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KIMI GONE. BOULLIER GONE. AND NEW CAR IS LATE

CRUNCH TIME FOR LOTUS



10-PAGE
LOTUS
SPECIAL

PLUS

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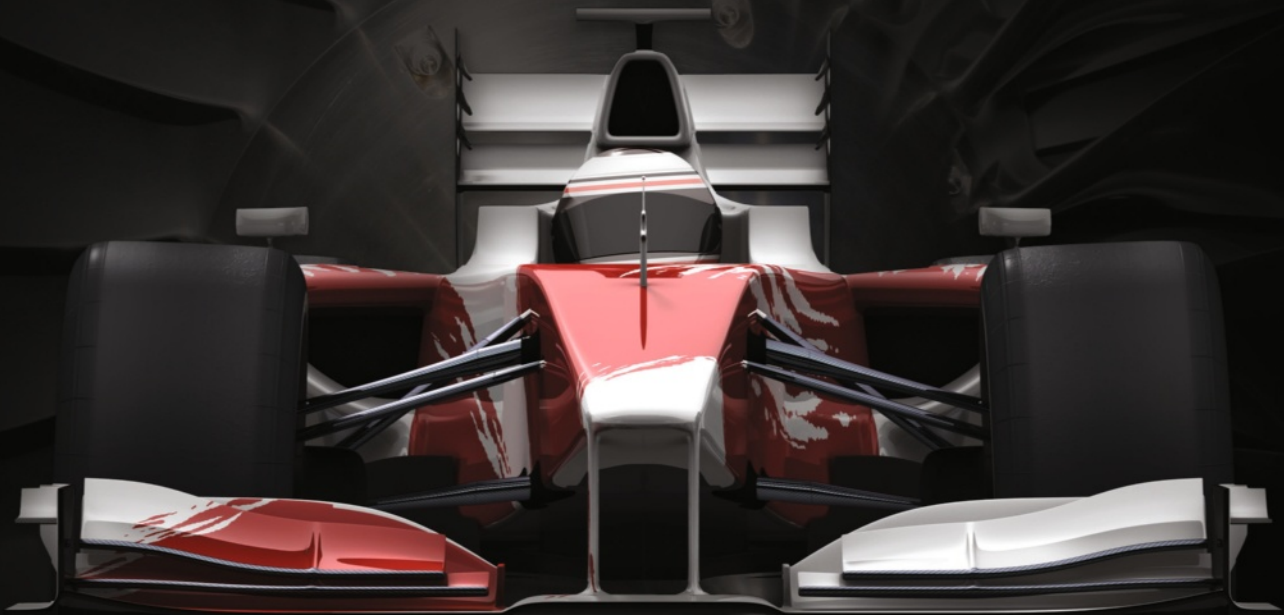
FORMULA 1 NEAR MISSES





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POLE POSITION

Lotus & Renault are in the Bahrain spotlight

THIS FORTNIGHT OF FORMULA 1 TESTING IN BAHRAIN

is going to raise some hopes and dash others as we gear up for next month's season-opening Australian Grand Prix. Some huge reputations are on the line, none more so than Lotus and Renault.

They are synonymous with fantastic achievements in F1, but both have hit troubled times of late. Lotus skipped the Jerez test amid a backdrop of uncertainty and a late car, after star driver Kimi Raikkonen and team chief Eric Boullier had already jumped ship. Read how Enstone plans to put its house in order from page 14.

Renault, meanwhile, suffered a horrendous Jerez, and also has it all to prove up against fellow engine producers Mercedes and Ferrari. Be sure to keep on top of the latest news as it happens in Bahrain on autosport.com with our three-man team on the ground.

Someone who has just returned from Bahrain is Mark Webber, after testing his new Le Mans Porsche 919 hybrid LMP1 machine. I caught up with him on Sunday at a charity event for our mutual friend Neil Cunningham, and Mark is relishing his new life away from the relentless pressures of F1. He tells Gary Watkins on page 30 all about his new challenge, including his upcoming return to the Le Mans 24 Hours.



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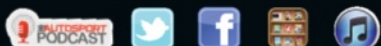


PRIVATE EAR



HARRELSON/LAT

FIND US ON



Cover image: Lotus F1
Inset: Juergen Tap/Porsche & Tee/LAT

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THE BIG PICTURE

Tony Stewart (14), Jeff Gordon (24) and Kurt Busch get caught up in a wreck in Saturday night's NASCAR opener at Daytona, ahead of this weekend's 500





This week in F1

MARTINI COLOURS TO RETURN WITH WILLIAMS

The white, blue and red colours of the Italian Martini drinks brand will return to Formula 1 with Williams this year.

The deal, which has yet to be officially announced, will lead to both Williams-Mercedes FW36s carrying the livery of the iconic Martini Racing Team.

AUTOSPORT understands that Martini parent company Martini & Rossi had discussions with a number of teams, including McLaren and Ferrari, before

finalising its agreement with Williams because of the appeal of having a significant influence on the car's livery. The squad is expected to be officially dubbed Williams Martini Racing in 2014.

The livery has yet to be finalised (below is our artist's impression) and will be unveiled before the season-opening Australian GP. It is set to incorporate several other major brands, including insurance company Genworth and Brazilian energy company Petrobras.

MARTINI'S F1 HISTORY

1972-73 Backed the Italian Tecno constructor's unsuccessful F1 graduation.

1975-77 After a year out, Martini backed the Brabham team (right), winning two races.

1979 One-year alliance with reigning champion team Lotus proved winless.

2006-08 Martini makes a low-key return with branding on the nose of the Ferrari.

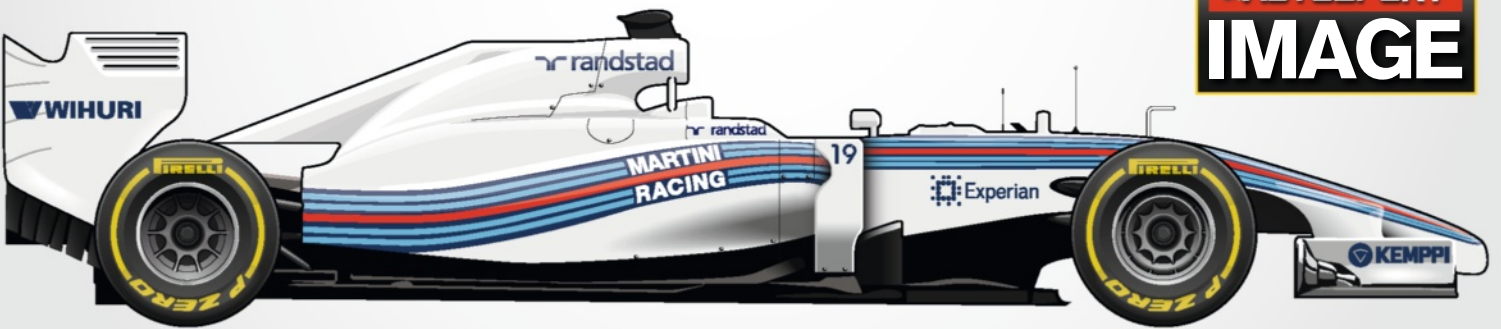


ILLUSTRATION: ALAN ELDREDGE



Tost not expecting surprises

Toro Rosso team principal Franz Tost does not expect as dramatic a change to the competitive order in Formula 1 this year as there was in 2009, the last time there were major changes to the technical regulations.

"I don't expect something like this," said Tost. "That was a very special case because Brawn won the championship because of the double diffuser."

2008 v 2009 STANDINGS

Ferrari	Brawn
McLaren	Red Bull
BMW Sauber	McLaren
Renault	Ferrari
Toyota	Toyota
Toro Rosso	BMW Sauber
Red Bull	Williams
Williams	Renault
Honda (became Brawn)	Force India
Force India	Toro Rosso

De Silvestro joins Sauber squad

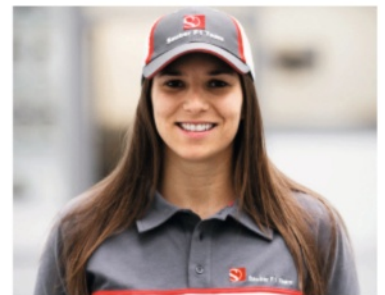
IndyCar racer Simona de Silvestro has joined the Sauber team as an 'affiliated driver' for 2014.

The 25-year-old Swiss has raced for HVM and KV Racing in IndyCar for the past four seasons, winning 2010 rookie of the year honours. Sauber intends to give de Silvestro running in Formula 1 machinery with a view to securing a superlicence.

Team principal Monisha Kaltenborn has backed de Silvestro's ambition to race in F1 in 2015, although there is no commitment from the team to field her.

"After four years in IndyCar, Simona's ambition is to enter Formula 1 in 2015," said Kaltenborn. "She is a very talented race driver and we decided to take her on board as an 'affiliated driver' and support her on her way to the pinnacle of motorsport."

De Silvestro has spent the majority of her car racing career in the United States, winning races in the Atlantic Series and finishing fourth in the 2006 Formula BMW USA standings.



DID YOU KNOW?

Simona de Silvestro hasn't raced in Europe since 2005, but did become the first female to participate in an official GP2 test, driving for Campos Grand Prix at Paul Ricard in November 2007.



STALEY/LAT

For all the breaking news, visit AUTOSPORT.COM

Ferrari: Kimi is more mature

Ferrari team principal Stefano Domenicali believes that Kimi Raikkonen has returned to the squad a better driver. "I've found him more mature, like all of us, more experienced, very close to the team," he told *Gazzetta dello Sport*.



Formula 1 is not epic anymore, the drivers are not heroes. The changes are being made in an artificial way and that doesn't work



Former world champion Jacques Villeneuve on modern F1

F1 pace to increase rapidly

Ferrari technical director James Allison has no doubts that Formula 1 lap times will reduce rapidly between now and the start of the season. "New rules offer new opportunities, so the rate of finding downforce is quite steep," he said. "You never know when that is going to slacken off, but it's showing no signs of that at the moment."



DUNBAR/LAT

BUTTON BACKS BOULLIER RECRUITMENT

Jenson Button has backed McLaren Group CEO Ron Dennis's decision to bring Eric Boullier in as racing director. "It's good to have fresh ideas and I think he [Boullier] does add to the team," said Button.



Marussia targeting Q2

Marussia team principal John Booth believes it is a realistic target for his cars to reach Q2 in 2014. "We would love to get into Q2 on a regular basis on performance," he said. "That has to be the target."



COATES/LAT

BIG NUMBER

4 Number of Q2 appearances for Marussia/Virgin drivers from its 77 races.



DUNBAR/LAT

Newey confident of exhaust fix

Red Bull chief technical officer Adrian Newey believes the car problems that contributed to the team's lack of running in the Jerez test three weeks ago have been solved.

"What stopped us at Jerez, on our side as opposed to Renault's side, was a problem where the bodywork local to the exhaust was catching fire," Newey told AUTOSPORT.

"It's a problem which hopefully we can get on top of ready for Bahrain [this week's test]."



HONE/GETTY

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March

18 March - BRITISH TOURING CAR CHAMPIONSHIP PRE-SEASON MEDIA DAY

22/23 March - National Car Races (Motors TV)

29/30 March - Sports & Saloon Car Races (750 Motor Club)

April

1 April - MCE INSURANCE BRITISH SUPERBIKE CHAMPIONSHIP PRE-SEASON TEST DAY

6 April - Historic Sports Car Races

12/13 April - Thundersport GB Motorcycle Races

19/20 April - DUNLOP MSA BRITISH TOURING CAR CHAMPIONSHIP

26/27 April - GT & Formula Car Races (MSVR)

May

3/4/5 May - DONINGTON HISTORIC FESTIVAL

10/11 May - Sports & Saloon Car Races (BRSCC)

17/18 May - National Motorcycle Races (No Limits)

23/24/25 May - FIM SUPERBIKE WORLD CHAMPIONSHIP

31 May/1 June - Sports & Saloon Car Races (BARC)

June

7 June - Aston Martin Races

8 June - Morgan Sports Car Races

21/22 June - National Motorcycle Races (BEMSEE)

28/29 June - Motorcycle Endurance Races (Hottrax)

July

12/13 July - International Formula Cars & Support Races (BRSCC)

19 July - Vintage Sports Car Races

26/27 July - National Motorcycle Races (NGRRC)

August

2 August - Fun Cup Endurance Race

3 August - MG Sports & Saloon Car Races

8/9/10 August - CLASSIC MOTORCYCLE FESTIVAL

23 August - Sports & Saloon Car Races (BARC)

24/25 August - British Truck Championship & Support Races

30/31 August - Classic Sports Car Races

September

5/6/7 September - MCE INSURANCE BRITISH SUPERBIKE CHAMPIONSHIP

13/14 September - BRITISH GT & BRITISH F3 CHAMPIONSHIPS

20/21 September - GT & Formula Car Races (MSVR)

27/28 September - Thundersport GB Motorcycle Races

October

4/5 October - Sports & Saloon Car Races (750 Motor Club)

18/19 October - National Car Championship Finals (BRSCC)

November

1 November - Britcar/GT Endurance Races

8 November - Sports & Saloon Car Races (BRSCC)

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Jonathan Noble

F1's newshound

With the sport's TV audiences declining, now's the time to see alternative media as an opportunity to maximise exposure rather than any sort of threat

The fall in Formula 1's television viewing figures by 50 million in 2013 prompted many doom mongers to suggest the end was nigh for grand prix racing. Such a huge drop-off in interest, at a time when F1 is crying out for more fans and bigger sponsors, was viewed as a warning sign for the extent of the trouble it was in.

The move to pay-TV channels, in a bid to chase the only networks that could afford the huge rights fees F1 demands, has not unsurprisingly led to a dramatic cut in audiences – already weakened by Red Bull dominance and less-than-spectacular racing.

That the audience in France dropped by 17 million in 2013 when F1 moved to pay TV shows the dangers the sport faces in chasing the big-money deals.

Going forwards, there are fears of F1 being trapped in a vicious circle. For with audiences falling away, the money that stations are then willing to pay for broadcast rights reduces and the sport effectively earns less for smaller and smaller audiences. In the end, no station is going to pay for a sport that nobody is watching.

While some have been bigging up such a doomsday scenario, there is another school of thought that some within the paddock talk about. It is that F1 actually has a very bright future of mass-market coverage and incredible revenue. And it's not from television.

Instead, the answer is right in front of many of us already: Twitter and YouTube. For years now, it has



Instantly, content is being pushed to fans – be it through mobiles, work computers, laptops or entertainment systems. The potential is massive. Which F1 fan would not dive on to their mobile for a replay of a fantastic overtaking move, dramatic onboard highlights, or a short review package of a race available a few minutes after it had happened?

That Twitter path is not just about boosting audiences though, because there is revenue in it, too. The NFL/Twitter clips have embedded adverts, with mobile network Verizon and fast-food giant McDonald's

“Formula 1 has a bright future of mass-market coverage and revenue. And it's not from TV”

appeared that the only relationship Bernie Ecclestone and Formula One Management have had with both platforms has been in shutting down unsanctioned video footage that has appeared online.

The appearance of F1 clips has been viewed as an inconvenience to the old television business model, potentially robbing official broadcasters of viewers. That, though, is old-world thinking, for the media landscaping is changing fast.

And the reality is that soon F1's commercial chiefs will have to make the call: do they stick to the declining old model? Or do they embrace a new way forward that could open up untold possibilities for the sport – both in revenues and audience numbers?

Look what America's National Football League (NFL) has done with Twitter. It struck a deal last year for near-instant replays and highlights of matches to become available as promoted tweets on the social media site.

instantly signing up to get their messages out there.

This deal hasn't stopped the rights of NFL matches still being sold to pay-TV channels. It maintains the audience and rights incomes, and works to boost profile by bringing the sport to more people, thus making life better for the traditional broadcasters rather than worse.

YouTube, with its huge reach, is also heading down the revenue-sharing path. Teams are hamstrung in what they are allowed to put up there right now, but even a short audio clip that Mercedes published earlier this year got 600,000 views – a figure higher than some live pay-TV races get. There is ad revenue off the back of it too.

F1's TV audience may be in decline, but that doesn't mean the end is nigh. If the sport's chiefs react, and view avenues like Twitter and YouTube as opportunities rather than threats, we'll all be watching F1 more than ever before – and they and the teams will earn more.

What is there to lose? ❄

This week in motorsport

DILLON'S #3 ON POLE AT DAYTONA

NASCAR's iconic #3, made famous by Dale Earnhardt, will start on pole position for the Daytona 500 for the first time since 1996 after Cup rookie Austin Dillon topped qualifying for the season opener at the weekend.

Dillon, the grandson of team boss Richard Childress, has raced with the number throughout his stock car career and will be the first driver to race at NASCAR's top level with #3 since Earnhardt's death in the closing stages of the 2001 Daytona 500.

"You want to perform with the #3, and everybody wants to see it perform," said the 23-year-old.

Childress added: "The #3 is special to all of us. The emotion will fly on Sunday [for the race]."

Dillon will be joined on the front row by Martin Truex Jr's Furniture Row entry, while the remaining slots on the grid will be decided by the traditional 'Duel' qualifying races on Thursday evening.



PENNINGTON/GETTY

P58 DAYTONA 500 PREVIEW

10

Porsche reveals engine details

Porsche's new 919 hybrid World Endurance Championship challenger is powered by a V4 engine, the German manufacturer has finally confirmed.

The configuration of its four-cylinder turbo engine is one of a number of key technical details of Porsche's new LMP1 coupe revealed this week. They also include the specification of its hybrid systems.

A V4 was chosen over an in-line configuration in the name of weight saving, because it does away with the need for a subframe by allowing the engine to be a structural component.

Porsche has opted for lithium ion batteries over flywheel and super-capacitor storage systems used by Audi and Toyota respectively. Energy recovery from exhaust gases comes via a turbine independent of the turbo, unlike Audi's F1-style system.



JUERGEN TAP/PORSCHE

P30 WEBBER AT PORSCHE



THORNE/GETTY

Volvo V8 Supercar breaks cover

Volvo unveiled its V8 Supercars challenger last week, before the S60 joined the field for a pre-season test at Eastern Creek. Drivers Robert Dahlgren and Scott McLaughlin set the 17th and 19th fastest times.



NETCALFE/GETTY



BLOXHAM/LAT

Caterham cans its LMP2 effort

Caterham withdrew its entry for the Le Mans 24 Hours and the European Le Mans Series just one day after its plans to return to the LMP2 category were revealed.

The Caterham Group had put together a last-minute deal to revive the relationship with Greaves Motorsport that stalled after fielding a Zyteck-Nissan Z11SNs in its colours at Le Mans last year. The plan was abandoned after the Caterham entry only made it onto the reserve list for the 24 Hours.

LMP2 is the biggest class on the Le Mans entry published last week. Its 17 cars join 10 LMP1s, 12 GTE Pro entries, 16 in GTE Am and the Nissan ZEOD experimental racer.

For all the breaking news, visit AUTOSPORT.COM

T-Sport in Euro F3 engine swap

British engine builder Neil Brown Engineering will this season return to top-level Formula 3 in the European championship.

The Lincolnshire firm, famed for its Mugen Honda engines, has an agreement with T-Sport for its ground-up design to power the Dallaras of Alexander Toril and Spike Goddard. The new engine has racked up nearly 2000 miles of testing.

Japanese company ThreeBond, which has powered T-Sport's entries in 2012 and '13, is still working on its new-rules powerplant, but its old-spec Nissan-based engine could be run in British F3.



GIOVANARDI BACK ON TRACK

Former British Touring Car champion Fabrizio Giovanardi tested a Motorbase Ford Focus at Brands Hatch last week, ahead of his series return.

"People have said these cars can be difficult to drive but I didn't really find that," said the 47-year-old. "Today was fine, it was good to be out there."

LYNN EYES THRUXTON F3



Macau Grand Prix winner Alex Lynn is hoping to contest this year's British Formula 3 round at Thruxton.

The new Red Bull junior protege, who will race in GP3 this season, was due to test one of Carlin's Dallara-Volkswagen F308s at the Hampshire circuit on Tuesday. "Thruxton is one of my favourite circuits," he said.

We won four years on the trot and would have gone beyond that had someone not decided to let Sebastien Ogier go



Former Citroen WRC team boss Olivier Quesnel takes a swipe at his old team for letting a future world champion slip through its fingers

BLOCK ENTERS FIA WORLD RX



Internet rally star Ken Block will enter three rounds of the new World Rallycross Championship in 2014. The American described the outings as "the most interesting" part of his 2014 schedule.

P28 VILLENEUVE IN RX

In brief



AMD'S NEW FOCUS

AmD boss Shaun Hollamby gave his squad's newly acquired Ford Focus its first run at Brands Hatch last week. Dave Newsham will race the ex-Motorbase car in the BTCC.

MARCIELLO DEAL DONE

Ferrari protege Raffaele Marciello has been confirmed as a Racing Engineering GP2 driver this year, as predicted by AUTOSPORT. "It is one of the strongest teams, and I feel best placed," he said of the team that took Fabio Leimer to the 2013 title.

FORMULA E CONFIRMS ITS FIRST DRIVERS

Lucas di Grassi and Daniel Abt are the first drivers to sign deals to race in the inaugural FIA Formula E championship, having agreed to race for the Audi Sport Abt entry. Ex-F1 racers Jaime Alguersuari, Christian Klien and Robert Doornbos were among the latest drivers to express an interest in joining the series.

PARENTE TO RAM

McLaren GT factory driver Alvaro Parente has been loaned out to the Ram Racing Ferrari team for seven of the eight rounds of the World Endurance Championship. He will share the British team's GTE Pro class Ferrari 458 Italia with Matt Griffin.

EUROV8 SERIES IS GO

Organisers of the Superstars series have revealed details of the stop-gap championship that will run in 2014 before the SuperTouring Series starts next year. Promoter FG Group expects an average grid of 16 cars – running to 2013 Superstars specification – for 'EuroV8' in 2014.

GP2 RULE TWEAK

GP2 has changed the feature race rules for 2014 to force the use of both tyre compounds during the first race of the weekend. Series bosses said the move brings the series closer to F1, where both tyre compounds must be used in a GP.

MOTOPARK SPLITS WITH RUSSIAN TIME

The Motopark outfit behind the success of GP2 teams' champion Russian Time has split with the squad following the death of its founder Igor Mazepa.

Mazepa had brought in the German squad to run his GP2 operation after taking over iSport's entry on the eve of last season, where it also fought for the drivers' title with Sam Bird.

Motopark boss Timo Rumpfkeil said the decision of the "heirs behind Russian Time" to take the team in a different direction to that established by Mazepa in 2013 forced the co-operation to stop.

He also warned that the team is at risk of being off the pace this season, before adding that it has cancelled its contracts with Tom Dillmann in GP2, and GP3 trio Marvin Kirchhofer, Markus Pommer and Jimmy Eriksson.



BRANDS HATCH
KENT

OULTON PARK
CHESHIRE

SNETTERTON
NORFOLK

CADWELL PARK
LINCOLNSHIRE

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BRITISH TOURING CARS	29/30 MARCH	BRANDS HATCH
BRITISH TRUCK RACING	12/13 APRIL	BRANDS HATCH
MCE BRITISH SUPERBIKES	18-21 APRIL	BRANDS HATCH
BRITISH GT CHAMPIONSHIP	19/21 APRIL	OULTON PARK
MCE BRITISH SUPERBIKES	3-5 MAY	OULTON PARK
MINI FESTIVAL	11 MAY	BRANDS HATCH
BLANCPAIN GT SERIES	17/18 MAY	BRANDS HATCH GP
MASTERS HISTORIC FESTIVAL	24-25 MAY	BRANDS HATCH GP/INDY
BRITISH TOURING CARS	7/8 JUNE	OULTON PARK
AMERICAN SPEEDFEST II	8 JUNE	BRANDS HATCH
MCE BRITISH SUPERBIKES	13-15 JUNE	SNETTERTON 300
BRITISH F3/GT CHAMPIONSHIP	21/22 JUNE	SNETTERTON 300
MINI FESTIVAL	12 JULY	OULTON PARK

HSCC SUPERPRIX	12/13 JULY	BRANDS HATCH GP
MCE BRITISH SUPERBIKES	18-20 JULY	BRANDS HATCH GP
BRITISH TOURING CARS	2/3 AUG	SNETTERTON 300
MCE BRITISH SUPERBIKES	8-10 AUG	OULTON PARK
LOTUS FESTIVAL	16/17 AUG	BRANDS HATCH GP
MCE BRITISH SUPERBIKES	23-25 AUG	CADWELL PARK
HSCC GOLD CUP	23-25 AUG	OULTON PARK
BRITISH F3/GT CHAMPIONSHIP	30/31 AUG	BRANDS HATCH GP
DUTCH SUPERCARS	13/14 SEPT	BRANDS HATCH GP
BRITISH TRUCK RACING	13/14 SEPT	SNETTERTON 300
BRITISH TOURING CARS	11/12 OCT	BRANDS HATCH GP
MCE BRITISH SUPERBIKES	17-19 OCT	BRANDS HATCH GP
BRITISH TRUCK RACING	1/2 NOV	BRANDS HATCH

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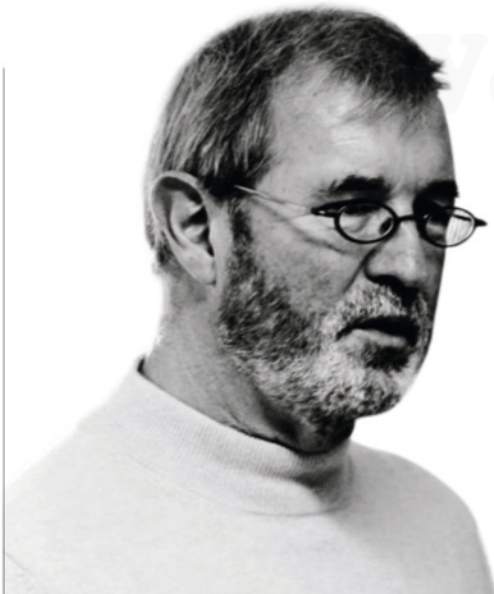


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Kevin Magnussen
2013 Formula Renault 3.5 Champion
2014 Driver for McLaren Formula 1



Peter Stevens

The inside line

The man behind the look of the McLaren F1, 1999 Le Mans-winning BMW and Subaru's WRC cars says F1 2014 is an affront to good design

Does it matter what Formula 1 cars look like? The short answer is yes; they are supposed to represent the pinnacle of contemporary engineering creativity and excellence. F1 is a worldwide entertainment industry and a shop window for wealthy and high-profile multinational companies to bring their products or services to the attention of millions. It is an enterprise that prides itself on being an attractive show. Unattractive cars undermine the entire F1 brand.

The FIA presents F1 2014 as a forward-looking, ecologically responsible business, concerned with the efficient use of energy among its core values. But no one could honestly say the appearance of the majority of 2014's cars reinforces that message. That the new technologies required have created technical problems is fascinating, and, for sure, the rapid pace of development always seen in motorsport will quickly produce workable solutions.

We can expect the usual nonsense from the teams and the sport's governing body, as those directly involved try to explain away the visual abominations: 'The rule changes are there for reasons of safety'; 'A winning car always looks beautiful'; 'They look like this for aerodynamic reasons'; 'The most efficient shapes are not always the best looking'.

Not true; a bad piece of design will always be a bad piece of design and those who suggest that we will 'get used to them' are sublime optimists.

or Red Bull cars, for example, I discern the work of under-trained or insensitive engineers, with no understanding of the complexities of body surfacing, hiding behind the excuse of 'aerodynamic requirements'.

This year's nose shapes are the first and easiest things to criticise, but the developments of the shapes of engine covers are equally poor. So why is the McLaren MP4-29 engine cover so beautifully executed, while the Ferrari's is so bad? That someone influential at McLaren has taste could well be the answer. As a senior F1 aerodynamicist friend said to me, "We can only test what we can think of and with an engineering training we are not properly equipped to come up with aesthetically pleasing results, so we don't understand how to make things look nice."

One senior designer says: "The great thing about the new rules is that because the nose of an F1 car has little effect on aero performance we are getting such a variety of solutions, the cars can all look different." In other words people are either choosing to produce these dreadful-looking machines, or they are incapable of maintaining control over their surfaces.

CAD programmes will join up the dots and the lines on the screen at the press of a button, and five-axis milling machines will cut the master model exactly as you have defined it. In the past, drawings would be passed to experienced pattern makers who would create a master model in wood, using their

"F1 is supposed to represent the pinnacle of engineering creativity and excellence"

The FIA's group of well-paid rule-makers seem to have been unable to foresee the consequences of their mandates. It always defies belief when this occurs. The phenomenon is not particular to motorsport: it is common among those in power.

But we all know that actions taken for one reason will often produce unsatisfactory results in other areas. The result of proposing a number of specifically defined cross-sections whose shape and position are mandated by the FIA, with no regard for the potential appearance of the cars, does little for F1's credibility as a premium experience.

Nevertheless, however shortsighted the rule-makers, it is incumbent on the teams to do a professional job when developing a car within the regulations. There is always the opportunity to present a good design solution rather than an appalling one. Most F1 teams use the same body surface development CAD tools, but when I look at 2014 Caterham, Ferrari, Toro Rosso

natural understanding of three-dimensional forms. Beautiful cars would result.

Modern 'on-screen' design is certainly an efficient way of integrating all the complex elements of a modern race car, but you can only see what it really looks like when it has been built. Today's engineering training is totally screen-based, providing only virtual opportunities for interpreting and experiencing three-dimensional form.

We are expected to endure 2014 shapes defined by an engineering CAD programme with limited surface development capabilities in the hands of pure rationalists. This is simply not good enough. The cars are not only an insult to the fans, they also carry with them the suggestion that the outcome of a more energy efficient future is that things must inevitably look bad; in other words, the price to be paid for responsibility is bad design. This assumption is unacceptable. ❧



Better late than never

Lotus was the only team to miss the opening pre-season test at Jerez last month. So just how much is the team on the back foot? By **EDD STRAW**



Grosjean excelled with second in 2013 US GP



Kimi Raikkonen... gone. Eric Boullier... gone. James Allison... gone. New Lotus E22... late. All hope for Lotus...? Good question.

Scuderia Enstone, as it's simpler to call the ex-Toleman/Benetton/Renault squad in deference to its Oxfordshire base, has a history of defying expectations, so it would be folly to write it off. But while none of the circumstances listed above can legitimately be painted as anything other than negatives, Lotus does at least appear to have hauled itself onto firmer ground after finishing the 2013 season in a very uncertain state.

After November's Brazilian Grand Prix, payroll payment was delayed in a very high-profile fashion and it was clear that the promised investment from Quantum Motorsport (see panel, p17) was not coming, so morale was at rock bottom. But a deal to bring major sponsorship from PDVSA, necessitating the signing of Pastor Maldonado, steadied the ship. Speaking to AUTOSPORT shortly before he left the team to join McLaren, team principal Boullier insisted that the team did have a "guaranteed operational budget" for 2014 along with "stability and long-term commitment". All of this is promising, but it would be a mistake to take anything for granted where this team is concerned.

Gerard Lopez, co-owner of Genii Capital that took control of the team in December 2009, and a long-time motorsport enthusiast, has taken over the job vacated by Boullier. A full-time replacement, either as team principal or in a sporting director-style role, will be appointed imminently, with former Citroen world rally boss Olivier Quesnel tipped for the role as AUTOSPORT closed for press.

"It's really odd when you read the press because it's as if there is a delayed response to what's really going on," says Lopez. "When there are bad things, people don't respond to them ▶

▶ right away, and when there are good things, people get stuck on the bad things. But there has been a lot of work to do.

“People forget that we were Renault at first, then were one of two Lotus teams in F1, which made it impossible for us to go into deals. Then we lost Robert Kubica, so essentially we had three years that were really quite awful.

“We were a bit shy in connecting with our businesses, other companies that we have in our portfolio, because we didn’t want to burn any bridges. It’s really only last year that we started to do so and started signing things towards the end of the year. Take PDVSA; we have relationships with PDVSA that are completely outside of F1 in the oil and gas business, so it came to us because of many more things than F1.”

Genii Capital, an investment management and financial advisory company, certainly has the connections to draw in plenty of partners to F1. The group of companies is believed to have an interest in some seriously large business entities and, to its credit, has poured plenty of money into the team over the past four years. But endless shareholder hand-outs was never the desired business model, and there is a renewed push to make the team stand on its own two feet. The theory is that this will prevent situations such as those that occurred last year when wages were late, which Lopez puts down to the stumbling blocks that the Quantum deal hit.

As well as supposedly guaranteeing the operational budget, the structure at the top of the team has also changed. Property investor Andrew Ruhan, who has a history with Genii and has a two per cent stake in the team, has joined the board and been appointed co-chairman alongside Lopez.

Lopez plans to take a keener interest in the behind-the-scenes political manoeuvrings in F1. While he will not be on day-to-day duties for the team, he is going to ramp up his role with presumably Quesnel handling race operations below him.

“We felt we [Genii] needed to get more involved,” says Lopez. “We have been able to divide things at a more senior level, with Andy focusing on internal things like finance and me focusing on the commercial side and, more importantly, the political side. We want to be much closer to the action in terms of F1 politics and finances. Maybe we lost some battles in the past and that’s something we really had to bring up to board level and chairmanship level.”

The departure of Boullier has also facilitated this change. The Frenchman often found himself in an invidious position at the top of the race team itself and working below the owners. By and large he did an excellent job to keep the team at the level it was at. So it’s no great surprise that he



Lopez (right) has lost Boullier (left) to McLaren



Boullier protege Grosjean stays on to lead the team

was targeted by Ron Dennis as the right person to head up the racing operations at McLaren.

“Any person that goes and isn’t fired outright is a loss, that’s a simple way of putting things,” says Lopez. “But we have Nick Chester [technical director] and Alan Permane [head of trackside operations] to deal with a lot of the racing stuff while I’ve been quite active in taking up some of Eric’s roles.

“I think Lotus has made Eric and at the same time he has been very good for the team. He will bring something different to McLaren, but what he adds there will be largely what he brings from Lotus. We’re not particularly worried. We left each other both thinking it’s the right thing to do.”

It’s not only in the top positions that there have been changes. As well as the loss of its head and deputy head of aerodynamics, Dirk de Beer (to Ferrari) and David Wheeler (to Williams) – with ex-Ferrari man Nicolas Hennel coming in as head of aero – there have been numerous losses in the rank and file. Many of these were voluntary departures (Mercedes and Williams have proved popular destinations), although there are believed to have been a handful of redundancies too.

Lopez admits to the team twice being behind on wage payments in the past four years, although insists that the final pre-Christmas pay packets went out “two or three weeks in advance”. While there’s no doubt that these problems had an influence in the decision of several to leave, things do appear to have stabilised.

“Nobody noticed that we actually increased by about 100 people two years ago,” says Lopez. “We increased from 460 to about 570. We started

EIGHT YEARS AT ENSTONE

2006

Wins: 8

The then-Renault team completes a second successive drivers’ and constructors’ championship double, led by Fernando Alonso.

2007

Wins: 0

Alonso leaves for McLaren. Renault struggles thanks to switch from Michelin to Bridgestone rubber and windtunnel-correlation problems.



Allison (left) departed along with Raikkonen, but Permane (right) stays



NO SOLACE FROM QUANTUM

On June 18 2013, it was announced that Genii Capital had agreed the sale of a 35 per cent stake in the Lotus team to the Infinity Racing investment group (later re-named Quantum Motorsport). This was the beginning of an on-off-on-off deal that made the team an easy target for mockery.

The public face of Quantum, the flamboyant Mansoor Ijaz, announced at last November's Abu Dhabi Grand Prix that the details had been worked out and the deal would go through imminently. It didn't, although dialogue remains open and it's possible that an attempt could be made to resurrect the tie-up in some form.

It's easy simply to laugh at Lotus's gullibility. But for a brief period of time, the payment did appear in Genii's coffers before bouncing back. That a nine-figure dollar sum materialised before the transaction was reversed suggests at least some funding was there, meaning that Genii's

pursuit of the deal was perhaps not as risible as some have made out, regardless of the outcome.

"That's what made it difficult for us," says Gerard Lopez. "It would have been much easier for us had the money never arrived because then you can just dismiss it as a group wasting your time. The money did arrive, but there were so-called KYC [know-your-customer] issues and it had to go back. The deal wasn't closed."

Lopez's position is "never say never", but things have been moving on. A stake believed to be around 10 per cent of the team has been sold to the company that owns Russia's YotaPhone.

Lopez also refers to negotiations with four of five groups that are interested in a buy-in, with "at least two that are extremely positive and make a lot of strategic sense".

Whatever happens, Lopez is adamant that Genii Capital will retain its controlling interest in the Lotus F1 team.

working on the 2014 car in 2011 and I don't think anybody started earlier than us. We went for a dual development programme non-stop and that's over now. So now we have 500 people entirely focused on the development of '14 and '15."

So Lotus is smaller, has lost key personnel and is behind the curve in terms of car preparation. Lopez rails against the idea that this was down to lack of money. His argument that the car that ran a week late at Jerez cost the same to build as it would have done had it run earlier is correct, but the financial uncertainty over the winter did influence the cashflow and contribute to that delay.

The question is, can Lotus continue to overachieve in these circumstances? During the past two seasons, it has finished fourth despite not being one of the four biggest-budget teams, and has won a couple of grands prix. But with Williams, a team of similar potential, seemingly back on the up and Force India among others looking strong, it's conceivable that a team in Lotus's position could fall to sixth or seventh.

But Enstone has a history of giantkilling and, while the circumstances are not perfect, it's impossible to rule out the chance that it will continue to punch above its weight.

The difficulties with the Renault engine are a big concern and could potentially hold back all four of the French marque's squads, although the window of opportunity to fix this is still open, so it's too early to draw any conclusions on that

"Nobody noticed that we actually increased by about 100 people two years ago. And we started working on the 2014 car in 2011"

GERARD LOPEZ

front. The new car did manage the maximum permissible distance of 100km during the second of its back-to-back promotional event days at Jerez last week, although the first day was far less smooth. By the time you read this, Lotus should have had at least one day of public running in Bahrain to show how reliable the car really is.

"We've already seen from the tests that it will be mixed up because of the engine and the chassis changes," says Lopez. "We feel

comfortable with their power unit and think that it's right up there with the best. We didn't run it at full power but we ran it very close to where it should be. The very good thing was that the hydraulics and the cooling performed absolutely flawlessly.

"There will be a bit of a reshuffle. It would be presumptuous to say that we think we're going to be better, but we have a good car, we believe we know what we are doing and, if we can fight for podiums and wins, we shouldn't be far off where we want to be."

It's impossible at the time of writing to judge where Lotus will really be. On the one hand, Enstone has a proud history of success and has thrived in difficult circumstances repeatedly. As for Genii Capital, while the four years it has owned the team have often been tumultuous, it has invested in the team and made a serious attempt to create the stability it craves. On the other, the departures and the late car are a real concern.

On paper, there is no reason why Lotus should be fighting with and beating Ferrari, Red Bull, Mercedes or McLaren. Yet it has done regularly in recent years. There are plenty of people queuing up to predict the team's imminent demise or slump to the back, but that would be premature. After all, while always ebbing and flowing in competitiveness, the team has had a habit of springing surprises over the years. ❧

Few teams have gone through the ups and downs that Lotus has in recent seasons.

2008

Wins: 2

Alonso returns, winning in Singapore (controversially) and Japan. Renault isn't in the title battle, but Alonso outscores everyone in the final six races.

2009

Wins: 0

Uncompetitive on-track, and off it the team flirts with closure once the '08 Singapore GP race-fix scandal is uncovered. Genii Capital buys the team.

2010

Wins: 0

Robert Kubica signs up and is a regular podium threat. With a stronger second driver than Vitaly Petrov, the squad could have been fourth in the constructors' standings.

2011

Wins: 0

Maintains fifth overall, but windtunnel problems and the decision to go with forward-exit exhausts, which work initially but hit a development ceiling, holds team back.

2012

Wins: 1

The rebranded Lotus team excels thanks to Kimi Raikkonen's strong comeback campaign. Team finishes fourth overall and Raikkonen wins in Abu Dhabi.

2013

Wins: 1

Lotus is in the mix for second in the points before fading late on, with Raikkonen and, in the second half of the year, Romain Grosjean showing well.

Can Lotus tame its newest wild child?

It succeeded in helping turn Romain Grosjean into one of F1's top performers. Can Lotus now do the same for Pastor Maldonado?

JONATHAN NOBLE spoke to the man himself to find out

18

Pastor Maldonado is not a man who lives by convention – or worries one jot about what others think of him. Take the new permanent driver numbers. While there was a clamour by grand prix stars for some iconic figures – such as #5 and #27 – it was not a total surprise when Maldonado went for something that no one else dared to choose.

“I like number 13. I think everybody was surprised with that, because nobody used it [permanently] before,” smiles the 28-year-old. “And it’s OK – I like it.”

This attitude of doing things his own way very much sums up Maldonado, even if it has left many struggling to reconcile the many facets that make him something of a Formula 1 enigma. It’s hard to explain how the genius behind that amazing drive in Spain in 2012 – when he effortlessly and intelligently held off Fernando Alonso for a sensational victory – is the same man who irked Sergio Perez so much with their numerous coming-togethers.

He also famously once crashed a demo car in front of thousands of fans in his native Venezuela, and even dropped hints that he was being sabotaged at Williams last year.

But whatever he has been in the past, and whatever anyone thinks of him now, Maldonado is heading into 2014 well aware that it’s a season that will give us, as well as him, some proper answers. Not only is he facing a year when driver experience and input is of increased importance, but he will be going up against an established benchmark in new team-mate Romain Grosjean.

The outcome of this year will prove whether or not Maldonado is the real deal.

MOVING ON FROM WILLIAMS

Maldonado may be able to look back now on his three-year spell at Williams as a great period of learning and growing up, but his time there nearly ended in acrimony and mud-slinging. Despite the partnership producing that sensational win at Barcelona, the relationship did not blossom. And

that led to frustrations from both sides.

At times the team was unhappy that Maldonado threw away further good results through unnecessary moments, like swerving into Perez in a Monaco practice session in 2012 to earn a grid penalty, just a fortnight after they had won together in Spain.

Then there were times – especially in 2013 – when Maldonado grew tired of being given a car that he felt was not worthy of his talent. Who can forget him saying how happy he was to be leaving the team when it announced the signing of Felipe Massa? Or his outburst at Austin when he refused to rule out his team deliberately hobbling him?

While it’s clear that both sides could have done a better job, equally it was the right decision for team and driver to go their separate ways. Maldonado knew he needed a change.

“Since I started with Williams, I knew it was not going to be a team forever,” he says. “But I learned a lot, and I had a great team – especially in 2011 and 2012. It has good people, and it was a good relationship between us.

“It was especially professional and I learned a lot from the windtunnel. We made a few mistakes in general but we learned from the mistakes.

“Sometimes it doesn’t work as you expected, as was the case last year. And that’s why I took a decision to leave the team and to join Lotus.”

Maldonado may be focusing on the team when he talks about the problems, but he accepts that ▶

“Since I started with Williams, I knew it was not going to be a team forever. But I learned a lot there” PASTOR MALDONADO





Day of glory:
Spanish GP 2012



DUNBAR/LAT

► he too was not blameless. “For sure I did some mistakes from my side,” he adds. “But at the same time the reliability of the car was not the best.

“We were maybe not consistent enough together, from my side and from the team side. It could have been better, but you can never go back. You always need to look forward, but you need to learn from the mistakes. I think I learned a lot. I feel more experienced now.”

THE CHANCE TO PROVE HIMSELF

When it became clear that Maldonado and his many millions in sponsorship backing from PDVSA were available, there was an inevitable

clamour from other teams for his contract.

A deal with Sauber was close at one point, but in the end Lotus won out, after then-boss Eric Boullier felt that Maldonado’s backing was essential to secure the short-term survival of the Enstone-based team.

That Maldonado was not the automatic first choice – that honour was Nico Hulkenberg’s – could have been taken as a big insult. But Maldonado’s attitude of not caring meant such ego concerns were not an issue.

Instead, all he worried about was the end result: getting himself into the best car possible. “I wanted a solid team who provided me with

a consistent car,” he explains. “Maybe not the quickest car in the world, but a solid and consistent car to do a great championship.

“I think I have the possibility to fight. I have always been a fighter. I’ve been always at the top of all the categories I have been in the past, and I have shown that I can win in F1.

“For sure it’s not easy if you don’t have a Red Bull car. This year, it seems to be that everything changes and we start from zero. I saw the projects from different teams, where they were interested, and I chose Lotus because they did a really good project. That’s it.”

Of course, the money concerns that prompted Lotus to take Maldonado in the first place are well known, and he is not shying away from the fact that things were difficult for Lotus last year. But equally, he reckons things are different heading into 2014.

“I know that they had a lot of problems with the budgets and everything, but I think all is sorted now,” he says.

“Every year the press is pushing very hard on the Lotus team, that they don’t have money, that they have a lot of problems with their suppliers, that they have thousands of problems. But they have still always been at the top. And imagine what they could do if they didn’t have this!

“It’s a good team; they showed that in the last couple of years. I think I’m in a very good position now to do well. For sure they lost some important people – everyone knows. And it’s not the best situation in

MALDONADO F1 STATS

1 WIN	1 POLE	47 POINTS	58 STARTS
0 FASTEST LAPS			



Day of ignominy:
Monaco GP 2012

THOMPSON/GETTY



Team-mate Grosjean (leading Vettel) is now a top contender

TEE/LAT

LOTUS OWNER GERARD LOPEZ ON MALDONADO



FERRARO/LAT

If speed was the only matter by which you measured drivers, Pastor would be very good. He has shown that in other categories. We've known Pastor for a long

time, because he was at DAMS [in Formula Renault 3.5], and I have known Pastor for a long time because I have known [DAMS boss] Jean-Paul Driot for a long time. We used to speak about Pastor a long time ago.

People take short cuts when it comes to Pastor. That's fine, Pastor can live with it and we can live with it, but I think Pastor is where Romain was. He has got speed, but he sometimes has to learn to put things together in a more consistent way. And that's what we're going to be working on. We've managed to do it with Romain.

I remember reading all sorts of stuff about Romain and him being worse, a very erratic driver without even a big sponsor. And now everyone sees Romain as what we saw, one of the fastest drivers in F1.

We think we can build Pastor because of the talent he has, into a top performing driver. And the race he won, it's not like it was snowing. He won that race outright so the kid can drive.

It's up to us now to make sure that he delivers that kind of performance every weekend. Romain has taught the team how to handle situations with drivers like that, and Pastor has come to a good place.



DUNBAR/LAT

“They’ve had problems with budget, but they are always at the top. Imagine what they’d do without this!” PASTOR MALDONADO

my opinion. But I believe in the team.

“They are good people still and we need to deliver all of our confidence with those guys – and I need to say that what I’ve seen up to now is impressive.”

One of the departures Maldonado talks about is Boullier. He concedes that losing the Frenchman to McLaren is not ideal, but equally the impact cannot yet be defined.

“We worked together in the past [at the DAMS team in Formula Renault 3.5 in 2005] and I think he did a good job at Lotus,” says Maldonado. “Everyone is free to make their decision, and if he left the team it’s for a reason and I wish him all the best. I don’t know if things will change in the team, but it seems to be very calm and fully motivated from my point of view at the moment.”

“The car looks amazing. The car looks competitive. But we need to not only build a car;

we need to be consistent in development. From what I’ve seen up to now, the team are fully ready to do their best.”

A TIME TO DELIVER

There are too many uncertainties in Formula 1 at present to give an accurate prediction for Lotus’s competitiveness in 2014. The picture is especially clouded because of the difficult start to testing for engine supplier Renault.

The all-new regulations have reset the playing field. You only need look at what happened to Red Bull at the Jerez test to realise that form from 2013 will not necessarily carry over into this year.

While it’s impossible for Maldonado to set a specific results target, he does have an established team-mate alongside him. Grosjean has grown and developed over the past 18 months, from a first-lap crasher to a man who could beat a world champion team-mate: Kimi Raikkonen.

It’s interesting that Maldonado sees in Grosjean a driver whose talent was not fully appreciated, but who has grown and become understood: “He’s a very quick guy. I remember two years ago, everyone didn’t believe in his talent and now he is one of the quickest drivers in the paddock.”

“He is a great driver, a good guy, and he has experience. So we are one of the best pairs in F1. We have a lot of ambition, we respect each other and I think we need to work together.”

“We don’t have the package to fight for the championship with the other teams, but you never know. Everything is possible.”

“In terms of budget we are one step behind, but

in terms of team or spirit or talent we are together with the other teams, so we need to put everything together to deliver our best for Lotus.”

This year will really be about Maldonado showing the world exactly who he really is. Is he simply an F1 journeyman who has bought his way into a top drive, and will never learn and move on from the needless incidents? Is he the real deal that we saw in Spain 2012, who can take on and beat the best when he has the required equipment? Or is he just something in between: a perfectly fast racing driver who happens to bring along some decent backing to a sport that’s in desperate need of that?

“I’ve been winning in the past and I would like to win again in F1,” he says. “If I won one race, then I can win two races or three races or four.”

It really is a year of discovery. Especially for the man who is bold enough to race with #13. ❧



Lopez (left) is sure Grosjean can deliver

“Romain is one of the three fastest drivers in F1”

Lotus co-owner Gerard Lopez has no doubt that Romain Grosjean can fill the gap left by Kimi Raikkonen’s departure. Is he right? EDD STRAW takes a look at how he has developed

The claim of Lotus team co-owner Gerard Lopez that Romain Grosjean is now one of the fastest drivers in Formula 1 is a bold one. In the past, such a statement might have had the caveat of ‘potentially’. But the Franco-Swiss racer’s outstanding second half of the 2013 season has indeed established him as among the top performers on the grid.

But among the three fastest? With Sebastian Vettel, Lewis Hamilton, Fernando Alonso and Nico Hulkenberg all on the 2014 grid, many will rail at that suggestion. But it’s not so outrageous a claim.

Lotus persevered with Grosjean, at a time when many had written him off, precisely because he was so quick and last season, while Vettel dominated, Grosjean was the second-highest points scorer in the final six races. For the first time, he converted his speed into consistent,

error-free race performances.

It’s the mental breakthrough Grosjean made last year that has convinced Lopez he has arrived. If he picks up where he left off in 2013, there is no doubt that he can emerge as one of the stars of the season.

“Romain could do a bad race now and it is not going to faze him,” says Lopez. “He’s in a good place and not questioning anything. He has reached a new level, like a video game; when you reach the next level you don’t have to go back again.

“It doesn’t take effort for him

to deliver now, which is a very important thing. He’s not on the edge to deliver those results. That makes him an unbelievable driver.

“We are convinced that Romain is one of the three fastest drivers in F1 today. He is comfortable with his role; as a human being he feels very good. He doesn’t need to look back anymore.”

The consequences for Lotus should Grosjean regress don’t bear thinking about, especially with the fast-but-often-erratic Pastor Maldonado in the other car. But




Grosjean grew at Lotus during 2013

Lopez's evaluation of Grosjean does stand up to scrutiny. After all, as last season progressed he was arguably the more convincing Lotus driver. Certainly his peaks were higher than those of team-mate Kimi Raikkonen, especially when it came to qualifying pace.

With qualifying arguably Alonso's weak point – or, to put it more accurately, his 'least-strong point', you can make a case that Grosjean is up there with the sheer pace of Vettel and Hamilton, who are often cited as the fastest single-lap drivers. And whether or not he is genuinely in the top three, it's more relevant to ask whether he has joined the upper echelon of drivers capable of emerging as a world championship threat. If he is, he will be a superb successor to Raikkonen as team leader.

That Grosjean is in such a promising position owes a lot to the faith the team has had in him. Ex-team principal Eric Boullier was a staunch supporter, although even he feared that it might never come together for the 2011 GP2 champion after last year's disastrous and crash-laden Monaco GP weekend. But from the British GP onwards,

MOST PODIUMS WITHOUT A WIN

 Nick Heidfeld	13
Stefan Johansson	12
Chris Amon	11
Jean Behra	9
= Eddie Cheever	9
= Martin Brundle	9
= Romain Grosjean	9

FERRARO/LAT

where he was running with Raikkonen before being hit with a late problem, Grosjean was one of the stars of the season. Did Lopez ever doubt Grosjean would reach his current level?

"No doubts about the talent," he says. "But I was always torn with him, he's always like my little brother. He had huge talent but just was not getting it right. Very often he was not getting it right because he was trying too much outside of the car. I was very hard with him

and made it clear that he was closer to his way out than his way in, and he did start delivering."

Whether the new Lotus-Renault E22, which was scheduled to test in public for the first time in Bahrain yesterday (Wednesday), is a good enough car to allow Grosjean to shine again remains to be seen. But while Lopez's claim sounds overstated, there is little doubt that, having stood by Grosjean, the team has a driver capable of doing justice to a top car. ❧

GROSJEAN'S STANDOUT DRIVES IN FORMULA 1



1 United States GP 2013 ▲

During the final six races of 2013, only once were the dominant Red Bulls split in a straight fight by another driver. Grosjean's outstanding second place at Austin, holding off a charging Mark Webber in the closing stages, was a drive of the highest quality.

2 Japanese GP 2013

Grosjean catapulted from fourth on the grid to lead. He not only kept Webber at bay in the first stint, but he stayed ahead for the second. He was powerless to prevent both Red Bulls from passing him later in the race, but his drive could not have been better.

3 Canadian GP 2012

After qualifying a solid if unspectacular seventh, Grosjean executed a one-stop strategy to perfection. He surged through to second late on, while other drivers, notably Sebastian Vettel and Fernando Alonso, had to abort their similar strategies and made late stops.

4 German GP 2013

Grosjean might well have won this race thanks to a superb first stint, during which he ran further and faster than his leading rivals. Ultimately, he slipped behind team-mate Kimi Raikkonen, but had he been able to gain track position over Vettel he'd have been quids in.

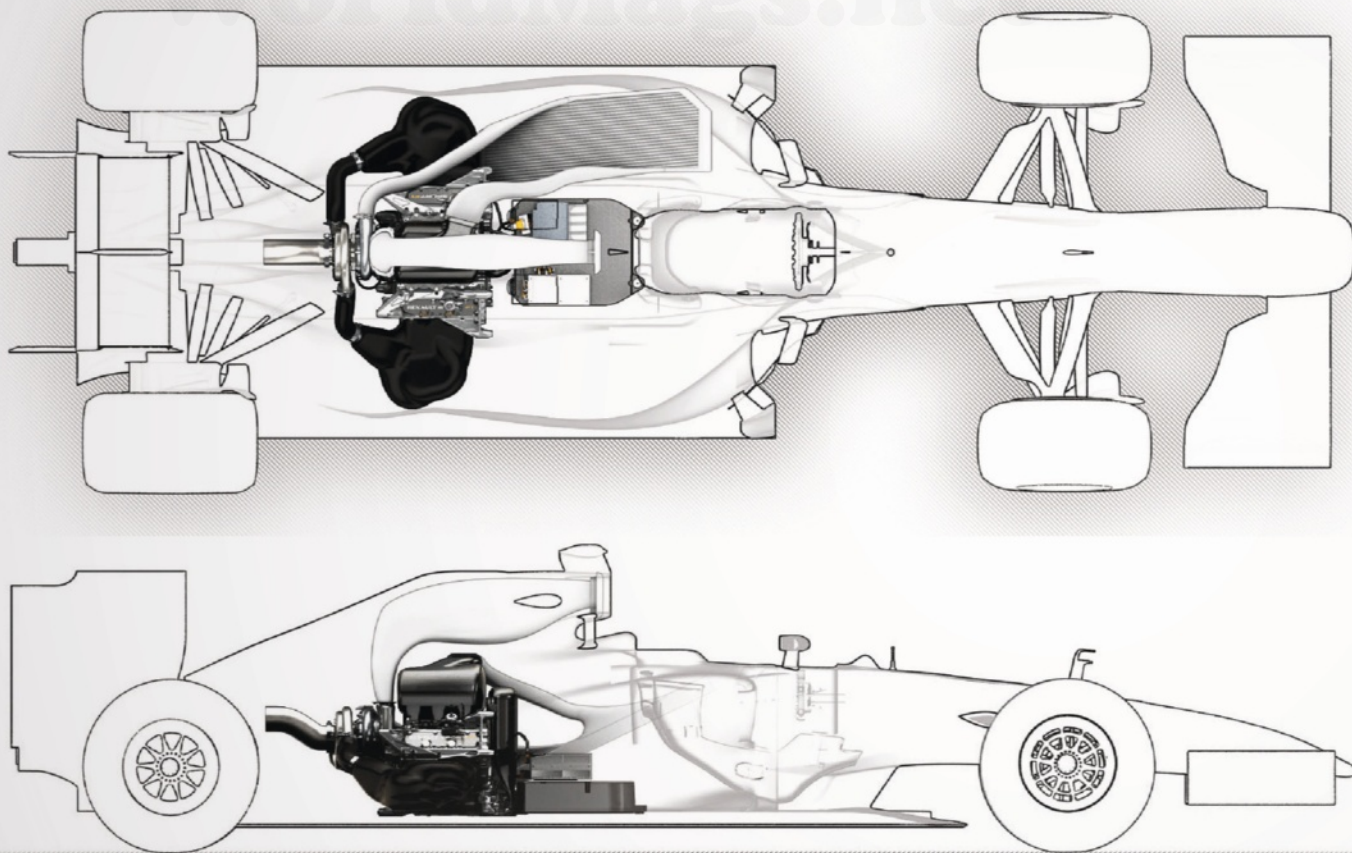


5 Bahrain GP 2012 ▲

In only his fourth start since returning after his brief and unsuccessful stint with Renault in 2009, Grosjean notched up his first podium. Briefly threatened to emerge as a contender for victory, before playing the team game and letting Raikkonen through.

6 Indian GP 2013

A strategic blunder, compounded by Grosjean not getting the best out of his tyres, left him 17th on the grid. But a superbly executed one-stop strategy, built on a marathon second stint, allowed Grosjean to climb to third place by the finish, behind only Vettel and Nico Rosberg.



Q&A

24

What's been going wrong for Renault?

Renault head of track operations Remi Taffin answers the key questions about the French manufacturer's power-unit troubles ahead of this week's key test in Bahrain. By **EDD STRAW**

Renault managed a mere 151 laps over four days in the first pre-season Formula 1 test at Jerez three weeks ago, around one sixth of what rival Mercedes achieved.

Since then, its engine has run in the back of the new Lotus, which completed two promotional event days at Jerez and hit the total permissible distance of 100km on the second of those. There was also a more troubled day of running for Toro Rosso at Misano. Heading into this week's crunch test in Bahrain, which began yesterday (Wednesday), Renault head of track operations Remi Taffin explains the situation.

What has happened since Jerez?
Mainly, we were facing hardware issues, and consequently also software issues.

The first one was the energy-store problem. We had good upgrades that we could test either on the dyno or on track, as we had two filming days, and everything worked as expected. So we are confident that the problem we had in the first test is now solved when we look into the hardware, and especially the energy store.

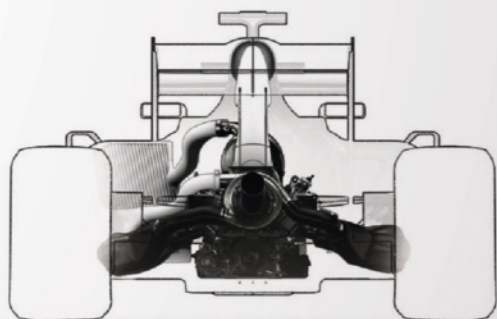
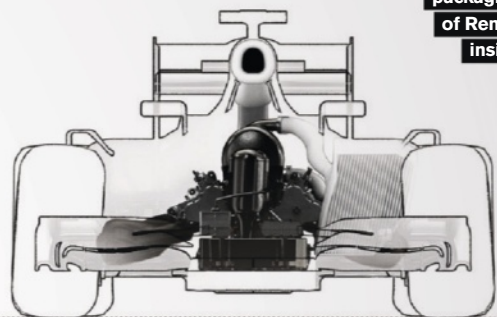
The next chapter was obviously software. In the first test, we had some poor driveability on track that was mainly traced to either boost control or calibration issues, which we have taken on for the last two weeks on the dyno, and we have improved our level. We are now still a bit behind our initial schedule but we have done what we would normally have done in the first test. So we should be OK in Bahrain.

The last point was the integration issues we could have faced with our

TAFFIN: "If the work we have done for the last two weeks is OK, we should see the difference in Bahrain and we should have cars out on track and running"

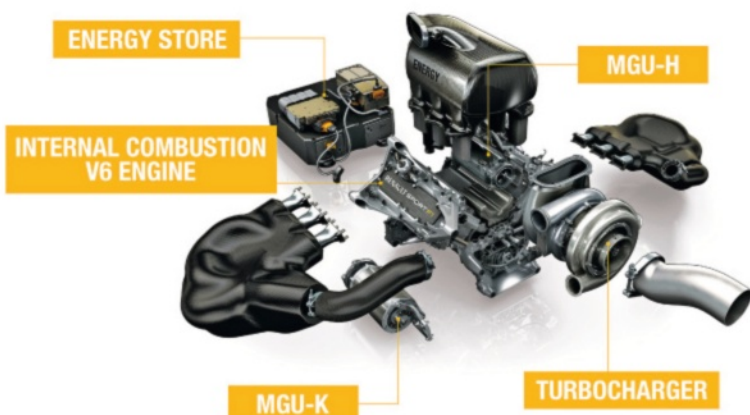


These graphics indicate the packaging requirements of Renault's power unit inside a 2014 F1 car



Taffin faced a media grilling at Jerez test

THOMPSON/GETTY



customers. We've worked on the dyno with them and we will get into the first day at Bahrain without all the issues that we had in the first test, which we now believe are closed.

We're ready to go into what we would have liked to do in the first test, which is properly testing the power unit and trying to give our customers the means to 'discover' their cars.

How far behind the opposition is Renault at the moment?

We are still behind schedule, but it's not a question of months. I think we're at least where we would have thought we'd be for the first test, so maybe we are now three weeks behind, and we are on a plan to recover. We're now going to go into Bahrain with what we would like to have finished the first test with.

Lotus had one successful filming day, but Toro Rosso apparently hit trouble on its promotional day at Misano...

We hoped not to have any problems, but we had a few further ones. But, in fairness, it wasn't a surprise. We knew what we had in the car and we thought we would get away with it, based on what we did in the first filming day [with Lotus], but obviously not.

The reasons are well known on our side and we have since worked on it, but there's nothing we can do on a filming day. When you start the day off with a configuration, you have to run all through the day so it's difficult to react.

Toro Rosso, which runs Red Bull gearbox internals, and Caterham, which uses a Red Bull customer box, have hit trouble. Is there a

problem with integrating the engine with Red Bull gearbox technology?

Not really. If we go into a bit of the detail on the differences between the Lotus and the Toro Rosso day, it's not a matter of a big issue with any hardware. It's on how the software is working and how we make all of the components that make up the power unit work together.

There's one point we've discussed for months now, which is how we use these components that make up the power unit from one track to another, one driver to another, even one tyre to another; all the maps that we have to build to make sure the power unit works fine for a defined track, driver and so on.

There's a lot of simulation work to do. From Jerez to Misano, it's a different track and that causes a problem, not because we can't sort it out but because there's a lot to do to ensure everything works fine in terms of calibration.

Are there software issues with getting the engine and gearbox talking to each other?

It's a bit complex and I don't want to go into detail, but it's not like one is not talking to the other; it's the language they use. We have to make this work. That's what we are doing on the dynos and that's what we hope we have achieved for the first day in Bahrain.

If the work we've done for the last two weeks is OK, which we think it is, we should see in Bahrain the differences and we should have cars out on track.

One of the other things that has been complained about is excessive drivetrain oscillation...

The oscillation problem is more a

consequence of how we control the power unit. If you trigger a bit of a hesitation and you can't control it because all components are not working accordingly with each other, it makes the problem even worse. The fact that our baseline was not exactly where we wanted it to be, everything we did and every single problem we picked up could drift into a big problem.

If we have a good baseline, these problems will disappear. Driveability could also be one of them with boost control. If at the beginning you are not able to control the primary parameters, then there is no way you can control the second and the third ones.

Given Renault's size and experience, how did this situation occur?

The situation is definitely worse from the outside than from the inside. It's obviously more difficult for you to understand what is happening inside and for us it's difficult to describe everything without giving away some information that we don't want to give away. It's a difficult moment we will get through.

We need to not forget that this new power unit is anything but similar to what we have been using for years. We always said that it was so complex that if we have one or two problems that we have got to fix, it is going to prevent you doing calibration or software development or so on.



REVEALED

Secrets of brake-by-wire

This season, rear braking can be controlled electronically for the first time because of the harvesting demands of the energy recovery systems. **GARY ANDERSON** explains how and why

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Formula 1 cars have a two-pedal set-up. The throttle has about 50mm of travel, while the brake has around 10mm.

In the old days, there was a throttle cable connecting the pedal to the engine, but that was displaced by the fly-by-wire system.

This year, fly-by-wire rear brakes have also been introduced as part of the major regulation changes related to the new 1.6-litre turbocharged V6 'green' engines.

To understand the brake-by-wire technology, first we need to look at the well-established fly-by-wire throttle technology:



HOW IT WORKS #1: FLY-BY-WIRE THROTTLE

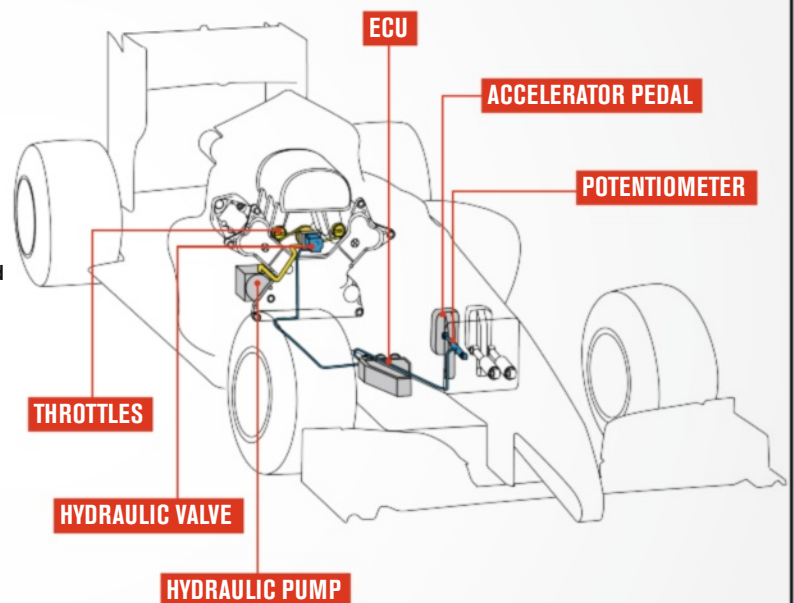
The throttle pedal is now a 'torque-control pedal', and is mapped to deliver a torque level at the rear wheels. In 2014, this torque can be produced by a combination of the new 1.6-litre V6 turbocharged engine and the energy recovery systems, so is more complicated than before.

Connected to the torque control pedal is a position-sensitive potentiometer. This can be a linear or a rotary potentiometer and sends out a different level of electrical signal to the control unit as its position alters. This signal will be processed and if, for example, fuel needs to be saved, the torque map (which is embedded in the electronic control unit) may only request electrical torque from the battery pack until it reaches the maximum available electrical torque. After this, a command will be

sent to a hydraulic control valve. This will open, sending high-pressure hydraulic fluid to an actuator connected to the engine throttle system. This actuator will open the throttle, and its position will be monitored by another potentiometer.

These electrical signals are sent back to the ECU and, when the position matches the driver's request, the hydraulic valve will hold the throttle in that position. These systems work very quickly, with a reaction time to a request in the region of 0.001 seconds.

For safety reasons, there will be a position sensor at each end of the torque-control pedal travel should anything go wrong with the pedal potentiometer. Each time the torque-control pedal is at either end of its travel, a check will be made to ensure that the systems are all still fully in agreement.



ILLUSTRATIONS: CRAIG SCARBOROUGH

THOMPSON/GETTY

HONE/GETTY

HOW IT WORKS #2: BRAKING BY WIRE

In contrast to the throttle set-up, the fly-by-wire rear-braking system is pressure sensitive.

A standard F1 braking system consists of four brake calipers, one on each corner of the car, and two master cylinders, one connected to the front calipers and the other to the rear. The master cylinders are connected to the calipers by Aeroquip piping. The smaller the pipe size, the slower the flow, but the stiffer the system when the driver applies the brake-pedal pressure. This pressure can be around 180kg at the brake pedal.

The brake pedal is connected to the master cylinders by the balance bar. This is a beam, the ends of which are connected to the master-cylinder pushrods, which the brake pedal pushes onto the middle of. The driver can adjust the brake balance by moving where the brake pedal pushes on this balance bar. By moving it closer to the front master cylinder he will get more front-brake pressure and vice versa.

This is done with a lever mounted in the cockpit and connected to the balance bar with a cable.

The braking-by-wire system has come about because the potential harvesting (charging up the battery pack by recovering energy otherwise wasted under braking) has doubled. So there is a lot more reverse torque in the rear axle from this harvesting than in 2013. It would play havoc with the braking balance and the stability of the car if the driver was to make any adjustments on the level of harvesting.

To create this system, the pipe that goes between the rear master cylinder and the 'T' piece that separates the fluid flow to each rear caliper is removed. A pressure sensor is fitted to the master cylinder, measuring the pressure the driver is applying to the brake pedal and sending it to the ECU. This can range from 0bar to 100bar.

The ECU will also know what level of energy harvest the driver is

“Force on the pedal never creates stable pressure in the master cylinders; the hydraulic valve will always be opening and shutting”

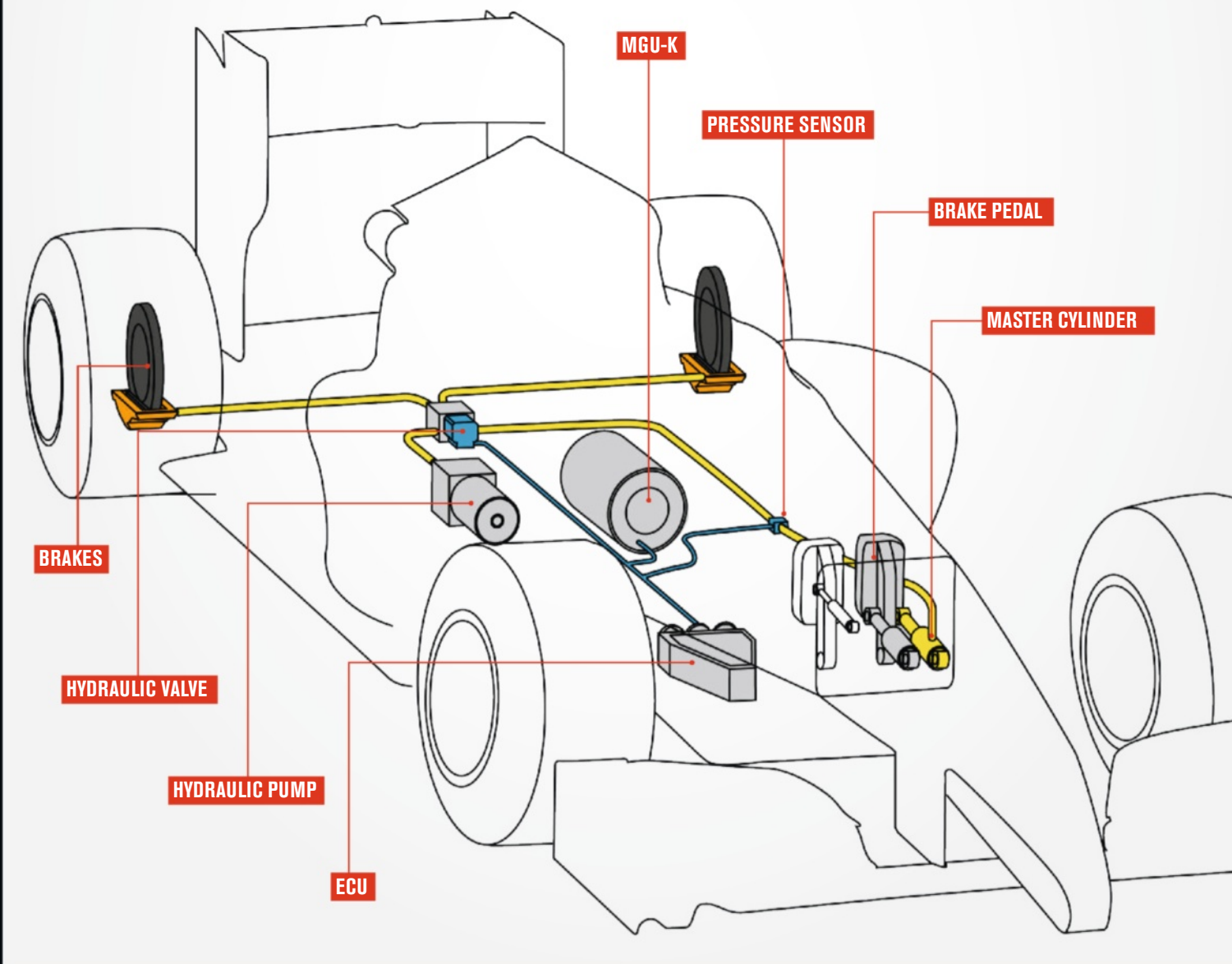
requesting under braking to charge the battery. This is signalled via a dial on the steering wheel with approximately 10 positions on it.

These two signals will be combined, and the rear-brake pressure needed to give the front-to-rear brake balance requested by the driver will be defined. This pressure will be achieved by opening a hydraulic control valve, letting through high-pressure hydraulic fluid. This valve will be mounted near the rear of the car on the pipework that would normally

feed the brake fluid to the rear calipers. On this pipework there will also be a pressure sensor to monitor the newly-requested rear-brake pressure. This hydraulic valve would then shuttle back and forth to maintain the requested rear-brakeline pressure, giving the correct overall front-to-rear brake balance.

The driver's force on the brake pedal will never create a stable pressure in the master cylinders, so this hydraulic valve will always be opening and shutting to maintain the varying pressure and give a stable front-to-rear brake balance.

The driver still has the opportunity to change the front-to-rear brake balance as required. All the fly-by-wire system is doing is taking the driver's rear-brake-pressure request and reducing it by the level of negative torque the battery harvesting is requesting, to end up with the brake balance he requires for stable braking and corner entry.





Villeneuve wants long-term rallycross future

The 1997 F1 world champion was a surprise addition to the World Rallycross field last week. He tells **GLENN FREEMAN** that this is a serious career move



Testing Peugeot RX car in France recently

Jacques Villeneuve plans to use his rookie season in rallycross as a platform for a long-term career in that area of the sport.

The 1997 Formula 1 world champion's deal to race in the new World Rallycross Championship for Scottish squad Albatec Racing was announced last week, and the 42-year-old, who has not completed a full campaign in any category since the 2005 F1 season, wants to race there "for the next 10 to 15 years".

When asked if his 2014 campaign was anything more than a toe in the water, Villeneuve told AUTOSPORT: "The plan is to do this long term, to have a year of learning and then to start fighting for the championship after that. Obviously I have a lot to learn from all these experienced guys who are amazing at what they do.

"Guys like Petter Solberg have already competed at world level in rallying. Hopefully I can mix it with my own experience and I can end up doing this better than them!

Posing with team boss Andy Scott



“Obviously that’s the goal, and it would be amazing. But right now, the championship is in its infancy and the first year will be a big learning year for me.”

NO SURPRISE

Villeneuve, who has raced in a multitude of categories since leaving F1 when he was replaced at BMW Sauber by Robert Kubica during the 2006 season, added that his rallycross deal should not be viewed as unexpected, as the style of racing and FIA world championship status for 2014 appeals to him.

“It shouldn’t be a surprise,” he said. “I’ve always loved racing that is at the sport’s roots, the rough and tumble, the basics of racing. Here we have 600 horsepower, it’s fun, exciting, challenging, and I’ve always loved a challenge.”

“I didn’t know much about rallycross but I’ve always loved watching it and always thought it was fast and crazy, and that really gets me going. It lacked the international aspect to it, but now it has become a world championship, and it’s not really full of politics. Hopefully it will stay like this.”

Villeneuve admitted that before making contact with Albatec team boss (and now his team-mate) Andy Scott, he “had no idea how to get into” rallycross. But Scott’s determination to do a deal with the Canadian became the determining factor in convincing him to sign a deal to race a Peugeot 208 this year.

“There were discussions everywhere, but nothing as serious

as this,” said Villeneuve. “When these discussions started, Andy really pushed hard. When I saw that level of enthusiasm that made a big difference.”

ICE RACING EXPERIENCE

While Villeneuve has never competed on gravel, he believes that his past outings in the Andros Trophy ice racing series will have given him some transferable skills and an understanding of how to handle four-wheel drive on a loose surface. So far, his only rallycross test has taken place at Dreux in France, a predominantly asphalt circuit.

“Racing on the ice is very useful,” he said. “I learned a lot about how to go backwards and still get out of trouble. That’s going to be useful for rallycross because once you’re in a race situation there are going to be times when the track is not wide enough for you and the guys you are racing with. So you need to find ways to throw the car around and use the four-wheel drive to make sure you don’t crash. You need to get yourself out of trouble and the ice experience will help that a lot.”

Villeneuve does not expect to be able to compete in every World Rallycross round this year, as he had already committed to television work in Formula 1.

“I’ve got some juggling to do this year,” he said. “Sadly I won’t be able to do the full championship because I already have other commitments with Formula 1. I will miss some F1 races but I can’t miss them all.”

GIVING UP ON NASCAR



JV: not enough of a good ol’ boy

Jacques Villeneuve has been trying to make it in NASCAR since 2007, when he made a handful of starts in the third-tier Truck series and two at Cup level late in the season.

But after a Daytona 500 non-qualification and a smattering of outings at various levels on the NASCAR ladder, mainly as a road-course ‘ringer’, the 1995 Indycar champion and Indianapolis 500 winner has called time on his stock car ambitions.

“It’s frustrating because I’ve always had the feeling that I could have done a lot of good there,” he said. “The few times I got a shot at it, I was doing very well even without the proper preparation.

But that’s the way it is.

“Now, I’ve moved back to Europe with four kids and I can’t imagine doing 36 races in the States. It would have to be a full-on deal, not something in between that you hope will get better. I’ve tried that for a few years.”

While there is a clear feeling that he wasn’t given a fair crack at NASCAR, it comes with an admission that living in Canada for the past few years did not help his situation.

“I probably should have lived in Charlotte instead of Montreal,” he added. “That would have helped, but when I moved back to North America [after F1] I didn’t really know about that.”

VILLENEUVE IN NASCAR

3RD BEST FINISH
IN NATIONWIDE

4
CUP
STARTS

9 SECOND-
TIER ROAD
COURSE
OUTINGS

1 POLE
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Webber's new world

After a dozen years in F1, Mark Webber is back in sportscar racing and has set his sights on Le Mans success with Porsche. **GARY WATKINS** flew to Bahrain to catch up with him

What would Mark Webber be doing now if he wasn't about to embark on a full season in the World Endurance Championship with that returning giant of the sportscar scene Porsche? Not Formula 1 and certainly not the DTM or Aussie V8 Supercars. Apart from saying what he wouldn't be doing, the

nine-time grand prix winner isn't entirely sure.

The opportunity to race one of the Stuttgart marque's new LMP1 919 hybrids was already on the table when he made the decision to quit F1.

It would be wrong to suggest that the outgoing Red Bull Racing F1 driver has set out to conquer a branch of the sport in which he tasted more than a modicum of success with Mercedes in the late 1990s as a young up-and-comer straight out of Formula 3. It's more that he was looking for a new challenge and the most successful sportscar marque of them all offered just that.

"It is very unlikely that I would have looked elsewhere to be honest," says Webber. "But I didn't have to think about whether there was another choice because this started quite early."

The contact with Porsche pre-dated Webber's decision to call time on his F1 career and came through research and development boss Wolfgang Hatz, the board member responsible for motorsport. They met at the re-opening of the Austrian Spielberg circuit – aka the Red Bull Ring, hence Webber's presence – and Hatz sounded him out for Porsche's long-awaited return to the top flight of sportscar racing.

The offer from Hatz included the chance for Webber to join Porsche for its preparatory year in 2013 as it geared up to take on Audi and Toyota in the WEC. Don't forget that the car we now know as the 919 has been testing – and testing regularly – since last June.

"There was a chance to stop [F1] and start with Porsche in 2013 doing the prep," explains the



Aussie. "Wolfgang was quite keen; he was asking about '13. I said I wanted to do F1 a bit longer because I thought it was a little too early to stop, and he said, 'No worries'."

Webber instead opted for what would be his last season of F1, though he didn't make it public that it was his swansong at the time, and negotiated a one-year extension to his Red Bull contract. The deal to join Porsche was done on a

handshake as early as December 2012.

Yet that desire for a new challenge could have kept him in F1. His negotiations with Ferrari earlier in 2012 have been well documented and would have resulted in a two-year deal to race alongside friend Fernando Alonso in 2013-14.

"We couldn't agree and my gut wasn't giving me the right vibes," is what he has to say about the final negotiations with the Italian team.

It was only natural, reckons Webber, that he should become stale after 12 seasons – seven of them with Red Bull – on the F1 trail.

"I had been doing it a long time and my motivation was not what it should have been; that is obvious when you get to your late-30s and you are doing 19 races and three tests a season," he explains.

Webber dwells on the travel aspect of F1 wearing him down: "I have been 250 days [away] a year for the past 10 years. I have a bit more free time now, but I will find easy ways to fill that whether it is seeing my family or other things that I want to do a bit more of.

"There are lots of small things that build up that make you want to have a change – it is like any job. Weight control is a massive thing. For 11 months of the year you are making sure there is nothing on you," he says, sucking in his cheeks. "You are the only one who can do that."

He also points out that it was easy to draw a line under his grand prix career at a time when new regulations were coming into force. But the question he doesn't fully answer is whether his uneasy relationship with fellow Red Bull driver Sebastian Vettel played a part in sapping his motivation, given that he would have been happy to continue in F1 with another frontrunning team. He suggests that having a difficult time with your team-mate "comes with the territory in F1".

Going cold turkey and stopping racing entirely wasn't an option for Webber, though he admits that had he won the F1 title in 2010 he would have

"My F1 motivation was not what it should have been"



Webber strides towards his new home for 2014

Webber gets up to speed in the Porsche 919 LMP1



taken a complete break from the sport.

"I would have definitely had a break after F1 and then picked up another category," he reveals. "I wasn't sure I was going to continue racing in something else [this time], but it became apparent to me after having a bit of time off that I had to do something. You need to use all the experience that you have and go and do something with that."

That's partly what attracted him to Porsche and its start-up programme. He says he is looking forward to having "a nice influence on achieving something with Porsche".

The chance to join the German marque for its first bid for outright Le Mans 24 Hours honours since 1998 – coincidentally the year he went to La Sarthe the first time with Merc – clearly excites Webber. Not least because he's a self-confessed Porsche nut.

"I've had Porsches all my life," he explains, before correcting himself. "Not all my life, but when I could afford one, I did buy a Porsche." And continued to buy them it seems. Garage space at home has become an issue, he reckons.

"For me to make the change with such a prestigious brand as Porsche is something I am excited about, not only on the racing side but also because they have sensational roadcar products."

The move into the WEC with Porsche means that Webber will return to Le Mans – the blue-riband, double-points round of the series – for the first time since he was a key player in the story of the marque's disastrous 1999 campaign. The Australian's Mercedes-Benz CLR flipped twice – once in qualifying on Thursday and again in the race-morning warm-up – and he is reckoned to have indicated privately that he would never go back.

Asked if he truly said that, he replies: "I probably did, didn't I?" But he reckons the comment was probably made about frustration over his relationship with Mercedes unravelling.

Webber is also a former director of the Grand ▶

THE INFLUENCE OF SCHNEIDER

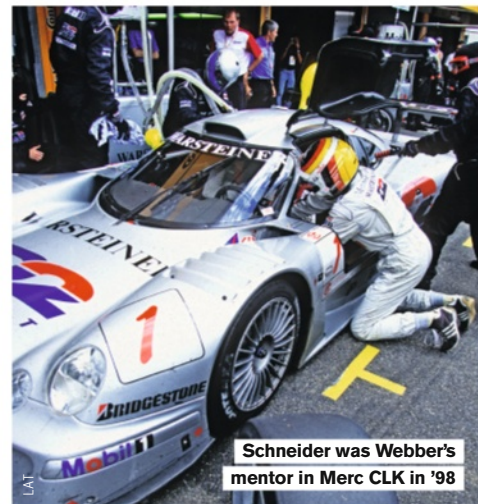
Webber cites his 1998 FIA GT Championship team-mate Bernd Schneider as a major influence on his career.

"He was like a big brother to me," Webber says. "He taught me about preparation, but mostly about the technical stuff. I was embarrassed to look at telemetry back then; I thought it was a weakness.

"Bernd probably went to F1 too soon, but fuck was he quick. It was bizarre, actually. I wanted to do well in F1 because he should have had that career as well. Great guy."

The Mercedes experience was also invaluable to Webber in his development as a wet-behind-the-ears F3 driver and proved important again when he graduated to F1 in 2002.

"I was very inexperienced, but I got to work with great partners like Bridgestone," he says. "I got to see a lot of circuits. When I got to F1 I was relaxed and composed about working with a big team."



Schneider was Webber's mentor in Merc CLK in '98

WEBBER'S MERCEDES CAREER IN NUMBERS

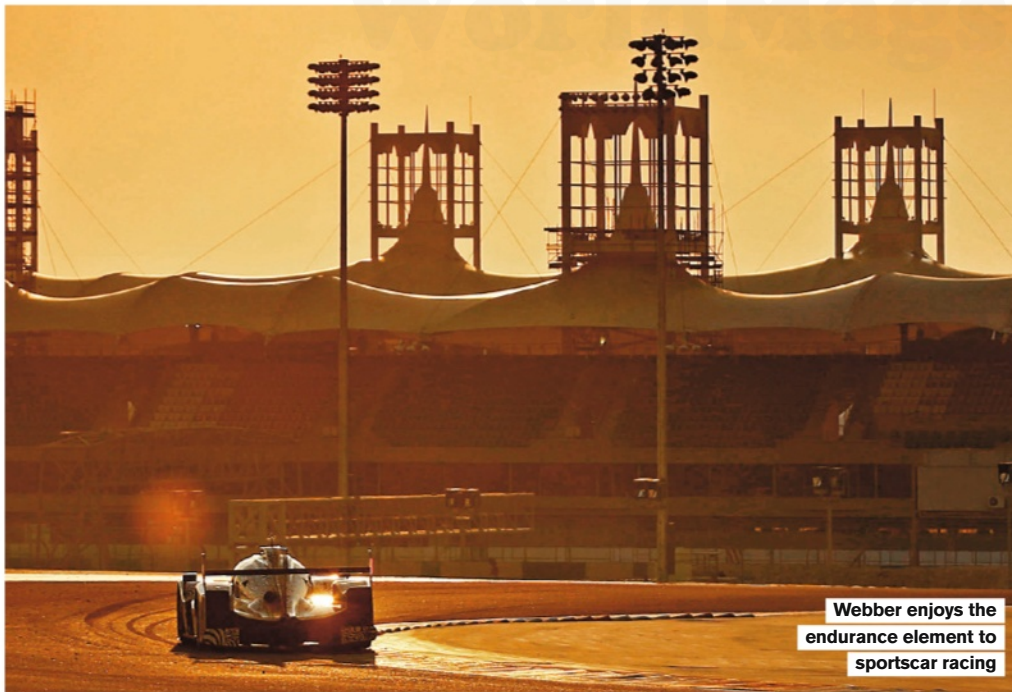
5 VICTORIES

8 NUMBER OF POINTS HE FELL SHORT OF THE TITLE IN FIA GTS IN '98

11 RACES CONTESTED

0 COMPLETED RACING LAPS AT LE MANS

3 DIFFERENT CARS DRIVEN
CLK-GTR, CLK-LM, CLR



Webber enjoys the endurance element to sportscar racing

would be good," says Webber, whose full-season team-mates will be confirmed as Timo Bernhard and Brendon Hartley early next month. "It would be nice to be as competitive as we can. You might get a third place but you are two laps down. If you get a fourth and you are competing, that is more important. Patience is going to be the key."

The ambitions will be upgraded for 2015, according to both Webber and Porsche.

"Year two we need to be strong," he says. "It'll be a bit disappointing if we're not challenging week in, week out. That has to be the goal for '15 and we absolutely have the ability to do that."

Webber reckons he "knew his future was at Porsche" after his first day of testing in the 919 when he completed two grands prix distances. How long that future will be isn't entirely clear, though he says speculation that he has a five-year deal with the brand "isn't far off".

That gives him plenty of time to add some WEC successes to his CV. Le Mans victory is high up on his list of targets, and he appears pretty keen on claiming what remains sportscar racing's biggest prize.

"Would I say I'm not stopping until I win it?" he says. "Not far off." ❧

"I was quite surprised at how enjoyable the car was to drive"

► Pirelli Drivers' Association, which leads into questions about safety at the 8.47-mile Circuit de la Sarthe. He suggests the track has been constantly improved since his years there in 1998 and '99, starting with an easing of the hump at the end of the Mulsanne Straight on which his Merc made the second of its take-off attempts. The continuous safety drive has been stepped up in the wake of Aston Martin driver Allan Simonsen's death in last year's 24 Hours.

"We know motor racing is dangerous and at any level something can happen," he says. "I can't lie under a bed. I want to still race and do these things, so I will make a judgement that I think is right at the time.

"Do we want to race around this room on push bikes?" continues Webber as he is interviewed in a hospitality suite during testing in Bahrain last week. "No, because it is not exciting, but as drivers, when we see something that is super-dangerous, we will go to the security guys and say, 'Can you change that a little bit? You have got to get the balance right.'"

Webber insists he'll have no problems tearing down the Mulsanne and over the hump, nor taking the series of kinks from Mulsanne Corner to Indianapolis – scene of his first flip in '99 – flat out in his Porsche. The reason? The accidents weren't his fault.

"I will, for sure, have emotions going there," he says of his return to Le Mans in June. "I will need to drive past those areas again. That's not going to be a problem because they weren't my mistakes. I will be fine."

Despite talk of waning motivation, Webber sees no problem in being asked to jump in his 919 hybrid in the night – possibly in the rain – and told he has to complete a quadruple stint.

"That is how it is," he offers. "In a bizarre sort of way I've always enjoyed that kind of thing. I have done my 24-hour endurance mountain bike races.

The less clinical nature here compared with F1 is something I enjoy. It is more rugged."

Webber isn't sure how relevant his experience from his short sportscar career with Mercedes in 1998 and '99 will be when he joins the WEC championship trail at Silverstone on April 20.

"I get a lot of similarities in terms of feeling and obviously the environment is very similar," he explains. "But you have more grip because aerodynamics have moved on from those years."

Webber says he was pleasantly surprised by the 919 P1 coupe on his first acquaintance with the car at the Aragon circuit in Spain last December.

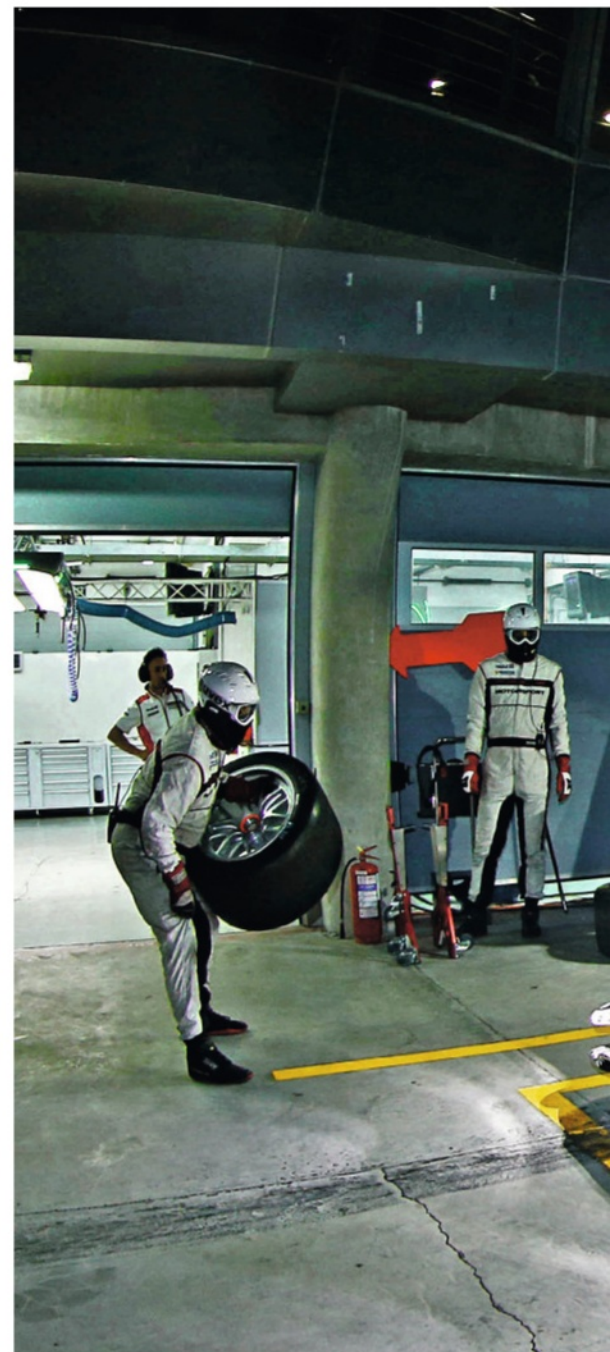
"I was happy to set the bar low and be content with whatever came my way," he explains. "I thought the car was going to be quite lazy. I was quite surprised at how responsive the car was and how enjoyable it was to drive."

Webber was fortunate that his first test in the 919 coincided with Porsche overcoming a major vibration problem that had dogged its two-litre V6 turbo engine since its shakedown at the Weissach test track in June. Even so, he – like his employer – has conservative aspirations for year one of the Porsche comeback in an era of technologically advanced machinery boasting multiple energy-recovery systems.

"If we can get some bubbles here and there, it



Getting to know team players Brendon Hartley (l) and Neel Jani



WILL WEBBER DO A BETTER JOB THAN VILLENEUVE?

When a Formula 1 driver makes the switch to sportscars, one question always raises its head: will they do a Jacques Villeneuve? It's a legitimate query as the 1997 World Champion's two years with Peugeot weren't a success.

Villeneuve's pace – or rather lack of it – in the wet at night in the 2008 Le Mans 24 Hours has been implicated in Peugeot's surprise defeat at the hands of Audi that year. Serge Saulnier, who as Peugeot Sport team manager hired the French-Canadian, reckons that Villeneuve was never truly at home in sportscar racing.

"This is not a problem of the driver coming from F1 or anywhere else," argues Saulnier. "It is a question of mentality. You have some F1 drivers who keep the F1 mentality, because for them they think F1 is not over or they have something to prove in terms of pace. Or you have some drivers who know that F1 is behind them and concentrate on their sportscar career."

Villeneuve, we know, hadn't entirely given up on F1 by 2007. With Webber, on the other hand, there can be no doubt that he has drawn a very deliberate line under his grand prix career.

Saulnier reckons there were further reasons for Villeneuve failing to make the grade in sportscars. One was his concerns about the dangers of the ultra-fast Circuit de la Sarthe: "I would say that Jacques was very concerned about safety, surprisingly, because in F1 he was someone who was very 'risky'."

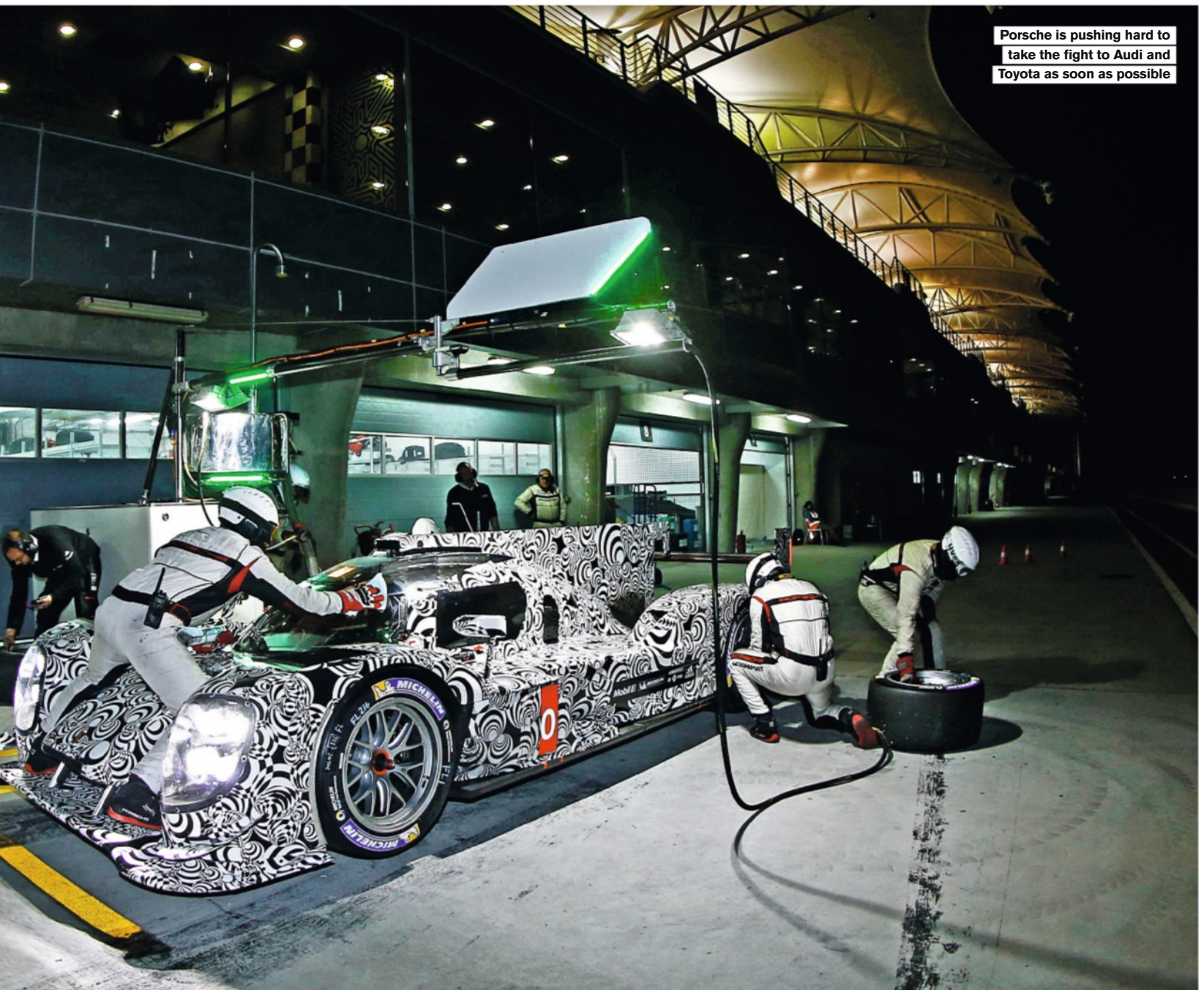
The second was the eyesight of a driver who raced in glasses or contact lenses throughout his career. "I have always supposed that Jacques had problems with his vision at night," adds Saulnier.

This explains why Peugeot had its drivers' eyes tested in the same way as French fighter pilots for the following year. By that time, Villeneuve was out of the equation, so Saulnier never got to find out if his suspicions had been correct.



JV was second at Le Mans in '08

Porsche is pushing hard to take the fight to Audi and Toyota as soon as possible



F1's cutting-edge trends

While ugly noses and troubles with the new 1.6-litre turbocharged V6 power units claimed all the headlines in the first tests, there was plenty of interest, as **CRAIG SCARBOROUGH** reveals



ERS LIGHTS

When the Mercedes W05 was unveiled to photographers, the rollhoop shone with the light from an array of green LEDs. Rather than this being a reflection of the fuel sponsor's colour scheme, it was in fact the first view we've had of a new safety-light system for 2014's more powerful energy-recovery system (ERS).

Up until last year, any car fitted with KERS had to have a safety light on top of the chassis to warn marshals and mechanics of the car's electrical safety status. But its position facing upwards in front of the cockpit was hard to see from a distance, so for 2014 safety lights have been added to the rollhoop and the rear tail lamp. These lights are controlled by the car's ECU. If the ERS is in a safe condition, then lights are green, if not they're red. These lights will come on if the car is in the pitlane or if it stops.

INTERCOOLING

Part of the challenge for designers this year is the cooling demand from the power unit.

One of the factors in the increased cooling is the need to cool the air after being compressed by the turbocharger, before it goes into the engine. Cooler and therefore denser charge air has more oxygen, creating more power.

Typically, F1 teams have used intercoolers to cool charge air, with the radiator-like structure passing the charge air through tiny tubes and the external airflow taking heat out of the intercooler.

This is thermally efficient and light. But the current breed of intercoolers are huge, three to four times thicker than a conventional water radiator, and end up filling an entire sidepod. This is bad for aerodynamics as the drag of the cooler area, as well as the

extra sidepod volume enclosing the intercooler, are a major penalty.

Another means of intercooling is to use water as an intermediary cooling step. Water-to-air intercoolers enclose the charge air-cooler core with a water jacket. The water conducts heat away from the tubes and then this is separately cooled with the water radiator in the sidepod.

This method is far more thermally efficient and requires a smaller intercooler area and a small water radiator. This benefit is compounded as the water-air intercooler does not need to sit in the airflow and can be tucked away for aero benefit. Secondly, the smaller water radiator saves on drag and sidepod space.

Even the pipework can be smaller so turbo lag can be slightly reduced as the path from the turbo to inlet tract is shortened.

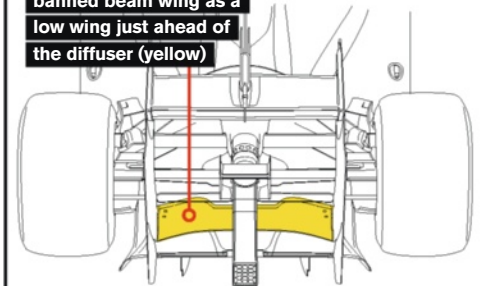
This solution has been used in F1 in the past. Toleman's Hart engine of the early 1980s initially used water-to-air cooling for the single turbo. So although this solution is proven to work and has major aero benefits why isn't it adopted more widely? Because the complexity of the plumbing, the water pump and the water jacket all add weight.

So few teams have been able to adopt this method, as the cars are on the edge of the weight limit already.

It's understood Ferrari, Marussia and Sauber are using water-to-air as well as the Mercedes factory car. Those top two teams at least can afford the weight penalty of the heavier set-up and can recoup the benefits in aero performance.

These sidepod-packaging advantages could allow better airflow to the rear of the car for production of downforce.

Williams has replicated banned beam wing as a low wing just ahead of the diffuser (yellow)



WILLIAMS BEAM WING

The loss of the rear beam wing is a problem for the aerodynamicists, as the wing connected the upflow from the diffuser to the rear wing. With this beam wing gone, the compound effect of the connected airflow costs overall downforce.

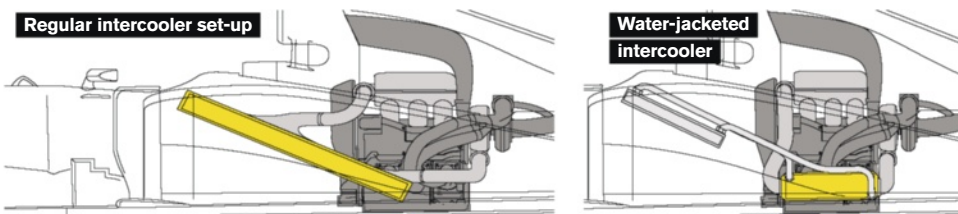
McLaren has found an aggressive solution but Williams has a simpler, more elegant one. It has fitted a beam-wing-style wing low down above the diffuser; this sits below the 150mm maximum height for bodywork around the diffuser and is totally legal.

The wing profile slims slightly as it passes under the gearbox and, as with the 2013 beam wings, serves as the means for passing the rear wing's loads into the chassis. So Williams does not have a rear-wing-support pillar.

Other teams are likely to have similar solutions in place for the first race in Melbourne. There are a number of areas around the rear of the car that allow loophole devices such as this.

Regular intercooler set-up

Water-jacketed intercooler



McLAREN SUSPENSION BLOCKERS

At its launch, McLaren's rear suspension drew attention thanks to the unusually angled rear legs of the wishbone and toe-control arm.

Having been delayed by hydraulic issues on the first days of the test, the MP4-29 took to the track and immediately surprised with the fairings added to these suspension members.

Both these trailing suspension elements sported large fairings, which create a curved vertical surface when viewed from behind.

Closer inspection shows the fairing to appear to be almost cricket-bat-shaped blockers, with a rounded front profile enclosing the suspension member, and a lip and flat rear surface forming a top-hat-like profile.

Clearly not a mechanical or structural solution, these fairings are purely for aerodynamic purposes and replace the effect of the beam wing, which was

removed from the regulations this year.

McLaren has been clever to integrate the blockers into the entire rear-end philosophy of the car, because the gearbox and rear crash structure had to be adapted to fit the trailing legs of the suspension.

Having these angled legs means McLaren can still meet the regulation that suspension elements must be straight in between mounting points, while then offsetting the fairing profile to align them with the rear edge of the diffuser.

It's clearly the diffuser that is being affected by this solution, as the cricket bats slim down to a conventional profile near the rear wheel.

When airflow passes down the sidepods and into the Coke-bottle tail of the car, it hits the large cross-sectional profile of the fairings. Air spills under and over the profiles and this

creates a large low-pressure zone directly behind the car.

Air exiting the diffuser is encouraged into this zone, which in turns pulls more flow through the underfloor creating more underbody downforce. Of course this comes at a cost: the solution creates huge amounts of drag, which is a big penalty in a fuel-efficiency formula.

AUTOSPORT technical consultant Gary Anderson believes that at top speed, as the rideheight drops, the fairings could create larger gaps and relieve some of their effect for a reduction in drag at higher speed.

Although clearly aerodynamic, these fairings appear to be legal in most interpretations of the regulations.

They are counted as part of the unsprung part of the chassis (ie suspension) and hence they are allowed to move. They are symmetrical in cross-sections and are within the

maximum length and cross-sectional ratio for suspension members.

The key precedent is that teams have exploited aerodynamic benefits from suspension for many years. If you ran an F1 car in CFD with and without suspension members, there'd be less downforce with the wishbones removed!

But this is an extreme interpretation of the rules and, although the FIA appears happy with its design, others feel it's gone beyond what is acceptable shaping of the suspension members and that it may contravene older technical directives.

The only area that both Gary and I think may be controversial is that, while the suspension members are straight between the inner and outer mountings, the 'fairing' is doglegged to allow it to run along the trailing edge of the diffuser. It will have to wait for Melbourne before anything formal can be done with protesting the design.



The rear-suspension legs are fitted with cricket-bat-like fairings (yellow) to help replicated the effect of the banned beam wing

STALEY/LAT



Toro Rosso is one of the teams using the new optional LCD Dash display

BATCHELOR / XPB

MESL DASH

With the increased complexity of ERS for 2014, the teams have been allowed to use a complex dash on their steering wheel.

Although teams started to use large LCD displays on their steering wheels in the early 2000s, the introduction of the FIA-control ECU in 2006 halted their use and only a McLaren Electronics PCU-6D dash was permitted.

This LED display only offered a limited range of information to be displayed, and for many was a regressive step in passing information to the driver.

The new PCU-8D is a new 4.2 LCD colour display, which offers teams near limitless options to convey information to the drivers.

Teams have the option of using this dash or the older format. The difference will be in how much information their drivers need and a small 100g weight gain for the new display.



The road to F1's latest turbo era

Formula 1's latest rule changes are not universally popular, but some of those making the criticism were instrumental in getting us here. ADAM COOPER traces the journey

Perhaps it was inevitable that Bernie Ecclestone generated a few negative headlines after the recent Jerez test, when he once again made it clear that he is no fan of Formula 1's new power units. The real picture will only emerge as the years go by, but the twin drives of a) employing technology relevant to manufacturers and b) giving F1 a greener, more sponsor-friendly image will have an impact far beyond any controversy stirred by unreliability in testing or the early races of this season.

One thing is clear – we haven't got here overnight, and it's been a long and involved process. And Ecclestone has been in the loop all along as the rules developed.

Determining exactly where the road to 2014 started is not easy, but arguably it stretches back as far as 10 years ago, specifically to a summit meeting in Monaco in May '04, when incumbent FIA president Max Mosley met with the teams. This was perhaps one of the first times that the sport's stakeholders had looked beyond the next few races and the usual short-term debates about the following year's rules. The focus was on developing major changes for '08 and beyond.

At the time F1 was well supported by manufacturers, but Mosley believed the situation couldn't last, so there was an emphasis on cost control as well as improving the show. A raft of proposals emerged around that time, including 2.4-litre V8s for 2006, the requirement for engines to be used for several races, and a

standard ECU. After the meeting Mosley noted: "It was pointed out by one of the major manufacturers that we're currently spending €1000 million a year to provide engines to 14 of the 20 cars, and it therefore shouldn't be too difficult to reduce that by 50 per cent. That will make a big difference. That €1000 million is simply not sustainable, by any calculation."

Just four months later Ford's decision to cancel its Jaguar F1 programme was a timely reminder of how fickle the boards of big companies can be. Subsequently Mosley would look for ways to make F1 sustainable for manufacturers, both by attacking costs and helping them to justify their involvement in the sport by making the technology relevant. It wasn't easy, as these were turbulent times.

THE V8 STOPGAP MEASURE

The GPWC grouping of Ferrari, Mercedes, BMW and Renault planned a breakaway series for 2008, once the existing Concorde Agreement ended, and that proved a major distraction. Plans for a V8 for '06 had to be forced through, complete with a freeze on development. But the V8 was always going to be a stopgap, as Mosley believed the way forward had to involve greener technology, and that meant promoting efficiency.

In May 2005 he talked of a fuel-flow formula – famously championed by Cosworth's Keith Duckworth many years earlier – and in July that year he extolled the virtues of energy recovery, noting: "This concept has had an enthusiastic response from the car makers. We want to get

the emphasis away from hidden technology, whereas this would have direct relevance."

He expanded on that at Monza in September of the same year: "I think what you can say about the use of hybrid technology in F1 is that the only debate is when? We would like to see it in 2008. Some manufacturers say that's too soon. It's a matter under discussion."

By February 2006, Mosley made it clear that an all-new engine formula, focusing on efficiency, was now in the planning stages: "There are various reasons for that, apart from it being politically correct. All the manufacturers are working on fuel efficiency, there are some very interesting things going on. And if there is a big oil crisis, which is more than likely in the next few years, then it will be far more defensible if we can say, 'Actually we are working on the cutting edge of fuel efficiency.'"

The aim was not just to keep the current manufacturers on board, but to attract others, specifically Volkswagen/Audi.

GENESIS OF A NEW CONCEPT

The men charged with coming up with a new concept for F1 were FIA technical consultants Peter Wright and Tony Purnell, the latter having been on the other side of the fence as Jaguar Racing's boss until the end of 2004. Helped by automotive consulting firm Ricardo, their brief covered the whole technical package, including aerodynamics. The engine was the key.

"We started having a chat about what the car companies wanted from motor racing," Purnell recalls. "And we had a lot of meetings with all the players, and some of the people who we thought might like to play in the future. We met with their chief engineers, the people who were leading their road-car programmes, not just their F1 employees."

"I'd already been to the Frankfurt show, where there was a massive, tidal-wave message, which was, 'What we are interested in is fuel economy and efficiency'. When we went round the manufacturers we got the impression that their challenge for the future was just that. There was the green issue with carbon emissions as well."

"So there was a lot of heat on within the industry, perhaps more than in a generation, for a pretty radical change in approach. They really had to think about doubling fuel economy, and doing that through efficiency, because people won't compromise: they don't want slow or utilitarian cars; they still want sexy cars."

"Max also had this relevance-to-society message, with the thought that F1, with the right direction, could become a hotbed of engineering activity, which did a lot more good rather than just being a job-creation exercise. And he set us off to see how we could do it. We couldn't see how we could just nudge anything – it had to be a monster step."

The concept of a small turbo, with a strong element of energy recovery, soon emerged.

"There was a lot of talking to manufacturers about what they wanted," says Wright. "Relevance' was the key word. The European ▶

Jerez test was first sight of a new breed...



THOMPSON/GETTY

...but as expected it didn't quite all go to plan



THOMPSON/GETTY



► motor industry indicated the direction they were going, and we were shown things by them. However, the Japanese industry at that time was saying, 'We don't believe downsized turbocharging is the answer.'

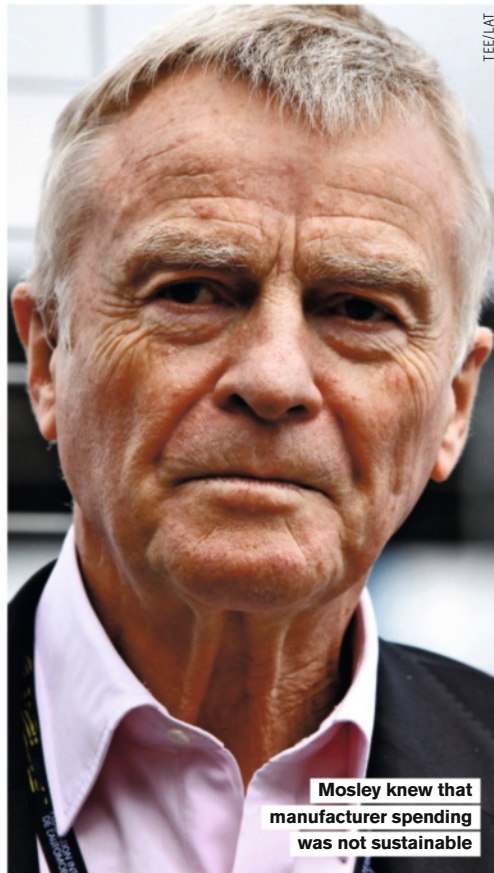
Nevertheless Wright was convinced: "It doesn't take very long before you arrive at the logical conclusion, which is what we've got now. If you're going to have an efficiency formula you need to go for the smallest, most efficient configuration of engine you can go for. You've got to have the minimum number of parts. You don't want to run very high rpm with all the losses that go with it, so in order to get the power you've effectively got to supercharge it."

"Once you make the target efficiency, energy recovery is a no-brainer. A normal piston engine at the very best is 30 per cent efficient, so you say, 'What's happened to the other 70 per cent; how much can we get back?'"

"Different people wanted wildly different things," adds Purnell. "The one common ground was this subject of efficiency, and changing the rules fundamentally from power-per-fixed-displacement to power-per-drop-of-fuel-allowed. That seemed to get pretty much universal approval, although there were still different views – could a fuel-rate sensor be accurate enough? And then there was a fair bit of common ground on electric hybrid power trains."

Radical aerodynamics were also a crucial part of the 2007 proposals.

"Peter and I saw that we should just go for a 50



TEE/LAT

Mosley knew that manufacturer spending was not sustainable

per cent fuel reduction for almost precisely the same speed," says Purnell. "And to do that we could get away with a much less powerful engine, with a complete change in the aerodynamics. What we wanted to do was go back to the ground-effect cars and undo years of the FIA making the aerodynamics less efficient, because that's what we'd done with flat floors and bans on things that worked well, to make an aerodynamically somewhat perverse car. Just making a clean sweep of it we could get lots of downforce for way less drag, make the cars look a bit prettier, and match the speed profile."

The Wright/Purnell proposals were published as a 23-page 'white paper' in May 2007. Crucially they noted it was important to maintain the sport's "technical 'awe' in 2011 via perhaps the most sophisticated powertrains that F1 has ever seen." Subsequently, for the first time a turbocharged future was formally tabled by the World Motor Sport Council, although after further discussion the report's initial suggestion of a V6 had already been superseded by a 1.3-1.5-litre, four-cylinder format (see panel, top right).

Mosley wanted new rules in place for 2011, but in typical F1 style there followed years of wrangling and debate about which direction the sport should take.

"We were just sitting round the table chatting more and more," Purnell recalls. "We were trying to focus in on it and get broad agreement, which was fairly difficult. It got very political. You can imagine, if we had someone present who was



COATES/LAT

Normally-aspirated V8s have run their last grand prix

THE 2007 PROPOSALS – WHAT WAS DROPPED

In June 2007, the FIA World Motor Sport Council used a report by Peter Wright and Tony Purnell as the basis for a proposed 2011 rules package focusing on efficiency, with energy recovery and drag reduction as key elements. The issue of overtaking was also considered. Much of what was proposed has been adopted, although key elements have been dropped:

REGULATIONS

- 1.3-1.5-litre, four-cylinder engine
- no RPM or boost limit
- energy-flow rate to generate 300kW, including energy recovery from the exhaust
- 200kW brake-energy recovery, both axles
- 400-600kJ energy return per straight
- pump-legal bio-fuel
- FIA-specified and supplied undertray and possibly other aerodynamic components
- 50 per cent 2007 downforce
- adjustable, regulated wings and cooling
- automatic downforce adjustment when following another car
- lap times and top speeds maintained at 2009 levels
- over 50 per cent reduction in fuel consumed

COSTS

A number of measures to constrain costs were proposed, including:

- standardisation of components
- homologation of components/assemblies
- material restrictions
- extended life of assemblies
- restrictions on personnel and work at races; restrictions on the use of certain facilities (for example windtunnels).

“We wanted to undo years of the FIA making aero less efficient”

Tony Purnell



speculative about involvement in F1, the others would be saying, ‘Why should these people have any say in it?’ Then we’d get, ‘There’s no way we’re coming in without knowing what the rules are.’”

There were many distractions, notably the ongoing battle between Ecclestone and the teams – initially under the Grand Prix Manufacturers Association banner, and later Formula One Teams’ Association. In addition the scandal in Mosley’s private life eroded his powerbase, and made it harder for him to push through changes.

Meanwhile, Mosley’s concerns about the sustainability of manufacturer support, voiced years earlier, proved to be well founded. Honda withdrew in December 2008, and that bombshell was followed by announcements from BMW in July 2009, and Toyota in November of that year. Renault wavered, eventually backing out of team ownership, but remaining as a supplier.

“We had people who were very vocal and super-difficult on some issues,” says Purnell. “And suddenly they left.”

In December 2009 Mosley bowed out and Jean Todt took the reins of the FIA. After the transition, Purnell lost his FIA role, although Wright remained on board. Todt pushed ahead with the plan to move towards turbos, and he gave former Ferrari engine boss Gilles Simon the job of fine-tuning the regulations in conjunction with the remaining suppliers.

KERS had made its debut in 2009, but it wasn’t until December ’10, some two and half years after the Wright/Purnell report, that the World Motor

Sport Council finally confirmed that a four-cylinder turbo was coming for ’13. Any plans for radical aero to boost efficiency – and reduce the power requirement – were dropped. And more power meant more weight, a bigger fuel tank and so on. The planned 50 per cent reduction in consumption drifted towards 30 per cent.

Renault, Ferrari and Mercedes now knew that they had to get on with the job, but things still weren’t that clear-cut. After endless debate over the preceding years, it took the confirmation that turbos were coming to really focus people’s minds on whether a four-cylinder engine was what F1 needed. Doubts were voiced by Ferrari, which wanted a V6, and by a highly sceptical Ecclestone, who wanted something that sounded right.

Meanwhile, in April 2011 Craig Pollock announced plans to build a customer engine under the PURE name, and Todt was keen to cite the arrival of a new supplier as proof that the sport was heading in the right direction.

The FIA boss was adamant the rules were now set in stone, despite increasing requests for a postponement from manufacturers who had previously agreed to everything. Only Renault, whose future in the sport depended on the change, was happy to press on.

Then, in June 2011, we saw a rare example of a U-turn by the FIA. Not only was the four-cylinder dumped in favour of a V6, as lobbied for by Ferrari and Ecclestone, its introduction was postponed from 2013 to ’14, giving everyone more time to prepare. ▶



Plenty of these 2007 manufacturers are no longer in F1

ETHERINGTON/LAT

► Even that date change wasn't enough for some, but Todt made it increasingly clear that there would be no further delays. Had the introduction been delayed a further year, the manufacturers would simply have faced another 12 months of R&D expense.

Nevertheless, there was one more concession. The rules had originally specified the use of electric power in the pitlane, but the belief was that it would be one step too far, and in December 2012 the requirement was dropped.

A key element that also slipped away was cost control. Back in July 2008, Mosley wrote to the teams saying that manufacturers should be prepared to supply the new powertrains to customers at "€2 million per season per team", a figure that seems laughable now. The plan to rein in R&D spending was stymied by the manufacturers, and was quietly forgotten by Todt and Simon when the rules were framed.

Some argue that what we've ended up with was a little too inspired by what the engine men wanted, and perhaps not enough by those who could see a bigger picture. Having helped to finalise the rules, Simon joined PURE to develop his own engine, which might suggest that he was too focused on creating a technical challenge that he and his contemporaries would enjoy.

Crucially there has been no sign of VW/Audi, despite the company's close involvement in defining the turbo route, while the PURE project collapsed. On the plus side, Honda is returning in 2015, although the consensus is that its decision

was not inspired by a desire to build a turbo. The timing just happened to be right.

Wright was present at Jerez to see – and hear – the new power units in action. And, while much of what was proposed in 2007 has fallen by the wayside, he's happy with the way things turned out. "The significant bit, which seems to be slightly lost, is to get the same performance for a third less fuel," he says. "You don't have many ways you can do that, and the set of rules that we were looking at in 2007 and the set of rules we've got now differ only in detail. A four-cylinder looked to be the optimum solution, as you want the minimum number of parts, friction and pumping you can possibly achieve. The six-cylinder – you know where that came from..."

"I think the rules are pretty good. I know quite a lot of people are firing at them, and that's a great pity. They need to be given a chance to settle down. The only thing is it would have been nice to go to variable aerodynamics, and in particular variable cooling. That would have given more potential. Back in 2007 we made a big push for it."

The bottom line is that the V8s could not have gone on forever.

"I know change leads to disruption, but you've got to refresh things," says Purnell. "If you don't allow change in F1, it's not F1. And to have a powertrain unchanged for such a long time is a nonsense. You could take Bernie's attitude, just give them something loud and sexy. But if you're going to do a new powertrain, then trying to make it relevant to the industry is the right thinking." ❧

"The rules we looked at in 2007 and the rules we have now differ only in detail"

Peter Wright



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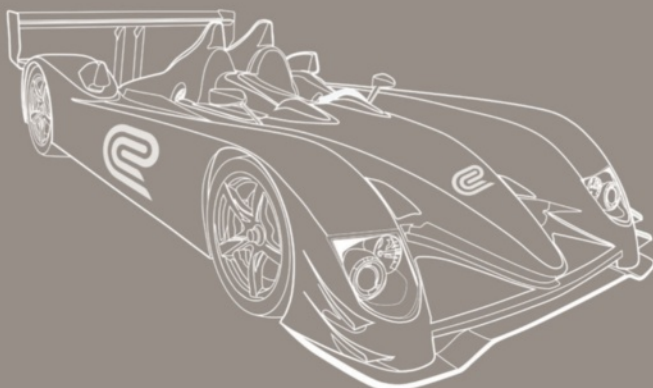
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Hamlin (11) battles it out with Keselowski

NASCAR SPRINT UNLIMITED DAYTONA (USA), FEBRUARY 15

Hamlin gets the slingshot

DENNY HAMLIN SURVIVED A CHAOTIC evening at Daytona to win NASCAR's non-championship Sprint Unlimited race on Saturday.

In any other race, the manner of Hamlin's victory would itself have been enough to send the fans home happy. Having won the first two segments of the race, he capitalised

on a draft from Joe Gibbs Racing Toyota team-mate Kyle Busch to slingshot past Brad Keselowski with one lap to go in the final segment. His margin of victory was 0.197s.

"When I had the opportunity to make it three-wide or push the 18 [Busch], I knew if I pushed the 18

that would stall my momentum for at least a lap," Hamlin said. "I had a huge run and needed to keep that momentum going. Inches make or break you. For us, it was a decision I made, and it worked out good."

But in terms of action, the thrilling finish was just the icing on a particularly extravagant cake.

A lot of Hamlin's work was done for him when nearly half the field was eliminated in a crash early in the second segment. This was triggered by Matt Kenseth getting tipped sideways in the middle of the pack by Joey Logano. Tony Stewart, returning to the cockpit after breaking his leg last September, couldn't avoid Kenseth and was collected by Jeff Gordon and Kurt Busch, while Danica Patrick spun and was hit by boyfriend Ricky Stenhouse Jr.

Later on, a pace car caught fire between the second and final segments. "You think you've seen it all, then you see that," Keselowski said. "I thought it was a race car. Someone said it was the pace car, and I couldn't help but start laughing."

Dale Earnhardt Jr looked a decent bet for victory, and had just conceded the lead of the third segment to Logano when he was eliminated in a clash with Marcos Ambrose.

● Mark Glendenning

RESULTS 1 Denny Hamlin (Toyota Camry).

75 laps in 1h18m35s; 2 Brad Keselowski (Ford Fusion), +0.197s; 3 Kyle Busch (Toyota); 4 Joey Logano (Ford); 5 Kevin Harvick (Chevrolet SS); 6 Jamie McMurray (Chevy); 7 Marcos Ambrose (Ford); 8 Ryan Newman (Chevy); 9 Dale Earnhardt Jr (Chevy); 10 Matt Kenseth (Toyota).

MRF CHALLENGE IRUNGATTUKOTTAI (IND), FEBRUARY 15-16 RD 4/4

Ellinas is champion – for now

TIO ELLINAS EMERGED AS PROVISIONAL MRF Challenge champion after the final round near Chennai, but will have to wait for an appeal lodged by Rupert Svendsen-Cook against a post-race penalty.

British racer Svendsen-Cook was adjudged to have rejoined the track in an unsafe manner after going off in the finale, and that his actions caused Greek-Cypriot Ellinas off the circuit.

While Svendsen-Cook finished the race second on the road behind Belgian Sam Dejonghe, and began celebrating the title, the stewards deliberated and hit him with a 30-second penalty.

The initial leader of this reversed-

grid race was poleman Ben Anderson, but the AUTOSPORT journo was given a drive-through penalty for moving on the red lights.

The star of the event for the locals was home-town hero Narain Karthikeyan. While Svendsen-Cook won a battle with Ellinas in race one, Karthikeyan beat Oscar King (having his first single-seater race since Formula Renault UK in 2011) in a fight for third.

Dejonghe then defeated Harry Tincknell and Svendsen-Cook in the second race, as Ellinas went out following a clash with Raj Bharath.

Svendsen-Cook defeated Tincknell for a British one-two

in the third race, while Australian Dylan Young held off King and Ellinas for his maiden podium.

In race four, MRF ambassador Karthikeyan gave the crowd something to cheer when he passed Svendsen-Cook and then Ellinas in the closing laps for victory.

"It feels absolutely amazing to win in Chennai again after all these years," said the ex-Formula 1 racer. "These guys are really good and I had great fun battling them, but it was the crowd that gave me the push and made this win possible."

RESULTS

RACE 1 1 Rupert Svendsen-Cook, 15 laps in 23m52.841s; 2 Tio Ellinas, +1.431s; 3 Narain Karthikeyan; 4 Oscar King; 5 Harry Tincknell; 6 Raj Bharath. **RACE 2** 1 Sam Dejonghe, 10 laps in 16m06.824s; 2 Tincknell, +1.646s; 3 Svendsen-Cook; 4 Ryan Cullen; 5 Dylan Young; 6 Ben Anderson. **RACE 3** 1 Svendsen-Cook, 15 laps in 24m06.163s; 2 Tincknell, +0.723s; 3 Young; 4 King; 5 Ellinas; 6 Cullen. **RACE 4** 1 Karthikeyan, 15 laps in 26m47.015s; 2 Ellinas, +1.691s; 3 Svendsen-Cook; 4 Dejonghe; 5 Young; 6 Anderson. **RACE 5** 1 Dejonghe, 15 laps in 26m57.825s; 2 Ellinas, +11.674s; 3 Young; 4 Gaurav Gill; 5 Tincknell; 6 King. **POINTS** 1 Ellinas, 215; 2 Svendsen-Cook, 203; 3 Dejonghe, 142; 4 Arthur Pic, 134; 5 Tincknell, 111; 6 Shinya Michimi, 62.



Ellinas won no races in Chennai, but took title

ARCA

Grant Enfinger won at Daytona, holding off series veteran Frank Kimmel, the 10-time champion whose remarkable Daytona victory drought continues. Kimmel settled for his third runner-up finish at the Florida superspeedway, ahead of Martinsville track chief Clay Campbell. An early 15-car wreck sparked brawls in the pitlane and garage area that required local police to restore order.

FLORIDA WINTER SERIES

Italian Antonio Fuoco took two more wins in the third round at Homestead. He beat compatriot and fellow Ferrari protege Raffaele Marciello in the first race, and defeated Canadian Nicholas Latifi in the third. Latifi won the reversed-grid race, while Max Verstappen claimed two podium finishes from the event.

CROSS-COUNTRY RALLY

Saudi Arabia's Yazeed Al-Rajhi sealed victory in Baja Russia Northern Forest '14, the opening round of the 2014 FIA World Cup for Cross-Country Rallies. Partnered by experienced German co-driver Timo Gottschalk, the Toyota Hilux driver overcame a mixture of icy, snowy and slushy winter conditions on the three-day Igora-based event to beat Russian Vladimir Vasilyev by 1m48s. Brazilian Reinaldo Varela finished third in a second Toyota after Finn Tapio Suominen left the road near the finish.

Formula 1's

We've not seen many grands prix lost in the closing moments over recent years, but unreliability seems



It all goes wrong for Kimi as a suspension collapse pitches him out of the lead

EUROPEAN GP 2005 Kimi gamble doesn't pay off

Kimi Raikkonen's McLaren MP4-20 and the Renault R25 of Fernando Alonso were generally the class acts of the 2005 season. Alonso's early form, along with some unreliability for Raikkonen, meant it was the McLaren man who was playing catch-up. And few races encapsulated their battle as well as the European GP at the Nurburgring.

At around half-distance, and with a fuel

stop soon to come, Kimi was attempting to eke out a little more than the 18 or so seconds he had over Alonso. He made a mistake at Turn 5 and went off, removing some of the McLaren's right bargeboard. That then contributed to a lock-up as Raikkonen tried to lap Villeneuve's Sauber, which flatspotted the right-front.

This was the season requiring races to be

run on one set of tyres and Raikkonen thus continued on his 'square' rubber, with the relentless Alonso closing him down. With a lap to go, the McLaren was still 1.6s ahead, but the gamble didn't pay off. The front upper wishbone collapsed due to the lengthy vibration from the flatspot, sending Kimi out of control at the end of the start/finish straight. Alonso's points lead grew and would not be overhauled.

LAST-LAP DECIDERS

In the 64-season history of the world championship, 26 races have featured a winner who didn't lead going on to the final lap.

1953 Italian GP

Leader Alberto Ascari's Ferrari spins at the final corner, team-mate Giuseppe Farina goes off in avoidance and Juan Manuel Fangio takes his only win of '53.



1954 French GP

In a crushing display of domination, the returning Mercedes team laps the field at Reims, Fangio and Karl Kling trading places at will, with Fangio being a nose ahead at the flag.



1959 US GP

After title rival Stirling Moss retires, Jack Brabham leads but runs out of fuel. Bruce McLaren takes the flag, as Brabham pushes his Cooper to P4 to secure the title.



1964 Belgian GP

1961 French GP

After the faster cars drop out, Ferrari world championship debutant Giancarlo Baghetti fights Dan Gurney for the lead at Reims. Gurney's Porsche 718 has the lead going on to the final lap, but can't hold off the Dino on the run to the finish line.

1967 Italian GP

Having charged back into the lead following an early puncture, Jim Clark's Lotus stutters low on fuel on the final lap. John Surtees's Honda takes over, tempts Brabham to dive down an oily inside at the final corner, and repasses him on the exit to take a famous win.

1968 Belgian GP

Jackie Stewart's Matra seems set to win after early rival Denny Hulme's McLaren breaks a driveshaft. But the Scot's car splutters low on fuel on the final lap with Bruce McLaren coming through to give his eponymous team the first of its 182 world championship race victories to date.

WorldMags.net near misses

set to return in 2014. **KEVIN TURNER** recalls some late-race failures from the world championship

A rare lucky win for Clark . . .

Jim Clark often won his races from the front, but at Spa in 1964 he took victory after starting the last lap in fourth! Up ahead were Graham Hill's BRM, the Cooper of Bruce McLaren and erstwhile leader Dan Gurney, who had been set to take Brabham's first victory until an aborted stop for fuel cost him his 40-second lead.

On that final tour, Hill's fuel pump packed up and Gurney's BT7 ran dry. McLaren took the lead but as he approached the final corner he too ran out of fuel. He had sufficient momentum to make it to the line, but not before Clark had swept by to beat the Cooper to the flag by three seconds. And then the Lotus ran out of fuel...



. . . but two titles lost late on

Between 1962 and 1965 the combination of Clark and Lotus boss Colin Chapman was F1's benchmark, but it was prevented from completing a Red Bull-like title streak by unreliability in two title showdowns.

Clark qualified on pole for the 1962 South African GP against rival Hill and the Lotus led most of the race. But a small bolt retaining oil in

the distributor-drive housing worked loose, leaving Hill to take the win and the crown.

AUTOSPORT reported the outcome of the 1964 finale between Clark (pictured left), Hill and John Surtees like this: "On the final lap of the Mexican GP, Gurney's Brabham flashed past into the lead as Clark's Lotus spattered to a standstill."

Clark had again done all he could, leading from the off and it was only an oil leak that stopped him, the engine finally failing on the last lap. With Hill having already tangled with Surtees's Ferrari team-mate Lorenzo Bandini, Surtees nipped through to take second in the race and secure the championship.

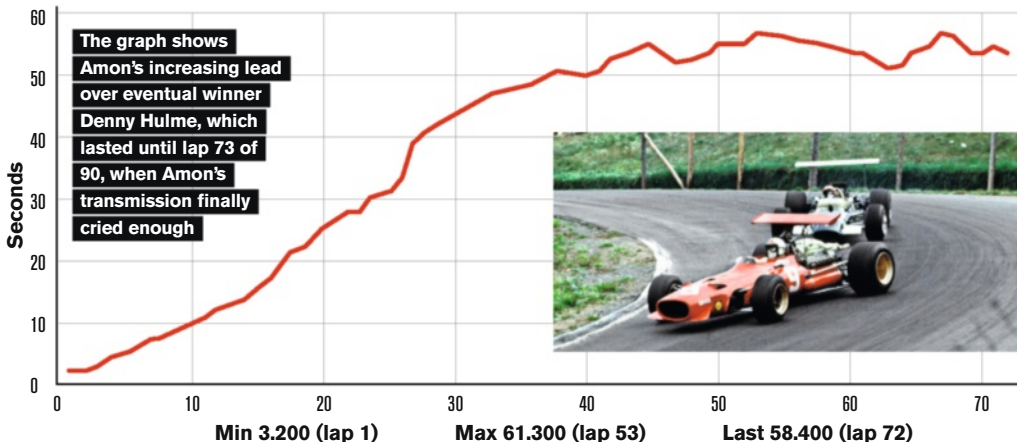
"After some of the misfortune that had befallen us, on this occasion I had a bit of fortune because Jim retired," says Surtees today.

CANADIAN GP 1968 Amon's cruellest blow?

Chris Amon's bad luck is legendary, but which was his worst near miss?

For showing a cool head under the pressure of his first pole, the 1968 Spanish GP is a contender, but there were some key absences from the event, most notably Jackie Stewart. The man himself picks out the 1972 French GP, in which he was denied by a puncture, as his best race. And yet perhaps his most dominant performance came in the 1968 Canadian GP for Ferrari.

Amon matched Jochen Rindt's pole time and, in the first GP in which every car was fitted with wings, flew into the lead at the start. As Rindt's Brabham and the Lotus of Jo Siffert wilted, Amon pulled clear, despite having to make clutchless gearchanges. The gearbox eventually failed.



1970 Monaco GP

It's not often a simple driving error lets a GP win slip by on the last lap. But under pressure from a charging Jochen Rindt, Brabham locks up at the final corner, the Gasworks hairpin, and slides into straw bales, allowing the Lotus driver through.

1970 British GP

Two months later Brabham hunts down Rindt before making his move on lap 69 of 80. He pulls away, then runs out of fuel on the run to the line and finishes second.



1971 Italian GP

Ronnie Peterson's March leads going across the line heading onto the final lap but is in the process of being overtaken by Francois Cevert's Tyrrell in a classic five-car slipstreamer. Peterson is back ahead at the Parabolica, but runs wide and is beaten to the line by the BRM of Briton Peter Gethin.

1977 French GP

1975 Spanish GP

When Rolf Stommelen's leading Embassy Hill loses its rear wing and is catapulted into an accident that kills four onlookers, there is a delay in stopping the race. Jacky Ickx's Lotus leads, but is passed by the McLaren of Jochen Mass on what would be the final lap.

1978 S.African GP

Once Riccardo Patrese's leading Arrows blows its Cosworth DFV motor, the Tyrrell of Patrick Depailler moves to the front. Fuel issues hobble the Frenchman and, despite some enthusiastic wheelbanging, Depailler is unable to hold off Ronnie Peterson's Lotus.

1982 San Marino GP

Boycotted by the FOCA teams, the Imola event boils down to an intra-Ferrari battle. Gilles Villeneuve believes team orders have been set with him in front, so is furious to see team-mate Didier Pironi sweep by on the run to the Tosa left-hander on the final lap to take one of the most controversial wins in the history of F1.

FRENCH GP 1977

Wattie's nearest near-miss

John Watson and the Brabham BT45B made for a formidable tie-up in 1977. But not a lucky one. 'Wattie' led four races, set two fastest laps and a pole, but ended the year with just nine points.

The most agonisingly late defeat came at the French GP at Dijon. Watson jumped poleman Mario Andretti at the start and, once past early leader James Hunt's McLaren, only had the Lotus to worry about. In the latter stages, Andretti closed on the Brabham, but Watson remained in control going on to the 80th and final lap.

Then the Brabham coughed low on fuel. It was enough for Andretti, himself the victim of late issues in Sweden, to sneak through for victory.

"I feel sorry for John," he said afterwards. "He did a beautiful job today and never made any mistakes that I saw."



Watson leads Andretti at Dijon in 1977 before a cruel late-race blow



Jabouille's Renault led in Brazil, '80 but failed. Team-mate Arnoux (P6 here) won

Renault's turbo troubles

Renault paid quite a price for being the F1 turbo pioneer in the late 1970s and early 1980s. The number of possible wins lost for the rapid yellow cars was numerous, but some were closer calls than others. Here are some memorable fails:

Brazilian GP, 1980: Jean-Pierre Jabouille retires from a comfortable lead with turbo failure, though team-mate Rene Arnoux inherits the win. "Jabouille had by far the worst of the early turbo technology," says Derek Warwick, Renault driver in 1984-'85.

British GP, 1981: Alain Prost and Arnoux qualify 0.046s apart, almost a second clear of the field. They dominate the race, but both hit engine trouble while leading.

Austrian GP, 1982: Famous for Elio de Angelis holding off Keke Rosberg in one of F1's closest finishes, this race looked to be heading Prost's way. After early problems for the other quick turbos, Prost was 27s out in front with just five laps to go. Then his electronic injection system packed up.

Swiss GP, 1982: Just two weeks later, Renault had another nightmare. Arnoux's challenge to Prost faded with more electronic injection issues and then a damaged skirt on his RE30B allowed Prost to fall prey to Rosberg's Williams with less than two laps to run.

Brazilian GP, 1984: When Niki Lauda's McLaren failed and Prost stopped his for tyres, Warwick moved his RE50 into the lead. He was 35s clear with 11 laps to go when his front suspension – bent in earlier contact with Lauda – failed.

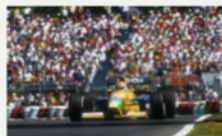
LAST-LAP DECIDERS

1982 Monaco GP

Leader Alain Prost crashes with two laps to go, Patrese goes by and spins at the hairpin, then Pironi runs out of fuel on the last lap. Andrea de Cesaris, set to pass the Ferrari, also runs dry, leaving a recovering Patrese to take his first GP win for Brabham.

1991 Canadian GP

Nigel Mansell's Williams is almost a minute clear going onto the final lap. As Mansell waves to the crowd the engine cuts out, handing Nelson Piquet his final GP win.



1991 Japanese GP

With title rival Mansell off the road, Ayrton Senna is able to pay back McLaren team-mate Gerhard Berger's support by gifting him victory at the end of the race.



1997 Hungarian GP

As the Goodyear-shod cars struggle, Damon Hill's improved Arrows moves ahead of Michael Schumacher's Ferrari to dominate. With three laps to go, a hydraulics problem starts causing throttle and gearbox woes. Jacques Villeneuve goes past on the final tour.

1997 European GP

In a controversial title-decider, David Coulthard is asked to let McLaren team-mate Mika Hakkinen through before both overtake the Williams of champion-to-be Villeneuve in the final seconds.

2001 Spanish GP

Hakkinen is over 40 seconds ahead of a tyre-vibration-hampered Schumacher when the clutch on his McLaren MP4/16 fails with less than a mile to go.

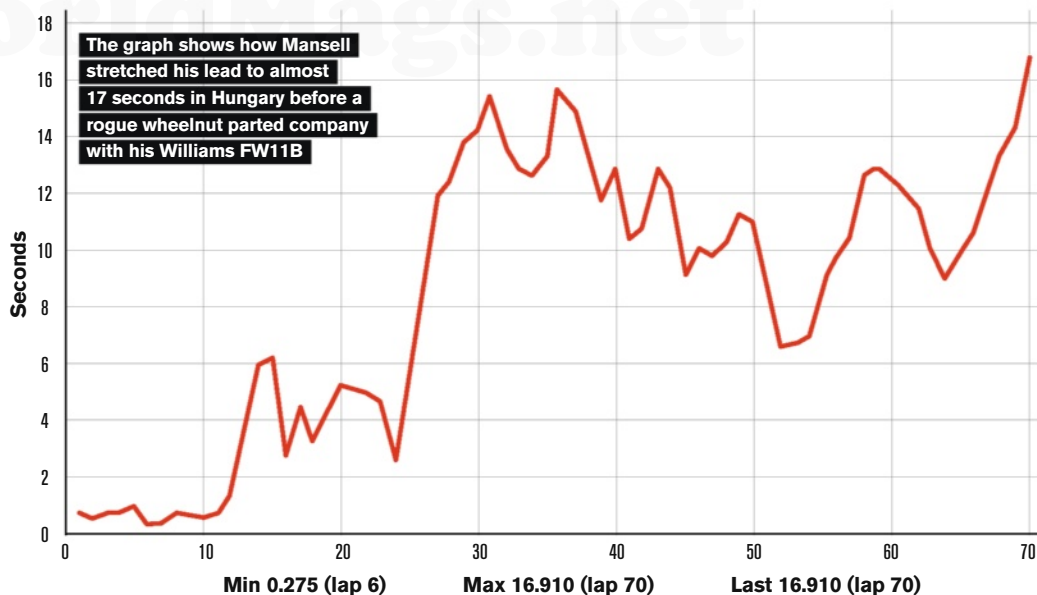


HUNGARIAN GP 1987 Mansell loses his nut

Nigel Mansell and drama were never far apart, whether it was crashing on a white line, losing a title with a high-speed tyre failure or shedding wheels. Perhaps the most costly example of the latter came in Hungary in '87, when Mansell led for 70 of the 76 laps before the right-rear wheelnut came off. And to make matters worse, it was Williams team-mate and title rival Piquet who stole the win.

"It was too bad," wrote AUTOSPORT's Nigel Roebuck. "Mansell had laid claim to this race even more than had Prost at Hockenheim. Yet neither got a point from their domination – and Piquet picked up nine each time.

"One had the feeling that if he had fallen from his hotel's top floor, a truck full of foam rubber would have passed by at the time."



BELGIAN GP 1991 Engine failure ends de Cesaris charge

The lapchart for the 1991 Belgian GP shows that Mansell, Jean Alesi and Ayrton Senna set the pace. Mansell and Alesi both looked set to win before electrical and engine problems respectively, and Senna took the flag despite gearbox problems. But this could have been a victory for Jordan, then in its first season.

F1 debutant Michael Schumacher might have stolen the show in qualifying, but it was the other 191 that nearly won. Andrea de Cesaris climbed from 11th to second and was putting Senna under pressure in the closing stages.

The Jordan's water temperature was

climbing, but the team decided to press on. Could he catch Senna? The answer came on lap 42 instead of the scheduled 44 when the Ford engine let go.

Gary Anderson, then Jordan tech director, recalls: "Cosworth had changed the pistons and the oil consumption was higher as a consequence. Cosworth always worked out the consumption per lap from our oil dip, but didn't tell us it had increased. We had more capacity available, particularly as it was Spa because at Eau Rouge oil surge can be a problem. That's what killed the engine."



Alesi's rear wing camera droops before parting company

ITALIAN GP 1995 Ferrari farce

The 1995 Italian GP was scene of one of the Damon Hill-Michael Schumacher clashes, but it's often forgotten that Gerhard Berger was ahead of the incident and leading, once David Coulthard's Williams had dropped out.

The Williams-Benetton crash put Jean Alesi (above) into second and a slow pitstop for Berger swapped the Ferraris around. Berger's bad luck had only just started, however: the onboard camera flew off his team-mate's car and struck Berger's left-front suspension, breaking the steering. "It was terrifying," Berger admitted. "I just saw this thing coming towards me at 180mph. I'm just glad it hit the car and not me."

Alesi, who had dominated at Monza the year before until a gearbox failure, was now clear. On lap 46 of 53 a wheelbearing failure ended another chance for the French-Sicilian to take a GP win.

Team boss Jean Todt said: "I have never known such bitter disappointment."



De Cesaris was flying at Spa before his Jordan got all hot and bothered

FOR MORE F1 NEAR MISSES VISIT AUTOSPORT.COM

2002 Austrian GP

One of the least popular team orders in F1 history results in Rubens Barrichello moving over for Ferrari team leader Schumacher on the final run to the line. Schumacher's points lead before round six had been a mere 21...

2002 US GP

... And with the title won in July (!), Schuey pays Barrichello back at Indianapolis. Or is it an attempt at a dead heat?



2003 Brazilian GP

Mark Webber's Jaguar crashes heavily, bringing a premature end to the wet race. But which lap to count back to? David Coulthard had led before pitting on lap 52, handing the lead to McLaren team-mate Raikkonen, who was overtaken on lap 54 by Giancarlo Fisichella's Jordan. Kimi was initially given the win until it was proved Fisi had covered one more lap than previously thought and was belatedly declared the victor.

2005 European GP

2005 Japanese GP

A great race reaches its climax when Fisichella, who has squandered a decent early advantage, is passed by a charging Raikkonen – up from 17th on the grid – around the outside into Turn 1 at the start of the final lap.

2011 Canadian GP

Another dramatic rain-affected event in which Jenson Button rides his luck to climb from last to brilliantly overcome Sebastian Vettel in the closing moments in Montreal.



Rene Arnoux: an F1 maverick

Frenchman Rene Arnoux went from grand prix winner with Renault and Ferrari to obstinate Ligier backmarker. PETER MILLS tells the story of an F1 driver who did things his own way

An attentive visitor to an early 1980s grand prix grid may well have had his or her curiosity aroused by an unusual sight: a slightly unkempt figure lying in the unorthodox position of back against grass verge, eyes closed, hands behind head and bandied legs pointing skywards against Armco.

Rene Arnoux possessed an informal manner but his uncompromising prowess behind the wheel resulted in 18 pole positions and seven wins. The determination required to rise from a humble background to the sybaritic lifestyle of a Ferrari driver perhaps explains much: the all-out wheel-banging over 'minor' placings, the stubbornness when being lapped and the slight air of the maverick.

A spell in the doldrums at the end of a 12-year

career in Formula 1 served to take the shine off Arnoux's early achievements, but this was a man who vied with Alain Prost to become France's first world champion. As always, Arnoux is most animated recounting the critical role played by John Surtees in reviving his stalled F1 career during his 1978 debut season.

"One thing really important in my career was when John called to ask me to do Watkins Glen and Canada [the last two races of the season]," he says. "The call came at really the last moment for me, and he said, 'Rene, I have two drivers who are qualifying my car [so far off the pace of the grid they're] on the last corner [laughs] are you interested in doing these races for me?'"

"I had nothing, I said, 'Yes, John. I can come over.' He said, 'No, don't come to England, we've no time. You have to go directly to Canada, we'll make the seat there.'"

Arnoux's Montreal performance, qualifying 16th on hard tyres and lapping fourth fastest for a period in the race, propelled the 30-year-old into contention for the number-two race seat at Renault the following season. The French concern was unable to extract preferred choice Didier Pironi from his Tyrrell contract. Arnoux, who had eclipsed the younger Pironi en route to the '77 European F2 crown when they were team-mates at Martini, was set to land his big break.

"John never obliged me to sign anything. He was a really, really good man. He never said you can only do these two races if you sign a contract for '79. Perhaps without those two races my career would have finished."

Arnoux's connection with Surtees dated back to the winter of '73, when French journalist Gerard 'Jabby' Crombac helped land the struggling driver a position at John's factory. That Arnoux,



Arnoux (28), here at Silverstone, won three races for Ferrari in '83



First win came with Renault in 1980

then having completed just one season of racing, was working as a jobbing racing mechanic was indicative of his struggle to the top.

"Arnoux actually worked for us in our stores!" revealed Surtees after bowing out of F1 as a constructor. "I'd wanted him to drive our cars for a number of years, but he always seemed to have options on him. The Lotus option [arranged through Crombac] wouldn't allow it and then the French fuel companies wouldn't allow it."

If those comments evoke images of influential players engaging in bidding wars for Arnoux's services, the reality was rather different. A talented karter, Arnoux spent two years working as a mechanic for Italian tuner Virgilio Conrero, famed for running factory Opel rally and touring car teams in Italy. The job provided funds to enter Mike Knight's Winfield racing school at Magny-Cours, and paved the way for entry and victory in the Volant Shell competition – held in the autumn of '72. The prize: a Formula Renault budget. The result: the 1973 French title, defeating future Ferrari team-mate Patrick Tambay along way.

Shell's withdrawal from racing in France instigated Arnoux's passage to the Surtees workshop in England. "I was a mechanic for John hoping to do Formula 2, but the problem was Shell didn't want to pay for me to drive the car. I was so disappointed."

A brief and unsuccessful liaison with the Kitchener F5000 car led Rene to return to a caravan in Magny-Cours, his permanent address, where he could regroup close to his sanctuary of supporters. Chief among these was Channel Islander Tico Martini, whose workshops were located nearby. The relationship would rescue Arnoux from the sidelines and help both parties make into F1.

But it was the seat at Equipe Renault Elf that would provide a worthy stage for Arnoux to display his talent. It's hard to imagine a Formula 1 fan unfamiliar with *that* Dijon duel with Gilles Villeneuve. If the monumental scrap endeared both drivers to legions of supporters, it's perhaps surprising to hear Renault team leader Jean-Pierre Jabouille's views on Arnoux at the start of their second season together.

In round two of the 1980 season at Interlagos, Renault appeared out of sorts in practice until skilled engineer Jabouille found a set-up breakthrough, grabbing pole and then generously handing the solutions over to his number two.

"It's perfectly normal that I should set the

"When you have the facilities of Ferrari and achieve nothing it's disappointing" RENE ARNOUX

car up for [Rene] because he's going to help me win the world championship," remarked Jabouille, with confidence more than a little misplaced. In truth, 'the Big Man' was only referring to his undisputed contractual status and seniority. Reliability would dessert Jabouille on race day, assisting Arnoux's win. When further success followed for Arnoux at Kyalami, the number two led the world championship...

But it was not until the switch to Maranello three years later that Arnoux mounted a convincing title assault.

"At Ferrari, it was the race in Detroit where I felt I lost my chance of the title," recalls Arnoux. "In looking for improved fuel consumption, I decided to fit a new electronic box for the race. But it would have only saved perhaps one and a half litres. It broke. I am sure if I had kept the old one I would have won."

Arnoux has a point. As his 126C2 ground to a halt opposite the Detroit Renaissance Centre, his half a minute lead had already allowed him to make a pitstop and rejoin in the lead.

The retirement was the climax to a testing run of troubles that left Arnoux with just eight points approaching the mid-season mark. In the second half of the year Arnoux's form sparkled and luck

held; three convincing victories contributed to outscoring eventual champion Nelson Piquet by 41 points to 32, and runner-up Prost by 13 points. The turnaround secured the Grenoble racer's coveted seat at Maranello for another season at the expense of Tambay – something that would prove a mixed blessing.

"When you have nothing and achieve nothing it's no surprise, but when you have the facilities of Ferrari and you achieve nothing it's disappointing. The first time I drove the '84 car I knew the chassis was very difficult. We weren't at the level we should have been. Working with Michele Alboreto was fantastic, though. He was one of the nicest guys, very open in all briefings and so easy to get on with."

Brilliance on the streets of Dallas aside, Arnoux was generally outshone by Alboreto. The relationship with Ferrari would end after the '85 opener in Rio and effectively signal the end of his time as an F1 leading light.

"When you have done four years at Renault and two and half at Ferrari you have made your choices, there's no possibility to go back to a top team. But my first season at Ligier, with the Renault [engine], I was quite happy about. I led in Detroit but I hit the parked car of Piquet when they didn't show any yellow flags. Then we had the Alfa engine. It was like glass, always breaking.

"Then [designer Michel] Tatu made a very strange car with a fuel tank between the engine and the gearbox, it was very complicated to drive and you must transfer the fuel after 20 minutes. It was really very complicated and heavy and it was not really enjoying to drive in this condition.

"I wanted to give Guy [Ligier] time to find a new driver so I told him in July of 1989 that Adelaide is my last race. I always have thought I made the right decision when I stopped driving – about this I'm certain."



Arnoux spent four years at Ligier. This is the recalcitrant JS31 of '88

“Have you seen what he’s done now?”



54

Malcolm Wilson's quote covers both the frustrations he's had with Ott Tanak and the Estonian's fine form on Rally Sweden earlier this month. **DAVID EVANS** asks whether Tanak has turned a corner



Tanak/Wilson bond came unstuck, but is on the mend

Malcolm Wilson could barely conceal his disbelief. So he stopped trying. The headline quote actually came following Ott Tanak crashing out of the final day of New Zealand, 2012, but it could have been numerous other occasions. Wilson looked across the service park, situated in Auckland's Viaduct Basin.

The Hauraki Gulf was just a step or two away...

The news that Tanak's time at M-Sport was done came a couple of months later. It was no surprise. He'd had it all. And apparently thrown it all away – quite literally.

That's perhaps a little bit harsh. He had shown great speed. Just before he drifted wide and rattled the trees in Puhoi, he'd been second quickest through Burnside, lying fifth and winning a tight-fight race against fellow NZ debutant Thierry Neuville.

Tanak and Neuville were the WRC's hottest properties in 2012 but, for once, it looked like Wilson might have backed the wrong horse.

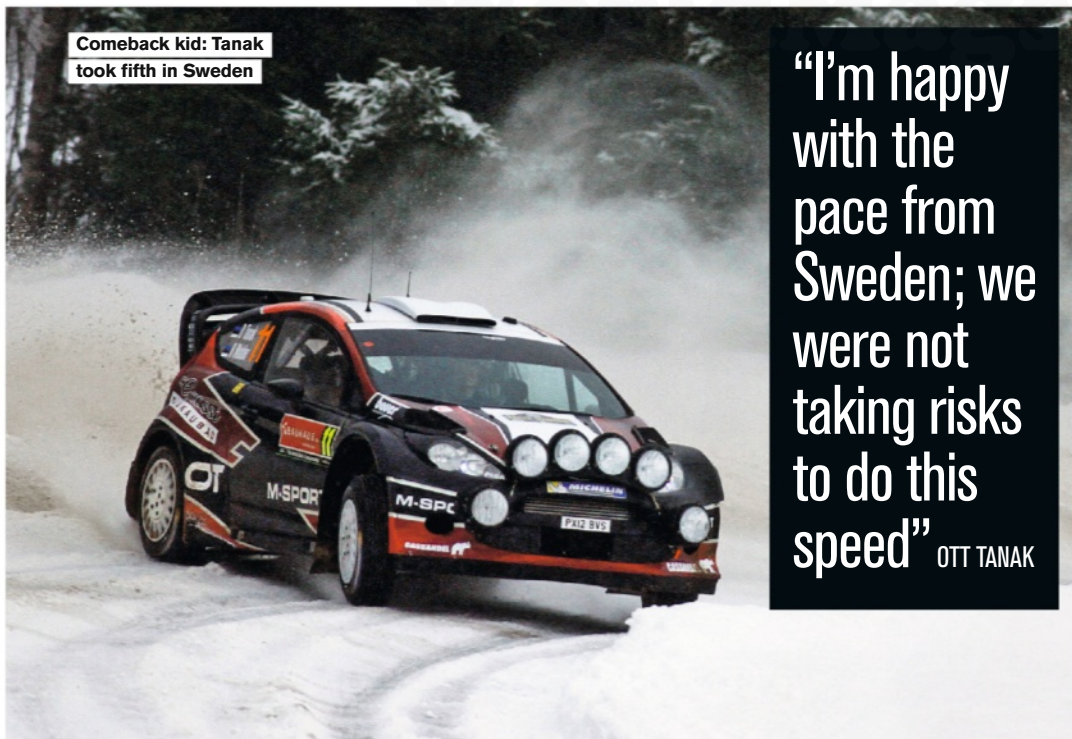
Maybe he hadn't. Maybe he'd backed a thoroughbred. As anybody who knows a bit about horse racing will tell you, most thoroughbreds are quite high maintenance and need to be given their head early on. But, with time, TLC and a degree of patience, they can come good. And win races. Tanak had all of the above through 2012.

People tried everything, even the arm around the shoulder. It's fair to say, Ott's not an arm-around-the-shoulder kind of fella.

But something's happened. On the evidence of his surefooted and supremely quick run through Sweden earlier this month, his season on rallying's naughty step has worked a treat.

Once he realised the news was not good coming out of Cockermonth, Tanak elected to set up his own team, OT Racing. He wasn't ready to give up without a fight.

Running a customer Ford Focus RS WRC for Georg Gross helped keep him out in a Group N Subaru. He tackled four Estonian events and finished second to Gross each time – a possible pointer to a burgeoning business brain as well: the customer is always right. And first.

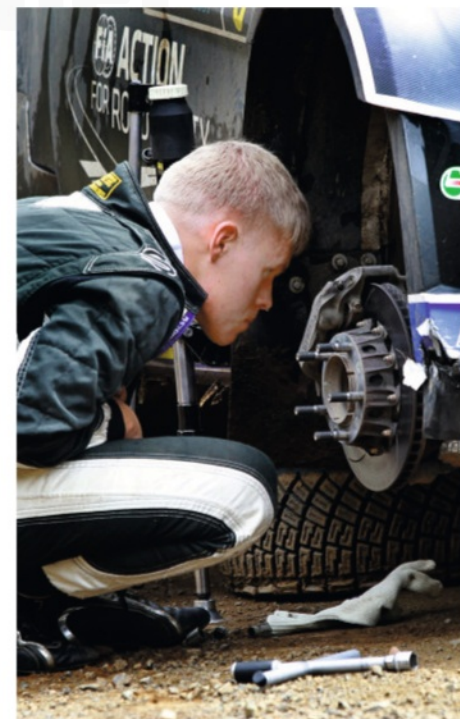


Comeback kid: Tanak took fifth in Sweden

"I'm happy with the pace from Sweden; we were not taking risks to do this speed" OTT TANAK



Great speed in NZ 2012 was followed by a shunt



TANAK'S 2014 PROGRAMME

Having missed the series opener in Monte Carlo, 26-year-old Estonian Ott Tanak used Rally Sweden as the start of his 12-round programme for 2014.

He will return to an M-Sport-run Fiesta R5 in Portugal – where he made his WRC debut with a Markko Martin-run Group N Subaru Impreza in 2009 – and Sardinia, the scene of his first WRC podium in 2012. On every other round, he will run as part of the DMACK team in an Autotek-run Fiesta R5, where the intention is to bag the WRC2 title and gain further experience of the roads in a programme with considerably less pressure than in 2012.

He will compete in Australia and Poland for the first time this year.

When he set about Rally Sweden last week and posted third-quickest time on the Superspecial, an eyebrow was raised. When he stayed in that provisional podium place for much of the first day, at the expense of Mikko Hirvonen's sister car, the other eyebrow was raised. And day-two spectators took a step back on catching sight of Fiesta RS WRC number 11.

They needn't have worried. The car came home fifth overall. And without a scratch.

"This is my second chance," says Tanak quietly. "And it's the perfect programme for me – some rallies in a World Rally Car and some in an R5 car. But it's been difficult. Of course I wanted to stay involved in the sport, so we make the team, but then we are trying as well to find the budget from Estonia – and this is not so easy."

While his pace has always been obvious, right from his trademark massive attack in a Pirelli Star Driver Mitsubishi in 2010, it's clear that Tanak now realises the value of what his mentor, five-time world rally winner Markko Martin, and Wilson were putting into him.

"I never gave up," he says, "and now we're back.

And I'm quite happy with the pace from Sweden; we weren't pushing and taking risks to do this speed, which is good."

Wilson's genuinely impressed and a little taken aback. Just two years ago he'd given Tanak the rallying equivalent of Alex Ferguson's hairdryer treatment too many times. It's reckoned Tanak shunted 11 times that year.

The M-Sport team principal, who has supplied a car on a commercial basis for Tanak this season, says: "There's a huge difference in everything he's doing. His confidence, his outlook and a big difference for me is the relationship with the co-driver. It's been a hard lesson for him, he wants to drive and maybe it came too easy to him before. He's different this time around."

While Wilson's extolling the virtues of the MkII Tanak, he arrives back in service, exits the car and makes for the motorhome, head down, face set. "He can still be a bit miserable, mind."

But he's not nearly as bad as he was. Information on what's just gone on between the trees is not quite on the same need-to-know basis. Talking about his return to the sport,

Tanak goes through the motions before pausing and then delivering a line with a smile: "We had a long time to analyse things last year!"

Probably the biggest difference for the new, apparently quicker but definitely more relaxed Tanak is his choice of co-driver. Raigo Molder has replaced Kuldar Sikk. Molder co-drove for him seven years ago and what he lacks in WRC experience (prior to Sweden he'd only competed on one WRC round) he makes up for in faith and friendship in Tanak. This is obvious when there have clearly been some pacenote issues early on in Sweden. In 2012, Tanak would have wasted no time in chucking Sikk under the bus for a wrong or late call. This time around, he gets defensive and ultimately moves the questioning on.

Tanak's next test comes in Mexico, where he's in a DMACK Fiesta R5. He finished a strong fifth there in 2012, but threw away a class win the year before when he pitched his Fiesta S2000 off the road and out of the lead. Yang has never been far from yin for Tanak.

Until now? We'll see how things develop, but it's looking good so far. ❧

Martin Prokop tackles a rutted and slushy stage



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Why Rally Sweden has to change

Rally Sweden is a snow rally but, once again, it failed to be quite snowy enough this year.

DAVID EVANS points out why that's a problem for the event's survival and suggests a solution

MCKLEIN



Tommi Makinen tackles a snow-free Sweden in '97



Colin McRae leans on a snowbank back in '95

Well, it wasn't cold. It wasn't even close to cold. And then some bloke arrived at Rally Sweden's post-event party in a T-shirt. OK, enough, it's time to see sense; time to turn north. It's unfair to say this problem's an annual one for Rally Sweden — but it's certainly perennial. The world's getting warmer. It must be, it says so in *The Guardian*. I read a feature about rising surface-air temperatures, greenhouse gases, subsurface ocean temperatures and retreating glaciers. I'll be honest, I didn't understand much of it — but it didn't sound like good news for polar bears. Or for the future of the World Rally Championship in Karlstad...

What I do know is that I didn't need gloves on while noting the thoughts of the world's best rally drivers. And the ink in my pen didn't freeze once.

THE PROBLEM

Fortunately for the organisers of Rally Sweden, it snowed a couple of weeks before the event started, which at least gave the look of some sort of winter. And it snowed during the rally, but that wasn't Swedish snow. It was British snow. The wet stuff that clings to the front of cars instead of the beautiful powdery stuff that wafts along and sticks to the back of cars.

The problem with Sweden this year was twofold: a lack of snow meant a lack of snowbanks and the lack of temperature range through the winter meant a lack of ice on the roads. Those of you who watched the rally on television would point out that there were snowbanks at the side of the road, but don't be fooled: they were piles of snow. There's a difference.

The difference is that a pukka snowbank is the one that a driver leans on at the exit of the bend, having hit the apex a gear higher than his pace notes suggested. That's Sweden and that's the magic of this rally — seeing the car go faster than seems humanly, mechanically or physically possible through a corner with a great plume of snow dust exploding from the car's point of contact with the solid snow.

Good conditions are easy to spot from afar: they leave their mark on the cars in the shape of missing rear bumpers. There weren't many cars

needing those replacing in service this year.

That was because touching the banks in Sweden this year was a joke. They gave zero support and wilted at the first sight of a front or rear bumper. Just ask Sebastien Ogier or Kris Meeke — both of whom were victims of a warm winter.

The temperature range is about developing the ice base, vital for the studded tyres to grip into.

THE IDEAL

What this rally needs is a weekly warming and cooling. Here are the perfect ingredients: a rainy, wet autumn followed by very heavy snow in the early winter. Early in the new year, we could do with a couple of days above freezing to let the snow thaw into the already sodden ground and then, from January's week two, the deep freeze — we want -20 and -30 all the way to the middle of February. Then, a week before the event, more heavy snow. A day before the recce, the snow stops. Job done.

The result of all that is perfect conditions: hefty banks and a perfect surface for the spikes to do their thing. And that means a wicked winter race.

It's true that prior to this year, conditions hadn't been bad, but Mikko Hirvonen's heard it all before. "It's not so nice to drive on gravel and without the snowbanks and, I have to say, I have never seen such deep ruts as on this rally," he says. "It's always a little bit of a risk on this event."

"OK, the last two years have not been so bad, but you never really know how it's going to be when you get here. Maybe it's easier to find the solution for global warming than finding a new place for this rally."

Or maybe not...

"My fear is that if we have one more year like this then we will lose the rally. Competition is tough now" PATRIK SANDELL

Citroen racer Mads Ostberg has a solution. "They should move this rally to Ostersund."

THE DEFENCE

Ostersund is a long way north of Karlstad. But the people of Karlstad, predictably, don't want it to move. Nor does Glen Olsson, the promoter. Olsson, it would appear, hasn't read *The Guardian* and would prefer to bury his head in the snow — if he could find any.

"This weather issue, I don't think it's a real issue at all," he says. "And I don't know where the ruts are, we don't have any problems with ruts."

So, you don't want to go to Ostersund then?

He replies: "If you want to go north, you have to go further, into the mountains, where there aren't any people, and no hotels. And the weather is the same in Ostersund as it is in Karlstad."

THE ANSWER?

Ostersund is one option, Are is another. Are is a gorgeous place, a host town for a World Cup downhill race. A place with 30,000 hotel beds. And a place where the winter comes. And stays.

Patrik Sandell is a former Junior World Rally champion, a Swedish driver who knows a thing or two about good conditions. He's for the move.

"I was on the rally and I felt sorry for the drivers," he says, "that was not the Swedish Rally. We have eight or nine gravel rallies a year — we don't need another one. One weekend each year we have a winter rally and that's Sweden. My fear is that if we have one more year like this then we will lose the rally, the competition is so tough now and if Sweden can't deliver proper snow and ice then Canada, China or Russia will and we [Sweden] will lose the WRC forever."

"Three or four years ago I said the rally had to go north and the government looked at the idea and said it was a good one — and people hated me for this. The people in Karlstad are very local and I know they think I'm only saying the event has to move north because I live up there, but believe me, it will work. We have the perfect roads, we have everything ready."

And, while the rain continued to fall in Karlstad, Sandell was talking to AUTOSPORT on his phone from near Are... from the middle of a frozen lake. The temperature was minus five and there were bright blue skies.

Time for change. And not just a climatic change. ❧

What's new for NASCAR in 2014



On the eve of the Daytona 500, **CHARLES BRADLEY** is your guide through all the changes you'll see on the NASCAR Sprint Cup grid this season, including an all-new title decider

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Often accused of being set in its ways, NASCAR kicks off its 2014 Sprint Cup season, as ever, with this weekend's Daytona 500 – the jewel in the US stock car racing series' crown. It's the first of 36 rounds across North America – from high-banked superspeedways to twisty road courses via short tracks and 1.5-mile 'cookie cutters' – but there have been plenty of changes in the off-season to talk about going into this weekend's all-important series opener.

THE RETURN OF THE #3

Not since February 18 2001 has a NASCAR Sprint Cup race featured a car running the number 3. That digit had become synonymous with Dale Earnhardt, the seven-time champion, who died on that day in a last-corner crash on the final lap of the Daytona 500.

On Sunday Austin Dillon – the grandson of team owner Richard Childress – will return the number to top-level NASCAR from pole position. "It's going to be emotional," says Childress. "Dale is up there, smiling and saying, 'This is what we talked about doing!'"



Dillon bringing it all back home for #3



Does NASCAR hope to stop Johnson celebrating?

MARKLAND/GETTY

'WINNER-TAKES-ALL' TITLE DECIDER FOR HOMESTEAD

A totally new system to decide the champion will be employed this year, with the 'Chase for the Championship' over the final 10 rounds opened up from 12 to 16 drivers. From there, four will be eliminated from the Chase after every three races, until just four remain in contention

when the series arrives at Homestead for its final round.

Any driver who wins a race during the Chase will automatically progress to the next phase. No bonus points will be awarded for laps led in the finale, meaning that the championship will be decided purely by finishing position in

that final round.

The new system has received a mixed reception from drivers, and many view it as a reaction to the recent dominance of Jimmie Johnson. When asked if this was so, Johnson replied: "It's crossed my mind, I'm not going to lie."

NASCAR'S NEW SPRINT CUP CHASE FORMAT			
16	DRIVERS - CHALLENGER ROUND Chicagoland New Hampshire Dover	12	DRIVERS - CONTENDER ROUND Kansas Charlotte Talladega
8	DRIVERS - ELIMINATOR ROUND Martinsville Texas Phoenix	4	DRIVERS - THE TITLE DECIDER Homestead



MARKLAN GETTY

Group qualifying should liven things up in 2014



LEVIT/LAT

ALL-NEW KNOCKOUT QUALIFYING SYSTEM

The single-car system of qualifying has been dropped at most events. The grid for races at tracks of 1.25 miles or longer will now be set via a three-round knockout format.

The first segment will last 25 minutes and be open to all cars, with the fastest 24 progressing to the next phase. They will run for an additional 10 minutes, at the end of which the fastest 12 will move on to a final five-minute all-in round. There will be a five-minute gap between each phase.

A two-round format will be used at shorter tracks, starting with 30 minutes for all entries, with the fastest 12 moving to the 10-minute final phase.

Crew chiefs have successfully lobbied to be allowed to add/remove tape on the cars' noses (to alter downforce levels) and make wedge adjustments, to improve handling, between phases. So it should be just as frantic in the garage between sessions as out on the track while drivers seek a clear lap or a tow.

'ZERO-RIDEHEIGHT' RACECARS

NASCAR's Gen-6 machines, new for 2013, enter their second season of competition with a crucial twist in the way they're run.

No longer will teams have to satisfy a post-race front-rideheight test (as you'd see in the British Touring Car Championship), which should end the costly grey area that many exploited by running their cars too low and then, ahem, surreptitiously raising them back up to pass post-race scrutineering.

This should level the playing field when it comes to dampers and springs, and eliminate one of the main

areas that was rife for cheating. There have also been some aerodynamic tweaks (a square leading edge on the all-important splitter, side skirt and rear fascia tweaks, and an eight-inch rear spoiler) aimed at getting the cars to produce more of a tow. Drivers felt that when they towed up to the car in front, its immediate wake was then hampering efforts to pass. It is hoped that the old-fashioned 'slingshot' effect could return to the racing, which is especially required on the 1.5-mile tracks that now proliferate.

SOME BIG-NAME DRIVER MOVES

There has been plenty of activity in the driver market over the winter, with some big hitters switching teams in search of success.

The biggest of these is Kevin Harvick, who ends a 13-year association with Richard Childress Racing to join Stewart-Haas Racing (Ryan Newman goes the other way). Harvick is joined at SHR by 2004 champion Kurt Busch, who was signed by F1 team aspirant Gene Haas without co-owner Tony Stewart's knowledge!

The fallout from last year's controversial Richmond race has cost Michael Waltrip Racing dear, as its attempt to manipulate

a race to get Martin Truex Jr into the Chase cost it a lucrative sponsor deal, a six-figure fine and Truex's defection to the Furniture Row team, which made the Chase with Kurt Busch last season. Veteran Mark Martin also leaves the team to make way for the returning Brian Vickers, now clear of the blood clots that have blighted his recent career.

Former F1 star Juan Pablo Montoya exits Ganassi Racing to return to Indycars, so 21-year-old Kyle Larson is thrust into the big league. He'll be embroiled in a tough Rookie of the Year battle with Austin Dillon, Justin Allgaier, Parker Kligerman, Cole Whitt, Ryan Truex and Michael Annett.

CHASE FOR THE CHAMPIONSHIP

DATE	LOCATION
February 23	Daytona 500
March 2	Phoenix
March 9	Las Vegas
March 16	Bristol
March 23	Fontana
March 30	Martinsville
April 6	Texas
April 12	Darlington
April 26	Richmond
May 4	Talladega
May 10	Kansas
May 25	Charlotte
June 1	Dover
June 8	Pocono
June 15	Michigan
June 22	Sonoma
June 28	Kentucky
July 5	Daytona
July 13	New Hampshire
July 27	Indianapolis
August 3	Pocono
August 10	Watkins Glen
August 17	Michigan
August 23	Bristol
August 31	Atlanta
September 6	Richmond
September 14	Chicagoland
September 21	New Hampshire
September 28	Dover
October 5	Kansas
October 11	Charlotte
October 19	Talladega
October 26	Martinsville
November 2	Texas
November 9	Phoenix
November 16	Homestead

WHERE TO WATCH ON TV

UK subscription channel Premier Sports will broadcast the entire NASCAR Sprint Cup season live.

REVISED PENALTY STRUCTURE AND APPEAL SYSTEM

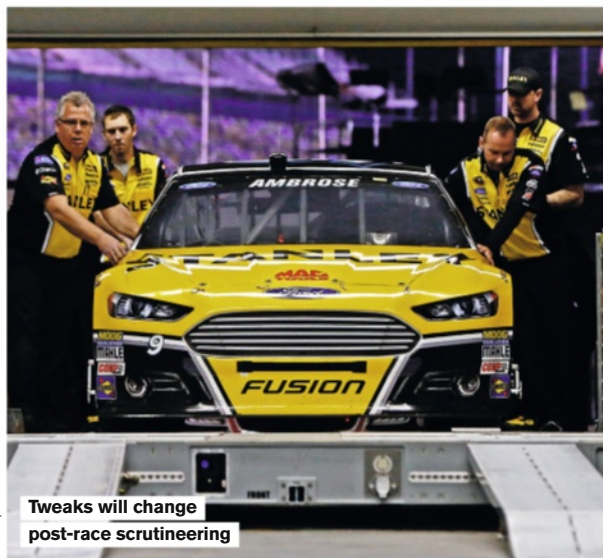
NASCAR has been labelled inconsistent when it adjudicates on rules transgressions, and has admitted as much, which is why it will implement a new system, rated from P1 (minor) to P6 (severe).

At the P1 end, these range

from slight infractions that result in qualifying time deductions for repeat offenders. Meanwhile, up at P6 – such as altering the engine and chassis beyond predefined limits – it will now result in a 150-point penalty, \$150,000-200,000 fine,

six-race crew-member suspensions and probation.

If transgression is found after the race, it strips the benefits of a win toward the Chase – but whoever wins on the track on Sunday will 'keep' their win in the record books.



FERREY/GETTY

Tweaks will change post-race scrutineering



Pitlane stop/go penalties are not the only sanction

Stars of the NASCAR soap opera



MARKLAND/GETTY

Starting this weekend at Daytona, they'll be tuning in for 36 episodes to watch the NASCAR storyline unfold. **CHARLES BRADLEY** tells you which millionaire superstars to look out for

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JOE GIBBS RACING TOYOTA

MATT KENSETH

Age 41
Starts 508
Wins 31
Av finish 14.2
Earnings \$99.5m



A rock-solid racer, if unspectacular. Labels his 2013 title near-miss as "disappointing" but is determined to go one better this time after a great first season since switching teams from Roush Fenway: "Nobody is looking back, everyone at JGR is digging hard – we have what it takes."

KYLE BUSCH

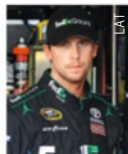
Age 28
Starts 329
Wins 28
Av finish 15
Earnings \$63.1m



The man they call 'Rowdy' should really have won this title by now. A supremely gifted racer, but sometimes his own worst enemy, now he feels is a perfect time to take that extra step: "The consistency and chemistry of us three [JGR] drivers mean it's time to be a championship-calibre organisation."

DENNY HAMLIN

Age 33
Starts 291
Wins 23
Av finish 14.7
Earnings \$55.5m



A disastrous 2013, so the only way is up. Missed four races last year due to a back injury sustained at Fontana, after a feud with Joey Logano ended with him in hospital, but he ended the season on a high with victory at Homestead – the track that will decide the 2014 champion: "For us, this is redemption year – to show we haven't gone anywhere."

Hamlin won last Saturday's 'warm-up'



THACKER/LAT

ROUSH FENWAY RACING FORD

CARL EDWARDS

Age 34
Starts 337
Wins 21
Av finish 13.3
Earnings \$68.8m



How the mighty has fallen. Two poor seasons have followed his being pipped to the 2011 title. In that time there have been race wins but nothing like the consistency you'd expect from 'Cousin Carl'. "Historically, we've run real well after big rule changes, so I'm positive from that standpoint," he says.

Veteran Biffle is still a leading contender



PENNINGTON/GETTY

GREG BIFFLE

Age 44
Starts 402
Wins 19
Av finish 15.8
Earnings \$64.1m



Was RFR's best performer in 2013, but that's not saying much. He was its only driver to make the Chase, but made little impact in it in those crucial 10 races. Now in his mid-forties, whisper it, are his best days (runner-up in 2005) behind him? Plus his contract is up at the end of the season. "We've been talking over the winter... wait and see," he says.

RICKY STENHOUSE JR

Age 26
Starts 41
Wins 0
Av finish 19.4
Earnings \$6.6m



Perhaps better known as Danica Patrick's current beau, rather than for his own on-track performance, former Nationwide champion Stenhouse shows all the signs of being right at home in NASCAR's elite. Question is, does he have that little bit more to make him a future title challenger? He says: "I feel that we have more confidence going into this season."

STEWART-HAAS RACING CHEVROLET

TONY STEWART

Age 42
Starts 521
Wins 48
Av finish 12.8
Earnings \$112.9m



DANICA PATRICK

Age 31
Starts 46
Wins 0
Av finish 26.6
Earnings \$4.5m

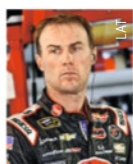


How will 'Smoke' bounce back from his leg-busting Sprint Car crash that curtailed last season? He's a natural born racer, and will be chomping at the bit to return to the title-winning form he last displayed in 2011. "Honestly, since my wrecked car landed everything has gone as well as expected," he says, adding that he expects to be "65 per cent" fit for Sunday's gruelling race.

You'll hear her say she's still learning, but she has over 100 stock car starts under her belt now and needs to prove she deserves a top car. Hugely popular, of course, but her '13 pole at Daytona proved to be a false dawn, and she's still only managed one top-10 finish in 46 Cup starts. "I feel better than I did last year, and feel good about where we are with the car," she says.

KEVIN HARVICK

Age 38
Starts 466
Wins 23
Av finish 14.3
Earnings \$89.2m



KURT BUSCH

Age 35
Starts 471
Wins 24
Av finish 17.2
Earnings \$79.6m



'The Closer' has finally cut the apron strings from Richard Childress Racing and joined Stewart's superstar-laden squad. Too many egos? Harvick has a short fuse, so if he's not getting the attention he requires we'll soon know about it. "I hit 'delete' after Homestead; I've come here expecting to win and race for a championship," he says.

Team co-owner Gene Haas dropped a small bombshell on Stewart when he revealed he'd signed Busch for a fourth car. Busch will add further fireworks into the mix but his top-10 points finish with the tiny Furniture Row team in 2013 shows he's one of the best out there on his day. "It's an exciting time; Gene expects us to win straight away," he says.

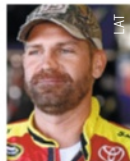


Patrick needs to prove her worth

MICHAEL WALTRIP RACING TOYOTA

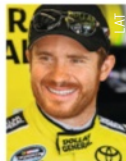
CLINT BOWYER

Age 34
Starts 289
Wins 8
Av finish 14.4
Earnings \$49.2m



BRIAN VICKERS

Age 30
Starts 280
Wins 3
Av finish 20.3
Earnings \$33.2



After a great 2012, last year had a disastrous end when the team was admonished for attempting to fix the outcome of the Chase at Richmond. He sums last season up thus: "We ran good until we got to the Chase, but we didn't win a race all year – that's unacceptable with the whole package we've got here."

Returns to a full-time ride for the first time since his Red Bull days – when blood clots were first discovered in health checks – in a scaled-back two-car team. "It feels great to be back after two years, for sure," he says. "I'm hungry for this." Jeff Burton will run a part-time third car with the Waltrip squad.

PENSKE RACING FORD

BRAD KESELOWSKI

Age 30
Starts 161
Wins 10
Av finish 16.2
Earnings \$31.9m



JOEY LOGANO

Age 23
Starts 183
Wins 3
Av finish 17.8
Earnings \$27.3m



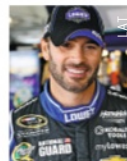
To say his title defence didn't go as planned is a massive understatement – missing the Chase was a disaster as Penske switched from Dodge to Ford: "It's not fun not enjoying the kind of success you anticipate, but it's the cycle of sports." His only victory came late-season at Charlotte, so don't rule out the 'Blue Deuce' from bouncing back.

The youngest driver in the 'big-five' teams, he made the Chase last year and scored one win to place eighth – his best placing in the Sprint Cup thus far and putting Keselowski firmly in the shade. "I'm excited because we're starting where we left off, with the same people to build on what we finished with," he says.

HENDRICK MOTORSPORTS CHEVROLET

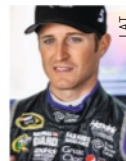
JIMMIE JOHNSON

Age 38
Starts 435
Wins 66
Av finish 11.6
Earnings \$135.1m



KASEY KAHNE

Age 33
Starts 360
Wins 16
Av finish 17.3
Earnings \$61.5m



He's NASCAR's answer to Sebastian Vettel. Six titles in the locker, but has a raft of new rule changes – including that new Chase-decider – to conquer. What helps here is that he's got the best crew chief in the business in Chad Knaus, renowned for reacting quickly to change. "This is a big shake-up, not only for the car but for the way the champion is crowned," he says.

It's year three with Hendrick, and last year's underwhelming Chase performance needs sweeping under the carpet. He's a regular race winner at this level, but his best points finish has been fourth. His former team boss Ray Evernham's return to Hendrick should also give Kahne a huge boost. "I understand the place and working with everybody now," he says.

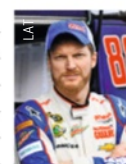
JEFF GORDON

Age 42
Starts 725
Wins 88
Av finish 12.5
Earnings \$137.5m



DALE EARNHARDT JR

Age 39
Starts 505
Wins 19
Av finish 16.1
Earnings \$81.9m



Has it really been 13 years since he won the title? He's enjoyed eight consecutive top-10 points finishes but another crown continues to elude the Californian. The spectre of retirement has also been raised, to which he says he's "jokingly serious" about. He adds: "All my trophies say Winston on them, I want a Sprint Cup too. I want that before my career's over."

Pressure to perform: it's all Dale Jr has ever known. He feels the weight of his 'Junior Nation' league of fans, who are as desperate for success as he is. The big news is that his crew chief since 2011, Steve Letarte, is moving on at the end of the season. "It's a pretty big deal, but we've got this last season together and we're going to enjoy it," he says.



Kahne looks for big step forward



Red Bull's latest ace

Briton Jann Mardenborough was set to go down the sportscar route thanks to the Nissan GT Academy, but a Red Bull/Arden deal in GP3 means F1 could yet beckon. By **MARCUS SIMMONS**

Since January 12 last year, Jann Mardenborough has started a staggering total of 76 races. Now, just back from his second successive appearance in the Toyota Racing Series in New Zealand, he's gearing up for a new activity: GP3 with Arden – as part of Red Bull's driver development programme. All this without spending a penny of his family's money...

The 22-year-old from Cardiff, as most of you will know, is a discovery of the Nissan GT Academy, and the one that Darren Cox, the Japanese manufacturer's boss of global motorsport, has earmarked for a single-seater career. Initially that was to gain experience of downforce in order to better prepare for a future in the sports-prototype ranks, but the Red Bull gig suggests that the thinking is now 'why not push for Formula 1?'

There are obvious connections anyway, as Nissan luxury brand Infiniti already has close

links with Red Bull. Furthermore, simulators are already a vital tool in F1; Mardenborough, as a find of the PlayStation-based *Gran Turismo* contest, will not only feel the benefit from Red Bull's facilities – he can improve them.

"It came about late last year," says Mardenborough of the initial Red Bull contact, "and obviously we're working with Arden this year [which ran the drinks firm's proteges Daniil Kvyat and Carlos Sainz Jr in 2013].

"I'll be able to use the sim to learn tracks like the Hungaroring and Sochi, and I've been invited to help develop it. Christian Horner [the Red Bull team boss, who founded Arden] has talked about it and I'm looking forward to it."

It's a big change from 12 months ago when, after just one season in Nissan's GT-R, he had just notched up his first races in single-seaters in New Zealand's TRS before concentrating on his main 2013 programme: Formula 3 in a Carlin Dallara-Volkswagen.

"When I started in F3 it was, 'wow, this is tough,'" he says. "There were a lot of downs

with results, but there were a few ups: at Silverstone and Norisring, there were glimmers that I can do this.

"It was a huge step, but I improved every weekend in terms of driving. The first race weekend at Monza was the worst – the conditions were so bad you couldn't see anything. I was used to having a nice windscreen in GT racing, but in the F3 car you can't see the track and there are young guys pushing to get past you by any means necessary... I've got a lot of respect for anyone who does that championship."

The initial plan was British F3, but that series' contraction for 2013 to four rounds meant a refocus to Europe. Still, there seemed every chance that Mardenborough could take a win in the British rounds, but it never quite happened...

"A lot of it was down to mentality," he reveals. "I was driving flat-out, as fast as I could, and seeing what happened. A lot of the time it didn't work out."

In many ways, Mardenborough was having to learn what most of his rivals nailed when they



Mardenborough gets to grips with Red Bull's Formula 1 simulator



Mardenborough took on a step up in F3 last year



Jann with mum Lesley-Anne and dad Steve

“The F3 car was on a knife-edge all the time, but as soon as I sat in the GP3 I felt more comfortable”

were 13 or 14 in karts: the development of a racing brain; slowing everything down so it's not so rushed. “Jimmy [Goodwin, his engineer at Carlin] talked to me a lot, telling me I looked like I was constantly going to shove it in the wall.

“Now it's a lot more natural and smoother. You know where to improve the next lap because you're not already on the edge.”

It was a lesson he put into practice on his repeat trip this winter to New Zealand, where Mardenborough won three races and was only narrowly pipped in the title decider a couple of weeks ago. “At the first round I pushed too hard in qualifying and ruined my lap,” he admits. “Then I said I was going to be a different guy, and after that the less hard I pushed the quicker I went.

“I ‘found’ myself as a driver – it was great. If anything I went a bit too far the other way, like at Hampton Downs where I was too concerned about getting points.”

Mardenborough's move to Arden comes after three days of GP3 testing in the post-season running in Abu Dhabi: two with Carlin and one

with his new team. He was in the top 10 pretty much throughout, hinting that even if he can't quite challenge for pole from the get-go, at least some reversed-grid glory could be on the cards.

“I felt more comfortable in the Arden car,” he explains. “I just got to grips with it a bit quicker. And Arden is a smaller organisation [than Carlin], and it's nice to work with different people.

“We were looking at Formula Renault 3.5 as well. You get a lot more track time than in GP3, but when the test came I was pretty quickly on the pace in the GP3, and we thought maybe the track time may not be so much of an issue.”

Is GP3 easier to adapt to for someone with a (short) grounding in GTs? “Yeah,” he admits. “The F3 car was on a knife-edge all the time, but as soon as I sat in the GP3 it felt more comfortable. It's something I can't describe but I was just more at home.”

But will he enjoy it as much as the LMP2 car? If Mardenborough does end up being Nissan's man in the prototype ranks, then his form from his Le Mans 24 Hours debut last year – where he finished third in class with Michael Krumm and Lucas Ordóñez – hints that he'll be a star in this discipline.

“It was my favourite weekend of racing!” he gushes. “To be racing with Michael... he was the first racing driver I ever sat in a car with, in the GT4 Nissan at Silverstone. He was talking about different techniques and showing me left-foot braking and I was thinking, ‘Wow, this guy is awesome!’”

Now, just over two years after that first foray onto the track, he's part of Red Bull's programme. Is there any chance of a run in the F1 car? “No talk yet, but that would be amazing!”

A DIFFERENT PATH TO A FAMOUS DAD

Jann Mardenborough isn't the first sportsman from his family – and he'll have to go some to become a folk hero on a par with his dad!

Steve Mardenborough is a legend with Wolverhampton Wanderers fans for scoring the winning goal away to Liverpool in 1984 – in the days when the reds seemed invincible. He spent many years as a professional footballer, including at Darlington (where Jann was born) and then in Wales (where the family now lives).

“I wanted to be a footballer from 13 to about 18,” says Mardenborough Jr. “I was pushing on, sort of playing semi-pro, but it never came naturally. My dad and my little brother would talk about looking at body movement, knowing where a player's going to turn before they do it, and I knew I could never do that.

“I'd go to training, work so hard and then not get picked, when someone who hadn't bothered going to training got in the team, so I packed it in. Three weeks later I got a call from the GT Academy...”

These days, Mardenborough Sr has to wangle time off work to watch his boy in action: “My mum and dad manage to get the money together to come and see me race, and they love being part of the team. They love experiencing things they've never seen before and seeing me happy. But when I'm at home I can still get quite chopsy with them!”

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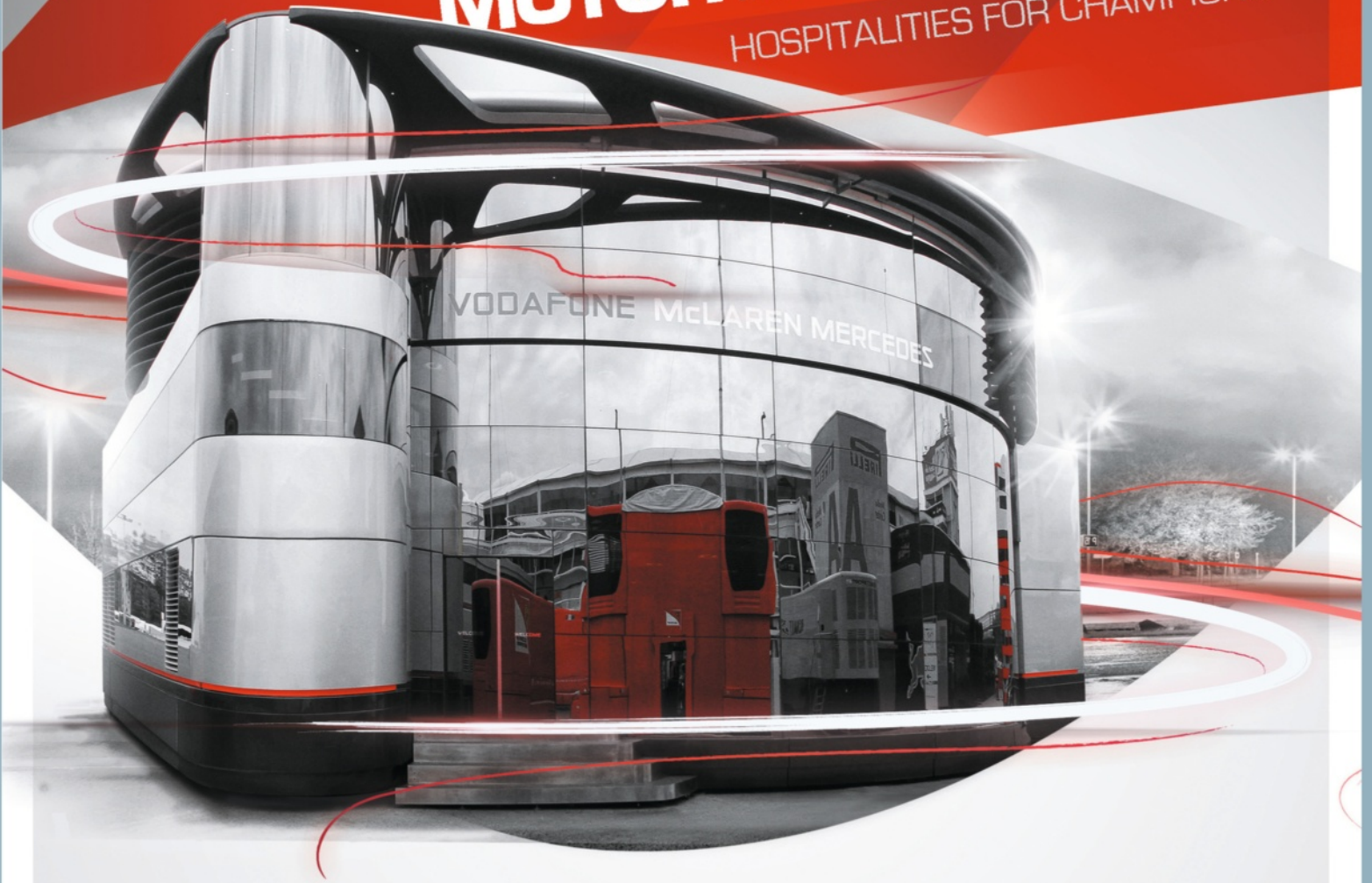
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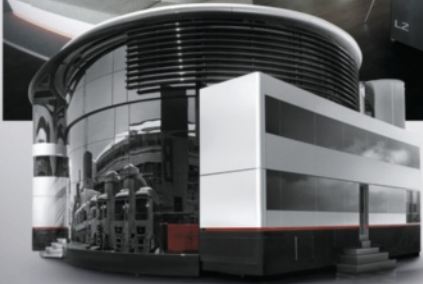
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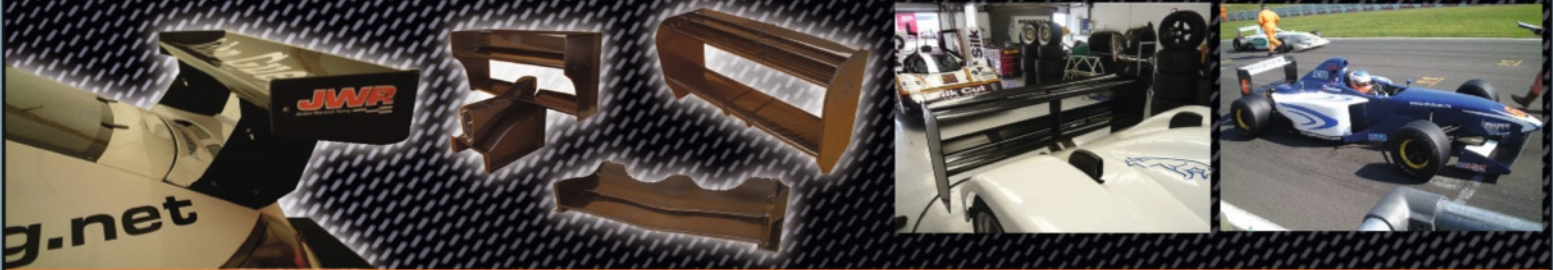
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Robertson is rated as one of Britain's brightest talents



ROBERTSON CV



2013 3rd BRDC F4, 3 wins (HHC)
2012 Ginetta Junior champion, 6 wins (HHC)
2011 Ginetta Junior runner-up, 3 wins (HHC)

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I MEAN NO DISRESPECT TO

Ginetta – or indeed sportscar racing in general – when I say it's a shame that Charlie Robertson has fallen off the single-seater ladder so early.

What we want to see in the junior formulae is drivers work their way up until they find their level: ie they come across enough rivals who have got that little bit extra. If that doesn't happen, those are the drivers you want to see get a chance in the higher echelons.

Losing some along the way for other reasons – namely budget – is hardly a new phenomenon, but for a promising 17-year-old to be looking elsewhere is an indictment of the current situation.

As one of the McLaren AUTOSPORT BRDC Award judges, I was fortunate enough to see how Robertson – then 16 – was able to adapt to McLaren GT, DTM Mercedes and F2 machinery that had nearly three times the power of anything he had driven before. The looks on the faces of the DTM team when they saw Robertson arrive in the pits suggested they were concerned he might be a little too young...

But he won them over with his ability in the car and his mature approach out of it. And he was sensational in the GT.

That doesn't mean he's more cut-out for GTs. Robertson was a factor in the F2 runs as well. The bottom line is: with that attitude and ability, he should be doing Formula Renault 2.0 with a view to progressing to F3 or GP3.

Most of the best sportscar aces have gone well up the single-seater ladder before switching because it makes you a better driver, but many are being forced to change earlier and earlier.

Here's hoping Robertson picks up enough backing to try again, or to follow Alexander Sims and Nick Tandy in becoming factory GT drivers.

Robertson in shock GT switch

Budget issues force highly-rated youngster to abandon single-seaters

McLAREN AUTOSPORT BRDC Award finalist Charlie Robertson has turned his back on single-seater racing to contest the Ginetta GT4 Supercup this season.

Robertson had been expected to move into Formula Renault NEC but will instead drive an HHC Motorsport G55.

The 17-year-old was one of the star performers in BRDC Formula 4 last year, his rookie slicks-and-wings campaign, taking third in the points.

He then tested a two-litre Formula Renault at Donington Park, Jerez and Paul Ricard as he lined up an FR NEC move, but will instead stay with the HHC squad that ran him to the Ginetta Junior title in 2012 and in F4.

He admitted single-seaters were no longer on his radar after committing to a career in sportscar racing.

"It's a bit of a change of plan but I think it's for the best," he told AUTOSPORT. "We were never really sure. We could have done FR NEC this

year and we were relatively close to doing it, but budget is the main reason.

"GTs was always something we never ruled out. It was always there and, after we discussed it, it seemed to be the best decision to further my career.

"We haven't got a car yet but I'm sure I'll get up to speed very quickly. HHC is probably the best team I've run with and hopefully I should be fighting at the front."

BRDC president Derek Warwick, chairman of the judging panel for the McLaren AUTOSPORT BRDC Award, labelled Robertson's move away from single-seater racing a "tragedy", but admitted it was no longer a surprise for a talented youngster to fall off the ladder because of funding.

"Although Matt Parry won the Award, rightly, one person who stood out was Charlie," he said. "Right from the very start it was obvious he was raw – he'd never even driven a road car before – but he impressed and that feeling didn't go away.

"If he doesn't pursue his career in single-seaters and someone doesn't find a way of supporting him it'd be a tragedy. He's a brilliant young talent, one I'd like to support, but budget talks and we've seen plenty of drivers not make it because of money. I find it frustrating."

Another BRDC F4 driver, early-season points leader Jake Dalton, will also step out of single-seaters due to being unable to raise a full budget.

Robertson believes it is too risky for drivers to commit to big-budget single-seater campaigns and said sportscar racing was becoming the obvious choice.

"The GT route is the way to go at the moment," he added. "That's what we need over the next few years and I've got to put my focus on that.

"I've always liked GT cars and it's definitely a route I'd like to go down. I've got to put [single-seaters] to the back of my mind. It was an option at one point but not anymore."

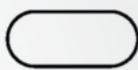
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British GT

Ginetta withdraws British GT entry

GINETTA HAS WITHDRAWN ITS factory-entered G55 from British GT after a disagreement over the grading of one of its drivers.

Marque chairman Lawrence Tomlinson had originally intended to return to the series full-time alongside Mike Simpson in one of its G55 GT3s, and possibly field a second car.

But after series organiser SRO graded both drivers as 'silver', which means they would have to carry 65kg of ballast at every race, the

entry has been rescinded.

Simpson believes the ranking is too high for Tomlinson, who won the GT2 class in the 2006 Le Mans 24 Hours in a Panoz Esperante but has not completed a full season since '07. Tomlinson has been downgraded to bronze by Le Mans organising body the Automobile Club de l'Ouest.

"It's a non-starter really," Simpson told AUTOSPORT. "To commit to [racing with the added weight] wasn't something we were prepared to do.

"It's a bitter pill to swallow. He has not done a full season since 2007 and even his ACO grading is a bronze. He's always been a gentleman driver; the ultimate gentleman driver. You can't put him in that category."

Championship manager Benjamin Franassovici stressed that the team was offered a compromise.

"There's no Ginetta vendetta," he insisted. "I rate Lawrence to be quite talented and offered to evaluate it but that was not taken up."

Tomlinson and Simpson will instead contest a full VdeV Endurance Series campaign and are eyeing selected GT Open rounds. The G55 may also make its United SportsCar Championship debut later this year.

The marque will still be represented in British GT this season, with Colin White and Tom Sharp returning. Meanwhile, factory Ferrari squad AF Corse has announced a second car for Thai youngster Pasin Lathouras. His driving partner is yet to be confirmed.

VW Cup

Former champion Walker lands prize VW Cup drive with KPM

FORMER VOLKSWAGEN CUP UK champion James Walker will return to the series this season after winning a prize Milltek-backed KPM Racing drive.

Walker won the championship in 2012 and contested the first two rounds of last season but ended his campaign early.

He triumphed in an eight-driver shootout at Donington Park to land the seat in the VW Golf GTI. The evaluation included time in the racecar with British Touring Car driver Tom Onslow-Cole, plus on-track assessment in road cars and media interviews.

Walker will receive full preparation and support from KPM, as well as a spares package, and will only need to cover the cost of tyres and damages.

"I am amazed and honoured and so



looking forward to it now," he said. "I've got to find someone to do my job now so I can focus fully on it.

"I didn't think I was doing too well, so I was shocked and surprised as I didn't think I had it."

Porsche Carrera Cup

Meadows eyeing Porsche title hat-trick alongside GT debut

DOUBLE PORSCHE CARRERA Cup GB champion Michael Meadows wants to dovetail another title campaign alongside his British GT debut.

Meadows, who is likely to retain his backing from tech giant Samsung's UK arm, clinched the 2013 title in the season finale to become the first driver to win back-to-back titles in the championship with different teams.

He is unsure with which team he will run in 2014, but said it was a priority for him to branch out from the Carrera Cup, in which he has raced since 2010.

Meadows, run by the GT Marques squad last year and Redline Racing before that, said a hat-trick of titles and a move towards GT racing was his target for this season.

"At the moment no plans are finalised but I'm pretty close on a few things," said the ex-British Formula 3 racer.

"Porsche is one option but the other is British GT. There's good scope to do both; that's definitely the aim. I don't have that decision. Samsung is in the process of deciding what it wants to do."



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British GT4

Porsche to join British GT4 ranks with Team Parker Racing-run 997

TEAM PARKER RACING WILL RUN a Porsche in British GT4 this season for former GT Cup racer Barrie Baxter.

Parker, one of the Porsche Carrera Cup GB's leading squads, will enter the 997 owned by Baxter and raced in GT3 specification last season.

The team, which ran Ian Loggie and Chris Jones to the British Endurance Championship title in a similar car last year, will convert the 997 in the coming weeks before it becomes the marque's first to race in the category in the UK.

Team boss Stuart Parker, who hopes to confirm a second driver soon, said: "We've bought the GT4 kit and that will be with us shortly. As soon as we're ready we'll be out testing."

"It's something that's obviously growing for us but we're no strangers to sportscars. GT racing is where we want to be and something we really enjoy."

British GT's secondary class is set to swell into double figures this season with the Porsche joining examples from Aston Martin, BMW, Lotus, Toyota and Ginetta.

Championship boss Benjamin Franasovici said the growth of GT4 was proof that it can be a success in Britain despite its rocky start.

"I'm excited, I think we're topping 10 or 11 and adding another brand is fantastic," he said. "We haven't given up [on the class]. People were saying, 'You haven't got enough cars', but sometimes you've got to take care of the black sheep."



Parker-run 997 won BEC title



Super Touring ace Reid drives ex-Hunt McLaren M23

Former British Touring Car star Anthony Reid tested an ex-James Hunt McLaren M23 at Donington Park last week. "It's a fabulous handling car – you can see why it won so many races," said Reid, who was helping to sort the car for its American owner.

GT5 Challenge

Century growth continues with overseas GT5 Challenge entries

GROWING GT SQUAD CENTURY

Motorsport will continue its expansion this season with a two-car Ginetta GT5 Challenge assault.

The team, headed by former British Formula Ford champion Nathan Freke, has already announced a brace of G55s to be run in British GT4 on top of an

expected Ginetta GT4 Supercup entry.

It has now added Challenge debutants Osamu Kawashima and Frederik Mortensen to its programme.

Kawashima made his UK debut with Century in last year's GT Supercup finale, while Dane Mortensen tested a G40 with the team at Croft last autumn.

"I've always wanted to build up a team with a staircase of progression to race in British GT3, so putting a two-car team in the Ginetta GT5 Challenge is a perfect place for us to encourage newcomers to GT racing," explained Freke.

"It will help them build their way up within a team that is very capable of carrying them right through the ranks to eventually become a GT champion."



Kawashima ran in Century G55

HUMBLE PYE

The voice of club racing

Pane driving ex-Hill Lola T370 in 2012



Mauro Pane: 1963-2013

The Historic Formula 1 racing fraternity was devastated last Thursday when news broke of the untimely death of Mauro Pane, in what appears to have been a tragic accident on a rural road near his home in Northern Italy. The 50-year-old was among HF1's staunchest supporters and best-loved characters.

Pane was reported missing on Sunday when, following a family lunch, he had not arrived at the workshop of F1 Storiche, the team he founded in 1994 with father Marcello. Mauro's body and that of a woman passenger were found when his upturned car was pulled from a canal near Gambolo. Local sources suggested the bridge it was crossing collapsed following bad weather.

"Mr Bread" – as I had known him since the late 1990s, when he prepared compatriot Pietro Ratti's cars for FIA Thoroughbred Grand Prix events – was one of those rare fellows who not only prepared stunning cars, but also drove them brilliantly. A kart champion in '86, he often tested Ratti's Fittipaldi F5A and its stablemates, then maximised opportunities to race them.

As F1 Storiche's heart and soul, Mauro knew every aspect of those cars intimately, from restoring chassis to rebuilding Cosworth DFV engines. Universally respected in the paddock for his friendly camaraderie, his delight in assisting rivals – particularly in Italy, where he

knew everybody – was legendary.

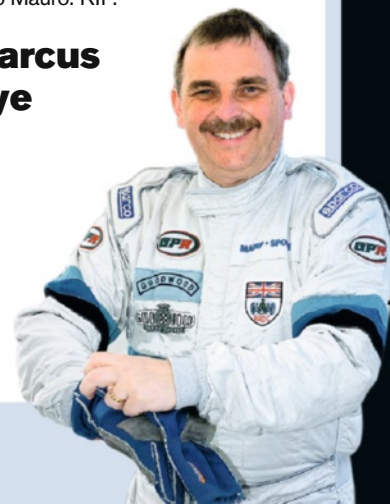
In 2006 fellow professionals paid him the greatest compliment when he finished third in the Monaco Grand Prix Historique's 1975-78 F1 plateau in Ratti's six-wheeled Tyrrell P34, behind Martin Stretton in Simon Bull's sister car and Simon Hadfield (Penske PC3).

"As Mauro drove down the pitlane afterwards all the mechanics stood and clapped him," recalls Ian Cox, now managing director of WDK Motorsport. "He was one of us." Pane went on to win the class-based FIA TGP title in 2008, driving the P34, and subsequently fielded many complex machines – including Formula 1 Ferraris – for loyal customers.

Pane bravely threw himself at his work when his supportive wife Sarah died unexpectedly last year. The dashing racer was a natural stunt double for the Niki Lauda character in Ron Howard's film *Rush*. He espoused the role brilliantly, even altering his driving style to mimic the great Austrian's.

As well as capturing the rivalry between Lauda and James Hunt, the popular biopic will immortalise the legacy of a friend who everybody will remember as 'a proper bloke'. Ciao Mauro. RIP.

Marcus Pye



"Mauro, F1 Storiche's heart and soul, was universally respected in the paddock for his friendly camaraderie"

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JONES

Mallory Boxing Day action could return

Mallory Park

Plum Pudding could be revived at Mallory

MALLORY PARK'S PLUM PUDDING meeting could be revived for the end of this season after the official formation of the circuit's new members' club.

New circuit operator Real Motorsport Limited, run by British Superbike team boss Stuart Hicken and Eddie Roberts, announced that the club would be created to help arrange a car racing calendar, as revealed by AUTOSPORT (February 6).

Mallory Motorsports Club Limited has

now been set up to help organise race events for the Leicestershire venue.

An application for Motor Sports Association recognition has been made in the hope of running the traditional Boxing Day fixture as planned.

The MMCL, which will be known as Club Mallory, was formally announced last week and is headed by Cliff Johnson, who has been involved with the circuit since the 1970s.

"Our partnership with Mallory's new operators is essential to our success," he said. "There's a lot of work to be done and a collaborative approach provides us with the strongest chance."

Roberts added: "Since taking over Mallory we've enjoyed fantastic support from both the local and motorsport communities. The formation of Club Mallory adds a whole new dimension. We're really excited."

In brief



EBREY

Brut Camaro revealed

Stuart Graham and Nigel Garrett have revealed the Brut-liveried Chevrolet Camaro they will be racing at the 72nd Goodwood Members' Meeting next month. Former Tourist Trophy winner Graham drove a similar, 5.7-litre V8 Camaro – prepared by Garrett – in the 1975 British Saloon Car Championship.

TV presenter to FunCup

British Eurosport and Motors TV presenter Alexandra Legoux has joined Team Brazingland's 2014 FunCup UK driver line-up. Regular racers Becky-Beth Cox and Jo Polley-Goldin lead the squad, which will be boosted by the appearance of ITV4's Rebecca Jackson at the Oulton Park opener on April 12. Brazilian Carolina Campanholi will also race, with a sixth slot yet to be filled.

997 for Caterham ace

Former Magnificent Sevens champion David Walley will drive a Porsche 997 Carrera Cup car in the GT Cup's GTB class this season. GTO class champion Kevin Riley is set to return in his Mosler, while Chevron will be represented by 2013 runner-up Jordan Witt and father David in the GTA category.

University buys G40R

The University of Bolton will enter an all-student team in the Ginetta Racing Drivers Club novice series. Students at the university's new Centre for Advanced Performance Engineering will be responsible for race-day set-up and maintenance of the road-legal G40R, while an intra-university competition will decide which of them drives the car.

Eurocup for Parry

McLaren AUTOSPORT BRDC Award winner Matt Parry's graduation to the Formula Renault Eurocup has been officially confirmed. The FR NEC champion (below) retains his Caterham affiliation and will, as predicted by AUTOSPORT, stick with the Fortec team that ran him to the NEC title, his debut campaign outside the UK.



DUNBAR/LAT



TRS

Toyota unveils new TRS car

THE TOYOTA RACING SERIES will introduce a new car for 2015.

The FT50 will replace the FT40 in the New Zealand-based series and features the latest FIA Formula 3 safety standards, including high cockpit sides.

Like the FT40, the new car will be built by Tatuus and powered by the category's 1.8-litre four-cylinder Toyota engine as the championship enters its 11th season next year.

The Japanese manufacturer's John Fowke said: "The new car represents a

significant ongoing commitment by Toyota to the development of the next generation of New Zealand drivers and to the health of motorsport in the country."

Category manager Barrie Thomlinson added: "The FT50 will be an exciting prospect for aspiring Kiwi racing drivers as well as the young international drivers who will look to race here in TRS.

"The car will feature up-to-the-minute design and technology and align with many of the established global series already in operation."

Radical European Masters

Tandy to race SR8 in Europe

BRITISH GT RACER STEVE TANDY plans to dovetail his customer Bentley GT3 programme in the UK with a Radical European Masters campaign.

Tandy, who will partner James Appleby in the Continental developed by World Rally Championship squad M-Sport, has purchased a Radical SR8.

He shook down his new acquisition at Donington Park last week, and Appleby also sampled the car.

"I'm doing Radical European Masters, planning to drive solo, but will have to miss the Nurburgring and Hungaroring as they clash with British GT," said Tandy.



Tandy ran SR8 at Donington

WALKER



Morgan eased to Jedi title

CLIFFE

F3 Cup

Jedi master feels F3 force

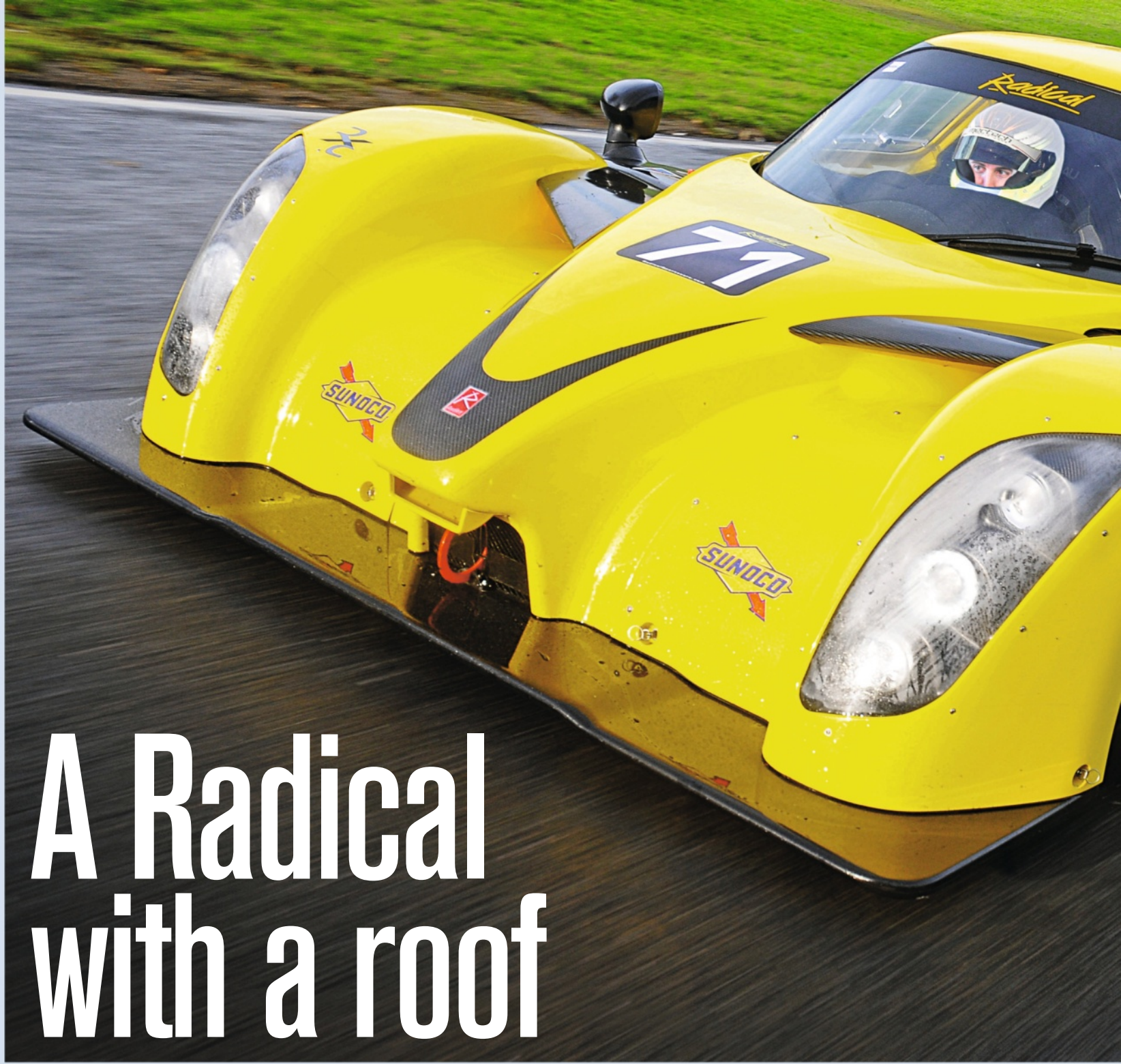
FORMULA JEDI CHAMPION Lee Morgan will race in the F3 Cup this season with race-winning squad Grays Motorsport.

Morgan dominated the Jedi series last season, winning nine of 14 races, and will race a Dallara-Mugen Honda F307.

Grays ran Aaron Steele to the inaugural

title in 2011, and Gino Ussi to third in the 2012 points, but Morgan is not setting his expectations too high.

"At the minute, the target is to just get used to the car in the first few rounds," he said. "It might be a bit too early to say I can go out and win it but if I can be competitive I'll be thrilled."



A Radical with a roof

The Radical RXC is the Peterborough marque's latest attempt at a 'race car for the road'.

BEN ANDERSON took it for a spin at Brands Hatch and was pleasantly surprised

Radical has a fine history of building very capable prototypes for the racetrack, but I wasn't sure what to expect from its latest road-compliant effort.

In my experience, road cars developed for the track tend to be a bit rubbish. Radical's first effort at this sort of thing – the SR3 SL ('Street Legal') – felt lethal on the road and like a blancmange on the track; the worst of both worlds.

But Phil Abbott and his team have learned from that experience, with those lessons abundantly clear when you look into what makes its Xtreme Coupe (RXC) tick.

PHILOSOPHY

According to Radical marketing manager **Roger Green**: "The problem with the SR3 SL is that it was a race car converted for the road to pass EU regulations, and was limited by its suspension travel. The difference here is that the RXC was designed to pass these regulations and work on the road from the outset.

"It's to expand our global markets. It's aimed at people who won't buy an SR3 or an SR8 because they don't like their open aspect. They'd rather race a GT-spec car with a roof and a windscreen. It allows us to produce a car with more adaptability."

DRIVETRAIN

The car we are using carries a 3.7-litre Ford Mustang V6 engine, producing 380bhp with Radical's own engine-management system.

It uses a seven-speed transverse Quaife gearbox, which alleviates the handling issue suffered by the SR8 race car that's generated by having too much mass hanging over the rear axle. The car is also offered with a 3.5-litre, twin-turbo Ford EcoBoost engine producing 450bhp, not available at the time of our test.

According to Green, this car has done 8000 miles on the same gearbox and engine.

HANDLING

Green: "We wanted this car to be something you can just jump in and drive and not have to rebuild every five minutes. Once you've bought the car, away you go!

"We want to give the same balance and feel as the SR3, but with more weight [900kg]."

BRAKES

The RXC features 350mm front and 310mm rear fully-floating disc brakes with six-pot calipers. Carbon ceramic discs are offered as an option. The brakes sit inside 17-inch Braid centre-lock wheels –



RXC offered good grip and stability

ALL PICTS: OLIVER READ

the largest wheels ever fitted to a production Radical. It amounts to the braking being one of the RXC's strongest assets (see panel, right).

SUSPENSION

The RXC uses the same basic four-way adjustable dampers as the SR3, mated to bespoke inboard pushrod and double-wishbone suspension developed by Intrax. The 'road' suspension package features longer springs and dampers to create more suspension droop. The ride height also increases from 40mm to 90mm for the road.

RACING

Green: "We have plans to race the car in Britcar, GT Cup and Dutch Supercars this year, and we're working on a VLN homologation

with our German distributor.

"We have already raced the car in our own 90-minute race at Oulton Park and two-hour race at Snetterton [last year]. The reliability was 100 per cent, and from a performance point of view the RXC was only a couple of seconds slower than an SR3 on the same Dunlop slicks. But the car hasn't been run by a race team yet..."

COST

Green: "The car costs £94,500, whether you buy race or road spec. It's doing exactly what we wanted from the off, which is not good from an aftermarket point of view, but if you don't have reliability you don't get sales in the first place. Every year the cost of race cars is going up; we want to peg it back." ❖

EXPERT VIEW

BRADLEY SMITH (SR3 CHAMPION)

The car drives like an SR3 but with more weight. For a GT/road car there's a lot of feedback through the steering and it brakes like an SR3 – that's where it excels compared to GTs.

If you spent a bit of time with it I think you could engineer it to be between an SR3 and an SR8 [on pace] on the right track.

I think this car will be easier for

amateur drivers to get closer to the pros in, because the SR3s are very light and you can't afford to slow them down too much.

This is the first time I've driven it and I'm impressed by it. It's a GT car with LMP aero – it's like a mini-Daytona Prototype. If we can get it into some GT races I think it will storm away. It's a fantastic package.



Smith (left) gives a pointer to Anderson

AUTOSPORT VIEW

BEN ANDERSON

I drove it at a cold and wet Brands Hatch in December and came away seriously impressed.

Phil Abbott and his team have clearly learned lessons, because the RXC is nothing like the SL. It's well-balanced and smothered in grip, and the braking and traction are superb.

Its sure-footed nature inspires immediate confidence in the driver, so it's just about how hard you want, or are prepared, to push.

You feel you can do no wrong, and when you do it's easy to get yourself out of trouble. The RXC easily outpaced Marc Hynes's Triple

Eight MG6 BTCC car and BRDC F4 rookie Charlie Eastwood's single-seater on a soaking wet Indy Circuit. In those conditions it is the most capable car I've driven.

The flat-shift gear-cut is a bit jerky, and the powersteering feels quite heavy, so I imagine the car could get quite physical in the dry. The RXC also feels a bit breathless with the Mustang V6, but Ford's more powerful EcoBoost turbo option should take care of that.

Fundamentally it's a superb car and I reckon it would be a serious contender in round-the-clock endurance races.



RXC excelled in bad conditions

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THIS WEEK

LETTERS • BEST PICS • LATEST GEAR • ON TRACK & SCREEN • ONLINE

What you think of the motorsport news of the past week



F1 grabs the testing headlines, but look out for action closer to home

It's not just F1 that's testing

Much has been made of the Formula 1 tests, and rightly so, but I think it shouldn't be forgotten that other series are out there up and down the UK carrying out test days.

While circuits usually charge for entry to F1 tests and severely restrict your access, it is possible to get into some UK venues free of charge. Just last week I visited Donington, first to the excellent museum (yes, there is a charge for this) but also to the circuit itself where, among other series, I was able to watch BTCC, Formula Ford and

GT3 drivers testing in their amazing cars.

I was able to wander the paddock and was beckoned into the garages by more than one team, where I was able to get up close to the cars I'd just seen on track and the drivers who were piloting them.

I would of course recommend you check first with circuits whether public access is available, but now is the time when a cheeky day off work and a short drive to your local track may reap rewards.

David Herron, Washington, Tyne And Wear

Just in case we don't all have

rule-change fatigue, here are some suggestions – 10 rules to improve F1:

- 1) Standard FIA-issue front & rear wings.
- 2) No bodywork below the car or around the rear wheels from the point where the engine is attached to the monocoque.
- 3) Un-stagger the grids.
- 4) Where the straight is wide enough, reintroduce 3-2-3 grid formations.
- 5) Allow qualifying tyres, one set per car to be used in Q1, Q2 or Q3 at each team's discretion – Caterham may choose to use them in Q1, Mercedes in Q3.
- 6) Instead of double points in the last race, a team can select one race per year and play a 'joker' for double points after Q3.
- 7) Testing allowed in reverse proportion to teams' points after every four races.

- 8) Introduce the title of world number one (as in tennis) from a countback of the last 20 races. In competitive years this could change hands several times in a season and a driver who was never world champion could take solace from being number one at some stage in his career.
- 9) Make some races – ie Monaco, Spa, Monza and Silverstone – 'Grand Slam' events or 'Majors' to help compare drivers of different eras with number of 'Majors' won.
- 10) Award points for qualifying 5-4-3-2-1, but the top five start in reverse order.

Peter O'Donnell
By email

If Mr Ecclestone is serious about
this double points last race in F1, why not

make it more interesting? Give each driver a 'joker' card worth double points and let them play it at whichever race they want to.

After all, it worked on *It's a Knockout!*
Gary Sutton
By email

Is it me, or does anyone else
think the front end of the new Caterham looks like the Ferrari 312T4 and T5?
Nick Wait
By email

Re: the headline 'Kimi at Ferrari'
"It's good to be back" on last week's cover. Indeed it is; at the very least he'll get paid for his services this year.
John Adkins
By email

In pictures

Images around the globe, from Slough to Sydney via Daytona, Florida

RAISING MONEY FOR AN OLD MATE
Stars from the racing world raised almost £10,000 at The Race Hut for ex-FF1600 star Neil Cunningham's battle with motor neurone disease. You can donate via www.racing4mnd.org



GARY HAWKINS

VOLVO JOINS THE V8 SUPERCARS PACK
Sweden's finest (centre) will take on the locals Holden (far left) and Ford (far right), plus Nissan and Mercedes on the circuits of Australia



THORNE/GETTY

BAD START FOR JOHNSON
Jimmie Johnson's NASCAR season got off to a bad start when he shunted out in the early stages of Saturday night's Sprint Unlimited at Daytona



LABERGE/GETTY

WHERE ARE YOUR MATES, CRAIG?
V8 Supercars hero Craig Lowndes paid the price for turning up first to the group drivers' photoshoot. The veteran should really know by now, shouldn't he?



THORNE/GETTY

In the shops

Desirable new releases

GILLES VILLENEUVE T-SHIRT

£26.95 – retroformula1.com

Officially endorsed and approved by the Villeneuve family, this Gilles Villeneuve T-shirt is, we think, Retro F1's finest portable blast from the past to date. Featuring period type faces, a maple leaf logo, the iconic #27, a Ferrari 126CK chassis number and, on the back, the Salut Gilles inscription from the Montreal circuit bearing his name, this is a must-wear for Villeneuve fans. The 100 per cent cotton T is available in S to XXL.



ROMANCE OF RACING CARDS

£8 – amazon.co.uk

To complement Dario Franchitti's recent photographic book *Romance of Racing*, in which the multiple IndyCar champion celebrates friendships and rivalries from his career, this set of 16 postcards features images of many of Franchitti's 'victims' in a ready-to-frame-or-post format. Most of the images come from the famous Cahier archive, with a few left-field inclusions. The set offers a snapshot of F1 history and is great value.



CLASSIC F1 GAMING PODS

From £2995 – classicracesimulators.com

These hand-built simulator pods reflect a classic era of monocoque, 1.5-litre F1 racers of the 1960s. Eagle, Ferrari, Honda and Lotus chassis are available, or you can commission your own, and the GRP-bodied, wooden-floor pods are designed to accept all the major gaming consoles.



WHAT'S ON

ON TRACK AROUND THE WORLD

NASCAR SPRINT CUP

Round 1/36
Daytona 500,
Florida, USA
February 23
nascar.com

NASCAR NATIONWIDE

Rd 1/33
Daytona,
Florida, USA
February 22
nascar.com

NASCAR TRUCK SERIES

Rd 1/22
Daytona,
Florida, USA
February 21
nascar.com

The Daytona 500 kicks off NASCAR's title campaign



LABERGE/GETTY

AUTOSPORT

Imagine you had the chance to banish your worst nightmares, what would they be? Chief sub-editor **MARCUS SIMMONS** gives his arguments to get rid of his pet hates to motorsport's Room 101

Room 101



Mistakes often come with their own penalties

UNNECESSARY SAFETY CARS

You know the drill by now: two or more cars make contact and start to head off in a direction not envisaged by the track designer, and before they've even come to a rest the safety car boards are out.

I'm with Martin Brundle on this: safety cars should only be necessary in exceptional circumstances, not be the default option. They plague the junior levels of international single-seater racing in particular, and their omnipresence means races are too often reduced to a series of short sprints. How are the kids going to learn all about managing a race?

Cut down on safety cars and, you never know, it could lead to drivers regarding yellow flags as more significant and thereby improve discipline...

BLAME CULTURE

When 20 or so blokes (and girls) are wrestling powerful machinery around a track in close proximity, fighting for every inch of space to the limit of their varying levels of ability, guess what: accidents sometimes happen. Many of these are 'racing incidents', where it's impossible to apportion blame, but frequently it's quite obvious that one driver is slightly more to blame than the other(s).

In those instances, that competitor normally pays a price anyway. Lock up under braking and

inadvertently tap the guy ahead into a spin? Well, you've probably damaged your front wing and lost time yourself. So why does modern motorsport find it imperative to dish out further punishment, such as time and grid penalties?

This leads us on to heavy-handed fines, which come for all manner of reasons. Sebastian Vettel in India was one; Raffaele Marciello at Hockenheim was another. He'd just clinched the European F3 title, undid his belts to celebrate as he drove slowly to parc ferme, and copped a €5000 fine for his heinous crime. At the same time, it's regarded as perfectly fine for the Deutsche Post grid girls to risk hypothermia whenever they squeeze into skimpy outfits that even pipecleaner-physiued WAG Victoria Beckham would find are on the tight side.

'ATHLETES'

This is just a personal foible, and it's one that cuts across many sports – not just motor racing: the description of competitors as 'athletes' is one that irritates me. I took my daughter to the show jumping at Olympia in December, and the commentator even described the guys in the carriage-driving support event as athletes. Yes, they were incredibly skilful – hanging off the back in motorcycle sidecar racing style – but they were predominantly slightly

overweight Dutch blokes wearing jeans.

The last time I looked, athletes were men and women mainly competing in track and field events. Racing drivers may have athletic levels of fitness – with the proviso that their training requires different areas of focus – but that does not make them athletes.

LEVEL PLAYING FIELDS

New one-make single-seater series launched? You can bet your grandad's pile of modern gadgets (he can't work out how to use) on the phrase 'level playing field' getting beamed around the world.

But it isn't really a level playing field, is it? The best teams will find the best tricks, use the best windtunnel, attract the best-funded drivers, get even more resources and become ever more invincible. And no one can catch up because they've all got to buy the same control parts.

Multi-make competition allows ingenuity, self-fabrication of components, a wider scope for engineering and development of drivers' test skills.

I'm not against one-make racing, but we shouldn't be blinded into believing everything there is equal.

'NO PERSONALITY' CRITICS

We've read it all before: the internet forum users who accuse modern drivers of having no personality.

That's grossly unfair. Most of the up-and-coming crop are top fellas. They work ultra-hard to make the most of their opportunities and love the sport.

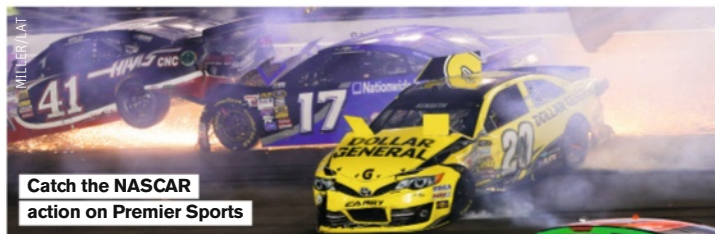
Not racing on a Sunday? In the young Brits' case, they're probably watching TOCA support races on ITV4 or a Motors TV Live Raceday, texting each other about who's hot and who's not. As a rule, they're a pleasant, funny, articulate bunch who all get on with each other, and for that David Brabham, Robert Reid and Tim Harvey, in their roles overseeing the MSA and BRDC young-driver schemes, must take a lot of credit.



These are athletes, drivers not pictured

Your guide to the best events taking place in the UK and around the world – plus TV and online

ON TELEVISION



Catch the NASCAR action on Premier Sports

THURSDAY FEBRUARY 20

2000-2100 ESPN
 NASCAR Now
2100-2115, 2215-2230 Sky Sports F1
 F1 Bahrain testing: day-two round-up
2115-2135, 2230-2250 Sky Sports F1
 F1 Bahrain testing: ask Crofty, day two

FRIDAY FEBRUARY 21

0340-0505 Motors TV
 Andros Trophy:
 St Die des Vosges highlights
0845-0915, 2145-2215 ESPN
 NASCAR Now
2100-2115, 2215-2230 Sky Sports F1
 F1 Bahrain testing: day-three round-up
2115-2135, 2230-2250 Sky Sports F1
 F1 Bahrain testing: ask Crofty, day three

SATURDAY FEBRUARY 22

1310-1415 Motors TV
 Toyota Racing Series:
 Manfeild highlights
1415-1500 Sky Sports F1
 F1 Bahrain testing: day-one round-up
1500-1545 Sky Sports F1
 F1 Bahrain testing: day-two round-up
1545-1630, 1915-2000 Sky Sports F1
 F1 Bahrain testing: day-three round-up
1500-1700 Motors TV
 NASCAR Truck Series: Daytona

1700-2100 Motors TV LIVE
 NASCAR Nationwide: Daytona
2100-2115, 2215-2230 Sky Sports F1
 F1 Bahrain testing: day-four round-up
2115-2145, 2230-2300 Sky Sports F1
 F1 Bahrain testing: ask Crofty, day four

SUNDAY FEBRUARY 23

1210-1515, 2100-0010 Motors TV
 NASCAR Nationwide:
 Daytona highlights
1300-1345, 2000-2045 Sky Sports F1
 F1 Bahrain testing: day-one round-up
1345-1430, 2045-2130 Sky Sports F1
 F1 Bahrain testing: day-two round-up
1430-1515, 2130-2215 Sky Sports F1
 F1 Bahrain testing: day-three round-up
1515-1600, 2215-2300 Sky Sports F1
 F1 Bahrain testing: day-four round-up
1700-2230 Premier Sports LIVE
 NASCAR Sprint Cup: Daytona 500
1900-2000 BBC2
 Hunt v Lauda: F1's greatest rivals

MONDAY FEBRUARY 24

0815-0915, 1800-1900 ESPN
 NASCAR Sprint Cup: Daytona 500
2130-2215 Sky Sports F1
 F1 Bahrain testing: day-one round-up
2215-2300 Sky Sports F1
 F1 Bahrain testing: day-two round-up

ONLINE

HOT ON THE WEB THIS WEEK

YouTube **PORSCHE'S RETURN TO SPORTSCARS WITH THE 919**



SEARCH FOR: Porsche LMP1 2014 - Our mission (official video) (1:23)
 To complement our Mark Webber feature on page 30, here's a short but punchy film from Porsche about its return to sportscar racing in the World Endurance Championship with the 919 Hybrid LMP1 racer, seen here lapping the factory test track at Weissach.

AUTOSPORT+

Exclusive content coming up in our premium website this week

After all the troubles at Jerez and weeks of post-test analysis, it's time for Formula 1 to really get sorted in Bahrain. As ever, AUTOSPORT's team will be on hand to bring you the latest developments, controversies, opinions and lap times from the second pre-season test this week.

GET AUTOSPORT ON THE MOVE

- IN THE IPAD ISSUE THIS WEEK
- FOLLOW RENE ARNOUX DURING THE 1980 BRITISH GP
- ON SALE ALL OVER THE WORLD FOR ONLY £2.99

Download it now from autosport.com



Revved up over what's on the box

WHAT WOULD YOU DO WITH \$8.2 billion? To put that in perspective, John Terry-loving oligarch Roman Abramovich is only worth a couple of 'bill' more. Yet this is how much money the NASCAR TV rights have been bought for from 2015-2024 by US giga-networks Fox and NBC. And this against a backdrop of falling NASCAR TV numbers. Go figure!

Taking full advantage of a subscriptions war, NASCAR has trousered one of the biggest deals in TV sports history. This season, as its tripartite agreement with Fox, ABC/ESPN and TNT comes to a close, nascent channel Fox Sports 1 kicked off its coverage with 90 hours – count 'em! – of coverage from Daytona this week, culminating in

Sunday's famous 500-mile race. Paying top dollar, you'd expect all the bells and whistles – and a revamp of its graphics package looks great in the main. For qualifying on Sunday, Fox rolled out its



"So Jimmie, do you think that qualifying was fixed too?"

KIMRADE/INKEP/LAT

clever 'Wind Trax' graphics, used in the dazzling America's Cup coverage, giving a fascinating insight into how the breeze can really affect the cars. A neat touch.

Its tracker graphic is employed for the qualify laps, showing throttle, revs, difference-to-pole time and speed. However, when it came to Martin Truex's lap, the tracker was claiming he was under Dillon's poletime, right up until the finish line, after which it coughed up a time 0.003s slower. Only minutes earlier, Kyle Busch had remarked: "People do believe in conspiracy theories, so I don't know who's going to be on the pole out of the 88 [Dale Earnhardt Jr] and the 3 [Dillon]." Hmm.

Fox also used its 'Ghost Car' lap, overlaying Dillon's pole lap with Earnhardt

Jr's effort. It highlighted a crucial straightline difference on the backstretch that was key to his pole time.

What I didn't like about the coverage, however, was the replacement of the top-of-the-screen 'ticker' in favour of a right-side-of-the-screen running-order box. Imagine walking down the street with your right hand over your eye. That's what it felt like to watch – a classic case of fixing something that wasn't broken and making it worse. "Not cool!" tweeted Brad Keselowski on the subject, and I agree.

NASCAR on Fox Sports is a pretty dazzling product that ticks the boxes for the sports fans. And for the money it's paying, it dang well should be.

Revved up

Mario Hytten

“If it hadn’t been for that plastic bag, who knows what might have been”

■ Macau Formula 3 Grand Prix ■ November 18, 1984 ■ Ralt RT3 ■ Plastic bag spoils possible victory



Hytten was flying in Murray Taylor's Ralt until the engine fried

SUTTON IMAGES

THE MACAU GRAND PRIX IN 1984 was memorable for so many reasons. It was only the second race at Macau run for F3 cars and I look back on it very fondly. It was before Macau became a big commercial centre and it was a real adventure on and off the track.

I had come off the back of my second F3 season – I had been compromised by a severe lack of budget but I won at Silverstone.

I went to Macau a week early so I could finalise my budget for the race. I locked myself away in my hotel room with the local yellow pages and started ringing up companies who I thought might want their name on the car.

Thankfully one did. It was the model car company Matchbox and I even managed to get enough money for Dave Scott's car too!

I was with Murray Taylor's team in a Ralt RT3 and I told my mechanic Kevin Corin to take the rear wing flap off to make the car as slippery as possible because at Macau you need

good straight-line speed if you're to have any chance of overtaking.

In qualifying we were quick and I even remember Ivan Capelli coming up to me and asking for my settings. That was a satisfying moment.

I was surprised how quick the car was because I presumed I would be relatively slow in the tight corners, but it was just a great set-up.

I started on the fourth row of the

grid for the first heat and had a crazy battle with Volker Weidler. We were pushing each other very hard and on one lap he shoved me towards the guardrail on the straight. I almost touched it but that wasn't really the big issue. The main problem was that off-line there was lots of rubbish and a plastic bag got stuck in my radiator and cooked the engine.

I stopped on the circuit and as

I climbed from the car I saw the familiar face of Teddy Yip beckoning me over. He made me a drink and I watched the rest of the race from his apartment terrace with him and some very striking female guests!

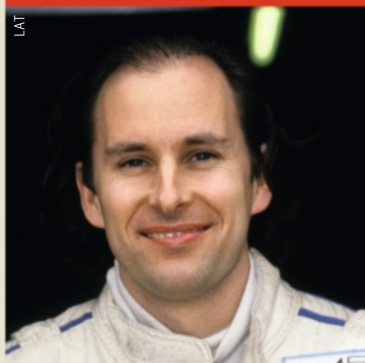
Between the races we changed the engine but because I retired I was starting near the back. I soon started cutting my way through the field and eventually got up to eighth, passing people and looking at who they were and thinking: 'wow, this is mega, I've just blown Johnny Dumfries away!' I was passing guys like Tommy Byrne, Emanuele Pirro and Roberto Guerrero as if they weren't there.

I was really walking on water that weekend and if hadn't been for that bloody plastic bag who knows what the outcome could have been.

Anyway we had a great celebration with the Murray Taylor boys that night and it turned out to be my last F3 race before I went to F3000, so it was a great way to finish. And what a magic place to do it in! ❄️

Mario Hytten was talking to Sam Smith

PROFILE




SWEDISH-BORN BUT RACING

under a Swiss licence, Hytten made his name in Formula 3 in the early 1980s winning a British round at Silverstone in 1984. A full season of F3000 followed in '85 with a podium finish at Donington. Sporadic F3000 races followed until 1988 before a switch to sportscars. After retiring in 1992 Hytten went on to form his own successful sports marketing company.

NEXT WEEK BAHRAIN TEST SPECIAL
Find out who's really winning the testing war




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** 17.1% of drink drive accidents are between hours of 5am and 1pm (Source: Dept. for Transport, Road Accidents and Safety Annual Report 2010)
* 4 Pints of Abbot Reserve contain 14.8 units of alcohol (Source: Greene King) and each unit takes 1 hour to leave the body (Source: NHS). Therefore 14.8 hours after 9pm the alcohol will have passed from the body.

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What's the **secret** about the new 911 GT3 Cup's **new brakes?**



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