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for Seb Vettel

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Lewis marches on without really peaking

Lewis Hamilton is traditionally less-than-bothered about statistics. He lacks Sebastian Vettel's deep knowledge of Formula 1 history, and admits to having poor memory. Hamilton often says he can barely remember his most recent race, let alone recall the precise details of seasons past.

The way Lewis absolutely lives 'in the moment' is a key part of his enduring success, as this Michael Schumacher-esque run of dominance continues. It feels as though F1 is reliving the early years of the new millennium: records being relentlessly smashed while the opposition flounders.

But those post-Mika Häkkinen years were tedious for fans who longed to see Schumacher tested to extremis. When a worthy successor finally came along – in the form of Fernando Alonso and Renault – F1 became more interesting again.

With the likes of Vettel, Max Verstappen and Charles Leclerc all racing against Lewis on the current grid, Hamilton should be finding things tougher. But Vettel – who has been magnanimous as the defeats have piled up – has unfortunately been found wanting in Ferraris that have been less than perfect, while Leclerc is still finding his feet and Verstappen's Red Bull-Honda is a tool still too blunt to consistently cut through the silver.

The fact Hamilton says he imagines chasing a "ghost" while striving to go faster – like he is playing an F1 version of *Gran Turismo* – says all

you need to know about the only other driver with identical equipment to Lewis. To his credit, though, Valtteri Bottas is improving.

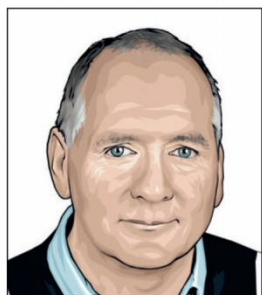
Meanwhile, Hamilton marches relentlessly on and we are left to talk about numbers and legacy rather than how he's prevailed in epic, down-to-the-wire title battles against the best drivers in the world. Hamilton has of course won two final-race showdowns, as Felipe Massa and Nico Rosberg well know, but that's not quite the same as saying you saw off Michael Schumacher at his peak...

I don't mean to do Hamilton a disservice. He is clearly a special driver who works extremely hard to succeed (off-track as well as on it; see page 34). Anyone who claims Lewis has it easy, and is effectively winning a two-car championship, need only look back to 2013 when Mark Webber failed to win a race in the best car.

The true greats make it look simple, but there's something greater about seeing them tested to their limits and winning anyway. Lewis was unbelievable during the run-ins of 2017 and 2018, but a lack of consistent opposition has made life easier this year.

Hopefully F1's 2021 rules revolution (page 16) will create the conditions needed to broaden the scope of battle at the front. Then, if Lewis truly wants what by then could well be title number eight, he will need to rise even higher than he already has. No one would enjoy that challenge more than him.

Contributors



MARK GALLAGHER

Our columnist has widened his remit to tackle this month's cover feature (p34), analysing Lewis Hamilton's empire



JAMES ROBERTS

Last heard from missing his connecting flight in Atlanta, our associate editor filed dispatches from Mexico (p60) and Texas (p54). #prayforjimmy



STUART CODLING

Ten years on from Brawn GP's triumph, 'Codders' shakes down CEO Nick Fry (p86) for the inside story on the team that became Mercedes



ANDY HONE

A man whose vertiginous barnet is best kept behind the camera, Andy met a NASCAR legend this month (p54)

Team principals

Editor
Ben Anderson
President, Motorsport Network
James Allen
Chief executive officer
Yavor Efremov

Drivers

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

Pit crew

Head photographer
Steven Tee
Columnists
Pat Symonds
Mark Gallagher
Nigel Roebuck

Photo agency
Motorsport Images
Director, global client success
Sunita Davies
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Ben Webster

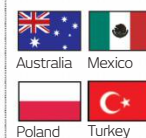
Advertising

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

Subscriptions

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

Partners



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A little touch of blue-sky thinking

The weather forecast for Friday in Austin was for blue skies all day, so with that in mind I planned to visit a spot I knew that works well for shooting into the sun late in the afternoon.

This is a tricky shot because there's no hole in the fence here. You have to remove the lens, hold it on the other side of the fence at the right height, then remount it to the camera body through the fence.

As I left the press centre before FP2 a huge cloud bank had rolled in, but I set off anyway in the hope that it would clear. It didn't go away entirely but it did leave some interesting striations.



Photographer
Glenn Dunbar

Where Austin, USA
When 4.05pm, Friday
1 November 2019

Details Canon EOS-1DX MkII,
24mm lens, 1/3200th @ F5





Winner doesn't take it all

On race day I was very privileged to be invited into the Mercedes hospitality area above the pitlane, where the guests kindly let me get in between them on the balcony to get a different view of the post-race rituals.

I feel this image sums up Valtteri's season in many ways. He drove brilliantly and won, then ran over to hug his mechanics, but he instinctively realised that this wasn't his rodeo. He had the presence of mind to break off and go to congratulate his team-mate, who had just won the world championship and was having a quiet moment of reflection in the cockpit of his Mercedes.



Photographer
Steven Tee

Where Austin, USA
When 3.51pm, Sunday
3 November 2019

Details Canon EOS-1DX MkII,
85mm lens, 1/640th @ F5.6





Flag carrier meets flag flyer

The Circuit of The Americas is close to one of the flight paths for Austin-Bergstrom International Airport, and in this shot you could say my plane really did come in...

Qualifying was almost over and I could see the jet approaching. I was willing it on, hoping it would get into the frame at the right time. Then I saw it was a British Airways plane. Bang on cue, over the hill pops Lewis Hamilton.

This shot may look heavily processed but it's all done in camera, with a high colour temperature and the exposure set for the sky rather than the car, giving a silhouette effect.



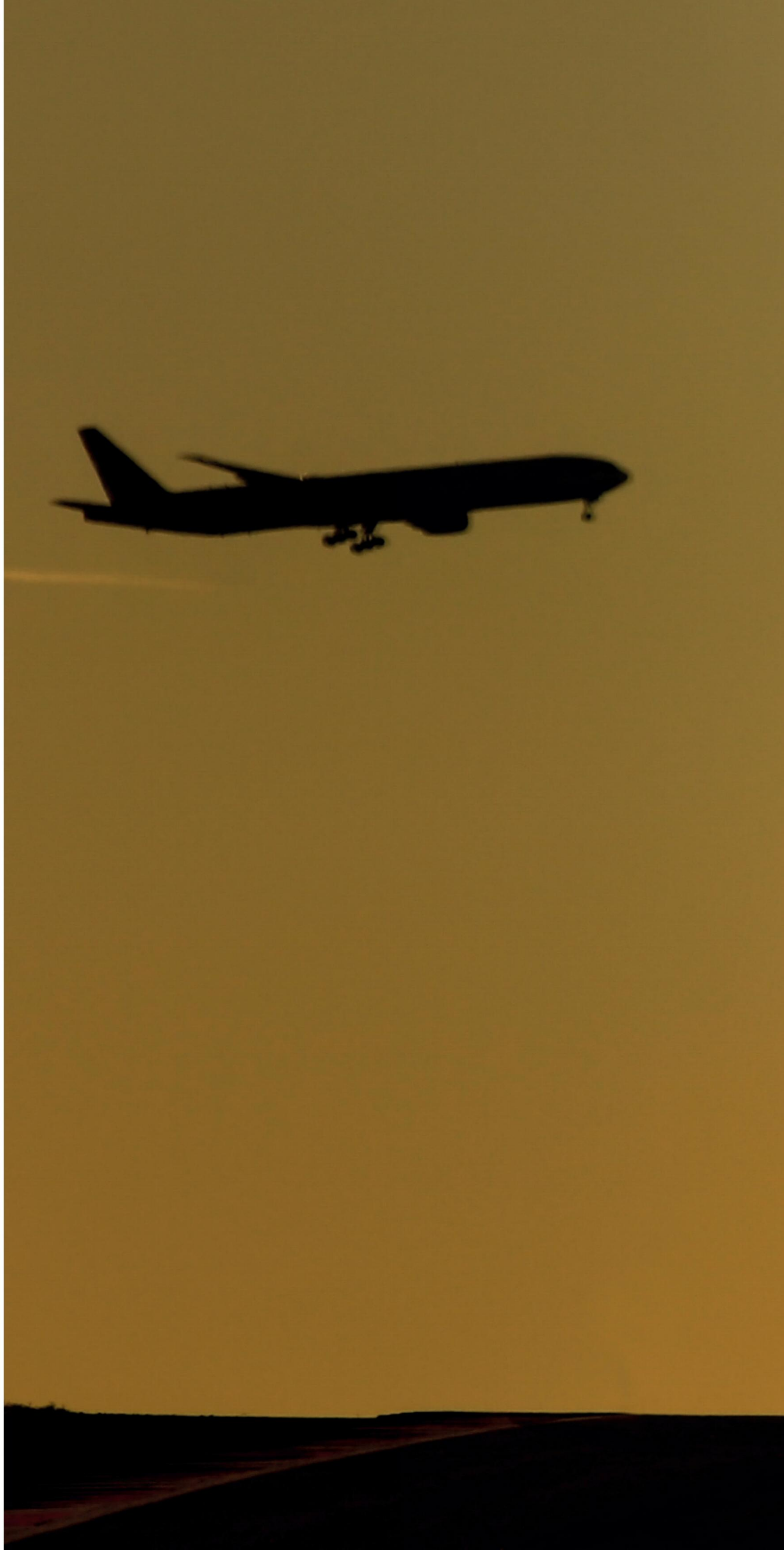
Photographer

Andy Hone

Where Austin, USA

When 4.59pm, Saturday
2 November 2019

Details Canon EOS-1D X,
200mm lens, 1/3200th @ F5.0







FLOAT
POWER

66-2000
05.17
2019
TOMMY
HILFINGER

Mercedes-AMG
PETRONAS

PETRONAS
SON
ELLE



Remembrance of things past

My position on the balcony of the Mercedes hospitality suite (see p8) also enabled me to capture this moment between Lewis and his father, Anthony.

There have been some tensions between them over the years but that's been part of the process of Lewis growing up and needing to make his own way in the world. I also took the well-known picture of them hugging when Lewis won his first title back in Brazil in 2008. Later I said to Anthony that it seems like such a long time ago – and here we all are again! Your eyes are so drawn to them that you don't see the actor Matthew McConaughey at first.



Photographer
Steven Tee

Where Austin, USA

When 3.53pm, Sunday
3 November 2019

Details Canon EOS-1D X MkII,
200mm lens, 1/400th @ F5.6

Lewis is the king of the world

Sometimes luck is on your side and you find yourself in the right place at the right time, even when you think you aren't. In this case I wasn't quick enough to get pole position in the scrum of photographers outside the Mercedes garage as Lewis celebrated with his team after the press conference.

So I stepped out of the scrum and stayed focused on Lewis with a longer lens. He was on his mechanics' shoulders and facing the sun, which ended up making a nice, clean shot with lovely highlights and shadows and no background clutter. He looks a bit like a roaring lion – or Leonardo di Caprio in that famous scene from *Titanic*...



Photographer
Zak Mauger

Where Austin, USA
When 4.20pm, Sunday
3 November 2019

Details Canon EOS-1D X MkII,
70mm lens, 1/1000th @ F2.8





FORMULA 1'S REVOLUTION FOR 2021 IS GO

Formula 1's 2021 regulations, which aim to both dramatically improve the spectacle and create a shake-up in the established order, were finally unveiled on 31 October. The new technical, sporting and financial rules were approved by the FIA's World Motor Sport

council on the eve of the US Grand Prix. The threat of a Ferrari veto on the new regulations was avoided when it voted in favour at the FIA meeting.

"It's a major change in how the pinnacle of motor sports will be run," said the FIA president Jean Todt. "For the first time, we have addressed the technical, sporting and financial aspects all at once. The goal is to have a closer championship and to be more unpredictable on the track."

Reduced aerodynamics aim to improve overtaking, but cars will be heavier, slower and will retain the same 1.6-litre V6 hybrid power units. F1 chiefs hope a fairer spectacle will be achieved through a \$175 million a year spending cap. Here are the key changes...



02

MORE RACES, LESS TIME

Weekend shortened from four days to three to counter potential growth in calendar

03

MONEY, MONEY, MONEY

Budget cap of \$175 million to be imposed, with strict penalties for transgressors



WHAT ARE THE 2021 TECHNICAL REGULATIONS?

01

The rules are set to reduce the amount of ‘dirty air’ that is produced from a Formula 1 car, which will enable following cars to run much closer. That will be achieved by generating downforce through ground effect, utilising the floor and diffuser, rather than an over-reliance on surface aerodynamics.

Parts of the wings and bodywork will be prescribed, but with enough freedom to allow designers to create diversity, as F1 is keen not to create identikit cars. One key area that is prescriptive will be the ‘eyebrows’ over the front tyres.

“One of the difficult bits to deal with is the front wheel wake because this starts impinging on performance,” says F1’s technical director Pat Symonds. “The teams have been trying to push that wake outwards, which is what following cars drive through. Our philosophy is to keep that wake narrow and loft it over the car. The eyebrows are an important part of controlling that wake.”

A 2019 car following another within one car length retains only 55% of its total downforce, while the aim for 2021 is to increase that figure to 86% (at three car lengths in 2019 it’s 68% and in 2021 95%).

Symonds has spent the past two years working with Nikolas Tombazis, the FIA’s head of single-seater technical matters, in a thorough examination – in both simulation and windtunnel – to produce a car that should race more effectively through a reduction in turbulent air. But Symonds warns the 86% figure will come down as the teams start to claw back performance when designing the 2021 cars. I don’t think they are going to be at 86% at one car length,” Symonds says. “But they are going to be a damn sight closer than 55%. If we have done our job well, they won’t be that far off.”

Other key technical changes include the removal of barge boards, a standardized T-tray under the chassis, a ban on hydraulic suspension and inerters, plus larger, 18-inch wheels and bigger brake discs. The sides of the car will also be strengthened and cockpits enlarged to not penalize taller drivers. These directives in combination with the bigger wheels increase the overall weight of an F1 car from 734kg to 767kg.

Gearbox designs will be frozen for a five-year period, there will be a standardization in the fuel system and fuel must double in bio-content (20%). However, tyre blankets are set to remain until at least 2022.

The reduction in aero and increased weight is set to slow the cars down by 3-3.5 seconds a lap, putting them on a par with 2016 levels of performance. ►

PICTURES: MCLAREN

McLaren’s version of a 2021 F1 car. There will be some design flexibility in certain parts of the wings and bodywork but those ‘eyebrows’ above the wheels cannot be changed



“IT’S A MAJOR CHANGE IN HOW THE PINNACLE OF MOTOR SPORTS WILL BE RUN. THE GOAL IS TO HAVE A CLOSER CHAMPIONSHIP AND TO BE MORE UNPREDICTABLE ON THE TRACK”

JEAN TODT

HOW WILL THE SPORTING RULES CHANGE?

02

Given the proposed expansion to 25 races after 2020 and the effect the additional travel will have on personnel, F1 plans to counter that by bringing down time at the track from four to three days. Press and PR commitments, as well as scrutineering, will take place on a Friday morning in 2021, while two (potentially shorter) practice sessions will run on Friday afternoon. In addition, the number of working hours at the track will be reduced, so the curfew for personnel will be much tighter.

The other significant sporting change for 2021 is a regulation which states the car that is scrutineered at the start of the weekend will be the specification of car that is raced. New bodywork elements, such as front wings, will only be allowed to be trialled in practice, but cannot be raced on the same weekend.

"This is to stop the proliferation of building many parts in the hope that one works," says F1's managing director of motorsport Ross Brawn. "We're doing some sensible housekeeping on the way we operate during a race weekend to take a lot of strain [and costs] off the teams." This cost-cutting exercise will be aided by reductions in dyno testing, CFD simulations and windtunnel testing.

Before the announcement there had been discussion over other ways of changing the weekend format, such as introducing qualifying races or reversed grids. Pat Symonds says alternatives are still being looked at.

"We've had some really good meetings with the team



The teams all seem to be in agreement (above). Eyebrows (below) are a new technical change



strategists looking at different formats and that's a process that will continue," Symonds adds. "Some of the traditionalists need to realise the world is changing around them and we need to change with it. Most other sports have realised that and have grown their fanbase."

IS A BUDGET CAP WORKABLE?

03

For the first time, the governing body is going to impose limits on spending within a regulatory framework. Sanctions for breaking the ruling will lead to sporting penalties – depending on the severity of the breach.

The objective of the budget cap is to promote a competitive balance and sporting fairness and to ensure ►

F1 DIGEST THE MONTH'S BIG STORIES AT A GLANCE

13.10.19 Renault ECUs and steering wheels impounded after brake-bias system protest

17.10.19 Legality of Ferrari's engine questioned by rival teams



18.10.19 Reverse-grid qualifying race trials abandoned as teams veto the concept

3.10.19 Renault disqualified from Japanese Grand Prix over brake-bias system

29.10.19 FIA to review placement of Tecpro barriers at Mexican GP venue

31.10.19 Teams warned that breaches of cost-cap rules will have "serious consequences"

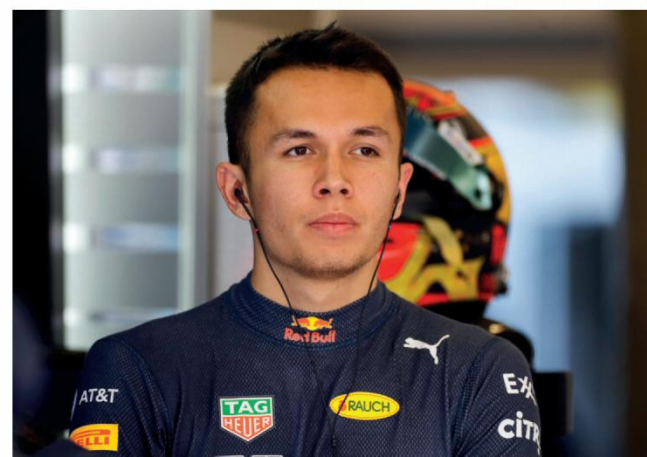
01.11.19 Renault recruits ex-Ferrari aerodynamicist Dirk de Beer and ex-McLaren engineer Pat

Fry as Enstone undergoes a technical reshuffle

01.11.19 Planning permission granted for new Racing Point factory

02.11.19 FIA clarifies fuel-flow rules after Red Bull query

12.11.19 Alex Albon confirmed at Red Bull for 2020





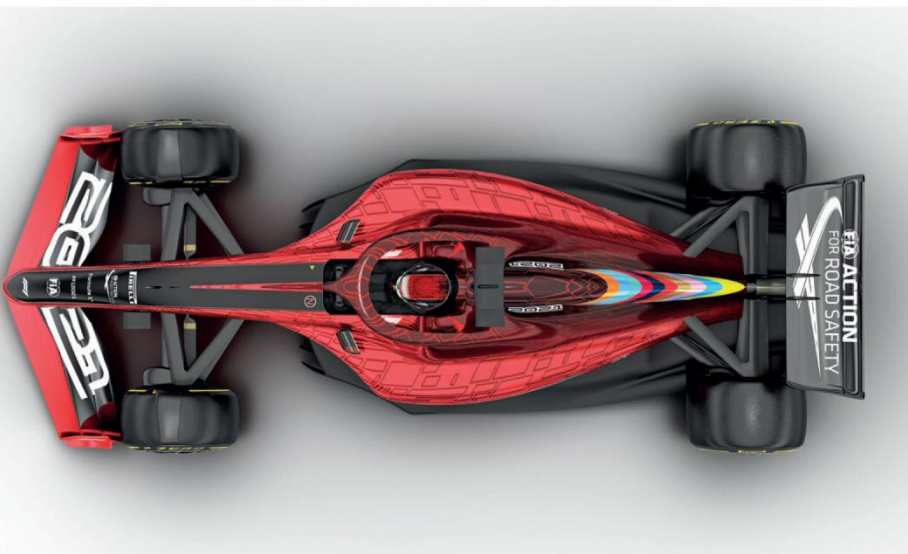
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“IF YOU FRAUDULENTLY BREACH THE FINANCIAL REGULATIONS YOU WILL LOSE YOUR CHAMPIONSHIP”

ROSS BRAWN



the long-term financial sustainability of the teams. It will be set at \$175 million for 21 races with plus or minus \$1 million for each race above or below 21.

“You may remember the gentlemen’s agreement between the teams known as the Resource Restriction Agreement,” said Ross Brawn. “But there’s not many gentlemen in the paddock I’m afraid and

that was a failure – but this solution has teeth. If you fraudulently breach the financial regulations you will lose your championship. It will have serious consequences. It is essential for the future of F1 that we control spending.”

Formula 1 has sourced outside accounting experts, such as Deloitte who have helped control spending in football, and the ruling is being drafted by former Mercedes CFO Nigel Kerr, who is now F1’s director of finance.

But just as the current technical and sporting regs are constantly in discussion and refined, financial rules will also need time to mature. Exclusions to the \$175 million budget cap will be driver salaries, the three highest paid executives of a team, marketing, non-F1 activities, FIA entry fee and driver superlicence costs.

When asked whether a cost cap would be workable, one high-level team source said: “We all fill in our tax forms and if we don’t tell the truth we go to prison. I don’t see why it can’t be done. Companies publish their figures and if they start fiddling those, they really are in trouble.”

Teams will be given time to adjust their operating structures and there is a proposed deadline planned. In 2020 teams will have the option to submit their financial data on a voluntary basis on the following dates. On 30 June, 2020 there will be an option to submit financial data for 2019. The following March will be another submission date for 2021 and on 31 March, 2022 there will be a mandatory submission of 2021 financial data.

“The 2021 regulations are everything that we’ve wanted to see, particularly the financial regulations,” says team boss Claire Williams. “They are a step in the right direction to ensure that the sport – but also teams like ours – remain sustainable for the future. We’re all aware of how unsustainable F1 is from a cost perspective. To have a level of cost-capping at this first juncture is important to teams like ours. I don’t think that can be underestimated.”



In striving to develop these new cars, teams will be subject to a stringent budget cap



F1 MASTERMIND

Your chosen specialised subject: the world’s greatest sport

- Q1** Esteban Ocon will return to the Formula 1 grid in 2020, but with which team did he make his practice debut in 2014?
- Q2** Which current driver has two podiums to his name but has yet to lead a single lap of an F1 race?
- Q3** Which two current circuits on the calendar first held a world championship race in the 1980s?
- Q4** True or false: Red Bull has won at least one race a year since its first victory in 2009?
- Q5** Which driver finished 20th and last in the standings in 2018 with a single point?
- Q6** The Ford Cosworth DFV engine won its first race in 1967, but when and where did it win its last?
- Q7** At which race did Teo Fabi claim Toleman’s single pole position in Formula 1?
- Q8** Which driver won the most world championship races in the 1977 F1 season: Jody Scheckter, Mario Andretti or Niki Lauda?
- Q9** Which team has won eight of the 30 Dutch GPs held so far?
- Q10** Who was Romain Grosjean’s team-mate at Haas before Kevin Magnussen?



1 Lotus **2** Lance Stroll **3** Hungaroring (1986) and Suzuka (1987) **4** False, it failed to win in 2015 **5** Sergey Sirotkin **6** Monaco 1983 (DFV) Detroit 1983 (DFV) **7** 1985 German GP **8** Andretti (4), the others 3 **9** Ferrari **10** Esteban Gutiérrez



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UNDER THE HOOD

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PICTURES **motorsport IMAGES**

consuming, to make a drop-in fuel than a simple alcohol-type fuel such as ethanol. Equally there are no plants or refineries in the world capable of making enough synthetic fuel, or e-fuel as it's sometimes called, to supply F1 – let alone the larger automotive community.

Although alcohol fuels may not have high energy density they do possess other advantages, such as very high resistance to knock, an uncontrolled and violent ignition which is detrimental to both power and the very structure of the engine.

Let's consider now the engine itself. The laws of thermodynamics show that engine thermal efficiency, in other words its efficiency at converting chemical energy to mechanical energy, is a function of

compression ratio. This is the main reason diesel engines are so efficient. Current F1 engines run very high compression ratios but they're limited by knock. The propensity of an engine to knock depends on the fuel it's run on – and gasoline, while good, isn't the best in this respect.

Tailored fuels, made from advanced sustainable bio resources, matched to engines specifically designed to exploit the characteristics of the fuel could move us forward to the next steps of efficiency. After all, the easiest way to reduce our carbon footprint, and to reduce cost to the consumer, is to reduce the amount of fuel burned no matter what its source. ►

THE NEXT STEPS ON THE ROAD TO A GREENER F1

In last month's column we looked at the need for F1 not just to embrace environmental sustainability but also to promote, using its sheer persuasive power, the path to an ultra-low carbon economy. This month we'll dig deeper into how we may achieve this, but first we need to expand a little on fuel chemistry.

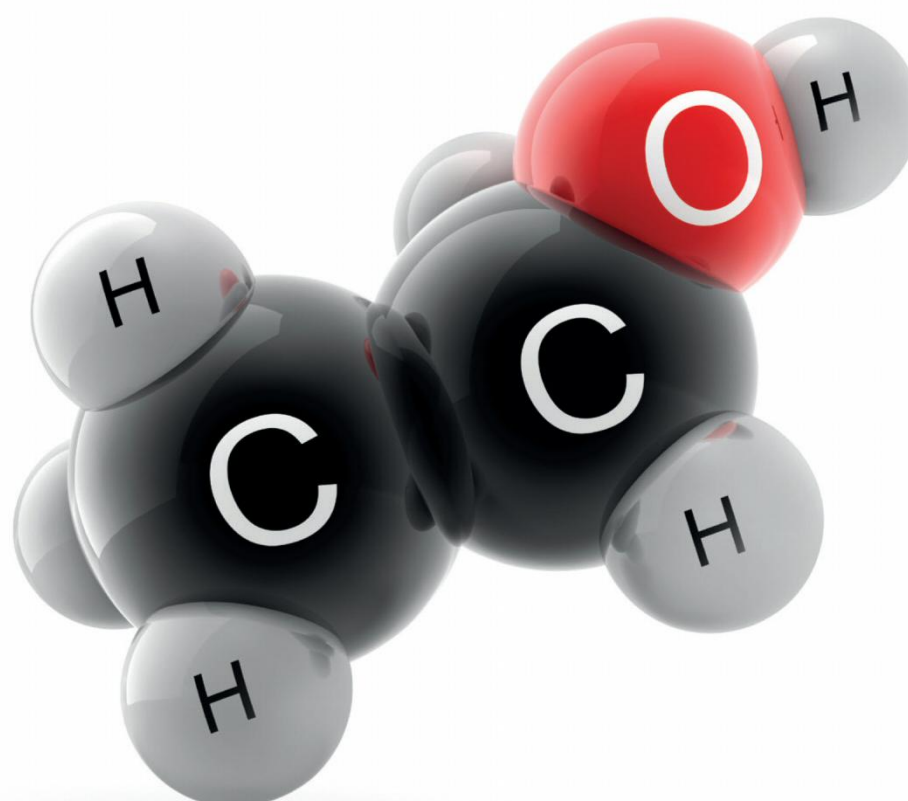
Many fuels are made of combinations of carbon and hydrogen atoms. One of the most simple comes from combining four hydrogen atoms with one of carbon to give CH_4 – a gas known as methane. Ethanol, the most common automotive bio-fuel, is made by combining two carbon atoms, six hydrogen atoms and one oxygen atom to give $\text{C}_2\text{H}_5\text{OH}$. Ethanol has the advantage of being easy to make and therefore cheap, but unfortunately it doesn't have the energy content of gasoline.

For every litre of conventional fuel burned we would need to burn 1.5 litres of ethanol to get the same energy. However, accepting that these hydrocarbon fuels can be made from atoms, we can also make the basis of gasoline, which is a substance

known as iso-octane. This is made from eight carbon atoms and 18 hydrogen atoms – C_8H_{18} . This would then be what is known as a 'drop-in' fuel, meaning it could be used in an existing engine without requiring any modifications. It would still need some additives, but these would be the same as are currently added to conventional gasoline and has a further advantage of not having some of the undesired elements, such as sulphur, in it.

While this may seem the perfect answer unfortunately it's much more difficult, and energy

Ethanol, the most common bio-fuel, is made from combining carbon, hydrogen and oxygen atoms. Easy to produce, the downside is that it doesn't have the energy content of conventional fuel





"You Can't Drive Money" - Jerry Seinfeld



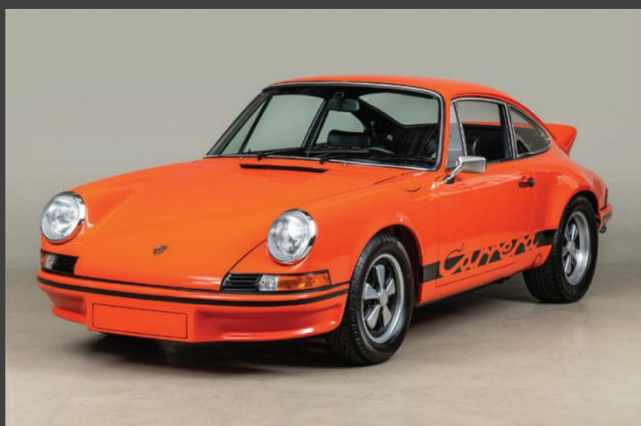
2017 Ford GT "Heritage Edition"
The 25th example of the newest Ford GT, owned by Chip Ganassi. \$50,000 "Heritage" limited edition that honors the first GT40 that won the 24 Hours of Le Mans. \$10,000 Titanium exhaust option.



1953 Porsche 356 Coupe "Pre A"
Multiple award-winning restoration. Gmund award at Porsche Parade 2018 with 299.8 points. California car for most of its history. Matching numbers 1500cc engine. Large collection of receipts.



1994 Nissan Skyline GT-R V-Spec II
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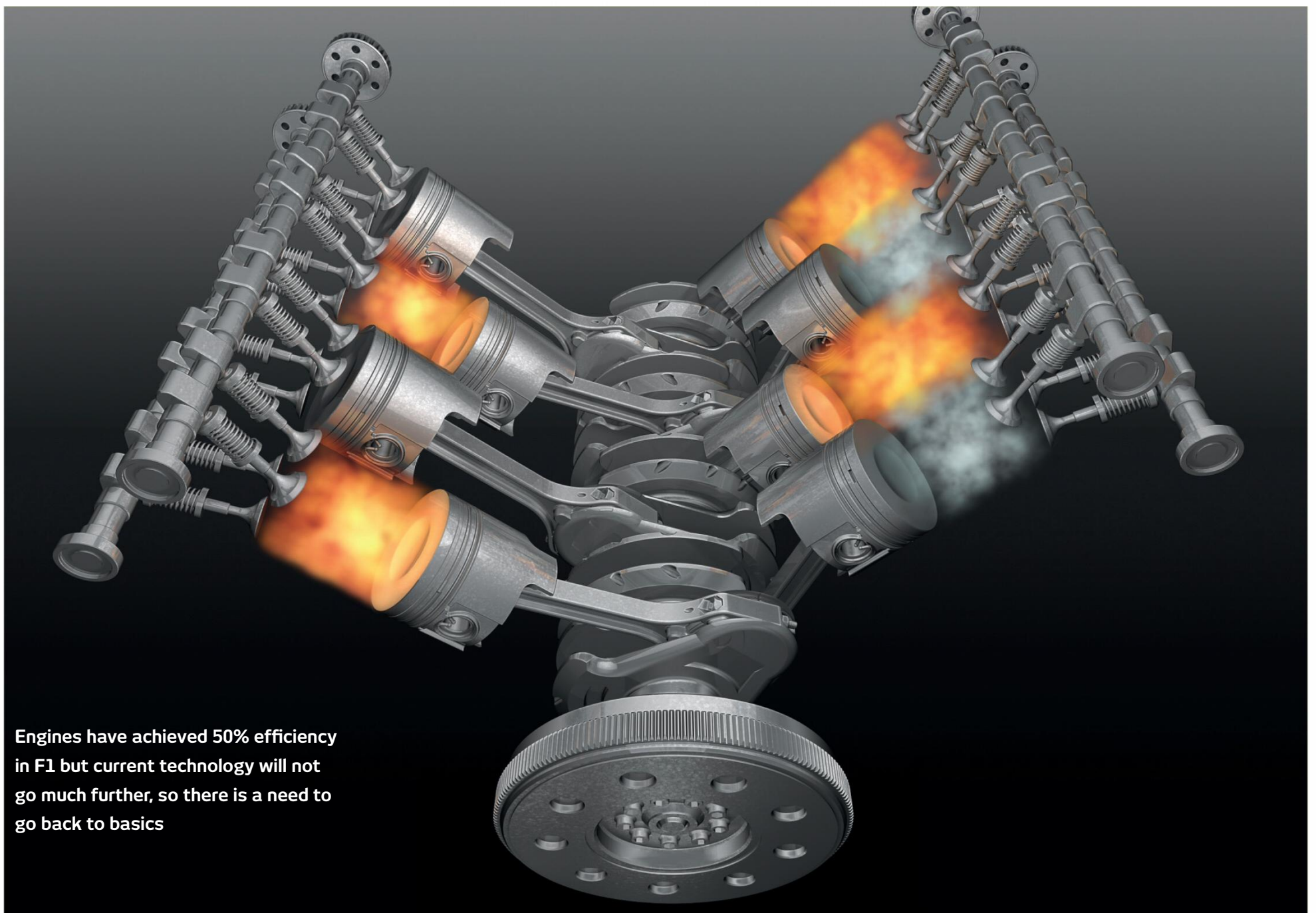


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Engines have achieved 50% efficiency in F1 but current technology will not go much further, so there is a need to go back to basics

While much of the low-hanging fruit of engine efficiency has already been harvested, we need to set ambitious targets for the next generation of power units. Just a few years ago 50% efficiency seemed a dream and yet F1 engines have achieved it. When we consider the next F1 engine we need to define targets rather than technologies, and the determination of achieving 60% efficiency is no longer a dream.

It is ambitious, though, and current technology will not get us there. We need to think laterally, to go back to basics and see what technologies will allow us to run higher compression ratios and what will reduce the inevitable losses. For example, should the engine be a two-stroke? Turbocharging, direct injection and plasma ignition could allow a very efficient two-stroke to run with none of the inherent problems of past-generation two-strokes. More importantly, an engine running on a synthetic ultra-low-carbon fuel with a very high octane rating could run at the sort of compression ratios that engines running on today's gasolines couldn't begin to sustain. Equally we may find traditional poppet valves are no longer suitable since the clearance volume needed

for them to open into the cylinder imposes some limitations on achievable compression ratios.

When considering future engine technologies we should also consider a full life-cycle analysis of the power unit itself and the supporting energy source, be it chemical or electrical. We live in a rapidly evolving world and one in which industry must be powered by low-carbon electricity. Once we have that, should we just be using it to charge batteries (which have built in environmental problems) and new infrastructure needs, or should we be using that electricity to synthesise liquid hydrocarbon fuels? We'll probably need to follow both paths, with full-battery electric vehicles having a role in an urban environment, and low-carbon-fuelled, highly hybridised internal combustion engines powering non-urban light vehicles and all heavy vehicles.

“FAILURE TO REDUCE CO2 EMISSIONS WILL LEAVE THE SPORT AS A PARIAH WITH NO PLACE IN MODERN SOCIETY”

F1 could play a huge role in this transition. It's proven its ability to advance technology readiness levels from experimental to production, and must do so again. It also has the profile to engage the public in these technologies. The difference this time is that it doesn't have an option. Failure to reduce CO2 emissions will leave the sport as a pariah with no place in modern society.

The next step needs to come with the next generation of power unit. F1 must be the first series to run on 100% advanced sustainable fuels to demonstrate their effectiveness. The fuel and the engine must be designed in harmony, and hybridisation and electrical systems must be taken to a new level. When a full circular life-cycle analysis is done, F1 must pave the way toward a true net zero carbon society in the transport arena.

GRAND PRIX GUIDE



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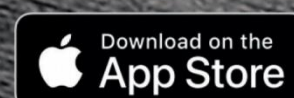
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STRAIGHT TALK

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NO NEED TO GET TWITCHY OVER F1 BROADCASTING

Formula 1's decision to live-stream the Mexican Grand Prix in six countries using online game-streaming platform Twitch took many by surprise. If you thought free-to-air versus pay-TV was the main broadcast battleground, things are

more complicated.

Twitch was founded in 2007 by four friends, including 24-year old Justin Kan, who attached a camera to his head and live-streamed his life for the next eight months. You read that right.

Justin.tv, Twitch's predecessor, was the result. It gave birth to a multi-channel online platform enabling viewers to enjoy content focused on technology, sport, news and gaming. In no time at all the gaming channels attracted large numbers of viewers rushing to watch those who were brilliant at it – brilliantly good, bad or funny, but always entertaining.

Our camera-headed friend and his business partners sold the company seven years later to

Amazon for \$970 million. For anyone who found Kan's head-cam antics mad, it is easy to see who got the last laugh.

Today Twitch boasts more than 15 million active users each day, with over a million online at any point in time. They watch content provided by over two million broadcasters across 27,000 partner channels. If, like me, you grew up with three-channel TV, this takes some getting used to.

Darren Cox, President and CEO of Canadian company Torque Esports, knows a thing or two about the gaming-to-racing landscape and the appeal of Twitch. Having played a pivotal role in steering the GT Academy initiative between NISMO and the famous Gran Turismo game, he now runs the World's Fastest Gamer. This is a competition that offers a real-world racing programme valued at \$1 million to the winner.

"Streaming F1 on Twitch was something F1's owners needed to do," says Cox. "Liberty is a US company with a US bias and they know the success other sports such as NFL and NBA have had with Twitch. If they can square the circle by working with traditional

free-to-air and pay-TV broadcasters, it's the right way to open the sport to younger audiences."

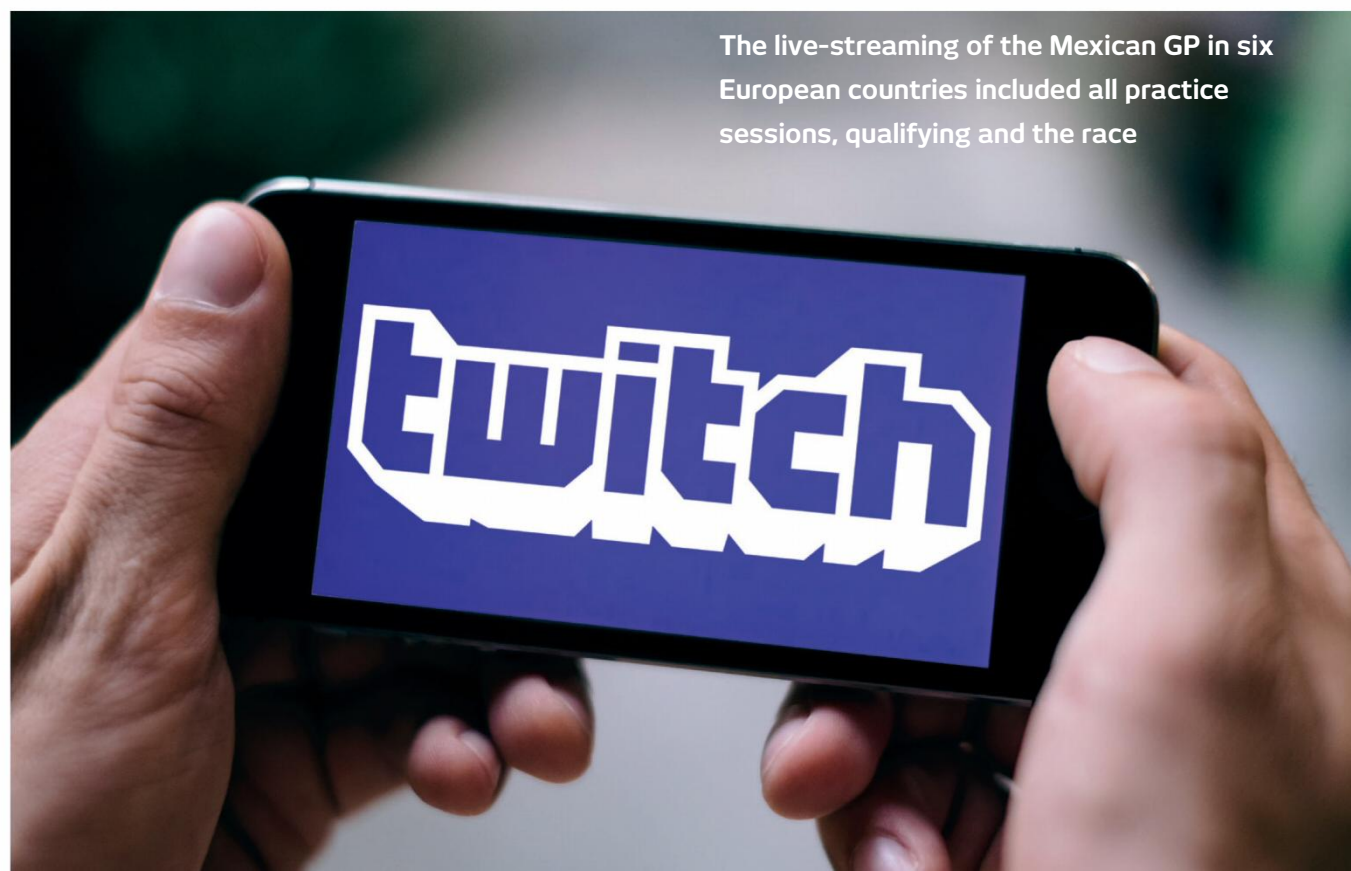
One of Torque Esport's subsidiaries, Stream Hatchet, provides data analysis of those accessing live streams, and Cox confirms that F1's initial foray onto Twitch produced some fascinating insights.

"Considering younger audiences are often labelled as having short attention spans, we can see that 26% of those who watched Mexico stayed for more than 30 minutes, and 19% for more than an hour," Cox adds. "The people who watched it actually stayed. Looking at this kind of data is hugely interesting to F1 and its sponsors."

The F1 channel on Twitch has almost 43,000 followers, due to the success of F1's official Esports series. Those who tuned in to watch the live stream from Mexico could enjoy the 'co-streaming' – commentary and chat – of influencers including German gaming cohort 'PietSmiet'. They have no fewer than 2.4 million subscribers on their dedicated YouTube channel.

With F1 streaming the live race feed, the opportunity to offer personalised content and choose the community you want to engage with during the race is one of the intriguing opportunities Twitch can offer. In a world of oh-so-serious commentary about compounds, engine modes and upgrades, perhaps an engaging, interactive and brilliantly funny livestream might just be a winner, whatever your age.

The live-streaming of the Mexican GP in six European countries included all practice sessions, qualifying and the race



THIS MONTH

Maarten ten Holder

Executive vice-president, head of Europe & chief auctioneer RM Sotheby's

Following qualifying at the Abu Dhabi Grand Prix this year a prestigious car auction, featuring a Michael Schumacher 2002 race-winning Ferrari, a host of supercars and some F1 memorabilia, will take place on the start/finish straight. The head of RM Sotheby's, the company responsible for conducting the auction, explains how it came to the car auctioneering business and its new partnership with Formula 1...

CV

2018-19

Executive vice-president, head of Europe & chief auctioneer for RM Sotheby's

2017-18

Global managing director, Luxury & Lifestyle division, for Sotheby's

2015-16

Managing director, Europe & Middle East and North Africa, for Sotheby's

2007-15

Managing director, North and South America for Sotheby's)

2002-07

Deputy managing director, Italy, for Sotheby's)

1999-02

Head of department, Arcade Auctions for Sotheby's (Netherlands)

1996-99

Operations manager for Sotheby's (Netherlands)

F1 Racing: How did you and the company get involved in the car auctioneering business?

Maarten ten Holder: I originally started out in Amsterdam as an art auctioneer with Sotheby's, as my father ran a small contemporary art museum.

I really enjoy the role as it's theatrical, transactional and if you get it right there is a lot of positive energy. When I first walked through the doors of an auction house I was instantly hooked and knew this was where I wanted to work.

Five years ago Sotheby's entered a merger with RM Auctions – a specialist in selling automobiles – which is celebrating its 40th anniversary this year. Now we go under the name RM Sotheby's and this year we have held 15 auctions across North America and Europe.

F1R: Why have you reached a partnership with Formula 1 to host this auction at the Abu Dhabi Grand Prix?

MtH: For the past 40 years most of our auctions have taken place at large car events, Concours d'Elegance at Pebble Beach, Monterey and the Monaco Historic Grand Prix. These events always feature a lot of like-minded people who love cars and supercars. So why F1? Obviously it's an important brand and often we see a lot of our customers in the paddock at races. It made sense for us to come together.

F1R: What are you expecting from the event?

MtH: It will take place on the circuit after qualifying on 30th November, at around 9pm local time. Paddock Club guests and ticket holders will be able to watch the auction taking place on the grid. We are expecting about 40-50 cars

INTERVIEW JAMES ROBERTS

in total, some memorabilia and a 2002 world-championship winning Ferrari. It is the chassis that Michael Schumacher took three wins with that year at Imola, Austria and Magny-Cours. We're valuing that car at \$5.5-7.5 million and for the total auction we're expecting a value between \$30-50 million.

We also have a Pagani Zonda which we're valuing at \$4-6 million, and entry-level cars for about \$100,000 too. There is a McLaren P1 which is about £1-1.3 million, but it's being sold without a reserve, so if you bid \$500 and no one else bids – I'll have to sell you the car...

F1R: How do rare classics and supercars make their way on to the auction market?

MtH: It's known in the art auction business as the three 'Ds' – debt, death and divorce. It can even be de-accession, which is when a museum decides something is no longer part of a collection. Alternatively collectors might buy a car at one price and they sell to make money. There are collectors who upgrade by purchasing something that wasn't previously on the market. There are actually lots of different reasons, but we also have specialists who contact clients who are interested in a particular marque.

F1R: Have you ever found yourself in an auction and caught out someone waving who doesn't realise they are bidding?

MtH: I find with car auctions there's a lot of vibrancy in the room and they typically take a little longer than art auctions. We find people might come in and order a drink, or wave at their friends, and for amusement I engage with them and tell them they are bidding right now. When they realise they're about to hand over five million dollars they suddenly look petrified.

F1R: What other plans do you have?

MtH: Well, Abu Dhabi is an interesting territory for us and our plan is to expand geographically into both the Middle and Far East. At the Abu Dhabi GP we plan to display the cars for the entire race weekend for fans to get close to, and they will still be there on the Monday for people to visit, as there's a national holiday in the UAE. Then, next year, we might look at a second grand prix to auction at.







Nico Hülkenberg takes every chance he can to stay hydrated. Some drivers – like Valtteri Bottas (top right) – have been known to have a coffee before a session

FUELLING AN F1 DRIVER

Nutrition and hydration are as vital to the success of Formula 1 drivers as they are to any athlete. Nico Hülkenberg's trainer **Martin Poole** explains how optimal diet yields maximum performance

WORDS JAMES ROBERTS
PICTURES
motorsport
IMAGES

Nutrition is critical for everyone – particularly athletes – because, if you're not fuelled in the right way, it affects everything from your mood to your concentration and decision making. Nutrition is the glue that holds everything together for human performance, including mental skills development and physical activities too.

I've noticed, especially through working with junior drivers, how they struggle in the afternoon by having that lull we all experience when blood sugar levels drop and fatigue starts to kick in. There are ways to deal with that, so that's why we have such a set routine to avoid it. Whether it's an engineering meeting or a session, I always make sure Nico [Hülkenberg] is in his optimal condition. We have to approach that differently each day to balance his nutrition needs for the race as opposed to qualifying.

In terms of diet, weight is important, and especially with Nico because he's on the limit height-wise. We're talking just a kilo or two, and since all our weights fluctuate, even after one 'cheat' meal, that can be an extra kilo the next day. But he's very lean, so he's not carrying much body fat.

With back-to-back races, Monday or Tuesday is the window for him to have a bit of a break, but it has to be within parameters. Fluctuating weight isn't ideal for the way the body releases energy, so consistency is key. That may seem a boring thing to say if you want to hear about dynamic, innovative, secret ways we are fuelling these guys to give them this magic power. Really it's common sense, combined with a bit of knowledge and planning.

It is important for Nico to have a good balance of carbohydrates and proteins – not too much of one or the other. It should be slightly more protein-based, but then we do decrease that a little bit towards Sunday. That's where the carbohydrates are really important for him. The rest of the week Nico will have foods I know he digests well, which don't make him feel uncomfortable and don't upset his digestive system. And foods that make him happy – that's important. There's no point in me trying to give him meals he's not going to enjoy. Nico loves pasta and fish, so these are the things we focus on.

We also do metabolic testing. It's one thing to understand what he likes but it's another to see the evidence of that diet on his performance, be it in training or in the car. We've also done specific scientific work to find out what's happening inside his body, so then we're able to make tweaks to what is already a healthy lifestyle.

As we ramp up towards getting into the car, you notice some drivers might have an espresso. I don't know if he



does it on every occasion, but you often see Valtteri Bottas with a coffee before he gets into the car. A few years ago I was against a caffeine injection before any session, because caffeine can give you a spike followed by a low. But if you have a good tolerance to caffeine or any other stimulant, it can be a good energy boost.

Nico will often say he likes to be fuelled and have "power" in the car before qualifying. He doesn't like to feel low on energy, so he likes to have something a bit higher in carbs. Then before the race we have more of a balance of carbs and proteins, which is slower releasing and keeps him going. Then, away from food, he drinks electrolytes, water and a combination of both throughout the weekend.

During the race itself he will have a drink, but doesn't consume a lot, so I need to make sure his hydration levels are topped up. But that top-up doesn't just happen before the race. You can't suddenly take a high-energy sugar drink and be sorted, because your body can only absorb at a certain rate, so taking on fluids has to be part of a consistent, healthy plan. There's no way to short-cut dehydration, nutrition or fitness, because the body is clever. It takes what it needs. If you haven't trained your gut or intestines to absorb more fluid – they won't do it.

Nico stays hydrated all the time. He drinks loads of water and complains about it because he's going to the toilet a lot, but welcome to the life of an athlete! Water is critical since just a 2% loss equates to about a 20% loss in concentration, but it can also depend on other factors, such as ambient temperature.

Plus it's important not to drink electrolytes all the time. It needs to be the right ratio of salts to fluid. If you end up with too many salts in the body through energy drinks, you'll end up being dehydrated, with too much inside your system, so you need to dilute it the right way.

For hot races we will have an increase in electrolytes because Nico will be sweating and losing more fluids. Some athletes might sweat more water than salt, so it's good to understand that on a cellular level.

We're learning so much about the science of nutrition and how the stomach communicates with the brain through the many neural pathways. Most of it is related to absorption rate and how quickly your gut empties – but the good news for the body is there are good things in most things we eat, except processed foods.

I might be on thin ice here, but even in beer – it's good to be able to enjoy a beer or two (post-race), and a glass of red wine is really good for you. But it has to be at the right time – and you do need to ensure a good balance.

MORE THAN A LIFESAVER

You might think the only function of a driver's helmet is safety but, as Carlos Sainz explains, there are significant performance benefits to be gained too

WORDS JAMES ROBERTS

PICTURES STEVEN TEE



Since Formula 1 drivers effectively take to the field of combat in masks, they take great pride in the design of their helmets, which both identify them to the fans and reveal their character. But look beneath the paintwork and there are a surprising number of performance-enhancing features.

McLaren's Carlos Sainz revealed that for the start of the 2017 season he made the switch to a Schubert helmet from his previous Arai model purely for performance reasons. The principal difference, he says, was weight.

"Compared with the previous brand of helmet I used, the Schubert helmet was 300 grams lighter," says Sainz. "When we moved into the new regulations for 2017, with bigger cars with more downforce, we were going to experience more G-force in the corners. If you multiply 5G by an extra 300g of weight on your head – that makes quite a big difference to your neck over the course of a race weekend. That's why I moved to this make of helmet and I've found it's very comfortable in the way it fits on my face, and has good visibility through the visor too."

Sainz adds that the ventilation of the helmet is also impressive and makes a noticeable difference in hot environments such as Singapore. On top there are four vents that direct air onto the top of his head. In addition there are four more vents below the visor. The higher two of the four are covered with fairings to reduce airflow through them, thereby improving the audibility of his radio when he talks to his engineer on the pitwall.

"I've never had a problem with getting too hot wearing this helmet," Sainz adds.

Another difference with the Schubert lid for Sainz is the double clip attached to the bottom of the visor. One click brings the visor partly down, while allowing a narrow gap at the bottom.

"This is helpful to avoid misting in wet weather, but also allows a bit of air to get in, say for when you're driving down the pitlane," says Sainz. "A second click allows the visor to fully close."

The top of the visor features a rubber seal to keep rain water out, and there's room for up to 12 transparent tear-off strips, which can be removed if the visor becomes coated with organic matter, oil or particles of rubber. Sainz says he would normally use about six during a race distance, but at some tracks which are particularly dirty, he might use as many as eight.

The rear and side of the helmet feature sculpting that's designed to save weight, but which has also undergone windtunnel testing to

help reduce drag. Aero fairings can be attached to work in conjunction with the car's design. Sainz's 2017 helmet featured a spoiler at the back to avoid buffeting in the Renault cockpit, but it's been deemed surplus to requirements for McLaren. There's also a transparent

fairing on the helmet's chin, aerodynamically shaped to prevent lifting and buffeting at high speed.

"THERE ARE HELMETS THAT HAVE A BACK SPOILER TO PROTECT YOU FROM BUFFETING AND HELMET LIFT, BUT THIS ONE DOESN'T NEED IT"





Sainz details some of the performance-enhancing features on his Schubert helmet



“The good thing about this helmet is that it doesn’t need a back spoiler to avoid lift,” adds Sainz. “There are helmets that have a back spoiler to protect you from buffeting and helmet lift, but this one is very stable and doesn’t need it.”

As a final piece of insurance against noise and vibrations, an additional flap of material under the chin acts to reduce turbulence which interferes with the audibility of radio transmissions.

“It’s a really high-quality helmet and honestly, I’ve had no issues with it at all,” Sainz says. “The service Schubert provide at the track is excellent and I’ve been very happy with it.”





AN EMPIRE STATE OF MIND

Now on six Formula 1 world championships and counting, Lewis Hamilton is undoubtedly a modern phenomenon on the circuit, but his appetite for success is not limited only to grand prix racing – Lewis has also been busy building something much bigger behind the scenes...

WORDS MARK GALLAGHER
PICTURES TOMMY HILFGER



e was inspired by Ayrton Senna, nurtured by Ron Dennis, and wooed by Niki Lauda to replace Michael Schumacher. Lewis Hamilton's star has ascended with the help of some rather special people. None, however, can have foreseen the degree to which the journey from Stevenage to superstardom would take Britain's most successful grand prix driver of all time far beyond the fame afforded to your typical Formula 1 world champion.

You need only have watched the now-famous appearance of a seven-year-old Lewis on BBC's *Blue Peter*, or have been in the audience at the 1996 Autosport Awards, to know that here was someone different. Then followed his apprenticeship at McLaren, and a meteoric rise through the junior racing formulae.

Nothing, however, suggested he would necessarily reach the global superstardom that Lewis Hamilton has achieved today: multiple world champion, global brand ambassador, fashionista, musician and social media influencer, who cares about the environment and isn't afraid to say so. Some find it hard to reconcile a Formula 1 world champion becoming passionate about the health of the planet, but Hamilton has long since learned to ignore the trolls and do things his own way.

"I know what it's like to feel like an outsider," he wrote on Instagram earlier this year. "As a kid I was always the last pick of the teams in the playground. I was one of only three black kids in my school. I know the sadness that comes with feeling like you don't fit in or not being accepted for who you are. And I know what it's like to be bullied for it too."

Lewis has described learning how to defend himself by embracing the discipline of karate, and being taught how 'to be fearless'. This school of hard knocks and racism influenced Hamilton's life and led to his adoption of the phrase 'Still I Rise' from the epic poem of the same name by American poet, singer and civil rights activist Maya Angelou. To read it is to understand

the man a little more. It is this combination of a tough personal journey combined with extraordinary achievement that attracts audiences to Hamilton from far beyond Formula 1, and the appeal is not new either.

Back in 2007 a minor commotion developed outside a restaurant in central London, with security clearing a passage through a line of paparazzi outside. Word soon went around that it was Lewis Hamilton in the company of rapper Sean Combs. It transpired that the music mogul known as 'Diddy' had managed to get hold of the McLaren driver's mobile number and had called him directly. Hamilton would later recount that he was playing golf at the time and thought the call was a wind-up. Combs, these days reputed to be worth something shy of a billion dollars, just wanted to have dinner.

In only his first season in Formula 1 Hamilton had already begun to taste the potential that comes from reaching the pinnacle of the sport and winning. Beyoncé Knowles had provided tickets to one of her concerts and Combs would introduce the young driver to rapper Pharrell Williams and British star Natasha Bedingfield. The flood gates to the music industry soon fell open.

Hamilton's love of music, combined with having almost instant access to the cream of the industry in the UK and America, gave him an outlet through which to enjoy down time. It is a side of Lewis Hamilton that few in motor racing know about, or understand. To the parochial Formula 1 community it can seem like a distraction, but as the seasons have passed the ►

Hamilton's world has expanded far beyond the narrow confines of F1, as his tie-up with Tommy Hilfiger shows

"Some find it hard to reconcile a Formula 1 world champion becoming passionate about the health of the planet, but Lewis Hamilton has long since learned to ignore the trolls and do things his own way"







September saw the launch of the third TommyXLewis collection

on-track success has accelerated. Mercedes boss Toto Wolff admits these outside interests really work for his star driver.

“Lewis is somebody who needs to be able to pursue his other ambitions,” Wolff told the BBC’s Andrew Benson last July. “If he’s able to do a fashion show that excites him, or record some music... he can come back stronger and more energised.”

Music culture in America is ethnically diverse. Achievement is recognised and talent celebrated, particularly if the path to success has been a bumpy one. Hamilton has felt welcomed and lauded as a young man from a mixed-race background who has conquered the world. The first title with McLaren was one thing, but the Lauda-inspired move to Mercedes has led to an unprecedented level of achievement and recognition.

In the UK, Hamilton’s appearances on chat-shows including *Parkinson*, *The Jonathan Ross Show* and *The Graham Norton Show* have been dwarfed by the profile generated in America through interviews on *Jimmy Kimmel Live*, *The Ellen Show with Ellen Degeneres*, *The Late Late Show with James Corden* and *The Daily Show with Trevor Noah*.

This is not easy work. Hamilton must cope with inevitable ‘what is Formula 1?’ questions: How fast do they go? How much is an F1 car worth? Do you want to move to NASCAR? He takes each in his stride, understands the opportunity that is afforded to him by being on these platforms.

While some at home complain about Lewis developing an unappealing mid-Atlantic twang, American media complement him on his ‘lovely British accent’. Once again it sets him apart.

His relationship with Nicole Scherzinger might have promoted Hamilton onto the society sections of media around the world, but being seen in the company of singers Rhianna, Christina Aguilera, Jess Stone and Rita Ora, or with models Winnie Harlow and Gigi Hadid, means the paparazzi are never far away. This is the world of Hamilton beyond Formula 1.

If music is a first love, fashion is his passion. One complements the other. Having spent time with design icons such as Donatella Versace and the late Karl Lagerfeld, Hamilton’s appearance on the red carpet at the \$30,000-per-ticket Met Gala measures the degree to which he has well and truly arrived among the US of A-List. Getting invited to the New York event requires the approval of Vogue’s Anna Wintour, not someone impressed by qualifying modes or soft-compound tyres...

It came as little surprise when Hamilton’s interest in fashion led to a high-profile collaboration with an established design house, in this case Tommy Hilfiger. A brand that came to prominence thanks to investors including Racing Point’s owner Lawrence Stroll, the Tommy Hilfiger name is by no means new to F1, having previously sponsored Ferrari in the 1990s.

Its eponymous owner is a fashion legend. Hamilton and Hilfiger launched their first ►

“If music is a first love, fashion is his passion. One complements the other... Hamilton’s appearance on the red carpet at the \$30,000-per-ticket Met Gala measures the degree to which he has well and truly arrived among the US of A-List”

“His social media audience is larger than any other driver in F1. On Instagram alone, Lewis has more followers than the next 10 drivers combined”

collection in September 2018, featuring a whirlwind tour that took in Milan, London, Shanghai and New York, in between the Italian and Singapore Grands Prix – both of which Hamilton won, incidentally.

Hilfiger is twice Hamilton’s age, but they clearly click. Three TommyXLewis collections have been launched to date, the spring 2019 collection in March being followed by the most recent in September. Hamilton is central to the design philosophy and, for a company that generated \$9.7 billion in revenues in 2018, this is also key business strategy.

The Tommy Hilfiger relationship extends beyond Hamilton’s role as a global brand ambassador; the company also supporting the Mercedes F1 team. It is Hamilton who is the pivotal element in that relationship. This speaks volumes for the balance of power when it comes to the driver and team negotiating future deals, for you have the best driver and a commercial powerhouse rolled into one.

Brand ambassadorships are baseline business for celebrity sports stars, and Hamilton’s social

media feeds demonstrate his strength. Aside from Tommy Hilfiger, brands including Puma, Monster Energy, Police, Bose, IWC and Vodafone are recent beneficiaries of Hamilton’s social media presence. With 13.2m followers on Instagram, 5.6m on Twitter and 4.1m on Facebook, his social media audience is larger than any other driver in F1. On Instagram alone, Lewis has more followers than the next 10 drivers in the world championship combined. A recent analysis of celebrity media showed a single social media post by Hamilton is worth around £40,000.

The direct reach is one thing, but Hamilton’s social media network goes far beyond the mere numbers count on his own feeds. In the past two years he has interacted with footballers Cristiano Ronaldo, Neymar Jr and Gerard Pique, while befriending actors such as Will Smith, Zendaya Coleman, Tom Holland and Millie Bobby Brown, which further underscores Hamilton’s Hollywood appeal. Hamilton has already made cameo appearances in Pixar’s *Cars* franchise, and *Zoolander 2*, and he holds wrestler-turned-actor Dwayne Johnson in high esteem ►



Hamilton’s outside interests have made him so much more than ‘just’ an F1 driver



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“Now he’s in full control of his career and business destiny, Hamilton’s next moves will be watched with interest”

as someone who moved seamlessly from sports entertainment to pure entertainment.

The cumulative Instagram network for Hamilton’s top 20 friends, collaborators and associates is a spectacular 950 million people. Throw in those following the brands he is associated with and the Hamilton network on Instagram alone represents a billion followers. No wonder companies are lining up to work with him...

One of the key reasons behind Hamilton’s success on social media is that his posts are personal and authentic. Those which are officially sponsored or promoted are marked as such, but his willingness to share photographs and videos from his life beyond Formula 1 really hits the mark with fans. The content that he posts is rich and varied.

His dogs Roscoe and Coco are as popular with the fans as they are with Hamilton himself, but his love for high fashion, music, supercars and motorcycles features strongly. So too his personal interests in environmental awareness, sustainability, veganism, animal welfare and children’s charities. The content comes across as heart-felt and genuine.


As is the way with social media the trolls are never far away, but the former victim of schoolboy bullying is a veteran when it comes to dismissing negativity.

When his plant-based diet spurred much online comment, Hamilton’s response was to open a vegan burger restaurant in London’s fashionable Mayfair. This is the result of a collaboration with hospitality company The Cream Group and Italian investor Tommaso Chiabra, one of the leading backers of meat-substitute company Beyond Meat. It plays perfectly to Hamilton’s philosophy of answering his critics through positive action.

Managing this stellar career and burgeoning interests beyond Formula 1 is no mean feat, and Hamilton controls his own destiny through the London-based management company Project 44. Initially managed by father Anthony, who guided him from karting to Formula 1, Hamilton then signed a four-year deal with entertainment impresario Simon Fuller’s XIX Group. At the end of 2014 Lewis moved into the arms of the Los Angeles-based Endeavour Group, which was created following the \$2.4 billion takeover of the legendary IMG sports and media company by William Morris Endeavour. That deal ran its course.

Now he’s in full control of his career and business destiny, Hamilton’s next moves will be watched with interest. A contract renewal with Mercedes beckons for 2021, with observers expecting Lewis to sign a two-year or two-plus-one extension unless lured elsewhere. Beyond that, the worlds of fashion and music seem set to feature strongly alongside business investments, as well as continuing to act as global brand ambassador for companies eager to tap into the profile of Formula 1’s dominant personality.

When Hamilton stepped on board his Mercedes W10 to commence testing ahead of this year’s world championship he had outlived his hero Ayrton Senna by a day. Michael Schumacher, whose every record is being dismantled by Hamilton’s ongoing achievements, was robbed of a happy retirement as a result of that fateful skiing accident in 2013. For all their achievements on the race track, we never got to see what the future held for Senna or Schumacher post-F1.

With career earnings set to approach \$500 million, Hamilton is thus on the threshold of having not only the most successful career in Formula 1 history – whether measured by results, income or global profile – but also of building an empire beyond the sport the like of which has never been seen before. He is already on top of the world, but the phenomenon that is Lewis Hamilton is a story with many chapters still left to run. 

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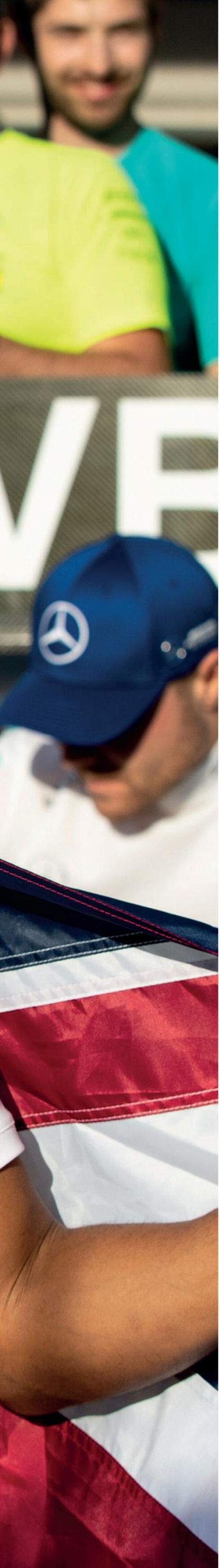
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LEWIS HAMILTON

With a sixth world championship in the bag, Lewis Hamilton has Formula 1's few remaining unbroken records well within his sights. And there's bad news for his rivals – he feels he's still got potential to improve, and he's not about to rest on his achievements

How would you rate this title compared with the five before? Has it been easier?

No way has it been the easiest. It's been the hardest year for us as a team. We lost Niki [Lauda] – a real pivotal member of our team. The emotional rollercoaster we've been on with losing him, and a race [Mexico] where I didn't have Bono [race engineer Pete Bonnington] here, just trying to remain focused throughout the year... and this car has not been easy. We started the season honestly going to Melbourne thinking that we were going to be behind. Mid-point of the season we *were* behind [on pace], and it's been a real challenge, this second half of the season. It's been the toughest second half I think we've had as a team, fighting against Ferrari and Red Bull – which is great, we welcome that.

Every journey is different. Every year you go through a different rollercoaster ride to get to where you're going. I wrote something in my [Instagram] post this morning, that each and every single one of us is struggling with something in life. Whatever it may be: small, big. I tried to show people that, from the outside, things always look great but it's not always the case. And I am also struggling with lots of different things and battling certain demons and trying to make sure that I'm constantly growing as a person.

Would you care to elaborate on that?

Well, not particularly – to each and every one of us it's personal, what we all challenge when we look in the mirror each day, when you feel good or you feel bad for whatever reason. There's always the darker side trying to pull you down

and you're constantly having to wake up... I don't know how you wake up in the morning but I look in the mirror and I'm trying to lift myself up and say: 'Yes, you can do it. Yes, you are great. Yes you can be fit if you go and put that time in. Yes, you can win this race if you do the right steps and you continue to believe in yourself, and no-one else is going to do it for you.'

This year losing Niki, I didn't think that was going to hit me as hard as it did. It really was upsetting and I miss him dearly. I didn't realise how much I loved the guy, from the moment that he was calling me, when I was back home, asking me to come to the team, to when we sat together in the hotel in Singapore – the weekend my gearbox broke at McLaren – to him always taking his hat off, to all sorts. That was a tough pivot point for us and also we lost a young kid [Anthoine Hubert] at Spa. I saw it on the TV, I saw it happen. When something like that happens it can put lots of doubts in your mind.

“I BELIEVE THAT I HAVE THE ABILITY TO CONTINUE TO GROW AND DO MORE WITH THIS TEAM AND WITHIN F1. THAT WOULD BE THE TARGET BUT TIME WILL TELL”

You're within one title of Michael Schumacher's record. Are you motivated to end your career as statistically the greatest that's ever been?

I've always said Michael's [record] was never a target for me. I'm not one that really thinks of records. I had thought getting anywhere near Michael was so far-fetched and I remember having my one [championship] for a long period of time, then getting a second.

I don't want to build up trying to get seven because, at the moment, I've got to enjoy right now. Tomorrow's not a given. What I have to do, and what we all should try, is to make sure you enjoy each day. So I'm not trying to think of what's going to happen at the end of next year or 2021. I believe that I have the ability to continue to grow and to do more with this team and within F1. That would be the target but time will tell.

Would you say this has actually been your best season overall, as a driver?

I definitely think so. Last year was a year of continuous growth and this year has also been continuous growth, but I tried to make sure that I started the season as I finished last year. That's just stayed through the season. If you look, I've been very consistent in qualifying. I've not had particularly spectacular poles that perhaps I did last year – but it's been first or second row the majority of the time. And apart from Hockenheim – I'll give myself a pass for that because I wasn't really 100% – I think it's been the best performing year. It takes a long time to master a craft and while I feel I am mastering it, there's more to master.

How
Leclerc
became
Ferrari's
new

ALPHA

Charles Leclerc began 2019 with specific responsibility to support Sebastian Vettel's championship ambitions, however Leclerc's relentlessly impressive form in an unexpectedly difficult season for Ferrari has changed the game, and created a newly volatile internal dynamic for the Scuderia to manage

WORDS SCOTT MITCHELL
PICTURES  motorsport
IMAGES



PICTURE: JERRY ANDRE



How does an understudy oust the star? When does the Beta know it is time to replace the Alpha? What does a support act need to do to become the main attraction? Look to Charles Leclerc and one may find an all-encompassing answer. After all, he has unwittingly become the perfect Formula 1 subject for such questions.

Even if Leclerc wasn't asking himself these questions in relation to his position within Ferrari at the start of 2019, plenty were asking on his behalf. The 'what' seemed a certainty: eventually Leclerc would displace Sebastian Vettel within Ferrari. The 'when' was a little more unclear, but surely it would only be a matter of time. The main unknown was 'how'. After all, team principal Mattia Binotto called Vettel – a four-time world champion now in his fifth season with Ferrari – Maranello's "guide" to the title. Leclerc was the highly rated

young upstart of whom Ferrari expected great things but did not want to crush under the pressure of expectation.

Leclerc knew this, accepted he would start life as a *de facto* number two and called it "my job then to turn things around". Some nine months later, he may sit and reflect on a job well done, with two races particularly clear in his, Binotto's and Vettel's memories.

A maiden F1 victory for Leclerc in Belgium was also Ferrari's first of the season. He followed that up a week later by winning in Italy.

Vettel spun early in Ferrari's home race, then picked up a penalty for rejoining straight into the path of Lance Stroll. While Leclerc lapped up the love of the *tifosi* on a wild Monza podium, Vettel was left to skulk in the shadows.

Leclerc's progress to becoming Ferrari's main man was not the product of a sudden surge in form after the summer break, though. He was causing Vettel, and Ferrari, problems from the very first race. On a dismal weekend for the team, Ferrari had to order Charles to hold position in Australia, after he caught Vettel for fourth. Leclerc complied. But one week later, when potential victory was on the line, he did not.

"I had the opportunity and I just didn't see myself lifting and staying behind," said Leclerc, just a few hours after he had ignored a Ferrari request to hold station after catching Vettel for the lead in Bahrain, having thrown away his pole

"The way that Charles is growing is very positive, he's a talent, we knew it, but I think he's really learning from mistakes, and that's more important"

Mattia Binotto



position advantage with a poor start.

Leclerc failed to win the race because of an unprecedented short circuit in his Ferrari's control electronics. But the message had clearly been sent: Leclerc's not here to play number two.

Ferrari proved wildly inconsistent in the early months of the season as it grappled with a low-drag, low-downforce car that left it incapable of regularly challenging Mercedes. But when the car was at its most competitive, Leclerc was the man mainly doing the damage.

He should have fought for pole and victory in Azerbaijan but blundered in qualifying. He had the edge in Monaco too but was stitched up by Ferrari failing to send him out for a second run in Q1. An inferior strategy arguably cost him the win late on in Austria, aligned with some aggressive Max Verstappen driving. And another reliability problem stymied Leclerc's pole bid

in Germany, before the treacherous conditions caught him (among many) out in the race.

Leclerc made some crucial errors, but he was also at the forefront of Ferrari's attack, piling the pressure on Vettel in the process – sometimes quietly, sometimes in full view.

"The way that Charles is growing is very positive," Binotto said mid-season. "He's a talent, we knew it, but I think he's really learning from mistakes, and that's more important. Even his collaboration with the team, his way of supporting the team in the development of the car, is improving race by race, day by day. If there's anything that's surprising us it is how much he's improving through the races."

Leclerc is a fiercely self-critical young man. Perhaps that is why he proved so adept at dealing with what Binotto calls "a lot of pressure on shoulders". He was placing the heaviest load on

himself. That, and the fact he had already forged a formidable mental strength from his karting days.

By the summer break, Ferrari was well out of the championship hunt. But Leclerc had made it clear he was a serious threat to beat Vettel for intra-team honours, and maybe even third in the standings. Going into the holiday, Leclerc had kickstarted a run of beating Vettel in qualifying that would extend to a phenomenal nine consecutive sessions. Only Vettel's pole in Japan stopped the rot.

Leclerc put this staggering form down to a change in approach. He clocked that his 'every lap might be my last' attitude – a legacy of spending his rookie season scrapping for Q2 and Q3 places in a Sauber – wasn't the right fit for Ferrari. Instead, Leclerc shifted his outlook: Q1 and Q2 were about bedding in and finding a rhythm. The top-10 shootout, when pole was up for grabs, ►



PICTURE: GLENN DUNBAR



was when he would unleash everything.

It worked. He shot from an average grid slot of 6.3 through the first six races to 4.0 over the next six. “What is perhaps most exciting about Leclerc is not what he is capable of now, though,” said Binotto before the summer break. “But where he goes from here.”

As it turned out, Leclerc would get stronger. Qualifying went from good to great, as Leclerc took four poles in a row from Spa to Sochi. But he started to match that with stronger race pace too. Vettel held an advantage in tyre management during the first half of the season, but defeat to Vettel in Hungary after qualifying ahead helped Leclerc finally realise the extent of his weakness in this area. A lot of homework followed. In Belgium and Italy, Leclerc defeated Lewis Hamilton – arguably the outright best in race management on the current grid – in victory fights.

It would have been a dream scenario for Ferrari if it did not come at the cost of some intra-team harmony. As Leclerc was establishing himself as ►

After the summer break Leclerc’s work on his race pace paid off, with back-to-back wins – at Spa and a dream victory at Monza (below)



THE ‘ALPHA’ BET

Ferrari and Mattia Binotto are taking the path less travelled. It’s bumpy, long and difficult to navigate because there is no real map to follow. Taking two aggressive, selfish and ruthless winners and taming them to be compliant team players is borderline uncharted territory.

Team orders are part of F1. Whether you agree with such race manipulation or not, they are part of the fabric of a team sport and serve a purpose. But Binotto is taking it one step further: trying to craft an arrangement whereby two alpha drivers compete on equal terms, but for the good of Ferrari – under its control and prepared to sacrifice their own interests for the team. “You can always decide to let them race,” Binotto recently admitted. “That would be the easier solution.”

Binotto’s task with Sebastian Vettel and Charles Leclerc is not same as Toto Wolff once had at Mercedes, or Christian Horner at Red Bull. Wolff knows the pain of the alpha bet. The scars of the Lewis Hamilton-Nico Rosberg rivalry might have healed on the surface but there’s a soreness that still runs underneath. It might even be why Hamilton is forever at pains to point out how great his relationship is with Valtteri Bottas, who will never be number two by name but is exactly that in practice. At Red Bull, Max Verstappen has moved to the next level with Daniel Ricciardo gone. Max had it easy against Pierre Gasly, and is not being problematically challenged by Alex Albon either.

Binotto sees Ferrari’s alpha bet as a gamble that can unlock a key strength as it bids to finally topple Mercedes: the strongest driver line-up among the leading teams and the compliance of those drivers to work together to obliterate the opposition, regardless of which one of them finishes first.

“What’s important for them is to be animals, because that’s the best way to be really aggressive and fast in the race weekend,” says Binotto of Vettel and Leclerc. And key for Ferrari, according to Binotto, is to manage the potentially destructive effects of that animalistic tendency. “It’s important for the team to be aware of that; try to prevent it.”

Some believe Binotto’s target to be optimistic at best, very naive at worst. If Ferrari gets it wrong the outcome will be defeat and that is something Ferrari cannot afford.





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"Ferrari must spot the way the wind is blowing. If it wants to tie Leclerc down longer-term, that will give Leclerc leverage and strengthen his position against Vettel even further"

the new golden boy of not just Ferrari, but F1 as a whole, Vettel's season unraveled further into one of mistakes and missed opportunities. And Vettel was not entirely happy with Leclerc. Especially as Leclerc's pole at Monza came at the expense of honouring an agreement to give Seb a tow on the final run. Tensions grew in Singapore, where Leclerc led from pole early on but lost the lead, and the win, to Vettel because of the strategies the team enforced upon its drivers. Things spiked in Russia, where Vettel refused to move aside after a choreographed start in which poleman Leclerc gave third-placed starter Vettel a tow and the lead to help get him ahead of Hamilton.

Leclerc had already had his wrists slapped for the Monza qualifying incident and losing his cool over the radio in Singapore, but Russia threatened a bigger divide. Binotto met with Leclerc and Vettel independently at Maranello, to establish what happened and how it could be avoided in future. All parties claimed afterwards the "misunderstanding" had been put to bed.

Through this process, Leclerc continued to learn. He appeared genuinely contrite after his public criticism of Ferrari over the radio in Singapore. In Russia, he was not shy in letting the team know he was unhappy, but didn't force it beyond insisting the matter be discussed more earnestly later. It smacked of a driver learning how to toe the line *and* play the game.

Ferrari must spot the way the wind is blowing.

If it wants to tie Leclerc down longer-term, that will give Leclerc leverage and strengthen his position against Vettel even further. Leclerc is showing no signs of letting that turn him into a Fernando Alonso-style power player, but he knows he is worthy of (at least) equal treatment.

"I'm definitely not the one who takes the decision for next year," says Leclerc. "But I have worked pretty well this season, I improved quite a lot, I understood completely the situation [at the beginning of the year] and I think I have been quick in some races. I have shown what I was capable of, and now I will leave it to Mattia and to the management to decide."

At the time of writing, a semi-resurgence from Vettel may yet prevent Leclerc ending the year as Ferrari's leading man in terms of points. Ferrari's progress has taken Leclerc to new heights, but it has also started to unlock some of the old Vettel by solving some of the car "trust" issues that have previously held him back. And if the developments of the 2019 Ferrari form the basis of 2020's car, and that suits him better out of the blocks, Vettel could delay the inevitable. But it

Leclerc has very quickly become part of the Ferrari family and the team will be anxious to tie him down to a long-term deal



would take a brave person to bet on Leclerc failing to establish himself as the *de facto* number one.

That is why Leclerc's season has provided emphatic answers to those opening questions. How does an understudy oust the star? By shining brighter. When does the Beta know it is time to replace the Alpha? When he stands taller. What does a support act need to do to become the main attraction? Become the premium option.

How did Charles Leclerc displace Sebastian Vettel at Ferrari? By doing all of the above. **F1**

PICTURES: GLENN DUNBAR; SIMON GALLOWAY; STEVEN TEE

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“First gear, wide open and crank it...” Sounds easy, right? Haas drivers **Kevin Magnussen** and **Romain Grosjean** learn, among other things, how to perform the perfect donut in a 1,500kg stock car, from NASCAR champion and Haas stable-mate **Tony ‘Smoke’ Stewart**

WORDS JAMES ROBERTS

PICTURES ANDY HONE



Neatly parked on the start/finish stripe of the Circuit of The Americas is the iconic shape of a Mustang. Under the hood is a 5.8-litre V8: pure American muscle capable of producing 725 thunderous horsepower. When it fires up...

Mechanics from Stewart-Haas Racing, breath condensing in the morning chill, huddle around the steel-framed beast. It is unseasonably cold here in Texas, but finally the numb-fingered posse persuade the Ford to rumble into life. Hot, blue smoke billows out of the pipes positioned just ahead of the right-rear fender.

The guttural roar tempts both Romain Grosjean and Kevin Magnussen out of the

relative warmth of the Haas F1 garage to inspect their sister team's racing machine. On hand to give them a guided tour is NASCAR team owner and three-time Cup series champion Tony Stewart, aka *Smoke*. Both F1 drivers are grinning from ear to ear at the prospect of wrestling the powerful but heavy Mustang around the fast sweeps of Austin's quick circuit, a day before practice begins for the United States Grand Prix.

Since the ambient temperature stubbornly refuses to budge from 6°C, Grosjean is hidden under a hood and multiple layers. “I remember in 2012 it was freezing here,” says the Frenchman. “I wanted to rent a Harley Davidson to come to the track as I thought that would be much cooler than a rental car. Then I saw the weather was lower than 10°C and thought better of it...”

Beside him, perched on the pitwall, is the Cup car's steering wheel. It's lean but wide – and delightfully sparse, unlike the multiple dials and rotary switches on an F1 car's futuristic-looking equivalent. Grosjean is surprised at the simple thing he picks up, with just one button for the pit-to-car radio. “That's your scream-at-everyone button,” laughs Stewart.

Since this is a Mustang specially modified to enable passenger rides, both F1 stars get a seat fitting alongside the driver. Grosjean climbs in through the window, *Dukes of Hazzard* style, and notices two grab-handles on either side of the seat. Romain takes hold of them and giddily says to the Stewart-Haas mechanic: “It's like Space Mountain! Whooo-hoooo!”

Magnussen is equally excited but more



Donuts weren't supposed to be on the menu when the Haas drivers sampled NASCAR for the first time, but part-time chef Grosjean decided to introduce them

measured in his enthusiasm. "It's such an iconic-looking race car," he says. "I've been seeing them on TV my whole life and I've always wanted to have a go in one. It's amazing they haven't changed the basic concept of these cars – they know what works and they've stuck with it."

Since Stewart has never driven Austin before (Sonoma and Watkins Glen are the only road courses on the Cup schedule), he's keen on some reconnaissance laps in a course car. Magnussen joins him for the ride, as does *F1 Racing*.

"Wow, it's much tighter than I expected," says Stewart as we navigate the esses on the opening sector of the lap, which are based on Silverstone's flowing Maggotts-Becketts-Chapel complex. His only experience of the layout until this morning had been drawn from lapping it in

the video game *iRacing* and watching YouTube clips. Downforce-endowed single-seaters revel in the fast direction changes but heavier, less aerodynamically complicated machinery needs to be wrestled. Later in the lap, as we tackle the twisty section at Turns 14 and 15, the NASCAR champ offers K-Mag some insight into what he might expect driving the Cup car.

"Because of the weight [1,500kg, which is twice as heavy as an F1 car] and lack of downforce you won't be able to arc wide as much into the tight corners," says Stewart. "It is a much straighter brake because the car acts more like a pendulum. When the weight goes one way, it tends to keep going."

Stewart slows as we pass some workers rolling green paint onto the asphalt on the outside of

the corner. "Am I the only one who thinks you shouldn't be painting a race track the day before the event starts?" he says quizzically. "Were those guys booked yesterday, busy painting houses, so could only do today?"

As Stewart goes round for another lap, Magnussen points out the bumps that are soon to become such a talking point (the track will now be resurfaced before next year's grand prix), and they discuss the extent to which it's possible to ride the kerbs here. The inner radii of many of these are guarded by steeper orange-coloured 'sausages' and the NASCAR man is interested to know about the damage they can cause to the underfloor of an F1 car. As the two pros swap notes, you sense their anticipation building. They can't wait to attack this 3.425-mile lap at speed. ►





Both Magnussen and Grosjean thoroughly enjoyed their NASCAR experience, and being shown the ropes by three-time NASCAR champ Tony Stewart

After the recce, it's time for Stewart to get behind the wheel of the real thing and he takes each Haas driver for a lap. On the door frame, stickers have been applied with the national flags of each driver and, simply, 'Smoke' – in honour of the champ. In the limited time allowed, there follows an interesting twist where Magnussen takes Grosjean for a spin – then they swap.

"The last thing Romain asked me, traumatised me," says Stewart. "He asked how to do a donut and I thought 'oh my God' – I didn't want F1 or the FIA getting mad at me. All I said was, 'first gear, wide open and crank it.'"

Sure enough, at the end of his run, Grosjean nails the throttle approaching the finish and spins the Mustang into a series of loops, with smoke billowing from the screaming Goodyears. Both

drivers leap out with huge grins on their faces.

"That was so much fun," smiles Grosjean. "To have Tony Stewart drive you around and teach you about one of the best NASCAR cars out there was awesome. It was a great experience and very different in one way to F1 and similar in another. For example, turning into Turn 1 you get a bit of oversteer, then understeer. But the experience was brand new, that's what was so exciting, a little bit like a new girlfriend... maybe I shouldn't say that as I've been married for seven years..."

Grosjean explains that both he and Magnussen tackled the first sector of the lap as they would in an F1 car. But then they realised Stewart was piloting the Mustang differently.

"In the esses, Tony was preparing the car for the exits, while we both drove straight to the apex

and saw whether we could make it turn. We both soon realised that wasn't efficient – we carried more speed in but it wasn't the fastest way."

Despite the Cup car's deliberate simplicity (limited electronics, basic tech) Grosjean loved the gearchange. "I thought it would be really tricky, but it was like a knife through butter."

Magnussen is equally effusive and relishes the chance to one day race a NASCAR Cup car – not just on the road courses, but on the perilous banked Superspeedways such as Daytona.

"It was such a cool experience to get in one of those iconic cars," he says. "I don't think it would be easy to jump in and be on it straight away, but I'd love the challenge. F1 is great. It's perfection, efficiency, high grip and big forces. But NASCAR is more... cool. Badass. Fun." 

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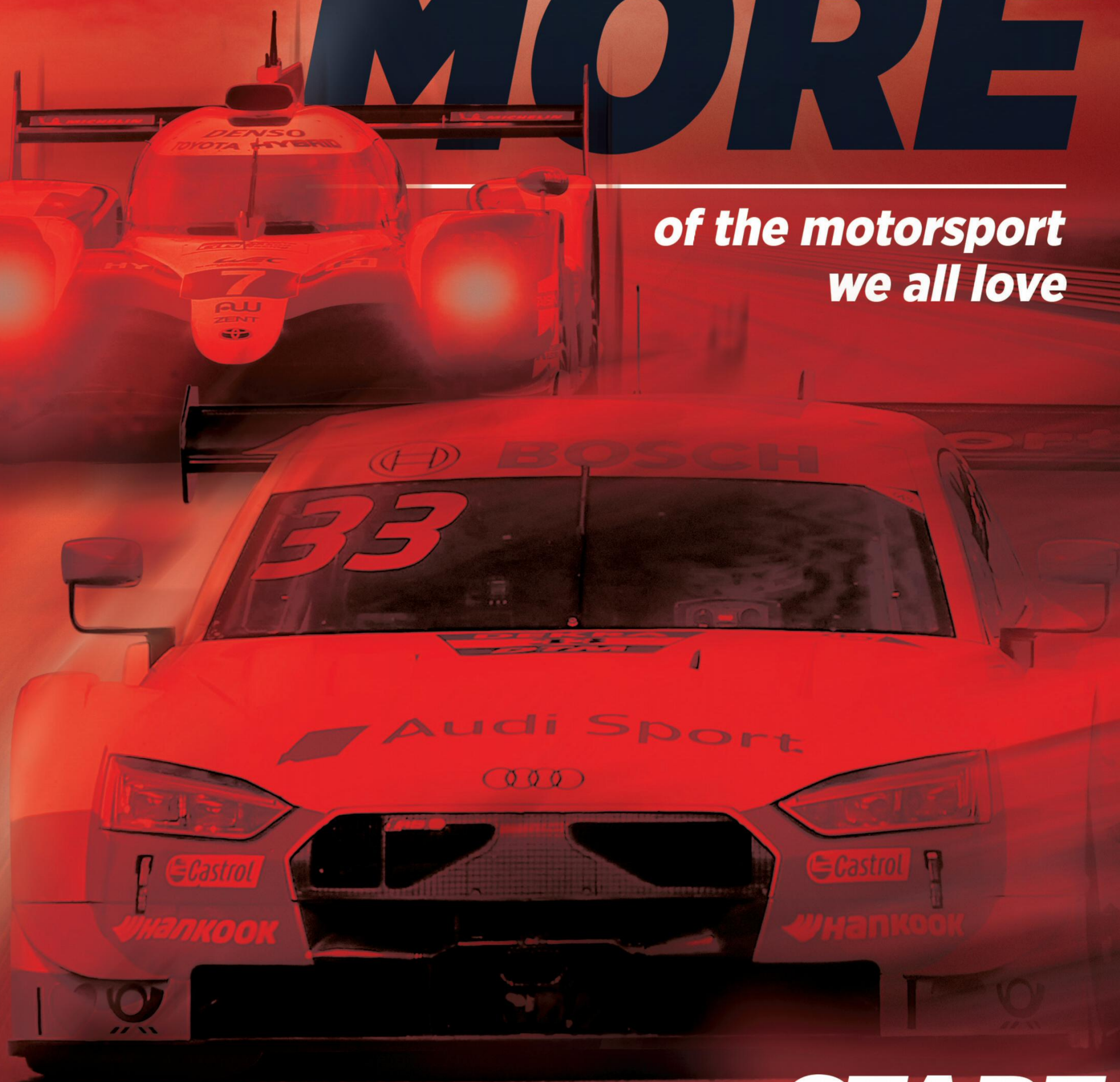
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Checo flies the flag

In Mexico City, there's overwhelming adulation for the home hero they know simply as 'Checo'. We join **Sergio Pérez** as he shows the fans some love ahead of his home grand prix

WORDS JAMES ROBERTS PICTURES GLENN DUNBAR  **motorsport**
IMAGES



According to legend, an ancient prophecy dictated that Mexico's indigenous people should build a great city where they saw an eagle perched on a cactus devouring a snake. This location – on an island in a lake situated at an altitude of 7,300 feet – was where,

700 years ago, the ancient city of Tenochtitlan was founded. Modern-day Mexico City now occupies that site. The story of the eagle and the serpent is enshrined in the centre of the country's flag, which is currently being unfurled by Sergio 'Checo' Pérez.

As he proudly holds the large Mexican *bandera*, he is surrounded by a phalanx of TV camera crews and photographers. Standing next to a Racing Point show car in the heart of Mexico City, Pérez is inundated with requests from fans for autographs and selfies. Wherever he goes, the masses gravitate towards their hero, making any movement slow-going. But the 29-year old isn't daunted. He dutifully obliges his adoring public, smiling for pictures and anointing their caps with his

signature. The build-up to the Mexican Grand Prix is unlike any other for this local racer.

It's early morning on the Wednesday before the action begins at the Autódromo Hermanos Rodríguez. The location for Pérez's first public appearance is outside the Plaza Carso shopping mall in Polanco, an upmarket district of the sprawling capital of the United Mexican States. The bustling city is already awake with office workers, street vendors and food retailers going about their business. The thin air is filled with the heady mix of tacos and exhaust fumes, accompanied by a regular soundtrack of sirens and car horns.

The greater metropolitan area of Mexico City is home more than 20 million people, making it the largest Spanish-speaking city in the world.

But like any major hub, particularly in a developing nation, the wealth of office blocks is accompanied by poverty. On main roads, small children hold out begging bowls.

Around the corner from the impoverished is an extraordinary display of wealth. As the early morning sun glints off the two office-block skyscrapers above the shopping mall, they cast shadows over an unusually sculpted silver edifice. This is one of the city's 185 museums and it houses one of the world's largest private art collections. Inside, works include Rodin sculptures and pieces from Picasso and Leonardo da Vinci. In total there are over 60,000 items from centuries of history, both from the Latin and Western worlds.

Back in January 2015, Pérez was inside this structure taking

the covers off the VJM08, Force India's challenger that season. The sponsors on the car then, and on his current Racing Point machine, have largely remained the same. Mexican telecommunications brands Claro, Infinitum, Telcel and Telmex are intrinsically linked to the owners of the buildings he's visiting today.

The Soumaya museum is named after the late wife of the man who owns the priceless collection and whose company built the Plaza Carso complex next door. He also happens to be the eighth richest man in the world, with a personal fortune of \$60 billion. While Checo is addressing the media and holding the nation's flag, the son of the wealthy businessman, one Carlos Slim Jr, is waiting for his star driver on a roof terrace above the shopping centre.

Carlos Slim's vast fortune developed in the 1990s when the Mexican government started to privatise its industries. Through

Telmex, Slim acquired the telecommunications business. Today he owns 90% of the industry and six years ago was listed by *Forbes* as the richest man in the world. His son, Carlos Jr, is a motor racing fan and has been a long-time financial supporter of Pérez, as the Telmex-liveried Formula BMW and F3 cars of his early career attest.

After Pérez finishes addressing the local media, he leaves the temporarily erected stage and enters the shopping mall, quickly followed by an entourage of photographers, fans, personal assistants and members of the Racing Point PR team. Ascending the lift, he emerges on a roof terrace where a small five-a-side football pitch has been built.

The shirts worn by Pérez and his fellow players feature the logo of a Carlos Slim-backed foundation that has been established to help children off the streets and into soccer camps, showing there is a

philanthropic side to one of the world's richest families.

However, as Checo takes to the field in a competition where Blue (*Azul*) play White (*Blanco*) there is no sign of any street children today. Half of the players have 'Slim' on the back of their shirts as various family members get to play against racing drivers (Haas tester Pietro Fittipaldi and F2 racer Tatiana Calderon are also on the field) and famous Mexican footballers, including the flamboyant former goalkeeper Jorge Campos.

Pérez doesn't spend long in action, but does mark his prowess with a neat little back heel to put the *Azul* a goal up. His time on the pitch is limited because the clock is ticking down to another round of media appearances, this time in a makeshift tent (adorned with sponsor brands) with outlets that include *F1 Racing*.

Although this is Pérez's home race, he's not from Mexico City. He was born, and still has a home, in Guadalajara, some 340 miles to

"IT'S A RACE I WAIT ALL YEAR LONG FOR AND I ACTUALLY BASE THE SUCCESS OF MY SEASON ON HOW WELL I DO AT THIS RACE"



All the cameras, professional and amateur, were focused on Pérez, who gave the crowd a few glimpses of his footballing prowess

Wherever he goes in the run-up to his home race, Pérez is always the centre of attention



the west – towards the Pacific coast. He will remain there during the Americas leg of the season, and in the winter, but in the summer months he commutes to races from either Madrid or his other home in Switzerland.

Pérez is about to turn 30 and admits it's a significant milestone in his life. His second child was born a little over a month ago, and he recently signed a contract which could arguably be the last and most significant deal of his career.

In the summer it was revealed the Mexican had signed a new three-year contract to stay with Racing Point until the end of 2022. It makes him the only driver currently racing to commit to a team through the transition to the new regulations (in 2021) – although his team-mate Lance Stroll is also likely to remain with the team since his father is one of the owners.

At the end of his current deal, Pérez will have raced with the

Silverstone-based outfit for nine seasons. It's a relationship based on mutual respect, and he has been a key figure in the team, triggering the administration process last year that ultimately ended Vijay Mallya's ownership and enabled Lawrence Stroll to take up the reins.

"I am happy about it because I can see this team has big potential," says Sergio when quizzed about committing to another three years at the outfit. "I really believe in the plans we have for the coming years. I think this year – as expected – has been a bit of a transition. It's only a little over a year [ago] that the new owners came in.

"It's a massive opportunity for me to grow together for the future and there is a big change in rules coming up, so hopefully this team can be in a place to maximise that."

After two successive years where Racing Point (then as Force India) finished fourth in the constructors' standings (in 2016 and 2017)

this year has been a struggle as the team has raced with a car built in the financial window of last year's administration. But as the new owners have started to invest in both the infrastructure and the car, progress has been obvious – particularly in the second half of the season. In addition, as revealed by *F1 Racing* earlier this year, Racing Point plans a new \$30 million state-of-the-art factory following the purchase of land around the team's current facility. Staffing levels at the organisation are now over 400 (split across two premises) and it hopes to increase recruitment significantly within the next two years.

"I've always said, if you cannot be in a Ferrari or a Mercedes, Racing Point is a fantastic place to be," Perez adds. "I've been there a long time and I've seen the windtunnel figures for next year and they look very good. It's looking like it will be a very promising year, but we have a couple of races to go this season. We are fighting for very important championship points in the constructors' [battle] – so we just have to give it our all." ►

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The final appearance of a busy day for Pérez was at a local indoor kart track. Unsurprisingly, he won comfortably...



The current regulations end next year and a new set of rules, aimed at reducing the gap between the top teams and midfield teams (such as Racing Point), will arrive in 2021 along with a cost cap – that’s why the investment is taking place back at base right now. Pérez believes that will

be the chance to make further progress with Racing Point.

“I think what the team is doing at its factory, how hard everyone is pushing and the investment that is in place, means it will be a massive opportunity. More than that, I wanted a project that motivated me. I’m 30 next year, so I have a big season ahead.

“I’m aware that it’s closer to the end [of my career] than the beginning. Years go by so quickly in this sport and we’ll see what happens after these three years, whether it’s my last or whether we carry on. It will really depend on if I’m enjoying it and am fully motivated. Now that I’ve got family to look after it’s very important that I have a project that motivates me to leave home every weekend.”

Checo has one final appearance

to make, on a small kart track housed in the bottom floor of the mall. Chaos ensues once more as he edges through the pressing bodies of the crowd and heads for the lift – accidentally becoming estranged from his Racing Point press attaché in the process. A few minutes go by in which he is lost to the team, but a local aide has cleverly taken Pérez to the kart track via an underground car parking lot to avoid detection.

When he arrives at the kart track he greets Carlos Slim Jr, who is already placing a helmet over his head to try his hand against a Formula 1 driver. There’s no contest. Despite starting last, Checo shimmies through the field to emerge a comfortable victor.

Since the Autódromo Hermanos Rodríguez returned to the F1 calendar in 2015 this weekend has always been one freighted with expectations for Pérez. For now, though, a podium finish remains

unfinished business here: he’s yet to finish higher than seventh on home ground. But, thanks to a contract extension for the event, he’ll have further opportunities to try again.

“It’s a race I wait all year long for and I actually base the success of my season on how well I do at this race,” says Pérez. “At every corner, wherever I’m on the track, I can see people cheering me on and that’s something very special. I’m delighted that the organisers have agreed to continue hosting the race for another three years. Formula 1 has grown a lot in Mexico and people enjoy it. It’s important they have someone to cheer for and have a countryman there. For me, it was very important that the Mexican Grand Prix continued.”

With that, Checo attempts to depart, but is once again cornered by well-wishers, friends and fans. As the sole representative of his country in F1, he’s the one man everyone wants to be with. **F1**

“FORMULA 1 HAS GROWN A LOT IN MEXICO AND PEOPLE ENJOY IT. IT’S IMPORTANT THEY HAVE SOMEONE TO CHEER FOR AND HAVE A COUNTRYMAN THERE”



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NIGEL ROEBUCK'S FORMULA ONE HEROES

JOSÉ FROILÁN GONZÁLES

PICTURES  **motorsport
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I MET
JOSÉ
FROILÁN
GONZÁLES
ONLY ONCE.

in 2002. The Belgian Grand Prix had been won by Michael Schumacher, and it marked the 100th victory for a Ferrari running on Shell: a happy consequence was that Shell invited to Monza the man who had scored the first.

In fact, Gonzáles's victory in the 1951 British Grand Prix was also the first for Ferrari since the inception of the world championship. Now he was back in a paddock again, and I couldn't pass up the opportunity of a chat.

In South America they love nicknames for their sporting heroes, and just as his friend Juan Manuel Fangio was *El Chueco* ('Bandy Legs'), Gonzáles was *El Cabezón*. "Means 'Big Head'," he smiled.

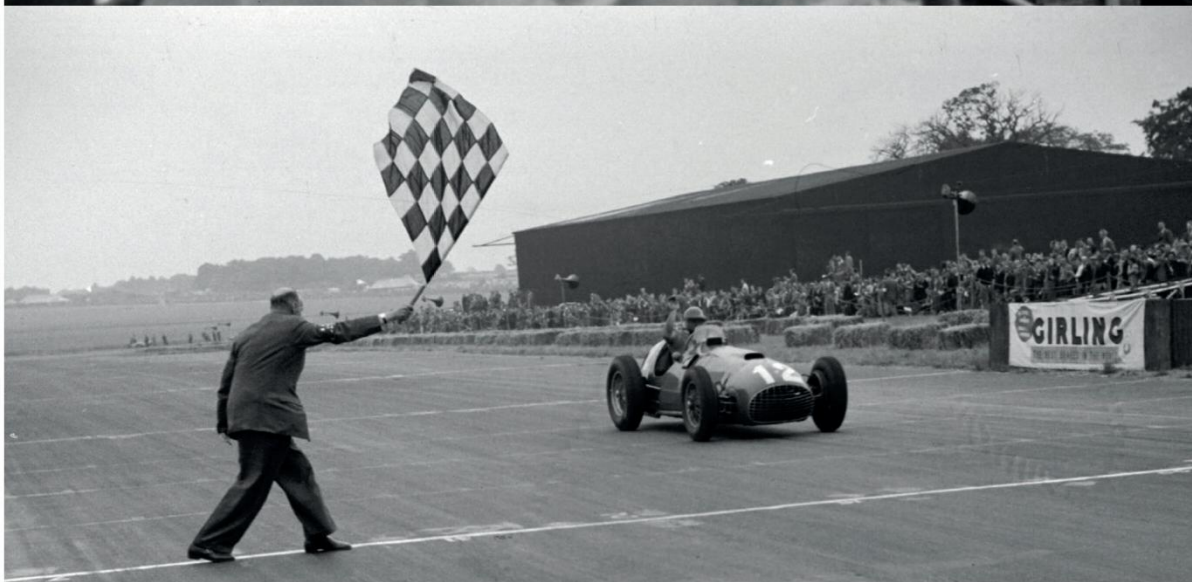
This wasn't 'big head' in the arrogant sense, but a straightforward description. In his racing days Gonzáles was indeed a burly fellow, but Stirling Moss attests that there was nothing awry with his fitness: "It was solid muscle, boy, believe me..." Now, in old age, *El Cabezón* seemed about half the size he had been.

Remembering his racing days, he was very animated, speaking quickly, laughing often, making his elevation to the top echelon of motor racing sound deceptively straightforward: "Fangio came to Europe in 1949, and the next year I followed, driving for a team from the Automobile Club of Argentina. We raced Maseratis, in national colours, but they weren't very competitive or reliable."

Occasionally Gonzáles drove a Ferrari for the same team, and back in South America the car was supercharged for use in the *Formule Libre Temporada*: early in 1951 a couple of races were run in Buenos Aires, and they proved crucial. It was here Mercedes made a brief return to racing, running the W163s which had dominated 1939, one of them for Fangio. In his Ferrari, Gonzáles flayed them in both races, and that registered in Maranello.

"When back in Europe, I went to see the *Commendatore*, and told him that if he needed me, I would be happy to drive for him," said Gonzáles. "When Serafini broke his leg in the Mille Miglia, Ferrari asked me to drive at Reims."

Gonzáles adapted readily to the 4.5-litre 375, qualifying sixth, then in the race handing over to Alberto Ascari, whose car had retired: "When I came in to refuel, the team director said, 'Ascari has to get in the car', so there wasn't much I could do – I didn't have a contract then! Alberto finished second, and the points were split."



Ferrari's first world championship victory came courtesy of Gonzáles at Silverstone in 1951 (above and below), after a titanic struggle



After Reims, Ferrari called Gonzáles. "He said, 'If you want to race Serafini's car all season, you can'. Then we made a contract – to be honest, I didn't even know what it said! I simply asked him, 'Are your drivers insured?' He said yes, so I said, 'OK, I'll sign!' I got a wage, and he also gave me some money for expenses."

Next on the agenda was Silverstone, a track new to Gonzáles, and there he stunned everyone by taking pole – by a clear second.

"Ah, Silverstone '51... there were four cars on the front row – Fangio, Farina, Ascari and myself," he recalled. "At the drivers' meeting they said anyone jumping the start would get a one-minute penalty, and we were all so nervous none of us moved – the three cars on the second row went straight past us! At the first corner

“

I was fifth, but on the second lap I passed Bonetto for the lead, and Fangio got into second place. It was a fight all the way.”

Photographs of Gonzáles that day, always apparently on opposite lock, chime with me like those of Fangio’s Maserati 250F at Rouen in 1957. “Of course there were no barriers in those days, so it was easy for spectators to see the drivers...”

At the end of 1951 Alfa Romeo withdrew, and Fangio signed for Maserati, persuading Gonzáles to join him. “I didn’t want to leave Ferrari, but Maserati paid better, and a bit more money was important in those days.”

The next two seasons were desultory if you were not a Ferrari driver, but Gonzáles supplemented his income by also driving the BRM V16 in selected races.

“BRM gave Fangio and myself £1,000 to do the testing for one year, and we divided it between us. There were many problems with that car – when you started to brake, and wanted to turn in... you went in another direction! At Albi in ’53 I finished second, but the big problem was always tyres. We could pass the Ferraris on the straight as if they were standing still, but we had to be very careful because the tyres kept coming off the rims. I remember a huge piece of tread hitting the side of my helmet. Oh, there were many stories with that car...”

For 1954 Gonzáles returned to Ferrari, winning at Silverstone (in both the British GP and International Trophy), and also taking a magnificent victory, with Maurice Trintignant, at Le Mans.

I FINISHED THE SEASON, BUT BECAUSE OF MARIMÓN’S ACCIDENT I STARTED TO HAVE PROBLEMS WITH MY WIFE, AND MY PARENTS ALSO PUT PRESSURE ON ME TO STOP

”

“Probably that was my most spectacular race – it rained for 17 of the 24 hours, and I drove something like 4000kms on my own. It was a fight with the Jaguars. In the wet the Jaguar was better than the Ferrari, but we had more power, and were ahead towards the end when there was a storm. With half an hour left, we made our last stop, for a bit of fuel – and the engine wouldn’t restart because the ignition was soaked! Finally, after seven minutes, they got it going, and we were able to win – by less than four kilometres...”

A few weeks later, though, came the tragedy that was to end Gonzáles’s racing career in Europe. In practice for the German Grand Prix his close friend, and fellow countryman, Onofre Marimón crashed his Maserati, and was killed.

“We never thought about safety then. Today, if a driver dies, it’s a big tragedy, but in those days you had about a 50% chance of surviving. At circuits like the Nürburgring there was no safety whatsoever. Onofre went off, hit the trees, and that was it. His parents were there, and mine, too. It was a nightmare...”

A grief-stricken Gonzáles drove in the race, leading for a while before handing over to Mike Hawthorn. “I finished the season, but because of Marimón’s accident I started to have problems with my wife, and my parents also put pressure on me to stop. After leaving Europe, I carried on in South America, with a Ferrari, and won two championships. The car was given to me by the *Commendatore* – I mean, I *bought* it from him, but it was cheap. A friend of mine had a Ferrari, and broke the engine, so I gave him the one from mine, but kept the car, and put a Chevrolet engine in it! In those days we used whatever was available, and actually it went pretty well.”

After one final F1 appearance, for Ferrari in the 1960 Argentine GP, Gonzáles called time on his racing career, and a long and happy retirement awaited. He died in Buenos Aires in 2013, his 91st birthday beckoning. 🇦🇷

Gonzáles at the 1954 German GP. It was the death of his friend Onofre Marimón, in practice for this race, that precipitated the effective end of his F1 career





THE DAY JENSON GOT THE FEAR (AND OTHER STORIES)

When you think of Jenson Button you think wet-weather mastery, right? In these extracts from his new book, Jenson vividly describes the day he embarrassed himself in the wet – along with a few other yarns from happier times in his career...

PORTRAITS: ROB WILSON; PICTURE: GLENN DUNBAR



“MAX VERSTAPPEN REALLY SHOWED HIS SKILLS IN THE WET. WELL, AS HE WAS DOING THAT UP FRONT, MUGGINS HERE, THE FORMER WET-RACE SPECIALIST, WAS SLIDING ALL OVER THE PLACE AT THE BACK, FEELING VERY MUCH NOT IN CONTROL OF HIS CAR, DESPERATELY TRYING AND FAILING TO FIND GRIP, AND FEELING... FEARFUL”

FEAR AND SELF-LOATHING IN SÃO PAULO

Yup. It happens. It really does. I remember my second-to-last race in 2016. Brazil, it was, the penultimate race of the season – the race before Abu Dhabi, at which I was due to retire. It was wet, which should have been perfect conditions for me, and one of those races that I could wring the neck out of and maybe do a little better than expected. I certainly hoped to beat my team-mate at the time, who was Fernando Alonso.

Turn one, it hit me. I had a bit of wobble, figuratively and literally. The circuit was treacherous with rain and I was sliding all over the place. This was the race where Max Verstappen really showed his skills in the wet. Well, as he was doing that up front, muggins here, the former wet-race specialist, was sliding all over the place at the back, feeling very much not in control of his car, desperately trying and failing to find grip, and feeling...

Fearful.

For the first time ever, I was scared.

I didn't tell anyone at the time. I've hardly told a soul since. But I suffered a loss of nerve that day. It was because I knew I was retiring, and as a result all I could think about was hurting myself.

The race was super wet, at a tough circuit that even though it had been so good to me over the years was still a dangerous one. This is not something you'd normally think about. Usually, in fact, you're not thinking in those terms at all. Don't let anything distract you when you're driving.

It's not a case of having to consciously banish distractions. They simply don't occur to you. You're a driving machine and that's it. But here I was, thinking. I was thinking, "There are two races to go. I don't want to hurt myself. Not when I've achieved so much, come so far."

I was scaring myself, that was the problem. My head wasn't in the right place, and I think that's probably the most dangerous scenario. You tense up, and when you tense up like that it's so easy for the car to snap. A bit of oversteer, a bit of understeer, it just goes. You might be going through a corner, hit a river, and if you snatch at the steering you lose grip and it's bang, gone, you're in the wall at 150mph. I didn't want to finish my career like that, or possibly not walk away from something. Ask me my scariest moment in a race car and that was it.

And here's the kicker. Because it was a wet race I was finding it tough to drive the car, which was exacerbating the psychological issue, which made it even harder to drive the car, and because of that I couldn't get heat in the tyres, and because of that it made the driving more difficult, which in turn made the psychological issue worse.

As soon as you get tyre temperature in the wet, things get easier, you can start pushing the car and taking risks, but I couldn't even get to that stage. It's not uncommon. I've heard it said by other drivers that the fear kicks in once you decide to retire. For that reason I think it would be better if you



Brazil 2016 was an eye-opener for Jenson, who was scared for the first time in an F1 car

PICTURE: MARK SUTTON

Jenson's new book is more of an insight into what makes him tick, rather than a chronicle of his racing career





decided, announced and did it all in one go, but of course it can never work like that for many reasons.

Of those who finished, I came last. Fernando, miles in front, was over a second a lap faster than me. I was embarrassed by my performance; I was gutted. Coming in and seeing the team was the most embarrassing to me. Crashing: shit happens, you say sorry. But to put in such a lacklustre performance was just mortifying.

I didn't tell them that I was scared. I just said I didn't turn the tyres on, which I couldn't, because I didn't drive fast enough to turn the tyres on. I don't mind saying that I don't think anyone's better than me in those conditions, but that day, nobody was worse than me. All I could think was that a year earlier I would have destroyed that race.

MY BOAT'S NOT BIGGER THAN YOURS

I bought a boat I couldn't afford. I earned half a million dollars a year and it cost \$800,000, so I was immediately in debt. Yachts, you probably don't need me to tell you, are expensive to buy and they're expensive to run. Mine was moored in Monaco harbour, which isn't cheap, plus you need to employ a captain to live on it, keep everything – yes – shipshape, and tell you when you need a new engine, which I did at one point. Again: not cheap. This guy would never see me. Three weeks a year I was on that boat, at most, and I ended up chartering it out because I just couldn't afford to run it, what with paying for him, the repairs, harbour fees and, oh God, fuel – fuel is unbelievably expensive. I remember when I picked up my first boat, Little Missy, in 2001, I invited my mates from Frome over for a holiday and one day they said, "Right, JB, today we're going to pay for the fuel for the boat."

"No, it's okay, it's fine, it's fine."

"No, no, we're going to sort it out."

"Guys, seriously, you don't have to..."

"Come on, come on. How much is it going to be?"

"Two and a half grand to fill it up."

"Okay," they said, "How about we, sort of, pay a bit towards it? Like, a hundred pounds..."

In all, the yacht was costing me hundreds of thousands of dollars a year. And I ended up buying two.

Little Missy was 20 metres. I got rid of that one and bought a new one, Ichiban, in 2014. That one cost \$5,000–\$6,000 to fill up with fuel and was 28 metres long, which isn't all that big when you consider that Jacques Villeneuve's was 44 metres.

Someone will always have a bigger boat, that's what they say. It doesn't matter how much money you've got and how much money you spend on a yacht, someone will always have a bigger one. They also say that the best boat is your mate's boat, and that's just as true.

“SO INSTEAD OF MODULATING THE PEDALS, WHICH IS WHAT I’D DO, LEWIS MODULATES THE STEERING; HE’S CONTROLLING THE CAR THROUGH HIS HANDS RATHER THAN HIS FEET. HONESTLY. IT’S AMAZING. YOU’D OPEN OUR DATA AND THINK IT’S CRAZY HOW WE’RE SO DIFFERENT AND YET WE WOULD DO PRETTY MUCH THE SAME LAP TIME”



PICTURE: MARK SUTTON

Jenson’s first yacht, Little Missy, moored in Monaco. As he quickly found out, yachts are not only expensive to buy but they’re also expensive to run...

As for planes, well, back in the day, people were spending a fortune on them. It was the proper glitzy, glamorous lifestyle of an F1 playboy: planes, cars and boats. Rubens Barrichello had one, Michael Schumacher, Eddie Irvine. Lewis had one for years but sold it. Why? Surprise, surprise, it turns out that you’re throwing money away when you own a plane. Worse even than boats.

Just for starters, if you’re going to buy a new one and you want it capable of making transatlantic flights – which of course you would if you’re a Formula 1 driver – it’s going to cost you \$20 million-plus, and it’ll be no comfier than flying first class.

Then you need a crew. Then you have airport fees, and of course the dreaded aviation fuel. Plus, if you own a plane you’re going to have to service it, and when you’re servicing it for those three or four weeks, you’re going to have to rent another plane.

All of which means that if you have to fly private then it’s better to rent, and what a lot of drivers ended up doing was clubbing together to rent a

private jet so it cost us less. We’d fly to Russia on a 14-seater jet and share the cost, which would be about \$4,000 each. It’s a pretty good way to travel, because you’re not queuing up, and if you take a nap you haven’t got people gawping at you while you’re asleep, which has always struck me as a bit unsettling when I’m flying. Like, what if I start drooling, or do one of those weird sleep-spasms when I’m drifting off?

DRIVING WITH YOUR FEET

I need a car that has a good, strong rear stability to banish that pesky oversteer. That’s the ideal – a car that gives good front grip so the more you turn the wheel, the more front grip you get – the kind of grip that pulls you around the corner as though the car is on rails.

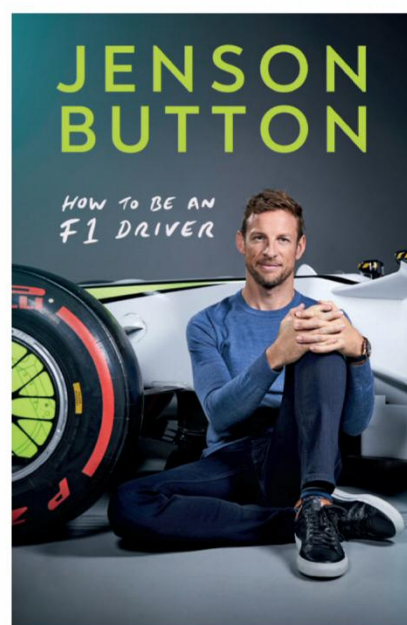
It’s a balanced car, that’s what it’s all about. When I brake, I brake hard and then come off. But I’m modulating a little bit, balancing the car as I come off the brake pedal, and when I go on the throttle, I’m modulating again, so I’m playing with the steering, I’m trying to be as smooth as I can with the steering wheel. But when I’m throttling, I’m gradually finding the grip, so I get on the power, feel just a little bit of wheel spin, hold it there until the wheel spin stops and then I’ll come on with more power, more power, more power.

All my movements are through my pedals, if you like. So I brake and then I modulate that and then throttle, I’m modulating all the way through the corner.

Lewis, on the other hand, is the opposite. Lewis arrives at a corner, bang on the brake, and whether he’s braked in the right place or not, he just immediately comes off the brake, no modulation. And the throttle – he gets to the apex or the exit, and it’s like his legs are just bang, bang, bang, and it shouldn’t work – it’s a style of driving that’s completely opposite to mine. But it works because he does everything through the steering wheel,

so instead of modulating these pedals, which is what I’d do, he’s modulating the steering; he’s accelerating and controlling the car through his hands rather than his feet.

Honestly, it’s amazing. You’d open our data and think it’s crazy how we’re so different and yet we would do pretty much the same lap time.



How to be an F1 driver by Jenson Button, published by Bonnier Books is now on sale for £20. See www.bonnierbooks.co.uk for more information





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BRM P25

The car that turned BRM from the laughing stock of Formula 1 into a grand prix winner – eventually...



British Racing Motors had been founded with the laudable intention of flying the flag at the top level of international motor racing. But this postwar British engineering showcase spent much of its first decade mired in humiliation.

BRM's first attempt at a Formula 1 car, the Type 15, had been a classic example of engineering over-reach: its complex and temperamental supercharged 1.5-litre V16 engine was just one of its many problems. Serial late withdrawals from races began to attract scathing editorials in the press, and BRM was at least partially culpable for world championship grands prix being run for F2 entries only between 1952 and 1953 as race promoters across Europe despaired of seeing any worthy opposition to Ferrari.

New F1 rules made the Type 15 obsolete before it could be developed into a reliably competitive car, but this did not persuade BRM's senior engineers to temper all of their ambitions when they began to draw its successor. The P25 would have all the makings of a fast F1 car but it would take years of development to debug it – by which time the rear-engined revolution would make it irrelevant as well as obsolete.

The Type 15 project was financially ruinous and Sir Alfred Owen, the industrialist who was one of the team's key investors, stepped in to rescue BRM in October 1952. That enabled development of the Type 15 to proceed so it could race in sundry Formula Libre events, though BRM would have been better served by focusing on the new 2.5-litre unsupercharged F1 formula coming in 1954. It continued to live up to its reputation as a shambles, failing to finish the P25 in time for that season and having to field a Maserati 250F instead.

In its first incarnation the P25 was innovative in many ways, using an unusual form of semi-monocoque chassis construction in which the bodywork acted as a partially stressed element, augmenting the steel tubing beneath. It featured disc brakes all round, with a single one at the back mounted to a four-speed gearbox on the transaxle.

Co-founder and chief engineer Peter Berthon did take the lessons of the Type 15 on board in the engine bay, selecting a concept proposed by consultant engineer Stuart Tresilian: a four-cylinder twin-camshaft with an 'oversquare' design in which the bore diameter was wider than the stroke length. This theoretically yields greater torque and enables larger valve widths, particularly in this case since Berthon decided against Tresilian's initial four-valve-per-cylinder concept.

Beyond that, Berthon wilfully disregarded a key flaw of the Type 15 by equipping the P25 with, in effect, the same suspension concept: double wishbones at the front with oleopneumatic struts taking responsibility for both springing and damping, with a De Dion axle at the rear hanging from a transverse leaf spring.

The P25 wasn't ready to race until September 1955, 19 months after the 2.5-litre formula came into effect. Even then it missed its first scheduled event, a non-championship race at Aintree, when Peter Collins crashed after a broken seal coated the rear wheels in oil.

BRM signed Mike Hawthorn and Tony Brooks for 1956 but the non-championship races had revealed serious flaws with the P25, forcing the team to run its 250F in the opening round in Argentina. Vibrations from the engine played havoc with the oil system and the large valves were prone to damage, which led BRM to withdraw from Monaco, where the P25 was supposed to make its championship debut. Brooks recorded in his diary the cars had the wrong gear ratios for the course and insufficient steering lock to get around the hairpins, anyway.

At Silverstone for the British Grand Prix – where Raymond Mays had teased spectators with a demo of the Type 15 back at the first world championship round in 1950 – BRM went all-in with a third entry for Ron Flockhart. All the P25s had reinforced valves and the race started well as Hawthorn and Brooks roared past Stirling Moss's Maserati and Juan Manuel Fangio's Ferrari to run 1-2. But then disaster: Flockhart stopped when his engine's timing gear ate itself, Brooks broke

**NOW
THAT
WAS
A
CAR**
No. 83



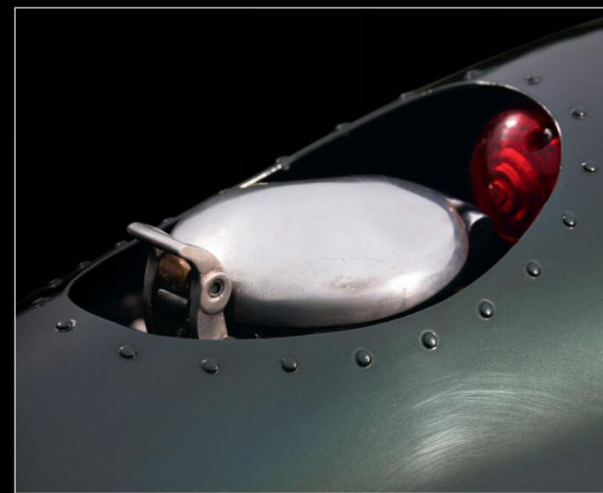
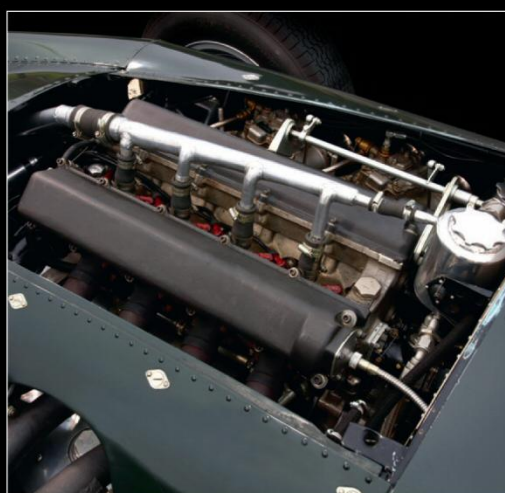
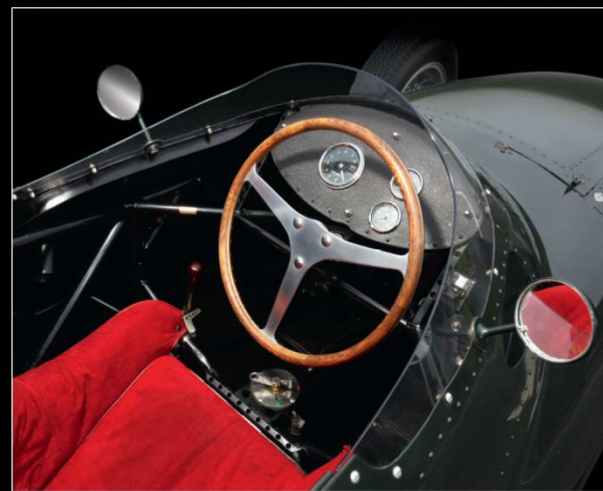
“BRM SUFFERED FURTHER HUMILIATION WHEN NO TOP-RANK DRIVER WAS WILLING TO SIT IN A P25 FOR THE BRITISH GRAND PRIX”

his jaw in a severe crash when his throttle stuck open, and Hawthorn’s gearbox failed. Owen declared that the P25 shouldn’t be raced again until it could complete a distance without breaking down.

Hawthorn – who said the car had tripled his laundry bills – and Brooks quit at the end of the season. Despite a strengthened chassis and longer wheelbase for 1957, further issues with the handling and brakes manifested themselves in the form of terrifying moments for Flockhart and new recruit Roy Salvadori. By Monaco, Colin Chapman had been drafted in to consult and one of his first proposals was to junk the suspension arrangement in favour of coil-over shock absorbers. Salvadori had already decided to quit and,

when Flockhart was injured in a shunt at Rouen, BRM suffered further humiliation when no top-rank driver was willing to sit in a P25 for the British Grand Prix.

Although the engine was redesigned for 1958 with a five-bearing crankshaft to smooth out the vibrations, F1’s shift from alcohol-based fuels to Avgas brought cooling problems which masked improvements elsewhere – and which weren’t properly understood or fixed until 1959. A new chassis, built up around a spaceframe with curved undertrays acting as partially stressed elements (enabling the bodywork, previously riveted to the frame, to be removed more easily), plus revisions to the



RACE RECORD

Starts 54
Wins 1
Poles 1
Fastest laps 1
Podiums 3
Points 36

SPECIFICATION

Chassis Steel ladder/spaceframe (1958-onwards) semi-monocoque
Suspension Double wishbones, oleopneumatic struts/coil springs and telescopic dampers (f), De Dion axle with transverse leaf spring/coil springs and telescopic dampers (r)
Engine BRM 25 inline 4
Engine capacity 2491cc
Power 275bhp@8,000 rpm
Gearbox Four-speed manual
Tyres Dunlop
Weight 690kg
Notable drivers Peter Collins (non-championship), Mike Hawthorn, Tony Brooks, Ron Flockhart, Roy Salvadori, Jean Behra, Harry Schell, Stirling Moss, Joakim Bonnier, Hans Herrmann, Graham Hill, Maurice Trintignant



front suspension geometry, transformed the handling. Cooling-related unreliability blighted 1958 but the following season the P25 came good, enabling Joakim Bonnier to qualify on pole for the Dutch GP and win, having been among the frontrunners throughout. It was BRM’s first world championship victory.

Elsewhere the rear brake continued to be problematic, and the more nimble and better-balanced rear-engined Cooper was in the ascendant in the hands of Jack Brabham. Eventually BRM broke up all bar one of the P25s to cobble together a mid-engined car, designated the P48. The surviving example – Bonnier’s Dutch GP winner, chassis 258 – is pictured here. **F1**



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{ YOU ASK THE QUESTIONS }

GEORGE RUSSELL

George Russell hasn't yet enjoyed the success of his fellow F2 graduates in F1, but is making his own impact with Williams. In answering your questions he explains why driving at the back is harder than it looks, and why he enjoys hanging out with Frank Williams and Robert Kubica

WORDS BEN ANDERSON

PICTURES
GLENN DUNBAR



motorsport
IMAGES

With Williams being a shadow of its once glorious self in Formula 1 right now, it would be easy to overlook the quietly superb performances of George Russell, who has adapted quite brilliantly to the unique demands of grand prix racing during his rookie season at motorsport's highest level.

Racing at the back of the grid means Russell avoids the glare of the spotlight that shines so intently on his 2018 Formula 2 rivals Lando Norris and Alex Albon (who he beat last year, by the way). But spend time in George's company and it quickly becomes apparent that he's possessed of a proper champion's focus, intent and self-belief.

Williams is going through probably the toughest period in the team's history, which doesn't appear naturally the best environment for a young driver to hone their craft correctly. But spending time stuck at the back of the grid driving a difficult car and not scoring points needn't be the waste of time it might seem. It did Fernando Alonso no harm at all, and it becomes clear as George spends time carefully and thoughtfully answering your questions that there's more to being at the back in Formula 1 than meets the eye...

What were your expectations for this season, and have they been met?

Stuart Wallace, UK

From a personal level, I think my expectations have been met. I've had good times and tough times. The tough moments and the times I haven't performed to what I believe I can, I've learnt so much

to help me in the latter events. Other than being higher up the grid, from my side I wouldn't change anything at all.

How do you prepare for a grand prix knowing you don't have a competitive car? How different is it to last year [when you were winning F2]?

Sergio Flores, Mexico

I prepare as if I'm going out to win the race, to be honest. I don't prepare any differently. I'm mega-passionate about it, and my goal every week is to absolutely maximise what I've got. It is very different to last year. It doesn't matter what category you're racing, if you're

fighting for a win there's always a buzz, and additional pressure when leading a race, but at the moment I'm just driving flat out and that's something I'm enjoying. In our situation we have to drive flat out, because we don't have as much downforce as the other teams. To keep the tyres in the window we've got to do quali laps every lap. That's very intense, whereas if you've got a faster car you're just driving within the limits to not overdo the tyres.

What was your first driving experience?

Chris Gaiter, USA

Well, I'll class this as a driving experience: I have an older brother who used to race karts, and when I was a young kid I had a pedal tractor, which I used to drive around the paddocks of the kart tracks. It had a water tanker on the back, and I used to collect litres of water for the teams to fill up their radiators with. It was my job every morning to pedal my tractor to the nearest tap. I must have been only three or four years old. I was the water boy!

“
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FLAT OUT
”

How much of an inspiration was Lewis Hamilton to you, and did your mother approve of your career choice?

Angie Brabyn, UK

Two very different questions in one. Growing up, Lewis Hamilton wasn't a huge inspiration to me, if I'm being honest. He's a guy I looked up to, but I didn't aspire to be like Lewis...

F1R: Was there someone you

did aspire to be like?

GR: No, there's never been a standout person. I've understood since I've been a young kid that I need to excel in many areas to become an F1 driver or world champion. I've wanted to take a bit from everyone: probably Lewis's speed, Jenson's character – how he was with the media, how everyone liked him and [considered him] a team player. Fernando's skill, Montoya's overtaking skills or racecraft. Bits and pieces from everyone.

And yes, my mother did approve of my career choice. When I first started karting my brother was still racing, and there were a number of times when my dad would be off with my brother and my mum would take me to the track, so she would be my mechanic, push my kart down to the grid. Even when I won the British championships in 2009 and 2010, my mum, after every session, would be writing all the set-ups down in her little notebook. She kept track of everything. She's properly into it.

What's the biggest thing you took out of your year at Mercedes?
Owen Hope, UK

Probably the biggest thing is seeing how much hard work Lewis puts into it. He's sort of perceived to be this guy who just rocks up to the track, gets in the car and goes fastest. But he puts so much effort in – one of the most hardworking drivers I've ever come across.
F1R: There's a misconception of it purely being natural talent isn't there...
GR: Absolutely, and I've noticed there are so many small details he does on-track that all add up to why he's so quick, and how he goes about really trying to get the most from the car, the tyres and everything. That really struck me – he doesn't just rely on his talent.

What is your favourite corner?
Michael Madden, USA

Probably an unexpected one, but a corner I really love is Turn 1 and 2 at Paul Ricard. Both corners are cambered, so you go through the left and there's a dip and then you go over the crest and into the right and when you compress on the exit you get more grip. That's a really great corner.

Is Robert Kubica a funny guy?
Pawel Rozwadowski, Poland

[Laughs]. Robert actually is a very funny guy. I don't know if unexpectedly or not! I've had a lot of fun with Robert this year. He



Russell has enjoyed working with Williams team-mate Robert Kubica this season

cracks me up on a daily basis when we're together.
F1R: Is he a practical joker?
GR: Not a practical joker, no. Just some of his stories and expressions. We have a good time together – especially recently, our relationship has really grown. We've done things on a personal level together. We went to the zoo in Singapore. And we went to an ice hockey match in Russia, just me, him, his trainer, my trainer.
F1R: Any examples of his weird expressions you can share?
GR: No. Yes, but... no.

How does it feel to be outdoing Robert Kubica this year?
Matthew Mills, Australia

[Long pause] Regardless of who your team-mate is, that is the number one comparison for any driver. That is not necessarily my goal, my goal is to help improve the team and be further up the grid. I'd prefer to be fighting in the points and having a tough time internally than being at the back. People think it's easy, [but] whenever there's a delta between team-mates they [the team] always look at the one who is performing worse, but they don't necessarily talk about the guy who's doing a good job. For example, with Max [Verstappen] and [Pierre] Gasly more people spoke about Gasly doing bad than they did about Max doing good, and it's probably a bit of both. ▶





What's the worst piece of advice you've ever received, who was it from and why was it so bad?

Victoria Palmer, UK

GR: Yeah, definitely. Back in my first year of F3 [in 2015], I used to do *so much* preparation – I used to go through all the data of the previous years, write comments corner by corner on what the guy who was quick did: his braking style, his throttle trace – anything I could pick up. I'd go through all the videos. And I thought that was great. But when I got to the race track, when I was driving, I used to be thinking [about] how to drive rather than just driving quick.

For the following year, I went in with the philosophy of just going to a track and driving as quick as possible – keep it simple. I know what I need to do: brake late, carry speed, throttle as early as possible, if I've got understeer do this, if I've got oversteer do that, and let it flow. That's really worked for me since. I put a lot of work and effort in with the engineers, with the set-up, with the electronic tools – the differential, all the brake migration, the engine braking – I put so much work in trying to maximise that, but from a driving perspective I just let it flow.

Maybe it's not *advice* but there's a saying 'if in doubt go flat out' – I think that's just... impractical and unrealistic.

F1R: Anything you were advised to do that you later thought 'I shouldn't have done that...'?

“ I SEE FRANK EVERY DAY I GO INTO THE FACTORY. HE'S SUCH AN AMAZING PERSONALITY AND AN INCREDIBLY FUNNY GUY ”

How much interaction with Frank Williams do you have during the year? He's a wonderful personality and we are curious to know how he interacts with his drivers.

Lou Caspary, USA

A lot, actually. I see Frank every day I go into the factory. I often go for a chat in his office. Quite often we just talk on a personal level, less so about racing, actually. He's such an amazing personality and an incredibly funny guy, which I never knew. Again, talking about things I can't repeat on tape...

Accept that you and Lando Norris will one day drive for the same team, who will be better and why?

Marcel Nicke, Germany

I never like to be cocky or arrogant, but I absolutely believe in myself. So, there's your answer. I'd like to know what he says. He probably won't be as confident.



Who is your biggest F1 hero?

Jonathan Price, UK

I don't necessarily have one, but if I had to say a name it would be Michael Schumacher. Schumacher was a guy I watched

growing up, and I used to have a Schumacher suit that I wore when I was quad biking.

Which supercar would you own in an ideal world?

Simon Baker, UK

I'm actually a bit of a McLaren fan.

F1R: The Senna?

GR: No, definitely not the Senna – that's too in-your-face for me.

F1R: You're a more subtle kind of guy?

GR: I don't think owning a McLaren would be subtle...

If you could drive any F1 car, either historic or up-to-date, which would it be and why?

Alison Jones, UK

I'd like to drive a 1992 Mansell car, that would be really cool. And also maybe a 2004 car – probably a Schumacher car.

F1R: Well, the Williams surely can be taken care of, just ask the

Heritage team to let you out. Instead of Karun Chandhok doing it all the time – muscle in!

GR: I looked on my Twitter one day and found out they were in bloody Jerez – with that car! I was ready to fly out that day, but it didn't happen. I was not happy at all...

Which superpower would you like to have?

Stevo Eisele, Slovakia

Probably just being able to get to places at the click of my fingers. Teleportation, yes. With the amount we travel, it would probably be very handy... **F1**

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THE
BRAWN
LEGACY



Ten years ago a skeleton crew of ex-Honda people completed a remarkable turnaround as Jenson Button claimed the world championship just months after his team was rescued from oblivion. That team went on to become Mercedes, and the rest is history. Speaking to *F1 Racing* ahead of the launch of his book, *Survive. Drive. Win.*, Brawn GP CEO **Nick Fry** explains how the outfit survived against the odds

WORDS STUART COOLING PICTURES  **motorsport**
IMAGES

HONDA WANTED TO SHUT DOWN THE TEAM IMMEDIATELY

In late 2008, what had been known as the “credit crunch” went viral and became a worldwide crisis. Banks wilted under the enormity of bad debts, exposed after years of concealment in obscure financial mechanisms.

In response they cut back on lending, and among the consequences was a collapse in the new-car market. Honda decided to axe its struggling F1 programme right away, and summoned Fry and team principal Ross Brawn to a meeting in a Heathrow hotel one November morning.

Nick Fry: “We knew it was going to be a difficult meeting. We’d done enough homework to cut the budget by about a third. This poor gentleman, Mr Oshima, our boss, was pretty much in tears as he told us that was it – they were off. The situation on the business side was that bad they couldn’t spend any money on F1. ‘Please go to Brackley and tell them all to go home and turn off the lights on the way out’ was the message.



Jenson Button addresses Honda employees in December 2008 to reassure them that the team will race in 2009 and that he will be funding his own travel to cut costs

“It was me who said, ‘You can’t do that – you’ve got to give us a chance.’ Honda is a big, honourable company and after some discussion we were given a month. Running up to Christmas with the world’s worst financial crisis didn’t give us a lot of time and, er, we met some dodgy characters...”

VIJAY MALLYA WAS A POTENTIAL BUYER



Predictably, the sale of distressed assets teased some interesting individuals out of the woodwork. Achilleas Kallakis, supposedly a billionaire shipping magnate but actually the son of a failed Ealing nightclub owner, arrived at the Brackley factory in a helicopter too large to land on the helipad. Kallakis, real name Stephan Kollakis, was eventually jailed for seven years for perpetrating a £750 million mortgage fraud.

Vijay Mallya actually proved to be one of the least peculiar suitors. Mallya had only recently bought and renamed Force India, but was attracted to Honda by its superior facilities in comparison with his acquisition, which had been run on a shoestring by several previous owners. Ross Brawn rapidly decided he would be unable to work with Mallya, and Fry also wrote the Indian magnate off as a less-than-serious buyer. The pivotal moment came when Mallya arrived five hours late for a dinner appointment at Stowe Castle with Fry and the finance director.

Nick Fry: “It was a long wait but we did get a very good curry at the end of it. Vijay, frankly, was one of the more honourable people who expressed an interest, which says a lot. It really was a situation where we had to kiss a lot of frogs. There were a lot of complete time-wasters, and around Christmas that year there was a lot of time spent by me and Nigel Kerr, our finance director, meeting people who were just having a look, or money laundering, or even worse. ▶

Really we were nowhere close to resolving the issue of the future of the team until well into 2009, when we were starting to do well.

“We got Kroll, the detective agency, to look at some of the prospective purchasers. The guy [Kallakis] – it took a lot of uncovering but we found he’d been selling false British hereditary titles to Americans who didn’t know better.

“We had incredible ups and downs almost on a daily basis. We had days when we thought we’d cracked it and other days where we thought that was it. We just had to plough on.”

THEY WEREN'T THAT CONFIDENT ABOUT THE CAR



Legend has it that the team knew it had a great car ready to run. The truth is somewhat different. Although Honda had poured unprecedented resources into developing the 2009 car, it also had form in producing stinkers.

Nick Fry: “We’d jacked in the 2008 season when it was clear the car wasn’t good enough. Once we’d got Ross on board the focus was on the regulation changes for 2009 – we knew if we started on that earlier than others it might give us a bit of an advantage. Internally the objective was to be in the top three. When Honda pulled out and decided it didn’t want to sell us the engine we definitely reduced that target – we thought that even if we could get into the top half we’d be doing well. We genuinely didn’t know how quick the car was.

“The computer simulations, frankly, we didn’t believe. There was some work done that indicated we’d be a second and a half quicker than the others at the start of testing, but we didn’t participate in the start of testing. We could only look at our aero numbers and make a guesstimate. And the numbers were disregarded as ridiculous because they were so good. Then, when we got to Barcelona, we were even better than the numbers showed.”





“WE GENUINELY DIDN'T KNOW HOW QUICK THE CAR WAS. THE COMPUTER SIMULATIONS, FRANKLY, WE DIDN'T BELIEVE”

“MAX THINKS YOU'RE A @***...”



Post-Kallakis, Fry and Brawn became increasingly despondent of finding a genuine buyer, especially if it was going to cost £10,000 a pop for Kroll to “look under every rock”. When a putative acquisition by Richard Branson’s Virgin empire fell down, a management buy-out became the only option. It was a credible way out for Honda, which otherwise would be faced with a substantial bill for making 700 people redundant. The deal was for £1 plus liabilities, and Honda would provide a parachute payment to enable the team to operate – just – for one season.

As is well documented, the car Honda spent the entirety of 2008 designing for 2009’s new rules package was excellent, even when compromised by having a Mercedes engine shoehorned in. Jenson Button won the season-opening GP, attracting fresh interest from other possible buyers, including Bernie Ecclestone. Fry was summoned to a meeting at Formula One Management’s Princes Gate HQ, where Bernie’s opening gambit was rather pithy: “Hello, Nick. Max [Mosley] thinks you’re a c**t.”

Nick Fry: “Honda’s view was it would be better to shut it down than sell to someone inappropriate and have grief thereafter. Ross and I were seen as the best of a bad lot. So we bought it for a pound. And the first job, sadly, was to cut back from 700 people to 400. We were running on a shoestring.

“This was a time when the teams were trying to negotiate a new commercial contract. Ferrari were invariably on Bernie’s side because he gave them the most money. One of the mechanisms Bernie tried [to influence voting in his favour] was to offer to buy the team from us. We had an entertaining conversation – in typical Bernie fashion he wanted the team but didn’t want to pay much for it. So I was dispatched from his office and I think his words were ‘If you effing well think you can do it yourself, then go and do that...’ ▶

STAFF SAVED FROM REDUNDANCY ARE STILL PIVOTAL TO MERCEDES TODAY



Brawn's circumstances meant the Brackley workforce had to be cut drastically. Fry and Brawn combed the payroll, weighing the case for every member of staff. Certain people they chose to keep are now vital parts of today's winning Mercedes machine: Jenson Button's race engineer Andrew Shovlin, team manager Ron Meadows, and strategist James Vowles.

Nick Fry: "You have to look at what you've left behind, and what we left was a great team. It continues to be that. We hired some fantastic people – and, to be fair to Adrian Reynard and

Craig Pollock [architects of British American Racing, Honda's previous incarnation], there were people like Ron Meadows and Andrew Shovlin who were there before I joined. Those people have now worked together for over 20 years in some cases. It's a very tightly knit team. They can work together almost without speaking because each knows how the other will react."

MANCHESTER UNITED VS MERCEDES



Besides Mercedes-Benz, Bernie Ecclestone and Air Asia magnate Tony Fernandes, other parties to express an interest in buying the now-

race-winning team included the Glazer family, owners of Manchester United. In Fry's book he describes how close the Brawn stakeholders came to choosing the US sports magnates over a car manufacturer.

Nick Fry: "They [the Glazers] had the very good idea of having Ross Brawn as an icon of our industry alongside Sir Alex Ferguson [the Manchester United manager] in the same portfolio.

"There would have been potential economies in getting sponsorship. Manchester United are a machine on the commercial side and that would have worked nicely for two entities. So there was a lot of logic to it.

"From the conversations we had with Ed Woodward, who's now the chairman of Manchester United and is a fantastically bright character, from a personal point of view it would have been great fun. But the problem was that Mercedes were a better bet in terms of having a proven F1 engine – a football team doesn't have one of those.

"We did the sensible thing, which was to sell the team to Mercedes-Benz. There was a temptation to carry on because we'd been very successful, we'd beaten the odds, but the reality is that two private individuals can't run an F1 team. You've seen since then how great teams such as Williams and McLaren have fallen by the wayside. Unless you've got the backing of a big entity you've got no chance."



THERE WAS A CONTINGENCY PLAN TO CLOSE DOWN AT THE END OF 2009



Even as negotiations with Mercedes proceeded, there was no guarantee the sale would be completed – or even that there would be enough budget to compete as Brawn the following season. The budget had gone from

£200m a year to £2m. Money was so tight that any expenditure over £75 had to be signed off by Brawn, Fry or Nigel Kerr.

Nick Fry: “We were eking out the money as best we could. How far could we get into 2010 before we went belly-up? The finances were done in a very simplistic way: the going-in position [with the management buy-out] was that we would pay off everybody at the end of the 2009 season on the same terms Honda would have given if it shut down at the end of 2008. We had a moral obligation. So we put that money aside, as it were, to give people if the worst came to the worst.

“And what was left was the budget. If I remember rightly, up until the summer shutdown we spent £600,000 on development of the car. Red Bull were rumoured to be spending one or two million per race. We knew they were going to catch up because they were throwing so much money at it. After the summer shutdown we turned the tap on briefly – the others were catching up fast and Jenson [Button] was having a wobble – but it was a matter of spending the minimum we could to get across the line. We didn’t know what was on the other side.”

“WHEN THE BUDGET CUTS DIDN’T COME INTO ACTION WE WERE LEFT HIGH AND DRY WITH A CAR THAT HAD SUFFERED PRETTY MUCH NO DEVELOPMENT”



.....

The euphoria of 2009’s unheralded championship success (far left and left) gave way to some fallow years. Mercedes had to play catch up to reverse a lack of development when the proposed F1 cost cap failed to materialise

BUDGET CUT FAILURE FORCED MERCEDES TO DOUBLE DOWN



Post-acquisition by Mercedes, the team struggled for the next three seasons – partly as a consequence of under-investment in 2009, but also because it was following the glidepath towards the Resource Restriction Agreement. This initiative was proposed by the teams to curb expenditure, but collapsed as the teams’ unity fragmented. Mercedes found itself spending much more than expected in order to be competitive. Fry remained part of the team until 2013.

Nick Fry: “The following year especially [2010], we did poorly. That’s because you would have one team working on the current car and another – or somebody – working on the future. We couldn’t afford that. So, when the budget cuts didn’t come into action we were left high and dry with a car that had suffered pretty much no development.

“Mercedes are realists. They may not have liked it but they understood the game. We’d underinvested and had a hard time for a couple of years catching up again. We went on a huge recruiting spree. I hired a senior human resources person specifically to re-hire engineers. We were on a mission to get back some of those talented people we’d had to let go. It was slow going.

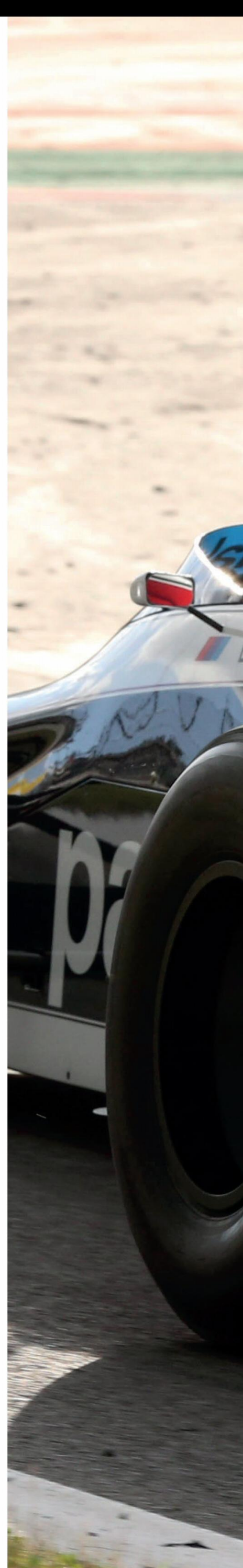
“At Brackley now, there are 1200 people. That’s an incredible amount of money being spent on just the chassis alone, as well as maybe 800 on the engine. Unless there’s a top-down approach I don’t know how you can resolve it. I remember in 2009-2010 having a conversation with [FIA president] Jean Todt and pleading with him to sort this out – to dictate what needed to be done in the same way Max [Mosely] would have done.

“There’s been 10 lost years [for F1]. Yes, the team I was lucky enough to own and run has continued to do brilliantly, and that’s fantastic in one way, but things could have been different if the income had been spread fairly and the cost of competing had been more moderate.” 

FORMULA ONE INNOVATIONS

In the nearly 70 years since the first world championship race at Silverstone, Formula 1 manufacturers have always tried to be ahead of the curve and, in the process, get a jump on their rivals. We take a pictorial look at just a few of the innovations and ideas that have come and gone along the way...

PICTURES  **motorsport**
IMAGES







MORE WHEELS ON MY WAGON

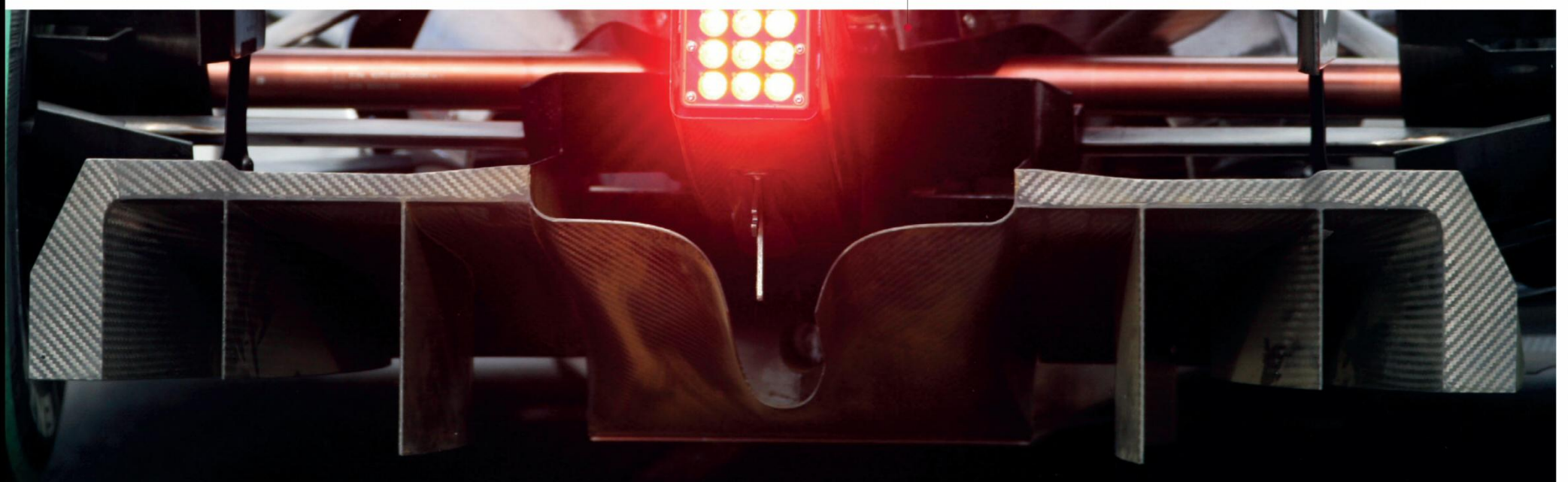
THE SIX-WHEEL CAR

When designer Derek Gardner first apprised Jackie Stewart of the concept of Tyrrell's six-wheel P34 car, the retired triple world champion nearly choked. Yet the car proved to be a qualified success, winning once and claiming 13 podiums in its two seasons. The logic behind the four 10-inch wheels at the front was two-fold. Firstly, better grip through the corners, even though the wheels were smaller. Secondly, those smaller wheels allowed for a reduced frontal area of the car and less lift. This meant Gardner could dial back on the aerodynamics, which resulted in the equivalent of an extra 40bhp.

COME AND JOIN THE DOUBLE DECKERS

THE DOUBLE DIFFUSER

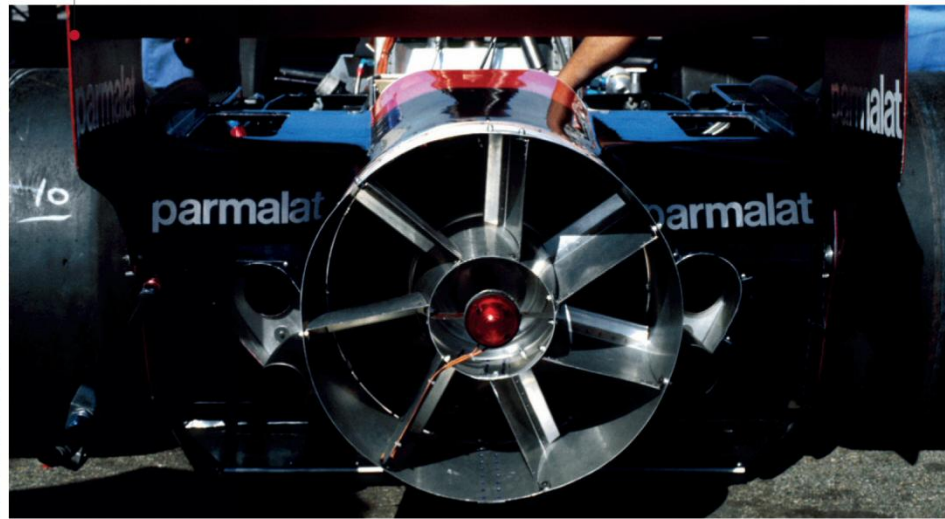
The main reason a modern F1 car has a diffuser – an underfloor device between the rear wheels – is to speed up the flow of air under the car, thus creating low pressure and increasing downforce. This wasn't new technology but when Brawn GP appeared in early 2009 testing with a double-deck diffuser it was a title-winning move. Regulations for 2009 had actually limited a diffuser's height and width but Brawn, along with Toyota and Williams, through cunning interpretation of the rules, added a second level to the diffuser. Protested and declared legal, double diffusers were, you've guessed it, eventually banned by 2011.



DESPERATION BREEDS SUCCESS

THE FAN CAR

Gordon Murray was trying to save Brabham's 1978 season with a redesign of the BT46 to compete against the ground-effect Lotus 78 and 79. But the shape of the BT46's flat-12 Alfa engine was problematical so Murray's solution was the fan car, the BT46B. Murray's thinking was: "If we could get [side] skirts to seal like the Lotus ones and have a cooling fan that uses more than 50% of its flow to cool the car and the rest to suck the car down..." The BT46B won on its only appearance, the 1976 Swedish GP, and never raced again.



THE PATH OF LEAST RESISTANCE

THE BIRTH OF AERO

Front and rear wings are now the norm in F1 and have been for many years, but until Lotus turned up for the 1968 Monaco GP with the 49B (pictured), all F1 cars had been lacking in such appendages. It was the appearance of the famous Chaparral 2F sportscar, with a high rear wing, at the 1967 Le Mans 24 Hours that had triggered the inspiration. The small front and rear wings fitted on the Lotus, initially in search of extra downforce and, ultimately, grip, were followed by the outlandish and eventually banned high rear wings, but the genie was out of the bottle. Ever since then aero has been king and a successful F1 car is defined as much by its aerodynamics as the power of its engine.



THE SEARCH FOR POWER

THE TURBO ERA

Supercharged engines had fallen out of favour since the early 1950s and, allied to various rules changes, nobody had deemed the time and expense of developing a new one worth it. This was until 1977 when Renault entered F1 with a Gordini 1.5-litre V6 turbocharged engine in the back of its own RS01 chassis. The search for extra power had begun in earnest, although initially Renault struggled badly. Unreliability and awful turbo lag took a long time to rectify but Renault finally won for the first time in 1979, importantly on home soil, and the turbo era was born. By 1984 every team, bar Tyrrell, was powered by a turbo. Banned for 1989, when F1 reverted to a normally aspirated formula, they made a return in 2014 as part of the current 1.6-litre hybrid technology regulations. ▶





BRACING FOR IMPACT

THE HANS DEVICE

The Head And Neck Support device was designed by Dr Robert Hubbard in the early 1980s, a head restraint aimed to reduce injuries and deaths by preventing excessive head movements in the event of a crash. The project failed to gain much traction until F1 looked at the device in the wake of Roland Ratzenberger's death at Imola in 1994. In 1999 Mercedes completed research on behalf of the FIA and, after a number of American series introduced the device, it became compulsory in F1 for the 2003 season.



KNEE-JERK REACTION

THE F-DUCT

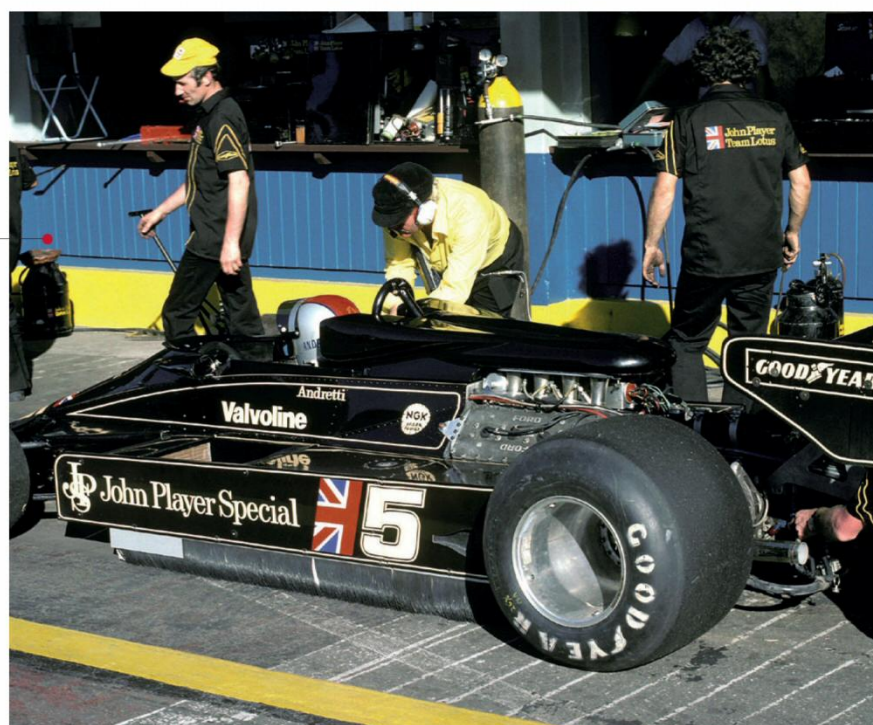
In pre-season testing in 2010 a mysterious inlet vent (below, right) appeared on the McLaren MP4-25. It formed part of the team's innovative new F-duct system, which fed air through the cockpit and onto the rear wing (below, left). Moveable devices to alter the airflow over the wing were banned but the RW80 – McLaren's name for it – was a passive device. Downforce was increased through the corner by the airflow and the duct could be closed simply by the driver moving his knees, reducing drag and increasing straightline speed. Declared legal, many teams followed suit but F-ducts were banned for 2011..



LET THE 'DOWN'FORCE BE WITH YOU

X-WINGS

Tyrrell introduced these extraordinary aerodynamic aids, christened because of the similarity to the X-wing fighter in *Star Wars*, on the 025 in 1997. The team, struggling financially and about to be taken over by BAT, spent little money on development and the 025's designer Harvey Postlethwaite saw the devices – made from old, discarded wings – as a quick and cheap way to improve the car. The thinking behind them was that they would create extra downforce, especially when following another car. Only Tyrrell used them in 1997 but other teams experimented with them in 1998 before they were outlawed.



AT ONE WITH THE TRACK

GROUND EFFECT

The use of the underside of a racing car to generate negative pressure and suck the car towards the track, resulting in more downforce and increased cornering speeds, was first utilised in the 1960s by CanAm sports cars with wheel-enclosing bodywork. It wasn't until the Lotus 78 that this was made to work on an open-wheel single seater. With a narrow central tub and sidepods that took up a bigger proportion of the car's width, along the bottom of the sidepods were 'skirts' and it was these skirts that made a seal between the underbody and the road, a crucial part in propagating negative pressure. The Lotus 79 utilised this to win the title in 1978...



AM I SEEING DOUBLE?


DOUBLE REAR WINGS

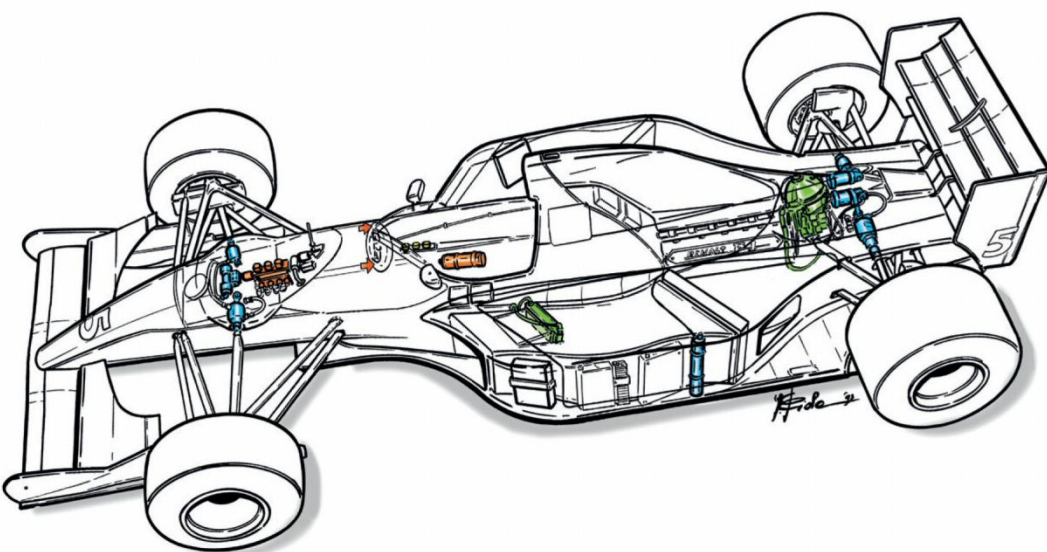
Although rear wings would balloon in size during the early 1980s as chassis designers (and tyre manufacturers) struggled to contain the increasingly prodigious power outputs of the turbocharged engines, this short-lived Ferrari design feature was more akin to a 'dirty protest' than a serious attempt to generate downforce. In the febrile political atmosphere of 1982, Ferrari felt that certain British teams were getting away with making a mockery of the rules. At Long Beach it fielded Gilles Villeneuve in a car with twin rear wings which, as a whole if not individually, were much wider than permitted.



WHAT GOES UP MUST COME DOWN

ACTIVE SUSPENSION

In any dissection of active suspension it is the Williams FW14B, 1992's dominant car, that is the main topic of conversation. But the concept was not a new one. The Lotus T92 was the first to race with active suspension in 1983, and in 1987 the 99T was the first race-winning active car. Developed to prevent uncontrollable grip loss when a car hit a bump on the track, pitched under braking, or accelerated out of a corner, the answer was a system that continuously monitored a car's ride height and adjusted it when necessary to remain constant. Williams perfected it, with hydraulic actuators on each corner of the car, and the consistent ride height, at any speed, provided for a perfect aerodynamic platform. And then it was banned for 1994... 



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Christmas

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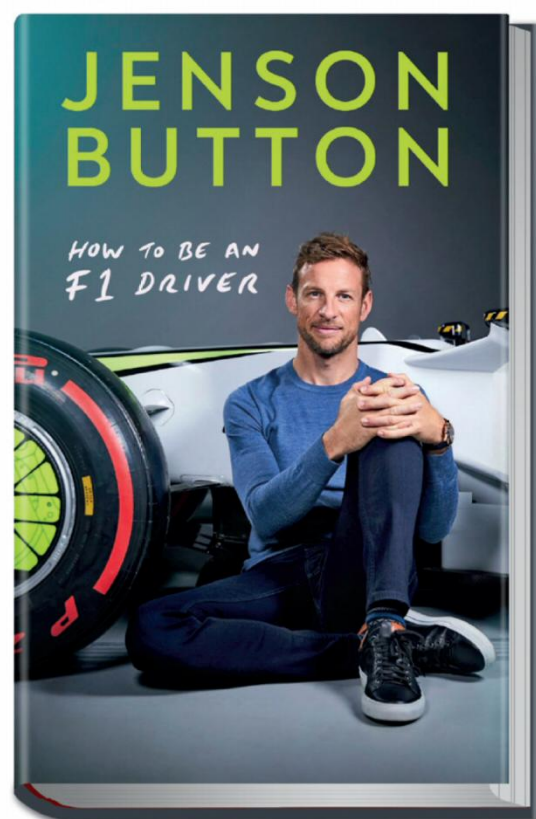
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Gift Guide

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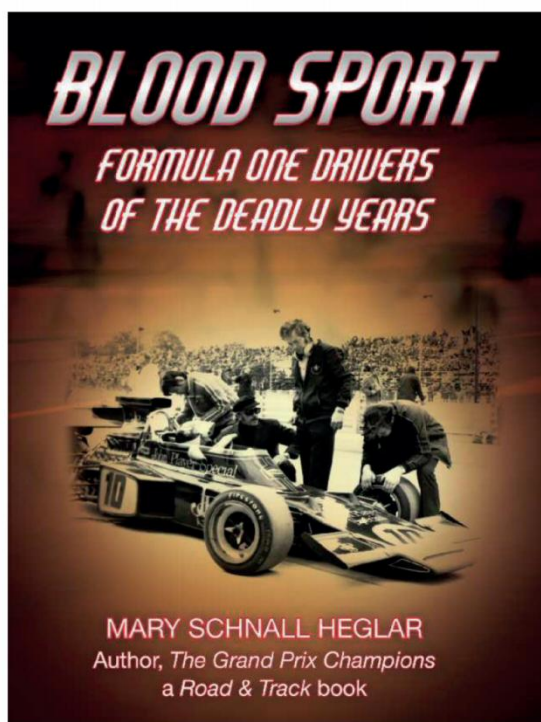
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Motorsport IMAGES



Lewis Hamilton's sixth world championship – and his radio antics – have definitely divided opinion

Isn't he great?

I believe Lewis Hamilton's success as an athlete should be considered in the same breath as the achievements of some of the great tennis stars, like Roger Federer or Novak Djokovic.

The reason is (despite his advancing years) Hamilton's pursuit of victory is relentless. He has a competitive thirst to keep improving every aspect of his life – on a daily basis – and that is an incredible trait, which only the very top sportsmen who win multiple titles share. There are some champions who win one title and that's all they have in their locker.

In addition, he doesn't have a 'win at all costs' mentality where

he will resort to dirty tactics on-track in the style of Ayrton Senna or Michael Schumacher. He should be admired for the way he drives so cleanly and rarely gets involved in any incidents with other drivers. Bravo Lewis!

David Hall

By email

Not necessarily...

I realise there is nothing more daring than to be critical of Lewis Hamilton, but I'll take the risk.

There's no doubting Hamilton's driving ability, but I am tired of his radio antics. How many times has he questioned the strategy and decisions that have been made, only to find he ends up winning

or finishing higher than he thought because of that same strategy.

He moans the tyres aren't going to last, then discovers they do, or queries he's been pitted too early as in Mexico, only to discover his hard tyres stayed fine the entire second half of the race.

In Japan Hamilton complained about a "lack of guidance" over saving his tyres. Yet in Mexico, when his engineer gave him some updates, he asked to be left alone.

Exactly what does Lewis want? Sure Mercedes makes some strategy errors, but overall its win/loss account on this is far better than any other team. Lewis needs to have a little more faith in the

ability of those on the pitwall and in the garage. After all, they've contributed more than a little to his world championships.

Stephen Bitmead

Uleybury, Australia

And don't compare

Congratulations to Lewis Hamilton on his sixth world championship. He is truly an exceptional talent. What I can't quite grasp is the rush to anoint him as the greatest driver of all time.

To my mind, naming Lewis as the 'G.O.A.T.' is not comparing like with like. How many more races and championships would Jim Clark have won, for instance, had his cars not broken down so frequently – or indeed, had he not lost his life relatively early in his career?

Also, the likes of Clark, Stirling Moss, John Surtees (etc) generally raced every weekend in a variety of machinery, often crossing continents to do so in a time before private aviation made such commutes comfortable.

I point this out not to do Lewis down, since he is unquestionably the greatest driver of his era. But the greatest of all time? I don't think it's possible to say, because there are too many variables.

Michael Staniforth

By email

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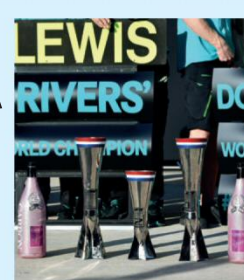
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- > Behind the scenes at Mercedes' engine factory
- > Chats with Lewis Hamilton and Valtteri Bottas
- > How Mercedes made two cars at once
- > Reports from the Brazilian and Abu Dhabi GPs



FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 18

THE MEXICAN GP IN 3 KEY MOMENTS



1 Mercedes victorious with brave and risky strategy

Lewis Hamilton's tenth grand prix win of the season might not have been his most spectacular, but it was a tactical masterstroke from the

Mercedes pitwall and a brilliant drive to preserve tyre life in a damaged car.

At an altitude of over 7,000 feet, the thin air of

Mexico City presents a difficult challenge for the engineers. Downforce levels are at their maximum, cooling is also at a premium – particularly for brakes – and the fluctuating ambient temperatures during the weekend meant strategists had to improvise during the race.

Prior to Sunday, high degradation in practice had suggested two stops was the way to go, but as track temperatures rose it altered the wear rates of the tyres. Suddenly a hard Pirelli could be used much longer than expected – but for how long?

When Red Bull stopped Alex Albon early on lap 14 for a nailed-on two-stopper, Ferrari decided to bring race leader Charles Leclerc in on the very next lap to cover the Red Bull. But Sebastian Vettel in the second Ferrari was discovering the degradation on his mediums was not as high as he was expecting, so the Scuderia split its strategy.

"We were surprised when we saw the Red Bull pull the trigger for a two-stop and we were surprised when Leclerc followed him in, because for us, the race was swinging conclusively to a one-stop," said Mercedes technical director James Allison. "Now the question was how we were going to beat Vettel, who was on the same one-stop strategy as us."

The question was how long could either Hamilton or Vettel run on the hard tyre, and could they get to the end of the race without stopping again? Ferrari believed 41 laps was do-able, so stopped Vettel on lap 30. But Mercedes gambled on bringing Hamilton in eight laps before then. From the cockpit, the Mercedes driver was uncertain of the risky call.

"You brought me in too early," said Hamilton to his race engineer Marcus Dudley (standing in for regular Pete Bonnington, who missed this race due to a medical procedure). "That's way too many laps for this set of tyres."

It required chief strategist James Vowles to come on the radio and reassure Hamilton it was the correct decision. When Ferrari pitted Vettel, they hoped the Mercedes rubber would drop off in the closing stages, allowing Vettel to pounce with his fresher Pirellis.

Through a combination of Hamilton's driving – despite losing a piece of his floor in an opening lap clash with Max Verstappen – and the fact the hards stayed competitive to the end, Hamilton hung on for victory.



A strategic masterclass from Mercedes helped Hamilton claim his tenth win of 2019

PICTURES: STEVEN TEE; MARK SUTTON; STEVE ETHERINGTON



Verstappen thought he had claimed pole after qualifying, but the stewards disagreed

2 Verstappen steps over the mark

Hamilton's route to victory in Mexico was considerably helped by Max Verstappen putting himself out of contention. Having won the last two races in Mexico, the Dutchman looked favourite again when he was fastest in qualifying. But when Valtteri Bottas crashed on his final run (at the last corner) Verstappen made trouble for himself.

Having gone quicker on his own final lap, despite a yellow flag for Bottas's crash, Verstappen was notably truculent when questioned about his actions in the post-qualifying press conference.

Asked if he backed off for the shunt, he replied: "It didn't really look like it, did it? No." A little later he was reminded that he should slow down for a yellow and added: "I think we all know what a yellow flag means." When the safety aspect was brought

up he said belligerently: "Do we have to go there?"

The FIA decided it *would* go there and hit Max with a three-place grid penalty. At the start, Hamilton was squeezed onto the grass by Vettel on the run to Turn 1. Under braking for the first corner, Verstappen dived inside Hamilton to try to claim third. The pair avoided contact, but both had to cut across the grass to recover their positions.

"I braked into Turn 1, and all of a sudden Max is alongside me," said Hamilton. "If you've seen races before, I always leave Max a lot of space – it's the smartest thing you can do. But there wasn't a lot of space to give him. I think he had an oversteer moment or something and then I got a massive hit from behind. Then I nearly took him out..."

On lap four, Verstappen dived inside Bottas in the stadium section and as the Mercedes tried to avoid contact, the front wing cut Verstappen's right rear tyre which effectively put him out of the race. He pitted and made a recovery drive to finish sixth.

3 McLaren pointless for first time since Spa

After qualifying seventh and eighth, McLaren was all set for one of its strongest performances of the year – but ended up not scoring points for the first time since August's Belgian Grand Prix.

Carlos Sainz took advantage of the first-corner skirmish between Hamilton and Verstappen to run fourth in the early laps, while Lando Norris was sixth. But whereas the hard tyre became

surprisingly competitive for Hamilton and Vettel, it had the reverse effect when fitted to the McLarens.

"It was a painful for us," said team boss Andreas Siedl. "It was the first time in a while that we have seen a different pace on Sunday so we simply need to analyse what the issue was." This was later discovered to be due to degrading aero parts.

As a result Sainz finished 13th. Norris, meanwhile lost a huge amount of time after problem fitting a wheel at his pitstop. After being pushed back to his pit for checks, the team later elected to withdraw Norris from last.



Norris had to endure being wheeled back to his pit following the error at his stop

RESULTS ROUND 18

MEXICO CITY / 27.10.19 / 71 LAPS



1st	Lewis Hamilton	Mercedes	1h 36m 48.904s
2nd	Sebastian Vettel	Ferrari	+1.766s
3rd	Valtteri Bottas	Mercedes	+3.553s
4th	Charles Leclerc	Ferrari	+6.368s
5th	Alexander Albon	Red Bull	+21.399s
6th	Max Verstappen	Red Bull	+68.807s
7th	Sergio Pérez	Racing Point	+73.819s
8th	Daniel Ricciardo	Renault	+74.924s
9th	Pierre Gasly	Toro Rosso	+1 lap
10th	Nico Hülkenberg	Renault	+1 lap
11th	Daniil Kvyat	Toro Rosso	+1 lap*
12th	Lance Stroll	Racing Point	+1 lap
13th	Carlos Sainz	McLaren	+1 lap
14th	Antonio Giovinazzi	Alfa Romeo	+1 lap
15th	Kevin Magnussen	Haas	+2 laps
16th	George Russell	Williams	+2 laps
17th	Romain Grosjean	Haas	+2 laps
18th	Robert Kubica	Williams	+2 laps

Retirements

Kimi Räikkönen	Alfa Romeo	58 laps - overheating
Lando Norris	McLaren	48 laps - withdrawn

Fastest lap

Charles Leclerc: 1min 19.232s on lap 53

TYRE COMPOUNDS USED



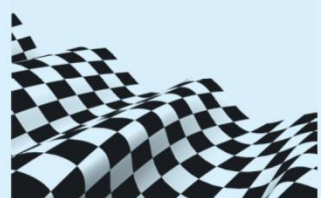
CLIMATE	AIR TEMP	TRACK TEMP
Sunny	22°C	37°C

DRIVERS' STANDINGS

1	Hamilton	363pts	11	Hülkenberg	35pts
2	Bottas	289pts	12	Norris	35pts
3	Leclerc	236pts	13	Kvyat	34pts
4	Vettel	230pts	14	Räikkönen	31pts
5	Verstappen	220pts	15	Stroll	21pts
6	Gasly	77pts	16	Magnussen	20pts
7	Sainz	76pts	17	Grosjean	8pts
8	Albon	74pts	18	Giovinazzi	4pts
9	Pérez	43pts	19	Kubica	1pt
10	Ricciardo	38pts	20	Russell	0pts



*includes 10-sec penalty for causing another car to spin



FINISHING STRAIGHT

RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 19

THE US GP IN 3 KEY MOMENTS



1 Hamilton seals title number six, despite defeat to Bottas

Although Lewis Hamilton started an unusually (for him) lowly fifth on the grid for the United States Grand Prix – thanks to a dislodged braking switch cover on his steering wheel – he didn't need to win this race to claim his sixth world championship. Indeed, a quietly restrained performance in which he held on to fifth would have been sufficient. But that isn't Hamilton's way.

The British driver is now one title ahead of Juan Manuel Fangio and one short of Michael Schumacher's all-time record – and, just like those great drivers, he fought for the win every step of the way. Ultimately he finished 4.1 seconds behind his victorious Mercedes team-mate Valtteri Bottas after making the most of an adventurous race strategy. Then, after parking his W10 on a strip of asphalt in parc fermé that had been painted with the words 'Reserved for the 2019 world champion', he summed up his relentless quest to accrue ever more wins and championships.

As he jumped from his car, the 34-year old said that as an athlete he was still feeling "fresh" and that he couldn't wait to fight for victories in the season's remaining two races. Later he added that his career was a little like working on a "masterpiece" he hadn't quite finished yet. Ominous words for his rivals.

From fifth, Hamilton made short work of Charles Leclerc and Sebastian Vettel as Ferrari's pace evaporated once again. But it was Hamilton's delicate balance of raw pace and smart tyre management that brought him within a whisker of victory on a one-stop strategy, while his rivals for the win (Bottas and Max Verstappen) made two.

Bottas was also originally planning a one-stop, but when Verstappen pitted early from second place on lap 13, Mercedes covered the Red Bull by stopping Bottas a lap later and switching him to a two-stop strategy. When Bottas made his second stop on lap 35 he emerged comfortably ahead

of Verstappen (again) and nine seconds behind Lewis. Valtteri's tyres were 11 laps fresher than Hamilton's and he had 20 laps to pass for the win.

Knowing Bottas was reeling him in, Hamilton radioed his engineer Pete Bonnington with his concerns, saying: "I don't know how long these tyres are going to last..."

Eventually Bottas closed to within DRS range and after an attempt to pass for the lead on lap 51 didn't work, he made the move stick into Turn 12 on the following tour. Verstappen also got close but his ambitions to pass Hamilton for second place were thwarted by yellow flags waved for a stricken Haas in the gravel at the end of the back straight.

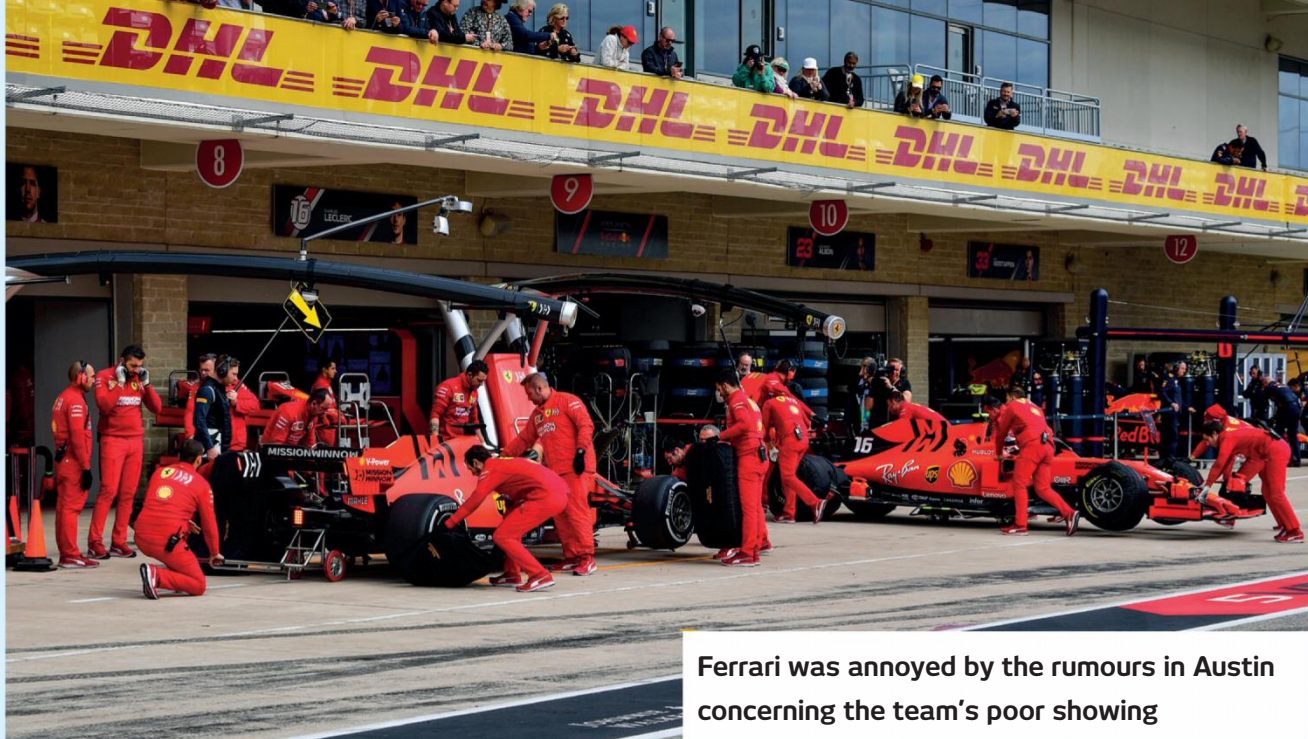
Bottas had mixed emotions now the title race was finally over.

"It was my best season in F1 so far," he said. "But being best of the rest doesn't feel good. Next year is a new opportunity."



Second in Austin behind a dominant Bottas was enough to confirm Hamilton's sixth title

PICTURES: ZAK MAUGER; SIMON GALLOWAY; JERRY ANDRE; STEVEN TEE; GLENN DUNBAR



Ferrari was annoyed by the rumours in Austin concerning the team's poor showing

2 Ferrari dismisses fuel-flow cheat rumour

Charles Leclerc finished the US GP in fourth, nearly a minute behind Bottas. He was the sole Ferrari for most of the afternoon (team-mate Vettel retired with suspension failure on lap seven) and it was significant how far off the pace Leclerc was – despite claiming fastest lap late-on.

When third-placed Verstappen was asked whether he was surprised at a sudden downturn in performance for Ferrari, he replied with a broad smile and said: “Not surprised at all.”

Earlier in the weekend it was revealed that Red Bull had written to the FIA for clarification over a potential loophole regarding fuel-flow regulations. The governing body then issued a technical directive that declared any scenario whereby fuel flow rates exceeded the permitted limit were illegal.

The enquiry came after teams expressed suspicions over the significant increase in speed Ferrari has shown since the August break. But after Mercedes took its first pole position since July’s German GP, team boss Toto Wolff was careful not to attribute Ferrari’s deficit to the recent FIA directive.

“Certainly the three teams were much closer together in terms of straightline performance here in the US,” he said. “But I wouldn’t say this is down to any specific event.”

Ferrari team boss Mattia Binotto said he was “annoyed” by the rumours. He added that a set-up change had led to an increased downforce configuration, and that Leclerc had been forced to run an older-spec engine in the race.

“We know we are legal and the FIA is controlling our package every single race,” said Binotto. “They are inspecting all the data that is available to them and hopefully they will clarify to everybody that what we have got is legal and we are not cheating.”

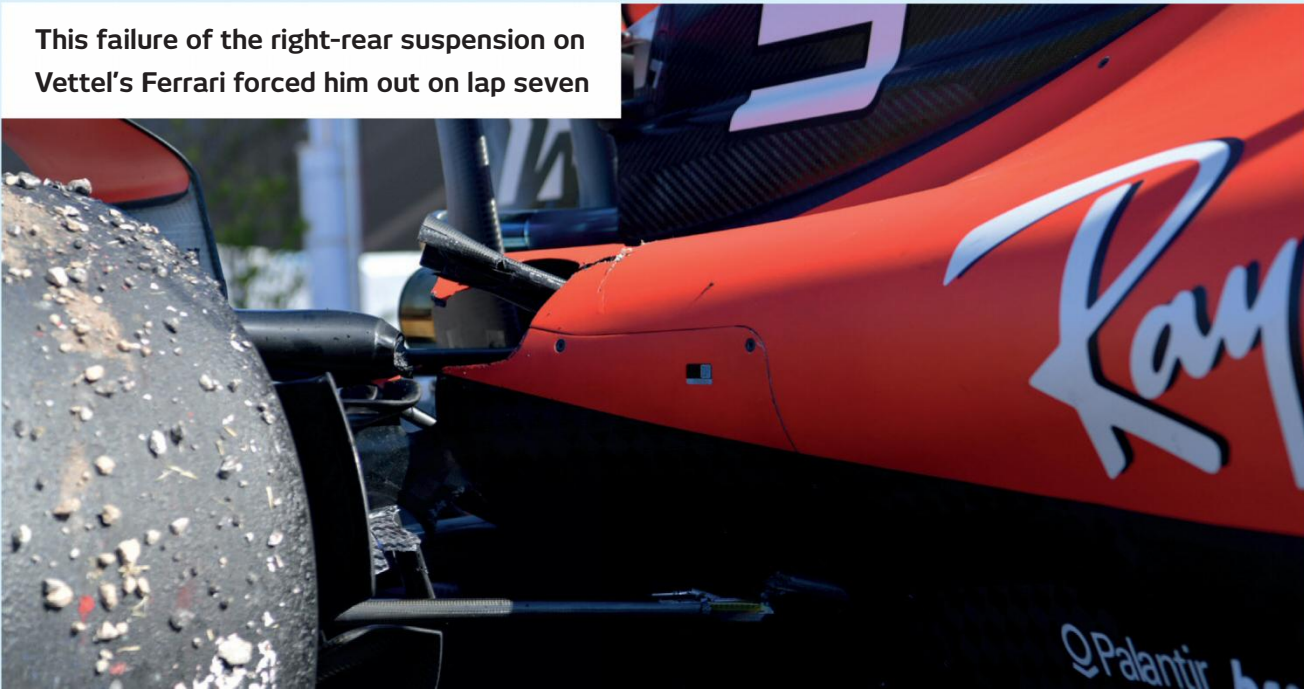
3 Race venue gets a bumpy ride from drivers

Following Friday’s practice at the Circuit of The Americas, several drivers registered disquiet at a significant deterioration in the track surface.

Organisers tried to smooth some of the worst-affected areas, but Hamilton said he had suffered a “massive headache”, while Verstappen added that he didn’t mind the bumps but suggested they were “like ramps in places.” In contrast, Daniel Ricciardo

said he enjoyed the challenge, which added a bit of character to the track.

On lap seven, Sebastian Vettel retired when his right-rear suspension broke as he crested the rise of Turn 10. Ferrari was still investigating the cause as *F1 Racing* closed for press. During the race, the team warned Leclerc to avoid the apex kerb at Turn 8 in case that was the reason for the failure. Before he retired, Vettel was in immediate trouble, losing four places on the opening lap and saying that it felt like he had accident damage because his car was “understeering like crazy”.



This failure of the right-rear suspension on Vettel’s Ferrari forced him out on lap seven

RESULTS ROUND 19

COTA, AUSTIN / 3.11.19 / 56 LAPS



1st	Valtteri Bottas	Mercedes	1h 33m 55.653s
2nd	Lewis Hamilton	Mercedes	+4.148s
3rd	Max Verstappen	Red Bull	+5.002s
4th	Charles Leclerc	Ferrari	+52.239s
5th	Alexander Albon	Red Bull	+78.038s
6th	Daniel Ricciardo	Renault	+90.366s
7th	Lando Norris	McLaren	+90.764s
8th	Carlos Sainz	McLaren	+1 lap
9th	Nico Hülkenberg	Renault	+1 lap
10th	Sergio Pérez	Racing Point	+1 lap
11th	Kimi Räikkönen	Alfa Romeo	+1 lap
12th	Daniil Kvyat	Toro Rosso	+1 lap*
13th	Lance Stroll	Racing Point	+1 lap
14th	Antonio Giovinazzi	Alfa Romeo	+1 lap
15th	Romain Grosjean	Haas	+1 lap
16th	Pierre Gasly	Toro Rosso	+2 laps/suspension
17th	George Russell	Williams	+2 laps
18th	Kevin Magnussen	Haas	+4 laps/brake disc

Retirements

Robert Kubica	Williams	31 laps - hydraulics
Sebastian Vettel	Ferrari	7 laps - suspension damage

Fastest lap

Charles Leclerc: 1min 36.169s on lap 44

TYRE COMPOUNDS USED

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

CLIMATE



AIR TEMP

21°C

TRACK TEMP

28°C

DRIVERS’ STANDINGS

1 Hamilton	381pts	11 Norris	41pts
2 Bottas	314pts	12 Hülkenberg	37pts
3 Leclerc	249pts	13 Kvyat	34pts
4 Verstappen	235pts	14 Räikkönen	31pts
5 Vettel	230pts	15 Stroll	21pts
6 Albon	84pts	16 Magnussen	20pts
7 Sainz	80pts	17 Grosjean	8pts
8 Gasly	77pts	18 Giovinazzi	4pts
9 Ricciardo	46pts	19 Kubica	1pt
10 Pérez	44pts	20 Russell	0pts



*includes 5-sec penalty for causing a collision



FINISHING STRAIGHT

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 21

ABU DHABI GP

29 November-1 December
Yas Marina



PICTURES: STEVEN TEE; ILLUSTRATION: ALAN ELDREDGE



RACE DATA

Venue Yas Marina Circuit
First GP 2009
Number of laps 55
Circuit length 3.452 miles
Longest straight 0.75 mile
Elevation change 35.1 feet
Race distance 189.739 miles
Lap record 1m 40.279s,
Sebastian Vettel (2009)
F1 races held 10
Winners from pole 7
Pirelli compounds C3, C4, C5

CAR PERFORMANCE

Downforce level Medium
Cooling requirement Medium
Fuel consumption 1.81kg/lap
Full throttle 60%
Top speed 208mph
Average speed 124mph

TIMETABLE (UK TIME)

Friday 29 November
Practice 1 9:00-10:30
Practice 2 13:00-14:30
Saturday 30 November
Practice 3 10:00-11:00
Qualifying 13:00-14:00
Sunday 1 December
Race 13:10
Live coverage Sky Sports F1
Highlights Channel 4

THE MAIN EVENT

The futuristic-looking Yas Marina circuit provides a spectacular backdrop to finish the Formula 1 season. Fittingly, the start of the race coincides with sunset so the final 55 racing laps of the year are held under floodlights. Since the event joined the F1 calendar in 2009, Yas Marina has established itself as the principal venue for the curtain-closer. It's hosted seven of the last ten season finales.

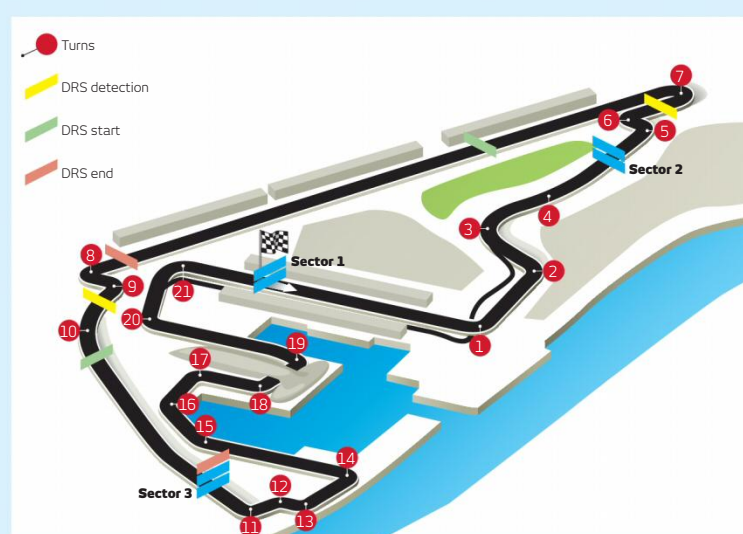
The circuit itself is two-thirds high-speed, characterised by long straights and tricky chicanes, while the final sector of the lap is a slower, more technical challenge for the drivers, as the track winds around – and underneath – the Yas Hotel. Temperatures are still hot during the day at this time of year, but can drop as much as 15°C once the sun has set, which can cause huge swings in tyre behaviour.

2018 RACE RECAP

The final act of 2018 was a fitting tribute. After the chequered flag had fallen, the three multiple world champions in the field came to the finish line and orchestrated a series of donuts. They sent tyre smoke pouring into the grandstands, packed with cheering fans.

Race winner Lewis Hamilton led the pirouettes, accompanied by second-placed Sebastian Vettel and Fernando Alonso – who was nowhere near the podium, but had recently announced his departure from F1. Alonso finished 11th and managed to incur three five-second time penalties for cutting the chicanes on his final laps!

KEY CORNER: TURN 7 A good exit is vital since the longest straight follows. With DRS available, that straight then offers one of the best overtaking opportunities on the lap.



RECENT WINNERS HERE...



2018

Lewis
Hamilton
Mercedes



2017

Valtteri
Bottas
Mercedes



2016

Lewis
Hamilton
Mercedes



2015

Nico
Rosberg
Mercedes



2014

Lewis
Hamilton
Mercedes

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Lewis Hamilton fights off a late challenge from Max Verstappen in 2018 to win the Monaco GP for the third time (above)



VISIT THE MONACO GP MONTE CARLO 21-24 MAY 2020

YOUR GUIDE TO MONACO

The Monaco Grand Prix, considered to be one of the most prestigious motor races in the world, is set in the gorgeous French Riviera, a part of the world rich in culture and made famous by a plethora of artists and writers. The likes of Edith Wharton, Somerset Maugham, Pablo Picasso and Henri Matisse all graced this part of the Mediterranean.

Monaco is the second smallest and most densely populated country in the world. It is a sovereign city-state with a population of 37,800 and is governed by a constitutional monarchy, with Prince Albert II its current head of state. The country's impressive economy was developed in the late 19th century with the opening of a casino and a railway connection to Paris.

Perched on the top of a 280ft cliff is the Oceanographic Museum and Aquarium, built in 1910. This is a stunning spectacle, with breathtaking views from the roof of the building. The famous deep-diving explorer Jacques Cousteau was a former director here and today's staff are keen to carry on his important legacy.

Known as 'Nice la Belle' to the locals, Nice is the second-largest city in the Côte d'Azur region and is an alternative base for the GP. Its stunning coastline and mild climate made it a very desirable

destination for the upper-class English in the 18th century. Today its popularity has grown and it is one of France's most visited cities, frequented by over four million tourists a year.

Aside from its stunning walkways and beaches, Nice is also a great spot for those who appreciate the arts. The contemporary Musée d'Art Moderne et d'Art Contemporain displays a large collection of art from the New Realism and Pop Art genres. Alternatively, the Musée Matisse houses many spectacular pieces of art by Matisse. Nice also boasts an impressive array of bars, restaurants and nightclubs. If you enjoy your wine, then a visit to La Part des Anges is a must. La Cave de l'Origine is popular with tourists and locals alike, because of an unusual selection of wines.

Cannes, like Nice, is another option for Monaco. La Croisette is a wonderfully winding promenade that radiates glamour during the Cannes Film Festival, with a mixture of the sparkling azure sea and exotic plant life adorning the walkway. The Palais des Festivals is another must-see for film fans, since the building is adorned with the handprints of many movie stars. For a flashback into Cannes' history then a trip to Suquet hill is a great way to glimpse the past. This is a maze of quirky restaurants, bars and shops around the port.



Away from the track Monaco has some beautiful buildings (above, left), and the Oceanographic Museum (above, right) is just one of a number of places for spectacular views (below and left)



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- ★ Informal social drinks and tour merchandise
- ★ Gullivers representatives
- ★ Post-race night life on Nikki Beach, Rascasse

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- ★ Gullivers representatives
- ★ Post-race night life on Nikki Beach, Rascasse

*all tours listed arrive Friday, depart Monday.

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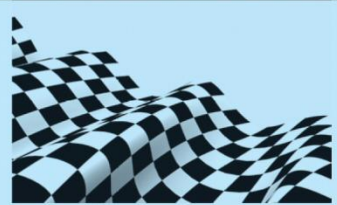
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Fancy competing against Fernando Alonso? Well in the latest video game, *Grid*, you can. It's been five years since Codemasters released *Grid Autosport* so this is the first time the *Grid* franchise has been available on the latest generation of consoles. Those familiar with the video game will know *Grid* evolved from the series of *TOCA Race Driver* games, so there has always been an emphasis on close-quarter touring car and GT racing.

A lot of current racing games pride themselves on realism and simulation, trying to accurately reflect the real world as much as possible. But not *Grid*. This game is all about having fun and getting your elbows

out on track. If you're not worried about racing around Silverstone in the other direction, for example, then you won't be too bothered about helpful instant replays to place you back on track moments before a race-ending shunt. There is a mix of real and made-up circuits and many have been ported over from *Grid Autosport*, such as the San Francisco street circuit and Japan's high-speed Okutama track.

Once again, in career mode rivalries develop with other AI drivers and you can take on Fernando Alonso and his eSports FA Racing team. The only drawback is there's no option for two-player split-screen racing. And that's a real shame.



REPLICA SEBASTIAN VETTEL 2019 HELMET

1:2 scale

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mementoexclusives.com

New to Memento Exclusives is a half-size replica of Sebastian Vettel's 2019 helmet, featuring the iconic colours of the German flag. This impressive 1:2 scale reproduction is fitted with an adjustable visor and packaged in an official gift box.

Made by a team of skilled craftsmen at Bell, the helmet shell,

interior and visor are made with similar materials to real helmets. For an additional price a museum-grade helmet case can be ordered to protect the replica from dust and UV light. The 2019 helmet designs of Lewis Hamilton, Kimi Räikkönen and Charles Leclerc are also available in this series.

F1 PANEL ART

Price From £95

wowwallart.co.uk

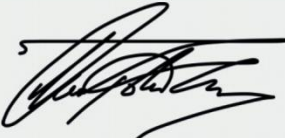
Established last year, Wow Wall Art is a company specialising in recreating famous parts of racing cars which are lightweight and can be hung on an office or garage wall.

Printed on 5mm thick Foamex, these pieces range from a side panel of Jackie Stewart's Tyrrell 003 world championship winner to the front wing and nose cone of an Ayrton Senna 1990 McLaren (pictured and retailing at £180).

The company also offers illustrations and furniture, including coffee tables and office desks, and is geared up to recreate bespoke



designs, so an owner can approach Wow Wall Art with their car and have selected body panels and designs made to spec.

FORMULA ART  LIMITED EDITION
DAVID JOHNSON GICLÉE PRINTS

Lando Norris - 2019 McLaren MCL34






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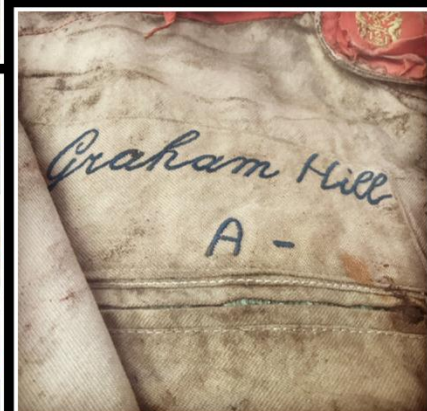
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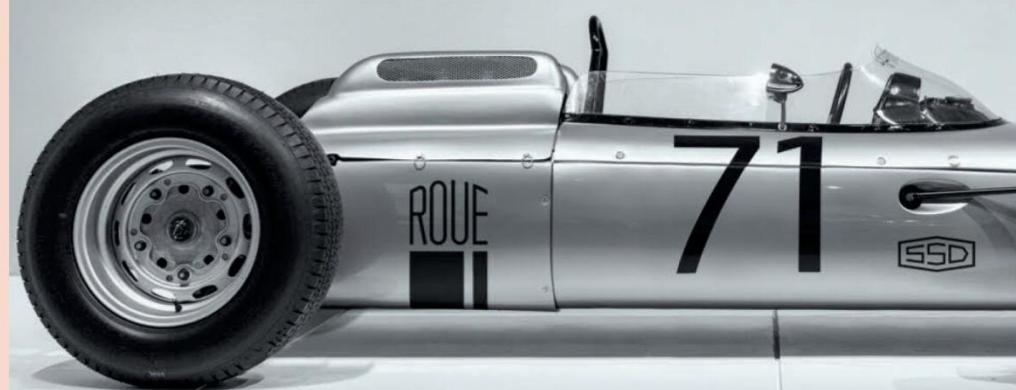
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PICTURES  **motorsport
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2021: VETOES AND VESTED INTERESTS...

One of Formula 1's greatest contradictions is that, while it's a hotbed of technical innovation and continuous change, the people who actually call the shots are change-phobic to an almost hysterical degree. Worse still, since Bernie Ecclestone short-sightedly granted the teams a voice in decision-making, the blunt hand of tawdry self-interest has crushed many new ideas at the embryonic stage.

Older readers and trivia whizzes will recall that Elvis died on the toilet. Well, despite an extraordinarily long sitting, and a copious amount of heaving and straining, F1 has managed to pass the 2021 regulations without suffering a heart attack. Sadly, one of the more interesting ideas that could have been implemented, and which was mooted to be trialled next year, has fallen foul of the it-can't-be-done crowd.

The phrase "reversed grids" naturally causes a collective shriek among 'purists', but the concept put forward by Liberty wasn't quite the gimmick those in opposition made out. No less a brain than

Ross Brawn thought it worthwhile to evaluate a different qualifying format at two or three events next season, for which the grid would be set by a qualifying race in which the field went off in the reverse of their championship order.

Still, the very mention of "reversed grids" evokes that automatic, Pavlovian response. But if you were suffering a bout of the tremors at the sheer effrontery of such a thing, fear not – your saviour is at hand in the form of Mercedes boss Toto Wolff, who, along with an un-named team principal, vetoed it at a meeting before the Mexican GP.

Formula 1 finally managed to get its 2021 regulations passed and showed them off to the media in Austin

"I did it because we have a responsibility to preserve the DNA," said Wolff. "It felt wrong, not to preserve an advantage – because maybe it would have been good for us as Ferrari would have been behind us when you look at current qualifying pace. I voted against it

because when you're looking at the Olympic 100m final, you're not making Usain Bolt start five metres behind just to make it exciting."

This is sheer cant, with a side order of whataboutery. More than that, it's naked self-interest hiding beneath a flag of convenience. If you think Toto kicked this one into the long grass purely out of altruism, you'll believe anything.

As the Blessed Toto gathered his vestments and retreated to the rectory, Ross Brawn responded with understandable peevishness. "I thought it was a fascinating contest," he said. "And the drivers were

a little bit nervous, which I can understand, but we were just asking for the opportunity for three races to try the format. If it doesn't work, we put our hands up; if it does work, great. If it's something in between, we can work with [that] just to help us develop the format of racing. And it's frustrating that we've not been able to do that, but I think that's – unfortunately – the classic problem with Formula 1."

Isn't it just? Qualifying races may not be the right answer, but as we look to a changing future and an evolving demographic, F1 needs to be able to ask the right questions as a starting point. From there the right answers may come. But so long as the right of veto rests with corporate functionaries, who answer to boards and bottom lines rather than motor racing's audience, any change will always be nixed or diluted.



PICTURE: JERRY ANDRE. ILLUSTRATION: BENJAMIN WACHENJE

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