy panels to form a semi-monocoque. The result was a beefier-looking car than the new Lotus 72 – which went on to dominate the season but was plagued by chassis flex and handling issues at first. Indeed, the 312B had more in common with the Lotus 49 in terms of its tight packaging, hardly a surprise since the 49 was the definitive 'cigar tube' design before F1 convention shifted to wedgier shapes. Rocker arms at the front kept the springs and dampers out of the airflow and Forghieri kept the nose (and air intake for the front-mounted radiator) wide and slim, with a pair of fixed aerofoils on either side.

Though the engine block was theoretically strong enough to act as a stressed member of the chassis, as with the DFV, in the 312B it was buttressed by a horizontal pylon that ran over the top of the crankcase, *and* served as a mount for the rear wing. This enabled the wing to be both lower and further forward than on the majority of Ferrari's rivals, on the rear axle line.

Ferrari began the 1970 season cautiously with a single-car entry for the returning Jacky Ickx, who gave the 312B its debut in the South African GP at Kyalami in March. Ickx qualified second but rode a kerb too heavily in the race, causing an oil leak that made his engine seize. Lotus had temporarily shelved its 72 in favour of the 49 but pre-season favourite Jochen Rindt also retired, and Jack Brabham ran clear to claim what would



“BETWEEN THE 312B’S TEETHING TROUBLES AND ICKX’S INJURIES, FERRARI DIDN’T WIN A RACE UNTIL AUGUST”

be his final F1 victory.

Ickx could only manage seventh on the grid for the next round at Jarama, but was taken out on the first lap when Jackie Oliver’s BRM suffered a brake failure and hit the Ferrari hard enough to puncture its fuel tank. Ickx suffered burns of both the fire and chemical variety, having been doused in petrol before escaping the cockpit, and both cars were destroyed in a blaze that took an hour to control – while the race carried on...

Between the 312B’s teething troubles and Ickx’s injuries, Ferrari didn’t win a race until August, by which time Lotus had sorted the wayward 72 and Rindt had begun a winning streak that would enable him to take his place in the history books as F1’s first posthumous champion, after his fatal

accident at Monza. The superiority of the new Lotus over the Ferrari was writ large when Rindt outbraked Ickx and went round the outside at the hairpin in the Dutch Grand Prix to claim the lead, three laps in.

Joined by Clay Regazzoni and Ignazio Giunti for the second half of the season, Ickx took advantage of modifications to the 312B – including a flatter rear wing, better brakes and beefed-up front suspension – to win three races. But he fell five points short of Rindt’s total, and it is to Ickx’s great credit that he maintains to this day that the best man won: “How could you beat someone who is not able to defend himself?” **F1**



RACE RECORD
(1970-71)
Starts 35
Wins 5
Poles 6
Fastest laps 10
Other podiums 7
Points 92

SPECIFICATION

Chassis Spaceframe/aluminium-panel semi-monocoque
Suspension Rocker arms, coil springs and telescopic dampers (f), Double wishbones, coil springs and telescopic dampers (r)
Engine Ferrari 001 flat-12
Engine capacity 2998cc
Power 460bhp @ 11,500 rpm
Gearbox Five-speed manual
Tyres Firestone and Goodyear
Weight 583kg
Notable drivers Jacky Ickx, Clay Regazzoni, Ignazio Giunti, Mario Andretti





It's my first day! say

H

After a year spent waiting in the wings at Mercedes, **Esteban Ocon** will back on the grid in 2020 with the team that gave him his break in F1. He started his new job in Abu Dhabi in December, and *F1 Racing* was there to watch...

When you first meet him, you think Esteban Ocon hails from the deep south of France. There's the dark colouring, the sheer intense wiriness of him, and of course the name Esteban: suggesting the dramatic landscape of the Pyrenees, with its colours and flavours that link France and Spain from the Atlantic to the Mediterranean.

In reality, he's from the opposite end of the country – born to a family with Spanish roots – in the Norman town of Evreux, which is closer to Enstone in England (555km) than it is to the border with Spain (around 850km). Viry-Châtillon, the Renault F1 team's other base, is a mere 120km away.

So, it's an Anglo-French marriage made in heaven – but only after a long courtship. Ocon, don't forget, was a Renault test driver in 2016. His earliest steps in car racing were in Formula Renault (in 2012), and he first drove an F1 car during a grand prix weekend for 'Team Enstone' in 2014, when it was Lotus – taking part in free practice at the Abu Dhabi GP.

Five years later, aged 23, Esteban was back in Abu Dhabi: as a proper F1 driver for the first time in a year, having spent a season in the grey shadows. The grey of Mercedes, of course, so it was hardly an exile – but still nothing compared with being a regular driver. He's done some tyre tests for Mercedes, which he says were more enjoyable than attending grand prix weekends with the team because "at least I didn't have to watch the others race."

But after being usurped by Lance Stroll from Racing Point the end of 2018, Esteban never lost focus on getting back. He was widely linked with the second Mercedes drive for 2020, before his two-year Renault deal was confirmed at the end of August.

It wasn't until December, though, that he finally got to climb into the car – or even wear yellow – at the Abu Dhabi post-season test. Up until the day before, he hadn't even been allowed in the garage...

When the big day finally comes, on 3 December, he has a new hat to add to his collection as well. "It's my first day, say hi!" is written garishly on his head, courtesy of a cap that looked like it was purloined from a Walmart new starter. ▶



“It’s something the guys at the factory made for me; cool isn’t it?” says Ocon, who is actually far prouder of the cap than he let on. Because it isn’t just a contrived PR stunt: it’s a genuine sign of affection from a team that is delighted to have a French driver back in its midst.

The feeling is mutual. “I’ve been waiting for this moment for months: it feels so good to be back. I’ve had a really warm welcome, and I’m seeing some familiar faces again as well as getting to know some new ones.”

For a (non-French) outsider, the way of doing things in any French organisation is either civilised or plain anachronistic, depending on your outlook. On arrival every morning, each man shakes every other man’s hand with a bonjour and a pleasantry. Women are kissed – on both cheeks. If there are a lot of people to get through, a wedding reception-like queue can form. It’s time-consuming, but it’s considered to be the height of rudeness to miss anyone out.

Esteban knows the drill well; he’s an expert in fact. He smilingly works his way through everyone when he arrives at the Renault hospitality in Yas Marina, taking his time with each person – because his first stated aim of the Abu Dhabi test is not to get to know the car, but to put “80%” of names to faces.

That’s not a straightforward task. Renault has changed a lot over the past two years, helped by a tranche of investment and some big new signings: notably Daniel Ricciardo. “It’s definitely a bigger and more rounded team than when I left,” says Ocon.

Ricciardo had it largely his own way in 2019, which was one of the factors that led to Nico Hülkenberg’s departure. What’s it going to be like for the Australian against Ocon? For all of Ocon’s

youthful charm, his relations with team-mates and other drivers haven’t always been smooth. At the 2018 Brazilian GP he was involved in a shoving match with Max Verstappen, and there was little love lost between Esteban and Sergio Pérez at Force India. When the topic comes up, Ocon smiles like a grinning assassin. “I don’t know Daniel all that well,” he says. “But I’m sure we’ll have the chance to talk and get to know each other. He seems a cool guy.”

For now, Ocon is here to learn about the car. So as soon as 9am rolls around he’s into the pit lane bang on the green light, determined to rack up as many laps as possible. “I haven’t driven much this year and testing next year is even more limited, so it’s as important to do as many laps as possible during these two days,” he explains, later.

Ocon is on the pace immediately, but not spectacularly so. After about half a race distance it’s clear he has a slight problem with his seat: something that’s affected him before on account of his height (6ft 1in). “I’m a bit more comfortable in the Renault than I was in the Mercedes though, as

both Daniel and Nico are taller than Lewis and Valtteri,” Ocon points out. “I also managed a day in the simulator at Enstone before coming here, which helped.”

Esteban is back out again in the afternoon and completes a trouble-free run the following day (the only driver to drive both days of the test in the same car) to end with 205 laps and the 10th fastest time overall. But you can never

read too much into testing. Instead, this is all about re-immersing himself in the F1 environment.

“We’ve started to work on all the details now,” says Ocon, after his second day in the car. “Towards the afternoon I started to get closer to the limit. There were some important details cleared on my side and we identified areas we need to work on.”

He doesn’t say how the Renault feels compared with the Mercedes he’s driven in 2019: he’s too savvy for that. “You learn certain things of course, but you need to know where the limit is in terms of what you pass on from one team to another,” he explains. “It’s a question of professionalism as much as respect.”

But the grin as he alights the RS19 can’t be faked. He likes it, and likes being back: no question about it. He even reckons the second day (when he covered 128 laps) was worth two days, as so much got done.

So far so good. But this is just the honeymoon. After several years of living together, will married life be just as exciting? **F1**





Ocon was very happy with the way his return to Renault at the Abu Dhabi test went





FROM TIN-TOPS TO START-UPS

WORDS JAMES ROBERTS
PICTURES ANDY HONE
 **motorsport**
IMAGES

When the Haas F1 team was founded, Peter Crolla was one of the first people through the door. An eclectic career in motor racing had set him up for the task...

PETER CROLLA CV

Born 2 October 1981

2017-present

Team manager, Haas

2015

Race team co-ordinator, Haas

2014

Garage support technician,
McLaren

2010

Team manager, Team
Dynamics (BTCC)

2007

Team manager, Fortec
Motorsport

2005

Race engineer, Fortec
Motorsport

2004

Data engineer, Team
Dynamics (BTCC)

2000

Motorsports Engineering &
Management, University of
Central Lancashire

When starting a new Formula 1 team the first step is to hire a workforce. In 2014, when Gene Haas decided to expand his NASCAR racing organisation into F1, the first fully paid-up employee was team principal Guenther Steiner. Long before original race drivers Romain Grosjean and Esteban Gutiérrez signed on for the 2016 season came employee number 14. That's Peter Crolla, then the race team co-ordinator, now team manager.

Crolla remembers walking into the small workshop in Banbury, formerly Manor/Marussia's HQ, in April 2015. The building was empty and they used the bare walls to draw life-size outlines of pit equipment which had to be ready for the team's race debut less than a year later.

Oh, and they needed to design and construct two F1 cars.

"The nine months between the company starting and going testing went in the blink of an eye," says Crolla five years on. "It's incredible that we built an entire F1 team in that time because we had literally nothing. We didn't buy any assets from any of the teams that had recently gone under. We occupied the building Manor had and bought one freight shack from Caterham. And that was it."

The personnel Haas assembled were from across the F1 grid, including those teams that went by the wayside, plus Renault and McLaren – Crolla's previous employer.

"It wasn't until we had two cars leave the garage for free practice in Australia that we recognised – no matter how we did in the race – how hard it had been to get to that point," he adds. "Then it was beyond our wildest dreams to have two cars in the points in that first race too."

Before being a part of Haas's sensational 2016 debut, Crolla had been a garage technician at McLaren and had learned the art of keeping a pit in order from the fastidious Ron Dennis. He says McLaren was a "steep learning curve" but instilled a discipline he maintains in the Haas garage to this day. Woe betide anyone who thinks they can leave an air jack or toolkit lying around.

"I don't think there was anywhere better than McLaren to learn the trade," says Crolla. "They had incredibly high standards of presentation. Everything had to be perfect,

wherever you went. You were quite pleased when Ron [Dennis] didn't speak to you – because when he did, you knew something was wrong.

"I learned a lot. It wasn't always easy but it was time well spent. When we built Haas, I had it in my mind that we needed to build it up to a McLaren standard. They set the bar and we wanted to do the best we can."

Crolla was destined for a career in motor racing after he was taken to Oulton Park for a British Touring Car meeting in 1994, when he was 12. At school he structured his GCSEs with a view to working in the industry and enrolled in one of the few motorsport engineering courses at that time at Central Lancashire University.

While finishing his course, he contacted Formula Renault and touring car teams to help out during weekends. After graduating he became a race engineer for Fortec in British F3 and, after two years, helped establish its World Series by Renault team, before becoming team manager with Team Dynamics in the BTCC.

"When you work in motor racing you can't help but recognise the spectacle of F1," adds Crolla. "As long as you're ambitious and career-focused and want to keep developing as a professional, then F1 should be your goal. Whether you want to do it for a year or for 20 years – it's important to tick F1 off your list."

After a season as a garage support technician at McLaren, Crolla accepted the role of race team co-ordinator at Haas in the spring of 2015. He moved up to team manager when Dave O'Neill left. The role encompasses many forms, from being a logistics co-ordinator and trackside operations director to having an encyclopaedic knowledge of the rules and regulations, while also ensuring the crew are fed and watered.

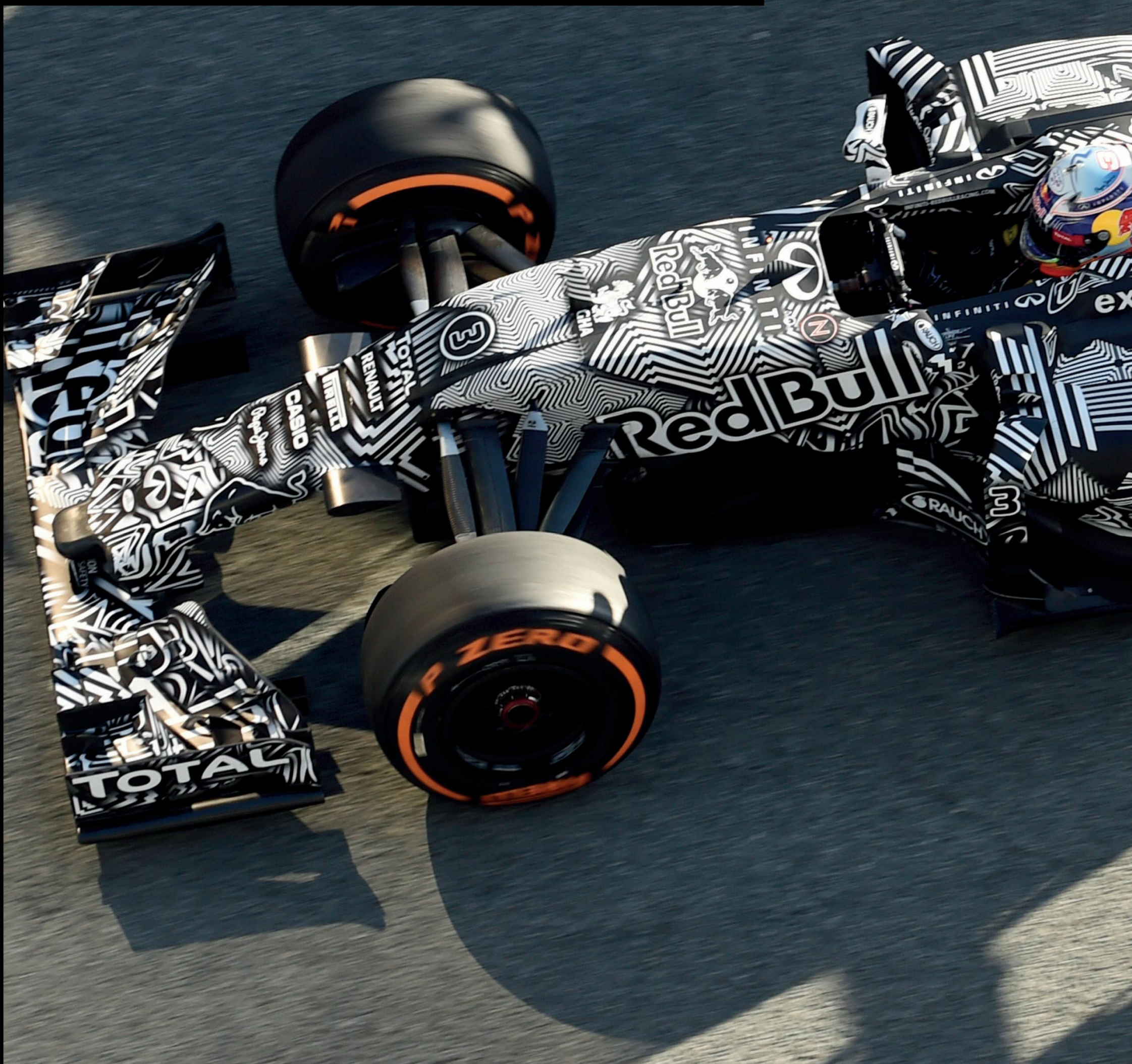
"There's nothing like standing on the grid before the start of the race, or being on the pitwall. It's the ultimate experience," says Crolla. "But it's only when you work in F1 that you realise it's nothing like the glamorous two hours you see on a Sunday afternoon. It's a fantastic way to see the world, but it's bloody hard work as well."

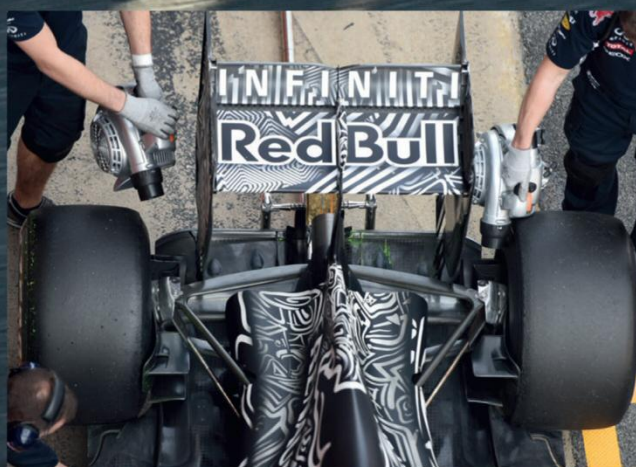
PICTURE: ANDY HONE

"AS LONG AS YOU'RE AMBITIOUS AND CAREER-FOCUSED AND WANT TO KEEP DEVELOPING AS A PROFESSIONAL, THEN F1 SHOULD BE YOUR GOAL"

UNUSUAL F1 LIVERIES

Variety in Formula 1 liveries is rare, but occasionally some buck this trend, as these unusual 'uniforms' show





Red Bull surprised everyone when, on the first day of 2015 pre-season testing, it turned up with this dazzling black and white camouflage livery, based on a Sebastian Vettel helmet design from 2014. The team reverted to more traditional colours for the season itself

► *There were times when an F1 car's paint job was secondary to getting in some mileage. Believe it or not this is the F300, Ferrari's 1998 car, being tested at the team's Fiorano test track by Michael Schumacher, just two days before Christmas 1997. After all, everyone knew it was going to be painted red...*

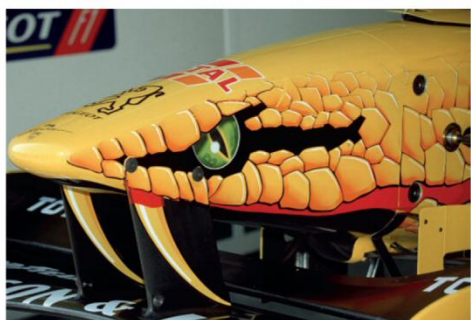


◄ *When it won the the 1975 Dutch GP with James Hunt, Hesketh Racing was devoid of sponsors. Hunt left at the end of the season but in 1976 arrived money from Penthouse magazine and Rizla cigarette papers. This dubious illustration of a model holding a packet of Rizlas was probably a low point for F1 liveries*

When Shadow managed to land Samson Shag, a Dutch rolling tobacco brand, as a new backer for 1979, the parties involved opted for a Hesketh-style method of sponsor display. Samson's lion logo was imaginatively altered to adorn the top of the bodywork and nose while the Samson name appeared on

▼ *the car's sidepods*

▼ *Benson & Hedges first sponsored Jordan in 1996 when it had two different liveries during the season, one in yellow and one in a mustard colour. For 1997, with B&H still paying the bills, it pimped up the yellow and added the subtle snake design along the side of the car down to the nosecone: scales, beady eyes, fangs and all*





▲ **Gitanes**, long-time sponsors of French F1 team Ligier, commissioned a special livery for Martin Brundle's car for the final two races of 1993. Italian comic author Hugo Platt came up with this reworking of the Gitanes name along the length of the car, partly overlaid with the company logo, smoke, and famous silhouette of a woman playing the tambourine

◀ **Red Bull** owner Dietrich Mateschitz is a co-founder of spinal research charity Wings for Life. For the 2007 British GP fans were asked to pledge money to the charity and in return they uploaded a picture to the team's website to feature on the two cars. The aim was to raise £1m, and thousands of images were used



► **British American Racing** naturally wanted to feature cigarette brands on its first F1 cars in 1999 and proposed different designs for each car. The FIA declared them illegal, on the grounds that both cars should look the same, and the dual 'zip' livery was the unappealing compromise



▲ **There's no explaining** away the 1994 Footwork Arrows paint job. With no main sponsor the team chose this geometrical look by a company called Matrix Design, with blue and red squares on a predominantly white background

► **Launched at the** Natural History Museum, Honda's 2007 car had no sponsorship branding. The 'Earth car', as it became known, focused on the company's environmental desires with the earth depicted against the background of space



▼ **When *Star Wars* film *Revenge of the Sith* needed some publicity,** it went for a tie-up with Red Bull at the 2005 Monaco GP. The team photo featured C-3PO, Chewbacca, Darth Vader, and a couple of bemused racing drivers



▼ **You know we said Ferraris are always red.** Well, apart from when they weren't. In 1964, after a dispute with the FIA, the Scuderia withdrew from F1. Except it didn't. This meant in the last two races of the year the cars were entered under the North American Racing team banner and painted blue and white...



NIGEL ROEBUCK'S FORMULA ONE HEROES

JEAN BEHRA

PICTURES  **motorsport
IMAGES**

MY
CHILDHOOD
YEARS WERE
DOMINATED
BY

Jean Behra, the first – and greatest – hero of my life, and it started one evening in April 1954, when I saw on TV a clip of the Pau Grand Prix, in which Behra's Gordini defeated Maurice Trintignant's Ferrari. It was, the commentator said, the triumph of a better driver over a better car. These were two very disparate Frenchmen,

Trintignant a dapper little man whose driving mirrored his appearance, Behra also small, but stocky and tough, with charisma to throw away. At eight, I was instantly ensnared, and for the next five years 'Jeannot', his chequered helmet, his victories, his innumerable accidents, became my world: when he was killed, in August 1959, I came to face to face with grief for the first time. Sixty years on, photographs of him retain pride of place on my office wall.

It didn't matter to me that there were greater drivers, that he was never world champion, nor – somehow – ever won a world championship *Grande Epreuve*; what appealed above all was his utter fearlessness. Injured countless times, Behra always came back for more. Fangio described him to me as 'too brave': inescapably he was right, but this can never be a fault in a childhood hero.

I never met Behra, of course, but my late friend Jabby Crombac knew him well, and often talked of him. What was he like? "Well," Jabby said, "you know Jean Alesi – and he is the Jean Behra of today [the 1990s]! Lovely guy, looks the part, tremendous guts, too emotional, drives with his heart..."

Born in Nice, Behra first made his name racing motorcycles, becoming champion of France several times before joining the little Gordini team in 1952. Totally against expectations, in June he defeated the dominant Ferrari team, including Alberto Ascari, in the Grand Prix de la Marne at Reims.

"It was impossible," said Crombac, "to overstate the importance of that victory in France. It was only two weeks after Le Mans, where [Pierre] Levegh, trying to drive the whole race on his own, blew up his Talbot's engine, and left victory to Mercedes – to the Germans! This was not so long after the war, you know, and the French couldn't forgive him, so when Jean – who was new in car racing – won at Reims, he was instantly a national hero. Beating the Italians was almost as good!"

Further successes with perennially cash-strapped Gordini were



Behra loved being a racing driver and although he never won a world championship grand prix was a national hero in France



few and far between, however, and for 1955 Behra signed for Maserati, thus beginning the happiest period of his professional life. For him a day without time in a racing car was a day lost. He savoured constant testing at the Modena *autodromo*, taking up residency in the nearby Albergo Reale, where he passed the evenings playing cards and drinking wine and talking racing. It was an existence he found completely fulfilling.

Raymond Mays (for whose BRM team Behra later drove) once related to me an anecdote revealing of Jean's love affair with his job. "I don't think he could ever quite believe his luck – that people would actually pay him to drive racing cars.

"He was a magnificent little driver, and a charming man, but

terribly temperamental in a French sort of way. If things weren't going well, he sometimes got demoralised, but it was never for long, and I asked him how he kept his spirits up.

"He told me he would get his passport out. 'I look at all the stamps in there, the places racing has taken me to, and then I look at the first page. Name: Jean Behra. Profession: Racing Driver. And it reminds me again how lucky I am to have this life...' I found that rather moving – and different from most drivers I've known."

During that first season with Maserati, Behra might have sought the solace of his passport quite often, for the races were utterly dominated by Mercedes. There were, however, several non-championship and sportscar victories, and these would continue over the next couple of years. At Casablanca in 1957 he trounced everyone, including team-mate Juan Manuel Fangio.

At the end of that year, in which Behra also won for BRM at Caen and Silverstone, he joined the team full-time for 1958, following Maserati's withdrawal. It was a disappointing F1 season, but for sportscar racing he joined Porsche, for whom he excelled.

For 1959, Jean moved to Ferrari, and the new association began well: in the gorgeous Dino 246 he won the Aintree 200 from team-mate Tony Brooks. I was there with my parents, thrilled beyond imagining at what would be my idol's last victory.

Because the Cooper revolution was underway by now, and the front-engined Ferraris were outpaced on all but 'power' circuits. There was a desperation in Behra's driving through the last months of his life. Here was a man with a mechanical understanding of racing cars most untypical of the time, yet now he repeatedly abused his engines, and at Reims did it once too often. Team manager Romolo Tavoni glanced at the rev counter tell-tale, and remonstrated with his driver – who felled him with a single punch.

Unsurprisingly fired forthwith, Behra immediately sought a

return to BRM for the German Grand Prix at Avus. "Unfortunately," Raymond Mays recalled, "there wasn't time to get it organised, so Jean turned up there with his own F2 Porsche."

It was a ludicrous race track, Avus, comprising two endless straights, with a hairpin at one end and a steeply banked bowl – with no wall at the top – at the other.

The day before the grand prix there was a sportscar race, for which Behra had also entered. It was raining torrentially, and Hans Herrmann, a close friend, implored Jean not to start. Fighting for the lead, his Porsche RSK spun on the lethally slippery banking, then hit a concrete block. Behra was thrown out, a lurid photograph showing him like Icarus, silhouetted against the grey sky.

"He was in the pit next to us," said Mays, "and I remember feeling sorry for him – he seemed very much alone during those last few hours of his life. All the elements of a Greek tragedy were there."

His colleagues remembered him well. "I liked Jean a great deal," said Dan Gurney. "Even then he was something of a throwback to a different time – he was a fiery guy, and he was there to race. I thought that was great – he had a look in his eye, and he didn't mind getting with the programme, that was for sure!"

"Behra," said Stirling Moss, his Maserati team-mate in 1956, "was one of the greatest fighters I ever came across. If you passed [Eugenio] Castellotti or [Peter] Collins or whomever, that was the end of it, but with Jean you had to keep your eye on your mirrors! He was incredibly tough, but also completely fair – I mean, he wasn't about to say 'After you', but I'd always feel quite happy going into a corner alongside him. He was a very likeable bloke – perhaps not as sociable as, say, Trintignant, but he was there to get on with what he was doing, and he did it bloody well..."

Whenever I am in Nice I invariably visit the grave. Nearby is the Boulevard Jean Behra. 🇫🇷

His time with Maserati was the happiest of his career, which included driving the fantastic 250F at places such as Monza

"I TAKE OUT MY PASSPORT AND THEN I LOOK AT THE FIRST PAGE. NAME: JEAN BEHRA. PROFESSION: RACING DRIVER. AND IT REMINDS ME AGAIN HOW LUCKY I AM TO HAVE THIS LIFE..."



THE LONG INTERVIEW

As a teenager Zak Brown went to Indycar's 1987 Long Beach Grand Prix and met one of his heroes. He asked race winner Mario Andretti how to get a job in motorsport. Andretti gave him some advice and thirty years later Brown has gone on to become chief executive officer of one of the most successful teams in Formula 1. This is the story of how he got there...

WORDS JAMES ROBERTS
PORTRAITS STEVEN TEE

THIS IS
ZAK
BROWN





Zak Brown wanted to be a racing driver. The problem was, he had no money. As a teenager, he appeared on the TV gameshow *Wheel of Fortune* then sold the watches he won to fund enrolment at a karting school. A few years later he left his home in California and flew to the UK, to pursue the dream of so many young drivers. His first job in motorsport was washing cars at a Donington Park racing school while lodging on an air mattress at a mate's house in Sheffield – a life Zak now describes as “torture.”

Brown realised he had a talent for finding sponsorship to keep his burgeoning career afloat, but eventually had to concede he lacked the speed to make it all the way to the top as a driver. Undaunted, the hard-working American returned home – surviving an earthquake that destroyed his house – and started to broker sponsorship deals on the US racing scene.

After building up a specialist motor racing agency, Just Marketing International, Brown eventually sold his company for more than £70million to a sports marketing group. While that helped fund a new life as a ‘gentleman’ driver in sportscars, Zak’s goal still remained Formula 1.

He continued to broker deals in grand prix racing and then came a choice: join Formula 1 as the ‘new Bernie’, or take control of McLaren. The racer in him chose the challenge of running a racing team with the remit to get them back to the front of the grid.

As the sun sets over the Abu Dhabi paddock, and the 2019 season draws to a close, Brown gives us a detailed account of how a Californian kid, who was always in trouble at school, became the boss of one of the most famous teams in F1.

F1 Racing: Before we talk about your early life, we know you’ve had a long career in motor racing as a driver. So, in a race of today’s team principals, would you be the fastest?

Zak Brown: I’m sure I’d be faster than Mattia [Binotto]. And Otmar [Szafnauer] too. He might have done a bit of racing

Mario Andretti (here with son Michael and Brown in 2017), gave Brown advice that set him on his way in motorsport



PICTURE: MICHAEL LEVITT

– but I’m faster than him. [Christian] Horner and I used to race against each other and we were pretty even [*they were in different classes in British F3 - Ed*]. So, I’d be faster than him. Toto [Wolff] is fast... but likes to crash, so I’d say I’d beat him. He was three seconds off Martin Brundle around Austin once. Yes, I think I’m going to make the cocky comment that I am the fastest team boss in Formula 1... [laughs]

F1R: Growing up on the outskirts of Los Angeles, California, tell us how you caught the motor racing bug?

ZB: My first racing experience was Long Beach, 1981. I still have the programme – signed by Eddie Cheever. I was about ten, but I remember it like it was yesterday. My Dad would also take my brother and me to Riverside International Raceway for NASCAR and GT/IMSA sportscar races a couple of times a year. He wasn’t a big fan – we never watched it on TV or anything like that. My dad didn’t have a racing background, he worked in the music business, while mum was a travel agent.

Riverside was a proper circuit. I remember going for the six-hour race and still have all the programmes, as I’m a bit of a collector of things like that. I used to collect *Hot Wheels* toy cars too. We also used to go to the Pomona drag strip. Tony Nancy, a famous drag racer, had a race shop two miles from our house, so I would walk there after school.

The next thing I did was go on the TV gameshow *Wheel of Fortune* in Teen Week, which I’ve still got the video of. I won six ‘his and her’ watches. More of which in a minute...

At high school I had a friend who was connected in racing and they took me to the Long Beach Grand Prix in 1987. We ended up having dinner with Mario Andretti, who had dominated the race. It was the coolest thing ever. I got to ask Mario one question, which was ‘how do you get started in racing?’ And he said ‘go-karts’.

In the race programme there was an ad for the Jim Hall karting school, so I went and sold the watches I won on *Wheel of Fortune* at a pawn shop to do the kart school. I ended up doing very well there.

When head-hunted by both Formula 1 and McLaren, the racer in Brown knew he had to plump for McLaren



MY MUM HELPED ME GET SOME TWA AIRLINE TICKETS, WHICH I SOLD TO DO MY FIRST FORMULA FORD RACE AT THE JIM RUSSELL SCHOOL AT DONINGTON PARK

F1R: Were your parents supportive of what you doing?

ZB: They were OK with it, because I was always in trouble at school and was moved three times. We were comfortable, but not a family that could afford racing. They didn’t love that it was motorsport, but liked the fact I was not getting into trouble and was passionate about something.

I started to get up and watch F1 races at 4.50am on a Sunday and became a bit of a Ayrton Senna fan. I was karting more and had a lot of success. I got a factory ride, which meant they [the team] paid for it, but I had to work at the kart shop in return.

Eventually, my Mum helped me get some TWA airline tickets, which I sold to do my first Formula Ford race at the Jim Russell school at Donington Park. I won and that’s where I met my best friend and the man who now runs my sportscar team, Richard Dean. He was my driving instructor.

I knew in order to pursue my dream I had to do sponsorship and did a deal to race against Jos Verstappen in Opel Lotus in 1991. I used to work at the Jim Russell racing school and Richard said I could stay at his sister’s house. So, I was in Sheffield on an air mattress in the living room and we’d drive the hour and a half to Donington Park. Imagine washing cars at 6.30am on a freezing dark February morning for £75. It was torture, but it was how I first made a living in motorsport.

F1R: Although you wanted to get to Formula 1, did you find it a struggle to keep finding sponsorship in the junior categories?

ZB: I was never able to find enough money. And I was worried about crashing, not because I was afraid to crash, but because I couldn’t afford it. I did Opel Lotus and had some podiums. Did F3, but it was going nowhere, so I went back to the US and tried to get into Indycar, and did a deal to race in Toyota Atlantic. I moved to Indianapolis because my home in LA was knocked down in the 1994 Northridge earthquake.

I lived about a mile and a half away from the epicentre. It was unbelievable. People think earthquakes are like something out of a Universal Studios tour. But I remember it vividly. It was 4:29am and when it hit, I thought a bomb had gone off. It broke everything in the house. The tables collapsed. Windows came in. Very scary. Tracy – then my girlfriend, now my wife – and I then moved to Indy where I worked for a racing school, on a \$14k salary and sales commission. ▶



I WOULD SIT DOWN WITH JOHNNIE WALKER AND GIVE THEM THE OPTION OF WHAT A McLAREN OR WILLIAMS DEAL WOULD LOOK LIKE

F1R: How did your business start?

ZB: Two things happened. I did a deal with TWA and Mansell Madgwick Motorsport in British Formula 3000. I realised I could sell more sponsorship if it was to more famous names than myself.

Secondly, the racing school I was working at went bankrupt. I went to all the customers and asked for deposits so I could go and buy all the spec racing cars from the bank. It was reborn as the 'Track Attack' racing school.

I started JMI and then got my first seven-figure deal in Indycar in 1998. I was getting momentum and after a 58-year ban I got alcoholic spirits back into NASCAR. That took a lot of politics to get over the line, and the guy I did it with was Mark Waller. He was working at Diageo North America then, and is now my managing director of sales and marketing at McLaren.

I had 60 employees and we were the largest, most successful

Seb Coe's Chime Communications bought Brown's JMI for £74 million in 2013

motorsport agency in the world. I was doing ten deals a year, in both Indycar and NASCAR. Then I brought Hilton to McLaren, which was my first F1 deal. They are with the team to this day.

F1R: What were you doing at the time that other sponsorship agents weren't?

ZB: I think the secret was that I wasn't representing the racing teams. Corporations are approached by individual teams and they don't really understand the difference [between them] and what they should be paying. I would sit down with Johnnie Walker and give them the option of what a McLaren or Williams deal would look like. The other thing is that there is no rate card – everyone is up for a deal.

My clients weren't the teams, rather they were Johnnie Walker, UBS, Lenovo, Martini – and I was their advocate. I am a specialist in motor racing and I think that resonated well with the corporations that wanted to be involved in the sport. I was credible because I had raced and spent my life in racing.

F1R: But when your company was sold, you moved into the wider world of marketing – into cricket, rugby, athletics and football. How keen were you on those sports, or did you want to return to motor racing?

ZB: In 2008 I was approached to sell 70% of the company to Spire Capital and Credit Suisse. I'd never planned to, but financially that was a life-changing event. They still wanted me to run the company, but I was just a guy who did deals. I didn't have any schooling in business; they instilled business discipline in me. Finally, in 2013, Sebastian Coe's company Chime Communications bought us for £74million and I was put in as Group CEO of CSM – the Sports group – for four years, heading up 1,200 people.

While I liked the company and the people, what I didn't like was working in sports I had no passion for. My whole life had been racing. I was fortunate because I didn't need to work, but I'm a workaholic and want to work.

During this time, I was still doing a bit of racing and in 2009 I established the United Autosports racing team with Richard Dean. That's because I had been around Formula 1 and wanted





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 GRID 2016



Brown has huge respect for Ron Dennis, the man he effectively replaced at McLaren

I WANTED TO GET BACK INTO RACING AND BE ON THE GRID. ULTIMATELY, I CHOSE McLAREN. SINCE THEN I HAVE LOVED EVERY DAY, EVEN THE VERY PAINFUL ONES

to race, but with a team that had the right environment. It needed to have the right hospitality for sponsors and I wanted it to look good.

We had a lot of fun racing at places like Daytona and Le Mans, and I got to drive alongside the guys I grew up idolising, such as Eddie Cheever, Stefan Johansson, Martin Brundle, Johnny Herbert. And in recent years Fernando Alonso and Lando Norris have driven for my team.

F1R: With a keenness to return to racing from a career perspective, you were heavily linked to two major F1 roles: F1 itself, to work with Donald McKenzie at CVC and also Bernie Ecclestone. At the same time, you're being courted by the shareholders of McLaren. Why did you decide to join McLaren?

ZB: Joining Formula 1 was appealing and flattering but I never got to the point where it felt it was 100% right. I've always been my own man and I didn't feel I was enough in control of my own destiny.

I've always had huge respect for Ron [Dennis], but then he had his own problems brewing with the shareholders. Finally, Mansour Ojeh and Sheikh Mohammed reached out and said to me, 'we want you to come to McLaren and help run this team and get us back to where we need to be.'

I thought that joining F1 would be more of what I've already been doing – sponsorship deals, etc. Whereas I wanted to get back into racing and be on the grid. Ultimately, I chose McLaren. Since then I have loved every day, even the very painful ones.

F1R: One thing that you needed to do was restructure the management team at McLaren and shake up the culture. How difficult has that been?

ZB: There's still a long journey, but I've been proud of everything we have gone through. I think so much of what I've learned as a racer I've brought back to the business. It's about getting the right people in the right place with the right focus, leadership and resources.

A friend of mine said a long time ago, that a company of 100 people is 90% you, 10% them. A company of over 500 people is 90% them and 10% you. A company of 1,000 people is 80% them, 10% you and 10% luck.

I'm not driving the car, working on it, designing it, so all the credit is due to the members of the team. My contribution is getting the right people on board in the right place and helping them be successful. It's about empowering them.

My job is to build the greatest team in Formula 1. The good news is a lot of it is there. It had just lost its focus. Andreas Seidl is running the F1 team and has James Key as technical director. Along with them I've changed the majority of my leadership teams. I have Laura Bowden as head of finance, Mark Waller from the NFL is head of sales and marketing. My head of HR came from Liverpool Football Club.

The biggest thing we needed to fix was our culture. We had the talent there, but we were lacking leadership. We needed to create a great work environment so our staff are motivated. ▶



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IN 2020 WE NEED TO KEEP DOING WHAT WE'VE STARTED. I THINK WE HAVE TO RECOGNISE THIS IS GOING TO TAKE SOME TIME. WE HAVE TO KEEP OUR HEADS DOWN AND STAY FOCUSED

F1R: This year two McLarens started in the top six for the first time in five years. Fourth place in 2019 was McLaren's best result in the constructors' championship for seven years. What's next for the upward trajectory of the team?

ZB: In 2020 we need to keep doing what we've started. I think we have to recognise this is going to take some time. We have to keep our heads down and stay focused. We're going to have some bad days at the office, some bad pitstops and we're not going to get there overnight.

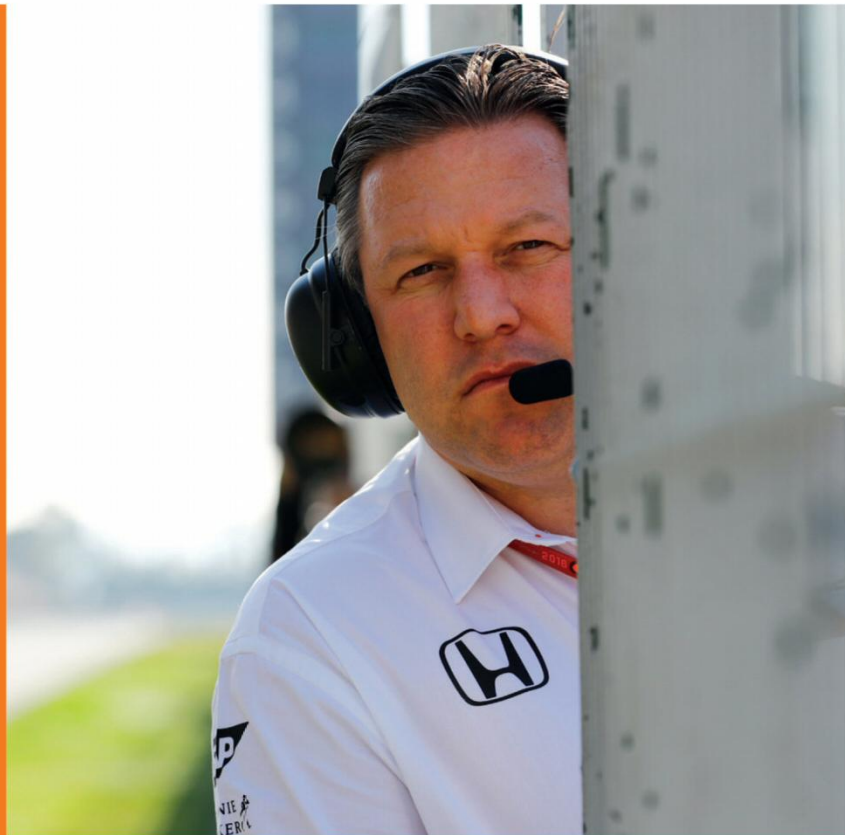
Before the turnaround the recent times have been painful for us, our fans and our sponsors. I guess the saying is, 'what doesn't kill you, makes you stronger'. That was an all-time low for everyone in the team. We're on our way up and it's made us stronger. It's made us look in the mirror. You have issues in life, in business, in racing. If you're honest with yourself and tackle them you're usually stronger in the long run.

I was looking at some stats the other day and Red Bull took a bit of time between their arrival [2005] and when they started winning [2009]. We're on the journey but we still have a way to go until we get back to how I grew up remembering McLaren – which is dominating Formula 1. But I'm confident we have the right people – Andreas has been an outstanding addition to the team – with the right commitment to get back there in the future.

F1R: We know that away from F1 you enjoy your classic car collection, sportscar racing and even golf. Is there a sport that you wouldn't compete in if you didn't think you had a chance of winning?

ZB: You're right, I don't play sport for fun. [1979 F1 champion] Jody Scheckter is the best ping-pong player I know – Olympic level – and we can have up to two hours battling each other and he's very good.

Yes, I won't do anything unless I think I can be competitive. On the golf course, I play a couple of times a month and the best opponent is [McLaren driver] Carlos Sainz – he is damn good. But I like playing better golfers because actually you are playing yourself. And with the whole handicap scoring you can play anyone. I find golf more of a challenge – just trying to beat my best score, not necessarily trying to beat who I'm playing.



CV

Age: 47

Born: Los Angeles, USA,

- 2018** Chief executive officer, McLaren Racing
- 2016** Group Chief Executive Officer at Chime Sports Marketing
- 2014** Non-executive board member at Cosworth
- 2012** Races in British GT, one win
- 2010** Races in FIA GT3 and British GT
- 2009** Chairman of his own racing team, United Autosports
- 1999** Races in the American Le Mans Series
- 1997** Races in GT2 and tests in Indycar
- 1995** Founds Just Marketing International
- 1994** Eighth in National Class, British F3
- 1993** Fourth in Formula Opel Lotus Benelux
- 1992** Races in Toyota Atlantic in the USA
- 1991** Races in Formula Vauxhall in the UK
- 1990** Races in Formula Ford in the UK

But golf is also such a frustrating sport because you can play like a PGA player one hole and like an amateur the next.

I still love sportscar racing and I keep my racing team separate from F1 – and it will remain that way. That's because I don't want two jobs, I want one job and then something else that I do at weekends that is enjoyable. I enjoy driving historics and have a nice road and racing car collection. It comes back to my love of collecting *Hot Wheels*. But I'm just fortunate now I've got the bigger version. It's emotional for me. Being involved in this sport is what I grew up wanting and I love it. It keeps me young. **F1**

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James

IN CONVERSATION WITH

WORDS JAMES ROBERTS
PORTRAIT STEVEN TEE



JAMES KEY

McLaren's technical director reflects on settling in at his new employer, and the long-term plans the team is putting in place

CV

2019

Technical director,
McLaren

2012

Technical director,
Toro Rosso

2010

Technical director,
Sauber

2005

Technical director,
Midland/Spyker/

1998

Race & data
engineer, Jordan

1996

Studied mechanical
engineering,
University of
Nottingham

You joined McLaren as the new technical director last March. Has it been easy to integrate into the team?

From my side, there has been a lot of learning. Every Formula 1 team has the same objective, but they are all different. Certainly the size and culture at McLaren was quite new to me and that needed to be understood. One thing I've learned is not to go in with preconceptions and change everything so it looks familiar to you, because that will be unfamiliar to everyone else.

Has your mindset changed with your move to McLaren?

Yes, to a certain extent you have to adapt to the situation you're in. You take what you know, both technically and in terms of approach, and apply that. McLaren is the first team I've worked for that has won a championship.

The belief and confidence that gives a team and the desperate will to get back there is very strong, whereas if you haven't done that before and you're climbing a ladder, you're on a learning curve. But that culture is in McLaren, not in an over-optimistic way, since we know we've not done it for a while, but we believe we can do it again. It's a good attitude and approach to have.

What have you made of both Carlos Sainz's and Lando Norris's contribution to developing the car?

I don't think we can underestimate their impact on 2019 for the team. They were in good form at every race and relaxed and comfortable with where they are. They get on very well with each other – which is an important, harmonious situation for the team.

Carlos is coming of age all the time. He's been really consistent and the two races he was really outstanding last year were Austria and Brazil.

As for Lando, it didn't feel like he was a rookie at all. His feedback has been very accurate and it has definitely helped pin down where we need to be with some of our weaknesses. We found last year that every race weekend brought up another issue and we found the data backed up what both drivers were saying.

You worked with Sainz at Toro Rosso. How much has he changed since then?

Carlos is just as quick and is good to work with, but is a driver who knows his job far better now he's done it for so long. What's benefitting him is McLaren is the third team he's experienced.

You learn different aspects of how you approach the weekend if you've done the rounds a bit. I'm seeing someone who has matured and has settled into being a Formula 1 driver. He was super-keen as a rookie, when he was up against Max Verstappen at

Toro Rosso, which was a great pairing to have. But he's refined his racecraft, he's a lot more self-confident, he's much more aggressive than he was because he has the confidence to do it now.

What will be the balance of resources in developing the 2020 car over the course of the year knowing you have a new set of regulations for 2021?

Short-term, there is a balancing act, particularly when you have such a fresh set of regulations – and it's the biggest change in the 20 years I've been involved in the sport. You balance your resource because you want both '20 and '21 to be good, but clearly you have to make compromises.

Everyone knows now the direction the regulations are going and it's a great opportunity for the sport to address some of the things we've been talking about for years.

Longer-term we've got a lot of plans. One of the positive things about McLaren that I'm seeing is huge support from the shareholders to allow us to look long-term. That's difficult for a team to do sometimes, particularly when the pressure is on. Having the patience to get the house in order is a positive thing. We hope the windtunnel will be up and running in 2021 and we have other projects as well.

We have a new driver-in-the-loop simulator, a massive departure from what we've been using. It's a project McLaren pioneered a long time ago. It's also been recognised that the simulator world has moved on and we're hoping that will come online for 2020. We'll try to work on as much as possible before '21 when the cost-cap comes in.

“I’VE LEARNED NOT TO GO IN WITH PRECONCEPTIONS AND CHANGE EVERYTHING SO IT LOOKS FAMILIAR TO YOU, BECAUSE THAT WILL BE UNFAMILIAR TO EVERYONE ELSE”



PICTURES OF THE YEAR

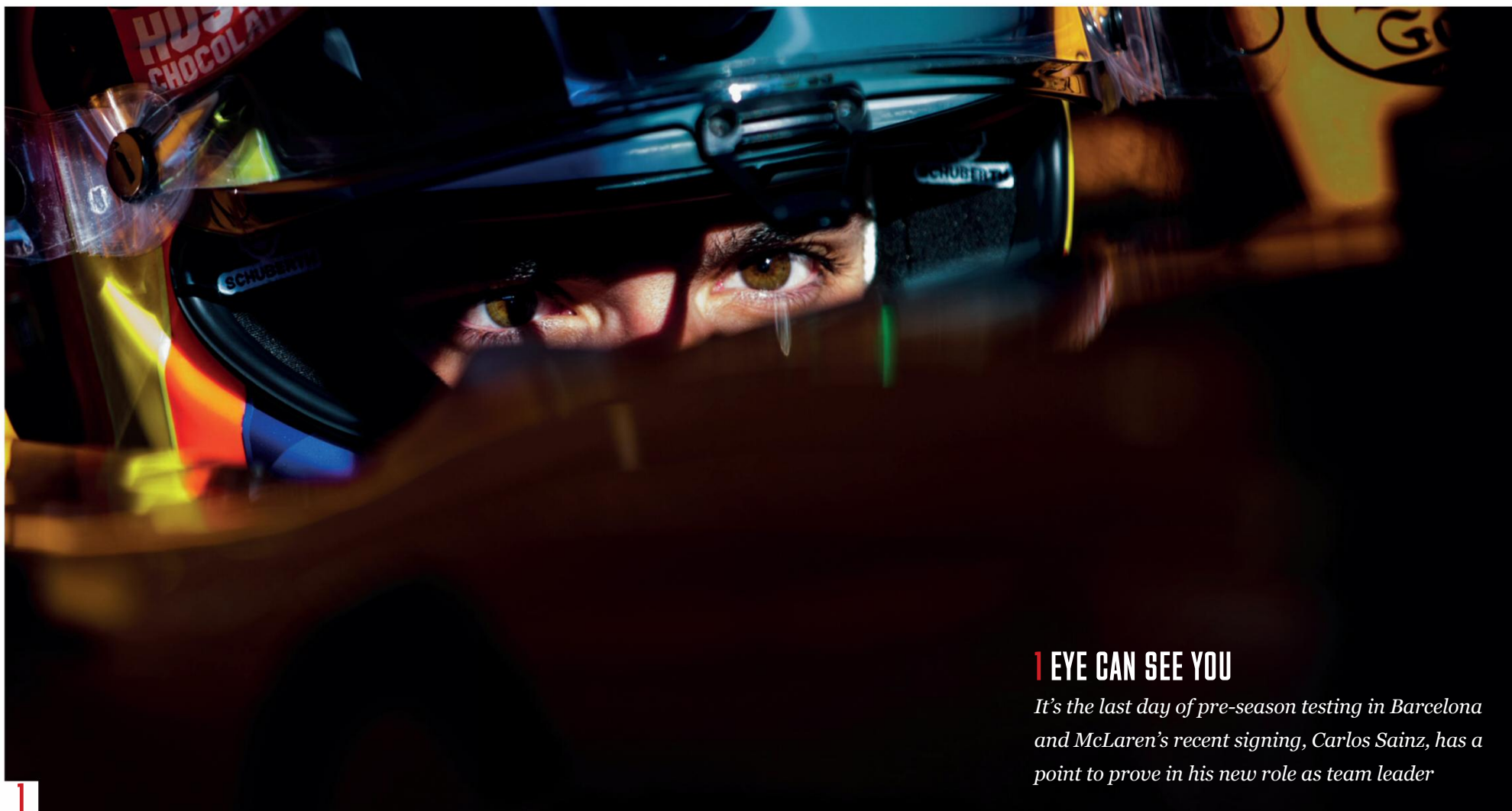
Race in, race out, throughout 2019, our crack squad of Motorsport Images photographers fought to capture the drama, spectacle and emotion of Formula 1 from the very heart of the action...

PICTURES



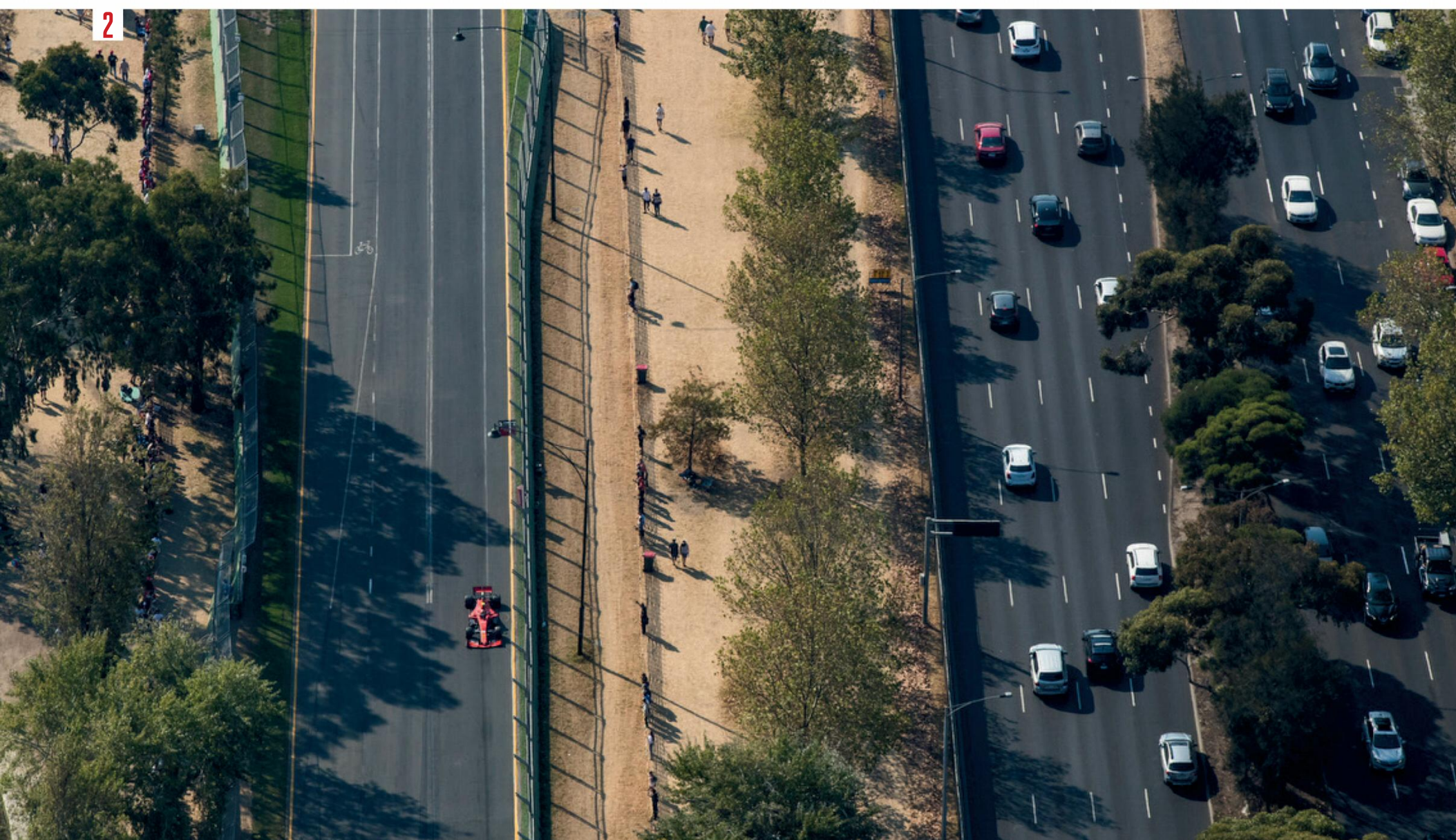
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PICTURES OF THE YEAR



1 EYE CAN SEE YOU

It's the last day of pre-season testing in Barcelona and McLaren's recent signing, Carlos Sainz, has a point to prove in his new role as team leader



2 CONTRA FLOW

For those with access to a helicopter, this high-angle shot of the Albert Park circuit is a must. Traffic on Melbourne's Princes Highway flows in blissful ignorance of the action just metres away

3 VIRTUOSO VERSTAPPEN

After an engine-mapping issue dropped Max Verstappen from second to fourth on lap one of the German GP he mastered the changing wet-dry-wet conditions to claim a convincing victory

4 CHINA IN HIS HANDS

Wherever Lewis Hamilton goes, so too do the Hamfosi. His victory in Shanghai could almost have been at Silverstone thanks to the masses of Union Flags brought by the local branch of 'Team LH'





1 BLURRED LINES

Australia's patriotically coloured kerbs create a bold graphic effect when shot with a slow shutter speed, contrasting vividly with the blue and red of Max Verstappen's Red Bull



2 FLOORED PROCEDURE

No diva behaviour on show here as Formula 1's youngest drivers happily sit on the floor ahead of a media engagement in Montréal. Still, this is one meeting that could do with a chair-man...

3 MOMENT OF MADNESS

What was he thinking? Having been passed for third place by Max Verstappen at Stowe on lap 37 of the British Grand Prix, Sebastian Vettel lunged right back at Vale – with spectacular results...

4 NO SMOKE WITHOUT IRE

Sebastian Vettel's crew pauses as the Italian national anthem rings out at Monza and jets trailing patriotic smoke zoom overhead. Sadly Vettel will disappoint them again with a clumsy performance



4



PICTURES OF THE YEAR

1 EVERY DAY I'M SHUFFLIN'

Sebastian Vettel's penalty during the Canadian GP cost him victory, enraging him to the extent that he stomped around parc fermé, rearranging the position boards to put the '1' by his own car



2 TRAILING, NOT SPARKLING

McLaren's performance underwent a blip in China as the recovering team struggled in qualifying. Carlos Sainz (pictured) said the circuit's long corners exposed the car's weaknesses

3 TAKING A LATE LUNGE

A packed crowd of Max Verstappen fans in Belgium witnessed their man having a bad day at the office, crunching into Kimi Räikkönen here and then sliding off at Eau Rouge with broken suspension





4



5

4 NIGHT SWEATS

Singapore hasn't been a happy hunting ground for Kevin Magnussen – he's only finished in the points here twice – so he looks understandably apprehensive ahead of the 2019 start

5 USURPED UNDER THE LIGHTS

Lewis Hamilton was truly exceptional in qualifying last season, even if his pole tally didn't reflect that. The Ferraris were quick in Singapore but Hamilton still split them

1 OVERSHADOWING VETTEL

One of Formula 1's key storylines in 2019 was Charles Leclerc's rise to prominence, discombobulating his four-time champion team-mate, Sebastian Vettel





2



3

2 EXIT STAGE LEFT

Montréal's 'Wall of Champions' claimed another victim as Kevin Magnussen dinged his right-rear wheel on the barrier and slewed away to the left, impacting even more messily against the pitwall

3 SLAM-DUNKIN' DONUTS

Abu Dhabi strives for spectacle even though its race has been a dead rubber for several seasons. Free of worries over engine life, the top three merrily smoked their tyres after crossing the finishing line

4 HUNGARY FOR MORE

Max Verstappen's maiden F1 pole position at the Hungaroring was a significant milestone: qualifying has been a bogey area for Honda since its return to F1 and this was its first pole since 2006



4

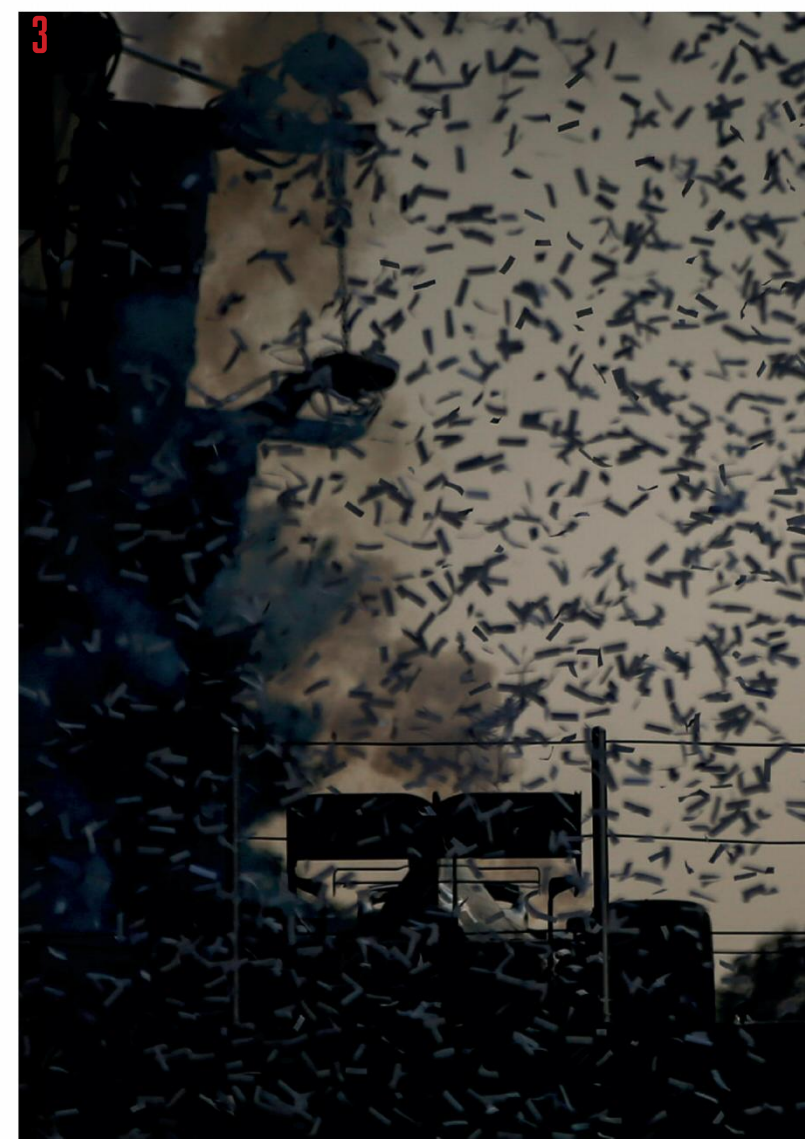


1 KERB YOUR ENTHUSIASM

Mercedes occasionally struggles in Austria and last year was no exception. Lewis Hamilton was ragged by his standards, clouting kerbs (and suffering damage as a result) on his way to fifth

2 WINNER TAKES IT ALL

Valtteri Bottas underlined his status as a class act at the US Grand Prix. Bottas won the race but Lewis Hamilton secured the world championship, and Bottas ensured his team-mate took centre stage





3 SOUND AND FURY

The Mexico Grand Prix organisers have been named Promoters of the Year five times now and it's not hard to see why – the podium ceremony gets noisier and more flamboyantly pyrotechnic every season

4 SLOWER THAN IT LOOKS

Even a slow pitstop looks like a frantic blur of activity, such are the fine margins in F1. Charles Leclerc's tardy first stop in the US GP helped consign him to a relatively lowly fourth place, 52s off the lead

5 KICKING UP DUST

Saturday practice in Hungary started late after a messy engine failure in the F2 race left oil on the track which had to be treated with cement dust. Bad news for the drivers but great for the photographers



PICTURES OF THE YEAR

1 STRIKING PERFORMANCE

Mercedes had rescued the German GP so it could celebrate its 125th anniversary in racing on home ground – but Max Verstappen crashed the party in qualifying (pictured here) and in the race

2 NOT THE WIN HE WANTED

Lewis Hamilton takes a moment to reflect on a Canadian Grand Prix he won after Sebastian Vettel was penalised. “Absolutely not the way I wanted to win,” he will say later



1

2





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SAM BLOXHAM

Part of the crew since 2013, Sam is one of the agency's busiest photographers. He attends every round of Formula E to supply the electric series with official imagery as well as covering the majority of the Formula 1 calendar



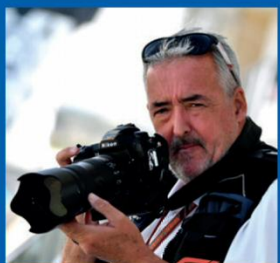
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MARK SUTTON

Co-founder of the Sutton Images agency, now part of Motorsport Images, Mark is also a keen cook – as you can see on his Instagram Stories. Our executive editor was aghast to find him putting hard-boiled eggs in fish pie



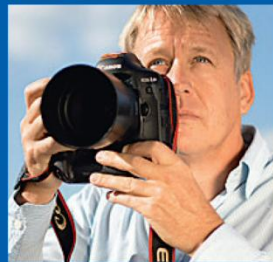
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STEVEN TEE

Until recently we were able to say Steve hadn't missed a grand prix since 1984. But he has – shock horror – now missed the odd one or two to cover Formula E landmarks. Well, it'd be rude to miss New York, wouldn't it?



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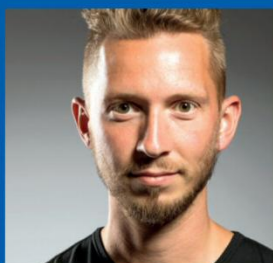
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ANDY HONE

The prodigious Mr Hone has been a professional photographer since he was in his teens, and has worked in F1 for over a decade. Away from the track he's a long-suffering supporter of Newcastle United



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JOE PORTLOCK

Indisputably the finest Formula 1 photographer to come out of Grimsby, 'Big Joe' follows the proud tradition of having started at LAT Images as a digital technician before honing his craft in Formula 3 and Formula 2



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GLENN DUNBAR

For 13 seasons Glenn acted as the official Formula 1 photographer for the Williams team, on top of his regular undertakings for this magazine. But he's broadened his remit this season to capture the entire grid



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ZAK MAUGER

Well-travelled Guernseyman Zak's Instagram feed offers a wealth of evocative non-racing landscape imagery. He's also worked as the official series photographer for F2 and F3, along with dalliances in electric racing



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SIMON GALLOWAY

Formerly the picture editor on our sister publication Motorsport News, Bristol-based Simon has worked in motor racing for over two decades now. He's a multi-disciplinarian, having covered Premiership football as well



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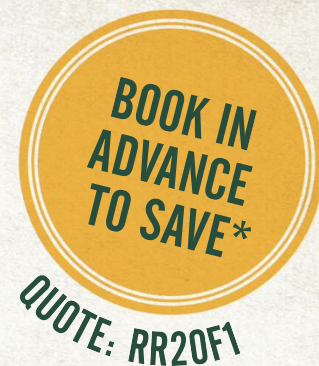
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race retro



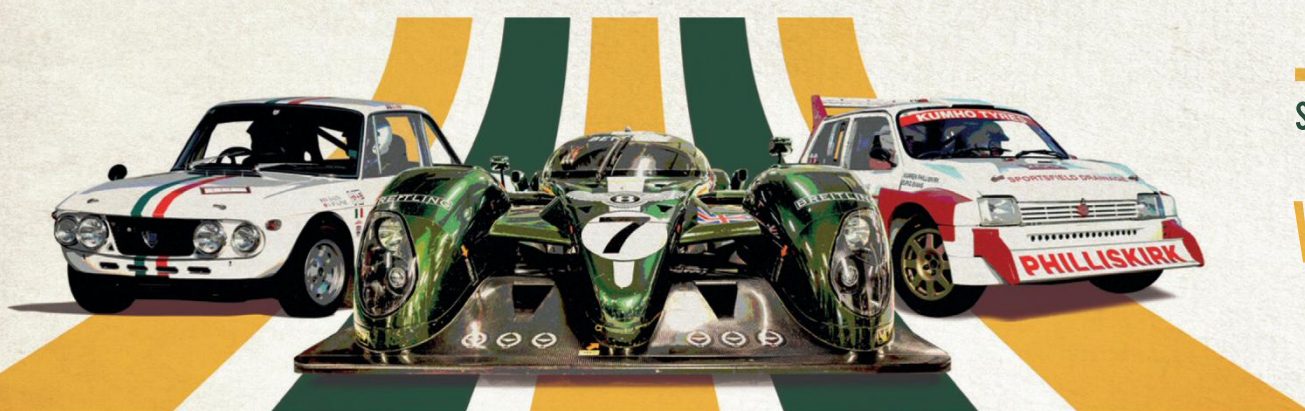
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PICTURES: ZAK MAUGER; STEVEN TEE; JERRY-ANDRE. *CONTENTS MAY BE SUBJECT TO CHANGE.



The long-term contracts agreed over Christmas for Verstappen and Leclerc surprised a few

Stars signed up

With the 2020 driver market closed I wasn't expecting the main F1 news over Christmas to be a couple of driver announcements.

It bodes well for the future of F1 that Ferrari decided to nail its long-term colours to Charles Leclerc's mast. That was quickly followed by Red Bull doing the same with Max Verstappen, although this was also about the driver deciding where his future lay.

Stability for both of these teams must now allow them to mount a serious challenge to Mercedes for 2020 and, hopefully, over the next four or five seasons.

Michael Hughes

By email

Top man

Your latest issue was certainly one of your best ever and not just because I'm a Mercedes fan. I was particularly interested in Lewis Hamilton describing his driving style [*F1 Racing*, January 2020] and input he tries to give the team.

Lewis speaks of understeer and oversteer and adapting to the car. A great driver is able to do what's needed. Ferrari on the other hand has announced that it will design a car more 'friendly' to Vettel.

Why Hamilton is as good as he is, is because he doesn't need a car specific to his 'style'. Vettel, while a fine driver, is not a great driver. Lewis is an all-time great.

Finally, Mercedes boss Toto

Wolff is quite amazing and the perfect complement to Lewis.

James Ruckman

By email

Hat's off

In regard to your feature on Lewis Hamilton [*F1 Racing*, December 2019], I don't think that we have evolved to the top of the food chain to become vegans. I don't buy anything with a Tommy Hilfiger label on it, and I am sure that I will never listen to Hamilton's music.

But one really has to admire the passion, determination and energy he puts into everything, while still delivering magic race-in-race-out.

Aleš Norský

Massachusetts, USA

Codling has got it wrong

Dear Stuart, I have just read your column [Flat Chat, *F1 Racing*, December 2019]. I am 79 and have been watching and attending F1 races since 1958 when I was at the French GP at Reims. And there is not a thing wrong with the format of qualifying and the grid. In fact I think this is the best there has been throughout all the years.

What needs to change is the money. Too much goes to too few and fans are shut out with the prices and access we have. I was at Monaco in 2017 and it cost me £480 for a seat to view the track, and I would not have been able to see much through the fence around the whole thing without the seat!

Liberty needs to look at the cost and access to make F1 more accessible and not think of ways to make it a spectacle, so short-attention-span 'millennials' can be pulled off their digital devices.

You have to pay attention to the sight and sound of racing - the smell of Castrol, the roar of an engine and all the people working so hard to make it work for us.

I will probably never make it back to Europe but I have been there and it is not the grid or how they qualify in F1 that will keep fans returning, but those visceral sensations that will draw new fans.

Gustav Erbes

California, USA

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- > Can Ferrari manage its driver line-up better in 2020?
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FINISHING STRAIGHT

TRAVEL



Charles Leclerc gave the tifosi something to cheer about at Monza last season (above). Below, Milan's stunning cathedral at sunrise



VISIT THE ITALIAN GP MONZA 4-6 SEPTEMBER 2020

YOUR GUIDE TO MILAN

Of all the races on the F1 calendar the Italian Grand Prix at Monza takes place in one of the most picturesque settings of them all. It's located between Como, Bergamo and Milan, which all offer culture, food, shopping and gorgeous scenery.

Milan is known as one of the world's most sophisticated cities, with a reputation for premium fashion, but Milan has a lot more to offer with imposing destinations such as the Duomo di Milano and the Galleria Vittorio Emanuele II and scores of tranquil parks and lively coffee houses.

Milan's Cathedral – the Duomo di Milano – is a breathtaking spectacle, the largest cathedral in Italy (St Peter's Basilica is bigger, but is in the Vatican City State). It holds a majestic presence in the city, took over six centuries to complete, and is now undergoing renovation work. Garlanded by gothic architecture it is a building worth exploring.

L'Ultima Cena, or the Last Supper, is a must-see for art fans. Housed in the Santa Maria delle Grazie, it is one of the most prized pieces of work by Leonardo da Vinci, and depicts the scene where Jesus reveals to his twelve apostles that one of them would come to betray him.

After being submerged in culture, head to the Galleria Vittorio Emanuele for some shopping in a

range of luxurious designer stores, while enjoying the architecture of glass and stone encapsulating this most charming of shopping malls.

If you're looking for a more relaxed atmosphere, then Lake Como is a destination you must visit. The gardens of Villa del Balbianello and Villa Carlotta offer a tranquil space to enjoy the views of Lake Como, as well as enabling you to explore the elaborate gardens. To make the most of its features hire a canoe or kayak to paddle around the lake.

Similarly, Bergamo reflects the vibe of Como and there are many walks that will take you through the diverse wilderness of the Italian lakes and hills. La Citta Alta is the central hub of the city, cradled by ancient Venetian walls, making it worthy of becoming a UNESCO World Heritage Site in 2017.

Milan has some of the most critically acclaimed restaurants in Europe. Saponi Solari is an excellent venue for indulging in the local cuisine, with extensive sharing platters. If you're looking for something more unusual, Iyo is one of Milan's top sushi restaurants. Topping the list in Lake Como is Il Cavatappi, where superb Italian cuisine is served in an intimate setting. Bergamo is famous for its seafood, with restaurants such as Osteria Al Giganca and Trattoria Camozzi da Claudio serving dishes such as squid and swordfish.



The tranquil gardens at the Villa del Balbianello (above, left) on the shores of Lake Como (below). One of the world's most sophisticated cities, Milan has some stunning new architecture (above, right)



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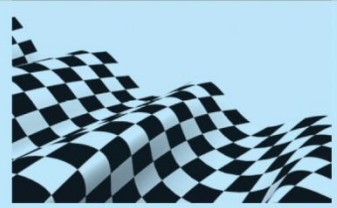
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By Roger Smith

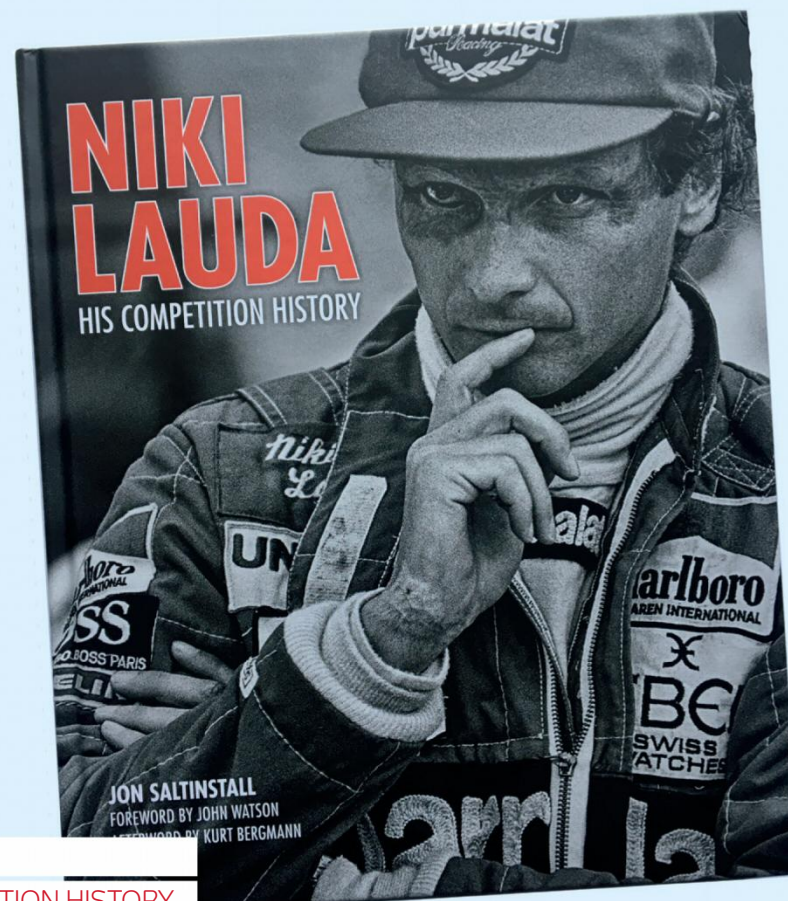
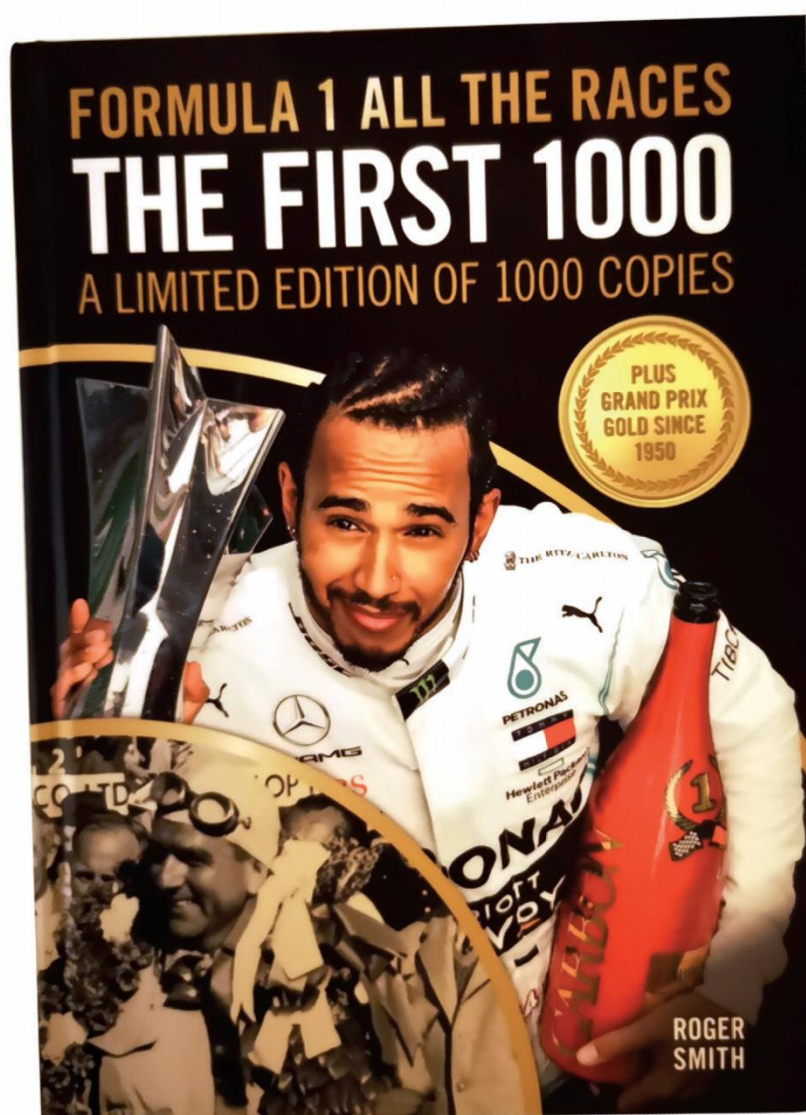
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The problem with sports reference books is that they are, axiomatically, never finished. There's always another match or tournament – or, in our case, motor race that's about to make your freshly minted work obsolete. That's what makes Roger Smith's pitch for the latest edition of this 720-page stats tome a bright one. By billing it as 'The First 1000' Formula 1 world championship races, this is one work with a beginning and an end.

This is an expensive book, but again the pitch is for a limited run of only 1000 copies – and people love 'premium' collectors' items.

To be fair, it's a fine book with a synopsis of each grand prix, race stats, season 'facts and folklore' and championship tables: simple, but easy to navigate. And the ranking of races as gold, silver and bronze, plus black for 'tragedy' and white for 'travesty' (for 'reprehensible actions or circumstances') is a nice touch.



NIKI LAUDA:

HIS COMPETITION HISTORY

By Jon Saltinstall

Price £60

evropublishing.com

Formula 1 said farewell to a hero last May when Niki Lauda passed away. Many tributes have been paid since then, but this new book goes one step further. Author Jon Saltinstall has painstakingly recorded every competitive race Lauda took part in.

Starting with the Mini he raced in 1968, to his Formula Vee and F2 outings, the research charts his climb to F1 and subsequent career with

Ferrari, Brabham and McLaren. It even recalls the BMW Procar races Lauda did in the early 1980s.

By documenting his diverse career, race-by-race, this provides the ultimate record of Lauda's 316 competitive outings up to his retirement in 1985.

This hardback book extends to 376 pages and contains a wonderful selection of over 500 photographs.

For so many people, Lauda was a real hero, and this latest title is a fitting tribute.

SHARKNOSE V6

By Jörg-Thomas Födisch &

Rainer Rossbach

Price €124.90

mckleystore.com

If you love Ferraris of a particular vintage then you will adore this book. When it landed on the desk at *F1 Racing*, it did so with a mighty thud. This book weighs over 4kg and has 432 pages. Published by the German company McKlein, this is a dual-language title – in English and German.

Sharknose V6 specifically relates to the iconic Ferrari 156 which made its Formula 1 debut in 1961, but it also features the 246SP and 196SP sportscars which competed at the same time. Printed on thick, glossy paper, the title's most spectacular feature is its photography.

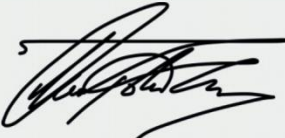
Stunning images from the archive of the renowned photographer



Bernard Cahier appear throughout, truly capturing the beauty and charm of a golden era of motor racing.

The book is broken into chapters covering the races the three Ferraris competed in and also features the drivers who raced for the Scuderia at that time, plus profiles on key characters such as engineers Carlo Chiti and Medardo Fantuzzi.

If you loved the style and design of the famous Sharknose and revel in this era of F1 and sportscar racing – this book is a must.

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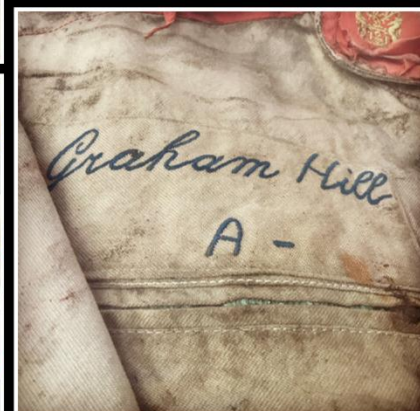
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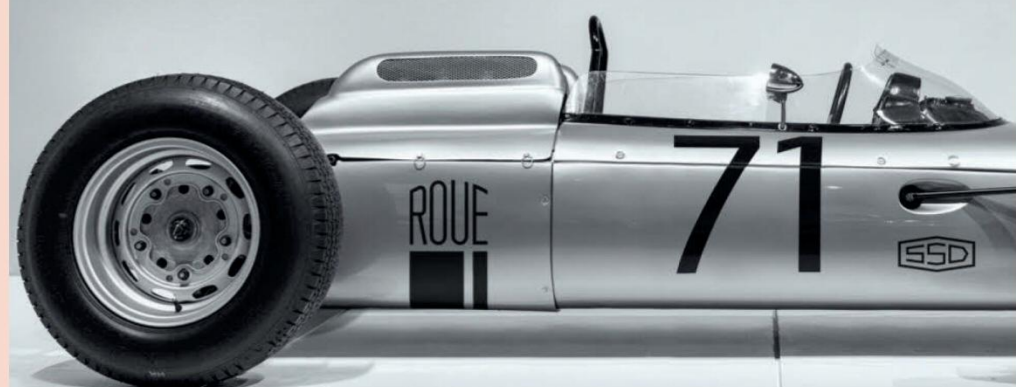
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VERSTAPPEN GOES LONG WITH RED BULL

The 2021 driver-market silly season became a whole lot less exciting over the winter as Max Verstappen and Charles Leclerc pledged themselves to Red Bull and Ferrari on long deals that will take them well into the new decade. Apart from the timing of the announcements – Leclerc’s just as most people were sitting down with a calculator to figure out how long to blast the Christmas turkey, Verstappen’s just as they were figuring out how to shed the excess poundage from all that feasting – it was the duration of those contracts that intrigued.

As a driver, unless your dad owns the team, you’ll feel your manager has earned their percentage if they can draw up a deal for one or two years plus options for more. Short contracts militate against drivers slipping into cruise-and-collect mode, especially if their team-mate is beatable. So for both Leclerc and Verstappen to get three-year extensions to their existing deals, taking them to the end of 2024 and 2023 respectively,

demonstrates their perceived value to their teams.

Verstappen’s renewal was the most interesting play. Red Bull has had to work hard to keep hold of him in the face of raids by Mercedes and Ferrari (in the hybrid era, why would a talent of his magnitude go anywhere else?). His previous three-year deal, due to end after this season, was concluded in a rush in 2017 when Mercedes went shopping for a potential alternative to Valtteri Bottas. At that point Max was labouring with a marginally uncompetitive car, Red Bull having failed to adapt to the new rules quickly enough,

Leclerc and Verstappen, two of F1’s brightest stars, have nailed their long-term futures to Ferrari and Red Bull respectively



and raging against repeated engine failures. Helmut Marko and Christian Horner really had to make it worth his while to stay on.

Rumours began to circulate in the middle of last year that Mercedes was on the hunt again, before deciding to lease Esteban

Ocon to Renault and to commit to Bottas. Now, one has to treat such talk with due scepticism, because much of it emits from the Dutch media, who have a vested interest in keeping Max in the headlines: a great many orangemen have joined the F1 press corps on the back of his fame. If he coughs, they report it; and if he doesn’t, they assume he might have asphyxiated – or worse – and report that.

So are we to read the timing and duration of this announcement as a large-print “hands off” notice, and a pre-emptive damping-down of contractual talk at what could be a critical juncture in the team’s history? To an extent, yes.

But, equally, Max is a hyper-competitive soul. Yes, he’s said he couldn’t partner Leclerc at Ferrari because “two number ones doesn’t work”. He also infuriated the Scuderia by accusing it of cheating, so perhaps that door is now closed against him. But, equally, he’s shown willing to take Lewis Hamilton on in equal machinery at Mercedes.

That won’t happen now – Lewis will surely have hung up his boots by 2024 – so Max *must* see Red Bull-Honda as a competitive proposition. Certainly there was another slow start under tweaked regulations last year, and the engine took three performance steps before the package looked like a frontrunning proposition, but Red Bull had debugged the car’s sensitive aero by mid-season. And while the headline results appear to be merely on par with the hybrid Renault years, in terms of laptime the Honda package is now closer to Mercedes and Ferrari.

Honda, too, has talked of Max as being the next Senna. It wants – *needs* – a marketable superstar to justify the cost of extending its own programme beyond the end of 2021. But will we see Max demonstrating an NSX while wearing a pair of tasselled loafers and a comfy sweater? Ah, perhaps not...

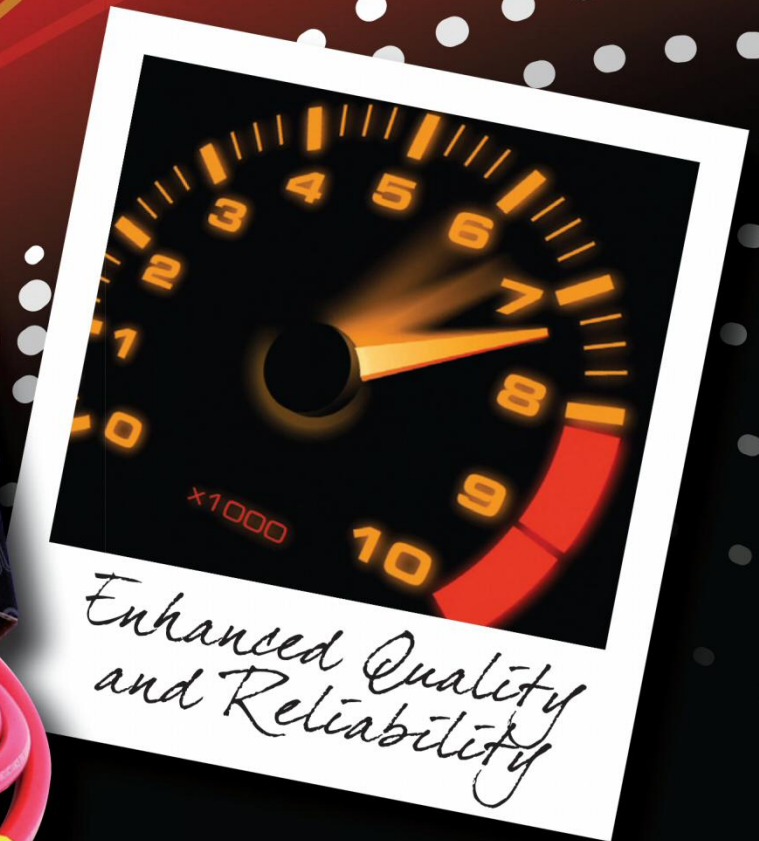
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