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F1 POWER LIST

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THE REAL PAUL DI RESTA

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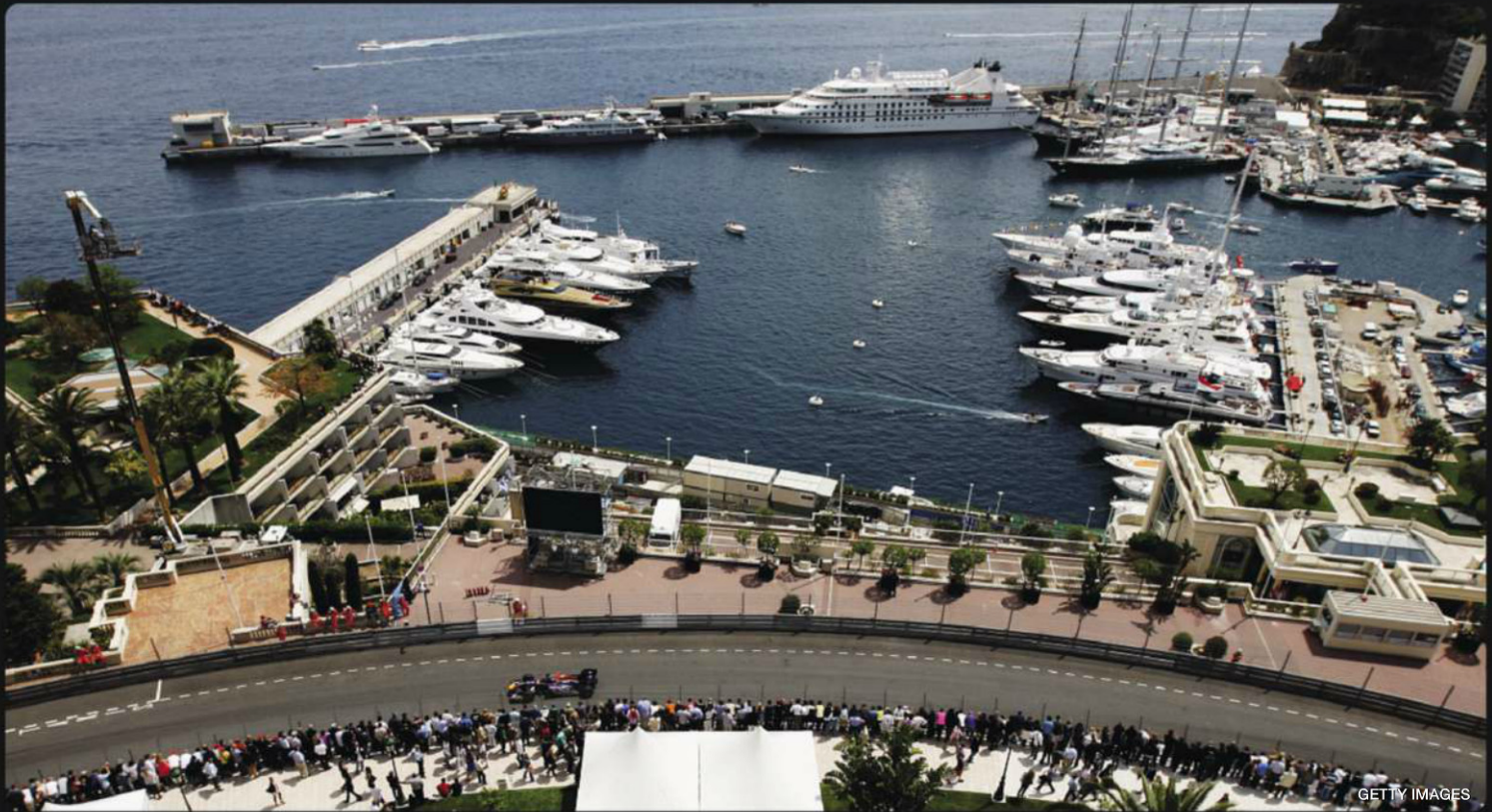
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73
68
58
42/46/52
55

COVER STORIES



PATRICK GOSLING/
VODAFONE
McLAREN MERCEDES



42 **JENSON BUTTON** Why the McLaren ace needs to take a tougher approach



58 **PAUL DI RESTA** With talent like this, does he need media-friendly charm?



73 **POWER LIST** The top 21 men and women who shape Formula 1



88 **GIEDO VAN DER GARDE** Behind the wheel of a very unusual Caterham

FIRST SECTOR: THE REGULARS

- 10 **IGNITION** McLAREN HAVE HAPPIER TIMES AHEAD
- 12 **PARADES** THE VERY BEST F1 PHOTOGRAPHY
- 18 **PITPASS** NEWS, OPINION AND ANALYSIS
- 28 **PITPASS TECH** THE SCIENCE BEHIND WET RACES
- 30 **PETER WINDSOR** WHO IS McLAREN'S NEW SPONSOR?
- 33 **DIETER RENCKEN** THE RETURN OF CUSTOMER CARS
- 35 **VALTERRI BOTTAS** IS LOOKING FORWARD TO 2014
- 36 **INBOX** CLASSIC TRACKS NEED CLASSIC CORNERS
- 38 **NOW THAT WAS A CAR** THE JORDAN 191
- 107 **SUBSCRIBE AND GET A FREE CREDIT CARD CASE**

SECOND SECTOR: THE FEATURES

- 42 **JB: NO MORE MR NICE GUY**
The personable McLaren racer needs to show his teeth and take charge of his team, says Peter Windsor
- 46 **McLAREN'S MAN AT THE TOP**
Team principal Martin Whitmarsh explains what went wrong in 2013 – and how they'll put it right for 2014
- 52 **LIFE AFTER LOWE**
When Paddy Lowe moved to Mercedes, McLaren began a radical shake-up of their technical department
- 58 **THE REAL PAUL DI RESTA**
A taciturn manner earned Kimi a legion of fans – but not so this plainspoken Scot. Lee McKenzie provides a more charitable insight into a talented and honest racer
- 66 **HUNGRY LIKE A WOLFF**
Mercedes boss Toto Wolff explains why the team's top-heavy management structure is key to their success
- 68 **YOU ASK THE QUESTIONS**
A grilling from our readers reveals Marussia racer Max Chilton's love of Reigate and dread of plate-sized spiders
- 73 **THE F1 POWER LIST**
Who are the movers and shakers with the most influence in the sport? After heated debate, we pick the top 21
- 82 **THE LAST OF THE V8S**
Say goodbye to the highest-revving engines F1 has ever seen, as the sport embraces a cleaner, greener future
- 88 **TOKYO DRIFT**
We join Giedo van der Garde, for a jaunt around the Japanese capital in the retro Caterham Seven Superlight
- 94 **LUNCH WITH GARY ANDERSON**
The former technical brains of Jordan, who now makes complex F1 concepts digestible for BBC viewers

THIRD SECTOR: FINISHING STRAIGHT

- 104 **JAPANESE GP REPORT** WIN NINE FOR SEB
- 108 **INDIAN GP REPORT** TITLE FOUR FOR SEB
- 112 **ABU DHABI GP REPORT** WIN ELEVEN FOR SEB
- 116 **US GP PREVIEW** CRACKING ATMOSPHERE STATESIDE
- 118 **BRAZILIAN GP PREVIEW** F1 2013 DRAWS TO A CLOSE
- 120 **F1 BOOK REVIEW** THREE MUST-HAVE RACING READS
- 121 **TOM CLARKSON** WHY INDIA SHOULD KEEP ITS GP
- 122 **MURRAY WALKER** ON THE LAST TIME F1 TRIED TURBO



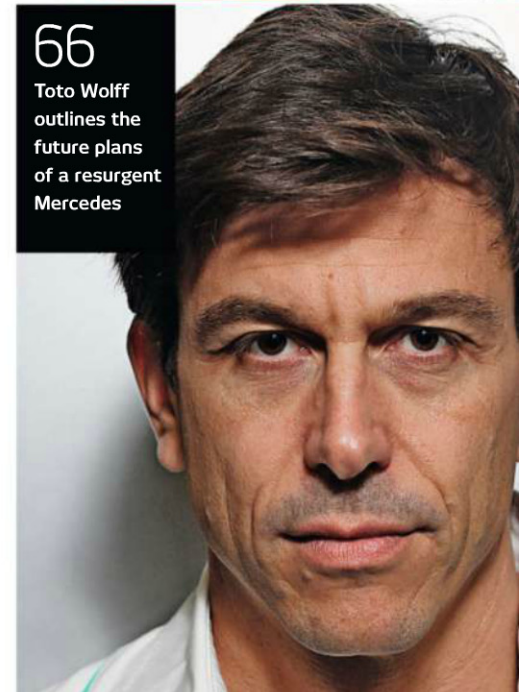
82

The inner workings of one of the most exciting engines ever to grace F1



66

Toto Wolff outlines the future plans of a resurgent Mercedes





68

Max Chilton on the near-invisible battle to prove himself from the back of the grid

42/
46/
52

Jenson Button, Martin Whitmarsh and the McLaren technical team discuss their plans to make McLaren great again

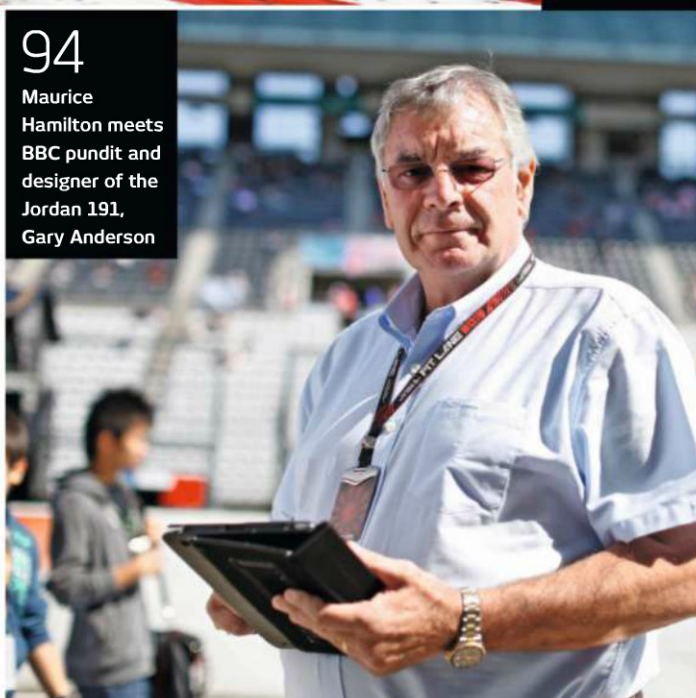


58

Lee McKenzie analyses the talent and personality of speedy Scot, Paul Di Resta

94

Maurice Hamilton meets BBC pundit and designer of the Jordan 191, Gary Anderson



88

Giedo van der Garde creates a stir on the streets of Tokyo in Caterham's sporty new offering





Ignition / Anthony Rowlinson / 12.13

There's light at the end of the tunnel for McLaren

Whisper it, but it looks as if McLaren might be packing up at Interlagos in a couple of weeks' time without having scored a single 2013 podium finish.

There, it's out. McLaren's season could be without silverware for the first time since 1980. For a team who have come to be regarded as a pillar of F1, this is a barely imaginable state of affairs. If it's troubling for McLaren's fans and dispiriting for the F1 media who've grown used to compelling narratives being supplied by Woking's finest, imagine if you will the *anguish* being experienced by the proud crew who sally forth each fortnight still programmed to win, while knowing their MP4-28 sadly won't deliver the necessary.

What to do?

Well, *F1 Racing* is pleased to report that McLaren have plans. Honda, we know, will be McLaren's engine partner from 2015 and we all remember what happened the last time these two got friendly. Then there's 'Mission Alonso'. Dismissed by some as mere paddock tittle-tattle, don't doubt that re-hiring F1's feistiest operator is high on McLaren's agenda, despite his last spin in silver ending so acrimoniously. In the meantime, an aggressive technical hiring programme is under way, the attention-grabbing poach of Adrian Newey's right-hand man at Red Bull, Peter Prodromou, being the most headline-worthy. There's also talk of the announcement of Samsung as a title sponsor any day soon. All told then, the future is far from gloomy, even if the fog of

underperformance has yet to lift, as you can read in our exclusive McLaren insight starting on page 41.

A degree of certainty as to the future is something that would be welcomed by Paul Di Resta, who we profile on page 58. He's one of a number of drivers whose F1 career paths were unclear as this issue went to press. After a fleet and single-stopping drive to sixth in Abu Dhabi, Di Resta told us his "focus was on staying in Formula 1". Mid-grid musical chairs be damned: he's worth his seat and it would be a considerable indictment of the sport's volatile financial straits were Paul to find himself out of a drive for want of a backer.

Cashflow woes are, however, a daily concern for the likes of Force India, Lotus and Sauber, to the extent that commercial pressures dictate their *modus operandi* to an extreme degree. The pantomime surrounding non-payment of some \$16m apparently due to Kimi Räikkönen, for example, would be surreally entertaining were it not sure indication that Lotus are a team whose balance sheet is in very real danger of rupturing.

Perhaps it's time for some of those who feature in our F1 Power List (page 73) to take stock of a state of affairs wherein only four of F1's 11 teams are financially secure, and take action for the common good. As McLaren's team principal Martin Whitmarsh noted in Abu Dhabi: "It tends to take a crisis for us to act together for the good of F1. It might be nice if we could do that for once *before* a crisis occurs, rather than afterwards."



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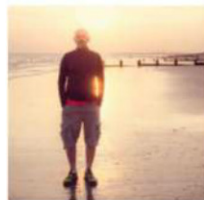
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Contributors



Andrew Ferraro
F1 Racing's ever-busy principal photographer

We made Andrew sweat this month by tasking him with a night shoot around one of Tokyo's busiest suburbs – at rush hour. Check out the results on page 88



Patrick Gosling
Life's a beach for McLaren's snapper of choice

It's incredibly rare for F1 teams to let photographers strap a camera to their holiest of holies – but McLaren made an exception for this month's front cover



Steve Croyley
Autocar editor in chief who's driven 'em all...

After four decades in the business, Steve's knowledge of the motoring industry knows no bounds. Read his take on McLaren's road car fortunes on page 48

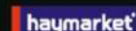


Lee McKenzie
BBC Sport's unflappable roving pitlane reporter

Established paddock wisdom places Paul Di Resta in the 'mardy' category. Lee McKenzie has unrivalled access to his inner circle (p58) and begs to differ...



Thanks to Rish Ap Gwilym, Andy Berg, Matt Bishop, Matteo Bonciani, Gavin Brown, Susana Burguera, Tim Clarke, Steve Cooper, Russell Day and family, Fiona Fallon, Ian France, Justin Gardiner, Patrick Gosling, Ross Gregory, Silvia Hoffer, Nicolas Ito, Darren Jones, Jed Leicester, Bradley Lord, Adrian Myers, Tracy Novak, Sophie Ogg, Paul Ormond, Sarah Prickett, Jonathan Reynolds, Andy Stobart, Will Taylor-Medhurst, Steven Tee, Tom Webb



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Parade

Seconds out Mark Webber threads his RB9 through the tricky final sector of the Yas Marina circuit, glimpsed here through the intricate glass-tiled roof of the Yas Viceroy hotel. Having topped the timesheets for much of the session, he'll be pushed into second by Seb Vettel at the end – although he'll later snatch pole

Where Yas Marina, Abu Dhabi **When** 2.42pm, Saturday 2 November 2013

Photographer Mark Thompson/Getty Images

Details Canon EOS-1DX, 200mm lens, 1/640th at F7.1







Parade

Cruising into the sunset It's second practice in Abu Dhabi and Jenson Button's day is about to get complicated as a failed tyre-pressure sensor interrupts his tyre-evaluation programme. He needs all the track time he can get to wring the most out of the recalcitrant MP4-28. Just three more races to go...

Where Yas Marina, Abu Dhabi **When** 6.09pm, Friday 1 November 2013

Photographer Charles Coates/LAT

Details Canon EOS-1DX, 600mm lens, 1/100th at F18







Parade

The soft option Fernando Alonso races into his pit box for his final stop of the Abu Dhabi Grand Prix – and, with just nine laps left to run, there's a set of quick but short-lived soft-compound tyres waiting. Having started outside the top ten, he's about to claim fifth place – via a near-miss with Jean-Éric Vergne
Where Yas Marina, Abu Dhabi **When** 6.23pm, Sunday 3 November 2013
Photographer Lorenzo Bellanca
Details Canon EOS-5D MkII, 15mm lens, 1/10th at F5.6



Vettel with Adrian Newey's right-hand man Peter Prodromou, who has signed to McLaren for 2015



INSIGHT

Red Bull: end of an era or the start of a new one?

With new rules and staff changes imminent, the four-time champions have their work cut out

Sebastian Vettel's fourth world title completes Red Bull's domination of F1 in the five years under the current rules. Only Brawn in 2009 have stood in the way of a clean sweep – and that was only due to their contentious double diffuser.

Will Red Bull dominate in 2014, with smaller turbocharged engines governed by a fuel restriction? Many hope a new start will level the playing field.

The new rules will end the harnessing of exhaust gases for aerodynamic effect, technology Red Bull have put to better use than any other team. But something that perhaps has even greater significance, is the departure of their head of aerodynamics, Peter Prodromou.

Like Ferrari during their most dominant era in the early 2000s, Red Bull have a tight-knit team of clever, innovative engineers

working under a group of ruthless managers, all devoted to one super-talented driver. But all empires fall eventually. Could Prodromou's departure be the first chink in Red Bull's previously impenetrable armour?

At the very top level, design guru Adrian Newey and team boss Christian Horner are contracted until 2017, while Sebastian Vettel has a contract until the end of 2015, with an option for 2016. But

below them, matters are not quite so settled. Prodromou, Red Bull's head of aero and right-hand man to chief technical officer Adrian Newey for a number of years, is moving to McLaren, and is taking with him his own second-in-command, Dan Fallows.

Prodromou has been signed to McLaren from the start of 2015, as his Red Bull contract runs to the end of 2014. McLaren have also recruited three further



The dream team: Newey, Vettel and Horner have now secured four title doubles

engineers to their aero team: two from Ferrari and one from Lotus. These moves underline McLaren's determination to become a major force again from the start of their engine-supply partnership with Honda. The Japanese manufacturer will not only provide free engines and technical input, but also a financial injection running into hundreds of millions of pounds.

Prodromou was also courted by Williams, who ultimately decided that with a salary of £900,000, plus bonuses, he was just too expensive. But the fact that he had serious conversations with one team and has committed to another leads to an obvious conclusion: he wanted to leave. And this is despite Horner's insistence in India that "people enjoy working for Red Bull, they enjoy the environment, they enjoy the way we operate".

For Prodromou at least, his move can be ascribed to ambition and wanting to be known as someone other than Newey's assistant. He has occupied this role since the pair first worked together at McLaren from 2000-2005, before following Newey to Red Bull in 2006.

McLaren must be confident in Prodromou's ability, and Newey rates him highly. So how much his departure weakens Red Bull

depends on whether Prodromou is an innovator himself or the draughtsman for Newey's ideas. Is he a leader in aerodynamic design, or the leader of an aerodynamic design department?

Red Bull now have two major questions to answer. How effectively will they replace Prodromou? And will any other key figures leave? So long as they hold on to Newey himself, both questions are arguably redundant. After all, history suggests that when the rules change, Newey's cars set the standard.

That was the case when normally aspirated cars returned in 1989 and Newey first made his mark at Leyton House; with the introduction of narrower tracks in 1998 and Newey's genre-defining McLaren MP4-13; and from 2009, with the RB5's definitive pull-rod rear suspension, ultra-low rear bodywork and subsequent exhaust-blown diffuser.

The 2014 rules are all about efficiency. Renault have the most efficient engine, and Newey's Red Bull is the most aerodynamically efficient car – as nearly all his cars tend to be. So on paper, there is little reason to believe much will change for 2014. Far from being the end of an era of Red Bull domination, next year could easily turn out to be the start of a new one.

WINNERS + SPINNERS

UPS AND DOWNS ON THE F1 ROLLER COASTER

GOOD MONTH FOR

Heart-warming comebacks

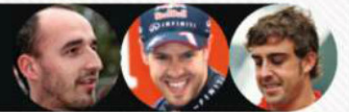
Robert Kubica has won the second tier of the World Rally Championship (WRC2). The former F1 racer, who partially severed his arm in a rally crash in 2011, took five wins in seven events to secure his first championship. As his reward, he will get to drive a top-level Citroën DS3 in November's Wales Rally GB.

Those in a rush to get the first round in

After Sebastian Vettel won the world title in India, he spent Sunday evening helping his team pack up the garage so the party could start sooner. Team-mate Mark Webber left the circuit straight after retiring from the race.

Fans of obscure historical jokes

Fernando Alonso wore a special helmet in India to mark scoring more F1 points than any other driver. But one wag pondered if the number '1571' on his lid was to celebrate the 442nd anniversary of the Battle of Lepanto...



Spontaneous expressions of joy

Sebastian Vettel was given a reprimand and his Red Bull team fined €25,000 for his impromptu 'donut' at the end of the Indian GP, in celebration of his fourth world title. Many fans considered the reprimand heavy-handed.

Spontaneous shedding of wheelnuts

When Pastor Maldonado shed a wheelnut during a practice session at the Indian GP practice, the FIA fined his Williams team a whopping €60,000. That's on top of another €60,000 fine for a similar offence in Suzuka.

Asking nicely

Lotus apologised for the radio message delivered to Kimi Räikkönen in the closing stages of the Indian GP. From the pitwall, Alan Permane radioed to Kimi: "Move out of the fucking way!" when Räikkönen got in the way of his faster team-mate Romain Grosjean. What do you reckon they'll write in his leaving card...?



BAD MONTH FOR

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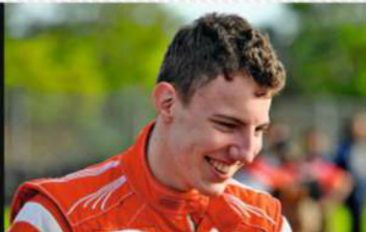


- 1 Which Brazilian racer was beaten by Jenson Button in a shoot-out for the Williams seat in 2000?
- 2 Who were the last F1 team for whom Jean Alesi (below left) drove?
- 3 Who replaced Jan Magnussen (below right) at Stewart GP in 1998?
- 4 Which two Frenchmen finished second and third in the 1983 drivers' championship?
- 5 Tony Southgate designed cars for which team from 1973 to 1979?
- 6 Which famous under-achiever started his F1 career driving for Reg Parnell Racing?
- 7 Who are the only two Monaco-born drivers to have started F1 world championship races?
- 8 What happened on 5 June 1983?
- 9 Which former Formula 1 street circuit had a start/finish line on Jefferson Street?
- 10 For which team did Stefan Johansson drive in 1988?



THIS BOY CAN DRIVE

Keeping an eye out for the stars of tomorrow



Raffaele Marciello Who is he?

Also known as 'Lello', he is an 18-year-old Swiss driver racing in the FIA European Formula 3 championship for the Italian-based Prema Powerteam.

How good is he?

In the highly rated European F3 series, Marciello has taken 13 wins, six podiums and 12 pole positions to clinch the title. Even more impressively, he has suffered only two retirements (and one disqualification for a technical infringement) during the 30-round championship.

Anything else we need to know about him?

He's a member of Ferrari's young driver academy, having impressed the Scuderia with his karting prowess. He also scored a debut win in the Formula Abarth single-seater series.

F1 chances

Sergio Pérez and Jules Bianchi have come through the academy to land seats in F1. While Marciello has yet to prove himself in higher categories, if his form continues and he proves adept in more powerful machinery, a Ferrari drive could feature in his future.

NEWS



Brawn set to exit Mercedes

A gradual departure was being planned, but team principal Ross Brawn will now leave on his own terms at the end of this season

Mercedes team principal

Ross Brawn will leave the team at the end of the 2013 season. So far his future plans are unknown.

Brawn's departure is not a huge surprise. Mercedes originally intended to let him go immediately, when they signed McLaren's former technical director Paddy Lowe at the start of the year. However, that situation changed when Brawn, in the words of one source, "got his elbows out", and plans shifted to trying to find a way to keep him on at the team.

Since then, non-executive director Niki Lauda has been negotiating with Brawn over a future role at the team, but there was one non-negotiable condition. Mercedes is to be run in tandem by executive directors Toto Wolff and Lowe. Had Brawn stayed on, it would have had to be in a different role that did not give him day-

to-day authority over the team.

An impasse then developed as Brawn wanted to remain in sole charge of the team, while Mercedes believe this is an outdated concept, given the complexities of modern F1. Sources close to Mercedes say they were impressed by Brawn's ability to hang on for so long at the team in the face of the company's desire to remove him. Equally, Lauda's decision to ally himself with Brawn only to fail to reach a solution could be seen to weaken his position and strengthen that of Wolff.

Brawn's future is uncertain. He has been linked with potential roles at Honda and the FIA. However, a role leading Honda's F1 project as they return as McLaren's F1 engine partner seems unlikely, given Brawn's frustration at working with them towards the end of his time as their team principal.

Answers: 1 Bruno Junqueira 2 Jordan 3 Jos Verstappen 4 Alain Prost and René Arnoux 5 Shadow 6 Chris Amon 7 Louis Chiron and Olivier Beretta 8 Tyrrell won their last F1 grand prix 9 Phoenix 10 Ligier

PHOTOS: STEVEN TEE/LAT; PETE SPINNEY/LAT; XBP/LAT; LAT ARCHIVE

FORMULA 1 2014 STARTS HERE...

The new Formula 1 season gets off to a roaring start on 9-12 January at the 2014 Autosport International Show, with a stunning collection of cars from all the teams contesting the world championship, and much more...



Ferrari champion John Surtees and Force India's Adrian Sutil (tbc) will be talking to fans at the show



Earlier this year, some 80,000 fans flocked to the NEC in Birmingham to forget the off-season blues and enjoy Europe's biggest motorsport show. At 2014's show, we'll look ahead to a new season that brings great excitement courtesy of a major change to the engine and aerodynamic regulations. We also hope to welcome Autosport International newcomer Adrian Sutil, along with other well-known F1 faces, to explain the changes.

Sky Sports F1 commentator Martin Brundle – whose own career included 12 seasons in F1

with teams such as McLaren and Benetton – will analyse the 2013 season and look ahead to how the radical new technical rules will shape 2014.

Historic Formula 1 will also be celebrated. To mark the 50th anniversary of John Surtees' 1964 world championship with Ferrari, the man himself will headline the guest list, accompanied by a rich collection of race cars and bikes from his illustrious career.

"Autosport International is a major part of the motorsport

calendar, and I'm delighted to be attending the 2014 show," said Surtees. "Having raced for over 30 years in many different disciplines, it will be exciting to pass on my experiences to passionate fans, and share the work of the Henry Surtees Foundation in motorsport and road safety."

Elsewhere, Sky Sports F1's David Croft will host a live 'drive-thru' demonstration in the 5,000-seat Live Action Arena, of the iconic Lotus 79 and 49 – cars that were raced by world champions Mario Andretti, Emerson Fittipaldi and Graham Hill, and which won 18 grands prix, three drivers' and three constructors' championships between them.

Tickets are on sale now, with adult entry priced from £31 and children's tickets from £20. For more detailed information about the show, visit www.autosportinternational.com.



Russian teen Daniil Kvyat will take over Daniel Ricciardo's Toro Rosso seat for 2014

PHOTO: ANDREW FERRARO/LAT

NEWS

The Russians are coming

New Toro Rosso signing Daniil Kvyat is the latest Russian driver to make it into Formula 1

Not only will F1 have its first Russian Grand Prix next year, but it looks increasingly likely that two Russian drivers will compete in it.

Sauber will run Sergey Sirotkin in deference to their new Russian partners, provided his patchy CV does not stop him from obtaining the necessary superlicence. And now Toro Rosso have announced they will also have a Russian in the cockpit, after Red Bull chose to replace Daniel Ricciardo with Daniil Kvyat.

Nineteen-year-old Kvyat has impressed in GP3 this season – the category from which Williams's Valtteri Bottas progressed directly to Formula 1, albeit via a year as Williams's reserve driver. He has leapfrogged António Félix da Costa, who had been Red Bull's next in line for an F1 drive. This is due to da Costa's

inconsistent season in Formula Renault 3.5, in which he's been outshone by McLaren juniors Kevin Magnussen and Stoffel Vandoorne.

Kvyat is more inexperienced but has improved as the season has progressed. Nevertheless, his promotion still comes as a surprise, even taking into account Da Costa's struggles and his own improvement.

Kvyat and da Costa drove at the Silverstone young driver test in July, along with another Red Bull junior driver, Carlos Sainz Jr, son of rally legend Carlos Sainz Sr. Sainz was more obviously impressive than either Kvyat or da Costa, setting fastest times in both the Toro Rosso and the Red Bull and making no mistakes. Kvyat, meanwhile, spun the Toro Rosso and da Costa spun the Red Bull.

The word is that Red Bull feel Sainz is just too young and inexperienced for Formula 1, although he is neither significantly younger nor less experienced than Kvyat. But Sainz has been less competitive than Kvyat in GP3 this season – and Kvyat's promotion has a financial aspect to it.

The Russian soft-drinks market was valued at \$14.5bn (and growing) in 2011 – an important consideration for Red Bull, who after all are in F1 to promote their soft drink. But a Russian bank is also rumoured to have paid a significant amount of money for Kvyat to race for Toro Rosso.

Only time will tell, but the impression of Russia as an increasingly significant force in F1 is unlikely to go away.

TECHNOLOGY OF CHAMPIONS

1

WINNING FORMULA: SMARTER MOLECULES

Mobil 1™ engine oil is engineered at a molecular level to perform inside a Grand Prix engine.

As it travels around the Vodafone McLaren Mercedes MP4-28's engine, Mobil 1 engine oil is repeatedly transformed. It flows at speeds close to 100 mph, resting for just a few seconds in the oil tank before being deployed to different areas of the power unit, where the loads, temperatures and speeds vary massively. Under extreme pressures, the oil can temporarily turn into an almost solid state, depending on where it is in the engine.

10

Mobil 1 engine oil can transition from a liquid to a consistency that's thicker than honey and back again in as little as ten microseconds.

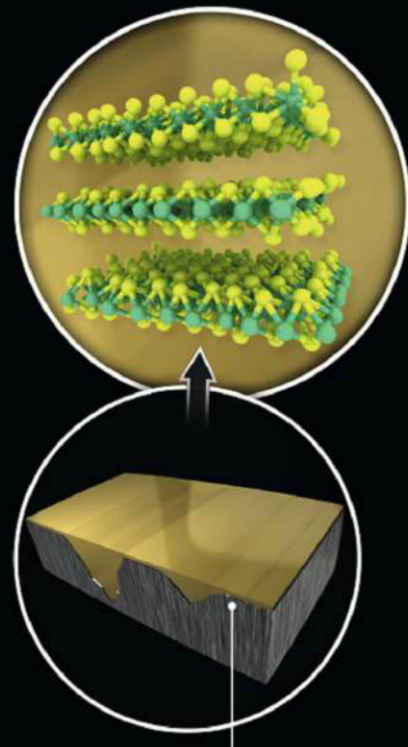
The oil is 'sheared' as it passes through fast-moving piston and bearing contacts, re-orientating the molecules and reducing its viscosity, which lowers friction.

1,000

The oil's viscosity can increase by a factor of one thousand when squeezed by gigapascals of pressure in the camshaft contacts.

TIME FOR CHANGE

'The oil is engineered specifically for use in the Vodafone McLaren Mercedes MP4-28,' says Bruce Crawley, Global Motorsport Technology Manager, ExxonMobil Fuels, Lubricants & Specialties Marketing Company. 'Lubricating a Grand Prix engine presents some unique technical challenges for the oil, its properties change dramatically depending on where it is in the engine. The magnitude of these temporary transformations are determined by the unique molecular composition of the oil.'



Under extreme temperatures and loads at the precise points where components come into contact, Mobil 1 engine oil forms microscopically thin films which separate surfaces and reduce friction.





Maldonado: likely to leave Williams for 2014



Hülkenberg: skills sought by cash-strapped Lotus

NEWS

F1 driver market due for a shake-up

It's all happening in the midfield: Maldonado to leave Williams, and seats at Lotus, Force India and Sauber up for grabs

The drivers in the midfield teams are engaged in a game of musical chairs ahead of 2014, and it remains to be seen who'll be left without a seat when the music stops.

Lotus need to fill a seat following the announcement of Kimi Räikkönen's move to Ferrari. They are currently in negotiation with both Nico Hülkenberg and Pastor Maldonado, although neither driver had been signed as *F1 Racing* went to press. The team would prefer to take on Hülkenberg, whose performance is more impressive, but the decision lies with the management of owners Genii Capital and is dependent on



Massa: set to make move to Williams

Maldonado, who theoretically comes with £30m a year from his sponsor, Venezuelan state oil company PDVSA. That would help bridge the gap between Lotus's income and

a deal for US-Middle Eastern financial consortium Quantum to buy into the team.

But if the Quantum deal does not come off – and there is scepticism that it will – they may be tempted to sign up

expenditure that Genii otherwise have to make up with their own money.

PDVSA have a contract with Williams for the next two years and without PDVSA behind him, Maldonado has no funding. PDVSA want to get out of their deal with Williams, but the team will fight for the money. Maldonado is expected to leave Williams either way, and is almost certain to be replaced by Felipe Massa. If Maldonado does not end up at Lotus, the only obvious places for him would be at Sauber or Force India, where Paul Di Resta's position looks increasingly shaky.

McLaren still have not confirmed Sergio Pérez's seat for 2014, although in India, Pérez himself said he believed his future with McLaren to be secure.

A wildcard in all this is McLaren's highly rated young driver Kevin Magnussen, who McLaren want to move to F1. Initially they looked at Force India and more recently at Marussia. They've even considered putting him in a McLaren as a stop-gap, while they try to land Fernando Alonso for 2015.

ANALYSIS

Will the Indian GP return to F1 in 2015?

A court order threatened the third running of the Indian GP, but F1 could yet rue its demise

This year's Indian GP could mark the last time F1 holds a race in the country, despite it being one of the world's most important markets. India has a population of 1.2 billion, a youthful middle class and is a growing force in geo-political-economic terms. A country, in other words, where F1 really needs a presence.

Growing frustration with Indian authorities over tax may have sounded the death knell for the race. India's government classifies F1 as entertainment rather than sport, which means the race is subject to an entertainment tax. In theory, this should not happen, due to a tax deal between India and Europe that dictates entities cannot be taxed in two different



Force India boss Vijay Mallya is seen as synonymous with the Indian GP

countries. In practice, it has not worked – hence a court hearing on the eve of the race in which the authorities sought to have the GP cancelled on the grounds of unpaid tax.

Brokering a deal is proving tricky. But there are two reasons why it is difficult in India. In a country with so much poverty, it is seen as bad form for a government to support what is seen as a plaything of the rich. Also, people link the race with Force India boss Vijay Mallya, who worked for years to bring the

race to the country. Mallya is a controversial figure as an ostentatiously rich businessman in financial difficulties. It plays badly for politicians to be seen to be close to him.

Even if the issues are resolved, Ecclestone's desire to move the race to March will cause problems. Temperatures in Uttar Pradesh are a pleasant 30°C in October. In March they are well into the 40s.

Hopefully sense will prevail over the future of this spectacular race.

STATS

The Indian GP in stats (2011-13)

We look at the numbers behind New Delhi's three appearances on the F1 calendar

36 drivers have started the GP

Drivers to enter Friday practice only: 2

3 drivers have led the race

1 Number of Indian GP winners (Vettel)

4h 32m 57.933s

Total time taken by Vettel to win all three races

180

TOTAL NUMBER OF RACE LAPS

153

LAPS LED BY **SEBASTIAN VETTEL**

220,000 TOTAL RACE-DAY SPECTATOR ATTENDANCE

Total number of pitstops: 120

Fastest speed recorded **J Alguersuari (2011)**

201.448mph

Fastest lap time recorded **S Vettel (2013)**

1m 24.119s

Most number of laps of circuit **N Rosberg 498 laps**

TOTAL DISTANCE RACED **573 MILES**

NUMBER OF SAFETY CARS: 0

NEWS

Rule-making process divides F1

Smaller teams left out of the powerplay of Formula 1's new Strategy Group

There is growing unease in F1 circles about the direction the sport is taking. When the previous Concorde Agreement came to an end in 2012, it gave Bernie Ecclestone the chance to change the playing field in his favour. He has not yet finalised a new Concorde Agreement, instead negotiating individual agreements with the teams (Marussia's was completed on the eve of the Indian GP, so all 11 are now locked in) and creating new structures that dramatically increase his power.

One new arrangement is the introduction into the decision-making structure of a new body called the Strategy Group. The old structure, in which sporting and technical working groups sent recommendations to the

FIA World Council, included all the teams in decisions. But the Strategy Group consists of Red Bull, Ferrari, McLaren, Mercedes and Williams, with a seat reserved for the best-placed team of the rest – currently Lotus.

The other teams are not part of the group, and can only feed ideas to the bigger teams.

The FIA's power is also reduced because of the voting procedure. The six teams in the Strategy Group have one vote each, while the FIA and Ecclestone's F1 Group each have six, with decisions passed by a simple majority. So to get his way, Ecclestone need only square off four teams, which would be easy for him.

Big teams insist the group streamlines decision-making and that others can still feed



Under the new structure, Ecclestone can gain a majority by squaring off four teams in the group

in through the working groups. But Force India's deputy team principal Bob Fernley says smaller teams are being "disenfranchised", and fear bigger teams will introduce customer cars. This would officially 'help' smaller teams by reducing costs, but it would kill them off by removing their core business.

In addition, some have questioned the ability of the teams to make effective rules – and say Todt's non-confrontational approach is not helping.

OBITUARY



Maria de Villota 1980-2013

Formula 1 was saddened by the death of Maria de Villota over the weekend of the Japanese GP. The former Marussia reserve driver, who lost an eye and suffered head injuries in a testing crash in 2012, was found dead in her Seville hotel room on 11 October.

It's been reported that doctors told the de Villota family she died "as a consequence of the neurological injuries she suffered" in the Marussia crash, in which she crashed into the tailgate of a stationary lorry.

De Villota had been hailed as a trailblazer for women in motorsport and for the work she had done on safety following her accident.

Williams reserve driver Susie Wolff said: "She had such a spirit for life and what she came through was a testament to her strength of character and her positive outlook. After the accident, she was behind me and had such a lust for life. She was happy to be alive and that she'd survived it. She had many great plans for the future. She was an incredible lady."

McLaren team boss Martin Whitmarsh added: "She was incredibly brave... someone who desperately wanted to achieve success in motor racing regardless of her gender. That's inspirational. A big loss to the sport and to her family, friends and loved ones."



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Pat Symonds'

FITPASS TECH

Explaining the hidden brilliance that drives Formula 1 forward

THE SCIENCE BEHIND...

Wet-weather racing

We often see TV footage of teams studying the weather radar to determine the onset of rain. But other than changing the tyres, is there anything they can do to enhance performance in the wet?

The simple answer is no. These days, cars enter parc fermé conditions as soon as qualifying begins, which means that compromises have to be made. When there is an official change in climatic conditions, certain things can be altered such as the car's cooling, but changes to the setup are no longer allowed.

When changes were permitted, what sort of thing could be done?

Perhaps the most important factor to consider when racing in the wet, is that the optimum level

of downforce is higher. More load in conditions where grip is limited will more than offset the loss that occurs on the straights from the extra drag associated with a higher level of downforce. Other than that, it's always worth making the car a little bit softer. Cornering speeds naturally tend to be lower in the wet, so it's not really necessary to carry as much roll stiffness. Softening the car will enhance the mechanical grip and also gives the driver a better feel of when he is approaching the limit.

These days, if you knew it was going to be wet all weekend, would you still make these changes?

If you knew for sure it would be wet, then perhaps you would. But weather forecasting is a fickle business and there is rarely any absolute

certainty as to what the weather will be like the following day. The main problem with this approach is that a car that has been fully set up for the wet will be marginally quicker than a car set up for dry conditions *providing* it remains wet. But, if the weather turns out to be dry, it will be significantly slower than one that has persisted in using dry settings. So in terms of risk analysis, the likely odds and outcomes are often unfavourable.

So the most important thing in wet weather is still the tyres?

Absolutely – slick tyres would be disastrous if used in wet conditions. A tyre achieves grip in two ways. One way is through the adhesion of the tacky tyre surface to the track, and the other is by the deformation of the tyre around the edges of the stones that form the aggregate of the Tarmac. This provides a locking effect, which creates the grip. In wet conditions the former is never present due to the film of water that is separating tyre from track, and if the water



When racing in the wet, water is thrown up in a 'rooster tail' behind the car, and can enter the engine air inlet of a closely following rival



HOW DO A TEAM KNOW WHEN IT'S TIME TO CHANGE THE TYRES?

At any grand prix we visit, we are continually calculating a 'cross-over' time. That is the lap time at which it becomes most favourable to change to a different type of tyre. As a rule of thumb, we would usually change from slick

tyres to intermediates at 117% of a dry time and from intermediate tyres to wet tyres at 125% of a dry time. But obviously this is something that will tend to vary widely from circuit to circuit.

is deep enough, even the second mechanism can break down when the tyre rides up on a film of water to create aquaplaning.

How do you avoid aquaplaning?

The most important thing, whether you are racing in a grand prix or driving an ordinary car on the road, is to have sufficient tread on the tyre. A set of Formula 1 wet tyres will shift around 60 litres of water per second at high speed. With a wet lap at an average circuit taking somewhere in the region of 90 seconds, this means the car will shift around 5,400 litres of water per lap – that's equivalent to 24 average-sized baths and can be achieved only if the tyre has good tread depth.

The other important factor in avoiding aquaplaning is the ride height of the car. Formula 1 cars run very close to the ground at high speed – just a few millimetres above the track surface, in fact. If the water is of sufficient depth then the underside of the car will literally ski along the top of it. For this reason it is often prudent to run at a higher ride height in wet weather, but here the tyres help us out: wet tyres are a slightly larger diameter than slicks, so they automatically raise the ride height when they are fitted.

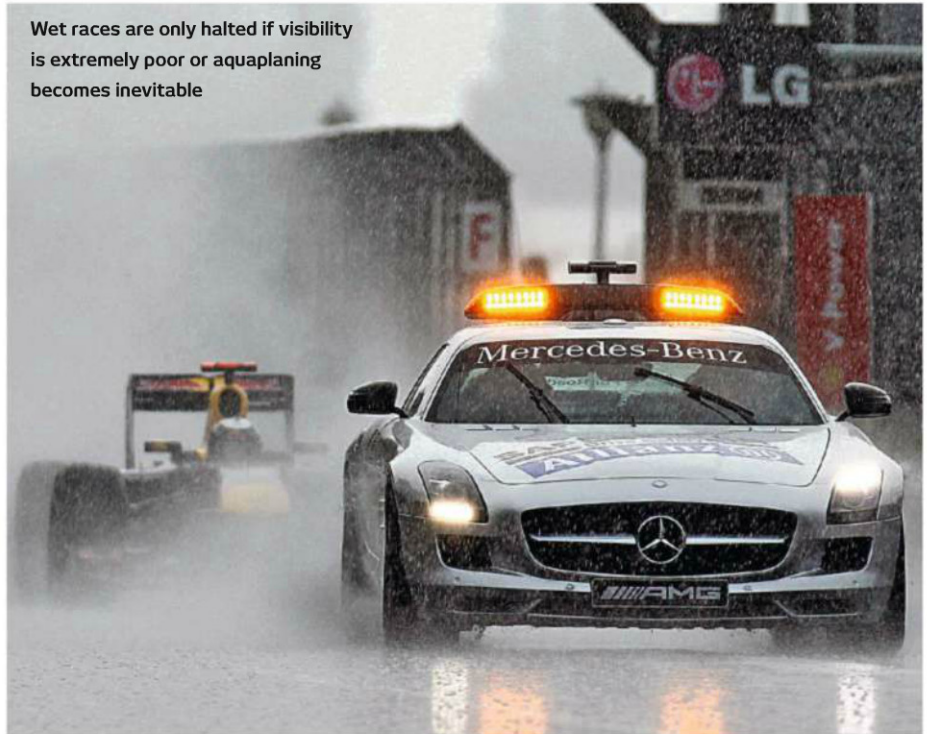
Do you have to do anything to waterproof the cars?

Generally speaking, no you don't. The wiring is protected to a classification known as IP65, which is an international standard that ensures the ingress of water does not harm the electrical systems. This is incredibly important when you consider the high-voltage energy recovery systems that are used these days in Formula 1. But even with this high level of protection, several KERS-equipped cars suffered problems over the course of the extremely wet 2009 Malaysian Grand Prix.

What about the engines?

When racing in the wet, huge amounts of water are thrown up in the 'rooster tail' that forms behind the car, and a competitor following too

Wet races are only halted if visibility is extremely poor or aquaplaning becomes inevitable




closely behind may experience water entering their engine air inlet, which can cause problems. To militate against this, the engine air inlet has slots that allow the water to drain away with minimal detrimental effect on the air pressure at the engine inlet.

Teams will also usually prepare engine maps that offer smoother torque delivery in the wet to assist the driver with controlling the car.

The 2009 Malaysian Grand Prix had to be stopped due to the extreme weather conditions. Should Formula 1 cars be allowed to race in the rain?

Of course they should. One of the greatest challenges presented by motorsport comes from trying to deal with whatever conditions you encounter in a more successful manner than your competitors. That said, there are certain conditions under which it is impossible to carry on – such as when visibility is extremely poor or aquaplaning is inevitable.

Poor visibility and aquaplaning are obviously beyond a driver's control, but does he need to drive differently when racing in the rain?

Yes, different courses of action are open to him. Firstly, smooth driving pays dividends when the circuit is wet. He needs to be extremely gentle with his control inputs to the throttle, brakes and steering as wet tyres react very badly to sudden changes of load. Secondly, he needs to read the track. If there is standing water, he obviously needs to avoid it, but even where the track is merely wet there will be different levels of grip. On a well-worn surface the smooth asphalt on the racing line that offers high levels of adhesive grip in the dry is the enemy of grip in the wet and the rougher, less-used part of the track is superior. In addition, the driver must manage the tyre temperatures as the track dries. Too much load will overheat the tyres and in these circumstances the driver may seek out the water-laden parts of the track to cool the tyres. 



Peter Windsor RACER'S EDGE

Authority, wit and intelligence from the voice of *F1 Racing*

ALL EYES ARE ON McLAREN AS WE AWAIT THE REVELATION OF THEIR NEW TITLE SPONSOR

I'm awaiting 2 December with bated breath. I think it will be a pivotal moment in the evolution of our sport. For 2 December – the first Monday of the month – is the day when McLaren will announce their new title sponsorship.

McLaren are the accepted world leaders of F1 sponsorship procurement and activation, so as I see it, their big day will bring one of three possible results. The first will be more of the same: another cash-rich, global Fortune 500 name will settle on McLaren with a long-term (ten years with a five-year break clause) £50m annual spend. Great. We can relax. An F1 title sponsor pays £250m over five years; a sponsor of the Olympic Games pays just one fee of £50m. F1 continues to rule the sponsorship world.

The second: a driver-related sponsor will underline my thoughts of a few months back, to wit, that the power is now with the drivers, not the teams. McLaren will be running a rent-a-driver on steroids – and that could be both good and bad.

The third – the one I fear most – is that the date will pass with nothing said at all, or with some sort of postponement or watered-down title deal. In that case, we'll need to regroup. And it'll be clear. Even McLaren, with their multi-million-pound motorhome spend, their half-billion pound homebase and their microscopic attention to material detail, cannot fight F1's lack of self-promotion and new frontier disintegration. Even McLaren will push for a major change in the way we develop and promote our sport.

Of course McLaren haven't exactly been stealing headlines in 2013. It's been a tough year for them. They haven't won races, they've lost their technical

director, and they've had to discover life beyond Lewis Hamilton. It's because of years like this, however, that McLaren are who they are today. They do the outrageous motorhome spend and they work in the art-museum-cum-race shop precisely *because* they want immunity from the vicissitudes of F1. McLaren's image is beyond that of a mere

F1 team. They are a group; they are a *brand*; they are blue-chip; they work with *partners* not mere sponsors. Bling they are not. They're minimalist chic.

So 2 December will be a major pointer to where we are at. We know F1 proved incapable of sustaining races in India and Turkey, despite massive local spends. We know that only a smattering of spectators attend races like China, Korea and Malaysia – and we know big Korean and Chinese ad agencies are not directing their clients towards F1. Instead, we see sports like golf, tennis and the Olympics attracting the new-age sponsors – and that is despite the spread of F1 races in Asia.

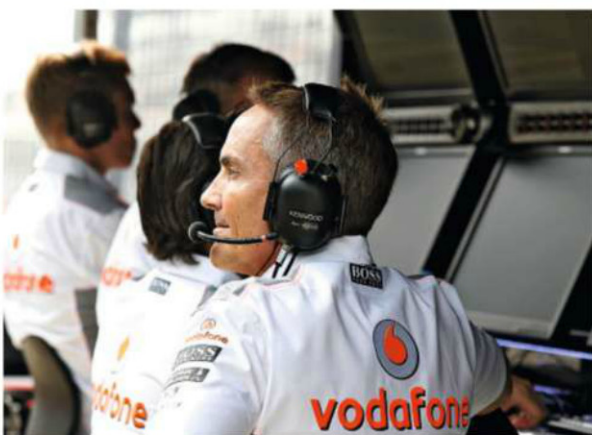
And we conclude, because hard numbers always do the talking, that F1 is either overpriced relative to other proposals on the desks of those ad execs, or that is underexposed and underpromoted as a sport (relative to its opposition).

We see, too, the ever-expanding F1 calendar. The teams don't *like* it, but they *need* it. It is a guaranteed source of money at a time when sponsorship is difficult to generate. The F1 money pool used to be supplied by three major sources in roughly equal proportion – by governments (building Tilke supercircuits and paying the F1 race fee); by TV networks (primarily Germany, Spain, Italy, Japan and the UK) buying TV rights (to the exclusion of the global internet); and by commercial sponsorship generated by the teams. Now the weight is shifting. More sponsors ride on the back of races as distinct from the teams; and there are fewer sponsors.

Hence the 22-race calendar for 2014. Hence the tepid reaction to the loss of India, or to the lack of Chinese and Korean sponsors. *There isn't time to think about it.* F1 teams pay weekly wage bills, pay suppliers (as late as they dare!), pay monthly salaries. They have to go where the money is. They have no capacity to analyse the lack of interest in China or the demise of India – and nor do F1's commercial rights holders. They have a mortgage to pay, a cashflow to sustain. They see a new, well-financed race and they immediately see additional revenue. The racing, in effect, is replacing the sponsorship.

All this makes short-term sense. It's a neat, if exhausting, solution to a void caused by years of overspending and underpromotion. It brings, though, its problems. How do you service the back end of a 22-race season if the title is won by, say,

It's difficult seasons like this one that have made McLaren the team they are today





The McLaren brand centre moves from race to race, giving the team's partners an obvious presence

"McLaren are a group; they are a brand; they are blue-chip; they work with partners not mere sponsors"

race 17? With additional pre-race promotion, I'd say – but then no one has a budget for that (not the teams, anyway, nor the rights holders). Thus the larger championship could take us in the direction of saturated NASCAR, the 2013 season of which was thus summed up by one leading US journalist, Peter de

Lorenzo, on the website *autoextremist.com*: "They are hell-bent on riding the current downward slide – the declining in-person attendance, the death march of a schedule that rivals the NBA and the NHL schedules for lunacy (with serial redundancy added in for good measure) and the declining TV numbers – to oblivion." I should point out here that NASCAR have a mind-boggling 36-race schedule set up for 2014, but the parallel trend is obvious: too much of something can be debilitating. Especially when your underlying philosophy has always been 'less is more'. And the national, free-to-air TV networks, while

still increasing their spends, aren't feeling comfortable about the greater programming demands of the longer F1 calendar.

I don't think a fatter schedule addresses the sponsorship problems. Yes, Russian drivers (and money) are emerging now there's a Russian F1 race. Where are the Chinese and Korean drivers, though? And why, given the infrastructure we have among Indian drivers, is the Indian GP not happening in 2014?

These are questions that must be asked. I don't pretend to have all the answers – but I do think the teams and rights holders should do more to promote F1 in its new-frontier countries. It is not enough just to race there. Top drivers should make public appearances in America during the August break. Over the winter there should be F1 promotion in China, Malaysia, Japan and Korea. Properly financed national driver programmes should be instigated. Everyone should be reminded that F1 is the world's biggest TV sport, but that the show runs from January to December, seven days a week – not just when F1 people roll up for a race. In the meantime, as I say, let's see what McLaren bring in on 2 December. Let's hope it's a big one. 

F1 needs to work harder at boosting attendance at newer races, such as the Korean GP



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Dieter Rencken

POWERPLAY

The stories F1's bigwigs would rather you didn't know...

A RETURN TO CUSTOMER CARS COULD CHANGE THE VERY NATURE OF F1

Customer cars were part of the fabric of F1 for years, with Frank Williams getting a foot up in a privately entered Brabham, and Jackie Stewart driving a March for Ken Tyrrell. In fact, Stewart's win in Spain 1970 was the last win by a customer car.

That changed in the early '90s when the FIA decreed teams must own the intellectual property to their cars. The next step was to enforce pairs of cars per team, with regulations eventually stipulating a uniform livery. Indeed, British American Racing's concept of running one car in Lucky Strike colours and the other in 555 blue was thus scuppered, with the nascent team forced to run a brand on either side of the car in 1999, their liveries split by ghastly 'zippers'.

Fans grew accustomed to Noah's Ark grids, with cars lining up side-by-side as teams expanded facilities to make increasing numbers of the 'listed parts' – components for which teams must hold the IP. Millions were invested. Factory space expanded and headcounts exploded to the point where, in their heyday, Toyota operated two windtunnels 24/7 and employed around 1,000 people to campaign two cars for two hours on fewer than 20 Sundays per annum.

That could change if plans by the commercial rights holders (CRH), CVC Capital Partners, come to fruition. The plans boil down to this: for F1 to have an equal number of teams, split into five or six 'A' and 'B' teams each, with those at the sharp end supplying the lower grid with turnkey technology – whether previous models, or the latest spec. The scheme is overseen by F1 tsar Bernie Ecclestone, in his capacity as CEO of the Formula One Group (FOG), the operation in which

CVC holds a majority share. And therein lies the motivation for the change: getting a better deal for those inside the agreement.

CVC splits F1's revenues 62% (teams) / 38% (CRH), with the former amount being split between the top ten teams of 2012. Red Bull, Ferrari, McLaren and Mercedes, the constructors' championship bonus (CCB) teams, receive premiums calculated on the basis of recent

performances/heritage. They will continue to do so through to 2020 regardless of seasonal performance.

Together with Williams (on the basis of heritage) and Lotus (highest-placed 'other' team) they sit on F1's Strategy Group, with a vote each. The FIA and FOG hold six further votes each, making a total of 18. Its decisions are escalated for approval to the (26-seat) F1 Commission, which can approve or reject proposals, but not amend them – then to the World Motorsport Council for execution. The Strategy Group met in October, with customer cars top priority.

If the plans come to pass, they would probably result in two-times-two Red Bulls, Ferraris and McLarens etc, with the most likely scenario being Toro Rosso as Red Bull customer, Sauber purchasing complete cars from Ferrari, and Force India from McLaren or Mercedes. Advantages to the CCBs are obvious: they will generate income from the sale of technology while spreading development costs over four cars. The minnows would save themselves the current annual development costs of cars with shelf lives of just 12 months. CVC, for their part, could justify lower payouts for teams on the basis of reduced costs at both ends of the grid, while the chances of weaker teams going to the wall would be reduced, certainly in the short term.

Ferrari argue fans would rather see four 'Ferraris' in action – even with two painted blue – than two of its red cars and, say, a pair of Marussias. Technology, they argue, would be better spread more equitably across the grid. But understandably the disadvantaged teams, who have invested in factories and hundreds of highly qualified staff, are up in arms. Many fear bankruptcy, and off-record are threatening EU Commission action on the basis of abuse of monopolistic position.

Could it *really* come to that? Consider that team bosses such as Vijay Mallya (Force India) and Sauber's Monisha Kaltenborn, who owns 33 per cent of the Swiss team, have no seats on the Strategy Group, while all four CCB team principals are employees of their respective corporations. Setting aside the economic consequences to the teams, the largest threat is to F1 itself, for if major teams withdraw, they will take a total of four cars with them. In the meantime, teams that have the misfortune of buying the slowest customer car will forever struggle.

To observe the progress of Caterham and Marussia has been fascinating. Short-term greed aimed at filling the pockets of money men would destroy that.

"The plan is that teams at the sharp end will supply the lower grid with turnkey technology"



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VALTTERI BOTTAS ROOKIE YEAR

The Williams racer reveals all about his first season in F1

MY FIRST SEASON IS NEARLY OVER – AND I’M ALREADY LOOKING FORWARD TO THE NEXT ONE

After the races in Asia, we now head to the Americas for the final two grands prix in my first season racing in F1. It’s been a long year and while we haven’t had the performances I would have liked, myself and the whole Williams team will be pushing hard to get strong results in Austin and Brazil.

I’ve enjoyed racing in Asia, and I really liked visiting India again. The culture is so different to what the predominantly European Formula 1 paddock is used to. For example, there are buses stationary in the middle lane of the highway and animals roam free everywhere. It’s a unique place. My first time there, I was a bit nervous as a passenger in the New Delhi taxis, but this year I’ve felt much calmer. Initially it looks as though there are no rules whatsoever on the road, but actually the drivers have their own way and it seems to work.

While the junctions look totally chaotic, everyone somehow sorts it out and the drivers have their own system of communicating with their horns. All the different types of ‘beeps’ have different meanings.

Looking back over this season, my biggest disappointment has been our overall performance. It’s a long way from where I’d imagined we’d be as I felt we could have taken a step forward from last year, but sadly that hasn’t been the case. We’ve identified the weaknesses in the FW35 and they’re mainly on the aerodynamic side. We still need to work in this area and it’s something we’ll concentrate on during the practice sessions in the final couple of races. Having said all that, I have learned a lot this year. For example, I now know how to manage tyre

wear during a race, and am now able to establish a good setup with my engineer Jonathan Eddolls to maximise a qualifying run. Plus I’ve made quite a few improvements in driving style and perfecting lines.

During the debriefs at the end of the session, we sit down and go through in detail exactly what the car was doing in every corner of the lap. We break that down even further and I’ll explain how the car reacts in braking, entering, mid-corner and on exit, too. My job is to relate how the car is handling to the engineers and using my feedback along with the telemetry data, they’ll come up with a plan to make changes to the car – hopefully for the better. A key point is not to make changes before the circuit has had a chance to get up to speed. Very often the car won’t handle well on a ‘green’ track at the start of the weekend, but we’ve done a good

“Next year there will be a big change – both the front and rear of the car will alter quite significantly – and I think this will be a good opportunity for us to make some gains”

job with car balance this year and have avoided making that mistake in chasing setup.

Next year there will be a big change – both the front and rear of the car will alter quite significantly – and I think this will be a good opportunity for us to make some gains. Also, there will be no chance to utilise the exhaust gases into the diffuser in 2014, which I think some teams have been better able to exploit than we have. But it’s up to us to catch up and maintain the development race throughout the season.

It’s been interesting dealing with the different aspects that F1 throws up, from a technical point of view, as well as working with sponsors and the media. I haven’t really spent much time with any other drivers though. There was a big dinner with all the drivers in Korea, but I didn’t attend because it was a Grand Prix Drivers’ Association meeting and I’m not a member.

I’ve noticed there’s usually one driver who is more vocal than the others, particularly in the drivers’ briefings we have at the circuit with the FIA’s Charlie Whiting. Probably the driver who talks the most is Sebastian Vettel. He’s quite vocal about issues between drivers, certain moves or penalties from the previous race. Personally I keep quiet and listen. What I’ve learned from these races in Asia is to continue fighting for positions until the very last corner of the race.

“What I’ve learned from these races in Asia is to keep fighting for positions until the very last corner”



PHOTO: CHARLES COATES/LAT



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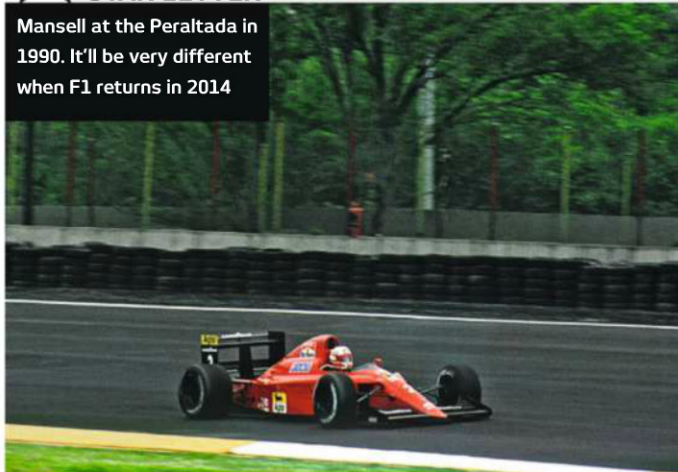
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STAR LETTER

Mansell at the Peraltada in 1990. It'll be very different when F1 returns in 2014



What's Mexico without the Peraltada?

Much is being made about F1 returning to classic tracks, such as Austria and Mexico. But having seen the proposed new layout for next year's Mexican GP (*F1 Racing*, November), I wonder if we're being sold short?

Surely the reason to go back to the traditional circuits is to revisit the classic corners of Formula 1 folklore? But as the Peraltada is set to be neutralised into a chicane and a mid-speed right-hander, we will have lost what made this circuit great.

After the two seasons away from Suzuka, would we have wanted to return there if 130R had become a 90° third-gear corner? Would Spa still excite us with Eau Rouge gone? And what would we think of Silverstone if Maggotts and Becketts were neutralised?

While the atmosphere at circuits is all important, if you get rid of the original layout of a track, are we really returning to a classic? If we do return to circuits of old, then let's retain their layouts as this is surely what has made them great, and is why we want to go back.

Euan Gorrie
Inverness, UK



STAR PRIZE

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Cut new drivers a bit of slack

After reading your feature on Toro Rosso (*F1 Racing*, November) I felt that I must counter a comment made by Franz Tost. He said that an F1 driver must eat, drink and sleep the sport, 24/7, 365 days a year.

With his mentality, it is no wonder so many promising young driver's careers have been ruined by him and Helmut Marko. It is totally unrealistic to expect any driver to have this attitude. Drivers need some free time away from their sport to retain their enthusiasm.

Toro Rosso also need to appreciate the fact that a driver may need three or more seasons to learn the finer points of F1, considering that the first year alone needs to be dedicated just to learning the circuits.

For example, how can a driver like Jean Alesi be allowed to stay in F1 from 1989-2001 having won just one race in all that time, when four-time Champ Car winner Sébastien Bourdais was shown the door after just two seasons? Red Bull want to maintain a good image, but their sister team is undermining it.

Andrew Byng
By email

Double the excitement

While thinking about current levels of competitiveness in F1, I had an idea. How about having four or five 'grand slam' grands prix that are worth double points or offer other incentives, ie for setting fastest lap? Teams would perhaps then be more inclined to take chances and would consider bringing new aerodynamic packages to each race.

I'd suggest Silverstone, Monaco, Monza, Singapore and perhaps Brazil. What do you think?

Ryan Cooper
By email

NEXT MONTH...

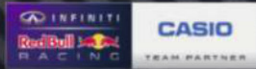


ALL HAIL THE KINGS OF FORMULA 1!

After four back-to-back title doubles, we get right inside the Red Bull winning machine:
> Maurice Hamilton interviews Adrian Newey over lunch
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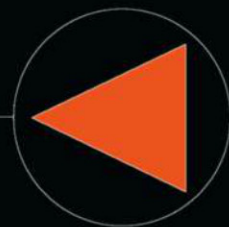
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Now that was a car



No. 22 The Jordan 191

The lean, green machine rightly considered one of F1's classic beauties



WORDS JAMES ROBERTS PICTURES JAMES MANN

In the winter of 1989, two F3000 rivals decided to form an alliance and step up to the top flight of grand prix racing together. Team boss Eddie Jordan phoned designer Gary Anderson, asked if he could build an F1 car – and convinced him he'd find the cash to fund it.

"I didn't realise Gary had such a good grasp of engineering until I saw the F3 cars he designed and built," Jordan recalls. "He hadn't been to engineering college, yet he was one of the cleverest people I knew."

As the project began to take off, former colleagues of Anderson came on board. Andy Green worked on the suspension and mechanical layout, while Mark Smith looked after the transmission and installation of the V8 powerplant.

The unsightly bulge on top of the engine cover seemed at odds with the sleek look of the rest of the chassis, which is neatly sculpted aerodynamically. The bulge is in fact a legacy of a late switch of engine. The car was designed for an off-the-peg Judd V10, but then a late deal was done to house a Ford HB, which sat a little higher than the Judd – but by then it was too late to change the car's profile.

Early mock-ups of the car were put through their paces in a windtunnel. That was until EJ discovered it was costing him £1,600 a day and he soon put a stop to it. After mortgaging his house to get the investment to help fund his project, he finally launched his F1 team

and the Jordan 191 at Silverstone in winter 1990. It was originally due to be the titled 911 but for an intervention from Porsche...

Former grand prix winner John Watson was tasked with giving the car its first ever shakedown, five years after he had last raced an F1 car. "My initial reaction was that it felt good and it was a friendly car to drive," says Watson. "Gary Anderson had been quite clever in some areas of the chassis, particularly around the diffuser, which came into close contact with the ground, created a seal and produced more downforce. Aesthetically it was very attractive and considering it was a private entrant, it was a great achievement."

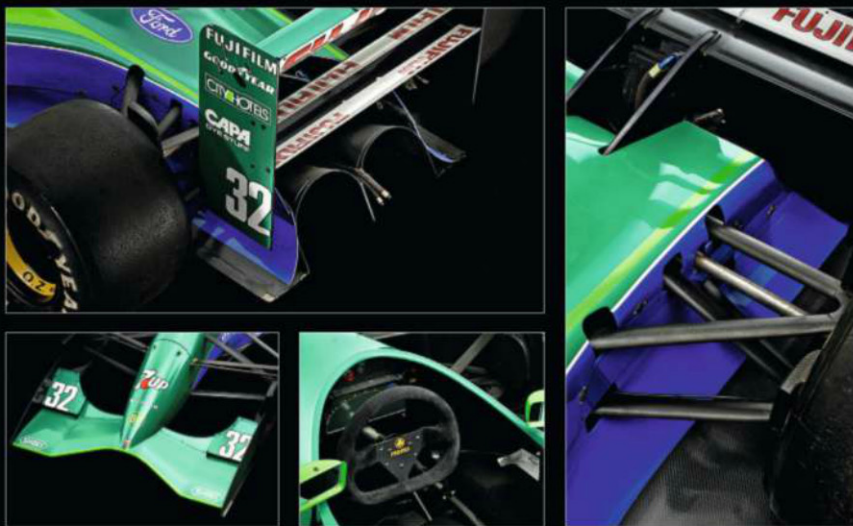
After testing at Pembrey and Ricard, Jordan headed to the 1991 season-opener in Phoenix, Arizona, where they were forced to pre-qualify early on Friday morning. Andrea de Cesaris didn't make the cut – but Bertrand Gachot did. Better still, Gachot made it through qualifying to end up 14th on the grid. Had today's points system been in place, Jordan would have scored a point on their debut: despite a late-race engine failure, this small new team were classified tenth.

The story of Michael Schumacher making his debut in this car is well known, but the real credit lies with the vision and engineering skill of two former rivals in getting the project off the ground. **F1**

• Read an interview with the 191's designer, Gary Anderson, on p94

JORDAN 191 TECH SPEC

Chassis	Carbon-fibre monocoque
Suspension	Monoshock, push-rod (front) Twinshock, push-rod (rear)
Engine	Ford HB4
Engine capacity	3.5-litre
Layout	72° V8
Power output	730bhp
Rev limit	13,800rpm
Gearbox	Jordan transverse
Weight	505kg
Wheelbase	289.5cm
Tyres	Goodyear
Notable drivers	Michael Schumacher Andrea de Cesaris Alex Zanardi



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HOW TO FIX MCLAREN



One of F1's most fabled teams are having a torrid 2013, performing way below their potential. But as this 13-page special explains, that's all about to change...

P42

JENSON BUTTON

As smooth off track as he is on it, JB is vital to McLaren's hopes. But maybe, argues Peter Windsor, it's time for him to show his teeth

P46

MARTIN WHITMARSH

When things go wrong at McLaren, this man answers the tough questions. He tells us how he plans to put his team's house in order

P52

SAM MICHAEL AND JONATHAN NEALE

After a very successful 2012, McLaren scrapped a great car, the MP4-27, and built the suboptimal MP4-28. Their tech chiefs explain the tough lessons learned

No more Mr nice guy

Jenson Button deserves better than to be scrabbling for points with the midfielders. So perhaps, argues **Peter Windsor**, it's time for JB to take charge of his – and McLaren's destiny...

Watching Jenson Button drive has always been a pleasure. There's something neat and tidy about his style, something relentlessly repeatable. He makes it look easy. He's a driver of F1 cars. He works with simulators, data engineers and telemetry. He's triathlon-fit. He's quick when the car is quick, slow when the car is slow – but you'd never know the difference unless you looked at the lap times. He's rarely out of line. He rarely locks inside fronts. Everything makes sense with Jenson. Almost everything seems to be reduced to a science.

And then there's that other thing, when race day dawns grey and damp and you know there's going to be a lot of talk about wets and inters and the best tyres on which to start. Everyone looks to Jenson. What's Jenson on? When will Jenson change? Nobody does it better. Ask Lewis Hamilton about Brazil 2012. Both of them were out there on used Pirelli mediums when the rain began to fall... and it was Jenson who won the day. Lewis, or his guys, got the pressures wrong. Jenson, or his guys, got them right.

So on the face of it, Jenson is the appropriate driver to be at McLaren right now. He's great with the sponsors; he's a world champion. He's available at just the right degree – when required, but only sparingly. And the board know that all they have to do is give Jenson a good car. If they do that, undoubtedly he will win with it. If they don't, he won't. Simple. He's a plug-in guarantee. He's the sort of driver that boards love to love. Fernando Alonso or Juan-Pablo Montoya – irascible, political, divisive – he is not.

Of course there are downsides. Jenson can't carry a damaged or ailing car on his back the way Fernando can. He's yet to strike the sort of driver-engineer relationship that characterised the Michael years at Ferrari or Seb Vettel's now. He can't tame a wayward back end the way Lewis or Fernando can. And he doesn't have the straight lines in his driving that Kimi has. →

PHOTO: PATRICK GOSLING/VODAFONE McLAREN MERCEDES





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Instead, he drives with wide, curved corner entries in the classic way. His apexes are dead-on bisections of the angle-created-by-the-intersection-of-the-extended-lines-of-the-two-straights, as your geometry teacher would have put it; and, for the most part, he brakes in a straight line (the exception being corners like, say, Spoon or Turn 1 at Suzuka, where the trajectory inevitably defines the braking shape).

His footwork is superb. I've yet to find an F1 engineer who isn't *totally impressed* by Jenson's brake-throttle co-ordination. "Unintentional overlap" are two words that never enter the Jenson vocab – although, like most left-footers, he can overbrake, or drag the brake pedal. His forte – the area where he enjoys a natural advantage over every driver in F1 with the exception of Räikkönen – is exit throttle application. I'm not talking about mid-corner throttle 'teases' of the Ayrton Senna variety; Jenson's style doesn't require that sort of manipulation. I'm talking about the millisecond



"I'd like to see Jenson at the factory even more, picking the brains of every designer, engineer, mechanic and part-maker he can find"

when the driver knows that he's done with the rotation and all that remains is the exit. Jenson has an eye-watering ability, at this point, to apply power with his right foot at precisely the load-rate the outside rear tyre can handle. That's why you rarely see him crossed-up on corner exits. That's why you seldom see him bobbling the car up on exit kerbs. His right foot is a sponge.

This logically means he also has tremendous feel with his left foot under braking. I remember an occasion back in the BAR-Honda days when Jenson was found to be braking at around the same point as Takuma Sato before the first chicane at Monza. Amazingly, though, Jenson was able to come out of the brakes sooner than Sato because he had stopped the car over





a shorter distance. This is nothing to do with the amount of pedal pressure a driver can apply: this sort of advantage is about minimising the initial pressure and finding a cadence commensurate with the surface of the road. It turned out Sato was braking on a very slight rise in the road surface. Jenson was naturally finding an almost imperceptibly flatter area and, in addition, had been warning the brakes before giving them the works.

It's interesting now, I think, to see Jenson nudging McLaren in the direction of Brembos for 2014. McLaren have traditionally been a Carbone Industrie team because CI brakes are ultimately about stopping power. Brembo (and the Hitcos preferred by Fernando when he was at McLaren) in theory offer more 'feel'. Jenson used Brembos during his victorious Brawn years. He had them on the front this year in Singapore. They reward "feel" – and in 2014, in addition, it is likely that the cars will need slightly less braking power on the rear. This could be a nice little coup.

**“Be a Michael.
Be a Fernando.
There's no Adrian
at corporate
McLaren, so
someone needs
to be The Rock”**

Jenson's corner approach is wide and curvaceous. Very Rubens Barrichello. Very Graham Hill. The downsides to this are longer corners – more load through the tyres for a physically longer lap and a slower initial corner entry phase; the upsides are greater margins for error, higher minimum speeds and more space in the first half of the corners, thus to adapt to slippery or changing track conditions. That's

why Rubens, too, was always good in the wet or semi-wet.

I say "more margin for error" but I should qualify this. A Kimi, who brakes late and deep in an angled approach to the minimum-speed point and doesn't worry about the value of his minimum speed, has virtually no margin for error should he get it significantly wrong. His recovery tools are steering load-versus-brake pedal pressure decrease. Once he's run the gamut of those, there's nowhere to go except straight on. (That's why he's been going off quite a lot in untimed practice sessions – invariably in a straight line from the entry phase.) Jenson, by contrast, brakes in a straight line on the outside approach to the corner, then turns in when he feels the back end can take it. Without a stable back end, Jenson's corner has gone. That isn't the case with Kimi (or Lewis); they balance a sensitive back end with the aforementioned steering-against-brake-decrease. The problem for Jenson comes when the back end can only take load at significantly reduced speed. In this sense, as it happens, you could argue that Jenson's style actually gives him less margin with which to play – or, to be more precise, less room for a laptime gain should the car be under-performing.

One final thought: despite the disappointments of 2013, Jenson appears to be very much at peace with the world. He's won his championship and he's driving for a very nice team, with an amazing facility, not too far from London. Chances are that McLaren will eventually give him a great car and that he can win again. That sort of menu engenders Jenson's weekly simulator sessions, his race weekend debriefs and the mid-week phone calls. He does that job as the 100 per cent professional that he is.

He could benefit from being a derivative of that. I'd like to see him at the factory more, annoying everyone, pushing them, picking the brains of every designer, engineer, mechanic and part-maker he can find and using that intelligence to move things along. Initiate staff changes if need be. Eliminate barriers. Be a Michael. Be a Fernando. There's no Adrian at corporate McLaren, so someone needs to be The Rock. Stop telling the press that "given the delays, eighth place wasn't a bad result." Tell them the truth. Make it raw. Make it hurt. Recreate the passion as something you can feel rather than something you talk about. Corporate F1 may be fun and it

Alonso back to McLaren? Don't bet against it...

Let's start with what we know. McLaren want to re-sign Fernando Alonso as soon as possible. If they can get him as a partner to Jenson Button for 2014, they will. If not, they will go all-out to get him for 2015 when their engine partnership with Honda begins. Their pursuit of Alonso is all about wanting to become a major force again. Honda are not providing free engines and a substantial financial input to fight for points. They want to win championships.

McLaren team boss Martin Whitmarsh has made no secret of his admiration for Alonso. He described him as "the best driver out there" to the BBC in Singapore, and in Japan added that if you were to name the two drivers on the grid you would want above anyone else, they would be Alonso and Sebastian Vettel.

Alonso has said it is nice to hear other team bosses appreciate his work, but has publicly reiterated that he is contracted to Ferrari until the end of 2016 – when he will be 35 – and ideally would like to extend that contract.

Whitmarsh, for his part, says Alonso is "contracted to Ferrari next year and may be after that". An interesting difference of interpretation that suggests Alonso has ways of getting out of his Ferrari contract if he wants.

Red Bull sources say the same – that Alonso told them in the summer he was potentially available for 2014 and would like to drive for them. Which suggests he is not as locked in – or as committed – to Ferrari as he and they might like people to think.

Can McLaren get him? Clearly Alonso has grown frustrated with Ferrari's lack of competitiveness this year. There are also question marks over Ferrari's progress with the new engine rules – the word on the street is that they are behind Mercedes and Renault. And McLaren are using Mercedes next year.

Can McLaren convince him that they are a better bet? That might be hard now, but if Alonso stays at Ferrari in 2014 and they struggle again, it would suddenly seem much easier. A lot will depend on what Honda can tell him about their engine.

Andrew Benson



may be relatively easy, but it doesn't always produce results. There should be no smiling faces at Woking. Enough with the platitudes about how hard the boys are working and how great the pitstops have been. This F1 team spends €300m per year, yet Jenson Button, for most of 2013, struggled to beat the Toro Rossos and the Saubers – let alone the Force Indias.

As a man with huge talent and presence – as a number one-and-a-half driver – Jenson is now also one of the few guys who can take McLaren in his hands and perhaps return it to the front. Forget the board. F1 isn't about 'being nice' to people – or even 'being professional'. It's about being as hungry as a snarling dog that will never let go. 🐕

Out of the hurt locker

After taking a very public stumble in 2013, McLaren have to get things back on track *fast* – but with new tech regulations pending, just one year to run on the Mercedes engine contract, and a potential gulf where the title sponsor ought to be, can they do it? Team principal **Martin Whitmarsh** comes out fighting...

WORDS STUART CODLING
PORTRAIT STEVEN TEE/LAT





Let's make no bones about this: 2013 is – unless fate intervenes on an unprecedented scale – going to be McLaren's first season without a win since 2006. For an organisation whose core values are built on victory, one that has long cherished the statistic of having won one in every four grands prix since their Formula 1 debut, that's a painful truth to acknowledge.

Thus *F1 Racing's* opening question to Martin Whitmarsh – in the words of the hotel bell boy to George Best, 'Where did it all go wrong?' – is greeted with a certain *frisson*.

"A variety of things," comes the eventual response. "We made some decisions last year in developing a car that had too much risk in them, and they didn't work. With new regulations coming in for 2014 there comes a point where you've got to start focusing on next year, and that's exactly what we're doing. So I'm afraid

"This year is a symptom of too much ambition. We should have developed the 2012 car"

I can't give you the one-line answer that you may have wanted or expected, but there's a whole variety of things that went wrong..."

For all their reputation for conservatism, McLaren are among F1's great innovators. In the past decade-and-a-bit they've brought brake-steer, the 'inertor', the 'F-duct' and more to fruition. But their vulnerability, some say, is their absolute faith in their ability to process 'big data'. They have a profitable sideline exporting their considerable expertise in this field to adjacent industries, through their Applied Technologies division. It's possible, though, that this has led to a fractured and abstract design process: team leaders responsible for various elements of the car are given targets for improvement, which they duly find while testing new components in isolation, but when put together, the complete car is less than the sum of its parts. Does this represent a failure of the data-driven approach?

"I don't think so," says Whitmarsh. "This year is a symptom of too much ambition. We ended last year with the quickest car. I think it would have been... well, it would have been the right thing to have developed that car. But we took the decisions regarding this year's car at around the midway point of last season – and, if you look at our results in 2012, we started strongly but mid-season we began to run out of puff a →

little bit. I think at that point we sensed we needed to be more innovative and change more things, to make sure we had a more competitive car in 2013. At the end of the year, the car developed well. So it's easy to say, 'This time last year you had the quickest car, why would you have chosen at that point to change the car?' The answer to that is we didn't – we chose some months earlier. There were a number of concepts we put in that we couldn't get to work; we couldn't get it to be a cohesive package.

"We made some organisational changes last year that didn't work, so some of those changes have been either reversed or partially reversed. But it's very easy in a situation like this for me or others to point fingers at people. I think that sort of activity is something you do internally. Publicly, I've accepted responsibility for this year, and that's the way I'd rather have it. Inevitably, when you look into it, I'm not always going to be enamoured by some of the decisions people took, but it's my job to accept that responsibility.

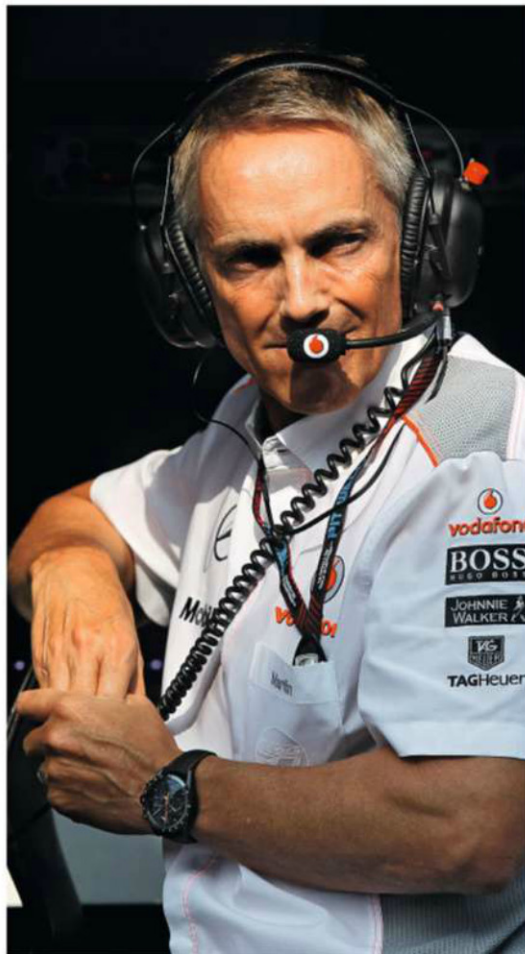
"Normally at this point in the year, we would be developing the car strongly because, frankly, we're often fighting for the championship or certainly at least for race wins. This year we're not doing that because we just can't afford to. We *have* to be competitive next year, given the changes ahead. To drag ourselves from fifth in the constructors' championship to third in 2013 would take an amount of resources that we aren't able to put into this project."

For McLaren, 2014 is going to be a transitional year – the first one since 2007 without Vodafone as title sponsor and the last with Mercedes, the powertrain supplier with whom McLaren were once joined at the hip. Forget the internet conspiracy theories that McLaren will somehow be given the 'B-spec' engines ("When you have a limited number of engines per season," says McLaren MD Jonathan Neale, "it means that in order to get a high quality part, everything coming down that production line has to be the same"). The question is whether 2014 or 2015 will be the real focus.

"Realistically, I hope we can achieve a world championship in 2014," says Whitmarsh. "That's got to be our goal. We've put a lot of effort into it. We're coming up to our 20th year with Mercedes and they've got a good programme with the new power unit. I know many of the people personally – I recruited some of the senior people in powertrain development when I ran that side of the business years ago. They'll do a good job and I think we can do a good job. We've got to aim to go out there and win."

For all the optimism, questions still remain – chiefly as to the identity of the new title sponsor Whitmarsh himself has committed to revealing on 2 December 2013. That date is now fast approaching – and it's telling that, when quizzed on this particular subject, McLaren's team principal becomes somewhat evasive. →

Team principal Martin Whitmarsh takes responsibility for the failures of 2013 and has no interest in pointing the finger of blame. For 2014, McLaren are looking forwards... not back



How McLaren's car division shapes up

Reaching profitability with a start-up supercar company in just four years, as McLaren have done, may not have quite the headline-grab of an F1 world championship victory, but it requires just the same ingredients: ground-breaking technology, bold planning, aggressive targets, talented staff and a never-say-die spirit.

This is the belief of group chairman Ron Dennis, who launched the car-making company, McLaren Automotive, after a plan to continue making road cars in partnership with Mercedes-Benz dissolved when the German multinational sold their McLaren stake in 2009.

The latest success, achieved against a background of worldwide financial stringency, is impressive because McLaren have only made real money from the first car in a proposed three-model range, the £170,000, 200mph 12C, launched in 2011. A McLaren 'hypercar', the £860,000 P1, of which only 375 will ever be built and whose special appeal is that its driver can change from road- to race-car configuration by pressing a button, is just starting production. The biggest earner is likely to be a new £120,000 model, the P13 – a challenger to the upper-crust Porsche 911s. It will eventually push production at the Woking plant beyond 4000 units per year.

McLaren's profitability confounds pundits, who believe making money from supercars is hugely difficult. Enzo Ferrari may have sold road cars to pay for racing, but now sponsors take that role. Ferrari draw support from their link with the Fiat group, and adopt a broad-brush approach when discussing the source of their earnings. Even Porsche make saloons and SUVs to reinforce their fast-car range. For now, Ron Dennis insists McLaren will build only supercars – but even he doesn't rule out other vehicles in the longer term.

Steve Croyley



INSET: KEVIN WOOD/LAT

"Realistically I hope we can win a title in 2014. That's got to be our goal. We've put a lot of effort into it"



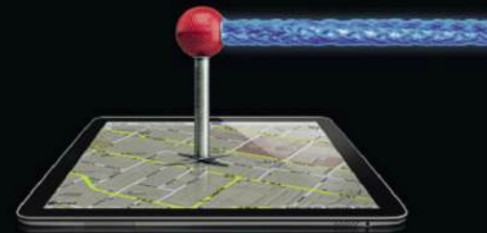
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Nissan Juke n-tec. Turn every drive into a ride with Google™ Send-to-Car technology.

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Fuel consumption figures for Juke range are: URBAN 28.8-58.9mpg (9.8-4.8L/100km), EXTRA URBAN 47.1-72.4mpg (6.0-3.9L/100km), COMBINED 38.2-67.3mpg (7.4-4.2L/100km), CO₂ emissions 169-109g/km.

MPG figures are obtained from laboratory testing, in accordance with 2004/3/EC and intended for comparisons between vehicles and may not reflect real driving results. (Optional equipment, maintenance, driving behaviour, road and weather conditions may affect the official results). *Only available on models equipped with 4WD 1.6 DIG-T. Model shown is a Juke n-tec 1.6 petrol priced at £16,295 On The Road with optional metallic paint at £500. Models subject to availability. Google™ Send-to-Car and Google™ Places require subscription, compatible phone or device (not included with vehicle), and Wi-Fi or 3G connection, and rely on services provided by third parties outside Nissan's control. Cellular networks not available in all areas. Voice minutes, roaming charges and/or data usage may apply. Nissan is not responsible for any equipment replacement or upgrades, or associated costs that may be required for continued operation due to service changes. Google™ wordmark and logos are registered trademarks owned by Google Inc. Information correct at the time of going to print. Nissan Motor (GB) Limited, The Rivers Office Park, Denham Way, Maple Cross, Rickmansworth, Hertfordshire WD3 9YS. 301580/A2



HOW TO FIX **McLAREN**

“Again, it’s a little bit like the Honda questions,” he says. “You’ve got to be respectful. We’re excited about the future and excited about where the brand is going, but, at the moment, the name of the team is ‘Vodafone McLaren Mercedes’ and we’ve got a duty to them to represent and promote those brands. We owe loyalty to our existing partners and we’ll talk about the new ones when the time comes.”


That’s not really an answer to the question as phrased. Let’s try a different tack and address another hot topic, one that has also come about through comments Whitmarsh made to the media. How realistic a prospect is – or was – Fernando Alonso?

“Anything’s possible. Again, you have to be careful what you say in these situations. I was asked in Singapore, ‘Would you be interested in signing Fernando Alonso?’ So I said ‘yes’. I wasn’t asked: ‘Are you in negotiations with Fernando Alonso?’ It was an abstract question. It’s a clear fact that Fernando is one of the top drivers in F1 at the moment, and any team principal – if they’re being honest – would have given the same answer as me.

“He’s currently under contract to a rival we respect. Would it be possible in the future? It would. We want the best engineers, the best technical partners and the best drivers. That’s what it takes to succeed. Fernando, you know... we have a past, and I was around in that past. He’s matured into a driver who often gets more points than the car seems to deserve. He’s a very talented guy.”

It was McLaren’s policy of running two equal number-one drivers – or, to put it another way, not favouring one of their drivers over the other – that famously unhinged Alonso back in 2007, and arguably lost them both championships that year. Assuming that Red Bull will continue to produce beautifully fluent technical packages, and that they will similarly continue to focus on just one driver, you have to ponder whether McLaren will be forced to reconsider this cherished tenet. This holds true whether we’re looking at 2014 or blue-skying to 2015 and beyond, with the likes of Kevin Magnussen and Stoffel Vandoorne (see column, right) waiting in the wings.

“In life, not all things are equal,” Whitmarsh firmly insists. “I don’t want to go all *Animal Farm* on you, but the fact is: that’s what we do. We will never sit down at the beginning of the year and predetermine that one driver will be favoured ahead of the other. There are some teams around us who do that. I’m not saying it isn’t effective – but it’s just not the way that we – McLaren – go motor racing.”

For those who love F1 as a contest, as opposed to a relentless gathering of trophies, that final utterance will come as proof positive that McLaren, in the grand scheme of things, have not lost their way. 



How are McLaren’s finances looking?

Chairman Ron Dennis was present when McLaren celebrated their 50th anniversary. Their guiding light for the past 35 years, he was spreading a message of confidence. This year, he said, the McLaren Group would achieve a long-held ambition and turn over a billion dollars for the first time.

The Group is in robust health, with revenues rising, whether in Automotive, Applied Technologies or Electronic Systems – all prefixed by ‘McLaren’.



True, McLaren Racing, the F1 arm, last year lost £12m; by contrast the company have sold over 3,000 road cars, launched a flagship model – the P1 – and moved into the world’s largest market, China.



McLaren’s sponsors show an enviable mix of breadth and depth. Prestige brands such as Hugo Boss and TAG Heuer have partnered McLaren for over 30 years, with ExxonMobil moving into

a second decade. Add in 31 partners – mostly blue chip – and it is clear the team offers commercial benefits others only dream of.

True, title sponsors Vodafone will depart shortly, but no replacement has been announced simply because McLaren are spoiled for choice, with Proctor & Gamble’s Gillette thought to be in contention. GlaxoSmithKline are another candidate: through their McLaren-GSK Centre for Applied Performance venture, GSK enjoy a close relationship with McLaren, and market a raft of consumer brands.

But 2015, brings Honda, and the stability of a ten-year partnership that will provide wide-reaching commercial and technical support. Having been ultra-successful during the late ‘80s with McLaren, Honda tarnished their reputation with in-house efforts in the noughties – now they’re totally committed to expunging such memories, with McLaren being the primary beneficiary.

Dieter Rencken

McLaren’s future driver line-up

The last time McLaren plucked a highly rated driver called ‘Magnussen’ from the junior formulae, it didn’t quite work out. In 1994, Jan Magnussen broke Ayrton Senna’s British F3 record, winning 14 of 18 races, and then obtained a one-off drive with McLaren in 1995. But Jan lacked commitment and soon sloped off to a career in sportscars.

Now his son, Kevin Magnussen, has set the junior racing categories alight and isn’t making the same mistakes as his father. ‘Kev’ decided that World Series by Renault was a more competitive series than GP2 in 2013, and therefore a better career platform. He duly claimed the championship with a race in hand.

The Dane’s primary sponsor, Jack & Jones, is a clothing store owned by Andreas Povlsen, Denmark’s third richest man. Despite interest from Red Bull, 21-year-old Magnussen has committed to McLaren, who will most likely advise his sponsors to run him in another team to gain experience until a McLaren drive is available, or take him on as a test driver in 2014.

A year behind Magnussen in experience is Stoffel Vandoorne, a Belgian racer, also 21, who is another McLaren young driver. It’s his rookie year in World Series, but he’s pushed Magnussen all the way to the title. A former FIA Institute Academy winner, he has backing from Renault and the Belgian automobile association. Both he and Magnussen are great future F1 prospects.

James Roberts



Kevin Magnussen



Stoffel Vandoorne

INSETS: ANDREW FERRARO/LAT





Swiss movement, English heart



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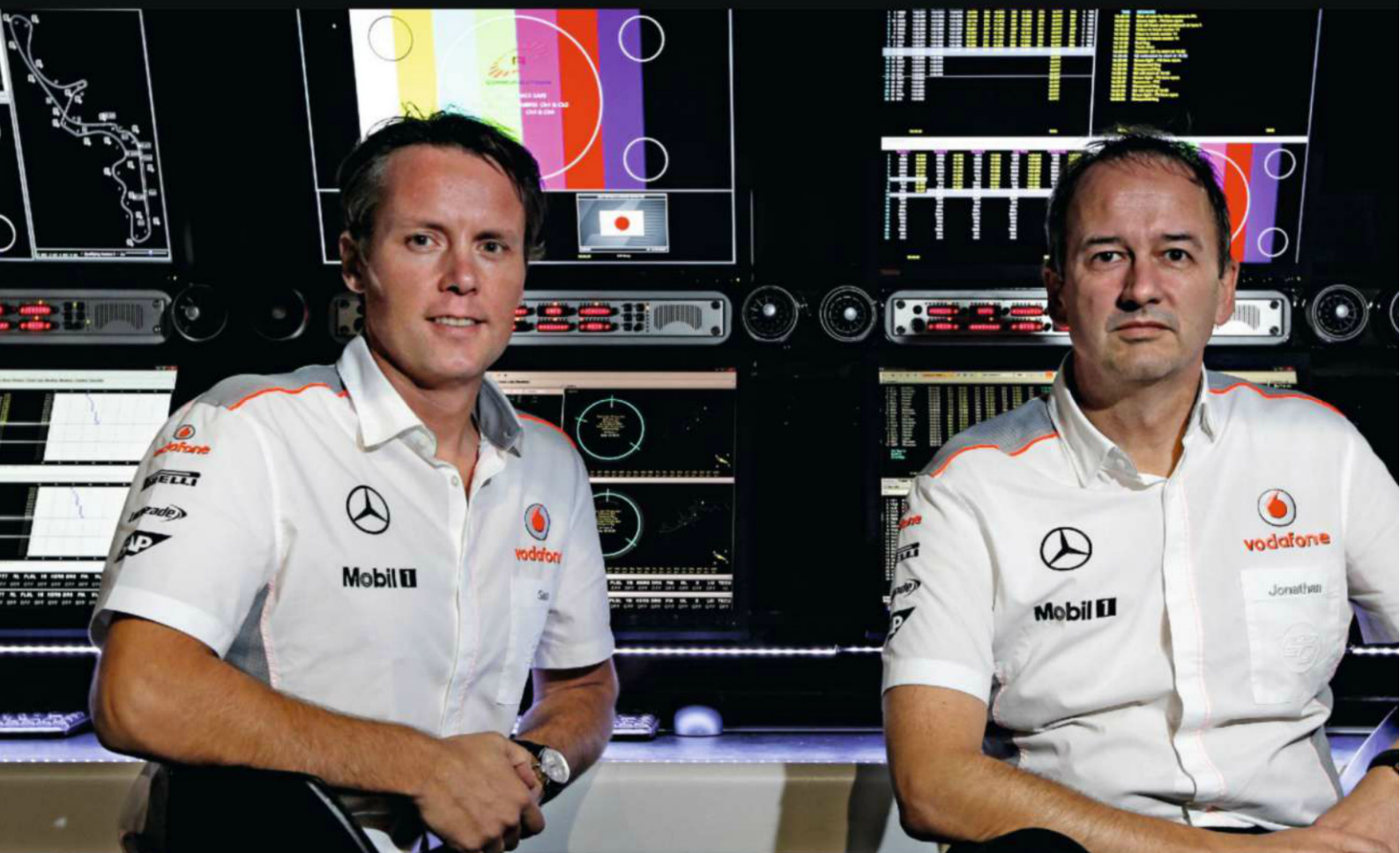
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{ Do you { believe } in life after Lowe?





McLaren are overdelivering this season. No, really. They're regularly jostling on the grid with the Saubers, Force Indias and Toro Rossos – but they're well clear of those midfield rivals in the constructors' championship. Why? Possibly – probably – because they're a sharper outfit with more resources: they're better operationally and analytically, suffer fewer mechanical failures and perform slicker pitstops. They outgun the teams they're

Their technical director left for Mercedes and their 2013 car has been a disappointment to say the least. So are McLaren down and out? Sporting director **Sam Michael** and managing director **Jonathan Neale** explain how they plan to come back fighting...

WORDS MATT YOUSON
PORTRAIT ANDREW FERRARO/LAT

fighting in all the areas where you'd expect a frontrunner to be packing more ammunition – except for one. Unfortunately for McLaren, it's the one that ultimately counts – the car.

The MP4-28's lack of pace is all the more shocking because this year McLaren were many people's tip for a title or two. They ended 2012 stronger than their rivals, and with no great shift in technical regulations due until 2014, they seemed to have a solid foundation on which to build. But while everyone

else was busy launching tidied-up versions of old cars, McLaren attacked their foundations with a jackhammer. They switched to a high chassis and pull-rod front suspension, opted for a new rear-suspension design and changed their sidepod concept. Nothing groundbreaking, but a fundamental departure from recent McLarens. It was a gamble that didn't pay off.

"I think it's fair to say, if we had the time again, we might *possibly* make different choices," deadpans managing director Jonathan Neale.

There's a refreshing lack of bluster around McLaren. In its place is a quite brutal level of self-analysis, undercut with some fairly dark humour. It's been a miserable season for an outfit accustomed to fighting up front, but the perception from the outside is of a team maintaining their morale – perhaps because of why, rather than how, the current car failed.

"We did what we did out of ambition, not out of fear," says Neale. "There was a sense that with the old car we weren't going to be fast enough. While the MP4-27 *was* a quick car, operationally it wasn't where we wanted it to be. We knew we could improve.

"We assumed – probably incorrectly as it turns out – that the existing car would just run out of steam, so we →



HOW TO FIX McLAREN

decided there was more potential in putting these other concepts together. Individually they'd been well researched, but with the benefit of hindsight we'd underestimated the amount of optimisation needed to make them work together."

McLaren's progress in the early months of 2013 is a cautionary tale: trying to integrate a great many new ideas in a very short a space of time, losing correlation with the windtunnel and, ultimately, showing up to race with an uncompetitive car. Not a car with glaringly inherent problems, maybe, but simply one less developed than the competition. The root of the problem, says sporting director Sam Michael, was trying to do too much, too quickly.

"The concepts we adopted, they're all things that have worked successfully on other cars – but they've been optimised and developed over a long period of time. Rather than doing wrong things we just compressed the timescale too much. It gave us too much to do, especially in the final year before a regulation change."

McLaren have dealt with their issues, but doing so required some retrenchment: time spent understanding the car rather than taking it forwards. "And time in F1 that you are not going

"By the time the 2013 car was rational and correlated, we were already heading to Silverstone" Jonathan Neale

forwards, you are going backwards – because everybody else is going forwards," says Neale. "By the time the car was rational and correlated, we were already heading to Silverstone."

And that's McLaren's 2013 campaign in a nutshell: the point they should have reached in March, they didn't reach until June. The MP4-28 isn't fundamentally flawed, it's just behind the curve. It has reasonable balance and performs adequately under braking. It lacks downforce and so suffers traction issues at low speed – but nothing that couldn't be fixed with time. Time, however, was a commodity in short supply with the big regulation change around the corner. As late as July, Jenson Button was arguing the MP4-28 had the potential to win, but his team decided against pushing for a late-season blaze of glory. They switched off the programme only a short while after getting to grips with their car.

Pulling the plug, argues Neale, was the sensible option given the size of the challenge for 2014. "There comes a point where you think: 'How much longer can we hang on in this? How much learning can we get out of it? Is it recoverable and at what cost to the future plans

of the organisation?' At some point you have to say, 'We're having a difficult season and if we're not careful, we'll give ourselves another one.'"

There's plenty of punditry willing to argue that early switchover gives McLaren an advantage going into 2014. It's the traditional sop for the defeated, but one that McLaren themselves do not accept, insisting the dramatic regulation changes mean all bets are off for 2014.

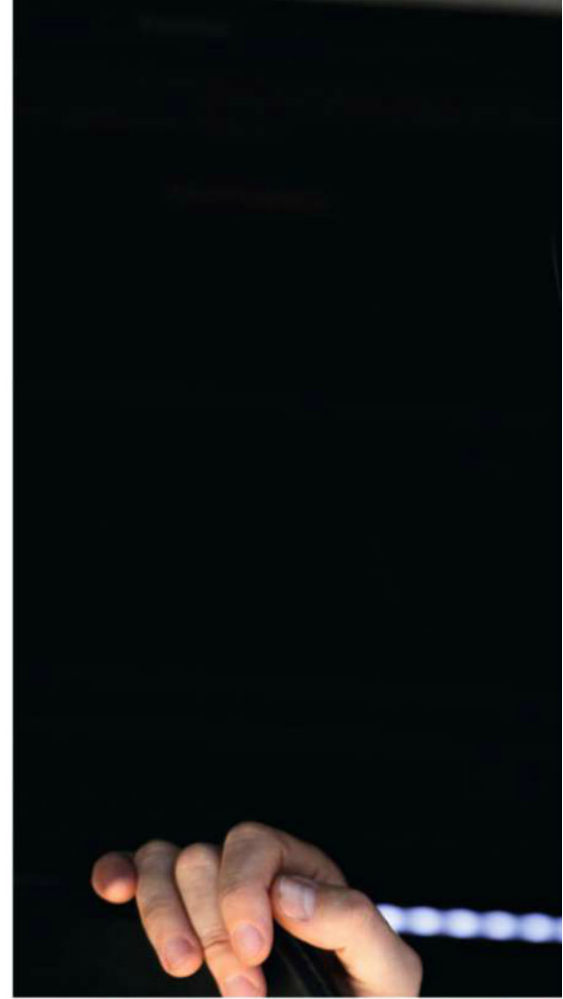
"I don't think we should be optimistic at all: we shouldn't overstate ourselves just because we may have given up on this season a couple of months before anyone else," says Michael. "Those other guys will have big programmes for next year as well. It's important for us to keep our team level and not assume we've got something no one else has got."

One of the most eye-catching things about McLaren's future plans is the reinforcement of the engineering department. Matt Morris has arrived from Sauber as engineering director, while Peter Prodromou, Red Bull's head of aero, will return to Woking once his current contract expires at the end of 2014. Along with several notable mid-level appointments, it suggests a team entering a cycle of regeneration.

McLaren tend to promote their most senior engineers from within. Paddy Lowe departed at the start of 2013, having been with the team since 1993. Tim Goss, his replacement as technical director, has been at McLaren since 1990 – which makes him a new boy compared with Neil Oatley, director of design and development, who arrived in the 1980s. Recruiting from without could be interpreted as a change in policy necessitated by the team's downturn in form – although both Michael and Neale argue their recruitment push is business as usual.

"The only thing that gets real attention is someone who transfers from another team at a high level – that probably creates a misperception of what we do internally," says Michael. "It's important to maintain a balance: you want to make sure your staff see they can make a progression in their career, but at the same time you don't want that to be your only route. It's good to have an injection of ideas because change is a good thing for a team."

The return of Prodromou generates the headlines, but the capture of Morris is perhaps the more significant appointment. He rose to public attention in the last few years as Sauber's chief designer, but his background is largely in powertrains, first with Cosworth and latterly at Williams, shepherding Grove's much-admired transmission department. After seven years locked into an aerodynamic hegemony, F1 has been rebalanced by the 2014 regulations, which put mechanical engineering back up on





What Honda will bring to the party

Honda have a complex history in F1, a narrative encompassing embarrassing lows as well as extraordinary highs. At each turn they've sought to go their own way, with differing results: magnesium-bodied 'screamers' in the 1960s; from undriveable grunt to world domination in the 1980s and early '90s; and then an unsuccessful spell as a constructor in the 2000s.

Their greatest strength has often proved to be a troubling weakness: not only are they unafraid to innovate, they're so determined to do so that they jump in with both feet. An *F1 Racing* contact who worked for Honda during their previous incarnation as a constructor, wearily described the Tochigi R&D facility as being "like a giant university science project, run without enough rigour". The picture thus painted is one of runaway invention; for every breakthrough, such as variable valve timing there's a quixotic dead end – such as the oval-pistoned motorcycle engine they brought in during the 1980s.

There were also issues with the F1 engines during the mid-2000s, which manifested themselves in blow-ups and inconsistent power outputs between units. But when Honda focus on something they tend to get it right. Jonathan Palmer recalls being called upon to test at Suzuka fresh off a 12-hour flight, come rain or shine (or even, in one case, snow).

At McLaren they have partners who also cite innovation as being a crucial element of the brand's make-up. But innovation has to be *managed*, and process is the key. The challenge for these two technical heavyweights is to stay in sync while working in time zones eight hours apart...

Stuart Codling



INSETS: STEVEN TEE/LAT; CHARLES CORTES/LAT; GLENN DUNBAR/LAT; LAT ARCHIVE



They've learned from their mistakes of 2013 and the playing field has been levelled by new regulations for 2014. Now, with a consolidated technical team in place, McLaren should be strongly placed to give Jenson a winning car

the pedestal alongside fluid dynamics. That's significant everywhere, but particularly so for McLaren, who have not one but two big upheavals to manage – first with Mercedes power and again as Honda arrive in 2015.

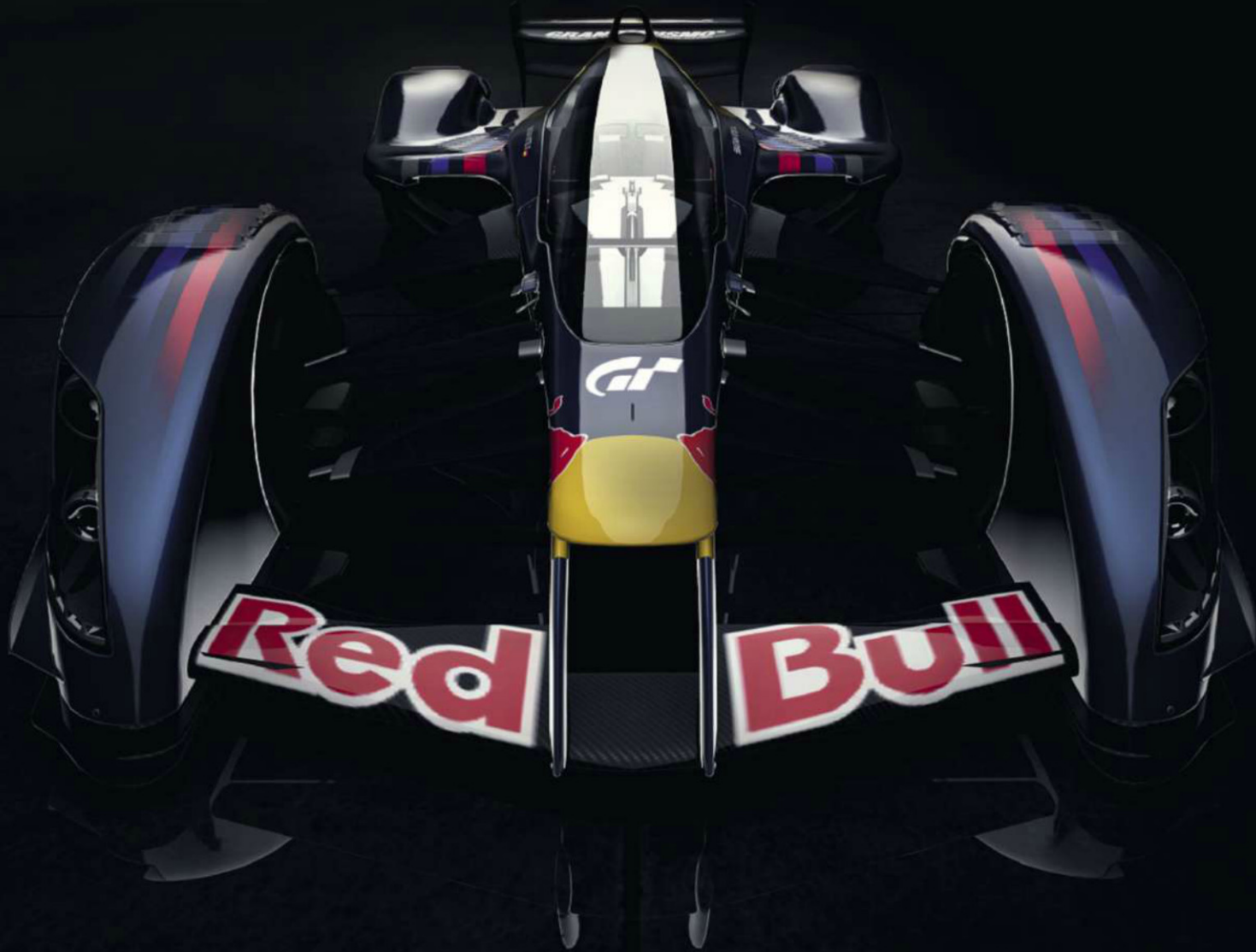
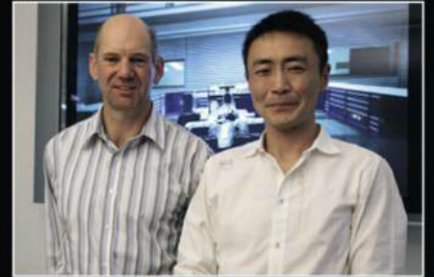
It's been a bruising 50th anniversary and, understandably, McLaren are rather more reticent about the future than their neighbours

in the pitlane, exhibiting none of the cocky optimism of a team at the top of their game. But, equally, there's no melodrama and certainly no panic. One of the advantages of longevity is a confidence in the cyclical nature of achievement. The wheel will turn. The job for McLaren's senior management is to ensure it turns sooner rather than later. 🍀

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Red Bull X1 Prototype

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These incredible images of the Red Bull X1 Prototype are not from some glamorous international motor show; they are directly from Gran Turismo.

The story of this beautiful car began when Kazunori Yamauchi, creator of Gran Turismo, asked the question: "If you threw away the rules and built the fastest racing car on land, what would it look like and how would it feel to drive?"

Red Bull Racing's Chief Technical Officer Adrian Newey could not resist and, together with Kazunori, came up with a virtual prototype unlike any car on the planet.

The Red Bull X1 is just one of 1,200 playable cars in Gran Turismo 6 (out December 6th only on PS3), ranging from extraordinary supercars to vintage sportscars that have all been recreated to an incredible level of detail.

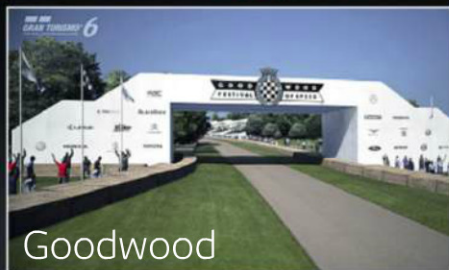
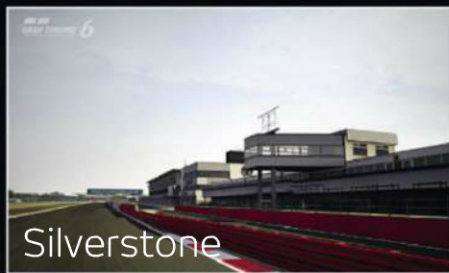
The physics model which dictates car dynamics has been renewed completely, with more accurate car load changes,

relationship between the car and road surface, changes in car 'attitude' and even more realistic tyres.

GT6 also introduces new locations where the drama will continue to unfold. These include the first ever video game appearance of the extremely exclusive Goodwood Hill Climb course, a track that only a few selected guests had experienced until now, as well as Brands Hatch, Silverstone and many more newly added tracks.

The HDR dynamic range (or graphical rendering power) in GT6 has been made 50 times greater than GT5, allowing for better motion blurring and making the sparkle of lighting even more realistic than before. All this immerses the player in a truly absorbing atmosphere.

It is an incredible environment in which to test your racing skills and try out the unique Red Bull X1, the fastest car that Adrian Newey and Kazunori Yamauchi could imagine.



X1 PROTOTYPE TECH SPEC:

Engine 3000cc V6 twin turbo	Dry weight 545kg
Power 1483hp	Wheelbase 2.9m
Max revs 15,000rpm	Max cornering G-force 8.25G
Transmission	Top speed 280mph
7-speed F1 sequential	0-60mph 1.4sec







The Real Paul Di Resta

Smooth and elegant on track, yet somewhat surly off it, Paul Di Resta comes across as a talented Brit with an image problem. **Lee McKenzie**, one of few journalists to know him well, argues that we should all make more of an effort to look beyond the façade

PORTRAITS ANDREW FERRARO/LAT

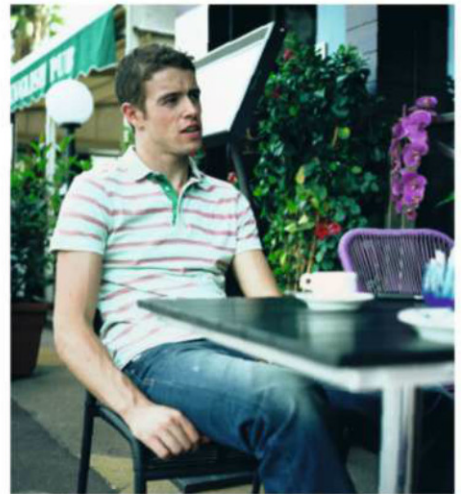
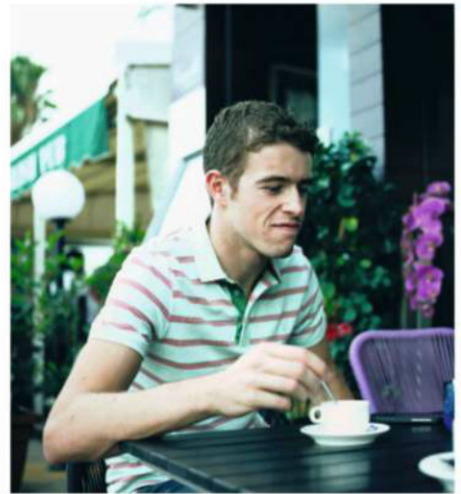
Paul Di Resta is something of a contradiction. He's Scottish versus Italian; frank rather than effusive. Ask around the F1 paddock, try to nail down the *real* Paul Di Resta, and you'll get mixed responses: "A good driver in the wrong team." "Dario Franchitti's cousin." "A bit like Andy Murray before Andy won Wimbledon." "A potentially great driver who needs a better chance."

All facets and generalisations rather than fully informed commentary but, in general, positive (the implied snarkiness of the Dario Franchitti reference aside), which fits in with Paul's policy of letting his driving do the talking: he doesn't go out of his way to court headlines. But perception is everything in F1, and whether you think of him simply as the third Brit on the grid or someone who needs to smile a bit more, Paul Di Resta is a good guy with a very good character – which he's gradually revealing to the fans and media.

I'll state my allegiances now. I've known Paul and his family for a while, aside from coming into contact

with them in my role as the BBC's roving F1 reporter. For those reasons, I'd say that if you're in the neutral-to-negative camp, give him a chance. He came into motorsport to win races, not to be a media darling.

In the interviews at the circuit that we do after qualifying and the race, I never think he comes across badly. He speaks eloquently and honestly and I'm not sure you could ask for more. If you want million-watt smiles, Daniel Ricciardo's your man. If you want words of delight and slightly strange jokes, then it's Sebastian Vettel. Paul Di Resta is someone who doesn't naturally switch on in front of the camera – and this season he often hasn't had a huge amount to smile about. There's no billionaire behind the scenes waiting to fund him regardless of his performance, and although he has been backed by Mercedes in the past, their team won't have any vacancies for the foreseeable future. Di Resta is trading on his reputation behind the wheel and there is no doubt that the pressure is on. →



Perhaps it's this that leads him to indulge in the blame game more often than other drivers, and to highlight moments where he's personally responsible for situations with a positive outcome. He doesn't do this consciously – in a BBC feature we did recently, he was surprised when I asked him about it and unaware he even did it, despite the broadcast evidence of interviews and team radio. Likewise, his take on Spa, where he missed out on pole by the narrowest of margins: "It was a ballsy decision and it was basically me who did it. The team said they wanted to go out on slicks like everybody else, but I said, 'No, let's do something different.'" While many drivers carefully position themselves as part of their team, Paul doesn't always choose that route.

It's well known that when he was in the F3 Euro Series, Paul beat his team-mate Sebastian Vettel to win the championship. After that he moved to DTM with Mercedes, and while the other drivers were at classes learning German, Paul would be working on ways to win. His thinking was that speaking German wouldn't make him two tenths of a second quicker, but training and working with his engineers would. It obviously paid off and he won the drivers' title in 2010, while coming along to F1 races as Force India's third driver. In that sense you can't argue with his approach.

In many ways, you can liken Paul to fellow Scot Andy Murray, who struggled with his image in the early days of his top-flight career. The sudden increase in media coverage and pressure meant Murray was growing up under the spotlight. It was clearly

uncomfortable for him. So what did it take to shift that 'dour Scot' image and win the hearts of a nation? He had to break down emotionally on TV after losing his first Wimbledon final. After that, Great Britain loved him. So should Paul do the same – lose it live on TV – to win over the public? When Lewis Hamilton wears his heart on his sleeve, he's criticised for it. Perhaps the only way for any sportsman to be truly comfortable in the limelight is to be themselves, albeit the best they can be without becoming false. That, to my mind, is what Paul does: he's true to himself, and whether you like him or not is up to you.

He – and his family – are very direct. His straight-talking matches up with the accent, definitely more Scottish than Italian, and embracing an economy with words. Why, indeed, use 20 when a choice two will do? He doesn't collect celebrity friends or bring hangers-on to the circuit; he's simply there to do his job. He isn't a frivolous kind of guy. He doesn't revel in media work or pursue for its own sake the limelight that Formula 1 offers. In fact, from that point of view he's got a lot in common with certain Finns.

Paul moved to Monaco several years ago with his long-term girlfriend Laura Jordan. They have a beautiful apartment; →

“Paul doesn't bring hangers-on to the circuit. He's simply there to do his job. He's not a frivolous kind of guy”

Paul Di Racer

What he lacks in marketable charm, he's made up for in performance – at every level

Henry Ford famously observed that “history is bunk”. A significant piece of Paul Di Resta’s racing history, though one so increasingly distant that it is approaching bunk status, is the 2006 F3 Euro Series, in which he beat team-mate Sebastian Vettel in equal machinery. The timing was unfortunate because McLaren and Mercedes already had a hotly tipped protégé further up the queue for the vacant F1 seat alongside Fernando Alonso in 2007: Lewis Hamilton. And not only was Lewis quick and gifted, he was hugely more marketable than the press-shy Scot.

The problem for Di Resta and his generation was not that they lacked backing, but that they lacked *targeted* backing. The McLaren-Mercedes Champions Of The Future karting programme, established in the mid-1990s, was a laudable attempt to assist young talent, but its approach was too scattergun. Sources close to the project told *F1 Racing* that too many drivers were brought forward with too little rigorous analysis of their potential; and even when they did prove themselves, there wasn’t enough money in the kitty to take them beyond junior single-seaters. Mercedes, with a loyalty that deserves great credit, created a side exit to the DTM for some of these drivers, of which Di Resta was one.

Here’s where it gets interesting. Moving from single-seaters to tin-tops is usually the kiss of death for an F1 career, because the discipline is fundamentally less aero-dependent. After a few seasons of focusing on the nuances of managing the dynamics of weight transfer in a heavy car with very little aero and a high centre of gravity, even the keenest karting prodigies make like Marlon Brando in *Apocalypse Now*. Without realising it, they go native.

Granted, the DTM is distinct among closed-roof series in that it retains a strong aero element, but what sets Di Resta apart from his peers is that while he acquired the knowledge to succeed in that series, he never lost his fingertip-touch for an aero car or his *rage* to succeed in F1. Former Mercedes motorsport chief Norbert Haug was among those who kept the faith, and helped secure him a seat at Force India.

“The exciting thing about Paul is that he’s extremely focused,” says Force India’s deputy team principal, Bob Fernley. “His mental strength is among the best I’ve come across, and I think he demands a great deal from himself and the team. He pushes both elements of that to the limit. So he’s a very exciting driver to work with. There’s no respite. He’s constantly looking for optimum performance.”

His technical feedback, it’s said, is excellent, although our sources won’t give him sole credit for Force India’s upswing in performance since his arrival, on account of recent technical input from McLaren. But what awaits him now Haug has retired and Force India are locked in combat with McLaren? You can read into his recent performances that Paul Di Resta is now looking to control his own destiny – his own history.

Stuart Codling





stylish but homely, not ostentatious and outrageous, and it very much sums them up. Paul cycles a lot and is good friends with Jenson Button and Alex Wurz, but he also spends time with the other Monaco Scots: David Coulthard and Allan McNish. His other close friends come from cycling, superbikes and DTM – all competitive sportsmen, but people who live outside F1's goldfish bowl.

The biggest influence on anyone is family, and for an F1 driver, it's no different. Paul's father, Louis, is certainly a force to be reckoned with – in a nice way – although I'm sure most people would rather stay in his good books. You can understand why he's protective. He pushes Paul on, no doubt about that, but he also gave up a lot of himself and his life when Paul was making his way up the motorsport ladder. He will call me to discuss it if there is something on the BBC that he doesn't like or if I've done an interview he's not happy with. We'll talk about it and then everyone moves on. Louis dispenses compliments the way Bernie gives away money and his usual parting shot to me is, "I'll see you when you're better dressed!"

Add into the family mix the Franchitti brothers – Dario and Marino – who, despite their overlapping race schedules, are eager to play their part in the support network. Dario and Marino attend many of Paul's races and always brave at least one pre-season test. When the three of them are together it's car chat all the way, but if anyone ever dilutes the obsessive history-of-F1 conversations it's Paul,







who is much less fanatical. Yet he is the one mixing it up on track with the Prancing Horses.

Family life can also be tough and in 2011, during Paul's first season in F1, his family suffered a tragedy on the Friday morning of the Turkish Grand Prix. He found out about it after first practice, drove in FP2, qualified 13th (just one place behind his more experienced team-mate Adrian Sutil) then retired an ailing car during the race. That grit was impressive – no one would have thought ill of him had he chosen not to race, but he got on with the job, minimised the media fuss, then quietly slipped away.

The public-facing Paul may be an impassive one, but he's not a machine. With his family and close friends he's fun, →

This season, Di Resta's performance has exceeded that of his F1 team-mate for the first time. He came close to setting pole at Spa (above and left) and outraced Adrian Sutil to finish 11th at Suzuka (top)

Paul Di Resta vs his team-mates

	Race	Top 10s	Rtd	Qualifying	Q1	Q2	Q3	Pts
2011								
 Di Resta	6	8	1	9	1	13	5	27
 Sutil	11	9	2	10	0	12	7	42
2012								
 Di Resta	10	9	1	10	0	13	7	46
 Hülkenberg	11	11	1	10	1	11	8	63
2013*								
 Di Resta	7	7	4	8	4	5	5	36
 Sutil	7	6	3	7	0	9	5	26

*2013 stats correct as of Japanese Grand Prix



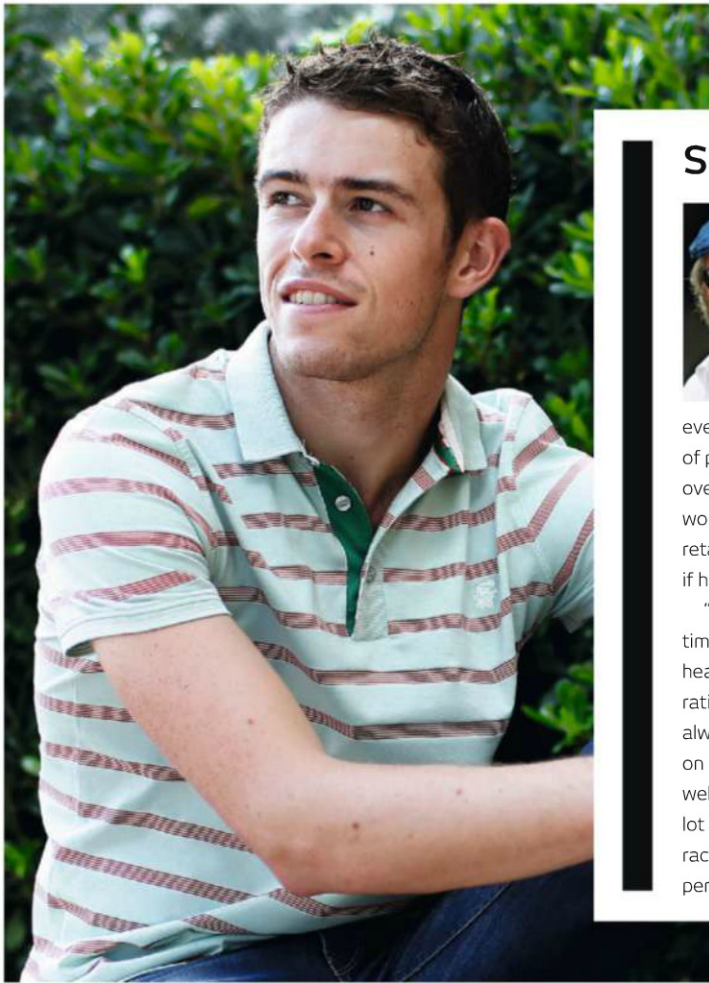


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Sir Jackie Stewart: Scot on Scot



"I have to say that Paul has demonstrated seriously good potential as a top-line driver in Formula 1,

even though he's had a number of poor races this year that have overshadowed that talent. I think it would be a loss for Force India not to retain him for another year: worse still if he was lost to Formula 1 completely.

"I've spoken to Paul a number of times this year, and he's got a good head on his shoulders. He's very rational, very committed and I've always thought he's been very good on the presentation side. He's always well dressed and certainly looks a lot better than a good many drivers racing in Formula 1 today. He has a personal sponsor in Aberdeen Asset

Management, which he represents well, and when he speaks it's always succinct and with clarity.

"And if you know the Scots, you'll know that they're fairly straightforward and sometimes quite blunt. Ken Tyrrell used to say the same about me sometimes... but you've got to be able to get your point across and create leadership through confidence. If something is wrong, you need to be able to convince people and tell them what the contributing factor is. If you're not being listened to, then there is a determination in a Scot to try to make that point clear – and sometimes it can be pretty straightforward.

"I've not heard any negativity against Paul, but I have been disappointed for him that things haven't quite worked out right, for various reasons, this year."

Interview by James Roberts

caring and loyal. When we filmed him spending time with the Italian side of the family in the village of Corigliano, an hour north of Naples, it was a fascinating experience. He was there with his grandfather Felice, who grew up in the village before moving to Scotland in his twenties. Paul had visited several times before to see his cousins and extended family, all of whom are passionate Ferrari fans – "But of course, the village supports Paulo too..."

It was the Tuesday before the Italian Grand Prix, and the 600 residents laid on a dinner in Paul's honour. After all, it's not every day an F1 driver visits Corigliano. He gave more time to the seemingly endless extended family and random people who claimed to be related to him than you would reasonably expect of anyone – let alone an F1 driver. I don't think anyone left without a smile on their face that day; everyone felt special.

And unlike some, Paul doesn't harbour grudges. I remember the evening of the 2011 Monaco Grand Prix, a race that temporarily set many people at loggerheads. I'd just done the post-race interview with Lewis Hamilton in which he bashed the stewards and made the offhand reference to Ali G's catchphrase "Maybe it's because I'm black." Now

there's a joke guaranteed not to translate worldwide. Allan McNish, one of the stewards that day, had given his friend Paul a drive-through penalty, which Paul didn't agree with. To complete the picture Anthony Hamilton, Paul's manager at the time, wasn't too happy with me even though I just ask the questions. Basically there were two tables in the Columbus Bar: the Di Resta/Hamilton table and the McNish/McKenzie no-mates table. As the night progressed diplomatic relations were restored and, by the next day, the air was clear even if our heads weren't.

So to my mind there's more to Paul than you see on television and read about in the F1 press. He's comfortable – and happy – to live outside the celebrity bubble. And he's not going to pretend to be happy when things aren't going well on the track. He's too honest and straightforward for that. He's not a politician, he doesn't have an agenda, and therefore when the quote pickings are slim for the F1 media they go away and write the story they want. Could Paul do more to keep them onside when times are tough? Maybe. But we're not out to get him, and if he's confident in his performances he has nothing to worry about.

What *would* give him reason to smile a bit more often in public would be to find a seat in a more consistently

competitive car, for all too often this season he's been undone by minor technical glitches. Someone with a winning pedigree is hardly going to be jumping for joy with any regularity when all that's on the table is a couple of points. Give Paul a chance in a top team and he'll shine – both on track and off. 🏁

"What would give Paul a reason to smile more would be to find a seat in a more consistently competitive car"



Hungry, like a Wolff

In a team packed heavily with talent and character, one man answers to the people who pay the bills. Toto Wolff discusses his and Mercedes' long-term goals

WORDS STUART CODLING PORTRAIT ANDREW FERRARO/LAT

“They’re doing a shoot for *Playboy*,” Toto Wolff jokes to the Mercedes mechanics who have downed tools to regard, with raised eyebrows, their executive director (business) being photographed for *F1 Racing* in that holiest of F1 holies, the back of the garage. To our left is a rear-wing assembly; to the right a spare floor and front wing. At no point since we entered this rarefied domain have we been left unobserved.

The genial atmosphere says much about the vibe within a team whose fortunes are largely on the up. Last time we caught up with Wolff, he was sitting beside Ross Brawn in a Bahrain hotel with the team yet to deliver on their considerable promise. Brawn is the incumbent team chief, Wolff the man brought in by the board to take over after they’d become jittery about the lack of results under Ross – yet the scene did not play out as uneasily as you’d expect.

For the meantime, they’re rubbing along just fine. Which is good, since Brawn has earned – due to the three race wins between that Bahrain chat and now – the right to determine when and if he leaves. Wolff seems happy with progress.

“The step forward the team have made since last year is a major improvement,” he says, “and something that wasn’t expected at the start of the season. Three wins and four podiums is something we can be satisfied with. Is this somewhere we want to be medium and long-term? No. It’s about being a frontrunning team on a sustainable basis.”

Who’ll be doing what next year, though? Wolff and Paddy Lowe have very modern, corporate job titles: executive director (business) and executive director (technical). Brawn retains the old school F1 title of team principal – the latter word being an adjective meaning ‘foremost in importance’. It makes you wonder whose hand will be on the wheel.

“The way the company is structured, with the senior technical team, it’s not about one person,” explains Wolff. “It’s not about Ross as team principal, or Paddy, or me. A bunch of guys deserve all the credit. The short-term is in Ross’s hands – to decide if he wants to continue as team principal or to call it a day. I believe in a broad management base with a combination of skills – this is how I see us being set up.”

That being so, it still appears that Mercedes have a very long top table. Or a very broad one, if that’s how you prefer to look at it. And there are some strong characters in there.

MERC’S TOP TABLE

Is it broad, long or top heavy?

Well, here’s who does what...

Ross Brawn

- team principal

Paddy Lowe

- executive director (technical)

Toto Wolff

- executive director (business)

Niki Lauda

- non-executive chairman

Bob Bell

- technical director

Andy Cowell

- managing director Mercedes AMG

High Performance Powertrains

Aldo Costa

- engineering director

Geoff Willis

- technology director

Ron Meadows


- sporting director

“There’s a discussion in the media at the moment about the risk of losing a top guy,” says Wolff. “If you have a broad base of senior technical people, you reduce that risk. Also consider that we’re having one of the biggest technical changes of the past few decades. We’re getting a new powertrain and a bunch of new technical and aero regulations. To succeed, you need skilled, technical, competent people. Having strong characters is no bad thing so long as it’s managed well and there’s balance. Mutual respect is important. We have the same agenda, the same goal. There are no issues between us.”

Perhaps the strongest character within the team is Niki Lauda. The straight-talking world champion comes with a reputation for being a reactionary, destabilising influence, and his minister-without-portfolio status gives him considerable reach.

“People underestimate Niki’s broad experience within F1,” says Wolff. “I enjoy working with him because he’s straightforward; he’s able to reflect on things and is happy to have a conversation. And we have the same target. If your argument is the right one, he looks you in the eye and says, ‘You’re right.’ Not many people have that capacity.”

The F1 team occupies Wolff’s attention full-time. Unlike Norbert Haug, whose role he loosely filled, he has delegated the DTM side of Merc’s motorsport business (“you can’t do both”). He retains a stake in Valtteri Bottas, but management is handled by Mika Häkkinen and Didier Coton. The sale of his Williams shares awaits the right buyer – “You can’t just sell to somebody who wants a trophy investment,” he says.

Once this deck-clearing is complete, who’d bet against Wolff continuing his ascent to top-dog status inside Mercedes – regardless of how long, or how broad, that top table is? 

Max Chilton

It's not easy when you fight and win your battles at the back of the grid where no one can see you. But the arachnophobic Marussia racer is sanguine about his prospects...

WORDS STUART CODLING PORTRAITS GLENN DUNBAR/LAT

You could hear a pin drop in Marussia's team building at the far end of the Korea International Circuit paddock. Only the hardiest of F1's travelling media have the stamina to schlep to this far corner of South Korea, and *F1 Racing* finds Reigate's fastest export stretched out in a chair after completing his press commitments in what must have been record time.

Outside, the late afternoon sun reflects lazily off the sea. Only the clink of teaspoon against coffee cup disturbs the calm. Max has a reputation for keeping things simple. There's no entourage, no rock-star trappings. He's funded his first year in F1 by, in effect, selling shares in himself, and runs his career like a business: lean, efficient, ambitious. You're more likely to find him waiting in Gatwick for an easyJet flight than tumbling out of a champagne bar.

With your questions set in front of him – "Sorry! OCD..." he says, straightening the pile – and only his trainer, Sam Village, in the audience, Max dives in...

Who's the better driver – you or your brother Tom?

Andrew Creed, UK

This has got to be my most asked question of all time... Tom's very good at touring cars because that's what he's done for 12 years. So he knows how to manage weight transfer. I've driven more cars that are aero-dependent, so I'm quicker in a single-seater, he's quicker in a car, and I'm probably quicker in a kart because I'm lighter. We'll leave it at that!

Can you describe Graeme Lowdon [Marussia CEO] in three words?

Zacharie Duval, France

Northern, friendly and amusing.

What have you enjoyed most and least about your year in F1 so far?

Sam Crown, UK

The thing I've enjoyed most is driving in grands prix. It's something I've dreamed of for years,

and it finally became available in Australia. I'll never forget that first race. I've had some amazing and enjoyable races – Monaco and Singapore were particularly good. My least? I'm not a negative person, so it's difficult to think about that... but when you think you're on for a really successful qualifying lap and then something happens outside your control – like a yellow flag – that's quite frustrating.

Do you think you have done enough to secure a drive in F1 for next year?

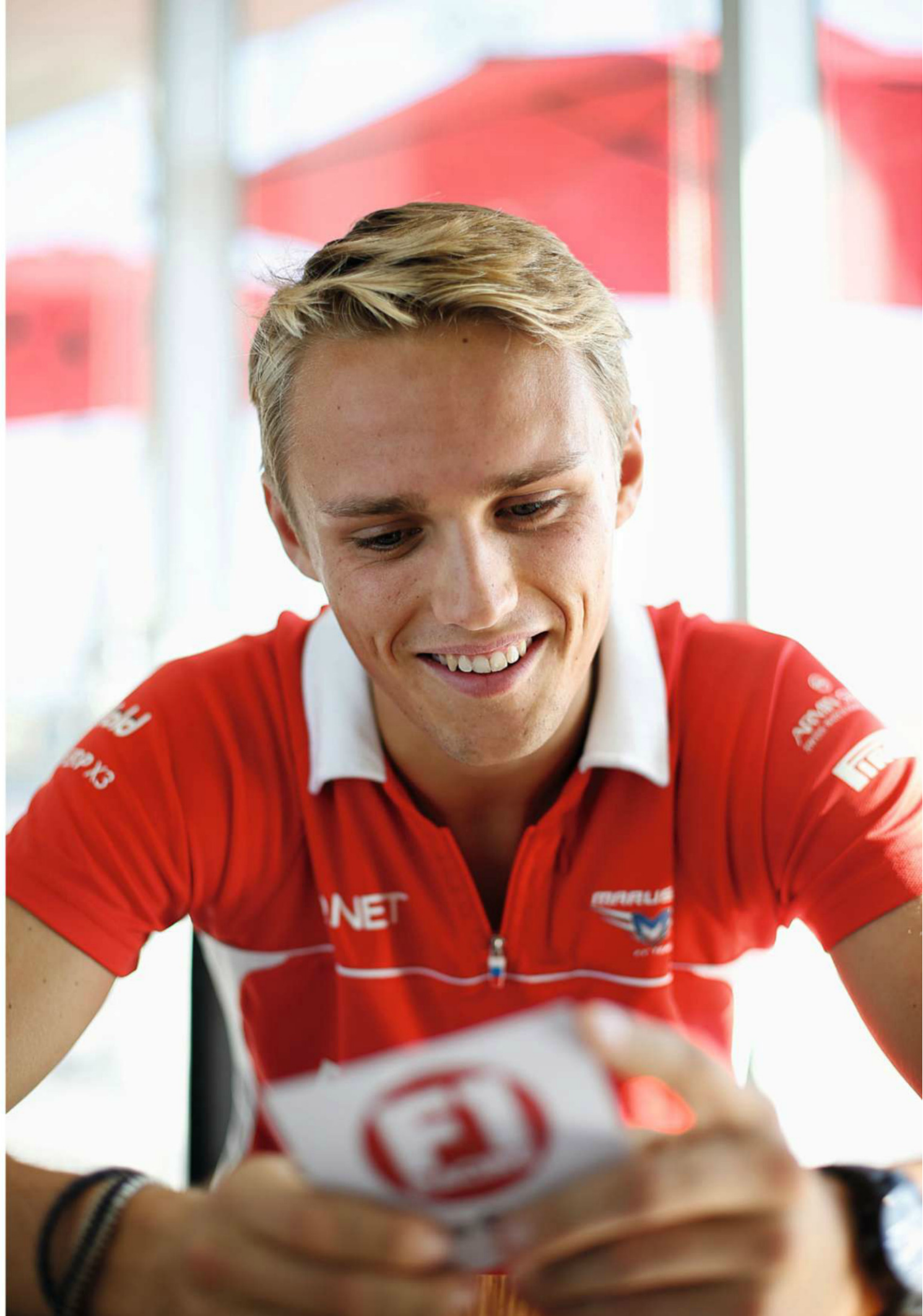
Rachel Oliver, UK

Yes. I think I've shown I can drive a Formula 1 car fast and bring it home. I do everything the team want me to do. There are a few things to work on but that's to be expected of a rookie.

Is the back of the grid all private jets and yachts, or is it more economy and taxis?

Michael Ianniello, Australia

Definitely the latter, but maybe one day... →



Pink Floyd, Led Zeppelin, Black Sabbath, Def Leppard or Status Quo. Which one is 'your' band?

Ara Arzumanyan, Armenia

Well, since I'm going to Rick Parfitt Jr's wedding next week, I'm going to say Status Quo.

With the exceptions of Spa and Suzuka, you finished in every race higher than your grid position. That is the best record in the 2013 field, but are you satisfied with your season thus far?

Ales Norsky, USA

That's definitely a positive. Obviously it's slightly easier for me to finish ahead of where I start because of where we are on the grid – if a couple of cars ahead fail to finish then that makes up a couple of positions. So it's not making me look amazing, but if it's something nobody else has done, I'll take it as a positive.

I watched your great qualifying from the grandstand at the Belgian Grand Prix. Did you think: 'Yes we can!'?

Billy Egerton, Ireland

I did! We knew that in those conditions some people weren't going to get it right, so as long as we made the right call – which we did – we would have a chance. We just got into Q2, and it doesn't really matter if you 'just' get in, because you're either in or you're out. It was a great achievement for Marussia to get both cars through because we've never done that before.

Rumour has it you were being considered to drive the Ferrari 312 at a classic car event, but Ferrari refused to let you drive the car. How does that make you feel?

Vaishali Dinakaran, India

It wasn't quite like that! I was going to drive Niki Lauda's Ferrari for a Sky TV event but they couldn't insure the gearbox. It was disappointing, but hopefully I'll get another chance.

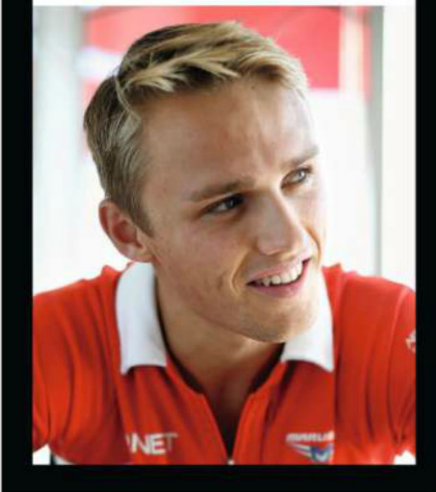
How frustrating is it when you are close to overtaking the car in front, then you get blue-flagged to be lapped by a frontrunner – especially if you think you could have got past in the next couple of corners?

Geoffrey Foster, UK

Yeah, it does get frustrating when you're in a close battle, but it's part of racing. It's a bit of a shock coming from junior formulae. When you run at the front, you never worry about blue flags. It's a shame because you feel like you're having the biggest battle on the circuit, but for the people watching on TV, whatever you're involved in probably isn't even being aired. You don't want to do anything that might change the



"Success, for me, is that so far this year I have finished every race. It's a good sign when you can bring the car home and still be quick"



outcome of the race for the frontrunners, so all I can really do is try not to lose too much time when I'm letting them past.

Do you wear underpants, boxers or Y-fronts to race in?

Wayne Meehan, UK

I wear boxers. That answers that one!

Did you close your eyes the first time you went through Eau Rouge in an F1 car?

Paul Hayter, UK

No, because I'm still here now! It's pretty ballsy, that corner. I remember taking it flat-out in a Formula 3 car and thinking, 'Wow, that's pretty fast.' In a GP2 car it takes you three or four laps before you man up and do it. An F1 car has so much downforce that it's pretty comfortable, but you don't forget how quickly you're going. I wouldn't ever dare shut my eyes through there.



Chilton's lid takes its three-stripe design from the now-defunct company who first sponsored him

The Max Chilton appreciation society was out in force on the Kemmel Straight at this year's Belgian GP. Did you hear us during the drivers' parade, and what does that support mean to you?

Aaron Rook, UK

There were a lot of people cheering and shouting my name there at Spa – and at Monza, too. Thanks for your support: it means a lot to me.

Who is your idol in the history of F1?

Tibor Kovacs, Hungary

When I was young it was Michael Schumacher. He came into F1 in the year I was born so I've watched him all my life. He was winning everything. As I got older and learned more about the history of the sport I discovered other people. John Surtees is an absolute legend – I've had a few chats with him and I just don't know how he did what he did. Sir Jackie Stewart and Sir Stirling Moss, too.

Hi Max, I'm from Reigate – can you arrange to do a run in your F1 car down the high street?

Scott Houghton, UK

I've always wanted to do this. Maybe we could arrange it one day. I tried once when I was karting but the council wouldn't allow it.

What would make this first year in F1 a success from your point of view?

Frederic Bancel, France

Success, for me, is that so far this year I have finished every race. It's a good sign when you can bring the car home and still be quick. My pace has been improving as well, so it's looking good for the final races.

Do you think the 2014 rule changes will benefit or hurt the smallest F1 teams?

Antti Martikainen, Finland

Personally I think it's great. When you look back at the past, when big changes have come in it

tends to stir things up for a while. It may only do that for a few races or half a season, but we've got a Ferrari powertrain for next year, so if we play our cards right and have a good winter's testing we could have a really strong first few races. For the smaller teams, it does help.

What exactly do the three lines on your helmet denote?

Jithun Vijay, India

It's an old company that doesn't exist now, but they sponsored me in karting so I had those lines on my very first helmet. I thought they looked cool, so even though the company has gone, I've kept them. It's part of my identity, like the dashes on Damon Hill's helmet – and his dad's.

Do you think you and Jules can beat Caterham in the constructors' championship this season?

Chris Sartor, UK

It's looking good but I don't want to tempt fate. If there's bad weather at a race or accidents we could be vulnerable. So I won't say yes or no.

How do you relax before a race?

Steven Green, UK

I try to lead a normal life – I train, see my mates, go out... although I'm not into *big* nights out.

At the racetrack, I tend to just chill out with my family, my friends and my trainer – it's pretty much the same routine as every other driver, really. It may seem boring but it's the best way for me to stay focused.

Which other drivers on the grid would you most like to go on a night out with?

Lauren Fuller, UK

I've been out with most of the other drivers on the grid at some point or other. Not this year, though. I've known quite a few of them for a long time, having raced against them in junior formulae. Dan Ricciardo was my team-mate in 2009 and he's a good laugh to go out with. Everyone in F1 is an enjoyable character.

Reigate is widely recognised as the centre of the universe; which of its many attractions endears you most to this idyllic and iconic town?

Ian Burrows, UK

[Laughs] Agreed! I like Reigate. It's got lots of restaurants and eating out is my thing. I like golf, and it's got a very good golf club. It's near London and all the airports, but it's in the countryside. And it's good cycling country – the loop I do through my house goes up Leith Hill and Box Hill. It's good fun.

Who was the first F1 driver you ever met?

Mike Hum, Canada

[Taps card against the table thoughtfully] That is a *great* question. Current or old school? Hmm, well the first ones were Jonathan Palmer and Martin Brundle because I raced against their sons in T-Cars [a UK-based one-make series for young drivers], so I spent a lot of time with them.

How do you keep motivated when you know your car will not match the performance of the top teams?

Mitch Vaughan, UK

It's simple. Driving a racing car is motivation enough for me. When there are other cars around, I try to visualise us all in identical cars and focus on doing the best job I can. You can't start chasing things that aren't going to happen.


What is the most surreal thing to have happened to you in Formula 1?

John Gilmore, New Zealand

These questions really do come from all over the world, don't they? Surreal, hmm... Well, last year at the Japanese Grand Prix, I was going to switch my light off when I saw this huge spider the size of a tea plate [he produces his iPhone and scrolls through to a photo of the offending arachnid, a huntsman]. I called reception – I don't speak Japanese, so I went: "Spider! Spider! Spider!" Then there was a knock at the door and it was a guy with a fishing net. It all went a bit Pete Tong from there. There was lots of screaming, it jumped on his back then disappeared. In just a few seconds it was half way up the corridor and this guy was chasing it with his fishing net.

Ever go "Nah nah, my car is faster than yours!" to your brother?

John Booker, Australia

Have I ever done that? No, but I will do if the need ever arises... 

I recently saw you at the Goodwood Revival meeting. Which F1 car from the past would you most like to drive?

Adam Moulder, UK

Definitely an older one. You can really feel them drifting. But I like to have seatbelts, so I'd go for James Hunt's McLaren M23 or something like that.



Hunt's M23 of 1976. More successful than Chilton's 2013 MR02 – and top of his must-drive list

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THE F1 POWER LIST



Who holds the biggest stakes in the world's most glamorous sport? *F1 Racing* analyses the influence, wealth and futures of Formula 1's movers and shakers to compile a list of its 20 most powerful players

PICTURES LAT; GETTY IMAGES; SUTTON IMAGES; REX FEATURES

Formula 1 is a sport with a global audience that is numbered in the hundreds of millions. Yet despite its huge reach, it is controlled by a mere handful of kingpins who rule the paddock.

More so than in any other sport, this power is focused on those few select individuals who can change its course with the mere flick of a hand or a nod of the head. They are able to strike multi-million dollar deals over a conversation in the right motorhome, or accompanied by the clink of champagne flutes on a private yacht somewhere in the Monaco harbour.

So who *are* these masters of this universe? That's a debate we at *F1 Racing* have long locked horns over and only now can we reveal the results of our hard-fought squabbles.

Power in F1 can be defined by influence, wealth, future prospects and that elusive something else we've termed 'the x-factor'. These are the yardsticks by which we measured those we believe to be the sport's major players. Some you'll have heard of; the inclusion of others may surprise you. But all possess enough power to make huge waves in our sport. Read on to discover who they are...

THE F1 POWER LIST



20 DAVID WARD

FIA presidential contender

INFLUENCE 5 David Ward is not so well known in F1 but in FIA circles, he is a major player.

WEALTH 5

FUTURE 0-10

X-FACTOR 5

TOTAL 15-25

He's worked

for the governing body for 20 years, as director general, secretary general of the FIA International Court of Appeal, adviser to former president Max Mosley and, for 12 years, as director general of the FIA Foundation, the road safety charity.

In his early career, Ward was chief policy adviser to the late John Smith MP, leader of the UK Labour Party. But Smith's sudden death from a heart attack changed Ward's career path dramatically.

He turned his attention to his other passion – cars. Now, after 20 years working for the FIA, he's thrown his hat into the ring to lead it. If his combative campaign style is anything to go by, there's little doubt he'd bring his decisiveness to bear on F1 as FIA president.

Power play: political heavyweight



19 SACHA WOODWARD HILL

*Chief legal officer,
Formula One Holdings*

INFLUENCE 9 You don't want to receive a letter from Woodward Hill. As Bernie's lawyer she has the power to

WEALTH 4

FUTURE 6

X-FACTOR 6

TOTAL 25

cease the day-to-day functioning of any person or team in F1. And she is not averse to using that power.

Woodward Hill has been Ecclestone's in-house counsel since 2000. Despite keeping a low profile, she has become a central figure at Princes Gate, the London headquarters of FOM. No contract is signed without her say so.

She is also a director of many F1-owned companies. She sits on the board of Delta Topco, F1's holding company, and has a one per cent stake in the business worth £50m.

Earlier this year, in an interview on his own F1 website, Ecclestone said he envisaged F1 could have a female CEO "probably in three to five years from now". There is no doubt he meant Woodward Hill.

Power play: quiet but deadly



17= CHARLIE WHITING

FIA race director

INFLUENCE 8 From his Race Control tower, FIA F1 race director Charlie Whiting oversees all that happens

WEALTH 5

FUTURE 8

X-FACTOR 5

TOTAL 26

at a GP. With a touch of a button he can turn on the start procedure or call out a Safety Car. He is central to the smooth running of a race.

Whiting is highly respected throughout the paddock – no mean feat given the controversies he has dealt with over the past 15 years. Few will forget the 2005 US GP where Michelin brought unsafe tyres, so asked Whiting to install a chicane in Turn 13. He refused, saying this was unfair to teams who could race safely on the track.

Looking back now, that seems a sensible decision. But a lesser man would have caved under the pressure. Yet Whiting is always cool, calm and collected. Which is essential when you have so much power at your fingertips.

Power play: pushing the button



17= MAURIZIO ARRIVABENE

*Vice president of marketing,
Philip Morris International*

INFLUENCE 6 F1's biggest sponsor has no branding on any cars or at any track.

WEALTH 10

FUTURE 5

X-FACTOR 5

TOTAL 26

Philip Morris's Marlboro has been Ferrari's title sponsor since 1997, but their logo last appeared at the '07 Chinese GP.

Phillip Morris are thought to have spent over \$1.5 billion on Ferrari – and their current contract runs to the end of 2015. It's the kind of contribution that wins you a seat at the Ferrari table – one currently occupied by Marketing VP, Maurizio Arrivabene.

So what do Phillip Morris get for their money? It's believed that they own the skin of the Ferrari car. They buy the sponsorship then sublet space to other sponsors.

Arrivabene is such a central figure at Ferrari that he's even consulted on the signing of new drivers. If money buys influence, Arrivabene has a lot of it.

Power play: smoke and mirrors



15= NICOLAS TODT

Driver-manager, GP2 team owner... and son of Jean

INFLUENCE 6 Nicolas Todt, son
WEALTH 4 of FIA president
FUTURE 10 Jean, has fingers
X-FACTOR 8 in a lot of pies.
TOTAL 28

He's a driver-manager, a GP2 team owner and a wannabe F1 team principal. His ambitions know no bounds, and few would bet against his rise to the top.

Through his driver management agency, All Road Management, he has amassed talent including Felipe Massa, Pastor Maldonado, Jules Bianchi and rising star James Calado. His GP2 team ART offers the perfect vehicle for youngsters to demonstrate their talents.

As a youth, Todt would be taken around the paddock by his father, who was then Ferrari team principal. He hasn't stopped networking since and there are few in F1 he could not get a meeting with. That is power in itself.

Expect the younger Todt to have a long career in Formula 1.

Power play: rising son



15= MARTIN WHITMARSH

McLaren team principal

INFLUENCE 8 As well as being
WEALTH 5 team principal of
FUTURE 8 McLaren, Martin
X-FACTOR 7 Whitmarsh
TOTAL 28

has been the Chairman of the Formula One Teams' Association for the past four years. So when he speaks, it is with the voice of the majority of teams in the pitlane.

He is like the union boss knocking on the doors of Ecclestone and Todt to demand better pay and working conditions. But this is not bluster. He speaks with conviction on matters of importance and is particularly media-savvy with a strong comms team behind him to help get his point across.

FOTA lost most of their power when Ferrari and Red Bull left in 2011. Whitmarsh says he will not stand for re-election and will want to refocus his attention on returning McLaren to winning ways. Even so, he remains a senior member of the paddock hierarchy.

Power play: union boss



11= PRINCE ALBERT OF MONACO

Monaco GP patron

INFLUENCE 6 Monaco is F1's
WEALTH 10 most important
FUTURE 5 race and Prince
X-FACTOR 8 Albert is the
TOTAL 29

most important person in the Principality. Without this GP, F1 would lose much of its glamour. Bernie Ecclestone knows this, so Monaco gets special treatment compared to other venues.

Monaco is the only race that sells its own advertising and it pays only a nominal race fee compared to the millions paid by other tracks. Even the schedule is different, with practice on a Thursday so Friday can be a day of rest. This allows for an extra night of partying for all the VIP guests who attend the weekend.

There is no podium, so the top three walk to the royal box where trophies are handed out by Prince Albert. This is before the national anthems (as opposed to other GPs where the anthems play first). In Monaco, Albert comes first.

Power play: racing royalty



11= CARLOS SLIM JR

Multi-billionaire, FIA Senate member and head of Mexico's young driver programme

INFLUENCE 5 Carlos Slim Jr
WEALTH 10 is part of one
FUTURE 6 of the world's
X-FACTOR 8 richest families,
TOTAL 29 with a \$72billion

fortune at his disposal. This buys great influence – especially in F1.

That influence is apparent this year with two Mexican drivers – Sergio Pérez and Esteban Gutiérrez – in the sport. Their progress has been accelerated through Slim Jr's own Escuderia Telmex young driver programme.

Slim's F1 influence grew after he was made a member of the FIA Senate. Since then, he's been active in trying to bring F1 back to Mexico. That deal has now been done, and all that remains is for work to be finished at Mexico City's Autódromo Hermanos Rodríguez.

His father's Telmex company already sponsors Sauber and further investment is forthcoming thanks to Slims Jr and Sr.

Power play: money, money, money →

THE F1 POWER LIST



11= HERMANN TILKE & PETER WAHL

Managing partners,
Tilke Engineers & Architects

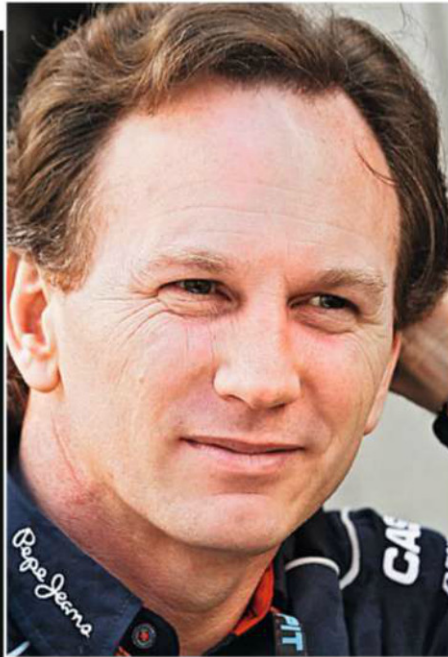
INFLUENCE 8 All new races now come with
WEALTH 6 a personal recommendation
FUTURE 7 from Bernie Ecclestone that
X-FACTOR 8 Tilke and Wahl design the
TOTAL 29 track. And there are few who
are brave enough to ignore
a recommendation from Bernie.

Tilke and his partner Peter Wahl have designed all F1's most recent circuits, including Bahrain, Shanghai, Istanbul, Singapore, Abu Dhabi, Korea, India and Austin. They are now working on the Olympic Park Circuit in Sochi and redevelopment of Mexico's Autódromo Hermanos Rodríguez.

Some have accused Tilke of creating boring tracks with few passing opportunities, but there is no doubt that his designs have hugely improved safety

As Ecclestone seeks to add more races to the calendar, it seems Tilke and Wahl will play a central role in F1 for years to come.

Power play: track monopoly



11= CHRISTIAN HORNER

Red Bull team principal

INFLUENCE 6 Theoretically, Christian
WEALTH 5 Horner should be higher up
FUTURE 10 on this list. In 2010, aged
X-FACTOR 8 36, he became the youngest
TOTAL 29 team principal to win an F1
constructors' championship –
and he has not stopped winning since.

Even so, his power is tempered by those around him, especially Helmut Marko. It is widely known that Marko has the ear of Red Bull boss Dietrich Mateschitz and is not afraid to whisper into it to get his own way. It is also Marko who oversees Red Bull's young driver programme, choosing who makes it to Toro Rosso and then Red Bull.

But Horner is the man who keeps the show on the road. He may not hold outright power, but he does hold sway over the day-to-day actions of F1's best team. And he knows the secret of keeping Adrian Newey happy. Anyone who can do that deserves their place at the top level of F1.

Power play: team player



10 SEBASTIAN VETTEL

Red Bull racer

INFLUENCE 6 Sebastian Vettel is the
WEALTH 6 youngest driver ever to have
FUTURE 9 won the championship – and
X-FACTOR 9 he's now won four of them in a
TOTAL 30 row. Yet he's just 26 years old.

At this rate, he'll eclipse Michael Schumacher's seven world titles to become the most successful driver ever. But he's also struggling with popularity, as fans become disenchanted with the predictable nature of every race – Vettel on pole and staying there from flag to finish. It's hardly his fault: you can't blame him for having the best car and for being so good at driving it. But everyone loves an underdog in F1, and Vettel is no longer that.

It may help him to move teams, and he has intimated a desire to move to Ferrari at some point. By the time his Red Bull contract expires at the end of 2015, he'll be 28 and at the peak of his game. The power to decide his next move will be in his own hands.

Power play: winning races

Close but no cigar...

They didn't quite make it into the top twenty, but here are other big-hitters who are making their mark on Formula 1



Alex Wurz
Driver and entrepreneur
– future team principal





08= TOTO WOLFF

Mercedes GP executive director

INFLUENCE 5 Toto Wolff has moved swiftly from relative obscurity to being a major player in F1.

FUTURE 9 There aren't many executives who could own large stakes in two rival F1 teams and get away with it, but Wolff walks that finest of lines.

The 41-year old Austrian investor and former racing driver is an executive director of Mercedes GP, with a 30 per cent stake in the team, and a shareholder in Williams F1 with 16 per cent. But his racing investments don't end there.

He owns 49 per cent of HWA, which runs the DTM race programme for Mercedes and develops F3 engines. Other investments include BRR Rallye Racing, and Aces Management, a sports management company he co-owns with Mika Häkkinen, which looks after the likes of Alexandre Prémat and Valtteri Bottas.

He is one to watch and is set to become an increasingly influential figure in the paddock.
Power play: future prospects



08= JEAN TODT

President of the FIA

INFLUENCE 9 Jean Todt's first term as FIA president is coming to an end, but over the past four years he has not exactly stamped his authority on F1. Granted, his style is different from that of

his confrontational predecessor Max Mosley, but Todt has shirked some major decisions, such as whether to race in Bahrain. He also failed in his election promise to bring in an F1 commissioner to oversee regulations in the sport.

That said, he has brought in a number of successful changes. The stewarding system has been overhauled and Todt has successfully negotiated a new Concorde Agreement that could net the FIA around \$270million over the next eight years. On top of that, he has kept the F1 media centre under FIA control, something Ecclestone was trying to wrest from him. If winning a battle against Bernie is any demonstration of power then Todt's still got it.

Power play: the regulator



06= FERNANDO ALONSO

Ferrari racer

INFLUENCE 8 Fernando Alonso is arguably the best driver in Formula 1. He was our choice for Man of the Year in 2012 despite not winning the championship and there is every good reason

that he will be a contender this year. Put simply, he gets the maximum out of every car he drives.

Alonso is an uncompromising competitor. It was emblematic that he was the man to break Michael Schumacher's stranglehold on the sport when he claimed the 2005 and 2006 titles with Renault. Things took a turn for the worse when he joined McLaren and clashed horns with Lewis Hamilton. Neither did it help relations with his team when he gave evidence that led to a \$100m fine in the aftermath of the 'Spygate' furore.

So the irony was not lost when Alonso joined Ferrari. He hasn't won a title with them yet but he enjoys life there. And his skill is such that he could choose from any other team in the pitlane.
Power play: pure driving skill →

Paul Hembery

Pirelli motorsport director
- tyre chief



Gerard Lopez,

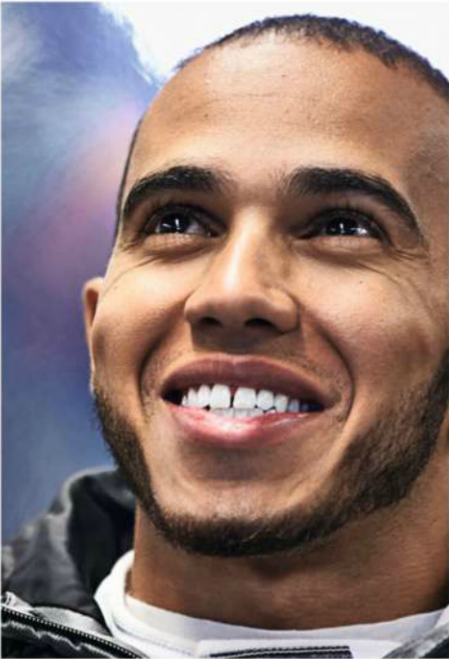
Lotus F1 chairman
- owner or seller?



Ian Holmes

FOM head of media rights
- controls the televising of F1

THE F1 POWER LIST



06= LEWIS HAMILTON

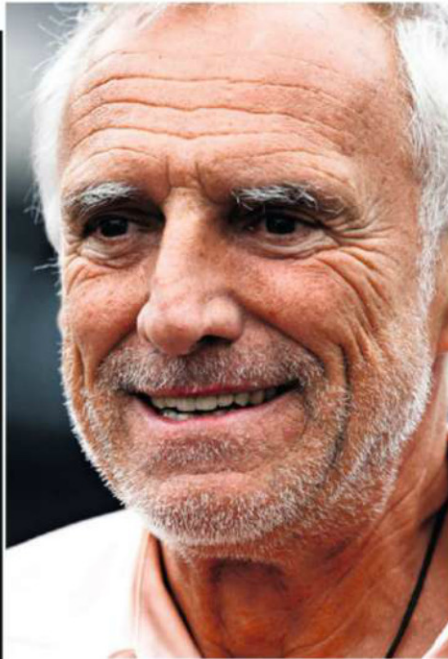
Mercedes GP racer

INFLUENCE 7 Sebastian Vettel might win all the races, but Hamilton is still the star of the show. With **FUTURE** 8 his penchant for celebrity, it is Hamilton who demands the attention of the world's press.

The fact that his agent, Simon Fuller, also looks after the affairs of David Beckham speaks volumes. Hamilton is the F1 star Fuller pursued with promises of huge endorsements and movie deals, and he seems set to deliver. Fuller's first job was negotiating Hamilton's four-year deal with Mercedes, worth an estimated £60m. A greater achievement was freeing Lewis from the commercial shackles of McLaren, so he can now strike a string of personal endorsement deals.

Make no mistake about the move – the decision was Hamilton's. So far he's been proved right. With Mercedes one of only two teams producing their own engine for 2014, expect this man to be fighting for titles again soon.

Power play: star status



03= DIETRICH MATESCHITZ

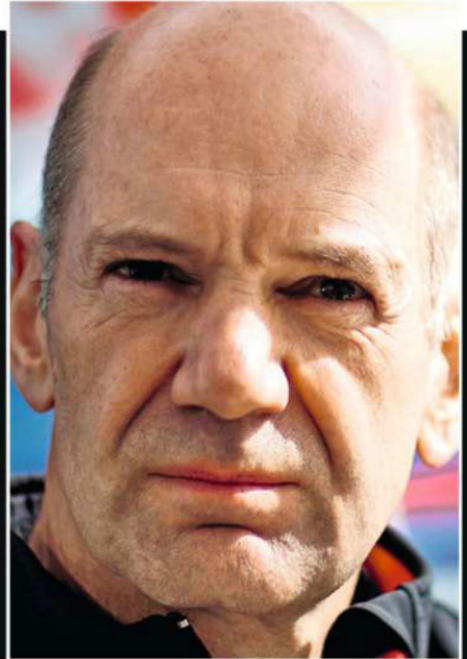
Red Bull founder and CEO

INFLUENCE 6 Dietrich Mateschitz owns two F1 teams and one grand prix circuit. There aren't too many people who can claim to have those in their toy cupboard.

He bought the former A1-Ring in 2004, renaming it the Red Bull Ring, but it lay dormant for the next seven years. The circuit is close to his birthplace, Sankt Marein im Mürztal, and rumour has it that he got tired of complaints from villagers about loss of tourism since F1 deserted the circuit. So what does he do? Buys the race contract himself, of course.

The \$20million a year needed to pay the rights fee is small change to Mateschitz, who has amassed a net worth of \$5.3 billion. Usually it is governments who step in to bankroll grands prix but as Mateschitz's wealth is more than the GDP of a small country, he had no qualms about doing this himself – especially if it keeps the locals quiet for a few years.

Power play: successive success



03= ADRIAN NEWEY

Red Bull chief technical officer

INFLUENCE 10 You get Newey and you win the championship. That was Red Bull's strategy when they entered the sport – and it's certainly paid off.

Newey is the most successful designer in F1 history with nine constructors' titles and over 80 grand prix wins to his name. He's also the only designer to have won constructors' titles with three different F1 teams – Williams, McLaren and Red Bull.

With the wealth and resources of Red Bull at his fingerprints, Newey's power has proved explosive. Whatever he wants from Red Bull, he gets. If he wants to avoid giving media interviews that is no problem. Can you imagine the promotion-seeking Red Bull allowing anyone else that luxury? But he gets what he wants for good reason. And in turn Red Bull get what they want: global exposure at the top of the biggest annual sporting championship in the world.

Power play: technical genius



Sheikh Mansour bin Zayed

IPIC chairman and UAE deputy PM
– owns a major share in Toro Rosso



Emilio Botín

Santander president
– McLaren/Ferrari sponsor





03= DONALD MACKENZIE

CVC co-founder and co-chairman

INFLUENCE	8	Donald Mackenzie owns F1, but he doesn't control
WEALTH	10	it. He doesn't even control his employee, Bernie
FUTURE	7	Ecclestone. In the ongoing bribery case against
X-FACTOR	8	Ecclestone in Munich, Mackenzie described him
TOTAL	33	as "very powerful and difficult to manage".

But that doesn't mean Mackenzie lacks power. He is, after all, the owner of the world's most lucrative championship, with CVC owning the largest single share in the business. But he's also smart enough to let Bernie do what Bernie does. And while CVC rakes in \$600m a year from F1, Mackenzie will let that carry on.

For now, Mackenzie will wait in the shadows collecting the takings and preparing to float F1 on the stock market. But when Bernie eventually hangs up his paddock pass, Mackenzie will be thrust to the fore. He is, after all, the man who chooses the man who will be king.

Power play: Bernie's boss



02 LUCA DI MONTEZEMOLO

Ferrari chairman

INFLUENCE	9	Ferrari aren't currently winning titles, but they are
WEALTH	8	the crown jewel of F1 – and di Montezemolo is the
FUTURE	7	guardian of that treasure. He is also one of the few
X-FACTOR	10	people in the sport who Bernie Ecclestone respects,
TOTAL	34	and that is a powerful proposition in itself. Under

the new Concorde Agreement, Ferrari's position is testament to their number-one status – and to di Montezemolo's bargaining skill. They will reportedly receive a guaranteed bonus of \$50 million a year – twice as much as the FIA managed to negotiate for itself.

As motorsport's biggest brand, Ferrari attract the best sponsors and drivers. But even the star names are overshadowed by di Montezemolo. His reprimand earlier this summer of the sport's best driver, Fernando Alonso, demonstrated his confidence. And to prove his point he re-hired Kimi Räikkönen to keep his star driver on his toes. Now *that's* power.

Power play: brand dominance →

Niki Lauda

Mercedes non-executive chairman
– wise old man of the paddock



Ross Brawn

Mercedes technical director,
– tech guru... but where next?



Gian Riccardo Marini

Rolex CEO
– F1's biggest non-team sponsor



01 BERNIE ECCLESTONE

CEO of Formula One Management

INFLUENCE	10	You could argue that Bernie
WEALTH	10	Ecclestone should not be on this
FUTURE	6	list. In the past year, the 83-year-
X-FACTOR	10	old has been indicted on bribery
TOTAL	36	charges, has failed in his plan to

float Formula 1 on the Singapore stock market, and has faced constant rumours about his replacement as the sport's head honcho.

Yet through a series of maverick manoeuvres, Bernie has cemented his position at the top. He has again fought off a challenge from the teams over their championship earnings, by using his tried and tested 'divide and rule' strategy (Ferrari first and the others will follow). At the same time, he has managed to appease the FIA with a small increase in their takings (a large part of that coming from increased fees to the teams), while simultaneously

lining his coffers by securing lucrative new race contracts in Mexico, New Jersey and Austria.

Negotiations over the new Concorde Agreement have resulted in personal triumph for Ecclestone, and are clear evidence of the power he retains. While some have sniped at the terms on offer, they have little choice but to accept Ecclestone's terms.

Ecclestone retains a 5.3 per cent stake in the Formula One Group, while a trust for his daughters, Tamara and Petra, has another 8.2 per cent. Even a rather large divorce settlement and his daughters' free-spending ways have failed to put a dent in his finances, and Ecclestone is still easily worth £2.5bn.

The only question mark over his power is his age. But since he was written off as past his prime ten years ago, you'd be foolish to bet against him again.

Power play: invincibility 🚩




WORLD EXCLUSIVE
F1 TECH EXPOSÉ
26-PAGE REPORT

The **FULL** technical specifications of the fastest F1 engine ever!



Elsewhere in this issue of **F1 Racing** there is a feature on the Cosworth CA F1 V8 engine. To read the 26-page report in full, containing many more technical revelations with supporting images, buy:

Race Engine Technology issue 73 from www.highpowermedia.com or by calling **+44 (0)1934 713957**



These exquisite components make up the Cosworth CA F1 V8 engine – a motor that can top 20,000rpm. Ahead of its final race, we explore its inner workings

Speed metal

WORDS JAMES ROBERTS

PICTURES RACE ENGINE TECHNOLOGY

In 1906, the first ever grand prix took place along the dusty roads on the outskirts of Le Mans. It was won by Ferenc Szisz at an average speed of just under 63mph. A modest pace, but the Edwardian pioneers who produced power figures of 110bhp at 2,000rpm were heralding the beginning of a relentless era of speed.

Over the next 100 years, the quest to build ever faster machines took grand prix racing to previously unimaginable highs. By the end of 2005, 3.0-litre V10s were screaming to 19,500rpm and producing a fearsome 950bhp.

It wasn't to last. For 2006, the first of a number of significant rule changes were introduced. Smaller 2.4-litre V8s coincided

with a moratorium on engine development. With rules frozen, caps on rev limits were introduced; first 19,000rpm and now 18,000rpm.

The new engine formula for 2014 (1.6-litre V6 turbos) will not reflect the same goals of those early pioneers, as the emphasis will be on fuel efficiency over outright performance. The power units used between 2006-13 are the last of a golden generation. The normally aspirated 2.4-litre Cosworth CA V8 of 2006 (derivatives of which are still used in the back of the Marussia this year) was the first F1 engine to attain 20,000rpm on track. No other manufacturer managed to reach the same dizzying heights until the cap on rev limits was imposed. With the new formula for 2014, none will.

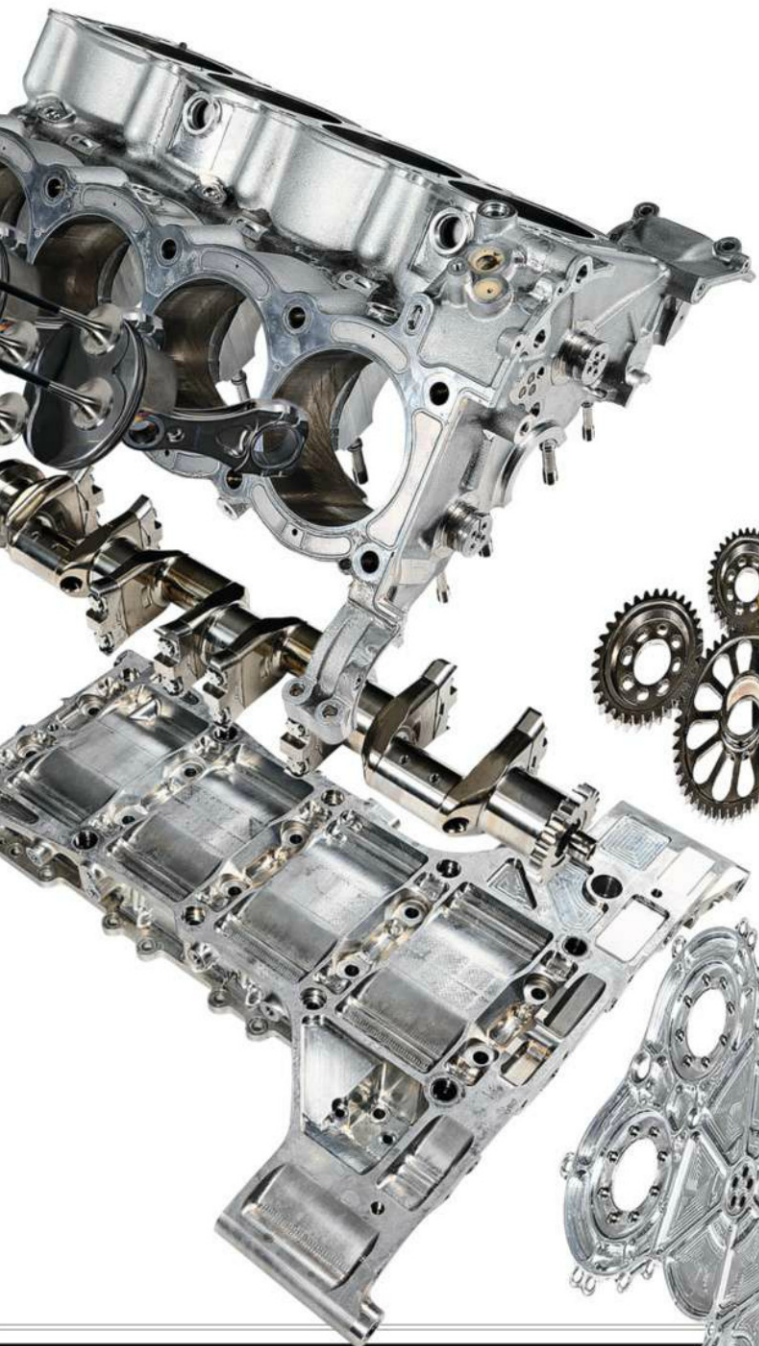
That engine will be mothballed on the Sunday night of the Brazilian Grand Prix, bringing the flag down on a glorious century of speed.

We mark the end of this era with a detailed look at the last specification engine used in grand prix racing, where outright performance *was* the ultimate goal and examine just how that magic 20,000rpm speed was attained...

Engine speed

Operating speed and horsepower steadily climbed during the 3.0-litre V10 era preceding the switch to V8s in 2006. BMW were the first to reach 19,000rpm in 2002 prior to mileage restrictions that lengthened usage and pegged the ongoing rise in crankshaft speed. In 2005, all the V10s in Formula 1 exceeded 900bhp, and by the end of the year Honda had reached 950bhp.

Cosworth took the uncompromising approach of targeting 20,000rpm from the outset with their 2.4-litre V8 for 2006. The CA had the most extreme stroke-to-bore ratio that Cosworth →



COSWORTH

had ever used, with a six per cent bigger bore than its predecessor, the TJ, and a piston speed of 26.4 metres per second at 20,000rpm. The CA's maximum piston acceleration was 9,581g at a peak power speed of 19,000rpm, rising to 10,616g at 20,000rpm.

The CA's increase in bore size was an advantage, but the challenge for the engineers was to burn the fuel and air mixture effectively. As the stroke-to-bore ratio decreases, it becomes harder to obtain an adequate compression ratio. Flame travel is lengthened, plus the combustion time shortens as rpm rises, so Cosworth needed to exploit ever-increasing fuel pressure.

"The ability to phase fuel delivery has aided combustion," says Cosworth's technical director Bruce Wood. "But when we first tried bigger bores in the V10 days, we couldn't make them work well because we couldn't get the combustion right. The required mixture preparation was enabled by running higher and higher fuel pressures. By regulation we run at 100 bar now, but for a while the CA ran at 200 bar on the dyno."

As engine speeds rise, so do vibrations and when the V8s replaced the V10s most F1 engine manufacturers struggled with reliability as the V8 wasn't so well balanced. Help came thanks to some of the world's strongest bolts...

"When we first started running the CA, the scavenge pumps, which are held onto the sump with horizontal bolts, would fall off. Those are 8mm cap screws, the heads of which snapped off because of the unbalanced force," says Wood. "They are now secured by Multiphase bolts..."

"The ability to phase fuel delivery has aided combustion"

Cosworth number their V8 engine cylinders one through four down the right hand bank, then five through to eight down the left-hand bank. On this basis, they used to use the firing order 1-8-3-6-4-5-2-7, which goes back to the days of their pioneering 3.0-litre F1 V8, the DFV, introduced in 1967. Then, in the late 1990s, they switched to 1-5-2-6-4-8-3-7. That was found beneficial in terms of performance at the cost of more severe crankshaft torsionals.

In addition, the design of the CA's piston was instrumental in letting it attain 20,000rpm from the outset. Rival manufacturers discovered it wasn't valve control, combustion or mechanical stress that were the biggest obstacles to achieving that level of engine speed; it was the heavily loaded 98mm bore piston, which under the new 2006 regulations had to be aluminium alloy.

"That was an area our rivals struggled with," notes Wood. "We would run an engine then machine the top off a piston to analyse it. Using sophisticated analysis we could establish how hot each part of the piston had been."

It was this detailed understanding and research into the thermal conditions to which pistons were subjected that allowed Cosworth to achieve that magic target of 20,000rpm.

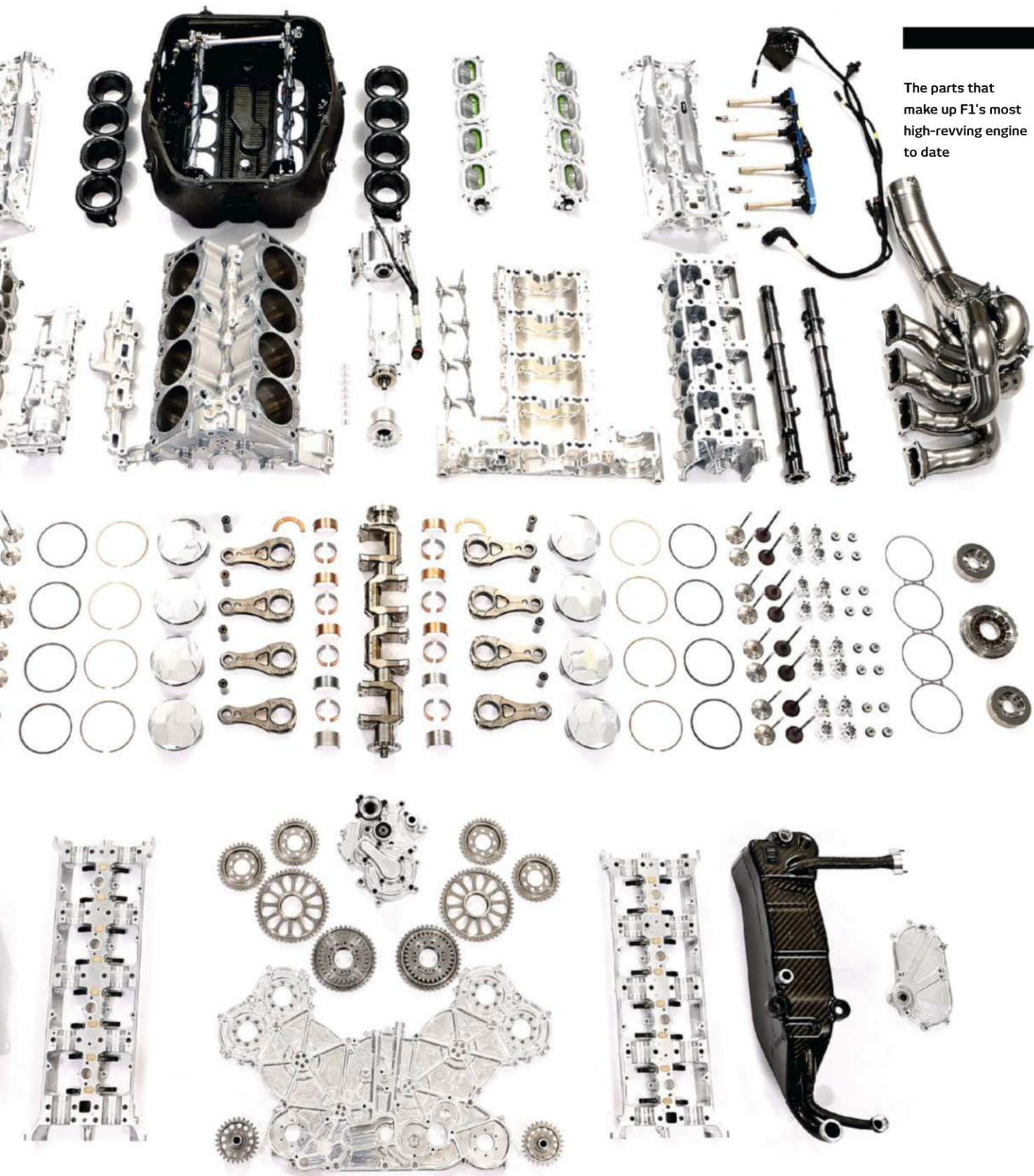
Architecture

The CA has a surprisingly traditional architecture, with a conventional monobloc (combined block and upper crankcase) that runs from the decks to crankshaft axis height, →



Marussia are the only team to use Cosworth engines in 2013 and will switch to a Ferrari power unit under the new 2014 regulations





The parts that make up F1's most high-revving engine to date



and a combined lower crankcase and sump that forms the main bearing caps. Its heads even have detachable cam carriers, reminiscent of the DFV's separate tappet blocks.

"It's worth noting that under the 2006 rules, the CA had minimum weight and centre-of-gravity height constraints, which earlier engines hadn't. That does steer you towards more robust design," adds Wood. "The CA was all about the speed, so we took the extra weight and made everything stiff. Given our 20,000rpm target, all the dynamic parts and the bearings needed to be as stiff as possible, otherwise when you run very fast you end up with things flexing and moving unexpectedly. You can't always predict that behaviour and that is when things break."

The TJ weighed in at 93kg whereas despite having two fewer cylinders, the CA came in at the

minimum permitted 95kg. Without that 2006 ruling, it might have weighed less than 85kg.

Engine operation

"In 2006, we could do just about anything we wanted because we had total control of the Engine Control Unit (ECU)," says Wood. "Since the CA returned in 2010, we have been much more limited by having to use the Standard ECU [which was brought in by the FIA with the aim of eliminating driver aids]. The rules now are such that the driver can't just put his foot down and expect it to sort itself out."

In 2006, Cosworth routinely fired the CA on all eight cylinders on the overrun to assist with brake balance, but in-race refuelling was banned for 2010, which put paid to that ploy. Yet Cosworth continued to run four cylinders on the

overrun, alternating from one bank to the other each time the driver lifted off the throttle.

Then the blown diffuser became a feature of 2010. That season and 2011, Williams used 'cold blowing' whereby the throttle was left open on the overrun but there was no associated ignition.

So-called 'hot blowing', the strategy to create ignited exhaust gas on the overrun, without creating engine torque through manipulation of ignition timing, was not introduced on the Cosworth until 2013, when it was exploited in conjunction with a revised SECU.

"Cold blowing helped us in terms of running temperatures," adds Wood. "We thought the new rules on exhaust location for 2012 would end blowing the diffuser, so that season we weren't cold or hot blowing to any significant degree. But teams still found ways to continue to use the exhaust discharge to gain aero. Then we thought hot blowing would be banned for 2013, but the rules stayed the same – so we had to do it."

The emphasis on aero performance often has a compromising effect on engine operation. The boiling point of engine coolant is a function of

"We thought hot blowing would be banned for 2013, but the rules stayed the same – so we had to do it"



Tech spec

Engine Cosworth CA

Layout 90° V8

Induction Naturally aspirated

Displacement 2.4-litres (2399.875cc)

Bore 3.858in (98.00mm)

Stroke 1.566in (39.77mm)

Maximum rpm 18,000 (by regulation)

Bottom end Five main bearings, plain steel crankshaft, four pins, titanium conrods, light-alloy pistons

Casting Linerless aluminium block and cylinder heads

Cylinder head Gear-driven double overhead camshafts, four valves per cylinder, 41.3mm intake valve, 35mm exhaust

Compression ratio 13.3:1

Engine management (SECU)

Fuel Unleaded gasoline
RON 102/5.75% bio element

Fuel delivery Sequential injection

Power/displacement (314.6bhp/l)



its pressure – increasing pressure pushes it up, so the coolant can run hotter, reducing the car's radiator requirement to assist aero performance. This led to a situation in the V10 days whereby some systems were pushed towards six bar, allowing the coolant to run at up to 140°C without boiling. The FIA then mandated a limit of 4.75 bar at the head tank pressure relief valve. The CA started its life running 120°C, but by 2013 it was coping with 130°C.

"HRT in 2012 were a good test bed, as they often couldn't get down to 120°C," says Wood. "We told them they might have to pay us for extra engines, but their engines survived – which proved we could run 130°C. You do lose performance from running the engine hotter, but the teams like the aero gain. If you run the water hotter without changing the oil then you change the amount of heat flux into the different fluids. Having hotter water isn't good for performance; having hotter oil is, although not for durability.

"You do have situations such as Canada this year when temperatures went up by 12°C on race day, so the cars run hot for the entire race. The

CA is not so sensitive that such an increase will cause it to fail, but it will cause more wear – the air-valve seals probably won't last for so long."

Development

Most power output gain since 2010 has come from advances in fuel and oil technology. Back in 2006, Williams had a deal with Petrobras, but since 2010 the CA has run exclusively on BP fuel and BP/Castrol oil. During 2011, around 5bhp was found through fuel development and another 2.5bhp through work on the oil.

"The fuel and oil work together throughout the life of the engine to prevent the build up of deposits that degrade engine performance. It is something we have worked on quite a bit through the life of the CA," says Wood.

"A CA loses 9bhp through its life of 1,365 miles. Much is down to keeping the combustion chamber and piston clean. Once the piston would be brown at the end of its life; now it's as shiny as when it first went in. Detergents in the fuel and components in the oil help, which is an advantage of having the same supplier for both.

"If we had the funding to run a dyno 24 hours a day, as some of our rivals do, we could have found another 5-10bhp since 2010. There is also still potential in the airbox and exhaust systems."

Cosworth have found an additional 40bhp since 2010. This was down to further work on the intake snorkel of the airbox and the exhaust, which are outside the homologated zone.

The moratorium on engine development has meant power output is not the major differentiating factor between rivals. The teams will compromise on engine performance by running hotter coolant or by exploiting the exhaust gas discharge for aerodynamic gain. The engine war has been dormant these past seven years as aero is becoming the new king of F1.

Engine development could be the key differentiator in F1 next year, but the new units will target energy efficiency first. So we're unlikely ever to see the engine wars that characterised the first century of GP racing. The 20,000rpm Cosworth CA will live on as the ultimate – the freedom of speed unchained and exploited to take engines to a new frontier. **F1**



Giedo van der Garde takes *F1 Racing* for a night-time spin around the busy

WORDS STUART CODLING PICTURES ANDREW FERRARO/LAT



streets of Japan's capital city in Caterham's '50s-inspired Seven Superlight



Shibuya's scramble crossing

is famously busy. Tonight it's illuminated by a giant video screen endlessly rotating promos for Japan's hottest new boy band, cold coffee and perfume – but the shoppers and commuters aren't the only ones making a beeline across it. There's a Caterham Seven Superlight R300, a Formula 1 driver and... a horde of police.

For a few seconds it seems as if we're destined for a night in the cells. Perhaps they think we're trying to re-enact a sequence from *The Fast and the Furious: Tokyo Drift*. Any excuses we might proffer could just be *Lost in Translation* (another movie set around this locale). But then, without a second glance at the incongruous yellow car and its pilot, they charge on past.

Giedo van der Garde is tittering to himself. "Did you see that guy?"

Turns out we had our backs turned to the real action. Here, in one of Tokyo's most densely populous wards, at rush hour, some fellow had taken it upon himself to perform an act best not described in *F1 Racing*. Giedo had time to take a picture on his phone ("Well, he was doing it for ages...") before the chap melted back into the crowd to evade the pursuing constabulary.

We're in the clear. The majority of people – and there are thousands passing through every few minutes – hurry across the iconic junction with only a fleeting glimpse at the Seven and its driver. Yes, traditional Japanese reserve is being eroded through exposure to Western culture and media, but it's still considered impolite to stare. Besides, it's rush hour and people have

got places to go. *F1 Racing* gestures in Giedo's direction and says conspiratorially to one of the few rubbernecks, "It's Michael Schumacher..."

"Aaaaaah!" He whips out his smartphone – an XXL-size 'phablet', latest model of course – to capture the scene before hurrying away.

The Superlight R300 isn't Caterham's most fire-breathing road-going Seven – that honour falls to the frankly insane 520bhp-per-ton R500 – but it's Caterham's biggest seller in the land of the rising sun and road-legal here. Even so, with a 'mere' 175bhp under the command of your right foot, an injudicious stab of throttle could have you facing the wrong way as easily as if the streets had been greased with olive oil.

It may look like a relic of the 1950s (it made its debut as the Lotus Seven at the 1957 Earls Court Motor Show) but its power-to-weight ratio is in BMW M3 and Porsche 911 territory, and that power squirts through the drivetrain without the interference of modern niceties such as electronic stability control. But it would be wrong to say the underpinnings haven't moved on – the diff, for instance, is now BMW-sourced rather than donated by a Ford Sierra.

"You can see the technology transfer from F1 at the time," says Giedo, "The low centre of gravity, the way the mechanical layout is designed to give the best balance, the focus on making it weigh as little as possible. The steering isn't power-assisted, it's very direct, and the cockpit is tight. It's all about the driver. The only downside is that it gets a little hot around town as you don't get much air on you – you're not going fast enough. It's not a car to drive slowly..."

Colin Chapman's original Seven was built up around a spaceframe chassis he'd intended to turn into a racing car, and when you slide into the modern-day version you see why Chapman was the Adrian Newey of his day: feet on the seat, you drop yourself into a passenger enclosure that feels like a torpedo tube. There's just enough room for a pair of legs terminating in size eight feet to abut one another. Once in repose, securely belted in via a multi-point harness, you take in the view ahead over a black fibreglass flyscreen – there's no windscreen... too heavy – and your eye level is roughly in line with the chrome strips on the bootlids of the Nissan Cedrics favoured by Tokyo's ultra-conservative white-gloved taxi drivers. Or, to put it another way, you're at risk of being kneed in the face by passing cyclists.

"When you have the road to yourself, or you put it on a track, you could have great fun," says Giedo, hooking it around for another pass of the junction. "I love this tiny steering wheel..."

To comply with Japan's strict emissions regulations, the catalytic converter is right on the exhaust manifold of the Caterham-tuned 2-litre Ford Duratec engine. That and the exhaust slung just below the driver's elbow make for hot feet in the first instance and hot everything else unless you're pressing on. There's plenty of demand in Japan, though, mainly for track-day purposes. In the UK there's a one-make championship. Caterham's factory – not actually in Caterham, but less well-to-do Dartford – has had to expand to meet demand from Asia.

"Want it to make some noise?" asks Giedo, blipping the throttle as he brings the car →

"It's not a car to drive slowly... put it on a track and you could have great fun"









to a halt opposite the statue of Hachikō, the faithful dog who always waited for his master at Shibuya station and kept a daily vigil there for nine years after the old man's death. Like the 'attract mode' of an arcade game, this bombastic salvo of hard-edge roort brings the Seven to the attention of some of Shibuya's younger residents, who gather to record proceedings on their phones. F1's most chilled driver takes it in his stride. "You know, in Amsterdam I don't even have a car..."

As capital cities go, laidback Amsterdam and pulsating-neon Tokyo are poles apart, but this, for Giedo, is one of the pleasures of a sport he's been trying to break into since the 2007 season, when he was briefly nominated as test driver for the Super Aguri and Spyker teams.

"Last year's Japanese Grand Prix was my first time in Japan," he says, "but I only went to Suzuka and that is in the middle of the countryside really. This is my first time in Tokyo. It's an amazing place, very... busy. Alive. It's like nowhere else in the world.

"One of the great things about this job is the travel. You get to experience so many different places. I'm a convert to Japanese food. I love the care and the attention to detail that goes into it – the quality of the beef, the freshness of the fish and the precision with which it's cut. There's a real passion to it. I don't believe in going to places and just living in a bubble. You've got to experience the culture of the different countries you visit and I really enjoy that."

If it seems incongruous for a company to operate in F1 while its volume-selling road car is a throwback to the 1950s (albeit a highly developed one), change is coming. Caterham recently revealed images of a hard-top two-seater co-developed with Alpine, to be launched in 2016, and a futuristic take on the Seven – the 'AeroSeven' – in concept form, ahead of a 2014 launch. And there's a Moto2 team coming next year, pointing towards a future sideline in two-wheelers. Just goes to show that Tony Fernandes hasn't just been throwing all his money at QPR.

ROAD CAR VS RACE CAR



Caterham R300

2.0-litre Duratec
20v four cylinder
175bhp
7,800rpm
6-speed manual
515kg
4.9secs
138mph



Caterham CT03

Engine 2.4-litre Renault RS27
32v 90° V8
Power 750bhp
Max revs 18,000rpm
Gearbox 7-speed semi-automatic
Weight 642kg
0-60mph 1.6secs
Top speed 220mph

"Yeah, it's quite an exciting time," agrees Giedo. "Tony has lots of ideas and he's the kind of guy who makes things happen."

For Giedo, too, things are happening. Pirelli's mid-season swap back to the underlying construction of the 2012 tyres has favoured cars other than the Red Bulls, and the sharp change in characteristics of the front tyres has favoured drivers who can live with understeer. Giedo has begun to consistently outqualify his more F1-experienced team-mate Charles Pic, and (at the time of writing) has claimed Caterham's best ever grid slot – 14th at the Belgian GP.

"This year has been pretty good," he says. "Earlier on I had problems with the tyres, but when that sort of thing happens, you just have to pick yourself up and get it together. Since the tyres changed, things have definitely improved."

Leaving the engine idling in traffic has made the cockpit hot, so Giedo asks permission to cut the engine and jump out for a while.

"I could take my jeans off to drive," he says, "but I've got some crazy underwear."

An unsolicited flash of part of the garb in question reveals that they are, indeed, crazy. This evening has truly opened *F1 Racing's* eyes.

Giedo has another appointment at 8pm so we part ways – him in a cab, us in the Seven – and enjoy a ground-level ride back to the hotel. This is true wind-in-hair motoring – and, for those not wearing glasses or goggles, grit in the eyes.

Somewhere around Roppongi a police car falls in behind us, lights illuminated. Uh-oh... 🚔

"I left school at 15 and didn't get involved in 'big words'. It works because I explain it as a layman. A layman won't understand the technical explanation – so why not go the simple route?"

From fixing tractors to tech roles at Brabham and Jordan, **Gary Anderson** is now the BBC's go-to man for translating big ideas into everyday language

PORTRAITS SAM BLOXHAM/LAT

United by our Northern Irish roots and a love of motorsport, Gary Anderson and I have been friends for longer than we'd care to mention. But our paths diverge where F1 technicalities are concerned. Which is why knowing Gary is such a boon when I need F1 complexities explained in a language I might actually understand.

Now Gary has taken that to a professional level in his highly regarded work with the BBC. 'The Big Fella' (to use an Ulsterism) has a massive cache of experience to draw from: he designed and built his own title-winning F3 car; worked as an F1 mechanic; and was technical director at Jordan and Stewart.

It would take several lunches to cover a CV like that. But we'll see where this chat takes us as we meet in the garden of The Fox at Farthinghoe in Northamptonshire. It's appropriate for a relationship that began nearly 40 years before as we stood clutching beers in a bar...

Gary Anderson: I've brought some photographs to get us started. D'you remember this one?

Maurice Hamilton: I do. It was at the Nürburgring in 1974 – that'll be the proper



Nürburgring, of course. I was trying to start out as a journalist and you were a mechanic with Brabham. We'd first met a few months before at the Monaco GP. I was hanging around the Tip Top bar, trying to make one beer last all evening. A lot of mechanics were in there. I recognised your Northern Ireland accent instantly and thought: 'He's my man!' I explained I wanted to do a story on mechanics because it was a subject that hadn't be covered in those days.

GA: That's true. There was nothing like the detailed coverage you get now.

MH: You introduced me to 'The Vicar' (Bob Dance, Brabham's chief mechanic) and he said I should talk to him again at Brands Hatch.

Which I did. We agreed I'd be with you at the Nürburgring. I was a bit concerned about Bernie [Ecclestone, then owner of Brabham] but you said: "Don't worry, it'll be all right. I'll speak to him." You had a good relationship with Bernie – tell me about the unusual interview you had with him to get onto the F1 team...

GA: I was building F3 cars for Brabham and Bernie came in and asked if I wanted to be on the F1 team. Of course I did! He pointed to a Ford DFV V8 and sort of jokingly said: "Can you pick that up and put it in the van?" So, I did.

MH: You picked up an F1 engine all by yourself?

GA: Yep. And now I was on the F1 team.

MH: Which brings us back to 1974 in Germany. You introduced me to Bernie in the paddock at the Nürburgring. He looked me up and down and said it would be okay; I had 'The Blessing', as it were. It was to be a fantastic weekend for me; I stayed with you guys all the way through.

GA: The team travelled there in a Transit van. It was a horrendous thing. And then there was the big silver transporter, the first articulated truck in F1 – my first job was working with Bob to convert it into a racing-car transporter. It took three months. The chassis wasn't that stiff, →



and if you loaded the cars before you closed the side door, the door wouldn't shut. We had stripped it out and put a kitchen in the front; a place for the whole team – about eight of us – to eat. That was an unheard of luxury in F1 then.

MH: You worked on Carlos Pace's car and I seem to remember it was just the two of you?

GA: Me and John Salmon. One would work on the front of the car and the other on the back. Derrick Walker and Terry Day worked on Carlos Reutemann's car. The Vicar would be floating and Richie Butler, who drove the truck, would do the odds and sods – tyres and stuff.

There weren't many of us. In those days, if you had a drama you helped each other. You helped other teams as well if someone got stuck. I helped the March team fix Vittorio Brambilla's crashed car in Watkins Glen; and I helped Lotus change an engine on their 72 at the Nürburgring. Next week, you might be the one needing help. They were good times.

MH: And if something was broken, you'd always fix it rather than replacing it.

GA: You'd have to fix it because you wouldn't have spares. You'd have to make a new one, or reinvent it, or botch it up, whatever.



With Eddie Jordan before the team's first race – the 1991 US GP

MH: But that was right up your street, because you're very much of that way of thinking.

GA: Perfect for me because I wanted to learn. I sat down with [Brabham designer] Gordon Murray one night. I didn't know about setting up suspension or anything like that and I was asking Gordon what does this mean, why are we doing that? It was a nice way to learn, particularly from such a clever bloke, who explained things so well. He was a fantastic mentor.

MH: So how much did you know when you arrived in motor racing?

GA: Um... nothing in racing terms. When I left school, I started fixing washing machines. My second job was the best job I ever had: it was working in a shirt factory in Coleraine. There were four blokes and about 90 women. At 16 years old, that was a great job to have. I was doing maintenance on sewing machines and cutters. The women made the shirts.

MH: I bet you learned a lot about life from that.

GA: Definitely! Then I went to work for a dealership selling Hillman cars and Massey Ferguson tractors. I served most of my apprenticeship there, which was great because tractors are fantastically in-depth technically; the

hydraulic systems and stuff on tractors are second to none. They're just mega pieces of kit.

MH: So where did you go from there?

GA: I went to work for a chipboard company. They had a machine that put felt onto chipboard to use for shed roofs. They had huge presses with two sets of rams to put pressure on and make a huge board. The rams were two feet in diameter and the whole thing was heated by steam. Each ram had a big seal around it and, if there was a leak, you had to go into the

middle of this press, between these rams. You had to wear an asbestos suit because it was about 100°C in there – you could only stay in for ten minutes or so before coming out for air.

You'd be on your elbows, pushing yourself down between the rams and you'd have a mate working with you. You had a rope tied around your ankles, and his job was to pull you out, because you couldn't do it yourself; you couldn't go the opposite way with your elbows.

MH: This is like something out of the dark ages...

GA: Well it was a long time ago. I was trying to fix this ram when I felt something strange. The next thing, I felt the head of the press going up – just little jerks, maybe half an inch at a time – but going up. And there wasn't much room. I shouted to my mate to get me out. Nothing. He'd gone off to have a cigarette. I started screaming and shouting. Somebody else came, grabbed the rope and pulled me out. There wasn't much time left. That's when I decided I was going to go to England. This was a Wednesday. I went home and told my mum and I left on the Saturday.

MH: In your early 20s and no specific plan?

GA: Aged 20. And no plan whatsoever. A mate of a friend got me a job driving a dump truck on a building site. I thought: 'I could do this at home.' I went to an employment agency and got a job at Bluebird Motors in Sevenoaks. There was a guy there whose father ran Motor Racing Stables at Brands Hatch. This guy said he was off to Brands at the weekend and did I want to come? I went there and saw they were looking for a mechanic for Formula Fords. That was it. I worked there until I heard Brabham were looking for people to build their Formula 3 cars for sale.

MH: This is 1972?

GA: The latter part of '72; about six months after I arrived in England. To set the price, they needed somebody to build the new car for 1973 and see how long it took. It took me about 40 hours. They set the price of the rolling chassis at around £4,000, but nobody else could match the 40-hour target I'd set.



"If you had a drama, you helped each other. I helped Lotus change an engine on their 72 at the Nürburgring"

MH: Bernie wouldn't have been too impressed by that.

GA: He wasn't because it was taking everyone else 60 hours, so he was losing money because I'd built the car too quickly.

MH: But he must have been impressed enough to test you with the DFV-lifting exercise and suddenly you're into F1.

GA: And off to the 1973 Spanish Grand Prix, working on a third car, a Brabham BT37 for Andrea de Adamich. Steve Roby was number one mechanic; I was number two. We towed the BT37 on a trailer to the races. We arrived in Monaco and removed some police signs to park outside our little hotel. We woke the next morning to find they'd set up a vegetable market all around and over our trailer. They were selling cabbages out of a BT37 F1 car!

MH: Around then, you decided to build your own F3 car, the Anson. How did that come about?

GA: When I was at Brands Hatch, I worked with a guy called Bob Simpson. I was sleeping in a Transit van, because I had nowhere to stay. Then I had a head-on accident with a Vauxhall 101, which knocked the front axle out of the Transit. That was my sleeping quarters gone. I phoned Bob at his family butcher's shop in Swanley – and moved in. Next thing, Bob's sister Jennie and I are together. Much later, we're talking about building the Anson – a mix of our names.

MH: Doing your own car is quite an undertaking. Was it more daunting than you expected?

GA: We were lucky in that Bob was working at Tyrrell by this stage and he would get some of his mates to work with us; I could do the same with the guys at Brabham. That sort of thing never frightened me; it's all about making sure you think about it beforehand rather than afterwards.

The biggest shock was how much it cost to run at a competitive level; that was the bit we didn't look at properly. We set up the company to make parts for F1 cars. We did quite a bit for Alfa Romeo, building the carbon chassis and all their sliding skirts and suspension bits. Then we got



Michael Schumacher makes his F1 debut in the Anderson-designed Jordan 191. He retired with a clutch failure on the first lap



Anderson's first F1 job: mechanic on Brabham's third car in 1973

the idea to build an F3 car for sale, because we had enjoyed F3 with our first car. But the early '80s were the worst time to start up a company. The bank interest rate was around 15 to 18 per cent and you needed a loan to build and then sell the cars. But we managed it.

MH: How many cars did you build in the end?

GA: About 30 in total. 1983 was our biggest year; we sold about 20 – and it was difficult building them. Regulations had changed, which meant we had to design a new car. We had no orders until November, then got one after the other. Building them was hard because borrowing money was very expensive – and I was never a great one for borrowing. But it was worth it because we won a couple of championships in Europe.

MH: In the middle of this, or maybe some time before, I remember you working for McLaren. That must have been a bit different to Brabham?

GA: Yes, that was after what you might call the first Anson period. I learned a lot from Gordon Coppuck [McLaren designer]. He had a completely different way of looking at things from Gordon Murray. Gordon Coppuck was a very solid engineer, always thinking of today. Gordon Murray was more adventurous.

MH: You had a spell with the Ensign F1 team and then won the F3000 championship running Roberto Moreno with Bromley Motorsport. How did the link with Eddie Jordan come about?

GA: I was with Reynard, designing the 1990 F3000 car and Eddie was running Reynards in F3000. He asked me to design and build an F1 car and I said: "You're mad! And I don't want to. I've got a good job at Reynard and I'm happy." He called back, spoke to Jennie, and the two of them convinced me. Never in my wildest dreams did I think it would be built – never mind raced.

I started with EJ in February. He said there was a drawing office and all that sort of thing. I went along – and there was nothing. I brought Andrew Green and Mark Smith with me from Reynard. I was there on my own for about a month and my first job was to build an office for us to work in. We had to start from scratch.

MH: Was this in the very early days of CAD?

GA: Yeah, 2-D CA; it was just like a drawing board but you didn't have a rubber; you couldn't delete it. We got three terminals set up and started to design the car. I did the chassis, →

windtunnel stuff and bodywork; Andrew did the suspension and Mark did the gearbox and engine installation. We met up with all the other bits. Just the three of us. Then Eddie walked in one day and said he'd got the money to build it.

MH: The Jordan 191 was a stunning-looking car because of its simplicity. That was what you were after because you weren't into trick stuff?

GA: We weren't clever enough to make it trick, so we had to make it basic and make it work. We had a higher chassis than most. We had push-rod and carbon suspension; nobody else had that. Was it trick? I don't know what 'trick' is. We had a car that functioned around all its requirements and this came from a few days a month in the windtunnel as opposed to other teams doing five days a week in the tunnel. You can only do what you can do with what you've got.

The 191 was good; everybody who drove it, liked it. The first major test we did was Paul Ricard at the beginning of 1991 with all the other teams there. One night we had Alain Prost and Cesare Fiorio [Ferrari team manager] standing outside our garage and asking how we could do this with what we had. That was a nice moment.

The truth is, the car was probably better than we were clever. We weren't good enough to get the best out of it at all times. It was a good year, but it could have been substantially better.

MH: The Jordan period was quite dramatic: how do you look back on it as a whole?

GA: As a huge learning experience. It was very satisfying to start from nothing. The '91, '94 and '97 Jordans were the cars I am most proud of.

MH: So, how does the period with Stewart compare? I'm thinking of the time with Jackie rather than the Ford/Jaguar era that followed.

GA: When I left Jordan, I had offers of a couple of jobs. Jackie called and everything felt right. We met in a hotel and he said he wanted me as technical director. He had a solicitor there for me, along with his own. It was done and dusted. No second-guessing; no under-the-counter deals. That's how I like to work. Jackie knew what he wanted; he understood motor racing; he knew when you were bullshitting him; he knew when you were trying even if you were not succeeding. It was very different to working with EJ.

With Jordan, if we had a bad weekend, Eddie would hide; if we had a good weekend, he would be there. You'd go round the factory with Eddie to try and keep everyone motivated and show him what was going on. Eddie wouldn't know one person from the next. Jackie, with about



Anderson with team boss Jackie Stewart in the Jaguar days: "Jackie knew when you were trying, even if you were not succeeding"

"Just the three of us made the Jordan 191. You can only do what you can do with what you've got"

200 people, would know their names, their wives' names, if the kids had a cold last week; everything. I'm not criticising Eddie; they were just very different people. Jackie was a fantastic bloke to work for. Then he sold out to Ford. At the time I thought it was a good idea, but I just couldn't cope with the people that came in.

MH: We didn't see you for a while and then you turned up as one of us; a member of the media. Had you done any commentary other than being called in to do interviews on radio or TV?

GA: I started off with RTÉ [Irish national television]. I'd done interviews with them and they felt I explained things well. They called and asked if I'd be interested because their numbers were dropping and they didn't know what to do. They said to more or less do what I wanted in terms of covering the technical aspects, as it was something they didn't know enough about.

Imola was the first race. I did some stuff down the pitlane; explained a few things. It was more

like radio because we didn't have the camera down there. I'd watch the main feed, and if it was a picture of a car, I'd explain what was on screen. I did about four or five races. The following year, Setanta bought the rights and I carried on with them. That was nice; I went to all the European races, some flyaways – and then they began to run into financial problems after buying a huge chunk of football that they couldn't really afford.

At the end of 2009, Star Sports called to see if I was interested in doing something with them. This suited me because I was starting a building project for my daughter and, for Setanta, I had been going to Dublin every weekend and the project would suffer if I continued. Star Sports, on the other hand, was from London on Saturday and Sunday; the only race we'd do live on location was Singapore. That worked well.

MH: You seemed to take to it easily...

GA: I enjoyed it from the start because we got a huge amount of public support. A guy called

Michael O'Carroll was the producer at RTÉ. Michael's a good old boy and his theory was if you can keep the missus happy watching a race, then she'll let the husband watch it. But if she gets bored, he's going out whether he wants to or not. At the airport, on the way back from the Belgian Grand Prix one year, a woman in her 50s came up to me and said: "I just want to thank you for everything you do, because I used to hate motor racing but now I feel as though I understand enough to keep me interested. I'm a bigger fan than my husband!"

MH: It's really nice to get feedback like that.

GA: It is. So, after two years with Star Sports, the BBC asked if I'd do something with them. I've always felt that if you're involved in the media, you want to work for someone like the BBC at some point because that to me is the ultimate as far as the UK is concerned. Saying that, I think the BBC maybe underestimates how much the public like the technical aspects.

MH: If they're like me, they want it explained in easily understood language.

GA: That's right. I left school at 15 and didn't get involved in what you might call 'big words'. That works in my favour because I explain it as a layman. Technical people understand a layman's explanation, whereas a layman won't understand the technical – so why not go the simple route?

MH: What really needs explaining is aerodynamics. The layman obviously knows air passes over and under the car – and that's about it. Where you come in is telling us about the effect if you do this or you try that.

GA: That's the point. Air has always been around, so it's up to you to use it or not use it. Some cars use it better than others. There's nothing new; it's just that we've got a better grasp of it. Being able to put that understanding across in an easily digested manner is very important to me.

MH: Explain what you do with your paper and pen. It's not sophisticated, but it works very well.

GA: That's because it's very clear. In magazines it can be a little bit more sophisticated because people who buy the magazine do so because of their interest in motor racing.

MH: That's how we started out in 1974. Me trying to be a journalist and thinking it would be impossible to travel to a race with an F1 team to write about it. And you helping make it simple.

GA: You have to say it seems to have worked out well for both us.

MH: It has. Thanks, Gary. 📺



Maurice Hamilton and Gary Anderson reminisce about the old days (main picture); Mercedes boss Ross Brawn gets a grilling from BBC technical analyst Anderson at the 2012 Malaysian GP (below)



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There's no stopping him

Not content with collecting a fourth consecutive world championship in India, Sebastian Vettel cruises to his eleventh grand prix victory of 2013 in Abu Dhabi

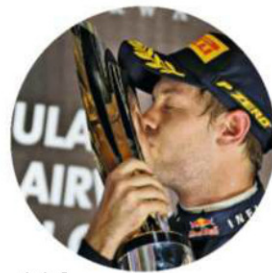
REPORTS



104
JAPANESE GP REPORT
Strategy at its finest helps Vettel another step closer to the title



108
INDIAN GP REPORT
Seb does it again: his tenth win of the year becomes his fourth title

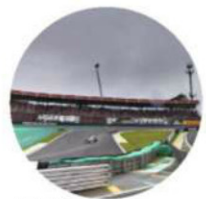


112
ABU DHABI GP REPORT
Webber nabs pole, but the win goes to his rather successful team-mate

PREVIEWS



116
US GP PREVIEW
A newer track with a great atmosphere and exciting racing



118
BRAZILIAN GP PREVIEW
F1 returns to a classic venue for the close of the 2013 championship

OPINION

121
TOM CLARKSON
From the refined elegance of the RAC in London, to the colourful chaos of the Indian Grand Prix



122
MURRAY WALKER
In which Murray is pursued by very tall women on roller-skates. And muses on the turbo era...



RACE DEBRIEF

by Stuart Codling

Japanese Grand Prix

13.10.2013 / Suzuka



Romain gladiator loses Bull fight

Despite Grosjean's valiant efforts, a perfectly planned Vettel/Red Bull effort brings the title ever closer

You've had the clunking fist four times in a row, now meet the velvet glove – but, sadly for those who crave variety, not a fingerless one. For the first 39 laps of the Japanese Grand Prix it seemed that Romain Grosjean might claim a worthy maiden victory, only for that lofty ambition to be crushed by a stealthy tactical play that favoured the world-champion-in-waiting.

This was a race made riveting by the rich possibilities of its unfolding strategic picture rather than wheel-to-wheel action from lights to flag, though there was plenty of the latter to savour. In an often scrappy grand prix – one that featured more drive-throughs than a busy branch of McDonald's – even Seb Vettel made occasionally heavy weather of keeping his car on track and in a straight line.

Mark Webber started the race from pole but did not get to enjoy the lead for long, for when the lights went out the denizens of the second row made a smarter getaway than those in front. As Grosjean jinked right to clear Vettel

and move into the lead from fourth on the grid, Lewis Hamilton tried to punch through the narrowing gap between the two Red Bulls, and Vettel's front wing snagged his right-rear tyre. The resulting puncture would damage the performance of Hamilton's car to the point where it wasn't safe to continue.



Thus before the race was a lap old we had lost one of its potential key players. Some less crucial ones, too: at the opposite end of the grid, Jules Bianchi and Giedo van der Garde contrived to enact an alarming reprise of the first-corner shunt here between Prost and Senna in 1990.

With Lewis Hamilton trailing into the pits and ultimately into retirement, his Mercedes team-mate Nico Rosberg lapping some way off the pace of the leading trio, and Felipe Massa occupying fifth place and showing no inclination to move out of the way for Fernando Alonso (in spite of a very clear team order), Vettel was sitting pretty relative to his championship rivals even as he ran in third place. "Drop back to save your tyres," said race engineer Guillaume 'Rocky' Roquelin soothingly over the radio. "A two-second gap [to Webber] is good."

Red Bull tried and failed to make the 'undercut' at the first time of asking, bringing Webber in on lap 11. Lotus duly covered that move by bringing in Grosjean a lap later,

swapping tyres in 2.6secs, which enabled him to retain the net lead once Vettel pitted on lap 14.

The leading trio gained further ground on the chasing pack thanks to Daniel Ricciardo, starting from 16th on the grid and one of just two drivers (the other being Charles Pic) to begin on the harder prime tyres. By staying out until lap 19, Ricciardo was temporarily elevated to fourth and soon found himself at the head of a frustrated train of faster cars on fresher rubber.

Red Bull rolled the dice again on lap 25, this time ordering Webber to turn up the wick and close in on Grosjean before making a second stop. This, a clear indication of a swap to a three-stop strategy, was guaranteed to set the tinfoil hats of conspiracy theorists worldwide a-crinkling. Were the team sacrificing his prospects in order to lure Lotus into making a strategic error? Had there been two Lotus cars in the game, Grosjean's team might have been afforded some tactical flexibility at this point. But Kimi Räikkönen had qualified poorly in ninth, then slipped out of the top ten on the opening lap. Lotus couldn't fight a war on two fronts. They opted to keep Grosjean out until lap 29, by which time he had shipped several seconds to Webber and also had Vettel in close proximity.

The world champion-elect was having a somewhat scrappy race, locking wheels here and there, but he managed to do enough to keep his tyres alive until lap 37, emerging just a few seconds adrift of Grosjean. "Towards the end of the race you'll come under pressure from Mark," advised Rocky, "so make sure you've got some tyres left." Which translated as: you must pass Grosjean *now*. Vettel needed no second invitation and breezed past on the main straight as the 40th lap ticked round.

All that remained now was the endgame. Webber's turn in the lead of the race ended with his final pitstop for medium-compound tyres on lap 42, and on fresher rubber he came storming up to Grosjean's rear wing. And then, it seemed, the killer instinct deserted him, although in-car footage indicated poor traction out of the final corner – that, and on his best run he pressed the DRS button too early and failed to activate it.

Webber finally demoted the Lotus into third place with two laps to run – too late to challenge his team-mate for the lead. On the slowing-down lap, Red Bull team principal Christian Horner congratulated Vettel on his "management" of the race – an apt noun given the circumstances, for here was a grand prix won through clinical pitwall strategy.

It was also a race that confirmed Grosjean's growing stature as a frontrunner. "We're not here to blow smoke up his arse," said Webber, "but he's doing a very good job this year..." 🏆

The story of the race

▼ Romain Grosjean takes the lead as Lewis Hamilton and Sebastian Vettel make contact

SUZUKA



▶ A puncture resulting from that contact forces Lewis Hamilton to retire his Mercedes



▲ Running P5, ahead of team-mate Alonso, Massa is told "Multi-function strategy A. Now, please"

▶ Rosberg drops away after pitting for new tyres, then incurring a penalty for unsafe release



▶ Long-stopping Ricciardo finally loses fourth place to Nico Hülkenberg in a great move at 130R



◀ Red Bull make the decision to swap Webber to a three-stop strategy

▶ Vettel makes his final pitstop and soon passes Grosjean, whose tyres are eight laps older



▲ Webber pits from the lead, drops to third, and takes another nine laps to pass Grosjean for second

▶ Vettel wins the Japanese Grand Prix from Webber and Grosjean, with Alonso a distant fourth



MAIN PHOTO: STEVEN TEE/LAT ILLUSTRATION: ALAN ELDRIDGE INSETS: CHARLES CORTES/LAT; GLENN DUNBAR/LAT; STEVE ETHERINGTON/LAT; ANDY HONE/LAT

Japanese Grand Prix stats

The lowdown on everything you need to know from the weekend at Suzuka...

THE GRID



1. WEBBER
RED BULL
1min 30.915secs Q3



3. HAMILTON
MERCEDES
1min 31.253secs Q3



5. MASSA
FERRARI
1min 31.378secs Q3



7. HÜLKENBERG
SAUBER
1min 31.644secs Q3



9. RÄIKÖNEN
LOTUS
1min 31.684secs Q3



11. PÉREZ
McLAREN
1min 31.989secs Q2



13. BOTTAS
WILLIAMS
1min 32.013secs Q2



15. MALDONADO
WILLIAMS
1min 32.093secs Q2



17. VERGNE
TORO ROSSO
1min 33.357secs Q1



19. VAN DER GARDE
CATERHAM
1min 34.879secs Q1



21. BIANCHI*
MARUSSIA
1min 34.958secs Q1



2. VETTEL
RED BULL
1min 31.089secs Q3



4. GROSJEAN
LOTUS
1min 31.365secs Q3



6. ROSBERG
MERCEDES
1min 31.397secs Q3



8. ALONSO
FERRARI
1min 31.665secs Q3



10. BUTTON
McLAREN
1min 31.827secs Q3



12. DI RESTA
FORCE INDIA
1min 31.992secs Q2



14. GUTIÉRREZ
SAUBER
1min 32.063secs Q2



16. RICCIARDO
TORO ROSSO
1min 32.485secs Q2



18. CHILTON
MARUSSIA
1min 34.320secs Q1



20. PIC*
CATERHAM
1min 34.556secs Q1



22. SUTIL**
FORCE INDIA
1min 32.890secs Q1

THE RACE



THE RESULTS (53 LAPS)

1st	Sebastian Vettel	Red Bull	1h26m49.301s
2nd	Mark Webber	Red Bull	+7.129s
3rd	Romain Grosjean	Lotus	+9.910s
4th	Fernando Alonso	Ferrari	+45.605s
5th	Kimi Räikkönen	Lotus	+47.325s
6th	Nico Hülkenberg	Sauber	+51.615s
7th	Esteban Gutiérrez	Sauber	+71.630s
8th	Nico Rosberg	Mercedes	+72.023s
9th	Jenson Button	McLaren	+80.821s
10th	Felipe Massa	Ferrari	+89.263s
11th	Paul Di Resta	Force India	+98.572s
12th	Jean-Eric Vergne	Toro Rosso	+1 lap
13th	Daniel Ricciardo	Toro Rosso	+1 lap
14th	Adrian Sutil	Force India	+1 lap
15th	Sergio Pérez	McLaren	+1 lap
16th	Pastor Maldonado	Williams	+1 lap
17th	Valtteri Bottas	Williams	+1 lap
18th	Charles Pic	Caterham	+1 lap
19th	Max Chilton	Marussia	+1 lap

Retirements

Lewis Hamilton	Mercedes	7 laps - damage
Giedo van der Garde	Caterham	0 laps - accident
Jules Bianchi	Marussia	0 laps - accident

THROUGH SPEED TRAP



Fastest: Mark Webber
191.73mph



Slowest: Lewis
Hamilton, 176.95mph

TYRE COMPOUNDS USED



Medium



Hard



Intermediate



Wet

CLIMATE

Sunny

23°C

TRACK TEMP

32°C



FASTEST LAP

Mark Webber, lap 44, 1min 34.587secs



FASTEST PITSTOP

Nico Rosberg 22.551secs (entry to exit)

DRIVERS' STANDINGS

1st	Sebastian Vettel	Red Bull	297pts
2nd	Fernando Alonso	Ferrari	207pts
3rd	Kimi Räikkönen	Lotus	177pts
4th	Lewis Hamilton	Mercedes	161pts
5th	Mark Webber	Red Bull	148pts
6th	Nico Rosberg	Mercedes	126pts
7th	Felipe Massa	Ferrari	90pts
8th	Romain Grosjean	Lotus	87pts
9th	Jenson Button	McLaren	60pts
10th	Nico Hülkenberg	Sauber	39pts
11th	Paul Di Resta	Force India	36pts
12th	Adrian Sutil	Force India	26pts
13th	Sergio Pérez	McLaren	23pts
14th	Daniel Ricciardo	Toro Rosso	18pts
15th	Jean-Eric Vergne	Toro Rosso	13pts
16th	Esteban Gutiérrez	Sauber	6pts
17th	Pastor Maldonado	Williams	1pt
18th	Valtteri Bottas	Williams	0pts
19th	Jules Bianchi	Marussia	0pts
20th	Charles Pic	Caterham	0pts
21st	Giedo van der Garde	Caterham	0pts
22nd	Max Chilton	Marussia	0pts

CONSTRUCTORS' STANDINGS

1st	Red Bull	445pts	9th	Williams	1pt
2nd	Ferrari	297pts	10th	Marussia	0pts
3rd	Mercedes	287pts	11th	Caterham	0pts
4th	Lotus	264pts			
5th	McLaren	83pts			
6th	Force India	62pts			
7th	Sauber	45pts			
8th	Toro Rosso	31pts			



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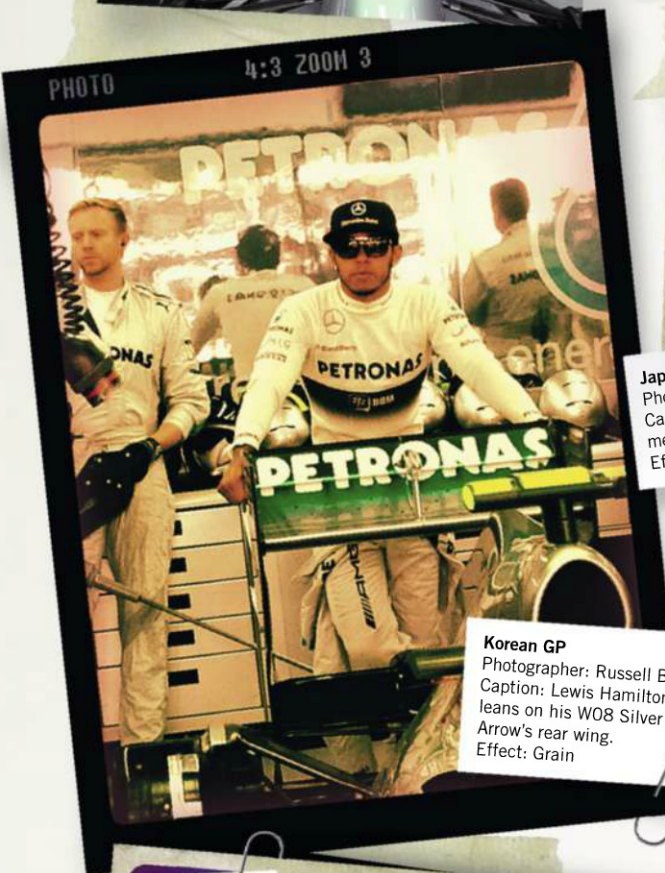


Indian GP
Photographer: Glenn Dunbar
Caption: Local entertainment creates a buzz before the start of the race.
Effect: Sixties

Korean GP
Photographer: Nathan Divey, Number 1 Mechanic, MERCEDES AMG PETRONAS
Caption: The pit crew assemble ahead of practice.
Effect: None



Japanese GP
Photographer: Jiri Krenek
Caption: Nico keeps an eye on the photographer during practice.
Effect: Film strip



Korean GP
Photographer: Russell Batchelor
Caption: Lewis Hamilton leans on his W08 Silver Arrow's rear wing.
Effect: Grain

Japanese GP
Photographer: Glenn Dunbar
Caption: Nico talks to the media at sunset in Suzuka.
Effect: Sixties



Korean GP
Photographer: Vladimir Rys
Caption: A stunning evening over the Korean circuit.
Effect: None

Korean GP
Photographer: James Moy
Caption: Clear team communication is vital during a race weekend.
Effect: Black and White



Japanese GP
Photographer: James Moy
Caption: The big wheel dominates the skyline as Lewis completes his parade lap.
Effect: Sixties



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RACE DEBRIEF

by James Roberts

Indian Grand Prix

27.10.2013 / Buddh International Circuit



All hail the inevitable

Sebastian Vettel matches Alain Prost's record, becoming F1 world champion for the fourth time

At the age of 26, Michael Schumacher had one championship to his name. When Alain Prost scored his first grand prix victory for Renault, he too had only just turned 26. Juan Manuel Fangio started racing when he was 23, but it was another 18 years before he won his first drivers' title.

At the Buddh International Circuit at the end of October, Sebastian Vettel crossed the finish line to win his sixth victory in a row and join the cast of legends mentioned above. This quartet is made up of the only drivers to have each claimed four drivers' titles (or more) and Vettel – who turned 26 in July – still has time to become, statistically, the greatest of all.

As Vettel is a student of the sport's history, he was suitably overawed by his achievements as he swigged from his Jeroboam-sized champagne bottle (hidden under the press-conference desk) and thoughtfully discussed his achievements, a few minutes after the podium ceremony ended.

"To join people like that – Michael, Fangio, Prost – is very difficult to put into perspective,"

said the 2013 world champion. "I'm way too young to understand what it means. I might be 60 one day – maybe then I will understand, but then nobody will care any more."

Perhaps his achievements explain why more F1 teams are eyeing up ever younger drivers but, crucially, Sebastian Vettel has a maturity that belies his age. In fact, he has few (if any) weaknesses in his armoury. And his rivals should be fearful – he's getting better with age.

Unlike his other wins here, Vettel didn't lead every lap in 2013. The reason was a legacy of uncharacteristically high blistering on the Pirellis, a combination of the tyre's chemical compounds and the ultra-smooth asphalt of the hot New Delhi circuit. Running in second practice, blisters appeared that were "the worst ever seen" according to some engineers. But on race day, track temperatures fell by around ten degrees from a high of 45°C on Friday.

Despite that, Red Bull weren't taking any chances and pitted Vettel from the lead as early

as lap 2 to switch to the medium-compound tyre. He then sank like a stone to 17th place behind Max Chilton's Marussia. From there he set about carving through the traffic... but there was just one man he needed to catch.

His team-mate Mark Webber decided to qualify and start the race on the medium (prime) tyre, the intention being to build a lead once he was at the head of the pack, while he knew that Sebastian would be battling through the field (potentially losing time in the process).

But the intention didn't play out in reality. Webber's poor start cost him time and places, and he then sat behind the other soft-running starters. On lap 4, Felipe Massa led (after he had blasted past both of the shorter-g geared Mercs on the opening lap) from Rosberg, Hamilton, Hülkenberg, Räikkönen – then Webber. When the Australian finally inherited the lead on lap nine, as those ahead of him pitted, it was too late.

Vettel had been using the extra straightline speed of DRS to his advantage, and by lap 12 he

was fourth – around 14 seconds behind his race-leading team-mate. Webber needed 21 seconds if he was to pit and emerge ahead of Vettel and he'd failed to open out a significant enough gap: the race was effectively over. Make that 'definitely over' on lap 39 when Webber was forced to retire his Red Bull with an alternator failure.

Soon after, he fled the track, not staying for the post-race victory celebrations. In fact, you'd be hard-pressed to find Webber in any team celebration photocall since Malaysia.

One man wearing the obligatory title-winning bespoke T-shirt after the race was a euphoric – and relieved – Christian Horner, who revealed there was an extra source of tension keeping his left foot tapping on the pitwall. "After the failure on Mark's car, which was sudden, there was no reason to expect that it would not happen on the other car," admitted Horner. "Immediately we tried to reduce the amount of draw on the alternator as much as possible, which even included turning off KERS in the end. There was then a problem with the sensor on the alternator. In the meantime, Sebastian is lighting up the timing screen with purple sectors..."

Red Bull have routinely stretched the operating limit of the Pirelli tyres, in part due to the extra downforce the RB9 generates compared to the opposition. Hence the upswing in form with the return to the 2012 structure of tyre from mid-season onwards. So it was in India that blistering was more extreme on the Red Bull than some of the other teams. As a result, Pirelli advised a maximum 35-lap stint for the medium tyre (and 15 for the softs). But Lotus felt they could do a further 18 laps on their medium tyres and so Romain Grosjean (starting 17th after a misjudgment in Q1) played the one-stop-strategy card. That resulted in a brilliant third place, but not before some intra-team histrionics.

Räikkönen had six laps more wear on his mediums and wanted to hold on until the end. That meant repelling his team-mate as he tried to pass on lap 56. There followed a furious intervention from Alan Permane on the pitwall to Kimi: "Get out of the fucking way!" he shouted. That switch to Ferrari can't come soon enough.

The final thought lies with Sebastian Vettel. Yes, it was sad that his theatrical smoke-wreathed donuts led to a reprimand and a €25,000 fine. But the one round of applause he received in the otherwise subdued media centre was when he knelt in front of his RB9. Against the backdrop of this spiritual nation, the small moment of worship took on great significance. "The majority of people have a very difficult life in this country," added the champagne-soaked Vettel. "They are very poor, but they are very happy. This is a special place to win." In case you had forgotten. He's only 26. 🏆

The story of the race

Sebastian Vettel leads from pole, ahead of Nico Rosberg and Lewis Hamilton

NEW DELHI



Massa leads as Vettel pits. The Brazilian made a great start, passing both Mercs on the opening lap

Alonso pits for a new front wing after it's damaged as a result of contact with Webber



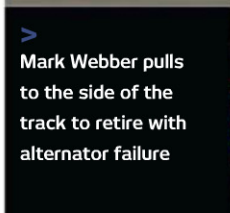
Webber inherits the lead after both the Mercs and Massa pit for fresh rubber



Alonso struggles with handling problems and finds himself fighting with Gutiérrez in 13th place



Ricciardo and Sutil are third and fourth behind the Red Bulls as they run long stints on their tyres



Mark Webber pulls to the side of the track to retire with alternator failure

Lotus drivers Romain Grosjean and Kimi Räikkönen fight over third place



After his final pitstop, Kimi rejoins the race to set the fastest lap

Sebastian Vettel completes the final lap in the lead and is duly crowned world champion



MAIN PHOTO: GLENN DUNBAR/LAT. ILLUSTRATION: ALAN ELDORIDGE. INSETS: STEVE ETHERINGTON/LAT. ALASTAIR STALEY/LAT; ANDY HONEY/LAT; CHARLES CORTES/LAT

Indian Grand Prix stats

The lowdown on everything you need to know from the weekend at New Delhi...



1. VETTEL
RED BULL
1min 24.119secs Q3



3. HAMILTON
MERCEDES
1min 24.941secs Q3



5. MASSA
FERRARI
1min 25.201secs Q3



7. HÜLKENBERG
SAUBER
1min 25.334secs Q3



9. PÉREZ
MCLAREN
1min 26.153secs Q3



11. RICCIARDO
TORO ROSSO
1min 25.519secs Q2



13. SUTIL
FORCE INDIA
1min 25.740secs Q2



15. BOTTAS
WILLIAMS
1min 26.134secs Q2



17. GROSJEAN
LOTUS
1min 26.577secs Q1



19. BIANCHI
MARUSSIA
1min 26.970secs Q1



21. PIC
CATERHAM
1min 27.487secs Q1



22. CHILTON
MARUSSIA
1min 28.138secs Q1

THE GRID



2. ROSBERG
MERCEDES
1min 24.871secs Q3



4. WEBBER
RED BULL
1min 25.047secs Q3



6. RÄIKKÖNEN
LOTUS
1min 25.248secs Q3



8. ALONSO
FERRARI
1min 25.826secs Q3



10. BUTTON
MCLAREN
1min 26.487secs Q3



12. DI RESTA
FORCE INDIA
1min 25.711secs Q2



14. VERGNE
TORO ROSSO
1min 25.798secs Q2



16. GUTIÉRREZ
SAUBER
1min 26.336secs Q2



18. MALDONADO
WILLIAMS
1min 26.842secs Q1



20. VAN DER GARDE
CATERHAM
1min 27.105secs Q1



22. CHILTON
MARUSSIA
1min 28.138secs Q1

THE RACE



THE RESULTS (60 LAPS)

1st	Sebastian Vettel	Red Bull	1h31m12.187s
2nd	Nico Rosberg	Mercedes	+29.823s
3rd	Romain Grosjean	Lotus	+39.892s
4th	Felipe Massa	Ferrari	+41.692s
5th	Sergio Pérez	McLaren	+43.829s
6th	Lewis Hamilton	Mercedes	+52.475s
7th	Kimi Räikkönen	Lotus	+67.988s
8th	Paul Di Resta	Force India	+72.868s
9th	Adrian Sutil	Force India	+74.734s
10th	Daniel Ricciardo	Toro Rosso	+76.237s
11th	Fernando Alonso	Ferrari	+78.297s
12th	Pastor Maldonado	Williams	+78.951s
13th	Jean-Eric Vergne	Toro Rosso	+1 lap
14th	Jenson Button	McLaren	+1 lap
15th	Esteban Gutiérrez	Sauber	+1 lap
16th	Valtteri Bottas	Williams	+1 lap
17th	Max Chilton	Marussia	+2 laps
18th	Jules Bianchi	Marussia	+2 laps
19th	Nico Hülkenberg	Sauber	+6 laps – brakes

Retirements

Mark Webber	Red Bull	39 laps – alternator
Charles Pic	Caterham	35 laps – hydraulics
Giedo van der Garde	Caterham	1 lap – accident damage

THROUGH SPEED TRAP



Fastest: Esteban Gutiérrez 199.94mph



Slowest: Giedo van der Garde, 117.36mph

TYRE COMPOUNDS USED



Soft



Medium



Intermediate



Wet

CLIMATE

Hazy

30°C

TRACK TEMP

33°C



FASTEST LAP

Kimi Räikkönen, lap 60, 1min 27.679secs



FASTEST PITSTOP

Felipe Massa 23.332secs (entry to exit)

DRIVERS' STANDINGS

1st	Sebastian Vettel	Red Bull	322pts
2nd	Fernando Alonso	Ferrari	207pts
3rd	Kimi Räikkönen	Lotus	183pts
4th	Lewis Hamilton	Mercedes	169pts
5th	Mark Webber	Red Bull	148pts
6th	Nico Rosberg	Mercedes	144pts
7th	Romain Grosjean	Lotus	102pts
8th	Felipe Massa	Ferrari	102pts
9th	Jenson Button	McLaren	60pts
10th	Paul Di Resta	Force India	40pts
11th	Nico Hülkenberg	Sauber	39pts
12th	Sergio Pérez	McLaren	33pts
13th	Adrian Sutil	Force India	28pts
14th	Daniel Ricciardo	Toro Rosso	19pts
15th	Jean-Eric Vergne	Toro Rosso	13pts
16th	Esteban Gutiérrez	Sauber	6pts
17th	Pastor Maldonado	Williams	1pt
18th	Valtteri Bottas	Williams	0pts
19th	Jules Bianchi	Marussia	0pts
20th	Charles Pic	Caterham	0pts
21st	Giedo van der Garde	Caterham	0pts
22nd	Max Chilton	Marussia	0pts

CONSTRUCTORS' STANDINGS

1st	Red Bull	470pts	9th	Williams	1pt
2nd	Mercedes	313pts	10th	Marussia	0pts
3rd	Ferrari	309pts	11th	Caterham	0pts
4th	Lotus	285pts			
5th	McLaren	93pts			
6th	Force India	68pts			
7th	Sauber	45pts			
8th	Toro Rosso	32pts			



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RACE DEBRIEF

by Anthony Rowlinson

Abu Dhabi Grand Prix

03.11.2013 / Yas Marina



You can't touch this

Nothing in F1 can hold a candle to a Vettel-driven Red Bull. And neither team nor driver are easing up

By lap 35 of the 2013 Abu Dhabi Grand Prix, with Seb Vettel leading Romain Grosjean by almost 40 seconds and team-mate Mark Webber by 52, thoughts started to drift away to a casual paddock chat earlier in the weekend with Jonathan Wheatley, Red Bull's affable and professionally punctilious team manager.

It took place around 9pm on Friday night. Wheatley had just left his hard-working crew in their top-of-the-pitlane garage to return to the team's paddock 'pod' where another of the weekend's endless 'to do's' had to be ticked off.

He looked weary, but paused to chat. "People think it's easy now we've won the titles," he said, "but it's harder. We have to keep the boys motivated and make sure we're always achieving everything we can. Some of them haven't been around as long as me, and they think it's always like this. Anyone who's been in the sport a while knows how hard it is to achieve success, so I tell them to make the most of every *second*."

His comments echoed the sentiments of Christian Horner earlier on, who'd confided there was "an awful lot more to do and achieve with Red Bull" and that he had "no thoughts beyond achieving more success with the team."

This mindset, this insatiable desire to win, win and win again is as much a key to this team's domination of Formula 1 as is any masterstroke from a Newey pencil, or any sublimely deft touch of Seb Vettel wheelcraft.

Hunger, drive and ambition, allied to technical genius and benevolent funding... these are the bedrocks of repeated brilliant performances that are the equal of anything F1 has ever seen.

Vettel, who again squeezed the very life out of his 'rivals' (winning by more than 30 seconds from Webber) thankfully has the good grace to acknowledge he feels humbled to be registering achievements that bear statistical comparison with the likes of Michael Schumacher and Alberto Ascari. Indeed, one of the few things with

which Seb has any apparent difficulty is finding the words to express his feelings at winning *again* and cementing his position as an all-time great. His post-race delivery in Abu Dhabi was reminiscent of Michael Schumacher's after winning the 2000 Italian GP and in the process drawing level with Ayrton Senna's 41-win tally. The emotion of the moment that day caused Michael to break down in front of the assembled F1 media corps, whereupon arch-foe Mika Häkkinen offered a consoling man-hug.

Thirteen years on, reaching for vocabulary in the Emirati twilight, Vettel offered this: "People don't see the challenge every single race to nail it. Numbers are not that important to me but equally they make me very, very proud and yes, this was a very emotional day."

The Vettel cause is being helped, it must be noted, by his eerie ability to massage these oh-so-fragile Pirelli tyres throughout a life cycle. Said trick is beyond Webber, by his own admission

– “You can’t teach an old dog new tricks, mate” – and its importance cannot be underestimated in explaining Seb’s continued superiority.

It’s also why Nico Rosberg, a polished third, was once again able to outperform the more tiger-ish Lewis Hamilton, who finished seventh after being held up by Esteban Gutiérrez. Contemporary F1 rewards method as much as machismo, and when a driver can access either (or both) at will – as Vettel can – invincibility results. No other driver seems able to combine such innate speed with such filigree precision. And certainly no other driver save Webber can call on a machine so effective as the RB9.

The devastating competitive advantage Red Bull have enjoyed since the summer break (yes, they really have won seven races on the trot) is hiding the lesser, though still notable, achievements being recorded in their wake.

Mercedes are edging towards second in the constructors’ championship, though their 11-point margin over Ferrari with two races to go, is, in the words of executive director (technical) Paddy Lowe “definitely not comfortable”. Reflecting on the Red Bull stranglehold, he noted: “We were able to match them until August, but since then their performance has just been phenomenal. There’s no simple answer to catching them. Overall they have been able to increase their performance in a way we haven’t been able to match.”

Consolation in a sport that offers cold comfort for non-winners, comes from maximising chances and making the most of what you’ve got. In Abu Dhabi, those non-winning ‘winners’ included Paul Di Resta, a single-stopping sixth, and Romain Grosjean in fourth.

Di Resta’s result was significant for a man who could stumble in the game of F1 musical chairs currently being played out in the midfield, and he made no attempt to hide its importance: “This is what we can do when we execute the race perfectly, even when our car maybe isn’t quite as quick as those around us. We had really good race pace and we set the car up to maximise that... and we got the result. Now we have to carry that momentum forward to Austin.”

Grosjean was once again fluent and assured, passing two cars on the opening lap and “nailing Massa when he had to,” as Lotus director of trackside operations Alan Permane put it.

The chaos and comedy down Lotus way these days comes from Kimi Räikkönen, who turned up a day late amid arguments over non-payment, qualified in P5 only to be disqualified (a technical infringement, no fault of his own) then retired on lap 1 after a biff with a Caterham. He was last seen heading for the airport at high speed – possibly the only thing in Abu Dhabi quicker than a Seb Vettel Red Bull. 🚗

The story of the race

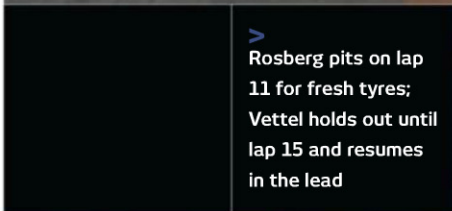
▼ Vettel takes an early lead from Nico Rosberg and polesitter Mark Webber at the start



YAS MARINA



▼ Rosberg pits on lap 11 for fresh tyres; Vettel holds out until lap 15 and resumes in the lead



◀ By virtue of not making his first stop until lap 21, Di Resta spends four laps in second place



► Webber and Rosberg pit from second and third places on lap 34



► On lap 38 Vettel makes his second and final stop, resuming half a minute ahead of Webber



▲ Vergne doesn't see Alonso leaving the pits and the Ferrari driver injures his back as he hits the kerb

► Vettel performs celebratory donuts after winning the race – but escapes penalty this time



MAIN PHOTO: ANDY HONE/LAT; ILLUSTRATION: ALAN ELDRIDGE; INSETS: STEVE ETHERINGTON/LAT; ALASTAIR STALLER/LAT; ANDY HONE/LAT; ANDREW FERRARO/LAT; STEVEN TEE/LAT; GLENN DUNBAR/LAT

Abu Dhabi Grand Prix stats

The lowdown on everything you need to know from the weekend at Yas Marina...

THE GRID

	1. WEBBER RED BULL 1min 39.957secs Q3
	2. VETTEL RED BULL 1min 40.075secs Q3
	3. ROSBERG MERCEDES 1min 40.419secs Q3
	4. HAMILTON MERCEDES 1min 40.501secs Q3
	5. HÜLKENBERG SAUBER 1min 40.576secs Q3
	6. GROSJEAN LOTUS 1min 40.997secs Q3
	7. MASSA FERRARI 1min 41.015secs Q3
	8. PÉREZ McLAREN 1min 41.068secs Q3
	9. RICCIARDO TORO ROSSO 1min 41.111secs Q3
	10. ALONSO FERRARI 1min 41.093secs Q2
	11. DI RESTA FORCE INDIA 1min 41.133secs Q2
	12. BUTTON McLAREN 1min 41.200secs Q2
	13. VERGNE TORO ROSSO 1min 41.279secs Q2
	14. MALDONADO WILLIAMS 1min 41.395secs Q2
	15. BOTTAS WILLIAMS 1min 41.447secs Q2
	16. GUTIÉRREZ SAUBER 1min 41.999secs Q1
	17. SUTIL FORCE INDIA 1min 42.051secs Q1
	18. VAN DER GARDE CATERHAM 1min 43.252secs Q1
	19. PIC CATERHAM 1min 43.528secs Q1
	20. CHILTON MARUSSIA 1min 44.198secs Q1
	21. BIANCHI* MARUSSIA 1min 43.398secs Q1
	22. RÄIKKÖNEN** LOTUS DSQ

* Five-place penalty for replacement gearbox ** Disqualified from qualifying for technical infringement, but permitted to start race

THE RACE



THE RESULTS (55 LAPS)

1st	Sebastian Vettel	Red Bull	1h38m 06.106s
2nd	Mark Webber	Red Bull	+30.829s
3rd	Nico Rosberg	Mercedes	+33.650s
4th	Romain Grosjean	Lotus	+34.802s
5th	Fernando Alonso	Ferrari	+67.181s
6th	Paul Di Resta	Force India	+78.174s
7th	Lewis Hamilton	Mercedes	+79.267s
8th	Felipe Massa	Ferrari	+82.886s
9th	Sergio Pérez	McLaren	+91.198s
10th	Adrian Sutil	Force India	+93.257s
11th	Pastor Maldonado	Williams	+95.989s
12th	Jenson Button	McLaren	+103.767s
13th	Esteban Gutiérrez	Sauber	+104.295s
14th	Nico Hülkenberg	Sauber	+1 lap
15th	Valtteri Bottas	Williams	+1 lap
16th	Daniel Ricciardo	Toro Rosso	+1 lap
17th	Jean-Eric Vergne	Toro Rosso	+1 lap
18th	Giedo van der Garde	Caterham	+1 lap
19th	Charles Pic	Caterham	+1 lap
20th	Jules Bianchi	Marussia	+2 laps
21st	Max Chilton	Marussia	+2 laps

Retirements

Kimi Räikkönen Lotus 0 laps - damage

THROUGH SPEED TRAP



Fastest: Felipe Massa
199.06mph

Slowest: Sebastian Vettel, 192.29mph

TYRE COMPOUNDS USED



Soft

Medium

Intermediate

Wet

CLIMATE

Sunny 35°C

TRACK TEMP

44°C



FASTEST LAP

Fernando Alonso, lap 55, 1min 43.434secs



FASTEST PITSTOP

Mark Webber 21.175secs (entry to exit)

DRIVERS' STANDINGS

1st	Sebastian Vettel	Red Bull	347pts
2nd	Fernando Alonso	Ferrari	217pts
3rd	Kimi Räikkönen	Lotus	183pts
4th	Lewis Hamilton	Mercedes	169pts
5th	Mark Webber	Red Bull	166pts
6th	Nico Rosberg	Mercedes	159pts
7th	Romain Grosjean	Lotus	114pts
8th	Felipe Massa	Ferrari	106pts
9th	Jenson Button	McLaren	60pts
10th	Paul Di Resta	Force India	48pts
11th	Nico Hülkenberg	Sauber	39pts
12th	Sergio Pérez	McLaren	35pts
13th	Adrian Sutil	Force India	29pts
14th	Daniel Ricciardo	Toro Rosso	19pts
15th	Jean-Eric Vergne	Toro Rosso	13pts
16th	Esteban Gutiérrez	Sauber	6pts
17th	Pastor Maldonado	Williams	1pt
18th	Valtteri Bottas	Williams	0pts
19th	Jules Bianchi	Marussia	0pts
20th	Charles Pic	Caterham	0pts
21st	Giedo van der Garde	Caterham	0pts
22nd	Max Chilton	Marussia	0pts

CONSTRUCTORS' STANDINGS

1st	Red Bull	513pts	9th	Williams	1pt
2nd	Mercedes	334pts	10th	Marussia	0pts
3rd	Ferrari	323pts	11th	Caterham	0pts
4th	Lotus	297pts			
5th	McLaren	95pts			
6th	Force India	77pts			
7th	Sauber	45pts			
8th	Toro Rosso	32pts			



For comprehensive F1 statistics visit www.forix.com



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The US GP preview



15-17 November 2013 / Circuit of The Americas, Austin

Drawing inspiration from the best bits of other venues, the Circuit of The Americas is rare among newer tracks in the enthusiasm it has generated



THE ENGINEER'S VIEW

Xevi Pujolar,
Williams' chief race engineer

Most people in Formula 1 are really looking forward to returning to Austin this year. Of all the newer races, this one seems to have got the balance exactly right: the circuit is really good; there was a big, enthusiastic crowd last year, which added to the atmosphere; and Austin itself is a fantastic city. So it's a very welcome addition to the world championship calendar.

There was a lot of talk about the track before we visited it for the first time in 2012. We'd heard all about the steep incline at Turn 1, but I don't think any of us thought it would be *that* steep: it was a real surprise. We were all curious about what would happen on the first lap at the first corner, as drivers would usually be inclined to brake later there – but thankfully everyone emerged unscathed.

Turn 1 isn't the only unusual feature at Austin, though. When you start the long straight, you can't see the end of it because of the undulations. These elevation changes across the whole venue make for a really interesting layout.

Parts of this track bear striking similarities to sections of other tracks. For example, Turns 16-

18 are inspired by Turkey's famous Turn 8, while the fast sweeping section after Turn 3 is similar to the Maggotts/Becketts complex at Silverstone. This latter sequence is actually quite a challenge for the drivers, as they attack at high speed then slow for the subsequent corners. The turns are a good combination of high- and medium-speed, and in terms of how short they are, Austin is behind only Melbourne, Monza and Montréal.

We're all curious to see if the track surface will have changed over the course of the past 12 months. Last year, because it was freshly laid, it was very slippery, which made it hard to extract any grip from the tyres. Consequently, there was a very long warm-up – hopefully that's changed now the circuit has been active for over a year.

AUSTIN STATS AND FACTS

117,429
spectators attended
last year's race

40 metres
The difference
in elevation
around the
circuit

TEN
different venues have
hosted the US Grand Prix



The height of the observation tower, which has 419 stairs

77
metres

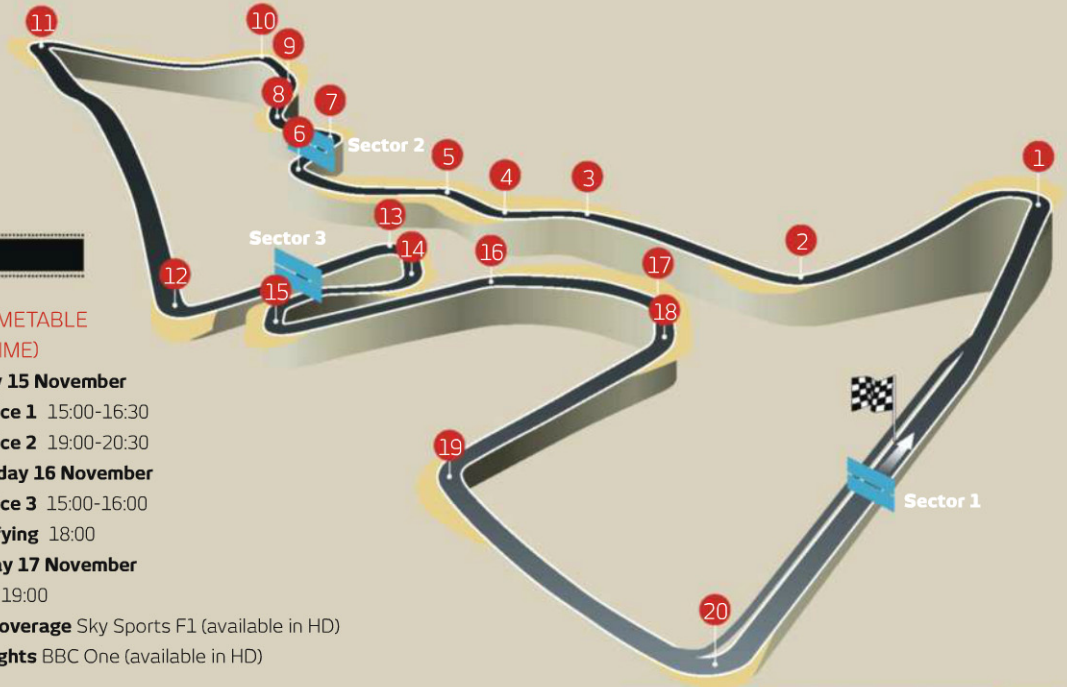


US GP RACE DATA

Circuit Circuit of The Americas
F1 debut 2012
Length 3.426 miles
Distance 191.939 miles
Laps 56
Direction Anticlockwise
Lap record 1min 39.347secs,
 S Vettel, 2012
Full throttle 63%
Gear changes per lap 59
Winners from pole 0
Tyre compounds
 Medium/hard

TV TIMETABLE (UK TIME)

Friday 15 November
Practice 1 15:00-16:30
Practice 2 19:00-20:30
Saturday 16 November
Practice 3 15:00-16:00
Qualifying 18:00
Sunday 17 November
Race 19:00
Live coverage Sky Sports F1 (available in HD)
Highlights BBC One (available in HD)



LAST YEAR

Winner Lewis Hamilton
Retirements 2
Overtaking moves 51
DRS overtakes 23
Weather Sunny, 24°C

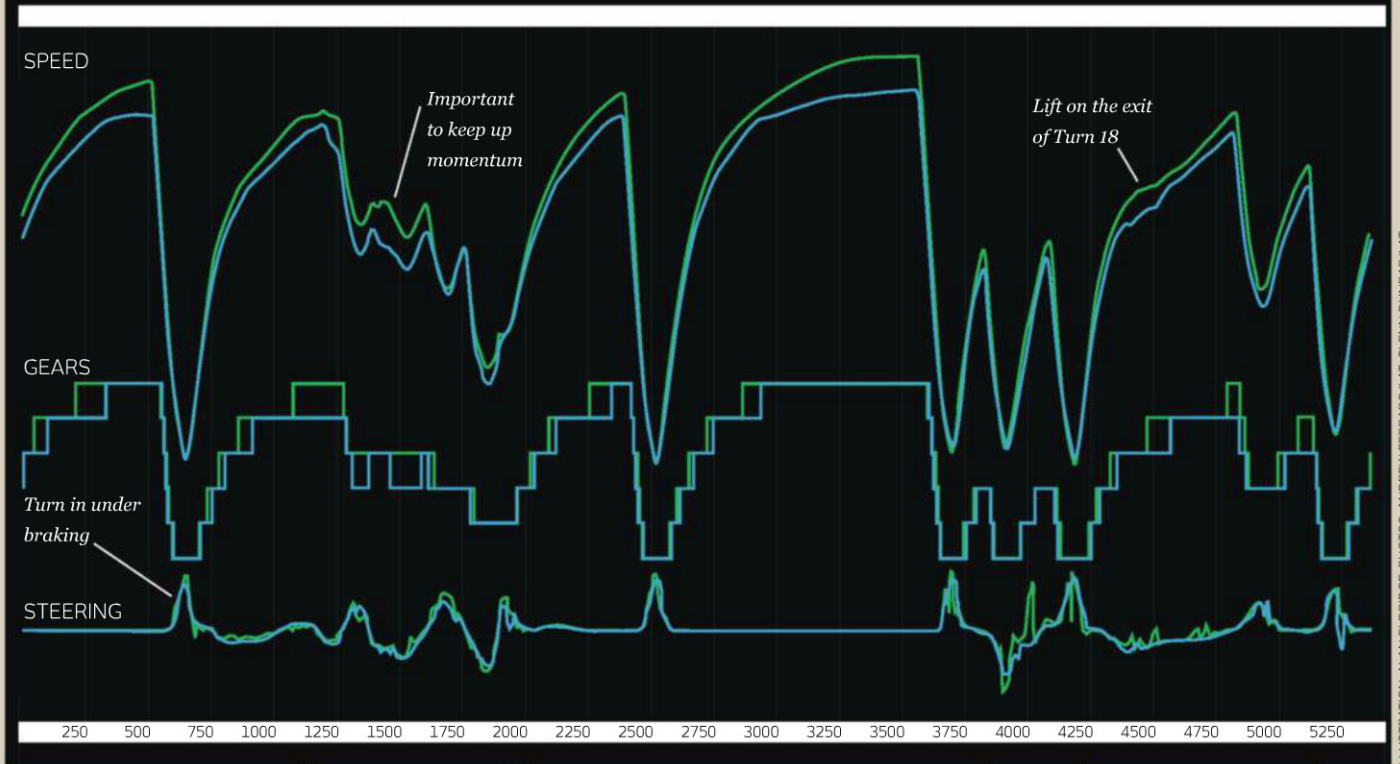
DO YOU REMEMBER...

...when F1 broke with tradition? At the inaugural GP at Austin last year, podium protocol was broken when Pirelli chose not to hand out caps. Instead, they chose to present each of the top-three finishers (Lewis Hamilton, Sebastian Vettel and Fernando Alonso) with Stetson-style hats.



AUSTIN TELEMETRY

QUALIFYING ■ RACE ■



Turns 4 to 9

Demanding high-speed sweeps that resemble Silverstone's Becketts

Turns 12 to 15

Consistent braking and accelerating is needed around these three corners

Turn 20

This tricky left-hander can catch drivers out

ILLUSTRATION: ALAN ELDREDGE. PHOTOS: ANDREW FERRARO/LAT, GLENN DUNBAR/LAT

The Brazilian GP preview



22-24 November 2013 / Interlagos, São Paulo

A naturally undulating track that's frequently deluged. And the introduction of drainage channels hasn't stopped the build-up of surface water



THE ENGINEER'S VIEW

Xevi Pujolar,
Williams' chief race engineer

Interlagos is a circuit of contrasts. The first and third sectors require power and straightline speed to achieve decent lap times, whereas sector 2 is tight and twisty and requires a high-downforce setup. Like Austin, this is a track with a lot of elevation, but here it's naturally undulating rather than having been engineered into the layout.

You're high up here – 800m above sea level – and, as a result, there's a 13 per cent power loss from the engines, the highest loss of any circuit on the calendar. It's a major consideration, given that power is so crucial for much of the lap. It's most important at the final corner, Turn 12, where you need a perfect exit to get on the power both to protect your position or to try to overtake somebody under braking into Turn 1. This is where we have to alter engine maps to accommodate both the power required up the long hill of the start/finish straight and the altitude-based performance loss.

As regards the track surface, this one isn't high energy, and therefore isn't too punishing on either tyres or brakes. The most important

thing when considering the tyres, is the strong likelihood of changing weather conditions.

Rain is quite a common occurrence here, so it's always something we need to be prepared for. That might even dictate the setup of a car or the amount of downforce we choose to run.

Over the past couple of years, tiny drainage channels have been added to the surface of the track at Interlagos, rather like the grooves we see on the grid at Spa. The aim is to try to prevent rivers of water building up across the track, particularly at Turn 3 as I remember one year a lot of drivers went aquaplaning off the track there. But despite the drainage channels, if it rains really heavily, rivers of water are still going to form on account of the undulations.

INTERLAGOS STATS AND FACTS

16%
of the lap
is spent on
the brakes



200 metres

The distance
from the start
to Turn 1

3.3G

Highest G-force experienced by drivers
for 3 seconds at Turn 11

800 metres
The height of the track above sea level





BRAZILIAN GP RACE DATA

Circuit Interlagos
F1 debut 1973
Length 2.677 miles
Distance 190.083 miles
Laps 71
Direction Anticlockwise
Lap record 1min 11.473secs,
 J Montoya, 2004
Full throttle 74%
Gear changes per lap 40
Winners from pole 10
Tyre compounds
 Medium/hard

TV TIMETABLE (UK TIME)

Friday 22 November
Practice 1 12:00-13:30
Practice 2 16:00-17:30
Saturday 23 November
Practice 3 13:00-14:00
Qualifying 16:00
Sunday 24 November
Race 16:00
Live coverage Sky Sports F1 and BBC
 One (available in HD on both channels)



LAST YEAR

Winner Jenson Button
Retirements 5
Overtaking moves 100
DRS overtakes 23
Weather Drizzle, 16°C

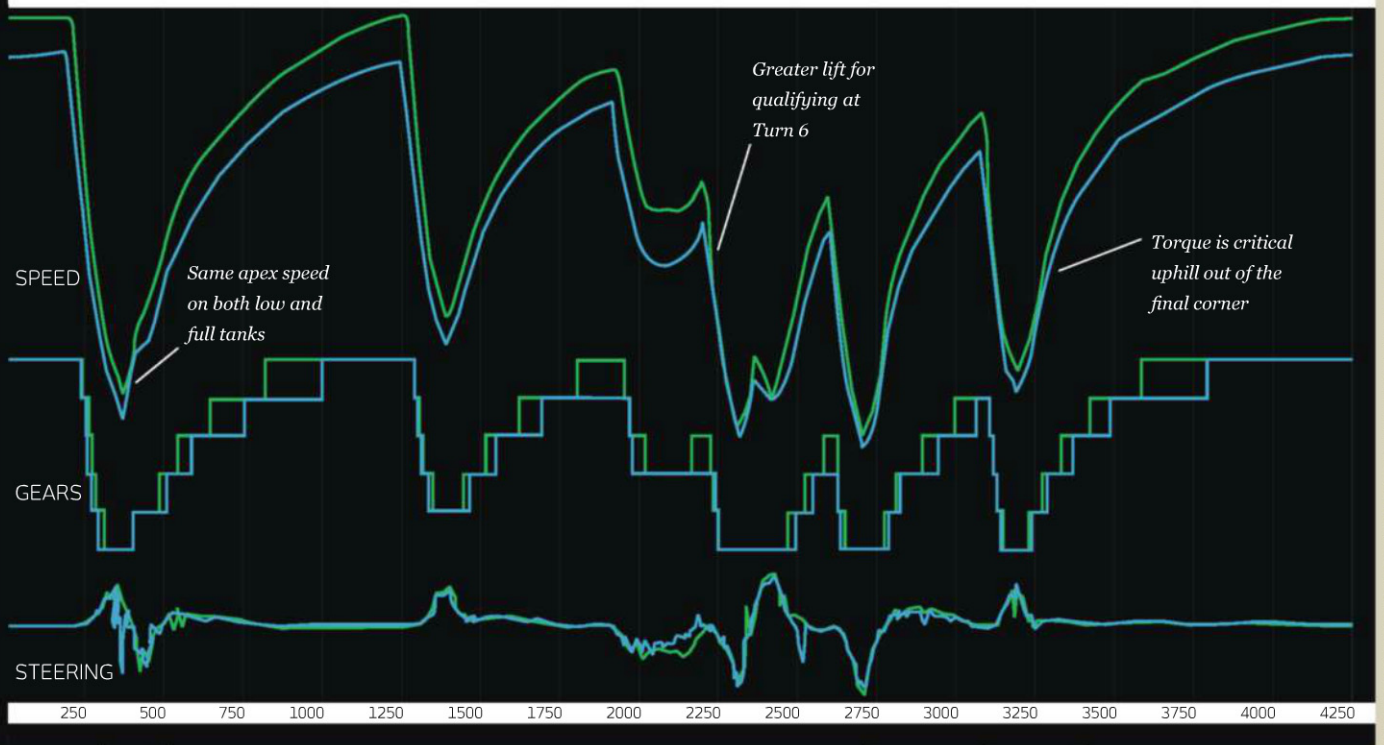
DO YOU REMEMBER...

...Jaguar's last race in Formula 1? The 2004 Brazilian GP was their final grand prix as Ford pulled the plug on their F1 operation. During the race, Mark Webber was battling for tenth place with team-mate Christian Klien, when they collided at the first corner.



INTERLAGOS TELEMETRY

QUALIFYING ■ RACE ■



Turns 1 to 2

Sensitive steering inputs are required to negotiate the Senna S

Turn 10

Bico de Pato is the lap's slowest turn with the most right-hand steering lock

Turns 12 to 13

A good exit out of the final corner is vital for carrying speed across the start/finish line

ILLUSTRATION: ALAN ELDREDGE. PHOTOS: GLENN DUNBAR/LAT; CHARLES COATES/LAT; STEVE ETHERINGTON/LAT

BOOKS FOR THE COLLECTOR

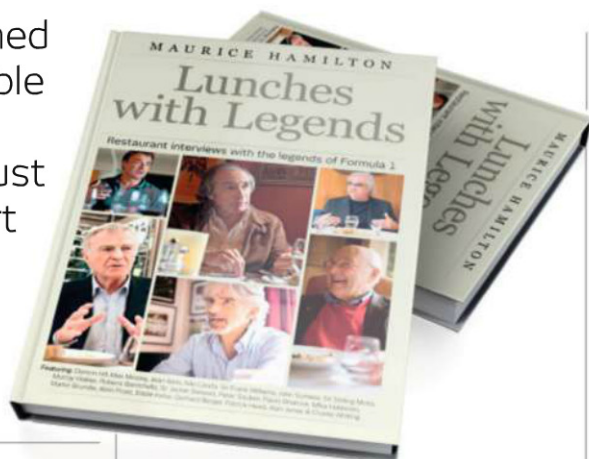
Three new F1-themed books – two available in strictly limited numbers – are a must for fans of the sport this festive season

The Official Formula 1 Season Review

272pp, hardback, £35

No serious fan's bookshelf is complete without the annual season round-up, the most authoritative record of the year's on-track events. Officially licensed by Formula One Management and featuring a foreword by F1 ringmaster Bernie Ecclestone, this book features full race reports and all the official statistics from 2013's 19 grands prix.

Keeping to the format of official season reviews past, this annual digs below the surface of each race in turn to provide new perspectives on Sebastian Vettel's fourth world championship season, featuring exclusive insight from drivers and team principals along the way. Evocative photography from LAT brings the year's highs and lows back to life in remarkable detail.



Lunches With Legends (Volume 1)

By Maurice Hamilton

288pp, limited edition hardback numbered and signed by author, £29.95

Maurice Hamilton's genial yet probing interviews with famous F1 personalities, often conducted over the course of a relaxed and bibulous luncheon, are among *F1 Racing's* most popular regular features.

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This book collects 20 landmark interviews with characters who have played a crucial role in the sport's history – whether in the form of controversial autocrat Max Mosley, championship winners including Jackie Stewart, Mika Häkkinen and Damon Hill, or poacher-turned-gamekeeper Charlie Whiting. Against a variety of backdrops, from the traditional ambience of a legendary Mike Hawthorn hangout (Tilford's Barley Mow pub) to Flavio Briatore's chic Monaco eatery, each interviewee spins a fascinating and unique yarn.

F1 Retro 1970

By Mark Hughes

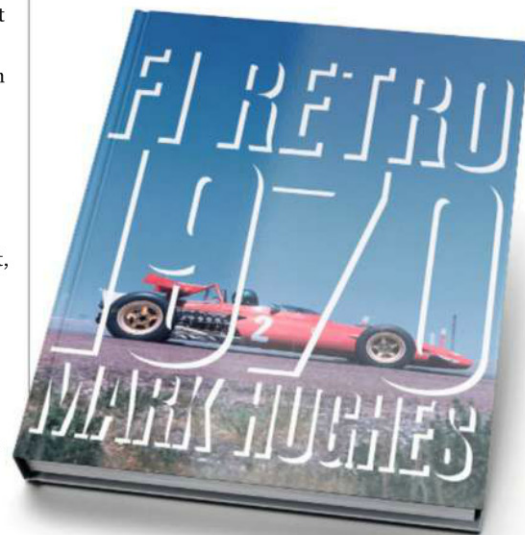
256pp, limited edition hardback numbered and signed by author, £49.99

When Jochen Rindt's friend and biographer Heinz Pruller asked him in 1969, "Why stop at one title? Wouldn't you like the idea of becoming one of the all-time greats, maybe equalling Jim Clark's record of 25 grand prix wins?" Rindt replied: "Really? Look where Jimmy is..."

Tragically, Rindt would not achieve his ambition of winning the drivers' title and then quitting while on top. In this, the first in a series of books to apply new, access-all-areas journalistic values to bygone eras, award-winning author Mark Hughes tells the story of the 1970 F1 season with a level of detail never seen before.

Rindt's doomed journey towards becoming F1's only posthumous champion is but one narrative thread; drawing on contemporary accounts from survivors of the era, Hughes gives the story of the season an emotional weight, but he also consults the expertise of modern technical experts to put the machinery of the era into a definitive perspective.

• All books featured here can be ordered online at www.f1racingbooks.co.uk



TOM CLARKSON

Inside the paddock from our man on the road

New Delhi deserves to stay

Exit the tube at Green Park, pass the Ritz Hotel and head down St James's Street onto Pall Mall. After a few hundred yards you'll see McLaren Automotive's glitzy new showroom on your left, opposite which is the entrance to the Royal Automobile Club – Britain's oldest motoring organisation.

Give the doorman a deferential nod and head through the rotating doors. Don't turn right because you'll find yourself inside Britain's poshest Post Office; turn left and ask the concierge for the Segrave Room. And put on your tie, or you'll go no further. Admire the Nissan GT-R sports car in reception and head upstairs, passing beneath a portrait of Her Majesty (the RAC was awarded Royal status in 1907). Turn right at the top, and you've arrived. There's a vast mahogany table down the centre of the room, a handful of trophies at one end and three paintings of note on the walls. The largest is a portrait of Henry Segrave, the first man to travel at 200mph on land.

As we move the furniture in anticipation of FIA president-elect David Ward's arrival, I'm reminded of a near-miss this magazine had at Fiorano years ago. We wanted to shoot Michael Schumacher in Enzo Ferrari's office and were poised to begin rearranging the Old Man's desk to help with the composition of the photograph, when in walked Michael accompanied by a PR man – who told us that nothing had been moved in the room since Enzo was last there!

This time, we – the BBC – have had no such shocks. We move the furniture to accommodate a couple of cameras and some lights, while former *F1 Racing* man Guy Nicholls – now the RAC's head of comms – tells us about the paintings on the wall and the history of the Club, which, for the record, is older than the FIA. Then the big man arrives.

David Ward is a member of the RAC, so he knows the dress code. He's affable and passionate in his arguments about what's wrong with the FIA's governance and, having given up his role as director general of the FIA Foundation, he claims to have no agenda in the December election other than wanting to do what's right for the Federation. What also comes across during our 20-minute discussion is Ward's passion for motorsport. He holds a race licence – "I used to do a bit of karting, but in reality I was too tall, and I now have an MG that I occasionally dust down and take racing" – and he's been a fan of F1 since he was nine. I'm left in no doubt that he's a credible challenger to current incumbent Jean Todt.

Then, in the space of 24 hours, we travel from the sublime surroundings of the RAC to the chaos of India. Such extremes are hard to find anywhere in the world (unless you venture to the British High Commission in New Delhi), but you grow to love the subcontinent once the shock wears off.



There's plenty of enthusiasm for the Indian GP, so it's a shame it's being dropped for 2014

PHOTO: ALASTAIR STALEY/LAT

"A country with a first-rate circuit close to its second largest city, deserves a place at motorsport's high table"

F1 has embraced India more in 2013 than previously, with some drivers turning up as early as the Monday before the race and staying for a week. The sport will never rub along in harmony with the mayhem of India, but the teams at least thought about life outside the F1 bubble on Sunday when they

donated their uneaten food to local charities. If India never returns to F1, it will be a travesty. A country with a middle class (referred to by sponsors as 'F1 fodder') of several hundred million people, plus a first-rate circuit so close to its second largest city, deserves a place at motorsport's high table.

After the madness of India, Abu Dhabi seems more sterile than ever. As I write during the build-up to the race, my mind isn't on matters F1 but on the Porsche SuperCup. Sean Edwards, who died in an accident in October, leads the championship by 18 points going into these final two races and I'm awaiting news as to whether or not they will become non-championship to ensure he wins the title posthumously. Here's hoping.

Sean was a great driver and an even better person. He and I first met in 1998 when we went with his father, former Formula 1 star Guy, to walk the battlefields of the Somme en route to the French Grand Prix. It was something Sean and Guy did together every year and both came to have an encyclopaedic knowledge of the First World War. It's not a coincidence that his memorial service is taking place in London on 11 November, Armistice Day. RIP Sean.

MURRAY WALKER



UNLESS I'M VERY MUCH MISTAKEN...

“Remember the last time we had turbo engines in Formula 1? Now that was a very different era...”

So in 2014 it's goodbye to the normally aspirated engines whose earsplitting revs have enthralled us for so long. It's goodbye, too, to KERS, which will be replaced by an altogether more sophisticated energy recovery system. And it's hello again to fuel-limited turbo cars. I say *hello again*, of course, because we've been there before – and what a great time it was!

Renault started it all in 1977 when F1 was for cars with three-litre normally aspirated engines or 1.5-litre supercharged or turbocharged motors. Up until then, everyone had gone the three-litre route, notably with the brilliant V8 Ford Cosworth DFV engine that dominated F1 from 1967, when Jim Clark took it to its first victory at the Dutch Grand Prix, in the legendary Lotus 49. But in '77, Renault bravely appeared at Silverstone for the British GP with something

very different – a single V6 1.5-litre turbocharged car for Jean-Pierre Jabouille. He lasted for 16 laps before retiring with a broken turbo, but Renault persevered with what we all called 'the yellow teapot', because of its vivid colour scheme, despite the fact it had such a high air intake and kept blowing up. But, eventually, the victories came for Alain Prost and René Arnoux – victories that forced their rivals to follow suit until, in 1986, F1 became all-turbo.

In 1989, 12 years after their debut, turbos were legislated out of F1, but what dramas we'd seen, with engines producing an almost unbelievable 1,400bhp. I saw so many great races as Ferrari, McLaren-TAG, Williams-Honda, Renault and Brabham-BMW struggled for supremacy. But while Renault had initiated the turbo years, they never won the coveted constructors' title during

that period (Ferrari did so first in 1982) and I remember the 1983 South African GP when they took a massive French media squad to Kyalami, confidently expecting Alain Prost to clinch the drivers' title – only for his car to expire, allowing Nelson Piquet in his Brabham-BMW to become the first 'turbo' champion.

Renault's proud pioneering achievement was to become the first constructor to win a race with turbo power and they did it at one of the most exciting races I've seen – the 1979 French GP at Dijon. Fittingly it was Jean-Pierre Jabouille who reaped the reward for his patient development work, but it was the battle for second between Gilles Villeneuve in his Ferrari V12 and Renault's René Arnoux that had everyone by the throat. For the last few laps they passed and re-passed each other, banging wheels and giving no quarter, with Villeneuve leading home Arnoux after Jabouille took the historic victory.

Gilles Villeneuve starred again at the Spanish GP in 1981 when, in the lumbering Ferrari 126 turbo, he held off the 'atmospheric' opposition, headed by Jacques Laffite's Ligier, for lap after lap by pulling away down the straights after they'd closed on the corners. Just 1.2 seconds covered the first five home! I could go on about the rivalries between Nelson Piquet and Nigel Mansell in their Williams-Hondas, (remember the 1987 British GP?), Alain Prost and Niki Lauda in their McLaren-TAGs (Portugal '84) and Prost and Senna in their McLarens (Monaco '88) but I'll end on a lighter note.

In 1980, realising the glory days of their fabled flat-12 engines were over, Ferrari appeared at practice for the Italian GP (that year held at Imola) with a prototype turbo car. This naturally roused frenzied interest – something that two amazonian Italian women exploited. Clad in tops featuring Villeneuve's sponsor, wine producer Giacobazzi, they roller-skated around the paddock, industriously seeking ways to get themselves on the box. I was about to start a TV interview with Ken Tyrrell when suddenly, with a whirl of wheels, I had a breast deposited on each shoulder. 'Great Scott!' I thought. 'I know I'm only five foot six, but this girl must be a giant!' Peeping cautiously around I realised it wasn't one but two girls, one on either side of me! I tell you – those were different times.



“Renault took the French media to the 1983 South African GP, expecting Alain Prost to clinch the title – only for his car to expire”





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