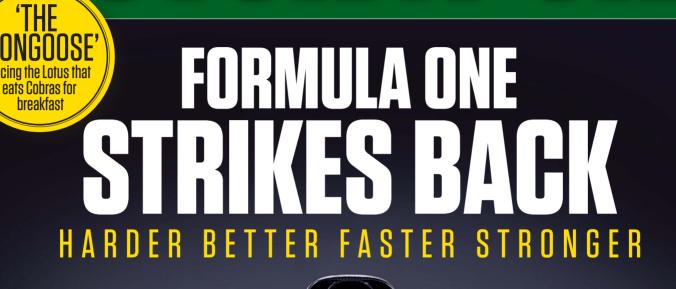
SCANDAL! CHEATS, SCOUNDRELS & RULE BREAKERS Motor racing's most controversial moments – from karting to F1

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MATTERS OF MOMENT

www.motorsportmagazine.com/author/ntrott

F ALL THE REASONS TO BE excited about the forthcoming Formula 1 season, and there are many, the area of driver fitness and conditioning is one of the most fascinating – and mysterious. This season's F1 drivers, from rookies to old hands, will need to cope with forces hitherto unseen in recent times. Wider tyres, more downforce and engine developments will yield cars that are anything up to five seconds a lap faster by the time of the last race of 2017 in Abu Dhabi.

'Cope'. Actually that's the wrong word. You and I would possibly 'cope' – well, for a lap or two. I have been fortunate enough to have a ride in a two-seat F1 car and Bentley's exquisite Speed 8 Le Mans prototype. I've also driven an F1 car of early 2000s vintage, but within just a few laps I had no chance of maintaining a reasonable pace. If indeed I ever could.

No, the experience in the F1 twoseater and particularly the Bentley opened the door to a new world – that of the wild, tumbling, violence of a flat-out racing car. I 'coped'. Just. And I wasn't even driving. Extracting myself from the Speed 8 I felt dizzy, overwhelmed, bruised and light-headed. My driver, Derek Bell, who is 33 years older than I, hopped from the car like a spring lamb. Later I saw him nursing a sore arm. Ha! I thought – it's not just me! "Old tennis injury," he explained. Damn.

Since then I've been intrigued by the





cockpit environment of a racing car. There is an extraordinary contrast at work; that the driver must absorb forces equivalent to five times that of gravity and yet his or her hands and feet are required to operate in deft, surgical movements. A moment of snap oversteer for a Formula 1 driver will create a cascading flash of g-force; like a savage Mayweather combination. Bang. Bang. Bang. The car is trying to tie itself up in knots, and only a perfectly timed twist of the wheel, or the tiniest throttle lift, will prevent an appointment with the wall. Or worse, a retirement.

It is why now, as you read this, the current crop of F1 drivers will be punishing themselves in the gym, on the bicycle in preparation for the violence and brutality of the new breed of cars. They must condition not only their muscles, but also their reflexes in order to deflect the strain and pain of a 190-mile Grand Prix. They must also hope that their instincts and reactions are as sharp as they were the last time F1 cars were this fast, or in the case of the rookies, when they were karting.

I discussed this over coffee with Dario and Marino Franchitti recently. Marino in particular was as articulate as ever in explaining the training regime that modern drivers must maintain in order to operate at the highest levels. His thoughts can be found at www.motorsportmagazine.com. As I was explaining my 'experience' of the Bentley, Dario was rather more enigmatic. "I'll tell you more about g-forces another day," he said with a glint in his eye. A few days later I received this email. It's a reminder why you should never play a game of one-upmanship with a racing driver, and particularly not an Indycar driver...

"Oval racing provides the Indycar driver with a different physical challenge to overcome than a road course. The most extreme example of g-forces is at Iowa speedway. During the 0.75-mile, 17sec lap, in the corners the driver is pulling somewhere around 5g sustained lateral combined with a fairly tasty number of vertical due to the 14-degree banking (which requires the driver to exert and hold steering loads equivalent to having 25-30lb dumbbells in each hand).

"The torque and twisting on your core has to be felt to be believed. The big issues here is that as the gs build it's impossible to reinflate your lungs - even on the start 'straight'. The load is around 2g, so you find yourself breathing as deeply as you can on the front straight (g-loading and seat belt restrictions notwithstanding) then holding that breath as you brace yourself through Turns One and Two. As you exit Turn Two there are three or four glorious seconds when you're actually on a straight bit of road and you gulp air then brace for Turns Three and Four. Then it all begins again. Don't worry, the race is only 250 laps long!

"The craziest g loads I ever felt were at Texas Motor Speedway back in D



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MATTERS OF MOMENT

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2000. The cars had 1000bhp and we were averaging around 235-237mph round a 1.5-mile oval. The same issues as Iowa applied, but the lateral load combined with the vertical reached a tipping point and some drivers were close to blacking out. Drivers were

coming back from runs with no memory of what they'd just done on track, with my own symptoms limited to a large reduction in my peripheral vision, so anything apart from my straight-ahead vision was lost. It returned after a few

minutes sitting in the pit box - that is after I found the pit box, as it took me three goes to locate it after a 15-lap run! Fortunately common sense prevailed and the race was cancelled.³

I don't know about you, but I was gasping for air just reading this.

MOTOR SPORT WELCOMES another new writer this month -Richard 'Dickie' Meaden. Many of you who read modern motoring titles will know Dickie as one of the co-founders of evo magazine, but in recent years his

skill as a driver has seen him compete and win in a number of historic events. He took the honours in the 74th Members' Meeting Whitmore Cup in a Lotus Cortina last year (above), during a season in which he also partnered Gerhard Berger in a GT40 at Spa

مرسال • PAGE 120 • PAGE 120 FOR MOKE DE LANC

and compete successfully in a 3.4 GA Cosworth-engined Cologne Capri. He's a tremendously modest bloke, and will hate me saying this, but apart from Andrew Frankel I can think of few

others who write as well about the dynamics of a road or racing car - and the sheer joy of driving some of the world's finest machines.

Dickie will write a monthly column and in-depth features for Motor Sport magazine plus contribute a column and video on our website. He may also find time to race this year - indeed a season in the new Peter Auto European F2 series beckons. I hope he's in training

Thanks for reading. Enjoy the issue and of course feel free to get in touch with me via @NickTrott27 or through the editorial team at editorial@motorsportmagazine.com.



Lunch with... Malcolm Wilson. rally star turned team supremo

ON SALE MAR 31

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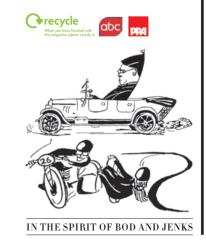
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THE MOTOR SPORT MONTH IN PICTURES

FEBRUARY 9-12, 2017

WRC round two

KARLSTAD, SWEDEN

The Monte Carlo Rally marked Toyota's first world championship event as a works team since 1999. Sweden was its second... and Jari-Matti Latvala/Miikka Anttila duly notched up the fledgling Yaris WRC's maiden win. Hyundai driver Thierry Neuville had been set fair for victory, but crashed on Saturday evening when he'd been leading by more than 40sec.



DAYTONA, FLORIDA, JANUARY 28-29

A new era in American sports car racing began when IMSA's new Daytona Prototype international (DPi) category raced for the first time. The Cadillac of Jeff Gordon, Max Angelelli, Ricky and Jordan Taylor won the Rolex 24, albeit in controversial circumstances following a clash in the closing stages.



DAYTONA, FLORIDA, FEBRUARY 19

Joey Logano won NASCAR's pre-season, invitation-only Advance Auto Parts Clash for the Penske Ford team, but only after rivals Brad Keselowski (Ford) and Denny Hamlin (Toyota) collided.

BUENOS AIRES, ARGENTINA, FEB 18

Defending champion Sébastien Buemi completed his winning start to the Formula E season, the Swiss becoming the first driver to score three consecutive wins in the series.

2017 FIA FORMULA E BUENOS AIRES ePRIX



Terris Barris Aris

Julius Bä

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THE MOTOR SPORT MONTH IN PICTURES





SILVERSTONE, ENGLAND. FEB 18

LENGLAND. FEB 18 The VSCC's annual Pomeroy Trophy event is ever a magnet for glorious diversity. Chevron B8 vs Fiat Panda? Morris Minor Traveller vs anything? What's not to like? David Wylie won in his BMW 2002.

PHOENIX, ARIZONA, FEBRUARY 11

2016 champ Simon Pagenaud and his Indycar rivals began pre-season preparations with two days of testing at Phoenix, running both during the day and under floodlights. The KV team was absent, having just announced its closure. LAT, JAKOB EBREY, SHAWN GRIT ZMACHER, MICHELIN

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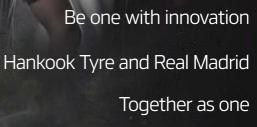
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Since its relaunch as a world championship the sport is pulling in a new audience through social media | By GARY WATKINS

AUDI HAS PUT ITS WEIGHT BEHIND reigning champion Mattias Ekström, Renault is on its way in conjunction with rally grandee Prodrive and a near-capacity grid is set to take part in 2017. As it heads into its fourth season, the FIA World Rallycross Championship is on a roll.

The good news has kept coming for the championship launched by global sports management company IMG for the 2014 season. Timo Scheider – like Ekström, a two-time DTM champion with Audi – has signed up full-time with Ford and the winner of the first two World RX titles, Petter Solberg, has thrown his lot in with Volkswagen. "There's a real vibe about the championship right now," says Swede Ekström, whose EKS RX squad will get financial and technical support from his long-time DTM employer for the first time in 2017. "And there are reasons for that: cars are cool, the format is cool, there are lots of high-quality drivers and the level of the teams is rising all the time."

This branch of the sport once graced UK TV screens on *Grandstand* and *World of Sport* on SatuFday afternoons, but the creation of World RX by IMG hasn't exactly brought a back into the mainstream. Rather, it is bringing rallycross to a new and younger audience that doesn't necessarily get its motor sport fix though TV.

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ACCESSIBLE FORMAT

World RX boss Paul Bellamy believes the 'short, sharp, shock' format of World RX is the key. It allows for a TV package that segues from pre-recorded coverage of the quarter-finals into the live action of the semi-finals and finals, but he also points out that rallycross is tailor-made for viewing via new media platforms.

"What we are offering is easily digestible to a younger audience that isn't only experiencing the sport through traditional media," says Bellamy.

Ekström sums it up smartly: World RX appeals to what he describes as the 'click-and-watch' generation following through social media.

MORE MANUFACTURERS

Audi's decision to get involved reflects the growth of the championship as well as his own successes, reckons Ekström, who is expanding his team from two to three S1 RX Supercars in 2017.

Prodrive's interest was also piqued by World RX even before it was approached by Frenchman Guerlain Chicherit, a former star of the freestyle skiing world and a Dakar Rally regular, to build a Mégane RX Supercar with the support of Renault.

"We have been watching the growth of rallycross since IMG took control with a clear vision," says Prodrive boss David Richards. "It's affordable, the most affordable world championship out there, and it can only grow in stature."

Renault has an arm's-length involvement in the project that should put the Mégane on the World RX grid for some development races in 2017 ahead of a full season next year. The same goes for Ford, which supports





Lydden Hill has been the home of UK rallycross since the days of *Grandstand* and *World of Sport*, but even icons topple: World RX will move to Silverstone for 2018 American Ken Block's team. Peugeot and Volkswagen have more overt involvements, developing their respective 208 and Polo RX Supercars in-house and then placing them with teams. Bellamy likes it that way.

"We want manufacturers to support our existing teams, which is exactly what they are doing," he says. "We don't want costs to spiral out of control."

MOVE TO SILVERSTONE

World RX will move its British round away from its spiritual home at Lydden Hill in 2018. It will switch from the Kent track that hosted the very first rallycross event back in 1967 to Silverstone, though details of the layout to be used at the British Grand Prix venue have yet to be disclosed.

The venue change reflects the rise in popularity of the series, according to Bellamy, who likened the move to replacing the original Wembley Stadium.

"The analogy I make is with the old Wembley, which like Lydden, had a place in everyone's heart," he explains. "But you have to sometimes move away from iconic venues to run somewhere that can service a modern audience."

NO BIG EXPANSION

World RX is made up of 12 rounds, with two outside Europe to meet the 'three continents' rule demanded of world championships by the FIA. Bellamy isn't looking for a quick expansion.

"We're quite happy with our number of rounds and don't see ourselves growing dramatically," he explains. "We work on the premise that less is more.

"We are looking at opportunities on other continents. The Far East is of interest because it is a big market for the manufacturers. The same goes for North America, but Bellamy is insistent that it wouldn't go head-to-head with the Global Rallycross Championship by scheduling a date clash with the US series. He believes that World RallyX and GRC can co-exist and feed off each other.

"GRC is important because it helps spread the rallycross message and keep the sport in the eyes of the US market – it is helping to develop the brand, if you like," he says. "A healthy GRC is also good for us because it provides another place for our teams and drivers to compete."

THE NEXT STEP

Bellamy suggests that the most important thing is maintaining a competitive field of cars, which is likely to be close this season to the 20 full-season entries allowed under series rules. Ekström has more lofty ambitions for the championship – he'd like to see an ex-Formula 1 driver join the show.

Former world champion Jenson Button sampled a Honda Civic Coupé from the GRC early this year and has talked about his interest in having a go in a category in which his father, John, was a leading light in the UK in the 1970s. Ekström reckons the Briton could be up at the front in World RX inside three years.

"If the public can see a newly retired F1 driver competing, it is certainly going to help the championship," he says. "If Jenson jumped in and worked hard, he'd be the biggest winner. If someone like him came with a proper three-year plan, they could be challenging for the championship in the third season.

"No one is going to be competitive in their first season, but if Jenson wants to have some fun going sideways, he should come to rallycross."



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Wiltshire announced

system to widespread

competitors. "This is

over-development of

engines in historic

racing," he said.

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measured and sealed

in historic racing this season by having

Historic 3-litres to support three Grands Prix | BY PAUL LAWRENCE

THE US WING OF THE MASTERS Historic Formula 1 series boasts high-profile exposure this season with three rounds featuring as support races to trans-Atlantic Grands Prix. The rounds at Canada at Montréal in June and the back-to-back races at Austin, Texas and Mexico in late October will all host events in the series, showcasing 3-litre F1 cars from 1966 through to 1985. Ferrari, Shadow, McLaren, Lotus and Williams chassis will all help to boost awareness of Formula 1 and its history in a market that is firmly being targeted by the sport's new owners.

Canada's historic round, returning after a lay-off, celebrates 50 years since the first Grand Prix in that country, while the other two supports have previously proved highly popular.

The Masters US season starts at the Laguna Seca Spring Classic in May, while one week on from Montréal the cars reappear at Mosport, one of the Canadian GP's former homes. Completing the programme will be a July date at Road America. Sounds of the Seventies

FERRARI 312PBS AND MATRA MS670s will present a sensational sound track for the 75th Goodwood Members' Meeting on March 18/19.

The 3-litre V12 sports-racing cars of the early 1970s will take part in one of the weekend's high-speed demonstration sessions along with Alfa Romeo T33s and Cosworth DFV-powered Mirages, while the 2-litre cars of the era will be represented by Chevrons and Lolas.

The new Achille Varzi Trophy race has drawn a fabulous line-up of 1930s Grand Prix cars to celebrate the memory of the Italian racer. A grid full of pre-war French and Italian Grand Prix cars and voiturettes will include examples from Alfa Romeo, Bugatti, Delahaye, Maserati and Talbot-Lago.

Meanwhile, the Lola T70 in which Michiel Smits had a violent accident at the 2016 event is due back on track again for the Bruce McLaren Trophy after a total rebuild by Complete Motorsport Solutions. The ex-John Mecom Racing T70 Spyder was very badly damaged when Smits flew off the road at Woodcote but the rebuilt car was shaken down at Donington Park recently.



HISTORIC RACING

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Donington packs them in

TWO FULL DAYS OF COMPETITION covering 19 races will cap the 2017 Donington Historic Festival on April 28-30. After a full day of qualifying on Friday, Saturday and Sunday will each feature more than nine hours of racing with Saturday's programme ending with a 90-minute race for pre-73 sports-prototypes, GT and touring cars.

Other headline races include Historic Formula 2, Historic Touring Car Challenge, the Stirling Moss Trophy, U2TC and the Super Touring Trophy. A programme of off-track attractions is planned to give visitors the chance to get a hands-on taste of historic motor sport.



Endangered species

A RARE 1964 CHEETAH WILL contest the Graham Hill Trophy race at the Goodwood Members' Meeting, giving the model what is believed to be its European race debut.

The GT car (below) is owned by Ian Burford and has been rebuilt by CCK

Historic over the last three years. About 11 of the Chevrolet

V8-engined spaceframe cars were completed by 1965 in the US by Bill Thomas. Thomas was a noted Chevrolet engine tuner and he conceived the Cheetah, with approval from General Motors, as a rival to the AC Cobra. A further batch of chassis was produced but a workshop fire in September 1965 halted production and Thomas turned his back on the project.

Daniel Lackey of CCK says that they have used period photographs to help with the rebuild of what arrived from the US as a bare chassis with a number of suspension components and some bodywork.

"It uses Corvette C2 running gear and that all dropped into place very well. We had a very good shakedown run at Brands Hatch recently. It has drum brakes all round, but it was stopping well," said Lackey.

At least one car has been active in US historic racing but none is thought to have previously competed over here.

Bennett fields F1 six-pack

SEASONED RACING CAR

preparation specialist Colin Bennett will field up to six cars in this season's FIA Masters Historic F1 Championship. Bennett has been active in the sport for close to half a century.

Bennett's CGA Race Engineering team will prepare Tyrrell 010s for championship front-runner Loïc Deman

– OBITUARIES –

David Good Navid Good. the 1961 **British Hillclimh** Champion who died recently aged 83, was a respected figure in the sport. Born without a right forearm, he was unable to get a race licence and turned to hillclimbing where he was outstanding. He was at the head of the sport for many years and won the 1961 title in his Cooper-Jap. He drove the car again recently at the re-opening of the Chateau Impney hill.

Keith Hall

Keith Hall. who has died aged 88, was a works sports car driver for Lotus in the late 1950s, only losing an F1 seat though injury. Hall's racing began with a Cooper-Bristol. Joining the Border Beivers he raced in F3. then was recruited by Chapman. winning the Index of Performance at Le Mans in 1957 sharing an Eleven with Cliff Allison. Sadly, the 1958 crash that snuffed out his F1 opportunity also ended his racing.

(ex-Jarier/Daly) and Mike Cantillon (ex-Alboreto) along with Joaquin Folch's ex-Piquet Brabham BT49, the Williams FW07C of Christophe d'Ansembourg (ex-Jones) and Mike Wrigley's ex-Jones/Reutemann FW07D.

Completing the squad will be US-based category newcomer Jonathan Holtzman who has bought the ex-Nico Bindels Lotus 87B. Holtzman has previously raced Formula Atlantic and sports cars in the US.

VSCC rebrands

THE VINTAGE SPORTS-CAR CLUB has refreshed the image of its racing programme by branding it 'Formula Vintage'. In the year that the club marks the 80th anniversary of its first race meeting at Donington Park in July 1937, the new name is designed to introduce VSCC racing to a wider audience.

The calendar for Formula Vintage starts at Silverstone, which returns to a two-day format on April 22/23, and then takes in one-day race meetings at Oulton Park (June 10), Cadwell Park (July 23), Mallory Park (August 12) and Snetterton (September 17).

Feature races at each event include pre-1931 vintage racing cars and pre-1961 racing cars.

Rule-changers for FoS

'PEAKS OF PERFORMANCE – Motorsport's Game-Changers' is the theme of this year's Goodwood Festival of Speed (June 29-July 2). The event will celebrate racing machines that were so fast, powerful, expensive or complicated that the rules were changed to control them. The event will showcase unlimited sportscars, 1930s-era 750kg Grand Prix cars, Group B rally cars and groundeffect and turbo-powered F1 cars.

Euro racers head west

UK AND EUROPE-BASED SPORTS racing and production GT cars from 1947 to 1955 have been invited to race in the Rolex Monterey Motorsports Reunion at Laguna Seca in August. After several US-based cars competed in Europe last summer, a return trip is on offer for both the Rolex event and the pre-meeting on the same track a week earlier. Each event will feature two qualifying sessions and two races.



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F1 FRONTLINE with Mark Hughes



cLAREN STEPS UNCERTAINLY into its third era in 2017. The original team can be classed as the Bruce McLaren/Teddy Mayer era from its formation in 1966, surviving Bruce's 1970 death and continuing until the 1980 introduction of Ron Dennis. Fourteen years produced two world

championships for drivers, a proud record but just a warm-up for Dennis's redefining of what an F1 team was between 1980 and 2016: 36 years and nine more champions, bridged by Niki Lauda at one end and Lewis Hamilton at the other.

Dennis did of course disappear from direct operation of the F1 team for five seasons between 2009-13 and built up the automotive side before returning as Group CEO. But this time he has no operational role at all, though retains his 25 per cent shareholding. So this really is the team's definitive third evolution, under Zak Brown's new commercial, political and strategic leadership, with Jonathan Neale remaining to oversee the technical and engineering side.

The Dennis departure was not a happy one, the breakdown of his long and fruitful relationship with 25 per cent shareholder and board member Mansour Oijeh verv much at the heart of it. Dennis's contract was never going to be renewed, but when he took the team to the high court in an attempt to prevent it from imposing his gardening leave a few months early - and lost - it only added to the sense of antagonism between Dennis and the board. Even Dennis's three-year return as Group CEO (without board membership) from early 2014 angered Ojjeh, who was recovering from a double lung transplant when he phoned Martin Whitmarsh to see how things were going - only to find Whitmarsh had been ousted. While Ojjeh underwent the operation, his brother held power of attorney and pressure was brought to bear to facilitate Dennis's return, much to Mansour's anger. Since that time Dennis had been trying to recruit investors that would have allowed him to retake control at board level, but it didn't happen. There have been suggestions that Dennis could yet take further legal action against the company that he quarterowns, though the possible grounds are not obvious, given that his contract was simply not renewed.

Departing in Dennis's wake after a short spell as CEO of the team was Jost Capito, who lasted just eight races. Dennis had recruited the former VW Motorsport boss to run the F1 team, somewhat treading on the toes of racing director Eric Boullier. There was a lot of mutual antipathy between Dennis and Boullier, whose appointment had been initiated by Whitmarsh. Capito's recruitment seemed bad news for Boullier's prospects there – and inevitably there was a somewhat dysfunctional dynamic between the two individuals. Boullier has done much in his relatively short time there to turn McLaren into a sharper team at operational level, losing it a lot of the inertia that had inadvertently been built into its organisation as it created systems to match its expansion. An early audit of roles and



STRAIGHT total for the second second



Read more from Mark about Formula 1 @ THE MOTOR SPORT WEBSITE personnel he conducted suggested that in some cases there were as many as three people available for each role...

But in the meantime the results on track remained woeful for a team of McLaren's size and resource. It's easy to lay the blame at Honda's power unit and its premature development, but that's only been a factor in the last two seasons. Look at the underlying long-term developments – Spygate, the loss of Mercedes as an engine and equity partner, the departure of Adrian Newey and Lewis Hamilton, the loss of big title sponsors with no replacements – and dysfunction is clear deep into the organisation. Much as Dennis should get the credit for the vast achievements of the team under his watch, so too is he implicated in many of its latter-day problems.

It's tempting to think that as the world moved on, Ron remained wedded to old ways and values that were becoming ever less relevant. Certainly, his insistence on staying with the golden years rate card was felt by others to be instrumental in no longer landing the big sponsors. But the style of sponsorship partnerships changed during that time: no longer was it just about a corporate image and allocating time for guests. Increasingly it has become about 'activation' of marketing campaigns, whereby a team has to take a more active role. Zak Brown's commercial mindset is bang up to date and he brings his own goodwill simply through being the new broom.

Technically, question marks remain about the aerodynamic department and about engine partner Honda. But those concerns are almost superficial compared to the longer-term changes already underway in the new era. McLaren Evo 3 is not yet a fully-formed entity and we don't know its true potential, but it may at least be becoming less burdened by its past.



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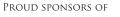
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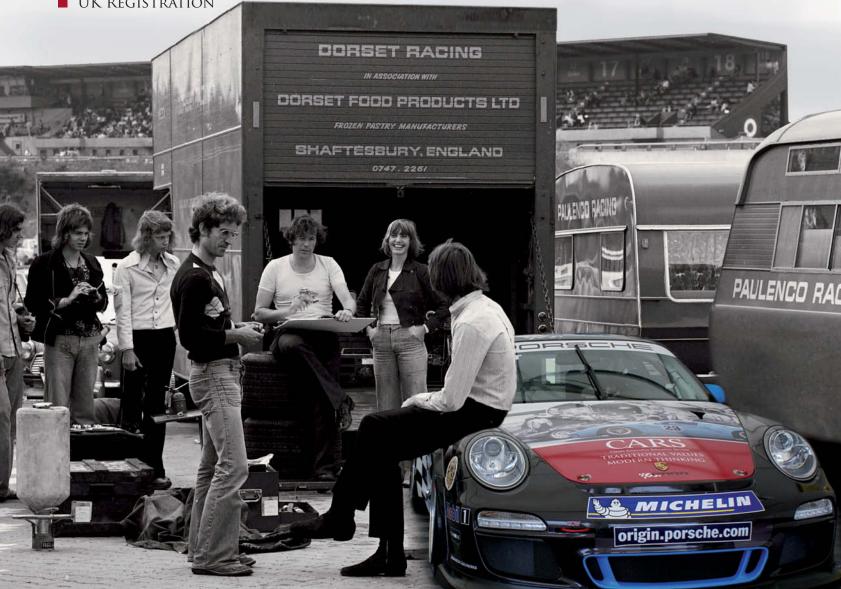
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They might not be sexy, but tyres are poised to play a greater part than ever in defining how hard drivers can push over the course of a Formula 1 race

> N THE EVE OF THE NEW F1 SEASON, as the new pumped-up, bad-ass generation of cars is about to be let loose with vastly more downforce, there remains one very big question mark around whether they will deliver the performance gains envisaged and therefore whether the whole exercise has been an expensive waste of time and effort.

> Having for the first time legislated in more downforce, F1 is presenting a very different look of car in 2017: wider, lower, swept-back and fatter-wheeled, they look like they're moving even when standing still. They are sexier, more menacing – and

should be a whole lot faster. Yet actually by far the most significant thing about them – the single factor far outweighing all the others in determining their performance and the quality of the racing – will be the tyres.

These cars will create more downforce than any in F1 history, are heavier than any previous F1 cars – and can deliver close on 1,000 horsepower. Which means the tyres are under more load than any in F1 history too, by a spectacular amount. Teams last year were estimating the downforce gains from 2016 would be in the order of 35-40 per cent, Brembo was saying the braking energy would increase by around 30 per cent. That would be challenge enough for Pirelli but, simultaneous with that, the tyre supplier

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F1 FRONTLINE with Mark Hughes

"PRE-PIRELLI TYRES COULD

BE BROUGHT BACK TO LIFE BY

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has been tasked by the FIA to produce a tyre very different in its behaviour to what it has supplied to date: specifically one that does not 'fry' into permanent inflexible uselessness once taken past a certain temperature threshold and which thereby has defined the fastest way of completing a GP as driving slowly. For 2017, the FIA has asked that the tyre's performance is recoverable if it becomes too hot, in order that drivers can push hard for most of the race rather than simply manage the rubber in between a couple of fast laps around each pit stop.

It's far from a given that Pirelli will have been able to accommodate these demands – from both the increased performance and those of the governing body. Doubts have been expressed about the suitability to F1 of Pirelli's whole technical philosophy and, furthermore, the tyre company has been stymied by the current era of testing restrictions. It

has also been the victim of mixed messages from F1 about what is required. Bernie Ecclestone's original brief to the company was 'to mix up the field, make it less predictable'. It achieved that through its heat-degrading tyre concept. But teams quickly got their heads around the traits and the unpredictability had largely disappeared by 2013, leaving just the unsatisfying 'driving to a time delta' style of racing. Not only has this been philosophically the antithesis of F1's traditional flat-out ethos, but it's also imposed a style of

racing where it's impossible – in the dry at least – to perform the sort of 'comeback against the odds' drives that have in the past created the sport's legends.

When Ferrari had got out of sync with McLaren at Hungary in 1998 and Ross Brawn told Michael Schumacher he needed to reel off 'qualifying laps' to bridge the gap, the German produced exactly that – an incredible demonstration of a genius driver on the absolute outer edge of his ability, striving to recover an apparently impossible situation. In pulling it off he created a golden sporting moment.

At Monza last year, after pole man Lewis Hamilton had made a bad start and been bundled down to fifth place while team-mate Nico Rosberg ran away at the front, he was 15sec behind Rosberg by the time he'd clawed his way back up to second. There were 35 laps to go and in qualifying he'd been 0.5sec faster. If he could maintain that pace advantage for 35 laps, he could in theory have been fighting out the win with Rosberg in the race's closing stages and each lap that the gap closed, so the tension and anticipation would have intensified towards a thrilling crescendo. But of course it could no longer happen that way; the tyres didn't allow it. They had to be driven to a delta, around 2sec off the ultimate pace in order to not fry after a couple of hard laps. So Hamilton was still 15sec behind 35 laps later. This is just one example of thwarted races in the Pirelli era. There are many others.

-

FOR 2017, THE BRIEF TO PIRELLI HAS BEEN UNAMBIGUOUS: a more traditional racing tyre that can be driven hard throughout.

Pirelli has been helped of course by the regulated increase in tyre width – up from 245 to 305mm at the front and from 325mm to 405mm at the back. This increases the contact patch – as does another, more subtle, change: the tyres' diameters have been increased slightly too. The bigger the contact patch, the less stressed the compound is, as

the load is spread over more area.

This will help in controlling the temperatures, giving a better chance of equilibrium between the load frequencies and the optimum temperature of both surface tread and the tyre's core. The ideal racing tyre is at that point of equilibrium even as it is driven as fast as the car will go, and the grip will progressively degrade only as the tread wears away. By contrast, the heat-degrading concept of tyre favoured by Pirelli to date typically (but not always) reaches equilibrium when the car is being driven whole seconds off its potential. Beyond that pace, certain materials within the tyre's compound permanently change their viscosity and harden the whole tyre, drastically reducing its elasticity and grip, regardless of how much tread is left. Backing off does not bring the tyre back to life – it is from that point on 'fried' and useless. Pre-Pirelli era

F1 tyres could also suffer heat degradation of course – ie the grip falling off when the surface becomes too hot and can no longer support the loads – but the tyre could be brought back to life by backing away from the ragged edge for a lap or so, because the compounds did not contain plastics that permanently hardened when overheated.

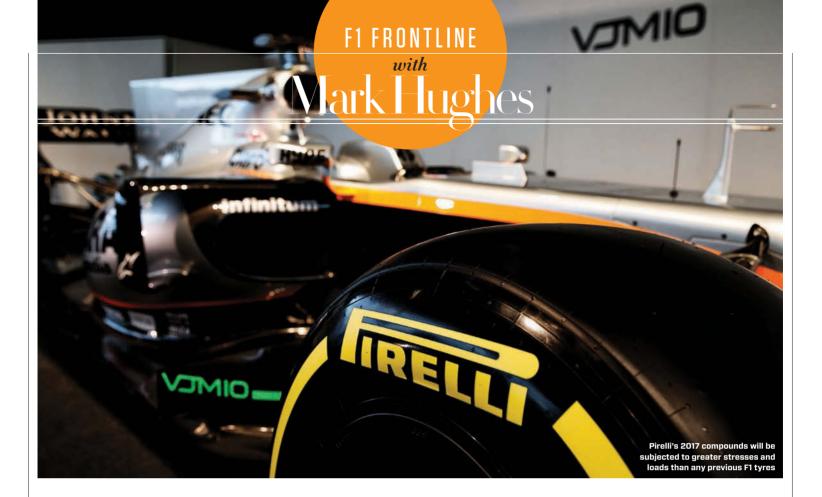
To fully grasp the mechanism at play here requires delving a little further into the chemistry and the dynamics involved. The demands of a circuit's layout (its corner radiuses and duration,

the gap between them), its surface and its temperature, together with the traits of the car, impose an ideal viscosity of compound. As the tread temperature rises, the compound becomes softer. But as the contact frequencies rise (ie how much stress the cornering or braking or accelerating is putting the tyre through) the compound becomes harder. There is always therefore an ideal compound that best resolves those two opposing pulls on a given track on a given day on a given car. When these are in harmony, the tyre is said to be in its ideal state, that of 'vitreous transition'.

The tread temperature needs then to be in harmony with the tyre's core temperature. If the loads generated by the tread do not put enough movement in it, the tyre's inner core will remain too cool and inflexible. If the construction itself is not flexible enough, it forces the tread to take up more of the load – causing it then to overheat. Which in turn reduces grip further, a vicious circle of degrading grip.

Creating a construction that flexes enough not to overstrain the compounds requires that it be strong. Repeated flexing can create a failure point if the flexing loads are not fairly equally distributed. If the construction design spreads the loads in a way that induces a weak spot from repeated flexing at the loads the tread is capable of generating, then either the construction needs to be stiffened or the tread grip reduced. Several shoulder failures of the Pirellis over the years have suggested that this indeed has been a weakness of that particular construction.

The heat-degrading mechanism of the Pirelli compounds tended to place a natural ceiling upon the construction. Because drivers were not flat-out for extended periods, it was enough to contain the loads within the construction's tolerance. But as the hybrid cars became faster through aero and engine development, so they began to edge the construction into an area that revealed the repeat stress point to be the inner shoulder of the rear tyre. This became apparent at Spa 2015 with the blow-outs of Rosberg and Vettel. In response, Pirelli increased the **D**



minimum permitted pressures and reduced the minimum camber angles, thereby limiting the grip the tread was capable of generating.

The more downforce created by the car, the harder a compound it can run without overheating the tread or underheating the core. Because rubber is visco-elastic (between a solid and a liquid), the way it reacts to loads is not consistent. Up to a point it will accept incoming energy and react against it, trying to spring back in the opposite direction to the load and thereby creating grip. But increase the loads beyond a certain point and the rubber cannot regain shape quickly

enough to absorb the incoming load and it stiffens and hardens, breaking the process down and causing the tyre to slide. Downforce gives the rubber help in opposing the load. So at a given speed, a car with more downforce imposes less stress on the rubber than one with less downforce. Or, expressed another way, at a given level of rubber stress the car with more downforce will be going faster than the one with less.

So although Pirelli's heat-degrading compounds place a false ceiling on how hard the driver can push for extended periods, the car with more downforce is still faster at that false ceiling than the car with less downforce. (There is however a point at which the downforce can

'saturate' the tyre and it simply cannot absorb any more load. Mercedes was nudging this limit at Spa last year. Red Bull used to regularly find itself in the same situation in the blown-diffuser era).

So into 2017 the question is how well matched the hugely increased downforce generated by the new regulations will be with the latest Pirellis, enhanced by greater width and diameter, improved compounds and new constructions. The enhanced dimensions allow a bigger contact patch that should give better temperature control, but the details of the changes in construction and compound have not yet been publically revealed. Pirelli says its compounds, "Make use of entirely new materials and a completely fresh design philosophy."

Which suggests it just might have responded to the FIA's brief with a

move away from the designed-in heat-degrading philosophy. But there remain doubts about how far it can do this. Pirelli has always insisted it included heat-degrading composites within the rubber compound in order to meet the original randomising brief. Others have suggested those chemical constituents are there only to facilitate the automated tyre manufacture process at the Istanbul factory where they are made, that they are needed in that process to get the base material into a sufficiently liquid state that it can be extruded effectively. If true, this

means that those plastics are intrinsic to the concept of tyre.

Also Pirelli stops short of committing itself to the new compounds beyond the first few races, saying, "After a very positive testing programme with the new sizes, Pirelli has decided to additionally homologate a back-up compound alongside each of the five new base compounds. These extra compounds are formulated using more traditional criteria compared to the new base compounds. For the first part of the championship, only the new-generation base compounds have been selected. The back-up compounds could be introduced later in the season to respond to any particular requirements once the real performance levels of the 2017 cars have been identified.'

All of which sounds less than confident.

The concern of the teams is that the aero overwhelms even the new tyre's construction and that Pirelli's answer will be – for the sake of safety – to increase the pressures and reduce the cambers again, thereby negating much of the potential performance increase.

That would also reduce again the contact patch and that might – depending upon how the new compounds behave – take us right back to Lewis Hamilton and co having to 'drive to a delta lap time' for whole stretches of the race. By the time you're reading this the first tests of the new cars and tyres will have been conducted at Barcelona and we might have the first indications of just how successful – or otherwise – this whole regulation change might be.

"THAT MIGHT TAKE US BACK TO HAVING TO 'DRIVE TO A DELTA TIME' FOR STRETCHES OF THE RACE"

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HALL OF FAME

www.motorsportmagazine.com/hof

How to vote for your favourite star

Voting for the Hall of Fame has begun with all four categories now live and open for readers to vote and make their choice. IMSA winners James Weaver and Andy Wallace joined the podcast team to choose 12 names that should be in the running for the 2017 US racing category. Each discussion is available as a podcast, which you can download from the *Motor Sport* website. The person with the most votes is subsequently inducted into the Hall of Fame at a glittering awards ceremony on June 7. The US nominees are:

JIM HALL

MOTORSPORT

The man behind the revolutionary Chaparral cars, he pioneered wings and ground effects among much else. A handy driver, too.

A J FOYT

Fearless and fearsome, Foyt won in almost everything he drove. The first to claim four Indy 500s, he won Le Mans, the Daytona 500 and seven USAC titles.

JIMMIE JOHNSON

Tied on a record seven NASCAR titles with fellow nominees Richard Petty and Dale Earnhardt – and the only driver to win five in a row.

DALE EARNHARDT Sr

The Man in Black won seven Cup titles, and was still winning races as he neared 50. A winner just about everywhere that mattered in NASCAR.

JOHN FORCE

In a 40-year career drag racing legend Force racked up 16 Funny Car titles, including 12 in a row, as well as 18 as a team owner.

MARK DONOHUE

Racer, engineer, team manager, champion – Mark Donohue was like few others. A winner in NASCAR, Can-Am, Trans-Am and Indycars, including the 500.

RICHARD PETTY

The King is NASCAR's biggest star. Seven titles, 200 wins, his number 43 Superbird remains one of NASCAR's most iconic machines.

JEFF GORDON

A stock car sensation who conquered NASCAR in only his third full season. Took four Cups in seven years and recently won the Daytona 24 Hours.

RICK MEARS

A four-time Indy 500 winner and three-time champion, Mears is one of oval racing's best ever, and famously modest with it.

ROGER PENSKE

His team has been the benchmark in US racing since the '70s. Winner of 16 Indy 500s, his squad has claimed countless trophies across the racing spectrum.

BILL FRANCE Sr & Jr

Quite simply, NASCAR and the Daytona International Speedway wouldn't exist without the France family. Enough said.

AL UNSER Sr

The first man to match Foyt's record of four Indy wins, Unser is also the oldest driver to win the 500. No one has led more laps at Indy than he has.



HALL OF FAME

www.motorsportmagazine.com/hof



PIERS COURAGE MCLAREN F2 Opens Hall of Fame Display

A McLaren F2 M4A raced by Piers Courage in the late '60s will be on display at the Hall of Fame and demonstrated on the Captain's Drive. Entered into the 1967 Formula 2 Championship by John Coombs, Courage ended the season in fourth place behind Jacky Ickx, Frank Gardner and Jean-Pierre Beltoise. Podiums at Hockenheim and Zandvoort were high points, but the best was yet to come.

In the highly competitive Tasman Cup of 1968, Courage beat Pedro Rodríguez, Chris Amon, Jim Clark and Graham Hill to victory in the sodden final round at Longford. No single-seater McLaren had won a race up to that point.

McLaren M4A/2 will be on static and moving display at the Hall of Fame event, held at the Royal Automobile Club, Woodcote Park on Wednesday, June 7, 2017.

We are delighted to welcome motoring specialists Hortons Books as our latest partner at the 2017 Hall of Fame.

For more information about the Hall of Fame, including how to cast your vote for this year's inductees,

www.motorsportmagazine.com/hof

WIN A PAIR OF TICKETS To hall of fame 2017

To celebrate this year's eagerly anticipated Hall of Fame ceremony, we're giving readers a chance to win a pair of prized dinner tickets. You could be rubbing shoulders with motor sport stars while enjoying a delicious three-course meal in the stunning grounds of the Royal Automobile Club on June 7.

To be in with a chance, simply cast your 2017 Hall of Fame vote. This will be entered into a free draw that includes a range of other fantastic prizes, such as a set of luxury *Motor Sport* luggage, signed books by *Motor Sport* writers, tickets to motor racing events and annual subscriptions to the magazine. To enter visit www.motorsportmagazine.com/vote. *Competition closes May 2017*



Tasman Cup

The best F1 stars ventured south in their droves in the mid-60s – a far cry from the modern Toyota Racing Series that keeps young drivers busy in the European off-season. Jim Clark mastered the Antipodean circuits best, winning three titles in four years from 1965. Bruce McLaren used his local knowledge to win the first title in '64, but the list of winners was rich in pedigree.

Bruce McLaren (champion) and Jack Brabham (3 wins), Graham Hill, Denny Hulme

Jim Clark (champion, 5 wins), Graham Hill, Jack Brabham and Bruce McLaren

Jackie Stewart (champion, 4 wins), Graham Hill (2 wins), Richard Attwood, Jim Clark

Jim Clark (champion, 5 wins), Jackie Stewart (2 wins), Jack Brabham

1968

1964

1965

1966

1967

Jim Clark (champion, 4 wins), Chris Amon (2 wins), Bruce McLaren, Piers Courage

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last year was a highlight for Meaden

IVEN THIS IS MY FIRST CONTRIBUTION to Motor Sport, I thought I really ought to introduce myself. Obviously because it's polite, but also because as a long-standing reader of this hallowed publication, I know I'd want the opportunity to look the new boy up and down to see if he fits the bill. So, here goes. Please be gentle with me.

No matter how far back I look, right to my very earliest memories in fact, I can't recall a time where I didn't love cars. Riding in them.

Drawing them. Reading about them. Making models of them. Photographing them. Watching them race. And, once I was old enough, driving and racing them myself.

I suspect being brought home from hospital as a newborn baby in a Triumph GT6 might have something to do with it; tender lungs treated to some lead-rich five-star petrol fumes; delicate ears rattled by a snorty straight-six lullaby. In my parents' defence it was the early 1970s.

This magazine also played its part in corrupting my young mind. I have to confess I don't remember the date of my first issue, but I'm pretty sure it had James Hunt's Marlboro McLaren on the cover. For some reason one thing I do remember vividly is being obsessed by the old black and white Caterham Cars adverts, which always seemed to be located on the inside front cover. If you're wondering, yes, I have since owned a Seven. Impressionable youth indeed.

Apart from pushing a small Corgi die-cast Yardley M19A around imaginary race tracks on my bedroom floor, my first introduction to motor racing was as a spectator. Initially avidly watching F1, rallying and rallycross coverage on the television, then, aged 11 or so, as a trackside spectator. Together with best mate Nick and his father, my dad and I would regularly go to Silverstone and Brands Hatch for the 1000Kms Group C races and the Tourist Trophy, which in those days

was a round of the European Touring Car Championship (ETC) for Group A touring cars. I'll never forget the buzz of excitement as we drove through the gates, nor the extreme cold as we huddled in the draughty grandstands at Woodcote and Stowe. I'd get autographs, take photos, proudly wave home-made banners with Nick and stand as close as I could to the track. transfixed by the noise and drama. Thanks to TWR's success I still have a soft spot for the SD1 Rover Vitesse. To be honest it's a miracle I didn't have a 40-a-day smoking habit, divided equally between Bastos to help Tom Walkinshaw pay the bills, and Rothmans to keep Derek Bell and Jacky Ickx in 956s.

Thinking back it seems surreal that the racing we watched back then is now revered and celebrated in historic race meetings and festivals around the world. Can I really be that old? Actually, don't answer that. The only thing more bizarre is that I've since raced with (and against) some of those heroes I watched race in the Eighties and Nineties. Sharing a Jaguar D-type at Le Mans Classic with Andy Wallace and a GT40 in the Spa Six Hours with Gerhard Berger have been by far the finest pinch-myself moments yet.

Parental and childhood influences fuelled my obsession for cars, but it was more by accident than academic design that I became a motoring journalist. Becoming a road tester was the dream, but there weren't any O-levels in oversteer or primary and secondary ride appraisal. Thanks then to Jaguar and the Guild of Motoring Writers for the Sir William Lyons Award – a competition aimed at budding young writers – for providing me with an opportunity to get noticed and, ultimately, to get my first full-time magazine job. With a foot in the door I was fortunate to work under the tutelage of some great mentors who taught me the right way to do things, and that the best results always come when you're having fun.

It was in those formative days (1993, to be precise) that I got my MSA race licence, so that I could drive BP's guest car in a round of the Caterham Seven Roadsport Championship. Getting my National B licence and doing that race were moments that genuinely changed my life.

This month marks the start of my 25th season of racing. I wish I'd been diligent enough to keep a diary of every car I've raced or tested over the years, but alas I always had something better to do. Suffice to say it's got to be several hundred different cars and a few hundred races. And that's not counting events such as Bonneville Speed Week and Pikes Peak International Hill Climb. Nevertheless, when I think about that first race I still get goosebumps. Still feel my heart-rate increase. Still recall the mild panic rising in my chest as it dawned on me I'd never



"I WISH I'D BEEN DILIGENT ENOUGH TO KEEP A DIARY OF EVERY CAR I'VE RACED" actually overtaken anyone in a racing situation – this rather critical epiphany coming halfway through attempting to overtake someone...

These days I've got a lot better at controlling my nerves, and I'm (a bit) better at overtaking, but whatever and wherever I race I'm pleased to say the incredible, inimitable, almost uncontainable rush of excitement and nervous energy remains just as powerful. Adrenalin is clearly still my drug of choice.

That's why even after all these years there's still so much to get

excited about. Over the last four or five seasons I've gorged myself on historics, doing more racing than the previous 20 seasons put together, in cars I previously would only have dreamed of driving. Iconic and utterly individual machines such as the Mk1 Lotus Cortina, Lola T70 Mk3B, Lotus Elan 26R and 3.4 RS 'Cologne' Capri. Oh, and a supersideways AC Cobra at last year's Goodwood Revival. And, and, and... When I get a moment I'll dig through the terabytes of GoPro footage I've accumulated over the years and share some snippets of in-car footage on

our website - motorsportmagazine.com.

I'm thrilled to say I'll be racing a few of those cars and – hopefully – driving with some more heroes this year. I'll also be stepping-up into Peter Auto's new-for-2017 Euro F2 championship, driving an ex-Giacomo Agostini Chevron B42 from 1978. Having previously raced only one single-seater, a Formula Palmer Audi, at Brands Hatch back in 2001, the prospect of piloting this quick and gorgeous open-wheeler is more than a little intimidating. Especially as the first event is at Spa!

Racing any car is tremendous fun, but I find historics completely bewitching. They're so expressive and engaging, with a magical combination of little or no aero and almost always more grunt than grip. They demand empathy, mechanical sympathy and constant improvisation. A bit of bravery too, if it's a T70 in the pouring rain. Whatever the conditions, and whether mid-week testing at Donington or dicing for a win at Dijon, the joy of historics is that every lap doesn't just feel like the most fun you've ever had: it *is* the most fun you've ever had.

That's why I regard my race licence as the most precious card in my wallet. It's a passport to pleasures I'm incredibly lucky to experience and the provider of memories I know I will never forget.

So the bucket list isn't getting shorter, which is a very good thing, because it means there's plenty of fun left to have. It goes without saying I'm very much looking forward to sharing the best of those adventures with you over the coming months. I really can't wait to get started.

>>END THIS RADIO-CONTROL RACING

Richard Williams



AS HE GETS DOWN TO THE JOB OF

redesigning Formula 1, Ross Brawn could use a guiding principle. Were he to seek individual solutions to each of the sport's current problem areas, the men in white coats might soon arrive to take him away. But if he isolated one defining element and worked downwards from that, he might stand a chance of creating a viable future while coming out with his sanity intact.

Here's an idea of how he might go about it, prompted by reading a description on the website of Tata Communications, F1's official content delivery network provider, of Lewis Hamilton's reaction following a practice session in which he had been in constant radio communication with an engineer. When he returned to the Mercedes garage, Hamilton expected to continue the discussion face to face. Instead he was told the engineer had not been trackside but back at the Brackley factory.

In its way, that sort of thing is rather marvellous. As well as the bank of engineers studying and crunching data at desks in the back of the pit garage, there are dozens of others, hundreds or even thousands of miles distant, playing an equal part in monitoring the car's functions in real time in order to optimise its performance at any given moment throughout the event.

The obvious comparison is with military personnel working shifts at Creech Air Force Base in Nevada or RAF Waddington in Lincolnshire, watching screens and positioning their Reaper and Predator drones over Al-Qaeda convoys before pushing the remote firing button. It eliminates danger to military personnel, of course, but to take physical courage out of the equation radically changes the nature of the event: this is not war as it was known all the way from the siege of Troy to the D-Day landings. If that seems a tasteless comparison, it is merely intended to highlight the risk run by Formula 1 when digital technology is deployed in order to eliminate the influence of human inconsistency, unreliability or defective judgment.

What most fans want, like those insiders concerned by diminishing crowds and falling TV ratings, is a return to a situation in which the driver can clearly be identified as the most important element, producing contests to which the human element once again holds the key. A concern for health and safety means that we are never going to go back to the sort of low cockpit sides that allowed us to admire the style and effort of drivers from Nino Farina in his Alfetta to Ayrton Senna in his McLaren MP4/6, so other ways must be found to let us recognise the differences between them as human beings, and to observe the decisions they make, alone and unaided, under extreme pressure.

So try imagining Formula 1 without any form of in-race remote electronic communication, technical or human: no sensors monitored in real time in the garages or back at the factory,



"It's toe-curling to hear a man in charge of a 230mph machine being given tips on how to drive it in battle" no radio voice link between engineers and cockpit. The driver could still have control of all the functions currently available on his steering wheel, but he would be entirely dependent on his own analysis and instinct for, say, adjusting the brake balance or selecting the correct engine map in changing conditions.

He alone would be responsible for choosing which parts of the circuit on which to push, and where to take it easy to extend the life of his tyres. He would make the call on tyre changes, a decision simplified by the use of a single dry-weather compound. He could have an extra button to press to tell the pits that he was about to come in, and two more with which to identify a choice of intermediates or full wets.

Nothing has done more to lower the standing of the drivers in the public mind than incessant radio coaching. It's toe-curling to hear a young man in charge of a 230mph machine being given tips on how to drive it in battle, and humiliating for everyone concerned when the team principal takes the microphone to issue orders in moments of crisis. All of those decisions need to be returned to the driver, governed only by the system of pit boards that goes back to Alfred Neubauer and the Silver Arrows of the 1930s.

To see the difference that radios make, just watch the Tour de France. A three-week stage race through the French countryside is a glorious spectacle, of course, but much of the actual racing is robotic and predictable because the riders are all wired up and listening to their sporting directors issuing instructions based on kilowattage. In the events from which radios are banned, such as the Olympic road race, random factors and individual initiative take over and true heroism becomes possible.

Cycling's team directors detest the radio ban. Not for reasons of safety, which is what they always claim, but because it reduces their degree of control. Formula 1's team managers are no different. When a partial ban was unsuccessfully imposed last year, they claimed that their sport needs radios and constant telemetry in order to remain at the leading edge of technical development. But they're wrong. They could still spend their budgets on the machinery, and the grid-to-flag control would be back in the hands of the drivers, which is where it belongs.



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1978 FERRARI 312 T3

Victorious in the 1978 US Grand Prix West driven by Carlos Reutemann
 Entered for Gilles Villeneuve in the 1978 South African Grand Prix
 Thrice Monaco Historique GP participant

1934 TALBOT AV105 - AYL 2

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 ♦ Engine rebuilt in 2017 by Talbot specialists Pace Products



MOTORCYCLES

>>MOTOGP'S NEW TOP GUN?

<image>

Vinales got his Yamaha career off to a flying start by setting the pace during the first two winter tests

THIS SEASON VALENTINO ROSSI HAS A NEW Movistar Yamaha team-mate who may turn out to be his most troublesome yet. Maverick Vinales replaces Jorge Lorenzo, who has defected to Ducati.

Vinales is the most talented rider to climb aboard a MotoGP bike since Marc Márquez, who has won three of the past four titles. He graduated to the top class in 2015, after taking the 2013 Moto3 world title and winning four races in his rookie Moto2 campaign. No doubt, Vinales is very fast, but he's not as fast as the man whose name he shares. He was named after Pete 'Maverick' Mitchell, the macho star of Top Gun, the 1980s USAF recruitment advert masquerading as a Hollywood movie.

That's quite a burden to bear, in so many ways. What Vinales didn't know (at least until I told him) was the origin of the term Maverick. Samuel Augustus Maverick was a 19th century Texan lawyer and rancher who was so busy he couldn't be bothered to brand his cattle. Fellow ranchers called his unbranded cows Mavericks and the name stuck, eventually evolving into meaning 'independently minded'.

The 22-year-old's eyes brighten at the revelation. "Yes!" he laughs. "For sure I'm a bit wild! And I'm a fighter; I enjoy the fight, I like to overtake and I like to slide a lot."

Vinales' talent was evident from the moment he arrived in the 125cc class in 2011, when he won a GP at his fourth attempt, with an audacious final-corner move on Nico Terol. His independent spirit became general knowledge at Sepang the following year, when he fell out with his team – because his bike was woefully slow – and walked out of the paddock to catch the next flight back to Spain.

Suzuki was first to get Vinales' signature on a MotoGP contract, at the end of 2014; quite a coup for a factory returning to the class after a five-year absence. Last year at Silverstone he gave Suzuki its first-ever MotoGP victory on a dry track, running away with the race, while Rossi, Márquez and Cal Crutchlow traded blows at a respectful distance.

By then he had already rejected Suzuki's offers of a contract extension to join Rossi at Yamaha. In theory this was a good move, even though last year Suzuki progressed while Yamaha went backwards.

Vinales has everything going for him. He is aggressive and his riding technique sits somewhere between two compatriots who have won the past five MotoGP titles between them – he's less wild than Márquez but more animated than Lorenzo.

"My style is a bit similar to Marc's: a bit on the limit, a bit out of control," he adds. "And mentally I am quite strong – in a race I never give up. If a rider in front can go two tenths faster, I will still try to catch him and pass him."

Vinales's former crew chief Jose Manuel reckons his technique is closest to Rossi's.



"Vinales rejected Suzuki's offer to join Rossi at Yamaha. In theory this was a good move, even though last year Yamaha went backwards" "The way Maverick rides a bike reminds me of Valentino – he's good at everything and he's very adaptable," says Manuel, who worked with Rossi at Ducati. "He is a hard braker, he's good with the gas, he's strong everywhere and doesn't really have a weak point."

Although Vinales changes motorcycle and team this season, he looks likely to be the main rival to reigning world champion Márquez. Yamaha might well have fixed its problems because Vinales topped the MotoGP's first two winter tests.

If Vinales and Márquez fight it out on the track it will be nothing new. More than a decade ago the pair duelled with each other on Spanish kart tracks, in the 50cc Copa Conti and 70cc Metrakit championships.

"I always had good battles with Marc," says Vinales. "We were always at the front – one day I'd win, the next day he would win, so we were fighting for the championship, but he's two years older than me so he was always one step ahead."

Márquez is still two years older but we will find out this season if he's still two years better at riding a MotoGP bike. When the pair do clash it will be an interesting battle, because both are happy to rub elbows and swap paint. They are also immensely mentally strong and seem to have their egos well under control. Like Márquez, Vinales is a quiet man, totally focused and full of self-assurance. Their rivalry is likely to be just as intense but a lot less bitchy than that of Rossi and Lorenzo.

Even more fascinating will be how Rossi responds to his new team-mate. When Lorenzo joined Yamaha in 2008 the atmosphere in the garage immediately soured and degenerated from there; until Rossi walked out in 2011. The team simply wasn't big enough for the both of them.

But times have changed. Rossi wasn't used to being beaten back then, whereas he is now. So far the pair get on very well, but as other former friends have observed, Rossi is happy to be friendly, until you start beating him.

"Sincerely, I'm worried," smiled Rossi, of his latest challenge. "I've known about Maverick's potential for a long time. The moment he signed for Yamaha I knew I cannot relax."

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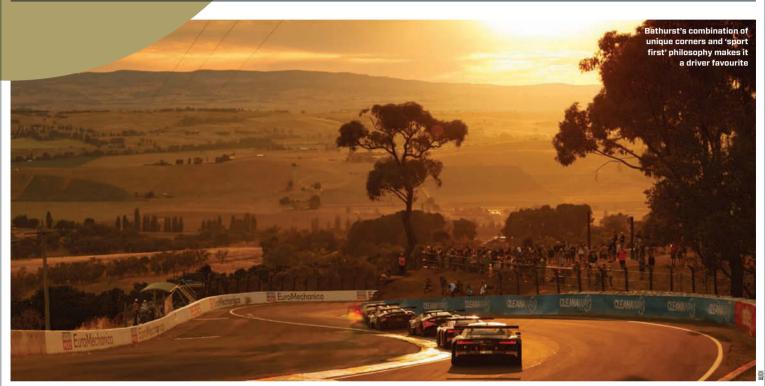
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LO

>>WHY BATHURST IS ON EVERYONE'S BUCKET LIST

GUFST, COLUMN

Darren Turner



I'VE JUST COME BACK FROM MY FOURTH trip to Australia. I've been twice to the Gold Coast to race in Aussie V8s and once with McLaren to drive the two-seater F1 car at the Melbourne Grand Prix, but this trip to Bathurst tops them all. The Bathurst 12 Hours is an incredible event: the circuit, the fans, and the organisation, all of it!

The circuit itself didn't disappoint and now I fully understand why it is on the bucket list of so many racing drivers. It has everything, from massively challenging sections to corners that you just don't find anywhere else. You can see from the attrition in the race what an unforgiving circuit it is. The slightest mistake can have huge consequences, as you don't bounce when you hit those walls. Mount Panorama is a circuit that you have to respect or it will bite you, as a couple of drivers found out via a few broken ribs during the weekend.

The Australians sure know how to run a race weekend. They have found that perfect balance between enjoyment for the drivers, enjoyment for the fans and making sure the racing is of a high level. I noticed this when I did the Aussie V8 races. Take the pre-race briefing, for example. The message is that we are all there to put on a good show and there is a lot of mutual respect between the drivers and officials. It's a different vibe to what we have in Europe and it's very refreshing. It's not all about rules and regulations, it's about the sporting side of things.

Bathurst was a fantastic experience and, to be there with R-Motorsport in the Aston Martin Vantage GT8 was a great privilege. The GT8 is actually a road car so to finish so strongly at an event like Bathurst is an incredible achievement. I knew we had a good car as I raced it in the Nürburgring 24 Hours last year, but for it to prove itself both on the Nordschleife and Mount Panorama is impressive. We didn't have any technical issues during the race, just a few punctures, so the GT8 is clearly strong.

One of the fun things about being in the invitational class is that you are not involved in the main GT3 fight, but you have the best seat in the house to watch the action. I was out on the circuit in the middle of a few intense GT3

"At one point eight or nine GT3s came past in one go and I loved it, as I got to see them going hammer and tongs from close range" battles. At one point I had eight or nine come past in one go and I loved it as I got to see everyone going at it hammer and tongs from such a close range.

Now that I've done it I've got the bug and want to do it again. It was just one of those events that is great fun for everyone involved.

We're now busy preparing for the season ahead. I'm sharing the no97 Aston Martin V8 Vantage GTE with Jonny Adam this year. We've been team-mates on numerous occasions and he's one of those guys who are easy to get along with; a great team player, a hard worker and he's fast. We work well together and we have every chance to be competitive this year, as we showed at the last race in Bahrain last year. The Vantage GTE has been one of the most successful cars in the WEC over the years so we should be racing at the front in 2017.

So that's it from me. I hope you've enjoyed reading these columns over the last 12 months. If you haven't, I'm sorry, as you haven't heard the last of me yet! I'll be popping up on other *Motor Sport* pages in future. Until then, cheerio!



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STAR LOT @ GOODING & CO

1989 MAZDA 767B [Amelia Island, March 10]

Mazda alone has stuck with the rotary engine, but its confidence was vindicated when in 1991 a 787B won at Le Mans. This 767 was a crucial step on the way, mounting a piercing four-rotor 630bhp engine. Driven by Terada, Duez and Weidler it came 12th at Le Mans in 1989, winning GTP in 1990, and ran in many other endurance events. Demonstrated at Goodwood in 2016. Estimate: \$1.8-2.4m

UNDER THE HAMMER

Key highlights at classic and racing auctions from around the world

Bonhams



1963 Lightweight E-type Jaguar Sold for \$7.3m

1952 Ferrari 340 Vignale spider Sold for \$6.38m

1964 Porsche 904 GTS Sold for \$2.3m

1931 Alfa Romeo GC GS Zagato Sold for \$2.8m



a Amelia Island, USA March 9

1954 Arnolt Bristol roadster Prototype of Bertone-bodied US range on Bristol chassis; recently restored Estimate: £320-400,000

1927 Bentley 41/2 litre tourer

Early 4½; retains original Vanden Plas coachwork; Estimate: £600-720,000

Artcurial

a rétromobile, paris february 10

1965 Dino Berlinetta Speciale Unique and famous Ferrari concept, the first mid-engined Ferrari GT Sold for €3.8m

1948 Ferrari Spider Corsa

Rebodied 1955; thought to be seventh Ferrari built Sold for $\pounds 2.96m$



1983 March 84G GpC/IMSA Porsche 956 motor; extensive race history including Le Mans, Sebring, Daytona Sold for €357,000

1990 Mercedes 190E 2.5-16 EVO II Sold for €190,720

Historics at Brooklands

a Brooklands March 4



1971 Fiat 500 Abarth Recreation of 695 SS Gp2 race cars Estimate: £14-18,000

1970 Triumph Mistral

TR3-based special in Microplas GRP shell Estimate: £10-15,000

Gooding & Co

@ AMELIA ISLAND, USA MARCH 10

Sune Envall -Carlsson's first rally *Estimate: £640-960*

AUTOMOBILIA

BONHAMS

Peter Helck painting

of 1908 Mercedes

Estimate: £1200-2000

2006 Ford GT Only 1450 miles from new:

5.4-litre supercharged V8, one-off wheel design. Estimate: \$250-300,000



1977 Porsche 934/5 One of 10; class winner 1979 Nürburgring 1000Kms Estimate: \$1.4-1.6m

1947 Cisitalia 202SC

Unusual cabrio version of classic 202 model; 1.1-litre four-cylinder, twin Weber carbs. Estimate: \$525-625.000

1957 Jaguar XKSS

One of the original 16 road cars built at Browns Lane; Canadian competition history in 1950s; converted to D form and much raced in 1980s; original XKSS components now refitted. Estimate: \$16-18m

RM Sothebys

(**a) Amelia Island, USA** March 11

1936 Lancia Astura

Pinin Farina open tourer on superb Lancia mechanicals with 3-litre V8; Milan show car Estimate: \$2-2.6m



1950 Ferrari 166MM Barchetta Raced by Castelotti, two Mille Miglia entries, original body Estimate: \$8-10m

1966 Aston Martin DB5C Volante

Rare interim model on short DB5 chassis but with DB6 refinements Estimate: \$1.6-2m



1928 Bentley 41/2 'Bohtail'

Works team car which ran twice at Le Mans (placed third in 1929); second in 1929 Double 12; driven by Clement, Benjafield, Davis. Estimate: \$6.5-7.5m

1968 AAR Eagle Indianapolis car

Driven by Mark Donohue; multiple entries in USAC and Indy 500 races; 525bhp Traco-Chevrolet V8 Estimate: POA

AUCTION CALENDAR

MARCH

4 HISTORICS AT BROOKLANDS Brooklands, UK 9 BONHAMS Amelia Island, Florida 10 GOODINGS

Amelia Island, Florida **10** RM SOTHEBYS Amelia Island, Florida **11** MOTOSTALGIA Amelia Island, Florida **19** BONHAMS Goodwood, UK 24 MECUM Kansas City, USA 28 BARONS Sandown Park, UK 29 H&H Duxford, UK **31**AUCTIONS AMERICA auderdale, USA

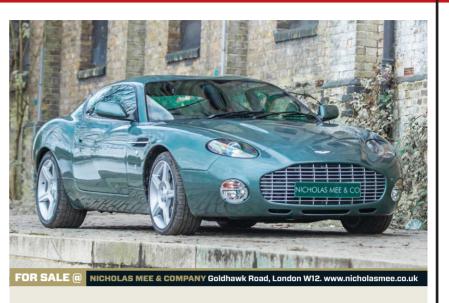
APRIL

1 CCA Birmingham NEC 22 BARONS Sandown Park, UK

MAY

11 AUCTIONS AMERICA Auburn, Indiana 13 BONHAMS Newport Pagnell 20 HISTORICS AT BROOKLANDS Brooklands

21 BONHAMS Spa-Francorchamps 27 RM SOTHEBYS Villa d'Este, Italy



DREAM GARAGE

ASTON MARTIN DB7GT ZAGATO

FACTFILE

YEAR 2003

ENGINE 5.9-litre V12, 435bhp

TRANSMISSION

6-speed manua

SUSPENSION

F & R: double wishbones,

coils. monotube dampers

rear control arms

TOP SPEED 185mph

DRICE £295 000

ZAGATO IS ONE OF THE LONG-LASTING names among Italian coachbuilders, despite various crises. Which car springs to mind as soon as that evocative name is mentioned will probably depend on your orientation – if you have Castrol R in your veins you'll think of 6C and 8C Alfas. If

you're a Sixties Swinger it's Aston Martin wings that will flutter in your heart – namely the chunky, muscular DB4 Zagato that Jim Clark flung round Goodwood. There have been several returns to that combination, not to mention the 'Sanction' replicas, and the example in Nicholas Mee's showroom undoubtedly reflects the

desirability of that heritage.

Based on the GT variant

makes such a delicious howl but in

of the DB7, it packs the 5.9-litre V12 that

uprated 435bhp spec. But when Zagato

Bloxham that would turn into the latest

aston to carry that Zorro 'Z' on its flanks,

they started by slicing out a section to

on an already shortened DB4 chassis.

department, "but it also improved the

shorten the wheelbase, something that

wasn't needed for the first one which sat

"That helped the vehicle dynamics,"

says Neal Garrard of Nicholas Mee's sales

aesthetics. You can see the hints referring

back to the DB4 Zagato - the wide grille,

got hold of the 99 bare frames from

the puffed up rear arches, the double-bubble roof."

Of course those first cars were built for racing; no-one is going to fling a DB7 Zagato around Spa among a field of rumbustious racers.

"We see these as offering the best of both worlds," says Neal. "All the feel of a

> classic car, individually built with hand-rolled bodywork, but with all modern conveniences – air-con, power steering etc. And being on production mechanicals they are predictable to own and maintain."

They may not have the race record of the 4GT, but these limited editions are becoming noticed,

according to Neal. "They used to be sought by marque enthusiasts but now as the value of prime Ferraris and Maseratis shoots up they are starting to catch the eye of collectors of other marques."

This one, first ordered by a Zagato collector, has the desirable manual gearbox to go with its uprated suspension and brakes, so although it comes with all the protective covers and special logbooks of a concours car (class winner at Salon Privé) it should also offer all the excitement Astons are built to provide – noise, drama, speed. And sheer presence. You won't see another on the road.

APRIL 2017

ROAD CARS

www.motorsportmagazine.com/author/andrew-frankel



Superfast returns – and how

Ferrari reveals its latest fearsome flagship | BY ANDREW FRANKEL

FERRARI HAS UNVEILED THE MOST powerful standard production car in its history. The 812 Superfast is a heavily re-engineered version of the flagship front-engine two-seat F12 and comes with a 789bhp, 6.5-litre engine. The '800' component of its nomenclature refers to its power output as expressed in PS, the '12' to the number of cylinders.

Compared to the F12, the engine has grown by 234cc, its output by 49bhp, making it even more powerful than the limited-edition 769bhp F12tdf. However the car has the same 1525kg dry weight as the F12 (which means around 1625kg for the more usually quoted kerb weight) so posts identical acceleration figures as the tdf: 0-62mph in 2.9sec, an extraordinary feat for a front-engined, rear-wheel-drive car. Top speed is said to be beyond 211mph.

The Superfast name is taken from the firm's luxurious 1964 flagship, whose 5-litre engine was the biggest yet fitted to a Ferrari road car and would remain that way until the launch of the 550 Maranello in 1996. Fittingly then, the 812 Superfast also boasts Ferrari's largest street unit to date.

But perhaps of greater significance is that the 812 will likely be the last new



Ferrari model powered only by a normally aspirated internal combustion engine. Its smaller V8 cars have already gone over to turbocharging and when the 812 itself is replaced, likely to be in either 2019 or 2020, the new car will still have a V12 engine, but one that is assisted by a hybrid electric drive, using technology transferred across from the LaFerrari hypercar.

It is also the first Ferrari to use an electric steering system, a move that is likely to cause anxiety in those commentators who insist no electric steering system has to date bettered the feel and response of the hydraulic system it is replacing. Ferrari's motivation for the move would seem not so much to save fuel and therefore lower CO₂, but to allow full integration with its famed Side Slip Control electronics and a second generation of the rear-wheel-steering system that's carried over from the tdf.

Stylistically, the 812's aim is evoke memories of the 365GTB/4 Daytona and includes a return to twin tail lights. While we're on the subject, when new in 1968 the 4.4-litre Daytona needed 352bhp to reach 174mph and claim the title of fastest car in the world. That's fully 200bhp less than the least powerful Ferrari made today, and a barely believable 437 fewer horses than that boasted by the 812 Superfast.

And if you think that sounds fast, bear in mind that just before the 812 is itself replaced, there is likely to be a limitededition, lightweight still more powerful version cut from the same cloth as the F12tdf. And as the absolutely, positively and definitely final purely aspirated, unassisted Ferrari of all, that will likely prove one of the most collectable cars ever to emanate from Maranello.

New McLaren takes shape

McLAREN HAS BEEN TEASING some details of its all-new replacement for the 650S ahead of its unveiling at the Geneva Motorshow in March. Widely reported to be called the 720S, the new car is known to be fitted with a 4-litre twin-turbo V8 engine, described by the factory as 'all-new', presumably with the 720PS (710bhp) output alluded to in its alleged name. If so it will escalate the power struggle far beyond the current reach of Ferrari's rival 660bhp 488GTB. McLaren says the car currently officially known only by its P14 codename will do 0-124mph (200km/h) in 7.8sec and a standing quarter mile in 10.3sec. This last figure is especially significant as it is a scant tenth of a second slower than that recorded for the McLaren P1 hypercar in independent testing.

McLaren claims that not only are power, torque and response significantly improved over the 3.8-litre V8 seen in all McLarens since the launch of the MP4-12C in 2011, but it also comes with better fuel consumption and a lower CO₂ output as well. The car is also known to come with a new carbon-fibre monocell with a structural roof element, unlike that of the current 650S. This will likely allow an even stiffer structure that can therefore be made even more lightweight but which will likely need substantially more re-engineering for the spider version.

In the meantime McLaren has announced it is to build a new $\pounds 50$ million factory in Sheffield, where all its carbon fibre (including monocoques and body parts) will be in future be built and developed.

The move will create about 200 jobs directly and more in the local supply network. The new factory will work in conjunction with Sheffield University's Advanced Manufacturing Research Centre to pioneer new techniques in carbon fibre production.

Until now McLaren has outsourced the production of its monocoques to Carbo Tech in Austria, but once production has been brought in-house, the amount of British content in each car will rise from 50 per cent at present to about 58 per cent. The new factory is expected to be running at full capacity by 2020, with early pre-production monocoques starting to be manufactured from the end of this year.

GM to sell Vauxhall

GENERAL MOTORS HAS SOUGHT to quell suggestions of substantial UK job losses following news that it is in talks to sell its European businesses including Vauxhall and Opel to the PSA Group, owner of Peugeot and Citroën. Vauxhall has two UK plants, based at Ellesmere Port and Luton, employing 4500 people between them with a further 30,000 job at dealers and in the UK supply chain. Business minister Greg Clark has been assured by GM that, were the deal to go ahead, these UK facilities would not be 'rationalised' with those of Peugeot and Citroën.

Whether that is enough to allay fears remains to be seen. For GM the motive will simply be to rid itself of a lossmaking operation, for PSA the reason for its interest in the acquisition appears to be volume and the associated economies of scale. In size terms it would make PSA second only to VW in Europe.

What it means for future Vauxhalls remains to be seen, not least because the deal, while advanced, has yet to be given the green light. But it would certainly mean shared platforms and shared technologies. Whether there would remain space for Vauxhall to have an identity of its own among hitherto rival brands as close as Peugeot and Citroën is not yet clear.

Aston tees up hypercar

ASTON MARTIN HAS ANNOUNCED its main technical partners for its forthcoming Adrian Newey-designed AM-RB 001 hypercar. The carbon fibre monocoque will be produced by Multimatic, which has worked with Aston in the past on the One-77 supercar and Vulcan track car among other projects. It will work closely with Red Bull and take full advantage of the F1 team's expertise in producing strong, ultra-light structures for racing.

The engine is a brand-new bespoke 6.5-litre V12 that is being developed for the car by Cosworth. The interest here is how the unit will produce sufficient power to hit Aston's stated target of



every kilogramme of mass being powered by its own individual horsepower. Aston is not stating a target weight for the car, but even if it could be kept down to one tonne (140kg less than the hitherto lightest carbon supercar, the McLaren F1) that would still require the engine to develop 1000bhp, which in turn would require a specific output of 154bhp per litre – a number that no normally aspirated road-going engine has yet approached.

Worthing-based Ricardo will build a new seven-speed paddle-shift gearbox for the AM-RB 001. Ricardo has impeccable credentials in the field, having supplied Bugatti with the transmission for the Veyron since its launch in 2005.

Other suppliers include Bosch for the engine and stability electronics, Alcon and Surface Transforms for brakes, a Rimac battery and Wipac headlamps.

Law suit looming at VW?

VOLKSWAGEN HAS THREATENED to sue Ferdinand Piëch over comments made in the German press surrounding the diesel-gate scandal. Piëch is the grandson of Ferdinand Porsche, former chairman of the VW Supervisory board and the man widely credited with turning VW into the most successful car company on earth, before being thrown out in a 2015 boardroom coup. He is quoted as saying he told key VW officials about the so called 'defeat device' at the heart of the scandal in February 2015, seven months before the news became public. This stands in stark contrast to the claim of the man who replaced him - Martin Winterkorn - that he knew of the issue only shortly before the scandal broke. There would appear to be a clear inference from Piëch that there was a cover-up in the interim which, if true, would worsen further the position of the embattled Winterkorn, who was forced to resign and now faces an investigation by public prosecutors into what he knew and when.

For its part VW's lawyers issued a statement flatly refuting Piëch's version of events: "No evidence was forthcoming indicating the accuracy of these allegations, which were classified as implausible overall." It added, "The board of management will carefully weigh the possibility of measures and claims against Mr Piech." www.motorsportmagazine.com/author/andrew-frankel

BENTLEY CONTINENTAL SUPERSPORT

Crewe calls time on GT with 700bhp monster that is also the world's fastest four-seater | BY ANDREW FRANKEL

> HEN SOMEONE comes to write the definitive history of Bentley – who knows, perhaps in time for its centenary in 2019 – he or she will have to consider the models

most significant to the brand's survival. There is of course the original, the 3-litre whose twin-spark 16-valve engine was born on a bench in New Street Mews. There was the Speed Six which, like the 3-litre, won Le Mans twice, and the 8-litre, WO's masterpiece born into a world that didn't want it. After bankruptcy came the Rolls Bentleys, the superb overdrive Derbys of 1938-39 and the 1952 R-type Continental. Then little more than badge-engineered anonymity until 1982 when the Mulsanne Turbo gave the marque an identity of its own once more.

And then the Continental GT, after the 3-litre the car I would argue was the

most significant of all. Before it, Bentley could scarcely sell 1000 cars a year; but thanks to the Continental GT and its derivatives Bentley sales have topped 10,000. It is the Continental GT that brought new levels of engineering integrity to Bentley, that transformed the brand's image around the world. Its success ultimately convinced Volkswagen, which had bought the brand in 2003, to make the single biggest investment the company had ever seen so an SUV could be designed, engineered and built at Crewe. By the end of the decade Bentley production will probably top 20,000 and I'd be surprised if most were not Bentaygas. And it was the Continental GT that made it all possible.

But now its time is nigh. Fifteen seasons sitting on the architecture of a defunct VW saloon is an extraordinary record, but you don't need long in one to see the evidence of its age in its mass, its 20th century ergonomics, its joke graphics, its uneven weight distribution.

FACTFILE £212,500

ENGINE 6.0 litres, 12 cylinders, turbocharged POWER 700bhp@5900rpm TORQUE 750lb ft@2050rpm TRANSMISSION ght-speed automatic. four-wheel drive WEIGHT 2280kg POWER TO WEIGHT 307bhp per tonne 0-62MPH 3.5sec TOP SPEED 209mph ECONOMY 18mng

CO2 358g/km

Still, time remains for one last laugh, and this is it: the Continental Supersports, not just the quickest, most powerful Bentley in history but, as the company is proud to boast, the fastest four-seat car in the world today, its 209mph top speed beating that of Ferrari's GTC Lusso by a single mile per hour.

20 TU

Depending on what kind of Bentley fan you are, that Supersports name can elicit two rather different images. Some might now be thinking of the 1925 3-litre Supersports, the first Bentley guaranteed to be capable of 100mph, others the stripped-out, pumped-up 2009 Supersports which featured a more rear-biased torque distribution, a wider rear track, revised suspension and a weight-saving regime so extreme the rear seats were deleted, at least until almost all prospective buyers asked Bentley to put them back.

By those standards, this Supersports can seem somewhat half-hearted. Compared to the Continental Speed on which it is based it has the same torque split, track, suspension and tyres, its 40kg weight saving merely a byproduct of its standard carbon-ceramic discs and the titanium rear exhaust box taken from 2014's V8-powered Continental GT3-R. Other than also acquiring the GT3-R's passive torque-vectoring system, the chassis is completely standard.

But the engine is not. Believe it or not, Bentley now has two 6-litre twin turbo W12 motors on its books, an effectively new direct-injection motor for the Bentayga, and this port-injected unit closely related to the 2003 original. It won't quite die when the Continental is replaced this autumn because it will live on for a while in the Flying Spur saloon, but it would be fair to say it's in the autumn of its life. Nevertheless new vim has been breathed into it by a pair of larger Mitsubishi turbos, blowing at 1.4bar as opposed to 0.9bar for the Speed: the effect is to whack power up from 636bhp to a nice round 700bhp. More impressive still is the additional 130lb ft of torque that comes with it.

It is no exaggeration to call the car's performance transformed: we're used to Bentleys performing strongly at low revs, but this one is unlike any other to wear the wings. The bigger difference comes at the other end when the smaller turbos of the W12 literally ran out of puff. No longer: the Supersports feels as eager at 6000rpm as it does at 2000rpm, stretching the car's powerband further still, imbuing its performance with an elasticity I've never encountered in other cars regardless of badge. The result is indecently fast, a near 2.3-tonne cathedral of a car, capable of hitting 100mph from rest in 7.2sec.

But it's frustrating too, because while it accrues speed at a rate you'd have needed a Ferrari to match until very recently, its chassis has not been allowed to match this progress. The car is not only heavy, but much of the weight is in the wrong place, slung out ahead of the nose. It has an aversion to ambitious entry speeds every bit as pronounced as less powerful, less sporting versions of the same car. Be more realistic and the car will respond and deploy its torque vectoring software to help tuck the nose into the apex on the way into a corner and then stop it running prematurely wide at the exit. You can often feel the system at work and at times it can even seem a little contrived, but it is far better that than a stodgy diet of nose-heavy understeer.

Nevertheless this is not a car you can bend to your will. You can enjoy driving it fast and there is a satisfying cerebral challenge in seeing how neat and precise you can make your lines in a car as vast and heavy as this. But if your dreams are of a fully engaging, indulgent driving experience, you will need to have them fulfilled elsewhere.

To me the problem is not so much the Bentley as its billing. Calling it a 'Supersports' is writing a cheque the car beneath can't quite cash. I'd concede that it is a sporting car, but so is a Bentayga SUV. That is not the same as calling it a sports car, let alone a Supersports.

Even so, nothing feels quite as massively engineered as a Bentley; its ride is first rate, its refinement at speed quite exceptional. Even that oldfashioned interior offers a superb place from which to watch the hours and miles roll by.



To be honest it would be naïve to hope for more. In brutal commercial terms, this car exists because everyone knows an all-new car is not far away and Bentley needs to maintain interest in the old car and provide it with an orderly and effective run-out. Far more than a 209mph top speed, that's what Bentley is hoping its 700bhp will achieve, at least for the 710 units that will be sold to the public.

It's a car I found frustrating at first but eventually quite likeable. But my search for the first proper Bentley sports car of my lifetime continues, and what better reason will Bentley have to produce one than its centenary in 2019? And if it too has 700bhp I shall be pleased; but if it weighs less than 2000kg, I will likely be absolutely ecstatic.



Fashion and

technology may

have passed the

but Supersports

uprated engine

adds immense punch to its

hefty weight

Continental GT by,

ROAD TESTS

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PORSCHE PANAMERA 4 E-HYBRID & 4S DIESEL

Don't be fooled by appearances. These two Stuttgart newcomers are remarkably different beneath the skin

HANCES TO COMPARE old- and new-school thinking on an otherwise reasonably even playing field do not come along that often in this business. But anyone pondering the relative merits of new-fangled hybrid power versus conventional diesel would do well to look at the lessons provided by these two new Porsche Panameras. No, they don't translate directly to all parts and price points of the market, but the general thrust of the arguments for and against are broadly reliable.

So in one corner with have the new hybrid, or Panamera 4 E-Hybrid to give it its full name. It uses a 322bhp twin-turbo 2.9-litre V6 coupled with a new electric motor to provide a total of 456bhp that is distributed to all four wheels. The Panamera 4S Diesel has a 4-litre twin-turbo V8, but without hybrid assistance can muster 'only' 422bhp. What's more you can plug the hybrid into the mains and waft around on a wave of electrons for about 30 miles at up to 87mph, and you can count on the Government to look very favourably upon it as a taxable benefit, as will as Mayor Khan should you be tempted to drive into London. Best of all, and in an attempt to spread the word wider than the previous Panamera hybrid managed, Porsche has actually



£79,715 ENGINE 3.0 litres, 6 cylinders,

turbocharged + electric POWER 456bhp@6000rpm TORQUE 516lb ft@1100rpm TRANSMISSION eight-speed automatic,

four-wheel drive WEIGHT 2245kg POWER TO WEIGHT 203bhp per tonne 0-62MPH 4.6sec

TOP SPEED 173mph **ECONOMY** 88.5mpg **CO**₂ 56g/km





cut its price from £88,967 to £79,715, despite the fact that you're also buying a brand-new car on a fresh platform that's better in almost every regard than the one it replaces. The 4S Diesel costs £91,788, more money for less power and higher running costs.

So it's looking like something of a slam-dunk for the new world. And if all you did was drive your Panamera hybrid on electric power, you might conclude that was indeed the case. Spot the difference: the hybrid Panamera, left, is heavier and lacks the all round performance of its diesel counterpart (above)

Despite sharing the name and something of the look of the previous Panamera, the new car is actually highly altered and is designed to do a very different job: it's no exaggeration to call it Porsche's first true luxury car. And nothing plays quite so well to this narrative as swishing about borne only by a silent stream of volts. Also, the new electric motor has both meaningful power and torque and, as a result (and at least while battery power remains), the Hybrid will actually provide all the performance most people would choose to use most of the time.

In this mode of travel the only real downside is the feel of the fly-by-wire brake pedal as it decides when to use the electric motor to slow the car and when to activate the enormous discs. It's not ideal but you get used to it.

It takes longer to acclimatise to what happens when the V6 motor chimes in – and during a reasonably long drive in South Africa, I never did. As you will know Porsche has produced some great six-cylinder engines and still does, but this is not one of them. It's too noisy and too coarse and unsuited to the hitherto svelte nature of the Panamera. Impressive performance figures are there to be taken, but you need to work the engine harder than I cared to make it achieve them.



And there's another problem. The elephant under the bonnet – almost literally – is the car's weight. At 2245kg it weighs not only 320kg more than the Panamera 4 with the same engine minus hybrid, but more even than a longwheelbase Mercedes-Benz S600 6-litre V12 limousine. And despite the best efforts of Porsche's chassis engineers, you can never escape that sense of excessive mass. It compromises the car's handling and combines with the unlovely engine to kill any chance of the car being actively fun to drive.

The contrast to the V8 diesel Panamera could not be more stark. It might have eight cylinders instead of six, but it is still 120kg lighter than the hybrid. It also has a torque advantage of

Panamera 4S Diesel FACTFILE £91,788

RV66 RS0

ENGINE 4.0 litres, 8 cylinders, turbocharged POWER 422bhp@3500 rpm TORQUE 626lb ft@1000 rpm TRANSMISSION eight-speed automatic, four-wheel drive WEIGHT 2125kg **POWER TO WEIGHT** 96bhp per tonne 0-62MPH 4.5sec **TOP SPEED** 177mph ECONOMY 42.2mpg CO₂ 176g/km

more than 20 per cent, delivered at even fewer revs. And there's no nasty brake pedal nor any awkward transition from electric to petrol power, just one velvet wallop from idle.

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our road test

cars in action

THE MOTOR SPORT DIGITAL EDITION

Make no mistake, this car has one of the great powertrains, as suited to its role in life as a four-cam V12 in a Ferrari Daytona or a Cosworth BDA in an Escort rally car. No, it's not silent like the hybrid when powered only by electrics, but no one will resent the distant thunder of the V8, or its ability to accelerate like a supercar with scarcely a rev on the tachometer. Which is why it feels by far the faster of the two, regardless of what the figures say.

And because it brakes and accelerates more consistently than the hybrid, the whole driving experience flows more readily. It's an easier car to handle, more fluent on the limit and more engaging too. Better, in other words.

Here then are two Porsches, similar in appearance and (on paper) performance, but utterly different in character and approach. And I get why some will still go for the hybrid: for a certain kind of user the maths will likely prove compelling. But if that's not you, find the extra and buy this diesel: it's not just a far better car, but a much better Porsche. To me such things still matter, and I hope they always will.

Never too Lehto

I really enjoyed Andrew Frankel's Lunch with JJ Lehto. I was at Le Mans in 1995, sitting in the Dunlop grandstand throughout the night watching this wonderful race unfold. Drivers were having serious moments all the time in the rain and II outdrove them all in the sinister-looking dark grey McLaren. Even Mario Andretti lost an almost certain win in the Courage-Porsche when he went off in the Porsche Curves. We probably all wanted the Bells to win in the bright yellow Harrods McLaren, but it was not to be. I have been to many Le Mans races, before and since, but 1995 remains one of my stand-out favourites.

What wasn't mentioned in the article was II's unfortunate involvement in the 1994 San Marino GP at Imola. His Benetton stalled on the grid and was hit by Pedro Lamy's Lotus. Though neither was hurt, there were debris everywhere. They didn't red flag the race and a safety car led the field round for several laps. When the safety car was brought in, as we all know, the cars were released and Ayrton Senna crashed fatally soon afterwards. I have always wondered whether that debris played its part in the Senna crash. If not, it still seems possible that if there had been a restart after a red flag, Senna might not have crashed at Tamburello.

James Trigwell, Guildford, Surrey

Tommy Byrne's bridges

A really absorbing Lunch With... in February's issue. Joe Dunn's interview with Tommy Byrne revealed many interesting aspects of this fascinating story of career promise only partially fulfilled. I have the feeling that if we'd ever had a real equivalent of NASCAR in the UK, Tommy would have been its king!

But what a contrast is evident in the aftermath of the 2016 Grand Prix season in regard to what is said by drivers off-circuit. There was Tommy, clearly with all the necessary raw talent and proven speed, blotting his copybook in close conversation with Ron, and apparently thereby losing his chance to compete in F1 with a top team. On the other hand, repeatedly in 2016 we heard Ron's protégé, one Lewis Hamilton, saying all sorts of ill-advised things – in front of a worldwide audience at that - yet sailing on now into yet another season and continued multi-million pound earnings. All the more strange considering Hamilton's many years of schooling in the PR/media aspects of the job. Though I don't think Tommy would have been bothered to suggest this in mitigation, he had experienced no such context to guide him when he made that fateful enquiry as to the meaning of R&D.

Thanks for maintaining the high standard of research and writing in the Lunch With series – it remains a highlight of *Motor Sport* despite the ending of Simon's exclusive authorship. *David Buckden, Walmer, Kent*

Two-wheeled Tyrrell

I do quite a bit of research into aviation, and the attached photo came to me via a Canadian Air gunner. It shows a very young Ken Tyrrell (left, easily discernible) as a Halifax flight engineer in the RAF at RAF Pocklington in Yorkshire during



WWII. They were P/O Hare's crew. Some crew members were averse to posing for pre-mission photos

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 believing it to be tempting the fates.
 Pocklington is a couple of miles down the road from me, but little remains apart from a memorial.
 Dave Taylor, Dunnington, York

Missing gears

I totally agree with the sentiments of the Doug Nye article about the historic Formula I gearboxes.

The FIA has to be very careful not to have so many rules that it puts off competitors in historic motor sport. We have had enough new rules recently from the MSA. Most of us compete for the enjoyment and we do not want unnecessary problems at the racetrack.

Doug mentioned Formula Junior, which has had similar problems: Coopers have mainly been involved and have been retrospectively penalised – cars that have had HTP papers with Hewland gearboxes can no longer obtain them. In period many new Coopers were built by their owners from a kit of parts supplied by Cooper and some owners fitted them with Hewland gearboxes for reliability and not with the Jack Knight Ersa gearbox, which was at that time the gearbox mainly used by Coopers. Now, with Ersa gearboxes getting old and parts not easy to obtain, the best solution was the Hewland that can no longer be used. New Ersa gearboxes are in the pipeline, we are told, but will surely be very expensive.

Some Lotuses have had problems, too, having to revert to Renault gearboxes instead of Hewland – but you can put Hewland gears in the Renault box!

I maintain that you should be able to use any period items that were available at that time. What we want is historic racing with no draconian rules. Jeremy Bouckley Walmley, Sutton Coldfield

Single-marque Monaco

In your March letters Jock Hiddleston suggests scrapping the Monaco Grand Prix as the circuit couldn't be upgraded to accommodate the faster 2017 Grand Prix cars.

How about for this one race all the drivers are entered to race in Kentengined Formula Ford cars of the 1980s and early 1990s? Think back to the Formula Ford Festivals of that era, and the mind goes into overdrive to imagine today's drivers scrapping for the lead around the streets of Monaco.

As at the Festival they could invite any international licence holders and hold heats and quarter- and semi-finals to decide the grid for Sunday.

Top drivers from all disciplines, sports, saloons, rallying, and other formula, all competing together – who wouldn't want to witness that?

Maybe some lateral thinking from Chase Carey and Liberty Media could make it happen. The only downside: the owners of the cars would need some good insurance! *Guy Raines, Norton, Malton, North Yorkshire*

More of the same

Contrary to removing Monaco, I would keep all tracks the same. As a certain commentator says, "the throttle works both ways". I thought the idea of the changes was to improve the show, not sanitise it further by altering tracks. *Bob Bull, Portishead, North Somerset*



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LETTERS

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Getting the hammer down

Whilst in no way decrying the massive achievements of Dan Gurney, as written about in March, I must correct you on one issue. The winner of the 1959 Tourist Trophy was Stirling Moss, who took over the No2 car of Fairman and Shelby after the car he shared with Roy Salvadori was incinerated in a pit fire.

Moss drove the majority of the race from about 1½ hours in, pursued by Dan Gurney and Tony Brooks in the works Ferrari. Even now, nearly 59 years after the event, I can still in my mind see Brooks hammering down Lavant Straight in the final minutes of the race in a desperate bid to catch Stirling.

One of my all-time great memories in a lifetime of following motor sport. *David Robinson, Milton Keynes, Bucks*

Roll back the years

In a world of droning F1 cars with PR-protected drivers, snub-nosed WEC barges and cartoonish WRC hatchbacks, how revealing it was to see the Can-Am Private View feature in your March edition. Liberty Media, the WEC and the FIA should stop, look and consider the image of Jo Siffert in his (privately entered!) Porsche 917/10 at Road America on p126.

It shrieks looks, power, excitement, accessibility and charisma, in ways that no current mega-costly global formula can match.

Tragically, both drivers on that feature page were killed driving in their F1 'day jobs'. *Steve Singleton, Ilkley, West Yorkshire*

A new world of racing

Reading March's Private View Can-Am feature brought back some very happy memories of visits to Laguna Seca and Riverside in 1972 and '73, when I went with friends to cheer on David Hobbs in his Lola T310 and McLaren M20. Wonderful weather, friendly people, stunning cars with explosive noise, great racing dominated by Mark Donohue in the Penske Sunoco Porsche 917/10.

Having been weaned at Silverstone, Oulton Park, Snetterton etc, this racing was something else, while also at the same meetings were the IROC races, with Indy and NASCAR drivers battling with WSC drivers in Porsches. We won't see the likes of that again.

Coming back from LA on the Jumbo, Denny Hulme was stretched out across four seats next to me, fast asleep the whole way back to London. Happy days! *Tony Barrett, Wellesbourne, Warwick*

Automatic weight loss

When I co-authored Chaparral 1961-1970 with Doug Nye in 1991, he sent me off to interview Phil Hill in Los Angeles. Phil was everything I had been led to expect, welcoming, erudite and admiring of Jim Hall both as a driver and an engineer. He was also given to somewhat maudlin introspection. He didn't approve of the GM-sourced transaxle: "The 2E would go off the start line like a '41 Dodge Fluid Drive...", which I dutifully recorded. But there is a simple fact we all missed and I only discovered myself when I bought an ex-Chaparral transaxle: complete with torque converter: it weighs only 75lb, about half the weight of its contemporaries. This was significant on a car with a dry weight of 1520lb, especially when the extra weight would have been hanging off the back. Richard Falconer, Painswick, Gloucestershire

Bleeding good idea

I agree with Doug Nye that the Chaparral 2F is among the greatest racing cars of all time, and one of the most beautiful. I said this to Jim Hall some years ago and he was surprised, saying "But it's only an old race car!"

I have always been a fan of Hall's designs. I once stood alongside the 2J when the fan engine was run on a wet day and was staggered by the size and length of the air pattern on the wet tarmac. That car passed a lot of gas!

Another time I asked him if he had considered the use of boundary layer control as used on carrier-borne aircraft. Surprisingly he was nonplussed.

In these aircraft bleed air from the compressor blows across the wing to increase lift at low speeds – ideal for the rear wings of racing cars. I am surprised neither Hall nor Chapman thought of it.

A similar principle was used over the years from 1983 with variations of the exhaust-blown diffuser. Perhaps someone did think of it and used it, but is keeping schtum... Dr Peter O'Donnell, Epsom, Surrey



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REVIEWS

www.motorsportmagazine.com



Ferrari 70 Years

Dennis Adler

Few words excite the imagination quite like 'Ferrari'. Undoubtedly the world's most iconic car manufacturer, Ferrari has transcended itself to become a symbol of desirability and excellence. Its seven-decade evolution has been so widely told that the challenge of producing yet another book worthy of a place on an enthusiast's bookshelf is daunting. But *Ferrari 70 years* has achieved that.

In a fascinating insight into an intriguing history, Dennis Adler stylishly presents the full history of Ferrari, from the infamous partnership between Enzo and Luigi Chinetti, to the tragic back story of the Dino and the fascinating origins of the iconic prancing horse. Stunning modern photography and historic imagery encapsulates the full evolution of Ferrari styling, from the minimal AAC 815 to the grandeur of the Enzo.

Ferrari 70 years is a celebration of a motoring legend, well worth the time and money of any Ferrari enthusiast. And most of us are one of those, aren't we? *MT Published by Motorbooks ISBN: 978-0-76035189-5, £24.99*

Whatever Happened to the Gold Cup?

Mike Allen

I'm not sure there's such a thing as stealth publishing, but this could be the domain's foundation stone. Many people will associate 'Gold Cup' with singular horsepower and Cheltenham, but the trophy in question here is the one handed out at Oulton Park to such as Stirling Moss, Jim Clark, Jack Brabham, John Surtees and Jackie Stewart. It's just that the cover doesn't mention as much...

Self-published by Mike Allen, this focuses on a very specific period in Gold Cup history – 1957-1974, when the event was organised by the Mid-Cheshire Motor Racing Club. This encompasses the greatest phase in the event's history, when it was usually a non-championship F1 race contested by many of the world's best.

When early retirement was forced upon him, Allen used the time at his disposal to research the history of a race he'd attended many times as a lad. The results are thorough, with an appraisal of the main event plus details of the support races and fragments of contemporary context thrown in from time to time. Consider this from the programme in 1965, when Formula 2 was the star attraction: "Cars must be equipped with fastening points for a safety harness, though the harness itself is optional".



No mention there of cockpit halos...

It is well illustrated, with black-and-white

images from mainstream suppliers such as

Getty and LAT, but also a wealth of material

from gifted local photographers who deserve

wonderfully candid shots, but self-publishing

This might have limited appeal, but it is a

charming snapshot borne of genuine passion. SA

Published by the author, available via Facebook

A reprint, perhaps, but this softback contains

1950s and '60s. Laid out around official BMC

documents, letters and telegrams, it tells the

to get publicity for Riley, Austin, Morris and

MG, and how the big prizes came with Healey

and Mini once the competitions department

was allowed to focus its efforts. There's

relatively little text slotted in between the

documents and photos, but the co-authors

have all been BMC's competition managers

Hardly a handsome production, with black

and white reproduction of variable quality, yet

photos of A40s in the Alps, bleary drivers at

Liège rally and Morris 1800 Landcrabs on the

East African Safari add huge atmosphere. GC

night controls on the gruelling Liège-Sofia-

inside story of BMC's initially scattergun efforts

lots of material for those interested in what

rallying (and some racing) was like in the

only downside is that the pictures are

generally too small - there are some

can impose limitations on both design

ISBN: 978-1-5136-1779-4, £30 +p&p

BMC Competitions

Department Secrets

Marcus Chambers. Stuart Turner.

and pagination.

It matters not.

Peter Browning

to be better known than perhaps they are. The







David Whyte

so it's cogent stuff.

Published by Veloce

It must have been dispiriting for a 1930s Monte Carlo Rally entrant who lived in Kent to know he had to drive to John O'Groats even to start the event. Yet as this little work describes, between 1926 and 1939 some 200 crews made that northward slog before heading out for Monte Carlo, because every mile counted for points.

Whyte outlines the trials faced in early days over those tough Caithness roads, sometimes worse than anything in the Alps. He begins in 1926, when Victor Bruce became the first British winner, and includes chapters on lady entrants, racing drivers, toffs and amateurs, and the *concours de confort* that once mattered so much, especially if you didn't have much hope of overall victory.

Maybe because I know those roads well the many adventures in this one absorbed me, but I accept it's the epitome of niche... Mind you, the feat that impressed me most was the lorry driver who in 1934 carried UK competitors' luggage single-handed from London to Monaco in a Thorneycroft lorry, barely stopping for 48 hours – average speed 18mph. *GC Available from www.srbooks.com, £12 inc P&P ISBN 978-0-9935971-3-8*

Green Hell

Hannes M. Schalle/Moonlake Entertainment

In its 90th year, the Nürburgring's story is comprehensively told in Moonlake Entertainment's *Green Hell* by means of some of Germany's and the sport's biggest names. Jochen Mass and Hans Herrmann are just two wheeled out inside the first five minutes, with Murray Walker sharing commentary duty with David Croft. Despite the incredible subject matter it's a slow burner at first, but spiked with genuinely remarkable period footage showing thousands lining the roadside in the track's 1930s pomp.

Given the span of time things will inevitably be missed: passing references only to Fangio's '57 win, say, and in fairness you wonder how much footage remains usable 60 years on. Jackie Stewart appears frequently, leading to a slightly unnecessary and uncomfortable featurette on the venue's deadly side. It's questionable whether extended clips of Le Mans '55 or Wolfgang von Trips' death at Monza bring anything to the documentary.

It's made by the team behind *Lauda: The untold story*, so they know their Nürburgring, but *Green Hell* fails to fully convey the 'Ring's majesty and ferocity, and isn't as dynamic as it might have been. At its close it fades into infomercial territory by focusing on the thing keeping the 'Ring open: trackdays. And when JYS reappears to conclude things you're reminded of the real story that was being told 15 minutes before. If that first hour or so is certainly a worthwhile watch for the stories and period footage, few would blame you for switching off before the end. *JP www.thegreenhellmovie.com DVD release date TBA*

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KEEPING AN EYE ON THE TIME: POWERFUL PLAYERS IN THE WATCH WORLD by Richard Holt

CARTIER

Cartier is known as a jeweller first and a watchmaker second. With so many companies to choose from, what would make you go for a brand that is best known for putting sparkly things around the necks of Grace Kelly and Liz Taylor?

Well, for a start there is no shame in the watches not eclipsing the company's jewellery prowess – Cartier was described by no less a figure than Edward VII as "the jeweller of kings and the king of jewellers". But also, Cartier is not making watches as an afterthought, it has been at the forefront of watchmaking for more than 150 years.

Cartier was instrumental in the evolution of the watch into something worn on the wrist rather than in the pocket. In 1904 the Brazilian aviator Albert Dumas-Santos complained to his friend Louis Cartier, son of the company's founder, that putting a hand in his pocket to check the time mid-flight was awkward when there were vital aircraft controls to grip.

Louis Cartier responded with a square-cased wristwatch that accompanied his friend on every subsequent flight. That watch became known as the Cartier Santos. There had been wristwatches before, but these had mainly been either novelty pieces for ladies, or else crudely adapted pocket watches. The Santos was instrumental in making the wristwatch a handsome thing that a gentleman would be happy to wear.

Last year Cartier launched a new range called Drive, motoring-inspired watches that were widely praised as the best new men's watches from the brand in a long time. This year a gorgeous extra-flat version has been added, giving the Drive range an extra slice of elegance.

Not at all bad for a jeweller. www.cartier.co.uk



ROGER DUBUIS

With the affinity between fast cars and fancy watches, lots of watchmakers are understandably keen to associate themselves with the world of motor sport. While you cannot compete with the likes of Rolex and Tag Heuer in terms of racing heritage, it does not stop others from trying to get in on the act. When Roger Dubuis decided that it wanted a little piece of motor sport, it took the desire quite literally.

It has produced two limited editions of its trademark skeletonised watches with straps that contain pieces of rubber taken from the tyres of Lewis Hamilton's Mercedes after he won the 2016 Monaco Grand Prix. www.rogerdubuis.com

ROGER DUBUIS EXCALIBUR SPIDER PIRELLI AUTOMATIC SKELETON is produced in a limited edition of 88 pieces. £61,500



PIAGET

The 140-year-old Swiss brand Piaget is best known for making ultra-thin watches. Back in 1957 it sealed this reputation by producing the world's thinnest movement, measuring a wafer-like 2mm. This year Piaget is celebrating that achievement with the new Altiplano 60th Anniversary collection. Available in a range of colours, the Altiplano has an 18K white-gold case and an automatic movement. www.en.piaget.com

PIAGET Altiplano 60th Anniversary, £23,300

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Ferrari 250 GT Lusso (LHD)

This late LHD example, no. 329 of 350 units built, was supplied new to German importer Auto Becker in June 1964. Today this Lusso presents extremely well in its original colour and is accompanied by its tool roll, spare wheel, and an extensive history file. The car is UK registered, Classiche Certified and available to view immediately. **£POA**







Additional Motorcars Available for Acquisition



Ford Mustang (Appendix K)

A genuine 1965 Ford Mustang with race history from new being owned and raced in its early years by David Tallaksen and Gene Felton. A regular Goodwood Revival competitor and recently prepared by WDK Motorsport which included a full engine rebuild. £79,995



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Storage

Scandal Caught in the act

is all that the second second



ARBON FIBRE? AT THE Revival? That was the whisper about the debris found on the track at Goodwood after a shunt involving a type of car that had had its greatest days long before those super-strong black threads were ever

produced. Unusual perhaps, but what is certainly true is that the competitive instinct on which motor sport thrives can be hard to subdue when pressed up against tight regulations. As soon as someone writes some rules, somebody else will try to force a screwdriver between them.

In January, the Motor Racing Legends historic racing organisation announced an engine certification programme to confirm the capacity of all motors racing within its purlieu. Licensed inspectors will visit the workshop where an engine is being built, confirm the capacity, and seal it for the season. If the seal is broken, the car could disappear from the results. So far it's voluntary and no one will be excluded, but MRL chairman Duncan Wiltshire indicates that it will become mandatory in future, adding with supreme tact that "All of our competitors of course want to win fairly." And MRL's scrutineer John Hopwood adds that the FIA is interested in the scheme.

This, don't forget, is historic racing where the only prizes are silverware – and glory. In the wider world of motor sport there is more at From ingenious tweaks to car swaps and deliberate accidents, racing has an inglorious history of rule-bending. Welcome to *Motor Sport*'s Hall of Shame

stake, and there is a rich history of pushing rules to the limit. From the grass roots to Formula 1 there is never a shortage of engineers with a smart idea that may circumvent a rule or two and give their car an advantage.

And it was ever thus: according to Alistair Caldwell in his early days at McLaren, it was not uncommon for drivers to save weight in the car by emptying the fire extinguisher before the start. A few years later, Brabham bypassed minimum ride height rules with a hydraulic system that lowered its car on the track yet enabled it to remain fully compliant when measured at rest.

Such tricks of the trade have passed into racing folklore, and exploiting the grey areas around the rules is alive and well today. Mark Hughes, our F1 correspondent, was first to reveal the trick employed by F1 teams last season to get around mandatory tyre pressures: teams would artificially heat the axle and brakes, so that when the Pirelli tyre was fitted it would heat up, increasing pressure to meet the rules, but then rapidly start to lose that pressure once the car was on track.

However, some tactics in motor sport have gone well past what could be seen as a bending of the rules and into an altogether darker area. When discovered, these scandals can end careers, make headline news and cast a long shadow over a team. Last month Toyota marked a spectacular return to rallying with a win for its Yaris in Sweden. However, the Japanese manufacturer will always be remembered for an ingenious cheat that can be said to have ended its participation in the sport almost two decades ago.

Likewise, Pat Symonds is rightly regarded as one of the greatest engineers of his generation, but as he tells us overleaf, he will forever regret his involvement in arguably one of the worst scandal to affect the sport when he allowed a young driver to crash at the Singapore GP in order to ensure his team-mate won the race.

It's a world away from over-tweaking cars for historic racing – and the consequences are far more serious – but it demonstrates the extraordinary lengths competitors will go to in order to gain an advantage. It is an instinct that occasionally crosses the line between doing whatever it takes to win, and bending the rules so far that they snap.

CRASHING THROUGH THE RULES

One of the biggest scandals in modern motor sport still haunts all those involved – and resentments still lingers

NG.

T'S NOT OFTEN A MOTOR SPORT incident crosses over into mainstream consciousness. But Crashgate, as it inevitably became known, is one of them. The idea of a team deliberately engineering an accident in order to win a race caught the imagination of newspaper columnists who were

quick to dub it 'the sport's darkest day'.

Almost a decade on, the incident still casts a long shadow and it is a testament to its lasting damage that one of the main players in the scandal should feel moved to speak publicly about it in terms of searing honesty.

Pat Symonds says that the incident will forever be associated with him and left him "shattered". It is the single biggest regret of his career. The engineer also explains the intense pressure that he and colleagues were under in the lead-up to the incident, as well as new

Off-the-wall idea: Nelson Piquet Jr's 2008 Singapore smash put his Renault in the scrapyard but his team-mate Alonso atop the podium

MANITOU

details about exactly what happened. Perhaps more importantly his account shows what happens when competitive people who would do anything to win are driven to go one step too far.

But despite the newspaper headlines – written by journalists with little knowledge of F1 – many in the sport at the time regarded the incident as rule-bending, rather than scandalous. Some even suspected that the outrage was deliberately stirred up by senior figures within the sport with a hidden agenda. In fact, the full story may be one that is yet to be told.

For now, though, this is what is known: at the Singapore GP in September 2008, Nelson Piquet Jr crashed into the wall on the 14th lap, meaning that the safety car had to be deployed. Due to the vagaries of pit stop strategies and fuel loads the deployment of the safety car meant that Piquet's team-mate Fernando Alonso, down the field following an early stop prior to the crash, found himself at the front when the race resumed and went on to win.

A year later, midway through the 2009 season, Piquet was dropped by Renault. The young driver was furious and claimed that he had crashed in Singapore on team orders, in the belief that helping his team-mate to win would secure his future.

The accusation was dynamite, with many simply refusing to believe that it could be true – but a few weeks later Renault was charged with conspiracy by the FIA.

At the hearing Renault was disqualified from F1, suspended for two years. Managing director Flavio Briatore was suspended from all Formula 1 events and FIA-sanctioned events indefinitely and executive director of engineering Symonds received a five-year ban. Both bans were overturned by a French court in January 2010.

Symonds then returned to Formula 1, first with Virgin/Manor and latterly with Williams as chief technical officer – a position he left at the end of last year. Few believe he will stay away from the sport for long but, despite his many achievements and the multiple world championships he helped engineer, it is clear that in his mind at least they are forever tainted by events at Singapore in 2008.

Today, Symonds says the pressures at Renault had been building for some time: "2007 had been a lean year, and 2008 even more so. The recession had arrived and so there was corporate pressure on Flavio from Renault, and immense pressure on the team, financially and for results. Flavio wanted to get rid of people.

Scandal Caught in the act

With the frozen-spec V8s he'd decided we could get rid of half of Viry. At Enstone we had to cut back to the point where offers we'd made to aerodynamicists had to be rescinded. I had to do that, yet these guys had quit their jobs. It was probably the worst thing I've ever been involved with."

By the time Singapore came around the requirement to win at any cost was becoming apparent: "While I will never, ever try to justify Singapore, some of the pressures were indescribable. Flavio had told me we had to win a race by the end of the year or Renault was pulling out.

"I honestly think that the punters out there who think badly of me, if they knew some of the other things that went on in the paddock, they would be amazed. I regret it bitterly because it changed everything and led to me leaving Renault. I had to resign. There was nothing else to do otherwise the team was history.

"The mechanics of how to do it, the planning of it once Flavio had decided we were doing it, I probably had more to do with that. We knew it wasn't the right thing to do and we didn't make it generally known in the team. Alan Permane didn't know, for example, Steve Nielsen didn't. The funny thing was our strategy software wasn't working. It would automatically start itself up but it had been left set on UK time. So we started the race and there was no data coming in at all so we had no idea where any of the cars were, what the gaps were etc. So I was having to do it the old-fashioned way with stopwatch and pen and paper while trying to put the plan into action."

Bad feeling is still smouldering over who came up with the idea to crash in the first place. Piquet has always claimed the initial plan came from Symonds – something Symonds disputes: "Irrespective of anything you read, the first idea, the first knowledge I had of it came from Nelson Piquet Jr. He was the one who first proposed it as far as I was aware. What I did wrong was instead of saying, 'Don't be so stupid,' I said, 'I'll talk to Flavio about it.' Flavio said yes. Whether the original idea came from Nelson Jr I don't know – but that was where I first heard of it.

"But if you remember that year Nelson had finished second at Hockenheim because Timo Glock had brought out the safety car by crashing just as Nelson was pitting, giving Nelson a completely undeserved podium. That hadn't gone unnoticed. I don't know who actually came up with the idea. But I know a lot of people didn't tell the truth about the aftermath of that episode. The one thing I am proud of is I never told a lie in that whole episode. Other people lied through their teeth.

"After my resignation I was shattered to start with. A career I could be proud of had come to nothing because of one incident. That was pretty hard to reconcile."

OTHER F1 SCANDALS

1994 LAUNCH CONTROL

1994 was a turbulent season for Benetton. Following the San Marino Grand Prix, the FIA investigated the computer software used by the podium-finishing cars of Ferrari, McLaren and Benetton. Benetton initially refused to comply on commercial grounds, but an eventual investigation found a concealed 'Launch Control' programme in the software, legal in '93 but outlawed for '94. Design chief Ross Brawn denied the system had been used, arguing the '93 system was extremely hard to remove and was concealed to prevent accidental use. The FIA couldn't prove Benetton had used the software and the team escaped penalty, but suspicions hung over its championship success.

2006 SCHUEY'S STUNTS

Michael Schumacher had posted the fastest qualifying time at Monaco in 2006 when he ran wide and stopped on the track, preventing rival Alonso from setting a faster time. The stewards sent him to the back of the grid for the race. The incident revived memories of Jerez '97 when, leading Villeneuve by a single point, he turned in as the Canadian dived for the lead. The move failed, Villeneuve was champion and Schumacher, found to have crashed deliberately, was excluded from the standings.

2007 'SPYGATE'

The allegations were serious. Ferrari accused its former employee Nigel Stepney, a senior engineer, of passing 800 pages of confidential data on Ferrari's 2007 car and strategy to McLaren's chief designer Mike Coughlan. What McLaren had done with the data was at the centre of a major FIA investigation. McLaren was found guilty and fined \$100 million – the largest penalty in F1 history – and excluded from the 2007 constructors' championship.

2009 'LIEGATE'

McLaren's second scandal in two years came at the 2009 Australian GP, with the team accused of having instructed Lewis Hamilton to allow Jarno Trulli past under the safety car, following an illegal pass by the Englishman. McLaren denied the charge and instructed Hamilton to make similar claims, insisting Trulli had been at fault. Trulli was initially penalised, but contrary evidence came to light: the FIA found McLaren and Hamilton guilty of lying and stripped them of all points from Australia. Ron Dennis stepped down as team principal soon afterwards.



O!" N to th kidr nanwor But

Nicky Grist was used to the punch in the kidneys that came a nanosecond after that word passed his lips. But this was something else; George Foreman

had replaced the bantamweight. Toyota's explanation to Juha Kankkunen's co-driver was a simple one: "We've had an evolution of the engine."

In fairness, the explanation wasn't wide of the mark. What Toyota Team Europe engineer Dieter Bulling failed to mention was this particular evolution effectively enlarged the Celica GT-Four's turbo air restrictor beyond the regulation 34mm, adding valuable power.

TOYOTA'S MONSTER CHEAT

The ingenious turbo tweak that worked so well it blew its own cover

MICHELIN

CIBIE

"It was like a rocket off the line," recalls Grist. "It was incredible. But we just thought: 'Fair play to them...'"

Unfortunately, fair play it wasn't.

It was actually one of the most creative pieces of engineered cheating in the history of motor sport. The FIA still holds an example of it in its offices in Paris, and it has become a byword for the lengths teams will go to in order to gain an advantage through engineering sleight of hand.

In 1995 Toyota was riding the crest of a wave. Carlos Sainz, Juha Kankkunen and Didier Auriol had won four of the previous five championships in Celicas while the Japanese giant started the year chasing its own hat-trick.

It couldn't be better. But by the end of the season, it couldn't be worse.

The GT-Four was Toyota Team Europe's (TTE) third incarnation of the Group A Celica, but it was nothing like as successful as the previous two. The new car was too big, too heavy and was hamstrung by front suspension that none of the drivers liked.

Previous successes brought expectation and, when it became clear the car wasn't working, TTE turned to the dark side.

"Engine development at the time was absolutely top secret," says Grist. "We would have a pass to get into the factory, but you'd need another pass to get anywhere near the engine shop. But there was nothing unusual in that, it had always been that way."

What was unusual was how the car went off the line at Rally Australia's Langley Park superspecial stage. Immediately after the start a 15-metre straight led the cars into the first braking area at the side-by-side crowd-pleaser alongside Perth's Swan River. In that distance the three works Celicas of Juha Kankkunen (co-driven by Grist), Didier Auriol and Armin Schwarz had already pulled out two car lengths on their rivals.

With restricted engines and gravel tyres on tarmac, that just shouldn't happen. The other teams began to take notice.

"We'd been told to flick this switch five seconds before the start of the stage," says Grist. "It was to do with the engine development. We just did it and got on with it."

Unbeknown to TTE, the FIA was taking more and more interest in the Celica and that interest reached fever pitch next time out in Spain.

Kankkunen was never a driver at his **D**

absolute best on asphalt. Yes, he'd finished on the podium on his previous three Catalan outings, but in 1995 something unusual was happening. Of the first 15 stages, he was quickest on eight and only out of the top three once. He and Grist were flying.

"We'd done quite a lot of work with Juha on Tarmac before the event," says Grist, "and we just thought the combination of him driving the car neater and straighter with this engine development was working well. I remember Carlos [Sainz] coming to me and asking what was going on. He was following us on the road and he told us about the black lines we were leaving from these huge powerslides. "'I can't get near you'," he told us."

The FIA was now starting to gather evidence.

"We changed the turbo as a matter of course at the end of every day," says Grist, "and I remember the FIA scrutineer coming over. He handed one of the guys a receipt, picked up the turbo and said: "I'll take that."

Kankkunen crashed out of the rally on the penultimate stage of the second day. Twentyfour hours later, everything became clear.

The team was invited to meet with the stewards after the event, where evidence of a restrictor that opened to allow more air through was put before them. With freer airflow, horsepower would surge, negating the intended levelling effect of the standard restrictor. It worked like this: before an event, with the use of a special tool, the entire restrictor could be slid forward 5mm against strong springs and locked, allowing extra air round the sides. Dismantling for scrutineering automatically released the catches, letting the restrictor spring back into its legal position and concealing its own ingenious hardware.

"That was when the shit really hit the fan," says Grist, "and we started putting two and two together..."

Auriol's sole surviving Celica was excluded (like Kankkunen, Schwarz crashed).

Just over a week later, at a specially convened meeting of the FIA's World Motor Sport Council, president Max Mosley described the cheat as: "The most ingenious device I have seen in 30 years of motor sport."

He then excluded TTE and its drivers from the 1995 results and banned Toyota for 12 months.

A rival engineer admits there was grudging admiration for TTE's work. He says: "It was clever, beautifully engineered. And they could have used it and got away with it easily through the following year. Where they fell down was running it in Langley Park. It was so public and so obvious, we knew something was going on and we wouldn't leave the FIA alone until they found it."

The scandal precipitated Toyota leaving the WRC in 1999, not to return until this year – after an 18-year break.

OTHER RALLYING SCANDALS



1985 THE CAR SWAP

Before Toyota, perhaps the biggest rallying question mark was over Michèle Mouton's Audi Quattro Sport on the 1985 Ivory Coast Rally.

Mouton's car suffered engine trouble in the event and disappeared soon after the restart following an overnight loop near the Ghanaian border. What made this more interesting was that the sister car of Franz Braun – an Audi engineer entered in an identical Quattro to run as chase car to Mouton – also disappeared.

Running well at the restart, Braun's Audi now ran very sick. And guess what happened next? Mouton's engine was miraculously fixed, out of sight, while Braun's car retired.

Questions were naturally asked and the scrutineers had a nose around the Quattro, but found nothing incriminating. Subsequently, some observers noticed a jacking point missing from the front of Mouton's car, while a towing eye arrived at the rear. In addition there were livery discrepancies between the two cars: missing spotlights and windscreen clips.

No conclusive evidence of a car swap was ever found, perhaps because neither car actually finished – Mouton withdrew before the end of the event.

FUNNY FUEL

Prior to the arrival of a control fuel for the WRC, the teams regularly mixed heady concoctions, but the biggest boost of all came from nitrous oxide injection. It was completely illegal, but used regularly through the late Eighties and early Nineties. It wasn't unusual for Lancia to be seen with four plumbed-in fire extinguishers in its Deltas. And the Italian team was scrupulous in its attention to safety, with said extinguishers changed at almost every service – even when they obviously hadn't been used.

Another favourite involved continually refilling windscreen washer bottles... that seemed unusually large. But this wasn't destined for the screen – it was a watermethanol mix to chill the intercooler.



FTER A PERIOD OF regulatory conflict, with countries embracing different sets of rules that militated against mainstream international saloon car racing, the FIA created Group A with the

intention of breeding greater global uniformity. Manufacturers had to build 5000 examples of a model annually to qualify for homologation, and substantial modifications were permitted beneath fairly standardlooking bodyshells. The European Touring Car Championship embraced the new regulations in 1982 and Britain followed suit one year later. The ingredients looked promising, with a trio of Tom Walkinshaw Racing-run factory-backed Rover Vitesse SD1s at the head of the three-class entry plus evolving opposition from Toyota, Mitsubishi, Opel and – from mid-season – BMW.

Factory Rover drivers Steve Soper, Jeff Allam and Peter Lovett scored one outright victory apiece in the first three races: so far, so equitable. The Rovers continued to dominate into the summer, but the first hint of real trouble arose at Donington Park in June, the seventh of 11 rounds. Recently arrived with a BMW 635 CSi for Frank Sytner, rival Grace International Racing submitted a protest on the grounds that the Rovers' rear wheel arch inserts were too wide. Walkinshaw countered that these were legitimate, because Rover ran larger rear wheels and tyres in certain Third World countries to help its cars cope with difficult road conditions.

Soper headed a Rover 1-2-3 in the British GP support event at Silverstone, after which the Rover and GIR teams submitted protests against each other and Sytner – initially fourth on the road – was on this occasion excluded when his steering system was found not to comply.

Protests and counter-protests continued to sour the mood when the series returned the following month to Donington Park. In the paddock, Rover had a road-going Vitesse mounted on a promotional plinth... and overnight somebody stayed late and sprayed a graffito on the backdrop: "TWR = Third World Racing." Many in the BSCC community found this quite amusing, though it probably didn't help: the message was hurriedly cleaned up on Sunday morning. It also came to light that Walkinshaw had earlier in the week issued a writ against UK governing body the RAC MSA, over its handling of previous protests. Among the trailers and caravans that formed the hub of the BSCC community, rumour was that the Scot had been seeking an injunction that would force the race's cancellation ...

THEY THINK IT'S ALL ROVER

EXPRESS Hepolite

The saloon car racing season that lasted 18 months and only concluded after an enquiry in front of a legal expert

Llene

Amidst all the acrimony, Soper's latest victory – he and closest challenger Hans Stuck (BMW) both had to cope with fading brakes during a fine duel – passed almost unnoticed.

The final two meetings went ahead without further protest, but after Soper was crowned champion there were still outstanding tribunals and court cases to be heard. These dragged on and on, to such an extent that the 1984 BSCC began long before any verdict was reached.

Finally – the following July! – an enquiry headed by Lord Shawcross ruled that the TWR Rovers contravened the regulations on two counts: their valve rockers and the rear bodywork had illegally been modified. All three drivers were excluded from the championship and Andy Rouse – who was supposed to have driven a privately run Rover, but ended up racing an Alfa Romeo GTV6 and dominating Class B from the fourth race onwards – was declared champion.

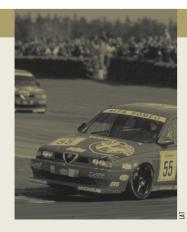
Not long before the verdict was announced, the Austin-Rover Group withdrew from the BSCC, citing its unhappiness with the way the series was scrutineered. That left the road clear for Rouse – by now at the wheel of a self-run Rover – to become the only driver to win the BSCC twice within the space of three months. He clinched the 1984 title at Donington Park in September and was presented with both awards during the course of the same weekend. The following year he would win it yet again – his fourth and final such success – at the helm of a Ford Sierra.

Jillo as

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Other consequences? Opel Monza driver Tony Lanfranchi technically became Class A champion for 1983, even though he'd scored 36 fewer points than the closest TWR Rover. And Soper, one of the finest saloon racers of any generation, would never win a premier tin-top title on home soil.

He did quite well elsewhere, mind. D



OTHER SALOON CAR SCANDALS

1994 ALFA'S SILVERSTONE SPECIAL

It was an extraordinary endeavour by Alfa Romeo to bring the 155 Silverstone model to the 1994 British Touring Car Championship at the height of the Super Touring era. Alfa Romeo chose to develop a light and minimalist road car model specifically to field in that year's championship, producing 2500 cars at huge cost to comply with the regulations. The car featured an adjustable front and rear spoiler as a standard part, which had a negligible impact on the road but provided a large advantage on the track. The 155 Silverstone was legal but very controversial, taking Gabriele Tarquini to the '94 title.

2011 WHAT ENGINE PARITY?

A gradual transition was proposed for the British Touring Car Championship's move from S2000 to low-cost NGTC regulations, with engine performance parity promised for the runners of both engine types for the 2011 season. However, 2011 proved to be a fractious season with reigning champion Jason Plato in the S2000 Chevrolet Cruze and the series' BMW drivers protesting their lack of performance parity, as they were unable to compete against the power of the turbocharged NGTC cars on the straights.

1949 MOONSHINE MODS

Bootlegging made NASCAR. Good ol' boys ran seemingly stock business saloons, fitted with big engines to outrun the police, as gallons of moonshine whisky were hauled across US States. Devising dirt ovals to race these machines, a new sport was born. But when Glenn Dunaway won the first race of the new 'Strictly Stock Series' in 1949, his Ford was found to have heavy-duty rear springs fitted to support the load in the trunk and to aid traction and handling. Naturally he failed post-race checks, his car far from stock.

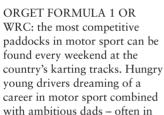
ASCA



1967 NOT TO SCALE

Renowned for his ability to exploit a grey area, suspicions were raised when Smokey Yunick's unsponsored Chevrolet Chevelle took pole at the 1967 Daytona 500, beating the factory Fords and Chryslers. An urban legend has long circulated that Yunick, pictured left, modified the Chevelle to be 7/8th scale, lowering the roof and raising the floor to save weight without compromising the car's profile. Whether true or not, it is widely accepted that Yunick did modify the floor, roof and windows to make the Chevelle slick and fast through the air.

A sport rooted in law-breaking has invented some clever dodges



charge of preparing the machine their progeny races – can result in temptations that are too hard to resist.

"Karting is obviously hugely competitive among drivers and especially the parents," says Chris McCarthy, editor of *Karting Magazine*. "If you are a parent who is building the engine for your son to race, you try to go as far as the rules allow – and it does result in people overstepping the mark."

The most infamous case of kart cheating occurred back in 2005, when Adam Christodoulou and his father Peter were caught using modified engines that had extra power. The cheat gave the kart an advantage over fellow racers and the resulting investigation and sanctions have gone down in karting folklore as a warning to others about the consequences of illegal modifications.

In the case, heard by the Motor Sport Association National Court, Michael Garton, one of the MSA's most experienced technical commissioners, said the modifications made to the engines had been "very deliberate, very sophisticated and very expensive". He added that the case was "the most serious case of cheating" he had witnessed during his many years of investigating ineligibility in karting.

The cheat was discovered after Christodoulou – then 16 – was approached by scrutineers after a race at Rowrah, who took his engine away for examination. It was found to have been cleverly modified, using specially made pins,



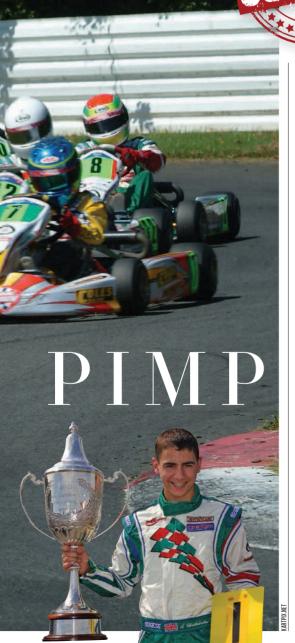
1976 NITROUS BOOST

NASCAR's biggest race, the Daytona 500, began with controversy in 1976 after the top qualifiers had their times disallowed for using nitrous oxide to boost horsepower. "If you don't cheat, you look like an idiot. If you do it and you don't get caught, you look like a hero. If you do it and get caught, you look like a dope," claimed one.

1983 A PETTY BIG ENGINE 2007 SPECIAL FUEL

Richard Petty's victory at Charlotte Speedway in 1983 was clinched amid controversy. The seven-time champion was found to be running an engine measuring almost 382 cubic inches, much larger than the allowed 358 cubic inches, and with left-side tyres being run on the right side of the car. Despite protests from rivals, Petty kept his 198th NASCAR victory.

Toyota had an infamous arrival in the NASCAR Sprint Cup Series in 2007. After qualifying for the Daytona 500, Michael Waltrip, twice winner of the great race, was found to be running performance-enhancing fuel additives in his Toyota. Waltrip was stripped of 100 points, his car was seized and his crew chief indefinitely suspended. Four other drivers were also penalised at Daytona for illegal modifications. Waltrip stressed the breach was his fault, not Toyota's.



then expertly resealed to disguise the tampering. The modification increased the engine's power output by about 4bhp - enough to offer significant advantage in a field where other competitors were running at about 30bhp.

In the subsequent case, the MSA Court found Peter Christodoulou guilty of illegally modifying the engines being used by his son Adam and three other youngsters, Lewis Reeves, Jack Harvey and Jordan Chamberlain. He was fined £30,000 and ordered to pay £13,000 costs. The court also suspended Adam's competition licence for nine months. It took no action against three other drivers, who it said were unaware that they were using modified engines and had been fooled into using them.

According to McCarthy the case still

really know who is genuinely quick until you get to national level where the scrutineering is far more stringent."

Even here, however, rule-breaking is not unheard of. Paul Klaassen, the MSA's technical commissioner, describes his job as being "a constant battle" against unscrupulous teams. "The most recent case we discovered was an Italian engine builder in the PFI European Championship. They were found to be running engines with modified cylinder heads that reduced the capacity from the minimum 14cc to about 12cc. This in effect increased the compression ratio for the engine and therefore increased power output. It was a particularly sophisticated cheat that was very hard to detect."

MY KART

How a keen karting dad went a step too far to win success for his son – and paid for it

reverberates today in karting circles - partly because of the size of the fine - but that accusations of cheating on a smaller scale are still rife. "At almost every meeting there are people being accused of cheating, whether with engine modifications or for using tyre softener to get the tyres up to temperature more quickly in winter.

"It's hard to say whether that is jealousy on the part of other drivers or not. But at club level, there is a general feeling that you don't

Adam Christodoulou served his ban but, when he returned to karting, found himself ostracised by fellow competitors. He left karting entirely at the end of 2006 to pursue a successful career in Formula Renault (he won the championship in 2008) and more recently in sport cars.

"The real tragedy of the whole episode is that Adam was genuinely quick," says McCarthy. "He didn't need to cheat to win."

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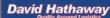
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On your marks. Set...

The new Formula 1 season is 'go'. Here is our essential guide to the racing ahead.



XPECTATIONS, IT IS FAIR TO SAY, are high. As the wraps come off the 2017 Formula 1 season, fans around the world are hoping that the raft of changes being introduced this year will repay their faith in a sport it hasn't always been easy to love.

Over the following pages we hope to explain exactly what those changes are – from the new regulations to the new cars, new drivers, new rivalries and the effect they will have. Many of the changes have been inspired by a desire to, in the words of a million Tweets, "make F1 more of a spectacle". But a word of warning: people expecting F1 to be transformed magically into a Moto3-style overtaking-fest are likely to be disappointed. The cars will be faster, however, lap times will come down and F1 will remain at motor sport's pinnacle.

Perhaps more exciting in the long term is the change of ownership. Liberty Media's purchase of F1 earlier this year brought to an end Bernie Ecclestone's long reign. Already, the can-do attitude of the American company has engendered an air of optimism among teams and fans for the future – and in Ross Brawn it has recruited one of the paddock's brightest stars.

It seems likely that the new owner will push to bring F1 to an American audience, too – perhaps with additional US races – certainly by jazzing up the race weekend and giving it a sprinkling of NASCAR-style pizzazz. These changes should be embraced rather than viewed with suspicion and we look forward to seeing how they will develop over the coming years.

In the short term, fans should start to see Liberty's impact later this year. When we spoke to McLaren racing director Eric Boullier, there was no mistaking his sense of excitement: "Formula 1 is undergoing a big change that's very good for everybody. It's difficult to see exactly where F1 is going but you can see they want to engage more with the fans and make it easier for any new teams to enter the sport, which is good. They want to consider the show and make it better without destroying the DNA of F1. We all agree with that and are very supportive."

Owner and teams in agreement? Perhaps some things have changed already.

We start our coverage with our pick of the new 2017 cars that have been revealed ahead of testing. **D**



WILLIAMS FW40

They say: "Celebrating 40 years in the sport this year, the Williams Mercedes FW40 shows a very different look to 2016's FW38. Although cosmetically the 2017 cars will look very different to their 2016 predecessors, the power unit and the areas around the power unit have not changed a great deal".

We say: Compared to most other teams this is an exercise in simplicity. A relatively uncomplicated front wing and uncluttered body beg the question as to whether Williams will make the most of the new regs.





MERCEDES WOB

ROAS

EPSO

They say: "The WO8 project has gone back to first principles. Only 17 per cent of the components in WO8 have been carried over from its predecessor, with the team's main focus lying on optimising the car within the new regulations".

We say: The shark fin is barely there (although that may change) giving a sleeker look, while the tightly packed, shrink-wrapped rear end has resulted in an expanse of floor in front of the rear wheels.







SAUBER C36

They say: "With the Sauber C36-Ferrari we have a solid basis as well as the resources to further develop the car. This will be important to establish [the team] in mid-field".

We say: A striking design and eyecatching livery. The gold reflects Sauber's 25th anniversary in F1. Still no major sponsors though.





NOK CO SKF X Tapers Swisse infor

HUBLO



FERRARI SF70-H

They say: "The lengthened nose and the arrowshaped wing are a consequence of the regulations, as is the obvious fin on the engine cover and the more complex aero appendages ahead of the air intakes on the sidepods, whose unusual shape was designed in harmony with the front crash structure".

We say: Quite fussy looking with clumsy aero and inelegant sidepod openings. Ferrari is calling the extra rear wing above the fin the 'seagull'.

📣 Santan

Santander

V-Power

A alfa St



PITSTOPS

The increased wheel sizes, particularly at the rear, make a fast tyre change more difficult - but practice and developing technique should bring the elapsed time back to where it was without changes to the equipment, other than an allowance for deeper wheel insets.

WEIGHT

The change in regulations causes an unwanted increase in the weight of many components - the minimum weight limit has been increased to cover the known effects - so the challenge of designing to this target should remain similar. As ever, though, new performance ideas can add weight. As the car is less of an evolution than normal years, achieving the regulation weight distribution becomes a little more difficult.

TRELL

SUSPENSION

With higher downforce levels and increased tyre grip, the loads on all the suspension components are considerably increased - for aerodynamic reasons we will not want the suspension links and mountings to be more intrusive than in previous years, so the suspension designer's task is made somewhat more difficult - the wider track additionally amplifies the loads at the inboard fixing points, so the tensile and compressive capacity of the composite links are stretched to higher limits - particularly the junctions between composite and metal sections.

BRAKES

Greater tyre grip and higher downforce equate to shorter braking distances, which inevitably means higher brake component loads, larger discs and calipers (particularly at the front).

BODYWORK

Although the allowable bodywork width has been increased, floors will be built to the limit for downforce generation. We might find that the sidepods remain slim, to provide better flow to optimise the performance of the car's rear end. With the rear wing becoming lower and wider, the detrimental effects of the downstream flow from the bodywork, most importantly when the car is in a cornering attitude, are considerably more significant than with the previous regulations - careful aero research will be at a premium here.

nr randstad

HACKETT

BATTERY

Shorter braking distances make the process of recharging and managing the battery more of a headache.

FUEL CONSUMPTION

Allowable fuel load has been increased by 5kg, which should more or less cover the greater requirement from full-throttle running and drag increase, but it is never an easy target to hit under all conditions.

DRAG LEVEL

Inherently higher, simply due to the increased dimensions. Cars will be a little slower on the straight - the amount of wideopen throttle around the lap will be higher everywhere, so fuel efficiency will pay dividends.

STEERING

IRELL

For similar reasons to the suspension, the capacity of the power steering system must be raised by a significant margin, but care needs to be taken that sensitivity and feedback to the driver do not deteriorate.

TYRES

At the time of writing we had still to run 2017 tyres on proper 2017 cars, so the performance, durability, degradation, driveability and ability to follow closely remained unknown.

SENSITIVITIES

This is perhaps the most important aspect of the regulation changes. With larger wings, a more powerful diffuser and large tyres to disturb the airflow, sensitivity to ride height and a car's attitude in pitch, roll and yaw are all amplified. These are normal tasks that have to be managed, but the consequences of not doing the best job are magnified and thus have a greater effect on car performance, consistency and driveability. This is particularly significant with the front tyres affecting front wing performance and the downstream effect of its wake on the brake ducts, chassis furniture, bodywork and floor/diffuser.

REAR WING

Over the last few vears downforce levels have been very similar at all circuits (ie around maximum), apart from the obvious exceptions such as Monza and Spa. With the much higher base level we will experience in 2017, rear wings will need a much broader range of performance, from simple trimming options to distinct assemblies to suit a given circuit.

DRS

Because the rear is a much larger device in 2017. the DRS effect will be more pronounced than it has been of late. The FIA will look to learn from the direct experience of running/racing the cars and will adjust the length of each DRS application to a shorter distance, such that the real advantage of using DRS will not be any more significant than it was under the previous rules.

COOLING

With new regulations it's always a maior challenge to provide the requisite heat exchange performance without adversely affecting the aerodynamic efficiency of the whole car - now perhaps more significant with the sidepod width and need for exiting air to have a minimised effect on the lowered rear wing and higher/ more effective diffuser

The lower, wider wing, larger tyres and a more powerful diffuser mean the already complex rear wing endplate will receive an even greater degree of attention to ontimise nerformance.

OVERTAKING

This will almost certainly be more difficult than it was in 2016 - the FIA might choose to play with this via DRS



NATIF Design & development director,

EW YEA How the 2017 cars have taken shape

The first major technical shift of the hybrid F1 era is designed to make cars faster by up to five seconds per lap. Here are the key points



ANT SOME PROPERLY big Formula 1 numbers? You need to rewind by more than a decade. During the first phase of qualifying for the 2004

Italian Grand Prix at Monza, Juan Pablo Montoya topped the times with an average lap speed of 162.95mph in his Williams-BMW. Last year, Lewis Hamilton's 159.72mph was sufficient to take pole - not a significant drop-off, but scarcely a barometer of progress. In 2005, the final year of F1's V10 era, Kimi Räikkönen's McLaren-Mercedes was quickest through the Monza speed trap during the race, at 229.969mph. The 2016 equivalent? Valtteri Bottas, Williams-Mercedes, 215.989mph.

It's not just the absolute qualifying numbers, either. For a few years now, drivers have spent much of their time driving to a controlled pace for the sake of tyre conservation - and in the process they have rarely unleashed their cars' true potential on Sunday afternoons. Consider the 2015 Spanish GP, when Sebastian Vettel's fastest race lap would have put him 17th on the grid for the supporting GP2 race... and yet he finished third.

And so, after years of trying to rein in cornering speeds in safety's name, governing body the FIA has mandated technical rule changes designed to increase them.

The two key areas affected by the new regulations in design terms are the tyres and bodywork. This year, cars will have a significantly broader contact patch, thanks to tyres about 25 per cent wider than last year. Fronts grow from 245 to 305mm and rears

from 325 to 405mm, while diameter is also slightly increased (the cars will continue to run 13-inch wheels). Pirelli estimates that the wider tyres and increased track will on their own account for a lap time reduction of about 2sec.

Meanwhile, the cars' overall width increases from 1800 to 2000mm, which permits the incorporation of a wider, more effective front wing (1800mm, rather than 1650) mated to a longer nose section. Rear wings will be lower (previously 950mm, now 800), as well as 150mm wider and mounted 200mm farther back. Completing a package that is designed to generate greater downforce, diffusers will be higher, wider, longer - and significantly more powerful. Sidepods are chunkier, too, with maximum permitted width being stretched from 1400 to 1600mm. It is anticipated that the extra downforce will, like the wider tyres, also shave a couple of seconds from lap times. To accommodate the cars' increased dimensions, minimum permitted weight rises from 702kg to 728.

Other rules have also been tweaked - for example the token system that applied to engine developments has been abolished and traditional safety car stars have been modified - but it is the design changes to the cars themselves that will be most noticeable.

As ever in Formula 1 where the tolerances are so small, the changes to tyres and aerodynamics will have a significant knock on effect on dozens of other components from brakes, to suspension and fuel efficiency. We asked Neil Oatley, McLaren's design and development director, to cast his slide-rule over the new regulations and explain how they will affect this year's cars. 🖸





MERCEDES

First team entry 1954 Races entered 148 Wins 64 FLs 47 Poles 73 Driver titles 5 Position last year 1st

Mercedes' task has to be to make the transition from Paddy Lowe to James Allison a seamless one that doesn't interrupt the superb integration between the engine and chassis teams, while adapting to a new driver dynamic. Only if Allison can take over where Lowe left off and Bottas can take the challenge to Hamilton as effectively as Rosberg did will things be as they were.



RED BULL

First team entry 2005 Races entered 224 Wins 52 FLs 52 Poles 58 Driver titles 4 Position last year 2nd

As well as hoping that Renault Sport has made significant inroads into the Mercedes power unit superiority, Red Bull trusts that its Adrian Newey-led aerodynamic vision has benefited from the big change in aero regulations. The recent questioning of the legality of Red Bull's heave spring may have put a spanner into its works. F1 needs Red Bull to challenge Mercedes on level terms.

DANIEL

RICCIARDO

Races entered 109

Titles 🕕 Wins

FLs 7 Poles

Position last year 3rd

MAX

VERSTAPPEN

Races entered 40

Titles 🕕 Wins

FLs 1 Poles 0

First GP Aus

First GP 😁



FERRARI

First team entry 1950 Races entered 929 Wins 225 FLs 236 Poles 201 Driver titles 15 Position last year 3rd

One senses a fragile equilibrium at the Scuderia right now. The management has got behind the existing technical team and reiterated it doesn't need any big names to replace James Allison. But that calm could evaporate if the new car is not a contender. If the management responds by firing people, then the team's gradual drifting away from its great years will continue.

SEBASTIAN

Races entered 179

Titles 4 Wins 4

FLs 25 Poles 40

Position last year 4th

KIMI

Races entered 🕾

Titles 1 Wins 2

FLs 41 Poles 10

Position last year Sti

RAIKKON

First GP Austr

First GP USA 2



FORCE INDIA

First team entry 2008 Races entered 171 Wins 0 FLs 4 Poles 1 Driver titles 0 Position last year 4th

Just to keep doing what it has been doing in the last couple of years would be the perfect scenario for this team. But its challenge will be to retain its relative competitiveness in a season of big aerodynamic regulation change. Such circumstances invariably play to the bigger teams that can research several different directions, but Force India has surprised us in the past.

SERGIO

Races entered 116

Titles 🛛 Wins 🛛

FLs 🕄 Poles 🗉

Position last year 7th

ESTEBAN

 \mathbf{U}

Races entered 🗉

Titles 🕕 Wins 🗉

FLs 🕛 Poles 🛙

Position last year 23rd

First GP 🕫

PERE

First GP Au



WILLIAMS

First team entry 1978 Races entered 670 Wins 114 FLs 133 Poles 128 Driver titles 7 Position last year 5th

Big changes behind the scenes. A major new investor with his son as a driver, a new technical chief, new aero chief, new chief of vehicle dynamics, new project manager, new team manager. Getting all that working efficiently while adapting to new regulations is going to keep everyone very busy. The real challenge is going to be putting solid foundations down for future success.





BOTTAS First GP Australia 2013 Races entered 78 Titles O Wins O FLS 1 Poles O Position last year 8th





MCLAREN

First team entry 1 **Races entered** Wins 182 FLs 1 Poles 155 Driver titles 12 Position last year Sti

Fernando Alonso himself has said it: there's probably a bigger question mark around McLaren coming up with an aerodynamically competitive car than there is around Honda delivering a competitive power unit in 2017. The new aero regulations are essentially McLaren's proposal, so the team should be in good shape. They need to convert that probability to certainty.



Rosso

TORO ROSSO

First team entry 198 Races entered 2 Wins | FLs Poles 1 Driver titles 🕕 Position last year 7th

In 2015, the Red Bull junior team conceived a very aerodynamically effective car. It needs to get that momentum back after a 2016 season compromised by a late call on engine choice and that engine being frozen in 2015 spec. Those restrictions haven't applied to the latest car and it should be good enough to have Sainz and Kvyat regularly embarrassing bigger teams.



FLs | Poles | **Position last year 14th**



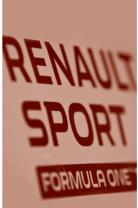
HAAS

First team entry 2010 Races entered Wins I FLs Poles Driver titles Position last year St

The difficult second album? First time around Haas had the luxury of conceiving its car without also competing at the same time. Further, it was able to take advantage of not being restricted on wind tunnel hours. Both factors were significant in giving the team such an impressive rookie season. But now that it's in the same boat as everyone else, can it continue to punch above its weight?



First GP Au Races entered 4 Titles 🕕 Wins 🛛 FLs I Poles I **Position last year 16th**



RENAULT

First team entry 1997 Races entered 321 Wins 20 FLs 1 Poles 20 Driver titles 2 Position last year 9th

It's one thing to target a progressive move up the grid for this team still in the early stages of rebuilding, but quite another to achieve it. Last year was about maintaining a presence while planning the badly needed upgrades of the factory. That's still a work in progress and as such the realistic target must be flashes of promise that suggest light at the end of the tunnel.

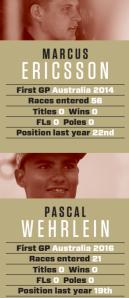




SAUBER

First team entry 199 **Races entered** Wins | FLs Poles 1 Driver titles 0 Position last year 10t

Sauber's target - now that it is financially out of peril - must be to avoid being the perennial tail-end charlies in the absence of Manor. Although the team's facilities are good, it simply doesn't have the staff numbers to exploit them properly. This year especially, at a time of major technical regulation change, that could be a very difficult problem to overcome.





Faster cars creating more g-force will challenge today's cosseted drivers in ways not seen for a decade. How will they cope? We asked three stars from the hairy-chested turbo and V10 eras to give their thoughts



MARK WEBBER

Competed for Minardi, Williams, Jaguar and Red Bull between 2002 and 2013, experiencing the change from V10 to V8 power

What are your reminiscences of driving the more brutally powerful cars of the V10 era on durable tyres?

The V10 era was certainly very intense as were the late Noughties, 2008/2009. Tyre technology was at its peak in the mid-2000s. The grip was astronomical lap after lap after lap and generally on low fuel, the race was separated into short stints. It was extremely rewarding for the drivers to drive such cars. Then, after they stabilised the tyre war in 2007, ie one tyre, the 2009 aero changes played a huge role in keeping the cars enjoyable to drive – albeit on a Pirelli tyre from 2011.

How much do you think F1's appeal has been reduced in recent times, with drivers being forced to run at controlled pace to make their tyres last?

The challenge for F1 in the last few years has been the incredible amount of sensors and simulation that the driver has supporting his profession, so the good drivers use the resources as always to the best of their abilities. But the two biggest factors in the last few years, which haven't helped our sport, are the perceived negative of quiet cars (acoustically) and drivers being told to manage their pace over the radio. For example, Lewis Hamilton, fighting for a GP win, getting the 'hammer time' call over the radio for two or three laps over the course of a whole GP is not right. It should be the other way around; the only time you should be controlling a race is at the end, not throughout. Way too much money and focus is spent on trying to understand the tyres.

Do you think the 2017 regs - wider tyres,

greater downforce, more grip etc - are a step in the right direction?

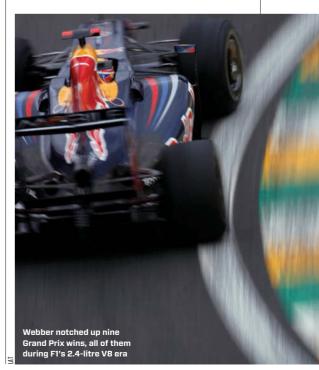
Absolutely no question about it – they are a step in the right direction for the drivers. But unfortunately it might not be what the fans want. I think maybe there'll be less overtaking, but if fans want to watch overtaking every lap, they need to get their fix from karting or junior category racing. Yes, we need some battles on track but not every corner. The drivers at F1 level must be tested to the maximum of their driving accuracy and precision each Sunday afternoon. We can easily manufacture overtaking as we've done in F1 over the years but it should really be the ultimate test for the drivers in every other sense too.

In an ideal world, how should an F1 car look and perform?

In general all F1 cars have looked pretty good in recent years except when by regulation we've had ugly noses or engine covers forced upon us. My personal favourites were late 1980s and early '90s in terms of styling and performance. An F1 car should not be the fastest qualifying car but the fastest racing car in the world on a Sunday afternoon – and by a big margin.

What are the key fitness challenges likely to be in 2017 - and will it be tricky for younger drivers who haven't previously been exposed to downforce of this magnitude?

For the old boys like Kimi, Fernando, Felipe, Lewis and Seb, the new g-forces will be nothing new to them but the younger generation will have to focus more than ever. Seating position



needs to be perfect to support them with the higher g forces. I think lower back, shoulder strength and neck strength will be crucial.

Which is likely to become the most challenging circuit with the latest regs?

Suzuka will be particularly rewarding and at Monaco things will certainly be going pretty fast around there. Why? Suzuka is very, very high speed with little run-off which is good for the focus, and with increased downforce around somewhere like Monaco, aside from the higher entry and apex speeds, the 2017 cars will have an immense amount of traction, so the speed on the shorter acceleration points will be higher.

Which will be the most interesting rivalries?

The most interesting rivalry will be the one between Max and Daniel as I think they'll spend the most time around each other – and especially so if race wins are on the table consistently. That'll be an added dynamic. Alonso vs Vandoorne? I don't think there will be much in terms of rivalry between them as they'll only be vying for points not podiums so it doesn't really count for anything. That said, I hope Stoffel does really well this year as he's earned his place on the grid the old-school way. Hamilton will try and win the championship by doing the minimum possible – I believe it's a game he likes to play, to test himself.

Which team might cause the biggest surprise?

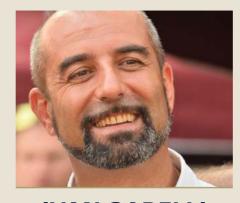
Red Bull to topple Mercedes. It's impossible to read if a midfield team will drop onto the new regs fast and outperform themselves in a good way. But if they do, then as usual as the season goes on they will get out-resourced by the major players.

If I gave you a tenner to place a risky bet, what would it be?

Verstappen to win the world championship.

How do you see the post-Bernie future?

Clearly, it's a monumental change to how the sport will be run. Commercially Bernie had a model that was extremely rigid and successful for decades. With Liberty, we will have, I think, a huge increase in the showbiz factor. There could be a big change in the exclusiveness of the sport - access to events, TV and digital content is likely to change; all of this is a clean slate for the owners on how they want to do it. And how, on the sporting side, they are going to attract new consumers to F1. How does Liberty visualise the actual racing going forward. What is good racing? Is it all equal teams, NASCAR-style? Manufacturers involved but only from a branding perspective rather than a technical arms race? This will play out in the next two to five years.



IVAN CAPELLI

Competed between 1985 – 1993 and made a name for himself with giant-killing exploits for Leyton House March

Do you see any similarities between the 2017 cars and the ones you used to drive in the 1980s and 1990s?

The bigger tyres remind me of how it was to drive my cars in the 1990s. But at the time the aerodynamics were not as developed as today and so it wasn't so crucial for the performance. We actually had good support from the mechanical grip, in the '90s. But now it seems aerodynamics are so crucial that you can be affected by a car two or three seconds ahead.

Do you think the 2017 regs - wider tyres, greater downforce, more grip - are a step in the right direction? Will they help the smaller teams?

I don't think the new tyres will change Formula 1 that much because the aero is too critical at the moment. Overall, I think F1 should put a cap on technology. Riccardo Patrese told me a few years ago, when he drove the Honda, that the engineers said "You need to use this for the differential, this for the engine, that for the..." Riccardo replied, "No, no, no. Just tell me where the switch for the engine is." This is the difference between the generations. The problem at the moment is that everything is against the small teams.

For a team to do something like we did with March in the late 1980s is impossible now. The only way for a small team to get a result is if something unexpected happens, like rain or accidents at the front. In the past it was different. For example in 1990 we didn't qualify at Mexico, then at the next race at Paul Ricard finished second. This is what the fans are waiting for. To see a Leicester win the championship and beat everybody! That's what really makes the sport interesting.

Which team might cause the biggest surprise?

Mercedes is still the strongest team in Formula 1, but there is a lot of chance to see an improvement from Red Bull and Ferrari, and why not an outsider like McLaren or Force India? But Mercedes is still the team to beat.







GERHARD BERGER

The Austrian was a mainstay of F1 for 14 seasons, throughout the turbo era of the 1980s

What are your reminiscences of driving the more brutally powerful cars of the mid 1980s turbo era, particularly a Benetton-BMW in qualifying trim?

When I think about the 1980s I recall a very good ratio between power, weight and aerodynamic performance. That's what it should all be about. When we had about 1400bhp in qualifying trim and far less downforce than they do today, it was all about car control. Now it's all about cornering speed and lap time, but with the grip levels they'll generate it might not look spectacular. Look at MotoGP, which I think is the best form of mainstream racing at present. The bikes are probably 20-25sec per lap slower than Grand Prix cars, yet they look faster and more dramatic. F1 is just a bit too clean.

Do you think F1's appeal has been reduced in recent times, with drivers being forced to run at controlled pace to make their tyres last?

Of course it has. Tyre management was part of the game during the 1980s, too, but later on there were times when you could race flat out all the way – and that's how it should be. Cars need to be lighter and tyres more efficient.

Do you think the 2017 regs - wider tyres, greater downforce, more grip - are a step in the right direction?

I don't think so. The cars might be quicker, but as I said before I doubt things will look that way. A MotoGP bike has 240bhp, weighs 150kg and has no aero. In the mid 1980s we qualified with up to 1400bhp and the cars weighed only 550kg. In both cases the ratio between power and grip is completely different from – and I think better than – what F1 will have this year. I don't want to be negative about the new rules before the cars have turned a wheel, though, so let's see how it goes.

Will it be tricky for younger drivers who haven't previously been exposed to downforce of this magnitude?

I'm sure they'll adapt. Cornering speeds will be very high, which takes its toll on neck muscles, but I think they'll get used to it pretty quickly. It will be a significant step up for newcomers – but then it should be.

Which will be the most interesting rivalries?

I think the most interesting aspect will be the different interpretations evolved by the engineers – the battle between design offices. That's always the way in the first season of fresh regulations. After a while it becomes obvious which solution is the best and all teams begin to move in the same design direction, but this season should produce some interesting and different concepts.

Which team might cause the biggest surprise?

Red Bull, simply because Adrian Newey has been in the business a long time and I think he's a genius. Everyone has a clean sheet of paper and I'd expect him to come up with the strongest aerodynamic concept.

If I gave you a tenner to place a risky bet, what would it be?

My money is on Lewis Hamilton for the championship, but if I had to pick an outsider? There are a couple of options, but probably Daniel Ricciardo.

How do you see the post-Bernie future?

I grew up in Formula 1 at a time when Bernie was developing the sport, bringing it up from almost nowhere to increase its profile and popularity, so I greatly appreciate what he has done. It will be interesting to see how Liberty Media, a company with a successful track record in America, will handle a sport with a strong European culture. But it has hired Ross Brown, who knows the business inside-out and is an ideal choice to steer them in the right direction.





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ΕA

Several simmering

rivalries will ignite the

2017 Grand Prix

season

BOTTASvs HANILTON

This is either the fantastic break of Bottas's dreams or the beginning of the end of his F1 career. He cannot out-Hamilton Lewis; he isn't intrinsically faster or more audacious. But he may be able to compete with him the way Nico Rosberg did. He is similarly mentally tough, can take emotion out of the picture very effectively, seems to soak up pressure like it's not there, is great with the tyres. But is he as fast as Nico? Because all those other qualities won't count if he's not. He must be close enough to Hamilton to make

count if he's not. He must be close enough to Hamilton to m those attributes relevant. Furthermore, if there are cars that can genuinely compete with the 2017 Merc then even a Rosberg level of performance would not translate in the same way it did for Nico. Other drivers slotting into that gap between a Hamilton and Rosberg level would help Hamilton dominate. Bottas has the toughest task of any driver on the grid.

Felipe Massa had several very quiet races last year and was outperformed by Bottas more consistently than in either of their previous two years together. His retirement seemed timely. Now he's been called out of it. Rookie Lance Stroll's credentials have been called into question by some, his passage eased with gold, but that counts for nothing once he's there, on the grid. Similar comments might once have applied to the Rodriguez brothers, but after all it's irrelevant how he got there; he'll be judged solely on his performances. Outqualifying Massa every

now and again would be a step towards him being taken seriously on his own merits as a driver – and many stranger things than that have happened.

ALONSOvs VANDORNE

Stoffel Vandoorne's potential is off the scale. But he has probably only a slightly easier task than Bottas. Given that it will be his first full season, he will be given more slack – and perhaps McLaren won't be fighting for the world title and Mercedes will, so the spotlight shouldn't be quite so intense. But his

measuring stick – Alonso – is similarly momentous. Alonso's greatest strength has never been searing qualifying pace, so expect Vandoorne to be able to compete instantly on that level. But if the 2017 Pirellis are up to being pushed hard for entire stints, then Alonso's sheer relentlessness will make him as formidable as ever. Potentially this is every bit as great a driver line-up as Red Bull's. Expect fireworks.

Thought Mr Ecclestone was finished? Think again. The next battleground behind the scenes will be the circuits using F1's change of ownership to try to negotiate more favourable deals. This is where Liberty needs to be both tough and creative. Simply caving in to demands to reduce the exorbitant fees circuits must pay F1 to host a race is not a viable option for the new owners. Instead they will be trying to create ways of opening new, currently non-existent income streams to the circuits. Think promotions and new media. On the other

hand, recall that Bernie Ecclestone always had a solid core of circuit owners that would sing to his hymn sheet. Don't rule out the possibility that he just might band them together in much the same way he did with the teams in the '70s. Going up against the people who deposed him might just be the sort of mischief that would appeal to this 86-year-old with time on his hands.



Teams were confidently predicting last year that the new aero regulations would liberate an extra 40 per cent of downforce over 2016 by the time the cars got to Melbourne. So in theory they should be 4-5sec faster. Except they might not be... There is a serious concern that in order to withstand the extra loads imposed by the downforce, Pirelli will need to set the minimum pressures at a high enough level that negates most of the potential performance gain. Which of course would render pointless the whole exercise of changing the cars... That's merely a concern at this stage, and may prove unfounded. The tyres are, after all, both wider and taller, giving a greater contact patch. So long as the constructions are up to containing all the grip that contact patch will generate, then the gains will come.

PIRELLIVS INCREASED DOWNFORCE

There's really only one way the Arrivabene-Vettel relationship could be repaired: if the new Ferrari is a rocketship. The team hasn't been set on a trajectory these few seasons past that suggests such a thing will unfold – the weakness of an aerodynamic department seemingly forever one step behind has been the general theme. Will the redrawing of the aero regulations – together with the extra input into the 2017 car of the formally retired Rory Byrne – be able to reverse that? Will the new engine technology that's reportedly being introduced be enough to compensate for any aero shortfall? If not, Vettel's frustration will only grow – and thereby his relationship with the management will degrade further. Vettel isn't going to recreate the Schumacher era without his equivalents of Ross Brawn and Jean Todt. It's difficult to see who they are in the current structure.



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process surrendering its capacity to design and produce its own transmissions, have its own wind tunnel etc – would hurt and isn't going to happen willingly. But a major injection of capital is necessary to get out of the current no-man's land. Is that where Stroll Snr comes in ultimately? Even if that's the plan and Paddy Lowe gets to choose how that money is spent, it's probably not going to take effect in one year.

> The immovable object and the irresistible force? Last year Daniel Ricciardo had a stronger batting average than

the phenomenon Max Verstappen. But the momentum seemed to be with the younger driver towards the end of the season. This has happened to Ricciardo before he's had the opportunity of a fully competitive title-contending car – and he admits to regularly pondering on how his career might have gone if he'd got into a Red Bull a couple of years earlier than he did. Everything he has done as a Red Bull driver suggests he's a world champion in waiting. Verstappen's impact has been more sudden, his racing style even more forceful. Last year they rubbed along OK. But if the 2017 Red Bull is a title contender, Christian Horner is going to have his hands full keeping the peace.





MOTOR SPORT TIP Head out a week in advance and you could also take in the Phillip Island Classic at a wonderful unspoilt circuit about 90 minutes away by road.

Flying Mon-Mon, 6 nights

Weekend Tickets £122.50 Flights London to Melbourne, £641 *Cathay Pacific* Internal Transport Train/Tram, £2.50 **3° Hotel** £55 *(Melbourne)* Beer £5 Total £1902*



MOTOR SPORT TIP

Shanghai is a wonderful, vibrant city, but it's also at least 45 minutes from the circuit. Stay there by all means – but commute by train. Taxis and shuttles are cheap, but terrifying.

Flying Mon-Mon, 6 nights

Weekend Tickets £63.29 Flights London to Shanghai, £430 *China Southern* Internal Transport Metro, £1 3* Hotel £20 *(Shanghai)* Beer £5

Total £1143



MOTOR SPORT TIP Better than it used to be, because the nightscape adds atmosphere -but bear in mind that locally, weekends means Friday and Saturday, so in effect race day is on a Monday.

Flying Mon-Mon, 6 nights

Weekend Tickets £133.34 Flights London to Bahrain, £362 Pegasus Internal Transport Taxi, £18 3* Hotel: £47 (Manama) Beer £2.91

Total £1398

RUSSIAN 04 GRAND PRIX APRIL 28-30

MOTOR SPORT TIP

Make sure your visa has some built-in flexibility: if you overstay your welcome through no fault of your own – a delayed flight, say – you'll still be fined.

Flying Mon-Mon, 6 nights

Weekend Tickets £71.12 Flights London to Sochi, £311 S7 Airlines Internal Transport Shuttle bus/Aeroexpress railway, £5.60 3* Hotel: £20 (Sochi) Beer £1.26 Total £925



MOTOR SPORT TIP

The city centre has obvious attractions, but you might find cheaper accommodation to the north, along the coast, while remaining within a cab ride of Las Ramblas.

Flying Wed-Mon, 5 nights

Weekend Tickets £116.36 Flights London to Barcelona, £82 Vueling Internal Transport Train, £2.16 3° Hotel: £103 (Barcelona) Beer £3.39 Total £945

AROUND THE WORLD IN With a little planning getting to distant Grands Prix can be easier than you might



MOTOR SPORT TIP Forget flying, you can pick up a Standard Premier return from London to Nice on Eurostar/TGV for about \$220, changing in Paris or Lille – a far more civilised way to travel.

Flying Wed-Mon, 5 nights Weekend Tickets £133.61 Flights London to Nice, £185 BA/Iberia Internal Transport Train, £3 3° Hotel £67 (Nice) Beer £1.50 Total £1017



MOTOR SPORT TIP Instead of flying directly to the host city, go to Newark and take the I-87 North - an easy drive that covers 375 miles of prime upstate New York. You can stop off in Woodstock en route.

Flying Mon-Mon, 6 nights

Weekend Tickets £88.80 Flights London to Montreal, £391 KLM/Airfrance Internal Transport Metro, £2 3* Hotel £48 (Montreal) Beer £3 Total £1296



MOTOR SPORT TIP Proof that you can't create an event overnight. The promoter promised that locals would flock to attend, but they didn't. At least it is no longer called the GP of 'Europe'...

Flying Mon-Mon, 6 nights

Weekend Tickets £96.57 Flights London to Baku, £295 Turkish Internal Transport Metro, £1 3° Hotel: £84 (Baku) Beer £1.50 Total £1302



MOTOR SPORT TIP This is no longer the most popular of the continental GPs, which means small local guesthouses are plentiful and reasonably priced if you don't fancy a daily commute to Graz.

Flying Wed-Mon, 5 nights

Weekend Tickets £90.50 Flights London to Vienna, £75 Eurowings Internal Transport Train, £19 3° Hotel: £104 (Graz) Beer £2.61 Total £981



MOTOR SPORT TIP Buy a tent, book an early campsite pitch, pack the coolbox with wine/beer/ cheese and embrace the full 1970s-style GP

experience (including occasionally sticky traffic).

Thu-Mon, 4 nights Weekend Tickets £199 Internal Transport £70 (£30 fuel & £40 parking), Train/bus, £20 (from London) 3° Hotel: £85 (Silverstone) Beer £3.90 Total £831



MOTOR SPORT TIP

The views across the circuit are as good as the urban landscape. Stay anywhere close to the centre and savour the twin delights of architecture and cuisine.

Flying Wed-Mon, 5 nights

Weekend Tickets £85.33 Flights London to Budapest. £158 AirFrance Internal Transport Free bus transfer/Metro under £1 3* Hotel £45 (Budapest) **Beer** £1.11 Total £724



MOTOR SPORT TIP

Start your day around Les Combes and make your way downhill, along the Kemmel Straight, towards Raidillon. Eau Rouge is tamer now, but that's not the same thing as being tame.

Thu-Mon, 4 nights

Weekend Tickets £133.60 Internal Transport £251(£120 fuel, £90 ferry, £41 parking)/£10 train and bus from Brussels 3* Hotel £51 (Ardennes) Beer £2.03

Total £734



Bergamo airport is almost as close to the circuit as Milan Linate. Avoid the more distant Milan Malpensa. Despite its local popularity, grandstand seats can be found.

Flying Wed-Mon, 5 nights

Weekend Tickets £93.95 Flights London to Milan £70 Rvanair/Flvbe Internal Transport Train, £1.70 3* Hotel: £60 (Milan) Beer £4.30 Total £664



MOTOR SPORT TIP

In some places, fans are able to stand just over a metre beyond the circuit perimeter. The evening timetable leaves scope for daylight exploration, too: Singapore Zoo is excellent.

Flying Mon-Mon, 6 nights

Weekend Tickets £156.65 Flights London to Singapore, £373 Turkish Airlines Internal Transport Bus. £1.30 3* Hotel: £45 (Singapore) Beer £5.29 **Total** £1369



MOTOR SPORT TIP This might be the

penultimate opportunity to see an F1 race at Sepang. The racing is often good; but pack an umbrella thunderstorms are pretty much guaranteed.

Flying Mon-Mon, 6 nights

Weekend Tickets £26.45 Flights London to Kuala Lumpur, £345 Turkish Airlines Internal Transport Train. £3.60 3* Hotel: £16 (Kuala Lumpur) **Beer** £3.48 Total £881



rices are for three-day general admission, art he class es similar alternative F1 com. F1 gures for events yet to be a class are four three-day general admission and admission days and dation and east and be fund be accessed in off astronomers, for the day before and are the class and thronomers additionand east additionand east additionand east and the fund east additionand east a for 2

Ticket Europe: the city



MOTOR SPORT TIP When it comes to ambience Suzuka is a case apart. Make sure you wander the packed - and wacky - fan zones on race morning.

Flvina Mon-Mon. 6 niahts

Weekend Tickets £70 Flights London to Nagoya, £583 Air China Internal Transport Train, £1.60 (plus £16 return from Nagova to Suzuka) 3* Hotel £72 (Suzuka) **Beer** £4.13 **Total** £1788



MOTOR SPORT TIP Austin makes visitors feel welcome and is rammed with bars that feature live music most evenings. With an uncertain future, you should get there while you can.

Flying Mon-Mon, 6 nights

Weekend Tickets £135 Flights London to Austin. £612 Air Canada Internal Transport Shuttle, £8 3* Hotel £86 (Austin) Beer £2.01 **Total** £2070



MOTOR SPORT TIP With its packed-out grandstands from first thing Friday morning this is a template for how F1 crowds should be - and if you don't like Mexican food your palate needs retuning.

Flying Mon-Mon, 6 nights

Weekend Tickets £80 Flights London to Mexico City. £434 Air France Internal Transport Metro, 20p 3* Hotel: £10 (Mexico City) Beer £1.22 **Total** £1097



NOVEMBER 10-12

MOTOR SPORT TIP Getting there can be a bind, because long flights are inevitably followed by tedious cab rides in São Paulo's traffic glue, but it's worth it. This is still a fine, old-world racetrack.

Flying Mon-Mon, 6 nights

Weekend Tickets £168 Flights London to Sao Paulo, £574 AirFrance/KLM Internal Transport Metro, £1 3* Hotel: £33 (Sao Paulo) **Beer** £1.01 Total £1694



Do racing circuits need to be straddled by a hotel with a multi-coloured, illuminated roof? Not really. Worth visiting, but not as

a priority. Flying Mon-Mon, 6 nights

Weekend Tickets £217 Flights London to Abu Dhabi, £279 Turkish Airlines Internal Transport Free park and ride/Taxi. £15 3* Hotel: £66 (Abu Dhabi) Beer £4.56 **Total** £1505



Exciting times for Formula 1, Mark. Let's start by talking about the new rules. In a nutshell what do they mean?

They're a redrawing of the aero, basically. The intention was to give maybe a 20 per cent increase in downforce, but as ever the aerodynamicists are cleverer than the rule makers and even by midway through last year teams were predicting a 30-40 per cent increase.

Why don't they just get rid of 90 per cent of the aero, because then you could actually race each other, couldn't you? You could get close and there'd be no dirty air.

MARK Or make it about drag reduction rather than downforce generation, so that you would have a relevance to the road car industry and fuel consumption. That would need an entire root-and-branch culture change through the sport. Why have the wings been taken off MotoGP bikes?



First, safety. Although nobody got hurt by them, it's just something else to get snagged up on. You can imagine two guys

coming into a 100mph corner, one going under the other guy, getting caught up on his wing, and then sitting the other guy up and sending him off. Also, the dirty air from the Ducati, which had the best wings, lifted the front of a drafting bike so the steering starts going.

MARK

How much performance were they adding?



Very little. It was a way to get more downforce to keep the front down after they went to unified software with

reduced wheelie control. So a tiny, tiny performance increase. And Marc Márquez says if you come out of a corner behind a guy with wings you're not getting that downforce, so he's got the advantage. It's just spreading the field out.



That's a Formula 1 phenomenon as well. If you took Lorenzo, Rossi, Márquez, how much difference is there in individual

styles and how much do you think the difference is more between their bikes than between them?

The two extremes are Márquez and Lorenzo. Marquez just looks like he's out of control – he's all over the bike, just twisting this way and that and making it all work, whereas Lorenzo, you don't even see him move. It probably is something about the bikes they ride, but it's also probably where they came from, because Lorenzo came from 250s, very lightweight 250 two-strokes where it's all about momentum and smoothness. Marquez came from Moto2. Not a lot of power, quite heavy, so you're fighting, them. The racing was very close and very physical. So I think that's a big part of where their styles came from.

But at the same time their styles do suit those two bikes – or they did. The Honda is very much a point-and-squirt bike; you just dive in the corners, get it turned and get it out, whereas the Yamaha is more of a getting-the-cornerspeed, momentum kind of bike.

Where does the Ducati fit into that?

Well, I think they've been going more towards cornering speed, so I think it's

going to work really well for Lorenzo. He could win the first race, because the Ducati has always gone really well at Losail and always has done. But I wanted to ask you about post-Bernie F1.

Yes, interesting times, in the medium term, at least. In the short term you're

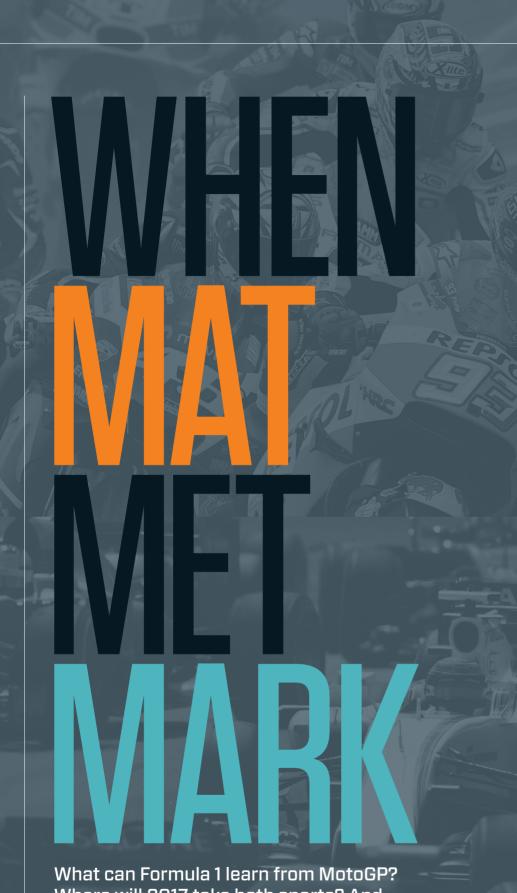
not going to see a great deal of difference. But I think behind the scenes, you're going to see a bit of a fight probably from the circuits, or a core of the circuits, to take advantage of the fact that the ownership is new and the hosting fee deals weren't negotiated with Liberty, but through Bernie.

And the hosting fees are huge $- \pounds 10$ million up to $\pounds 50$ million at some places, right?

Yeah ... China pays the most. And they all want the fees reduced. Longer term, I think the sport's in much better hands than it was; we no longer have a private equity company as the majority shareholder. We have someone who's actually investing in it for the sake of *the* business, rather than the sake of *their* business. So what sort of owner is Dorna?

Well they're a private equity concern, owned by Bridgepoint. The problem was that FIM [the governing body] basically sold its birthright to the manufacturers in the early '90s. But Dorna has managed to wrestle back control, by bullying and fighting with the factories over years and years to try to reduce costs, make the grid tighter and encourage new manufactures with the unified software and stuff. So I think they've done an amazing job, I think the racing is fantastic at the moment, and that's largely because of what they've done.





What can Formula 1 learn from MotoGP? Where will 2017 take both sports? And what does John McGuinness have in common with Michael Schumacher's dad? We asked Mark Hughes and Mat Oxley to thrash out some answers Is it a given that Márquez will be the man to beat?

Yeah, but I think Vinales will be there. I think Vinales could win the title. He's the real deal, definitely. He's the best guy since Márquez. And Márquez ... as Cal Crutchlow says, he's got these cat-like reactions, he just somehow works that front tyre – he's losing the front, but somehow he still gets around the corner.

Did Lorenzo and Rossi have to be separated, or were there some bad feelings when they were team-mates?

They hated each other. From the very beginning.

So is that why they're no longer together?

Largely. I mean Rossi left, because basically he said, 'Yamaha – it's me or him.' Yamaha was thinking, 'Well, you're 32 or 33' or whatever he was then 'and Lorenzo is 21, so see you later.' Lorenzo, is very like Max Biaggi, he's very cocky and has a swagger. He tries to be polite and everything, but you can tell he's just very cocky, just like Biaggi was appallingly cocky, just really unpleasant.

Rossi is totally different. He is a hippy like his dad – a multi-trillionaire hippy, but all the same. You know, he has this little army of friends around him, who would go anywhere with him for the adventure, and they would die for him probably. Whereas you look at Lorenzo, he has different people every year or two; they come and go, just like servants basically.

So they really did hate each other, and the first year they were together at Yamaha they had a wall down the middle of the garage, because Rossi was on Bridgestone and Lorenzo was on Michelin, so both tyre companies said we don't want to see the other's crew. But when it went to a single tyre supply the wall stayed. I think Rossi will be a lot happier this year

– and he's a bit older now, too.

Has he lost a few tenths, would you say, from his peak?

No. He won two races last year; he was running at the front in a lot of them, even though the Yamaha had huge problems because he couldn't overcome the lack of front grip like Márquez could on the Honda. Márquez could just sling it in and then drop the bike on its side, whereas Rossi needed that front tyre to get it all the way around the corner and it just wasn't there. MARK

But do you think Márquez could have done that on the Yamaha?

MAT

Yeah. I think he probably could.

In Formula 1 I don't think that the MARK driver ever has that same influence. I think the traits are pretty much defined by the car, and, yes, there are some drivers who have the knack or the style who can work around a particular tyre or a particular car characteristic better than another one, but it's never the defining thing that says this guy will be faster than that guy. It's always defined by the car, or the tyre.

Let's talk about the competitive picture, what we're expecting to see.

MAT

MARK

Presumably Hamilton will walk it, won't he? Or will it all depend on the rules?

MARK

There's no question that Hamilton's favourite. Renault on the engine side has caught up to Mercedes. They made big

gains last year, probably within a couple of tenths on lap time. The hope is that they get somewhere close to parity and make it a Red Bull vs Mercedes contest, maybe even Ferrari as well if they don't mess up. The other thing is that the reset of the aero regulations just might favour one more than another. Let's hope for at least two competitive teams, but three would be fantastic.



You still get quite a lot of mechanical failures in F1, don't you?

Well, certainly Mercedes will, but they're probably pushing it harder than the MARK customer teams.



The cars are under incredible stress, aren't they? A motorbike is under much less strain.



Yes, and you've got four engines lasting MARK the season. Red Bull has arguably the strongest driver line-up, I think, in Ricciardo and Verstappen, although McLaren

might argue for Alonso and Vandoorne. The Belgian is a bit like your guy Vinales, he's going to be mega. And if we've got a Red Bull within a tenth of a second of a Merc, it's definitely game on. I don't think there's going to be a night-and-day difference between Rosberg and Bottas, and it's not necessarily a fourth season of Mercedes dominance.



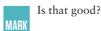
How much do they spend? Do people know, is it just a wild guess?



Budget? Top budgets - order of high 200s, low 300s. Million. MARK

MotoGP is really weird. No one knows MAT how much anybody's paid, no one

knows how much it costs to run a team. At a completely wild guess, including all the R&D and everything, Honda might be on 30 million. There's just no money in it. Suzuki's sponsor is its oil company; it doesn't have an outside sponsor.



No. There's just never been any money MAT in motorcycle racing. In the Anglo-Saxon world motorbikes are seen as dangerous, horrible things. So none of your blue-chip companies are interested. And it seems to me companies would rather spend five million for a sticker on an endplate of an F1 car.

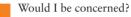
Can you access the paddock as a fan? MARK

It's all barcodes and blips. But at some races, like Misano, there are thousands MAT of people in the paddock. I think it's great when there's just crowds of people milling around, it's fantastic. But the whole sponsor thing has sort of shifted: the team has to have a huge hospitality unit, and the sponsor wants to

bring 50 corporate guests to every race. And also a lot of the teams now make money from these passes so it's become a bit of a revenue source. Which is great, but I'd much rather have a paddock full of fans that want to be there, rather than corporate guests.

But if you look at the motorcycle market globally, it's probably ... what, five per cent of cars? So, there's just no money in it, and it hasn't got that social cachet that Formula 1 has.

Wouldn't you be concerned if suddenly MARK all that changed and it started attracting the big money?



MAT

MARK

Yeah, would you be concerned about it polluting the sport?

It's all already very corporate, it's just the MAT amount of money is very small. But yeah, it obviously could get worse.

It's interesting that the sport – car racing MARK - is rooted in money. But if you look at a few of the most recently dominant drivers - Lewis Hamilton, Fernando Alonso, Michael Schumacher, say - they're all from pretty humble backgrounds.

Didn't Schumacher's dad own a kart MAT circuit?

He worked at the local kart track.

It wasn't his, then.

He was a bricklayer.

ΛAR

MARK

MAT

Oh really, wow. That's what John MAT McGuinness was. That was his first proper job. And what about Alonso's?

Alonso's dad worked in the quarries as MARK an explosives guy. And Lewis's dad was IT for British Rail.

Yes, that's interesting. Is that a hunger MAT thing, do you think?

Yes, I think it is. Lewis sometimes used MARK that as a little wind-up on Rosberg,

because Rosberg had a more privileged background. And I'm sure that it was a psychological wind-up, but I think there was some truth in it. I think you probably do learn to dig deeper when you have to keep winning at a very early age to continue. And I don't think that will change this year. \square

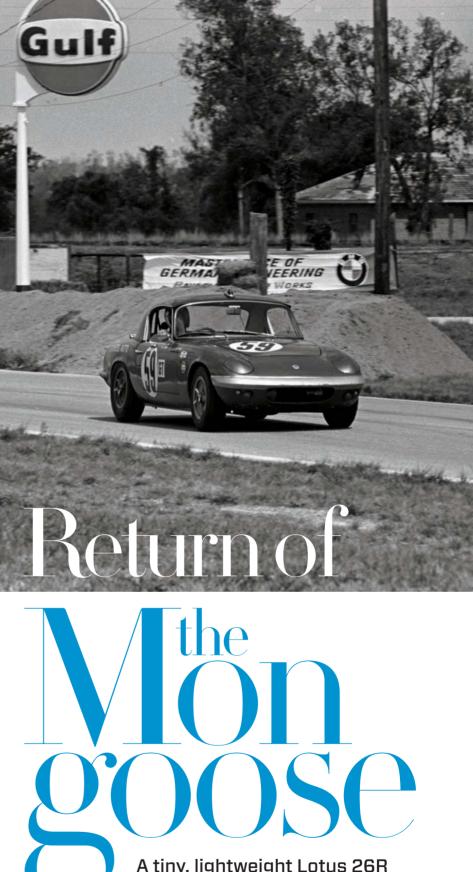




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A tiny, lightweight Lotus 26R with an illustrious racing past and a voracious appetite for Cobras is still punching above its weight on the track writer RICHARD MEADEN



Sebring 12 Hours, 1965: little Lotus meets major WSC competition - plus alarming deluge (inset). Bottom, car once again racing in 1960s form



F CARS COULD SPEAK, LOTUS Elan 26-R-9 would have quite a tale to tell. Built in the latter half of 1964 it was supplied to Stateside Lotus distributor and enthusiastic racer Peter Pulver that same year.

Pulver was a keen amateur racer and big on the US Lotus scene. Dutchess Autos' main interest might have been selling Buicks, but it had also served as the sole distributor of Lotus cars in the Eastern States since 1960. Known as Lotus East, this dedicated business (co-owned by Pulver and Newton Davis) prepared street cars for sale, sold and ran competition cars for Lotus East customers and, of course, those of Pulver and Davis. It was a nice set-up

- modest, but capable of strong results while still having fun. Just like the Elan, in fact.

26-R-9's wheels could only just have touched the ground at Dutchess Autos and Lotus East's workshops in Millerton, upstate New York, when it was whisked to Nassau for the famous Bahamas Speed Weeks. Pulver's Bahamian adventure was a great success, bagging class wins in the Nassau Tourist Trophy and Governor's Trophy before finishing third in class and 31st overall in the Nassau Trophy. It must have been quite an experience mixing

it with a terrific grid of cars and some of the best drivers of the day. The 250-mile Nassau Trophy feature race was won by Hap Sharp and Roger Penske in a Chaparral 2A, with Bruce McLaren second in an Elva Mark I and Pedro Rodríguez third in a Ferrari 330P. Not a bad podium. It's no wonder Pulver enjoyed the David and Goliath nature of taking his small English car to big American races.

As if to prove the point, the following season Pulver took 26-R-9 to the Sebring 12 Hours. A small privateer team competing in the second round of the 1965 World Sportscar Championship sounds like a pretty daunting challenge, but that was the joy of sports car racing in the 1960s. The grids were big and classes numerous (a dozen at Sebring) so everyone had someone to race against.

The Dutchess Autos Elan qualified 48th in the 66-car grid, some way back from the Autodelta-run Alfa TZs that presented the main opposition in the GT9/GT1.6 class, but respectably enough for a non-factory effort.

The grid for that race was pretty special, even by the standards of the day. Viewed from 2017 it looks like the most diverse and extraordinarily valuable gathering of cars you're ever likely to see. Highlights included a brace of Chaparral 2As, a quartet of Shelby Cobra Daytonas, multiple Ferrari 250 GTOs, 250LMs and 330Ps, GT40s, A3C Bizzarrinis, Porsche 904s... The list is mouthwatering.

The 1965 Sebring 12 Hours was also noted for a biblical deluge that lasted for more than an hour and a half. Grainy archive shots show cars butting through standing water like brightly coloured ships in a storm, the track surface invisible beneath the flood. It must have been appalling, yet 43 of the 66 starters survived the rain to take the chequered flag. Among the finishers was the valiant Pulver, who together with regular co-drivers Newton Davis and Lance Pruyn piloted 26-R-9 to 38th overall and fifth in class. A respectable result for an amateur team, and you can bet they had a blast in the process.

Pulver returned to the Bahamas at the end of 1965 to contest the 12th Annual Speed Week, his Elan now running in a dramatic speedster configuration with hardtop roof removed and a low perspex aeroscreen in place of the regular windscreen. He continued to campaign the Elan sporadically in big league races in 1966, once again heading to Nassau at the end of that year. In all Pulver started more than 100 races in 26-R-9, driving the Elan to and from each race with his tools in the boot and running on race tyres. Those were indeed the days.

THE STORY OF 26-R-9 THEN WENT COLD for a few years, Pulver having sold the car in 1967 to another American racer, who kept it for a few years before selling it to Robin Dickins. Dickins repatriated the by now really rather tired 26-R-9 to the UK, where he converted it for Modsports racing. It seems rather ignominious for a car with such interesting international provenance to have been so unsympathetically modified. Yet with no historic scene to speak of this was often the fate of ageing race cars that were no longer eligible or quick enough in frontline competition.

If there's one good thing about the burgeoning values of old racing cars it's that most will eventually come out of the woodwork. Thankfully this was the case with what was left of 26-R-9, which together with a truck-load of original components, spares and extensive documentation from its time at Lotus East was acquired by Dave Hughes. Hughes knew the car well, having regularly worked on and occasionally raced it while in Dickins' ownership. Hughes was in the process of restoring the car to race-ready condition when the present owner acquired the car in 2013, and committed to returning it to original Dutchess Autos specification for the 2014 season.

It's at this stage where mine and 26-R-9's paths cross, as I was already sharing a Mk1 Lotus Cortina in the Under 2-Litre Touring **D**

Car (U2TC) championship with the Elan's new owner. By now the 26R had been fully restored by Hertforshire-based Raceworks Motorsport, period correct down to the Dutchess Autos livery and distinctive roof-mounted identification light. According to Pulver, who now lives in Florida, he always ordered his cars unpainted because the factory paint jobs were so bad, and he chose grey because he reckoned the Corvette and Cobra drivers wouldn't see him coming in the braking areas! I like his style. As for the shark fin-like roof light, according to a former mechanic at Lotus East, it's a running light from a 1960s Chevy truck.

During the rebuild the owner took the opportunity to commission the design and build of an all-new roll cage, as he was desperate to own and race a 26R, but didn't feel the existing cage designs offered enough protection in the largely glassfibre Lotus.

Initial design work for the new cage was completed by Wiet Huidekoper (whose CV includes F1, Group C, DTM and GT1 cars, notably Porsche's 1998 Le Mans winner) with the manufacturing and homologation process handled by Andy Robinson. It's a great piece of work, providing solid mounting points for the driver's seat with improved side impact and pedal box protection in the event of a major shunt. More on which later...

IT SEEMS HARD TO BELIEVE NOW, BUT in its original 1963 specification the pre-26R Elan didn't make a great racing car. Too much flex and bump steer, weak wheels and snap oversteer were its nasty-sounding repertoire. Despite this, Colin Chapman wasn't interested in developing it as a competition car as his focus was the Lotus 25 Grand Prix car. That didn't stop privateers such as Ian Walker Racing and Graham Warner's The Chequered Flag working independently on improvements to address the Elan's shortcomings. But not before Jackie Stewart's famous assertion that the Elan was the worst car he'd ever raced! Hardly a glowing endorsement from one of the leading drivers of the day.

Aware that Elans were being bought to race and being developed by privateers, Chapman soon relented, rather cheekily using elements of both Walker and Warner's upgrades to inform his own suite of modifications. This included flared bodywork with a choice of faired-in or pop-up headlights, magnesium wheels and a single-skin glassfibre roof, along with extensive revisions to the suspension, driveshafts, brakes and a more potent state of tune for the familiar 1558cc twin-cam motor. The Elan 26R was born.

Homologated for the 1964 season it was an instant hit, finding favour with privateer teams and drivers at national level in the UK, and reaching a variety of overseas customers, including Pulver. There's some doubt over precisely how many 26Rs were built, with 97 is the most commonly quoted figure, but there's strong evidence to suggest the truer figure is 101: 52 S1s (including 26-R-9), 43 S2s, plus a further six S2s bearing duplicate chassis numbers! Many regular Elans have since been uprated to 26R spec, muddying the waters further. Needless to say genuine cars are hard to find and extremely sought-after on the rare occasion they come onto the market.



Sixties Endurance series sees Elan harrying hefty Cobras. First owner Peter Pulver tried 'speedster' form, left. By '73, car was racing in Modsports. below

"YOU NEVER LOSE A SENSE OF WONDER ABOUT JUST HOW SMALL AND LIGHT THE 26R IS"

Inevitably prices have leapt, from £170,000 or so a few years ago to anywhere between £250-300,000 for the quickest ready-to-race cars with notable history and entries to the best international race and tour events. That's a lot of money for a plastic car, albeit a very quick one. However, it's also around a quarter of the money commanded by the E-Types and Cobras that a good Elan can race against, and beat.

Drive one and you're left in no doubt why a good 26R is worth every penny. By modern standards, and even by those of the day, the Elan is a truly tiny car. Exquisitely proportioned and very pretty, but with just enough attitude thanks to the slightly more muscular bodywork and squat stance courtesy of those fat magnesium wheels and chubby racing tyres. With a homologated weight of just 580kg a puff of wind will roll one around the paddock. Back in the day the most potent BRM-tuned twincams were kicking out around 160bhp, but today – like most historic racers – power HARRY CENTRE

outputs have risen, with twin-cams now routinely developing a reliable 180bhp. You don't need to be a mathematician to deduce that makes for a rather lively power-to-weight ratio.

It's been my great pleasure to race 26-R-9 for the past three seasons in Peter Auto's fabulous Sixties Endurance series, which has a generous two-hour/two-driver race format, packed grids and circuits such as Spa, Dijon, Monza, Jarama and Paul Ricard on the calendar. Continuing Pulver's habit of running the little car in big races, 26-R-9 has also contested three Spa Six Hours (no finishes, sadly, though it was running as high as seventh overall) and a class victory and an overall Plateau 4 Index of Performance win at last year's Le Mans Classic.

As in period the diminutive little Lotus punches well above its weight. So while it fights other small-engined cars for class honours, its raw pace enables it to qualify among far bigger and more potent machinery. In Sixties Endurance it's common to be sitting right up at



the big boys end of the grid amongst the Jaguar E-types, Ford Mustangs and Shelby Cobras. Hilarious if you're in the Elan, but doubtless rather annoying if you're in one of the big bangers. It's given rise to Raceworks giving 26-R-9 the apt and amusing nickname of 'The Mongoose' on account of its appetite for Cobras. I suspect the Shelby drivers have given it some less repeatable soubriquets.

*

BEFORE YOU CAN START MIXING IT with the Cobras your biggest challenge is simply to get in the car. You really do have to fold yourself up into a semi-foetal position and post yourself through the door aperture. If I was just a few inches taller than my, er, compact 5ft 9in frame I'd favour going in headfirst then dragging my legs in afterwards as the taller drivers do, but with the steering wheel removed I can just about scrunch myself up and slide in sideways. You don't so much climb in a 26R as put it on like a coat.

Once in it's surprisingly roomy. OK, that's a slight fib. Tailored is probably a more accurate description, but the reclined driving position creates some headroom and feels good once you're clamped down by the shoulder straps. The expanse of wooden dash looks slightly odd amongst all the glassfibre, but there's a certain charm to it. Slamming the flimsy driver's door is sobering though, for it wobbles in your hand and shuts with a clack, it's so light.

Those of an easily rattled disposition might look around them and blanch at sitting in little more than a brittle plastic capsule, but new roll cage with its stout, strategically placed tubes offers genuine reassurance that you're not insane to go wheel-to-wheel with bigger, heavier cars. I don't tend to think too much about that stuff: I just do what I can to avoid putting myself in positions where I'm at the mercy of other drivers. What I've learnt – the hard way – is you can't legislate for incidents that are beyond your control.

Incidents like having your brake pedal sink to the floor on the 90mph descent towards Rivage. Looking back at the in-car footage it's a sickening impact, the only levity on offer coming from my repeated and clearly audible utterance of a short if rather profane mantra from the moment the brake pedal hits the floor to the moment the Elan's nose hits the wall. I'm still swearing as I tumble out of the door, shaken but otherwise unscathed, and walk across the gravel trap towards the incredulous marshals.

The Mongoose took a severe mauling in the shunt (later traced to a front brake caliper seal failure) but the fact that I got out with just a few bruises is testament to the cage's strength. That's why after its winter rebuild I was quite happy to get back into the tiny tearaway and resume our crusade against the cumbersome Cobras.

There's nothing quite like racing a 26R. It requires unusual sensitivity combined with a kind of hot rage and tenacity. Divergent emotions certainly, but the 26R only really works if you can wring its neck mechanically while ensuring you're not completely overdriving it dynamically. It's a fine line to tread. Never finer than in qualifying, where the Elan's outright single-lap pace is entirely reliant upon finding space. Not easy when Sixties Endurance grids regularly top 60 cars, none of which are blessed with the 26R's braking ability or corner speed. You never lose a sense of wonder about just how small and light the 26R is. Powering out of the pit lane is always a great feeling, the way it gets up an goes with such freedom and energy is wholly inspiring. I've raced Cobras and love the brutality of their performance, but the Elan is a lesson in purity and dynamic guile. It seems to think its way around a lap, stringing corners together with a delicious unbroken flow. It's packed with mischief, too. Or maybe that's just how it makes you feel.

Whatever, it (or you) just can't resist teaching 'quicker' cars a lesson; humbling them in the braking areas, hooning through corners and relentlessly harrying them into mistakes. At Dijon, where the circuit is essentially a tight knot of twists and turns with one long straight, the Elan is an absolute menace. In 2015 we actually had pole position, at least until our fastest time was subsequently disallowed for a flag infringement (boo-hiss etc), but it was a graphic illustration of the 26R's speed. However, if you really want to witness that pace at point-blank range, I recommend standing at the foot of Eau Rouge and watch a 26R. Compared to any other car the speed it carries though the compression and into the heart of the incline really is guite remarkable.

That said, the 26R is not entirely without vice. Especially in the rain, where its minimal mass can play against it. It must have been quite a handful for Pulver and crew during that monsoon at Sebring. You have to change your driving style to compensate, making soft inputs and leaning on it with progressive insistence until you feel it begin to slide, then apply similar smoothness to your throttle inputs. It's an absorbing and enjoyable process, but it pales compared to revelling in the feeling of strong, fluid grip and zero inertia as you do in the dry.

Wet or dry you have to work the brakes with sensitivity, for it's easy to grab an inside front as it unloads on your way to the apex. Surprisingly big fuel loads (it can do the Spa Six Hours with one refill!) don't upset it as much as you'd think. At least once you learn to work with the fuel-filled tail's slightly pendulous feeling through quicker corners.

As you can probably tell, I love the 26R. More particularly I love The Mongoose – because of its unusual history and the bond I've formed with it through good times and bad, but mostly because of its voracious appetite for Cobras. Though it be but little, it is fierce.

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Callum Ilott

How one commuter's view through a train window triggered a journey to international racing success. By Simon Arron

HE SURNAME MIGHT BE UNFAMILIAR, but then there is no family background in motor sport. "My dad used to commute to London by train and happened to notice the Rye House kart track as he was passing," says Callum Ilott. "He thought it might be fun, so I went along to try some rental karts and he later bought me one of my own. It heard head and dad thing."

became a weekend lad-and-dad thing."

There were no ambitious career plans at first, just the simple purity of combat. Ilott competed in club races for two years, then stepped up to national championships before branching out into Europe.

"I didn't have all that much success in the UK," he says. "I was about two years younger than most of the guys who were doing the winning, but I learned a lot from them. As I stepped up into faster karts, I felt more at home. The quicker I've gone, the more comfortable I've felt – I just hope that trend continues.

"Max Verstappen was one of the drivers I faced in 2013. I was quick, but didn't have much experience at that level and the others were often able to take advantage in the races – another useful lesson. I had a strong 2014, winning a couple of major titles,

and that summer Red Bull approached me. I was invited to meet Helmut Marko at Silverstone and he arranged for me to do an F3 test with Carlin. That's how I got the break that enabled me to switch to cars. I was 15 when I met Dr Marko and didn't really know what to expect, because you hear so many things. I found him very interesting – a bit of a character. He was very clear about what he expected. I got my first bollocking after a bad test in Austria, but he was very honest and direct – and you can't fault him for that."

At 16 Ilott graduated directly from karts to F3. He recorded one podium finish en route to 12th in the

championship – not enough to keep him on the Red Bull roster. "I felt I did a good job some of the time," he says, "but it was a tough year – with 35 drivers on the grid, many of them with solid experience – and Red Bull obviously thought I'd underachieved. I received the news by email, though I had a sneaking suspicion beforehand. Perhaps they signed me prematurely, but the experience has done me no harm."

Ilott switched teams in 2016, moving from Carlin to Van Amersfoort, and scored his first F3 win during the opening meeting at Paul Ricard – despite an engine fire that interrupted a pre-race test and forced him to switch to a

2012 tub. He was second to Lance Stroll in the standings early in the campaign, but his title hopes faded as the year went on – particularly after a forced engine change earned him three 10-place grid penalties at the Norisring.

There was a second victory, though, at the Red Bull Ring.

"Somebody suggested it would be funny if I did well there," he says, "because Dr Marko usually hands out the prizes. I duly won the first race – but he was absent. I finished second the next day, though, when he was there, and on the podium he said to me, 'It seems you're better off without us'."

Ilott stays in F3 this season,

and has joined Prema, the Italian team chasing a seventh straight European F3 title. Does he feel any extra pressure as he seeks to emulate Roberto Merhi, Daniel Juncadella, Raffaele Marciello, Esteban Ocon, Felix Rosenqvist and Stroll? "It doesn't really make any difference," he says. "I've given up my A-level studies to focus on racing – I can always go back to education later – and will see how this year goes. If I do well it will hopefully open some new opportunities. I would love to try my hand at sports car racing one day, particularly Le Mans, but for now my goal is to get as far as I can in single-seaters."

CAREER IN BRIEF Born: 11/11/98, Cambridge, England 2010 British Cadets, 6th 2011 Kart Stars champ; German KF3, 3rd 2012 KF3, WSK Masters & WSK Final winner 2013/14 KF, WSK Final winner, WSK Super Masters and CIK-FIA European champ 2015 FIA F3, 12th 2016 FIA F3, 6th 2017 FIA F3, Prema



{ LUNCH WITH } JOHN MCGUINNESS (Well, that was the plan)

He is the greatest living exponent of motor racing's most thrilling, historic and dangerous event: the Isle of Man TT. So we tried to have lunch with him

writer MAT OXLEY | photographer GAVIN HAWORTH



E COULD HARDLY have chosen a better place to have lunch with John McGuinness. We are sitting in the dining room of the Midland Hotel in

his home town of Morecambe, Lancashire. Beyond this 1930s art deco masterpiece lurks the grey swell of Morecambe Bay and the Irish Sea. Just over the horizon lies Mona's Isle, the island that has defined McGuinness' life.

Everything seems perfect, but for one thing: McGuinness isn't here. Calls are made, texts are sent. We seek him here, we seek him there, but he is nowhere to be found. Finally, long after the restaurant kitchen has closed, he texts me. "Really sorry, I screwed up, I forgot. My head's all over the place. I went out on my enduro bike. Can we do it at my house at four-ish?"

The 44-year-old, 23-times TT winner has recently moved just outside Morecambe, where he's lived most of his life, to a place in the hills, with wife Becky and children Ewan and Maisie. The snow-capped peaks of the Lakeland hills brood in the background as we turn into his drive. He is full of apologies and covered in mud, the residue of an 80-mile dirt-road blast on his enduro bike. No mobile-phone signal.

We take a seat in his kitchen/diner, thinking a cup of tea might be a nice idea. John opens the fridge and gets out some beers, so the story is no longer 'Lunch with John McGuinness', it's 'A few beers with John McGuinness'.

The circumstances could hardly be more different from your average Formula 1 interview: a PR sergeant-major summoning you into an office, "Okay, it's 13:00, you've got till 13.15." Instead we chat for two hours, discussing life, death and everything in between.

McGuinness started racing bikes when he was 18 and made his TT debut six summers later. In the late 1990s he won the 250cc British title and scored points in several Grand Prix events, proving his ability on short circuits. But he is best known for his exploits on road circuits, all the way from the Isle of Man to Macau, where bikes share the Grand Prix weekend with cars.

I ask him whether Macau might be even more dangerous than the TT, because the **D**

whole track is lined by Armco. Not even a slim chance of landing in a hedge.

"Not really," he says. "At Macau you can hit the barriers quite hard and carry on; so long as you hit them at a good angle. I've seen people do it; it does get a bit 'pin-ballish'."

As we down our first beers I notice that John's face is still dirty from his ride, so I suggest he might want to have a quick wash for the photos. "I'm just a scruffy twat," he shrugs with a grin. "Look at the state of me, but this is the way I am and I've always been like this."

Scruffy, yes. Also, more down to earth (and covered in it) than a sportsman of his stature has any right to be. And beyond brave. McGuinness is the second-most successful rider in the history of the Isle of Man TT, the world's longest-running motor sport event and almost certainly the most dangerous. There is rarely a TT fortnight from which at least one or two riders don't return.

The 37¾-mile Mountain circuit, first used for car racing in 1908, is a winding, bumpy, undulating and unforgiving country road ridden mostly at warp-speed. Each race week begins and ends with a six-lap race for the fastest superbike machines, more than 200 horsepower and geared for close to 200 miles per hour. The week-ending Senior TT is the biggest deal of them all: 226 miles of flaming synapses and adrenaline overload, averaging more than 130 miles an hour.

"It takes a long time to come down from that, a couple of days," says McGuinness. "After the Senior I lie on the sofa and I could sleep all night but then you're out on the town all night; it's like a celebration of being alive. Just a huge relief."

The risks are certainly great, but there is no buzz in the world like racing around the TT course: the bowel-loosening ride down Bray Hill, moments after the start, like falling off the edge of the earth, then flat-out in sixth gear through sleepy Manx villages bracketed by 30mph signs, dashing between hedgerows and drystone walls, the scent of wild garlic on the rush towards Ballaugh, the wide-open curves that speed you round the rump of Snaefell mountain and then the final plunge home to Douglas, with the Irish Sea glinting in the sunlight, if you're lucky. Every other racetrack pales into insignificance.

Some people get it, some people don't. For those who don't, the TT is something that belongs in the history books, along with the gladiators of Rome. For those who do get it, the TT is a glorious anachronism in a western world so weighed down by health and safety that you can't even walk into a café without having to dodge past a bright yellow caution sign telling you to mind the slippery floor, which isn't slippery at all.

For these people the TT is the last stand of primal motor sport; a living, breathing version



JOHN MCGUINNESS CAREER IN BRIEF

Born: 16/04/1972, Morecambe, Lancs
1990 First race, Aintree 1996 First IoM TT
1999 winner, 250 TT; British 250 champion 2006 wins three major TTs, breaks outright record 2007 wins Senior and Superbike TTs, first
130mph lap 2008 matches Hailwood's 14 TT wins
2009 15th TT, Superstock champ 2010-on Honda works rider; 2015 first 132mph lap; 23rd TT win

of the early days of Grand Prix racing, on two wheels and four. TT racers walk the line like none of today's Formula 1 or MotoGP stars, which is why many fans see them as a breed apart, worthy of a special kind of respect. Among these disciples is a growing band from the car world.

"Mark Webber comes over every year and he gets a bit emotional," says McGuinness, who has become good friends with the Australian. "It makes him all, like, wow! Martin Brundle loves it too. Paddy Lowe comes over and we've had Toto Wolff there. I speak to Toto and he's got massive respect for what we do.

"It's weird because I got quite pally with Michael Schumacher just before his accident.



I did some riding with him down at Ricard and we were chatting away. It was weird talking to him because he's such a legend and he didn't seem real because he was so immaculate. Then he dragged me to one side and said, why are you still racing at 40 years old? I said I've got bills to pay and I still enjoy it. He was massively intrigued by the TT and he was going to come over. We were texting back and forth and he was all excited. Then he had the accident.

"I've done a couple of events with Lewis Hamilton. He was on about the TT: 'Yeah man!' He's a bit hip, a bit 'dudey', isn't he? He said, 'Man, you're crazy.' I don't think he gets it, he just thinks I'm a nutter. Fair enough."



THERE ARE TIMES WHEN EVEN McGuinness wonders why he does it. "I buzz after a TT, but at the start I'm shitting my pants. I don't want to be there. I'm sat in my motorhome thinking, why am I doing this? What am I putting myself through here? I'm looking at the kids, thinking this is a bit selfish. To be honest it's a bit shitty, really. But then you get on the bike and you do your bit and afterwards you're chuntering away at a million miles an hour, talking about the race. It's a double-edged sword."

Some sections do scare McGuinness, most especially the 170mph plunge down Bray Hill with a full fuel tank and a new rear tyre. "Bray Hill in the Senior and Superbike races is horrendous on lap one, lap three and lap five, because you've got a new rear. You're just a passenger down there, you've got a bull by the horns, really. The bike does one thing one lap and another the next, so you've just got to let it do what it wants to do, then boss it when it gets out of shape. When they show us slow-motion clips, I'm thinking, 'Jesus, is that the sort of knots we're in?'

"I mean, it's horrible, horrible down there on the first lap, it really, really is. And you've no choice but to go for it. You could lose two or three seconds, which you'll never get back, so you've just got to grit your teeth all the way down. It's scary, scary stuff."

Which begs the question: why do they do it? Despite the fear, McGuinness adores the circuit, always has done. His favourite corner is typical of the TT - a mighty fast kink in a series of nameless twists and turns through a tunnel of trees that delivers a dazzling strobe effect on sunny days.

Just over 12 miles and five minutes into the lap and a few hundred yards after Handley's (named in honour of 1930s TT hero Wal Handley, who had an almighty crash there) it's the kind of place where the brave, talented and knowledgeable can make the difference. The corner didn't even have a name, until it was D

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1 McGuinness's success began in 1990 on 250s 2 Works Honda ride has brought more wins 3 2011, and a 17th TT victory in Senior event 4 Another Senior TT win brings total to six 5 Valentino Rossi was admiring onlooker in '09... 6 ... and Mark Webber has become a good friend

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7 Guy Martin joins McGuinness as Honda team-mate this season 3 Celebrating yet another win with wife Becky and family 9 Man and machine in perfect harmony... christened in McGuinness's honour.

"It's 160, maybe 170 miles per hour; I just like it. If you spoke to a layman and said, 'Right, I'm in sixth gear there,' he'd think you were taking the piss, but honestly you are; it's that quick.

"It's the second left after Handley's. I don't like the first left because it unsettles the bike. There's a bit of a drop-off, like it's motocross, so the front wheel comes up. The next left is just so fast and it looks impressive to do it pinned in top gear. You get hooked right into the hedge and then the road opens up for you. Every time I go through there I get a rush, I really do.

"If you do it right you can be going 10 to 15 miles per hour faster before you get on the brakes at the top of Barregarrow, and you've done it all in one corner.

"The useful thing is that you can get held up to death on that little shoot towards the top of Barregarrow; no disrespect to anyone, by the way. But if you do get held up you're stuck through Barregarrow top and bottom and through the 13th Milestone before you get to the next passing point into Kirk Michael, and even then you'd have to make a lunge.

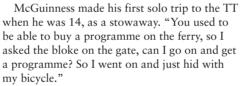
"I made a really strong pass on the run to Barregarrow on a real top rider who's not with us any more. He hesitated at that left and I passed him, and I've passed a few of the leading riders there. It's just getting through that left kink flat out. I'm tucked in and subconsciously pushing and steering with my feet and hands. I'm not hanging off. I move a little on the bike but I never hang off. I've never done it, even on short circuits. I just sit on top of the bike, like John Surtees."



McGUINNESS'S RELATIONSHIP WITH THE Mountain course goes back to when he was a little boy, pretending to be Evel Knievel in the garden on his bicycle. His father contested short-circuit events on the mainland and entered the amateur Manx Grand Prix, run on the full TT circuit. "We lived in Heysham, a few miles from the ferry to Douglas, but dad missed the ferry and couldn't race. What a dick!

"First time I went to the island was with him. It was half-term and TT practice week, so I got to watch practice. When race week started, dad took me back to school. I went mental: screaming, kicking.

"After that, every year I'd be stood at Heysham docks watching the bikes go past on their way to the ferry and waiting to see a racing truck, a Merc 508 or something. I'd get well excited. So there's always been that connection. As the crow flies it's my closest track – I was looking at the island today, from up on the hills on my enduro bike."



"THEN THE

ROAD OPENS UP.

EVERY TIME I GO

THROUGH THERE

GET A RUSH

Unlike MotoGP riders like Marc Márquez and Valentino Rossi, who learned to race minibikes around kart tracks, McGuinness fell in love with "twisting the tiger's tail" (as sometime racer Steve McQueen once put it) while riding road bikes around the lanes of Lancashire.

"I was the king up here: flat out everywhere, past Red Well, down to Kirkby Lonsdale and onto Devil's Bridge; wearing trainers, jeans and a paddock jacket."

McGuinness made his first TT visit on a motorcycle in 1989, just weeks after getting his learner licence. "I went over on my [Yamaha] TZR125 and did lap after lap after lap after lap, then put some more petrol in, then lap after lap after lap..."

Back home, his reputation as the local teenage tearaway soon caught up with him. "There were people reporting back to me dad, saying 'Your lad's going to kill himself.' I was a bit crazy. So me dad got me by the collar and said, 'If you think you're good enough, let's go racing.' We entered a club race at Aintree in the summer of 1990, on my Kawasaki 250 road bike. I thought I was going to win but I got annihilated. I came in about 29th. Ah, this racing isn't quite so easy..."

His racing apprenticeship continued with the 250, using his father for long-distance advice. "My dad was working on the gas rigs up in Aberdeen, so when I was at a race I'd go to a telephone box and ring him at a certain time, so I could tell him what the engine was revving to and all that."

Money was tight, to say the least. McGuinness lived with Becky in a council flat in Heysham, working as a bricklayer and sometimes earning extra cash picking cockles in Morecambe Bay. His soon-to-be-published autobiography *Built for Speed* tells it like it was. "There's not one bit in the book where I go on about getting a soft tyre and going two tenths of a second quicker; it's all about siphoning out red diesel, just to get to race meetings."

He made his TT debut in 1996 and won his first TT, the 250cc Lightweight, three years later and has been one of the island's top exponents ever since.

No other motor sport event has as much history as the TT and most riders have a deep respect for the event's past, which is why McGuinness's favourite victory was at the centenary TT in 2007. In 2007 McGuinness became the first ever rider to lap the Mountain course at over 130mph, bringing a tear to Murray Walker's eye. Right, home acclaim for Morecambe lad



"Every win has been special but the centenary Senior was really special, because I also got to do the first 130mph lap. One of the others was the 2015 Senior. I'd not had the best of race weeks, so they'd written me off and I was up against the wall. But I came out boxing that day – 131.8 miles per hour from a standing start. I don't know where that came from.

"The centenary was mega, just because of the history and all that. Murray Walker was in the winner's enclosure and he was welling up. I said, 'What's up Murray?' He says, I never thought I'd witness that – I saw the first 80mph lap, the first 90mph lap, the first 100mph lap."

Walker's father Graham was an important part of TT history during the inter-war years. He won the 1921 Lightweight TT on a Rudge and wrote extensively about the event.

"There was no tar, consequently dust and stones were a terrible bugbear and the roads were abominably bumpy," he wrote in the 1920s. "It is a solemn fact that grass and moss grew up the centre of the road over the mountain. I once hit a sheep coming down to the Bungalow at about 60mph. I was lucky to get off with a black eye and a dislike for mutton that has lasted ever since. Keppel Gate was a very narrow affair – it seemed impossible for a pair of handlebars to pass through it."

The Isle of Man hosted its first motorcycle race in 1905, a year after its first car event, an elimination trial for the Gordon Bennett Cup. The first bike race was also an eliminating trial, to select the British squad for the Coupe Internationale motorcycle races. The trial took place on the island because racing on the mainland had been effectively banned by the Light Locomotives Act of 1896, which limited speeds to 12 miles per hour.

The first TT of 1907 was staged over a triangular 15-mile circuit between Peel, Ballacraine and Kirkmichael. The more challenging Mountain course was introduced in 1911. "The sensation of speed is superb and yet appalling for the intoxication of speed is upon me," wrote a rider of that era. Some things never change.



LIKE ALL THE BEST TT RIDERS, McGuinness has huge respect for the course. That's why he is still here

"If you've got a screw loose, you'll last five minutes on the island. I've done it for 20 years, hit every apex and all that and it's been all right. I'm not an idiot, I'm a family man. It's just what I do. People are still going to get hurt and worse, but it's what we do.

"I've fallen off once, during practice for last year's Classic races. The night before I was lying there thinking, 'The law of averages says that someday I'm going to go abroad here.' The next day I flew into Quarter Bridge, got greedy on the throttle and lost the rear. On one side I was livid, on the other I was happy."

The number of lives claimed by the TT course makes for sobering reading: 252 deaths since the first fatality in 1911, including 79 since McGuinness rode his first TT.

McGuinness never talks matter-of-factly about the event's darker side but he does talk about it. And he knows that you don't have to be the one who makes the mistake to pay the ultimate price. McGuinness has lost three of his best friends at the TT – David 'DJ' Jefferies, Gus Scott and Mick Lofthouse – all of whom were blameless for the accidents that claimed them.

Jefferies was once the TT's main man, winning nine races between 1999 and 2002. During practice for the 2003 event he hit oil dropped by another machine at the 170mph left-hander in Crosby village. Scott died two years later when – unbelievably – a marshal walked across the track, taking a cup of tea to rider whose bike had stopped. Both Scott and the marshal were killed. Lofthouse died in 1996 during early morning practice, blinded by the rising sun. These sessions, which started at 4.30am to minimise disruption for Manx residents, were later axed. The marshalling failures that led to the deaths of Jefferies and Scott triggered a complete overhaul of event practices by new TT management.

"I give all three of them a nod every lap," says McGuinness. "I was a newcomer when Mick died at Milntown cottage. I saw his helmet on the side of the road. When I got back to the pits I said, 'Oh, Mick's broken down at Milntown...' It was hard; I was thinking, 'I'm going home.' Practice week was crap – cold, wet, horrible – then race week was glorious. I did my race and loved it, it was ace.

"The DJ thing was tough, same with Gus. I went onto the podium after the 2005 Senior, spraying champagne, living the dream, I didn't have a clue. I got down from the podium; 'Oh, Gus is dead.' It was real difficult."



free show where you can get away with sticking your feet over a grass bank, within 18 inches of motorbikes coming past at 180mph."

McGuinness has been with Honda for the past decade and his latest team-mate is TT/TV star Guy Martin, who is returning to bike racing for the first time since breaking his back at Dundrod, a Northern Irish road circuit. McGuinness admits he is somewhat concerned for Martin, who has yet to achieve his lifetime ambition of winning a TT.

"First of all, I didn't see the team-mate thing coming. I was driving to the team headquarters in my van. The team manager rings me and says, 'Oh, your team-mate is Guy Martin.' I nearly stuck the van through the hedge. I do get on with Guy and I don't begrudge him. He's earned a few quid and done some cool stuff – flying Vulcans and Spitfires, the jammy bastard! But I'm a bit worried about him. After a year off he needs a year or two at it. He's never won a TT



"I WENT ON THE PODIUM SPRAYING CHAMPAGNE, LIVING THE DREAM. I DIDN'T HAVE A CLUE. I GOT DOWN FROM THE PODIUM. 'OH, GUS IS DEAD...' IT WAS REAL DIFFICULT"



YOU WOULD THINK IT COULDN'T GET any tougher than that. But it does. The growing popularity of the event is only making life more difficult for McGuinness and the other top riders.

"There's more pressure on us all now. When I first started doing the TT 20 years ago, not so many people had heard about it, so you were a bit more under the radar. You could go into a bar in Douglas and you might get one or two people say hello. Now it's on TV, it's on YouTube and we've got Guy Martin, so it's like we've all turned into superheroes or something. Everybody's all over you.

"But what I love about the TT is that everyone who goes has a great time. They all say it's fantastic, they're just blown away. It's a so he must be pulling his hair out and I don't want him to push too far. He's great for the sport and he will take pressure off me because everyone's going to have Guy Martin fever."

Both riders will use Honda's brand-new Fireblade superbike plus Mugen electric bikes in the Zero TT. Apart from the Isle of Man, McGuinness will contest other roads events like Macau and the North West 200, plus various short-circuit meetings, mainly to keep his eye in for the roads. There is no doubt that he is in the twilight of his motorcycling career, which is why he's on the lookout for a touring car drive.

The Isle of Man hosted the very first world championship grand prix in June 1949, but by the early 1970s many riders had had enough. It was 10-times TT winner and 15-times world champion Giacomo Agostini who led the push to have the event stripped of Grand Prix status. The last TT counting for Grand Prix points took place in 1976, since when the event has had to stand alone. Over the years there have been many prophecies of its demise but not so much now. A global TV audience, the presence of Guy Martin and a visit from a certain MotoGP rider have all helped turn things around.

For many years the Grand Prix paddock hated the TT, because the riders believed the event gave motorcycle racing a bad name. That all changed in 2009 when Valentino Rossi visited, spectating at Bray Hill and riding a high-speed, closed-roads lap behind Agostini. Rossi has always appreciated racing history and was mesmerised by the Mountain course.

On the last day of race week Rossi climbed the podium to present McGuinness with the Senior winner's trophy, inspired by the original RAC TT trophy for cars. He handed the silverware to the winner with the words, "You are the true warriors."

And that was that; if Rossi believes that TT riders are the true warriors, who is to argue?

Since then McGuinness has got to know the nine-time world champion. "Whenever I see him at a MotoGP round he's got nothing but praise for what I do. I get a one-to-one with him without a load of heavies around, so it's pretty special. He was at the Goodwood Festival of Speed a couple of years ago. He came over, gave me a cuddle and said, 'How are you doing?' It was Rossi fever at Goodwood, he out-strutted Nico Rosberg and everybody.

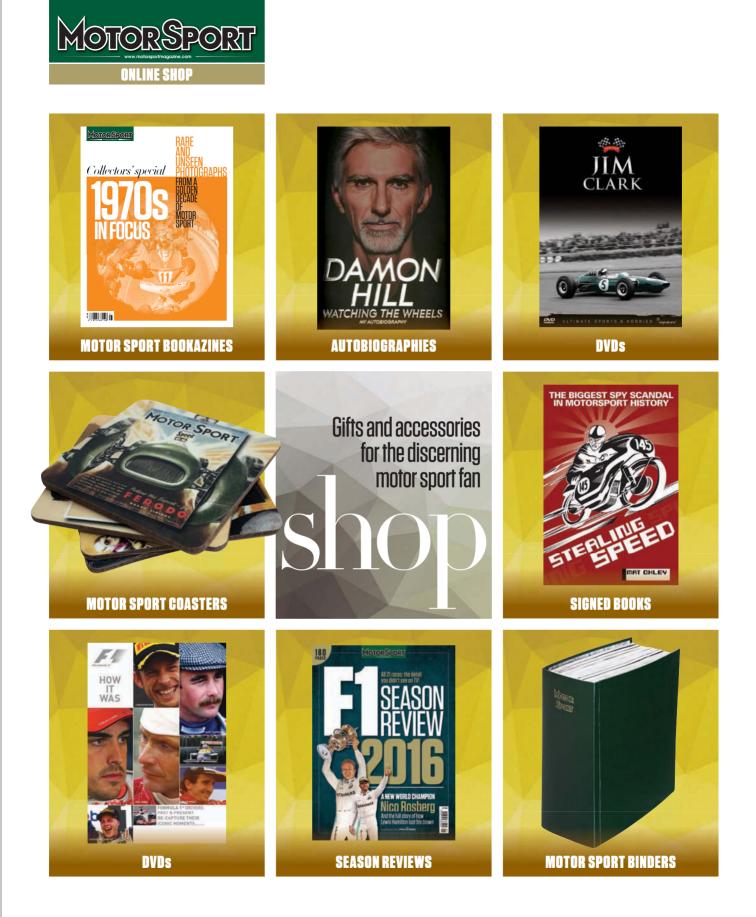
"Where do you start with him? It would be so easy for him to give it up because he's got everything, but he still wants to race and he still wants to win. He's inspirational. He's a god, isn't he? But one to one he's normal, he's just a biker. I do have one thing in common with him – we're both in the BRDC!"

McGuinness also has a couple of things over Rossi: in 2014 he was inducted into the *Motor Sport* Hall of Fame and last year he was awarded the Royal Automobile Club's Segrave Trophy (previous winners include Surtees, Stirling Moss, Sir Malcolm Campbell and Amy Johnson), the ultimate proof that he is in the motor sport pantheon.

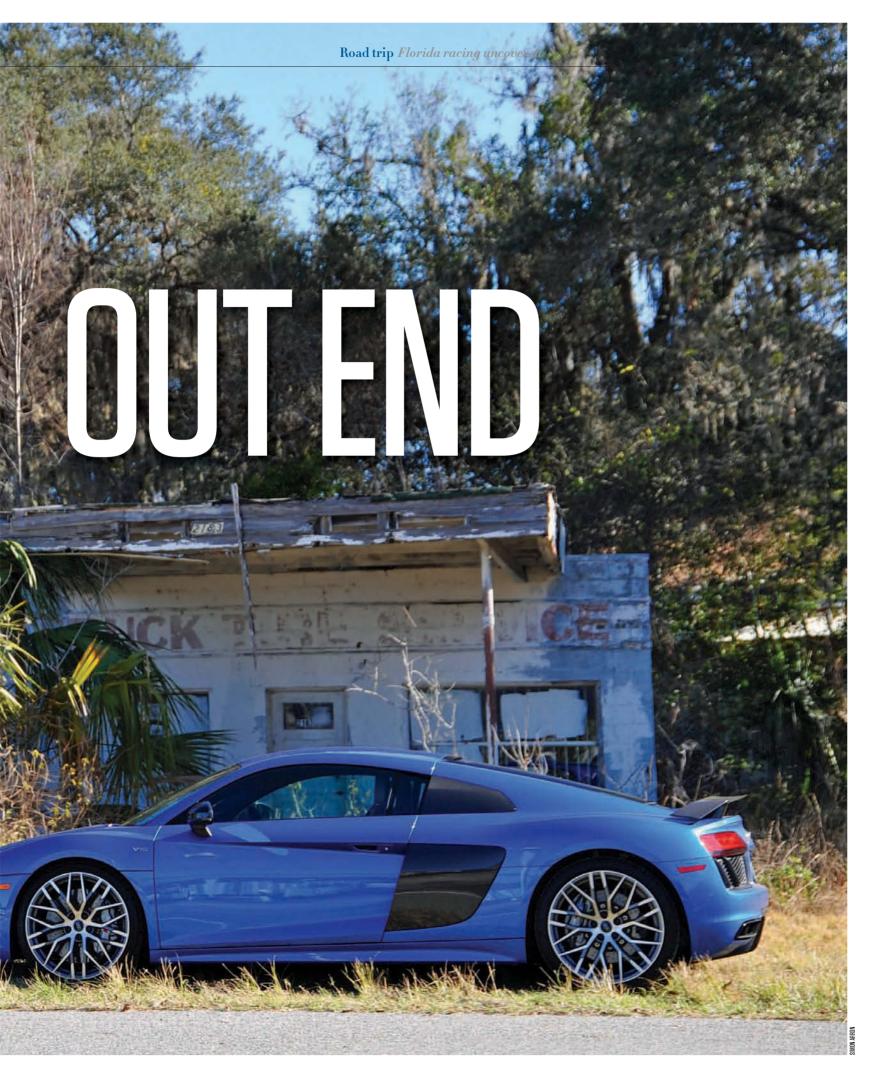
As we say our goodbyes we pass the Fireblade he rode in the Centenary Senior TT. McGuinness stands by the bike and happily gurns one more time for the camera. Here is a racing legend who couldn't take himself less seriously. We just wish he would keep a better diary.

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Feb 1930 | Threat to move TT racing to Belgium Nov 1966 | Bring car racing back to Isle of Man Sept 1975 | Looking back with Mike Hailwood



To browse the online shop, visit: shop.motorsportmagazine.com The Daytona 24 Hours is one of motor racing's great spectacles – and also the perfect starting point for wider exploration of American racing culture writer & photographer SIMON ARRON





HE LANDSCAPE around Miami Airport is a touch bleak, blending the urban with the industrial, but it's absolutely dripping with car culture. As our shuttle bus weaved around endless budget motels, it passed several independent marque specialists, a

European sales centre and countless scrapyards brimming with the battered husks of what had once been 1980s automotive Americana. It seemed as good a launch pad as any for a motor sport-themed road trip.

The brief was loose: collect an Audi R8 locally, drive it to the Rolex 24 at Daytona and take it wherever I fancied during spare moments in between. Daytona being a popular destination for itinerant enthusiasts - you can pick up a return flight from the UK to Orlando for about £380, fair value in terms of minutes aloft per penny - it seemed prudent to use the opportunity to explore other nearby motor sport attractions, past and present, and to see what else might lurk in the undergrowth. There are currently more than 40 active circuits, short ovals and drag strips in Florida, plus a fair sprinkling of kart tracks and who knows how many other venues buried invisibly beyond condominiums or else awaiting redevelopment. Despite its size, Miami - which has a permanent circuit at Homestead and was very recently home to the Race of Champions - has not had a conveniently located short oval, long one of urban America's sporting staples, since Hialeah Speedway closed in 2005 to make way for yet another shopping mall.

The Audi was parked in a warehouse that doubled as an echo chamber. Leave an R8 V10 in 'Drive' and it is naturally boisterous; slip it into 'Sport' mode and it becomes yet louder, holding onto gears for longer and providing a delicious – and definitely ostentatious – electronic throttle blip to accompany each downchange; fire it up from cold in a Miami warehouse and the aftershocks can be felt in Boston (quite possibly both of them – Massachusetts and Lincs).

America has a reputation for low speed limits, but Florida takes a fairly European approach. Adhere to the posted 70mph and you'll swiftly be zapped by SUV V8s travelling at 90-odd. Initially, sticky traffic on the northbound I-95 made it difficult to achieve double-figure speeds of any kind, but congestion eventually eased, 260 miles became 200, three-figure distances shrank to two and in due course I peeled right to be greeted by the Daytona International Speedway's familiar silhouette. No matter how many times you see it, you cannot fail to be struck by its scale: even at times of silence, there are few more impressive sights in the sport.

After 10 hours in the air and more than four at the wheel, bed couldn't come quickly enough, but it was already clear that this wouldn't be a quiet weekend – and not just because of the V10. At my first fuel stop, the cashier came out to take a look at the car – and was perplexed by "All that metal stuff at the back. The engine must be at the front, right?" Wrong.

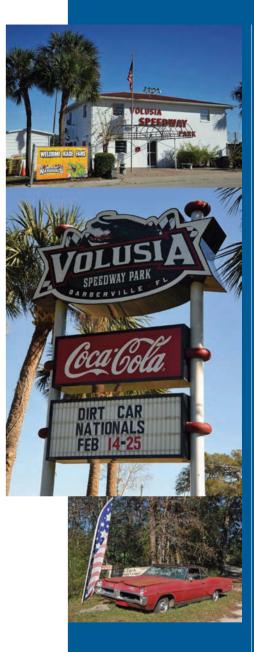
As I returned from the till, a young homeless lad was standing by the pump, wondering whether I could spare him 10 dollars for a bite to eat. Ordinarily I'd have sympathised, but my 'internationally approved' credit card had just been declined - and blocked, a problem I couldn't resolve until Europe reawakened - and I'd used my only paper dollars to fuel the car. I apologised and tried to explain, but it's hard to sound credible about such things when you're driving a \$162,000, 201mph missile. He wandered away muttering something about "bullshitter", which might ordinarily be true but wasn't in this instance. It was a foretaste of a weekend spent answering questions almost every time I opened the door.

*

DESPITE THE TRAVEL, I AWOKE AT 5AM on Wednesday – which always seems to happen in the States. Scrambled eggs, coffee and yoghurt apart, the first priority was to collect Daytona credentials – they still use charming but impractical flappy cardboard, the kind of thing that went out of fashion elsewhere in the 1990s – and then cut loose.

Heading back to the I-95 north, then bearing west along the SR40, it took only half an hour to locate Volusia Speedway Park (to the south, New Smyrna Speedway is closer still). Volusia opened in 1968, but an immediate cessation of operations was announced last autumn... before promptly being repealed. It had the feel of many bygone UK short ovals, except that its relative remoteness was unlikely to trouble any neighbours. There is also a kart track on the site. As I arrived banners were being erected for the World of Outlaws season-opener in February 2017. The half-mile dirt oval looked in good order and one of the groundsmen - the only sounds I could hear were a lawnmower and a hosepipe, so not quite on a par with a 410 cubic-inch V8 and a shale ricochet seemed sure the future was secure. Or, to be accurate, "This place ain't gonna close." That's settled, then.

America is always best explored away from the Interstates – and the next few miles underlined why. Shortly before the SR40 intersects with the US17, I came across a Plymouth Bonneville parked by the roadside.



Top, Volusia was preparing for the World of Outlaws' arrival. Above, roadside restoration project. Below, Putnam was padlocked and silent - barking hound apart. Right, R8 at rest in the Daytona pits







Dreadfully rusty, it was optimistically advertised for \$3500 and the sales pitch – whitewashed on the screen – claimed it to be a runner. Possibly true, but the engine will need almost a complete new car before ever it returns to the road.

Bearing north on the US17, in Seville I passed a derelict truck tyre service depot complete with equally forlorn pick-up on an elevated service ramp. Presumably it has been there since the day the business ceased trading, left behind as an afterthought. In the UK the site would long since have been smothered by identikit Barratt Homes, but here nature is correctly allowed to take its course.

"A 10MPH LIMIT APPLIES WHERE CAMPBELL ONCE PLIED HIS TRADE AT 270-PLUS"

The US17 leads on through the grandly named Crescent City, which sounds as though it came straight from a John Wayne script but looks absolutely nothing like a city, and on to Satsuma. Just beyond, set back from the main road in a wooded clearing, is Putnam County Speedway Park, a small dirt oval with few obvious facilities and a single, padlocked entrance. This is the home of 'legendary racing', according to the billboard acknowledging the venue's existence, but there was no sign of life other than a loud dog on the one adjacent property.

Time, then, to move on and reconnect with the northbound I-95 for an 82-mile run to Jacksonville. According to Google Maps, the dusty silhouette of the disused JAX Raceways exists still. Until 2005 this was a twin facility at 186 Pecan Park Road, with a dirt oval nestling close to a drag strip. Sat-nav guided me straight to what seems to have been the main entrance, but a barricade had been erected to prevent access. It would have been possible to enter on foot, but a fuel station across the road had similarly been abandoned and I wasn't keen to leave the R8 unattended in a derelict area.

The next planned stop was Daytona Beach, 90 miles south and not far from where I'd started. En route, though, I peeled off the I-95 to pick up a sandwich in St Augustine. It was only later that I discovered the existence of another disused track 10 miles north-west of my lunch stop. St Augustine Raceway closed abruptly in November 2001 (there is proof of its former existence on YouTube), shortly after hosting an event so specialised that I never knew this form of the sport existed. Anybody out there ever watched drag racing on mud?

Daytona Beach's competitive history has been mentioned here in the relatively recent past, but is sufficiently significant to bear repetition. There is a \$10 charge to take your car on the sand – passing first beneath an arch that declares this to be the world's most famous beach, a claim as yet uncontested by Blackpool – but a 10mph limit applies where Campbell once plied his trade at a breezy 270-plus. Overhead, the pelicans glide more briskly.

The beach side of the adjacent road is all smart hotels and high-rose condos, while the other is awash with tattoo parlours, nail bars, dollar shops and vacant premises – contrasting worlds separated by a strip of asphalt yet linked by the celebrity of their location.

Five miles south of the main entrance is the North Turn restaurant, named after one end of the beach course that staged the area's annual racing showpiece prior to the International Speedway's opening in 1959. It is absolutely rammed with NASCAR memorabilia and would on its own merit a trip to Florida.

*

The coffee's not bad, either.

LOTS OF THINGS IN AMERICA HAVE V8s or V10s, but many are about four times the height of an R8 and come as standard with a double cab, or else four berths and a kitchen. They don't catch the eye quite like the Audi. At 7.30 on Thursday morning, three lanes of traffic were just beginning to back up gently at the entrance to DIS when a booming voice yelled, "Hey, that's how to arrive in style."

Once again, no place to hide.

The morning was spent watching opening practice for the Rolex 24, after which I decamped once again to the west via the SR40 – this time for the 75-mile run to Ocala. Most of the route is single carriageway, with 55 or 60mph limits, and progress was swift. Disappointingly, despite frequent warnings of their presence, there was no sign of any bears.

Formerly known as Ocala Speedway, the local racetrack – a clay oval measuring three-eighths of a mile – now goes by the name of Bubba Raceway Park, following its acquisition a few years ago by radio talk show host Bubba Clem. Continuously operational since first it opened in 1952, it claims to be Florida's oldest active motor sport venue.

When I'd mentioned to Johnny Mowlem that I was going to Bubba, the supposedly retired but back-to-do-Daytona-one-last-time racer's eyes lit up. "Tony Stewart took me there a few years ago," he said. "It was amazing. At one point two drivers were fighting in the middle

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1976 Penske PC3 F1 Race Car - £POA

This Penske PC3 F1 race car was built in 1976 by Roger Penske, he only completed 1 year in F1, and this is chassis #1 of only 2 cars. This car was raced by famous Northern Irish driver John Watson during the 1976 F1 season. He achieved 5th in the South African Grand Prix, 7th at the Belgian Grand Prix and 10th at the Monaco Grand Prix. This PC3/001 is still being raced all over the world as it did in period, it has raced at the last 8 out of 10 current Monaco Historique Grand Prix's and has won in 2008 with Paul Edwards driving. It also came 6th in the wet at the Monaco Historique GP in 2012 with Chris Drake driving. Roger Penske is now 79 years old, yet still the driving force at Team Penske Racing. Important competitive car, well looked after, no expense spared, ready to race with Masters Etc, globally.

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Scenes from Bubba Raceway Park, Ocala. From the top, Car and truck fleet used for clearing mud from the surface. Late Model artistry. Pre-race briefing. Three-wheel drift. Paddock preparations



Chances of a repeat looked slim on a soggy Thursday, but when I walked unchecked into the paddock there was a fierce row going on between one driver and the scrutineer, the upshot of which was the car taking no part.

At one point it wasn't certain anybody would get to race, with persistent rain turning much of the track surface to mud. The main (well, only) attraction was the NeSmith Dirt Late Model Series, in which the cars have no windshields and drivers would run out of visor tear-offs long before the end of a 12-lap heat, never mind the 40-lap final.

"ONE OF THE DRIVERS WAS SIDE WAYS WITH HIS DOG IN THE PASSENGER SEAT"

To disperse the mud, a fleet of old trucks and cars was sent out to slither around as much possible for more than an hour. The meeting was delayed considerably, but with no noise restrictions the locals usually persist until the surface is raceable. I later learned that one of the drivers assisting with preparations was the track owner, who was slithering sideways with his dog perched in the passenger seat.

It was a very pleasant evening spent in the company of people who love racing for its own sake. Several complete strangers wandered across to introduce themselves, for no reason other than natural good manners when encountering a complete stranger, and you can't help but feel affection for anywhere surrounded by rickety grandstands assembled from wooden planks and steel poles – a slice of 1974 that has been missing awhile in Europe. In the paddock you could hear ZZ Top being played at maximum distortion and there was also a stall selling cheesecake on a stick. Obviously.

The chief flag marshal told me about a Brit that used to race regularly at Bubba – and successfully so. When I asked his name, he replied, "No idea. Always just called him Bulldog..." (Further enquiries identified him as Stephen Frankland.)

At one point I was collared in the pit area and advised that shooting with professional cameras was not permitted without a credential. My informant was Trace Crisp, the venue's official photographer, who granted me permission to continue once he'd established my purpose. He also later allowed me to join him on the infield, so I had my first view of a Late Model racer in full flight from a mound of earth about a metre from the apex, as drivers maintained a perfectly balanced drift over the lap's full course. Trace pointed out that the spot I'd chosen was quite popular with photographers whenever the World of Outlaws paid a visit. "See that wall," he said. "They tend to go over it rather than into it..."

The Late Model racers were a little calmer, Illinois driver Brandon Sheppard clinching victory shortly after I'd set off into the night. I learned, too, that the supposedly retired Tony Stewart was due to return to competitive action at Bubba in the near future.

*

UNTIL OTHER THINGS GOT IN THE WAY. the plan for Friday had been to get away from Davtona in time to visit a low-key drag racing event in Orlando, stopping en route at Casselberry - former home to Seminole Speedway, venue for one of the first oval tracks to become operational after WW2 (and promoted by NASCAR's founding father Bill France). Typing the coordinates into a digital map told me that Seminole was now Truffle Avenue, Casselberry, a residential development with absolutely no trace of its racing heritage. There was also a test and tuning day at the Gainsville drag strip, about 40 miles beyond Bubba, but that clashed with the start of the Rolex 24 – and I didn't really want to miss that bit.

There are lots of other sites worthy of potential investigation – and many have (or had) fantastic names. Thunder Cross in Okeechobee, for instance, which closed in 2004 and was converted to housing. One former track near Youngstown had several identities over the years, including Boss Hogg Speedway, and the finest of all was perhaps Dead Lake Speedway, Wewahitchka.

It is beyond question that the land occupied by these US institutions will always be worth far more as a development plot than it is as a racetrack, but the news isn't uniformly bleak. Sand Mountain Speedway, Fort Meade, was built about 10 years ago, but stumbled over planning consent and presently lies unused (although there have been attempts to kick-start the project). And in Pinellas Park, Sunshine Speedway closed its doors in 2004 but reopened five years ago as Showtime Speedway.

On the opposite side of the state, the refurbished Grand Dame – the Daytona International Speedway – has long styled itself as the World Center (sic) of Racing.

You can debate that point, but it has been – and remains – within striking distance of a very great deal.





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ILVERSTONE IS BUSY with every variety of racer today, but no one here has seen a pair of machines like these – two prime examples of the American special-building tradition that after WWII aimed to challenge European sports car imports on the track. These two appeared in UK

racing in 2016 and I was invited to gauge how they's measure up when that Transatlantic battle was rejoined.

There are two things we need to know about the culture that begat these. By the late 1940s, Europe's car industry had been destroyed by conflict but the sports car was still mainly a European thing; until the Corvette came out in 1952, America simply didn't make them. And equally important, in America there was almost no road racing; other than the odd beach race there was nothing like Europe's grand tracks and nothing at all on America's eastern coast. There was plenty of motor sport, most of it on the ovals - long for Indycars and the emergent NASCAR, short for sprint cars - and of course drag racing, much of which took place illegally on public roads. There was already enough hot-rod action to satisfy a depressed economy and besides, the American public owned the roads and promoters certainly wouldn't try and get them closed when there was no possibility to sell tickets. However... if the war that had devastated Europe and its industry hadn't touched America in quite the same brutal $\mathbf{\Sigma}$

PLAYING CATCH-UP Big firms were slow to offer sports cars to the US, but some

enthusiasts couldn't wait to go racing – so they built their own writer MARK HALES | photographer JAYSON FONG

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fashion, there's no doubt it would help bring an end to America's Great Depression. Come the dawn of the '50s, cars were becoming affordable to more Americans who were aware of the Jaguar XK120 and MG's T-type, cars that weren't made in America and wouldn't suit the ovals anyway. It's a touch simplistic, but this is broadly how the Sports Car Club of America and American road racing came to be.

In 1948, road racing as a major sport began at Watkins Glen in New York State, a venue which in a couple of decades would host the US Grand Prix. Most of the cars at that first race were imported from Europe but at the same time, at the opposite end of a vast country, there was the birth of California's Cal-Club which leant more towards road racers built in the American hot-rodding tradition. It was already a sort of 'them and us' - imports versus home-grown hot rods. It's also worth noting that an important underpinning in all this was the birth of Road and Track magazine, founded by hot-rodder John R Bond, and which as its name suggests was dedicated to this new branch of the sport. It was a new beginning that would encourage a great many special builders, most of them to remain heroes in their own land, but some - like Briggs Cunningham and later Carroll Shelby - who would take their specials to Europe and Le Mans.

Hundreds of these specials or 'Hot Rod Road Racers' rolled out of workshops and sheds in the late 1940s and '50s, some at a glance indistinguishable from Europe's best, some more clearly reflecting local traditions.

Hardly any have ever been seen outside America, however, until relatively recently. Californian businessman Rob Manson (Clubmans Mallock racer and general Anglophile) has collected and restored several and last year brought two to the UK to race (they'll return in 2018). Which is how I came to be driving the 1949 Baldwin Mercury (built by Willis 'Bill' Baldwin), and the 1952 Streets Manning (built by John Streets to a design by Chuck Manning), at Silverstone.

THE SPECIAL BUILDERS' ART IS DEFINED by many things, some more obvious than others. The ingenuity and skill of the creator, the category for which the special is intended and so on, but the biggest influence is the hardware on which the special is based. Austin Seven specials are very small, Ford Popular equals something Lotus Seven-sized; both have the engine in the front, gearbox in the middle and an axle at the rear. So the Mercury Special - which is based on the chassis of a 1946 Ford Tudor saloon - is big, even if the frame has been shortened by 14 inches. Despite that, the cockpit is relatively small and you sit close to a large wheel, for which I would discover there's a good reason. The body is shapely - from a

few paces, it could even be a Maserati – ingeniously fashioned from various parts of Plymouth and Chrysler, plus a few bits of kitchen equipment. Look a bit beyond and you'll see the heavy-duty leaf springs spanning the width of the chassis and the massive rods and knuckles that locate the beam axles at the front, and form the less than perfect attempt to restrain a large saloon rear axle. Manson has revised the latter in the interests of safety, and he's added a rollover bar and seat belts that wouldn't have been there in 1949.

I rather expected the engine to be V8-smooth, but it's not. Fire it up and absolutely everything vibrates. A low-frequency drumming that goes through the whole car, and me... The Ford sidevalve (nominally around five litres) was a staple to hot rodders, and this one wears a lot of stuff already developed for sprints and drag racing - like the Edelbrock aluminium heads and manifold with its triple downdraught Stromberg carburettors, and the twin water pumps (cooling was always an issue), all of which help to up the power from an original 80bhp to about 200. "Try not to use the gears any more than you have to," was Manson's only piece of advice. The three-speed gear cluster is from a period Lincoln and snappy gearshifts clearly weren't part of the luxury sedan experience...

Turns out you don't really need the first two, at least not for an exploratory lap of Silverstone's National track. The engine waffles rather than hammers, a thumpy offbeat rhythm which is entirely in keeping with the car's appearance but it's nothing if not muscular, pulling from zero all the way to 4000rpm where it loses interest. It's safe to let it go to five along the straights and I just left it in top, even for the hairpin, but meanwhile everything drums in sympathy. Mudguards, brakes, steering, dashboard... and the minimal mirrors that turn to a blur while I'm trying to secondguess the intent of a gridful of Minis on slicks whose occupants display little common sense and fewer manners. The Baldwin's steering is heavy and the more lock you add the heavier it gets, which is no problem in the quicker corners like Copse - where I can just let the car run in with a minimum of braking and tweak the wheel towards the apex. You have to be patient and let the car rotate before you pick up the gas, after which it drifts briefly before aligning itself nicely along the exit kerb. More than one Mini driver set himself up for a late lunge only to find the Mercury had disappeared.

Slower corners are not so easy. The drum brakes need a hefty push on the pedal and are reasonably effective, but the Special has no differential and, as I try to load the front and roll it into Becketts, the front end starts to wash wide and the first temptation is just to add more lock. Not easy when you need shoulders as well as biceps. More lock, though, makes







Watch Rob Manson first lap at Laguna Seca in the Baldwin Special on the 19th August 2015. © THE MOTOR SPORT DIGITAL EDITION

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Blue Baldwin's wide chassis betrays saloon origins; Manning's yellow tubes highlight purpose-built frame



"EVERYTHING DRUMS IN SYMPATHY – MUDGUARDS, BRAKES, STEERING, DASH AND THE MINIMAL MIRRORS"

Both specials pack flathead Ford V8 with Edelbrock heads and triple downdraught carbs, making some 200hp everything worse and any attempt to power out first pushes the front even wider, then unloads the inside wheel which despite the locked axle, kicks the tail. That's hard to catch when you have all your effort applied to turn the wheel farther to the right. Fortunately at the speed I was travelling, the car had pretty much straightened itself by the time I had caught up with the wheel... In the second session, I just opened up the corner as much as possible and got the car straight a bit earlier, plus it helped that I'd worked out how to double declutch into second. I still had to find top almost before the corner was done but it was all interesting. and worth some more investigation. It would definitely be more at home somewhere like Goodwood where there's only the one really slow corner.

THE MANNING SPECIAL IS RATHER LESS curvaceous – mainly to accommodate the truck radiator Manning deemed necessary to cool a similar sidevalve Ford V8 – but the bespoke tubular chassis is very different; Manning was a stress engineer at Douglas Aircraft and used his knowledge to create a stiff platform rather than adapt the ladder from a sedan. Most of the rest is from a Ford saloon and features a similar beam front axle, but there's a more sophisticated

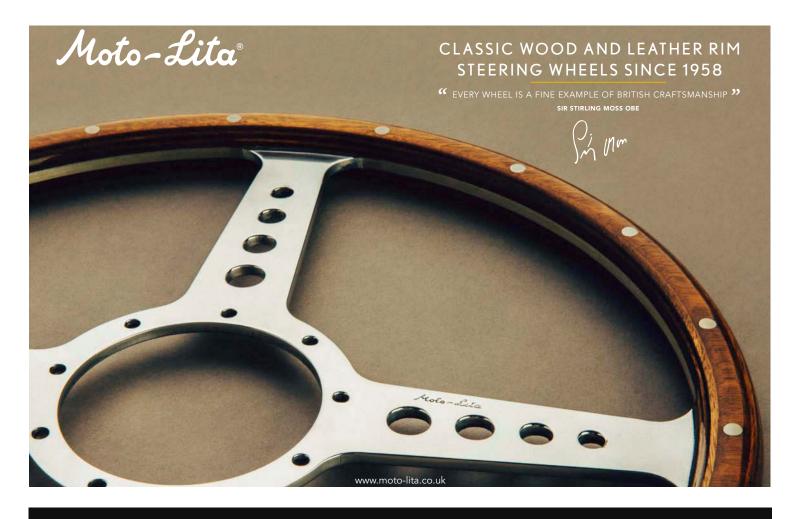
"TRY NOT TO USE THE GEARS MORE THAN YOU HAVE TO, IS MANSON'S ONLY ADVICE"

A-bracket location for the rear with the front location right up in the cockpit just aft of the gearlever. You still sit close to a big wheel, and the flathead Ford, to much the same spec as the Mercury's, feels and sounds very similar. It still thrums and drums too - maybe a little less while the gearbox is similarly Lincoln-derived but the clutch is dragging which makes my new-found double declutch less easy to accomplish. Acceleration is definitely better because the car is lighter, but the Manning's chassis feels very different on the track – as Manson says, it's much more of a race car, mainly he thinks because of the stiff chassis and the more effective rear end. The steering - which I know should be used as little as possible - is

still key to your connection with cars like these, and the Manning's is much lighter and more responsive so I'm not tempted to wind the wheel, even in the slow corners. Best technique seemed not to be a big input but a series of small nudges, to which the car responds nicely. Then the wheel is straight if you need some opposite lock.

The Manning's chassis and wheelbase is shorter - defined less by original saloon dimensions - so it's not quite as secure in the quicker turns, but the agility in the slower ones more than makes up for that. Sadly, by the end of my second session the clutch drag was getting worse and the brakes needed some adjustment so I called it a day, but just as with the Baldwin, more investigation would definitely yield more speed. The tracks on which they raced originally wouldn't have featured so many tight corners, otherwise the builders might have applied their ingenuity in search of a solution, but there's no doubt that more time on a quieter track might reveal ways to do it better - you simply can't rely on existing experience. They might look over-built and even a touch primitive by modern standards, but they are surprisingly effective on track. A clever use of available performance parts and scrapyard surplus enabled drivers to go racing on a budget and helped concoct a racing style unlike anything else.





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Four-time world rally champion Tommi Mäkinen is back in a domain he once dominated, this time as head of Toyota's resurrected team writer NICK TROTT

OMMI MÄKINEN IS 52. HE DOESN'T LOOK IT. His eyes glisten, he walks with an athletic, confident gait and an aura of composure surrounds him.

out...

His realm is the rally stage. He is one of two men who have won four consecutive world titles – the only other is Sébastien Loeb. He made his debut in the world championship in a Lancia Delta HF 4WD in 1987 and won the Finnish Group N championship a year later, but it would take another seven years before Mäkinen won his first WRC victory – again in his home country of Finland. Then it snowballed.

In 1995 he was signed by Mitsubishi. He won his first rally for the team in Japan 1996 then dominated for four years with 18 rally victories and back-to-back titles from 1996 to 1999. His last victory, driving a Subaru, came at the 2002 Rallye Monte Carlo. In 2003 he retired to build a rally car preparation business in Finland.

We meet him back on the stages of the Monte Carlo, where he took his final win. To say he has succeeded in building his rally preparation business would be an understatement – Tommi is here because his squad designs, builds and runs the cars for Toyota's return to world rallying. He's the boss – but a manager not a driver. Which is why everyone wants to know if he'd rather be in the car right now – back in his realm. "No, no. It's absolutely the younger guys' job," replies Mäkinen .

Few drivers have made the transition to management – the fierce selfishness and control freakery required to win as a driver creates friction in a collective. Friction and stress. Does Tommi feel the stress; and does he feel the pressure from Toyota? His body language says otherwise, but he jokes that he has another weapon to combat pressure. "I'm so stupid that I don't feel too much stress," he laughs. The self-denigration hides a smart management tactic – Tommi has recognised that he learned to cope with tension in his driving career and one of the key areas where he can succeed in his new role is to **D** absorb and deflect any pressure the team may experience. "Everybody is taking the pressure a lot and I try to be there to keep them as relaxed as possible. I try to tell them, 'Hey, come on guys. I'm sure that we will succeed.' Of course there is some pressure, but I don't take the most. I think many other guys take far more."

So why did Mäkinen opt to return to the pressure pot of world rallying, and how involved was he in Toyota's comeback decision? He explains that his business, Tommi Mäkinen Racing, initially created a "very special car" for Toyota and it snowballed from there. In fact, Tommi is being modest – the car he built was a private GT86 for Akio Toyoda – Toyota's president. Mäkinen was instructing Toyoda at the time, and the pair demonstrated the car at Rally Finland last year.

The discussions about WRC started "slowly" but finally Toyota asked him if he would mastermind the build of a Yaris, to the new-for-2017 WRC rules. He said he had to think "really carefully" and explained to Toyota that if it was serious there would be no half-measures. "I said 'If we go there, we have to go there absolutely flat out. It's the only way we can win, no compromises'."

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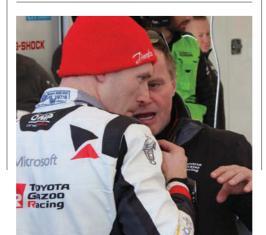
MÄKINEN EXPLAINS THAT THEY started the car from scratch, and therefore nearly a year of testing was crucial. He says that he knew the car would be faster and stronger with a dedicated and prolonged test programme, away from competitive rally stages and press or public scrutiny. "We were analysing, analysing, analysing, listening to the drivers' feedback and studying different areas of data as much as possible."

So did Tommi lend his experience as a World Rally Championship-winning *driver* to the team? "I did, yes. Quite a lot I have driven. I have some experience and I wanted to know the different areas to change, and how [set-up] changes affect the car. Then it's easier to discuss with the drivers and understand exactly what they need."

Much has been made of the increased performance and visual aggression of the 2017 World Rally Cars. Visually, Toyota's Yaris is a quite extraordinary. Underneath aerodynamic parts hitherto unseen on rally cars is the vague silhouette of a regular shopping hatch, but there the comparison pretty much ends. Mäkinen admits that the aero is effective even from very low speeds, and when you witness them on the stages the cars do appear drawn into the earth by some kind of subterranean magnet. Whether the increased aero effect, and power, will deliver a commensurate increase in spectacle will emerge as the 2017 WRC season unfolds and the cars move from surface to surface. The cars and the overall spectacle are, according to Mäkinen "looking good. Basically, because we could hear

Mäkinen may be taking a back seat to his drivers, but as a multi-title winner he has much to impart

"IT'S DRIVERS WHO ARE CLEVER, WHO HAVE THE KNOWLEDGE, WHO KEEP WINNING"



Despite Toyota's lengthy absence from the WRC, Latvala finished second to Sébastien Ogier in Monte Carlo. Right: Tommi Mäkinen in champion Mitsubishi days

the cars very, very far away. They gave a little bit more sound and that is very positive."

Of course, we all want to know how these new machines compare with the rally cars of 15 years ago. "When I was there, we were always saying that a certain car is more suitable for a [specific] condition and another car was better for that kind of condition. I would say that the improvement with the latest technology is that all cars are very, very fast and behave very well in every condition." Perhaps the biggest area of change however, is in the strength and reliability of the new cars. "I remember in my time, for example, there were always places where we had to slow down a lot, because the suspension behaviour was not so good and we could break something. Now, you don't need to care about anything, you go absolutely flat out." The glint in Tommi's eye, the excitement he tried to hide in his voice earlier, is now clear to see.

In that respect, we ask, does Tommi think that the modern cars suit a certain type of driver – a 'maximum attack' type driver? We namecheck one of Tommi's arch nemeses – Colin McRae. "Yes, maybe, but if I think about





driving style, it is not such a big difference compared to earlier. I would say that when the cars become bigger with a longer wheelbase, the Ford Fiesta and the Citroën C4, the cars didn't want to go sideways very much.

"That was the moment when everybody changed their driving style and they started sliding less... everybody realised that that was not the fastest way." Tommi explains that to this day the cars remain a "bit faster" when driven in a "similar, nose-forward and understeering style." *

AT THE TIME OF WRITING, TOYOTA HAS confirmed two drivers: Juho Hänninen and Jari-Matti Latvala. A third driver is likely to be announced later in the year for certain events. Does Tommi feel that, with the current pairing, they have two drivers with a similar driving style?

"That's the interesting area. I noticed that now we have two drivers [whose] driving style is very, very smooth. Juho is braking very smooth. He's accelerating very smooth. Jari-Matti is more on-off and his braking is pretty aggressive in to the corner and when it opens, immediately he wants a completely different response from the engine. That's very, very different.

"I did quite a lot of set-up last autumn on gravel when we tried something new on the car. I was working very well because I have some knowledge. But Juho didn't like that very much, because his driving style was different. He was going far softer and it didn't really satisfy my set-up. Jari-Matti came to drive the first time and he did the first snow test and the set-up was from Juho and he was thinking and thinking and thinking and looking what I could do different. I went to look when they tested it and I said to Jari-Matti, 'Try that. I remember I did something and I'm pretty sure that would be suitable to your driving style.' They did the changes and straightaway he was clearly faster. Of course, they are not such massive changes, but different driving style, you need a different kind of set-up."

Tommi goes on to explain that his ideal car set-up fits somewhere between his two drivers. "My suspension and transmission set-up is very similar to Jari-Matti, but I have similar engine mapping to Juho because I'm not doing that much on-off [the throttle]. I want to control without trouble."

In that respect, has Tommi identified differing levels of component wear on his drivers' cars? "Yes. Big, big, big. Juho is far more gentle for tyre wearing. Jari-Matti's style is more aggressive and he is wearing the tyres and it's a question of distance performance. I had a style on tarmac that was always very, very smooth and not wearing the tyres too much. I could just drive the car on the limit of the tyre performance, which was not wearing them.

"I have spoken with drivers about that; when you are driving, learn your car. You need to understand the way the car wants to go fastest. It's not a question that one car is built for him. That is not true. A car has so many possibilities. You can do whatever you like to do. If the driver is clever enough, he understands the car and how it wants to go fast. It is drivers who are clever enough, have the knowledge and understand; they keep winning the titles." Without a shred of self-awareness, it's clear that Tommi is describing himself with this comment.

With that, Mäkinen heads back to the service area. He's always surrounded by fans and selfie-hunters, but is confident and open in a crowd. Indeed he is excited and encouraging of a new fan zone created alongside the team gazebos in the service park.

He's a rare breed in motor racing, displaying confidence without arrogance and self-reflection without ego. And perhaps rightly so. Perhaps he knew that he had done everything possible to turn the Toyota (and its drivers) into winners. For at the very next rally, in Sweden, Jari-Matti Latvala won outright for Toyota in only the car's second rally.

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MM

HE SON OF TRIPLE 1000 LAKES and RAC Rally winner Timo, Tommi Mäkinen's competition career began on tractors and he was twice crowned Finnish ploughing champion during the 1980s. He switched to rallying in 1985 and won the national Group N title three years later. Mäkinen

graduated full-time to the WRC in the middle of 1990 with a Mitsubishi Galant VR-4 and Seppo Harjanne as his co-driver. He finished third in the Group N standings despite his late start.

Occasional works drives with Mazda and Nissan were followed by the offer of a factory Ford Escort RS Cosworth for the 1994 1000 Lakes. "I'm still not sure what happened," he said after beating the recognised stars to establish his reputation on the world stage.

Mäkinen joined Mitsubishi in 1995, although mechanical failures, accidents and team orders prevented victory during that frustrating first season. However, that was the prelude to unprecedented domination of 1996-99 – a period that included 18 victories as Mäkinen became the first driver to win the WRC title for four years in a row. It is a feat that has since been equalled or bettered only by Sébastiens Loeb and Ogier.

Mäkinen spent two more seasons with Mitsubishi, finishing fifth and third in the title race, before moving to Subaru. A two-year stint included his fourth successive Monte Carlo Rally win before he decided to retire from the sport at the end of 2003, with 24 WRC victories to his name.





TOULTEN

'Data Trace' was born from *Motor Sport*'s online Database, which includes results from around the world, from the mainstream to the obscure. There are full results for the sport's main championships, while the history of others is detailed with race winners and champions, a feature that is expanding all the time. Add to those 9000 driver profiles (and counting), 750 circuit histories and a compare/contrast function for all F1 drivers.

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Also from the 1969 F2 race: Piers Courage's Frank Williams-entered Brabham BT30 hogs the focal point, with Jacky Ickx (BT23C) and Jo Siffert (BMW 269) fore and aft. Rindt's Lotus is just coming into view behind. Courage finished third, Rindt retired after an accident and engine failures accounted for Ickx and Siffert. BMW's 1960s singleseater campaigns are often overlooked. Jo Siffert (BMW 269) leads a group comprising Piers Courage, Pedro Rodríguez and Robin Widdows. Bottom, close finish as Cevert wins from Widdows and Courage - the trio covered by one tenth.

PRIVATE PRIVATE VIEW A 'YOU WERE THERE' SPECIAL

A treat this month: it's many years since the fast Reims-Gueux circuit hosted racing. Luckily, photos can sweep us back there



ny professional photographer would be thrilled to have these images among their portfolio, yet Michel Mathieu says he is just "a passionate person who loved motor racing". Michel's father lived in Gueux and attended every race from 1926 to 1969. Michel recalls that in 1939 his father saw Caracciola's Mercedes crash, and then collected some of its exotic fuel: "He was surprised he could not set fire to it!" In 1959 his

son joined him, with camera, and from then until racing ceased Michel recorded the atmosphere and the spaciousness of this flat, open triangular circuit with its brake-boiling hairpin.

Michel retains particularly clear memories of the 1963 French GP. "We could see in the distance the exit of the little wood that marked the start of the downhill run towards Thillois. A little green car appeared – a Lotus, a BRM, a Brabham? – and then an eternity. Had there been an accident? No, that was the gap behind Jim Clark..."

Last year Reims-Gueux celebrated its 90th anniversary and many of the original pit buildings are famously extant (and also now partially restored, to help preserve them against the elements). If you are in the area, head west from Reims on the N31. When you see La Garenne restaurant to your right, filter to the left and you'll be on the old pit straight – the perfect time to switch on your imagination. Meridien Modena, the Ferrari and Maserati dealer for the South, requires:



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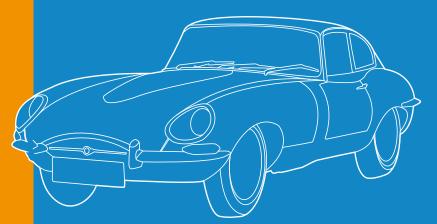
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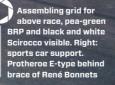
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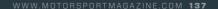
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TARMACADAM

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Private View Michel Mathieu



Jackie Stewart skims Toto Roche's heels, left, as Henri Grandsire looks for gears in his F3 Alpine, 1964. Right, Jim Clark is unaware of admiring glances







Above, Johnny Servoz-Gavin, Matra MS7, about to join eventual winner team-mate Stewart, above right, and Rindt (Brabham BT23C) on the 1968 F2 grid. Right, Pescarolo, soon to be second for Matra, looks relaxed; Stewart looks alert; Rindt looks for his goggles

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If you have any images that might be suitable for *You Were There,* please send them to: *Motor Sport*, 18-20 Rosemont Road, London, NW3 GNE

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ON THE ROAD WITH SIMON ARRON

From Abu Dhabi to Zolder via Interlagos, Jerez and, obviously, Oulton Park. Where next..? www.motorsportmagazine.com/author/simon-arron



TALES OF THEUNEXPECTED

Daytona Speedway, January 26-29: a new era dawns... and one of sports car racing's most enduring careers concludes on a high note T ALMOST DOESN'T bloody matter what happens for 23 and a half hours. Everything counts from the last yellow flag..." Fresh from victory in the GTLM class with Ford, Sébastien Bourdais had a

point. Whatever one might think about caution periods and the potential for associated artifice, though, the 2017 Rolex 24 at Daytona ended with spectators unsure quite where to look. Should they watch the all-Cadillac duel at the front? A Ford vs Porsche vs Ferrari battle in GTLM? Or the constantly fluctuating GT Daytona tussle, settled by 0.3sec after a contest led at various stages by most of the nine competing marques?

Pity those in the Prototype Challenge class, making its final appearance at this event: five cars, a range of driving abilities that descended rapidly from preternaturally gifted to terminally clueless and a 23-lap margin of separation by the finish.

Backdrop to the above was the commencement of a new era for American sports car racing, with the adoption of Daytona Prototype international (DPi) regulations for the **D**



SIMON ARRON

premier class. This allows manufacturers to choose a cutting-edge LMP2 chassis from one of four European manufacturers licensed to produce them, then top and tail it with their own bodywork and engine - much more creative than a simple spec formula, but a long way distant (and vastly more cost-effective) than the fascinating hybrid complexity of LMP1.

Cadillac was swift to embrace the new concept and its developmental head start told, its cars setting the pace from the start with Nissan, Multimatic/Riley, Oreca, Mazda et al squabbling for crumbs. A late caution flag might have guaranteed a tight run to the finish, but in truth the battle had been close from the off. This was not a typical Rolex 24, in that the 'Sunshine State' was anything but (the safety car was out for more than two hours during overnight rain, and the temperature could often be measured in single figures) and the final denouement was steeped in controversy.

In the hands of Filipe Albuquerque and the chasing Ricky Taylor, the leading Cadillacs touched at Turn One during the closing stages, the Portuguese driver spinning before rejoining to finish little more than half a second in arrears. "I would have felt a bit ashamed to win like that," Albuquerque said. "In the Tour de France, when one guy falls the other riders wait. If a true racer makes a mistake like that, they should back off - not just drive away."

Taylor's response? "I think he saw me committing and closed the door. But if he knew I was doing that, why would





you close the door and make us crash?" The stewards concluded (very swiftly, as they had to with only a few minutes remaining) that Taylor had no case to answer, so he took the flag to share victory with brother Jordan, Max Angelelli and - a useful headline for

Top, from left, retiring Angelelli with Gordon and the Taylor brothers. Above. the top two were closely matched throughout

that this was to be his final race. "Max and I won the 24 Hours together in 2005," said Taylor W, "and now he's done it with my kids, which is really, really special."

Part of the vanquished crew alongside Albuquerque and João Barbosa, Christian Fittipaldi was sanguine. "Was it a clean pass? I don't know, but it's definitely going to help sell tickets for next year."

Perhaps so, but the race deserves that much for the overall quality of the show, not just Gordon's celebrity status or the nature of the conclusion.



*

IT WASN'T JUST THE HEADLINE act that generated close finishes at Daytona. On Friday afternoon the meeting began with the opening round of the Continental SportsCar Challenge – a four-hour enduro embracing everything from Ford Mustangs to thoroughly modern MINIs.

With the pace-setting Mustangs striking trouble, the GT4-spec Porsche Caymans took the top four places overall (and in the Grand Sport division), Trent Hindman and Daytona neophyte Cameron Cassels surviving a timeconsuming spin at the chicane before recovering to win by half a second.

Sometimes when you're standing trackside, you need to do a double-take to make sure you're not imagining things – and thus it was in the slower Street Tuner class. A MINI Cooper's shoebox silhouette does not look terribly well suited to Daytona, but one of them compensated by looking eons



quicker than everything else through the infield section and chicane (despite the opposition comprising assorted Porsche Caymans and BMW 328is, one of the latter shared by London Olympic swimming gold medallist Tyler Clary).

There is no PA at the far side of the circuit, so it's tricky to keep track of progress, but returning to civilisation confirmed that one's eyes weren't being deceptive as the MINI of Derek Jones and Mat Pombo finished 1.5sec clear of three Caymans. "Ours isn't the most 'aero' car for Daytona," Jones said, "so this is a little unexpected."

Perhaps so, but it was absolutely wonderful to behold.

COLD SNAP OVERSTEER

ndallan.co.uk

Brands Hatch, January 21: ice-pick at the ready, there are Ford Escorts on the horizon...

HE TEMPERATURE GAUGE HINTED AT minus five and my Punto was more ice sculpture than Fiat, but that was no deterrent ahead of my first visit of the campaign to a traditional racetrack – albeit for a single-venue rally.

Chelmsford MC's MGJ Winter Stages has become a regular fixture at Brands Hatch and moved this year from Sunday to Saturday, a decision that added an hour to the permitted running time and thus allowed a few more entries. Most of the 88 cars seemed to be have the word 'Escort' glued to their flanks, despite the Mk1 having been out of production for more than 40 years and the Mk2 for more than 35.

Which millennium is this again?

Clockwise from above: winner Swift; closest challenger Hodgson; Taylor/Haggett Sunbeam; Brands pit complex converts to soecial stage It was to be a troubled event for some of the fancied runners. Winner in 2016, the Peugeot 306 of Chris West/Harry Brown was swiftest on the opening stage, but then hit an unnecessarily solid course marker on the second. Parts of the route were lined with harmless plastic cones, but in between were slabs of what looked like nuclear-grade concrete – sufficient to swipe a corner from a slightly offline 306. The Escort of lan Woodhouse/Paul Rowland didn't get that far, pulling off to retire before it had reached the



opening stage's first right-hander. It wasn't the best of days to be relegated to a spectating role, either. Early in the afternoon somebody mentioned that the temperature had picked up: perfectly true, it was by then two degrees.

Escorts took three of the top four places, with Paul Swift/Patrick Walsh defeating Martin Hodgson/Tony Jones by eight seconds, and the Talbot Sunbeam Lotus of Mike Taylor/Martin Haggett added a further retro flourish in fifth. Other desirable bygones included the Vauxhall Chevette of Steve Bowie/Steve Dear, the Autobianchi A112 Abarth of Alistair Oxley/Brian Commons (which sadly never made it to the start) and the original Mini of Alec & Mark Holding, while various low-budget hatchbacks delivered a sub-Escort spectacle but provided a valuable stepping stone that's ever essential at this level.

Some cars were beautifully driven – throttle artistry being used to particularly good effect to negotiate the tight pitlane hairpin – while many others were absolutely all over the place. It mattered not: it's possible to have a good

time without setting a good time.





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HISTORIC SCENE WITH GORDON CRUICKSHANK

One wheel in the past: searching out what's new in the old car world

www.motorsportmagazine.com/author/gordon-cruickshank





A one-off hillclimber is ready to reappear in competition after three silent decades in storage

HÂTEAU IMPNEY

hillclimb seems to have become a high-season target to tempt unusual machinery out of the workshop. This year an Alvis special that hasn't run for years will sprint up the Midlands hill, reawakened from a three-decade slumber for its new Norwegian owner.

Built by brothers Billy and Eric Goodwin in 1946-7, the good-looking device, its shape clearly echoing the Alfa Romeo Alfettas which were topping the post-war Grand Prix charts, hit the track in 1948. With Billy Goodwin at the helm it quickly achieved success, especially at Shelsley Walsh with a series of class wins and one international record. Divested of its hillclimbing twin rear tyres, Billy also took it on the track though with less impact, except on its driver who suffered burns when at Oulton in 1955 the scuttle-mounted header tank burst, scalding him with hot coolant. It was the finish of Goodwin's racing, and the end of the car's career until the 1970s when it reappeared in VSCC races. Since then it has remained immobile in a private collection until last year, when our Scandinavian **D**

GORDON CRUICKSHANK

enthusiast added it to his stable of Alvises. Now it's being recommissioned by Earley Engineering in Herefordshire, who have plenty of Alvis expertise.

"It's one of the many Shelsley specials of the time," says Alex Simpson who's in charge of the job. "The Goodwins were hillclimbing before this, but they decided to build their own machine patterned after the Grand Prix cars of the period."

Instead of adapting an existing chassis the brothers used their fabrication business to construct a bespoke twin-tube frame with some advanced features. "There's substantial crossbracing," says Alex, "and in the centre the engine and gearbox are used to brace the frame; they're actually load-bearing. It was built with independent twin wishbone suspension all round, using long torsion bars at the front and a transverse leaf spring at the rear sitting over a cage that hold the diff. "

All their own design, too, though utilising Humber Super Snipe parts up front and Alvis rear hubs and hydraulic brake system. The gearbox too is from Alvis, an all-syncro four-speed Silver Crest unit which was a special-builders' favourite back then. So much so, says Alex, that you can't find a whole Silver Crest today.

"We don't know who made the very pretty body," Alex says. "Probably a local coachworks, but it's built with low frontal area, skin-tight to the engine."

Powering the machine is a 4.3 Alvis six, gulping fuel through an English-asmuffins triple SU carb set-up and blue-printed, with lightened crank and flywheel, high-compression pistons, gas-ported – basically using all of Earley's expertise in preparing these units for racing and rallying. Says Alex, Alvises make extremely sturdy rally cars: "We began with restorations, but increasingly we're doing endurance rally prep and we've had great success on events like Peking-Paris, the Patagonia Rally and Trans-America."

Though purchased complete, the car has been stripped down for all the crack-testing and refettlement an old racer needs before relaunching its career.

When completed Alex expects the Goodwin to throw some 200bhp and 360lb ft of torque down the Shelsley ashphalt – but that ain't enough: "The Goodwins ran it from the start with a supercharger, and at the end of this year we'll be returning it to blown specification, with a Roots supercharger driven from the crank nose and twin SUs. In that spec it was up around 365hp..."

Really? "Oh yes. I've been liaising with Rod Jolley, who has a strong



Goodwin Special before the rebuild

that will eventually

restore it to fearsome

boosted specification

interest in this car because it has such history. He is refurbishing the Giron Alvis for this year, and he's getting north of 400 with a similar set-up." This is good news too – I've missed seeing that lengthy single-seater missile in action with the ever-flamboyant Jolley winding off armfuls of opposite lock.

"We're sharing knowledge with Rod," continues Alex, "as although we have supercharged some road cars with 7-8lb boost this will be up around 16lb so there's plenty to learn from him."

The plan is for Alex to get fully on top of the Goodwin special in its unblown form, which is how it ran in the 1970s, before adding even more gobs of torque. Sounds eminently wise to me. "And I need to get used to the two configurations – single wheels on the circuit and twin rears for the hills. But in the first year while I and the owner find our feet we'll stick to sprints and hillclimbs."

April is the target for a first shakedown. Comments at the time, says Alex, were that it was very predictable with none of the brake tramp a lot of vintage cars have. "Because it was so stiff it could be set up quite softly – you'll see in the photos there's quite a lot of roll. Independent suspension was still quite rare then, and a lot of people were running pre-war machines so by comparison it seemed sophisticated."

With Château Impney and Shelsley's Classic Nostalgia meet pencilled in among other events this season, you should have a chance to see this unique device in action. I hope they've moved that header tank.



A MINI ADVENTURE...

...but BMW had nothing to do with this one

HEAR THAT A DEDICATED MINI ENTHUSIAST has tracked down the remains of the Mini Marcos that tackled the 1966 24 hours of Le Mans, its A-series BMC powerplant buzzing it down that interminable straight while bellowing MkII Fords rocketed past at 200mph plus. Nicknamed 'La Puce Bleu' or Blue Flea and driven by Jean-Louis Marnat and Claude Ballot-Léna, it achieved a surprising 15th place at the finish – the only British car to last right through.

Not being a very valuable historical item, the pocket-sized device disappeared from the records in the 1970s, but Mini historian and author Jeroen Booji recently followed a tip off and found the car in Portugal. I say car; in fact most of the running gear has vanished, including the Cooper S engine, but under several layers of paint the glassfibre monocoque retains the original blue and yellow livery, plus the wide arches, various mountings and the 80-litre fuel tank fitted for the race. Booji plans to rebuild the little machine in its Le Mans form, so look out for a tiny entrant at Le Mans Historic –accompanied by some unmistakable gear whine.



Dick Scammell is responsible for the supervision of all the racing teams, each of which has its own chief mechanic. He is also responsible for all technical matters and control "in the field" at race meetings.

Peter Warr is responsible for all commercial matters, in connection with the Team's operations, such as bookings for Team movements, negotiating appearance monies, administering contracts, liaison with the Press etc., etc.

WORLD CHAMPION CAR CONSTRUCTORS 1963, 1965, 1968

PUTTING **US RIGHT**

Motor Sport has always been read by racing's high-ups, as a letter from C Chapman shows

IDYING UP MY HOME OFFICE RECENTLY. I turned up several things I rescued from Motor Sport's old home, Standard House in the old printing quarter north of London's Finsbury Square, before we moved out. So much historically interesting paperwork - letters, photos, brochures, press packs etc - was simply pulped, not to mention thousands of Motor Sport back issues dating back to the 1940s. Makes me wince to remember the row of filing cabinets filled with press information all neatly labelled in Jenks' handwriting. Material collectors would fight over it on eBay today - including the card from Enzo Ferrari and Jenk's written brief to me about 'replicas': "All Bugattis are fake unless DSJ says otherwise..." Still, if everyone kept everything, none of it would be worth anything.

Under the direction of these three we normally operate a number of entirely separate racing teams in selected categories of racing, each with its own chief mechanic, and in the case of Formula One this is Gordon Huckle. Nanufacture of the cars is supervised by Colin Knight, and stores and material programming comes under Dennis London.

I trust that this information will help you in future perhaps to understand better the functions of each man in Team Lotus, and should you ever find occasion to refer to them in your editorial matter, you can appreciate what their title and status is. Thank you.

I enclose herewith biographical notes on the three senior personnel for your information.

Yours sincerely,

dinchapm

One of the items I found is a letter to Bill Boddy from Colin Chapman on Team Lotus headed paper, dated July 1970 and outlining responsibilities at Team Lotus. Reading between the lines, WB must have ruffled someone's feathers at Potash Lane over job distinctions because the Lotus supremo opens firmly: "Team Lotus personnel are always pleased to see their efforts recognised in your magazine by personal mention... but sometimes unfortunately the various functions within the organisation are not correctly interpreted."

Polite but pointed - Colin Chapman's missive to WB. one of the few items to survive the emptying of Standard House

He goes on to point out that "...apart from myself who is in overall control of all Team Lotus operations..." he has three managers, "all of equal importance." Chief Designer Maurice Phillippe is "...responsible for all design work along policy lines agreed between him and myself at the commencement of each design programme."

Dick Scammell is Racing Manager, responsible for all the racing teams as well as all technical matters "and control 'in the field' at race meetings", while Competitions Manager Peter Warr looks after "all commercial matters such as bookings for Team movements. negotiating appearance monies, administering contracts, liaison with the Press etc, etc."

Under these three, Chapman continues, "we operate a number of entirely separate racing teams, each with its own chief mechanic, and in the case of Formula One this is Gordon Huckle."

Chapman closes, with sub-zero politeness: "I trust this will help you in future perhaps to understand better the functions of each man in Team Lotus, and should you ever find occasion to refer to them in your editorial matter, you can appreciate what their title and status is. Thank you."

Perhaps it was a build-up of vague personnel

30th July, 1970.

references over the years that made the Lotus boss pick up his pen, or at least tell his secretary to stick a sheet of headed in her Olympia. Or maybe it was the story we ran a couple of months before about Lotus Components, later confusingly renamed Lotus Racing, the entirely separate operation which built customer racing cars. There were obviously icy undercurrents there as Lotus Racing was suddenly closed by Chapman in 1971, putting most of its staff out of a iob However, Gordon Huckle and many of the Lotus Racing staff would go

on to be part of racing car manufacturer GRD (development driver T Walkinshaw).

Whatever the trigger, Chapman had put WB right on Lotus rankings - but there was never any doubt who sat at the top of the Lotus tree.

As a passing thought, any time the name Chapman came up when I was talking with Wesley J Tee, Motor Sport's erstwhile and ancient owner, he would mutter "that lad [sic] still owes us £13 4 shillings for an advert..." So if the Lotus finance department is having trouble making the accounts balance...

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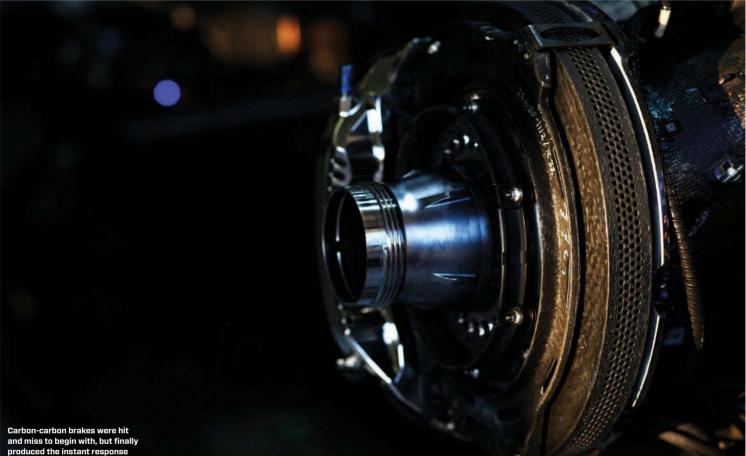
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FROM THE ARCHIVES WITH

DOUG NYE

Our eminent historian dips into the past to uncover the fascinating, quirky and curious



and cooling that teams sought

NEWS ON THE BLACK STUFF

Carbon brakes slashed F1 braking distances - once many dramas were resolved

EROSPACE ENGINEERING and Formula 1 design are inextricably entwined. To some extent one of these frontier technologies has benefited from developments fostered by the other, way back into the mists of time. There are many examples. The Daimler company's Mercedes GP car for the 1914 season featured lightweight engine construction. Almost immediately more pressing global concerns than mere motor cars chasing one another around in circles led to the technology literally taking off in the

Great War's military aero-engine race.

Back in the mid-1970s one of Formula 1's greatest forward leaps came in the development of carbon brakes. Gordon Murray of Bernie Ecclestone's Brabham team was reading about the technology featured in the Concorde supersonic airliner project. Just a passing reference to its carbon braking system really caught his eye. It claimed a weight saving of "about 1100lb" compared to a then-conventional metal disc/friction pad system.

Now a Concorde's under-swingings featured a lot of brakes, but it was the weight-saving prospect that riveted \square

DOUG NYE

Gordon's attention. He contacted Dunlop – who made the Concorde brakes – and met their specialist engineers to discuss the possible application of carbon brakes to Formula 1. Dunlop began development of a suitable set.

Everyone was worried about using full 'plastic' brakes because little was known about the material's behaviour in extremis. Consequently what emerged was a steel disc drilled to carry ten carbon 'puck' inserts on each side. Each 850C in racing it would become oxidised in the cooling airstream we had provided.

"This had the weirdest effect. We could run 60 or 70 laps with negligible brake wear and perfectly adequate performance and then in just two qualifying laps the driver might exceed that critical temperature and the material would simply dissolve! The brake would end up like a piece of ragged, floppy cloth – total scrap!

"That triggered a lot of development work with Hitco, including anti-oxidant coatings for the carbon material, but we eventually found that cooling was the real key - you had to control that temperature build-up, and attention to cooling in the finest detail really paid off. Unusual wear, too much bite in one application, not enough in the next uneven temperatures producing a similar effect, with carbon-carbon capable of generating such terrific heat so rapidly, and then capable of cooling just as rapidly, we had real headaches with differential expansion of materials ... ". They eventually adopted

puck had matching radii machined into it, apart from the final one to be installed which had a flat on one side – you fitted them all around the disc and then twisted the last one and it locked them all into place like a Chinese puzzle. This was a neat way of combining the lightweight, frictional and hightemperature-resistance properties of the carbon material with the known stability of a metal disc.

Those brakes were raced during 1976 on the works Brabham-Alfa BT45s driven by Carlos Reutemann and Carlos Pace. The South Americans needed patience. Pace wrote off one of the cars in Austria when he tramped on the brake pedal to find nothing at home and promptly creamed at high speed into a trackside barrier. It was found the disc diameter had grown, the disc touched the caliper and the heat then generated had boiled the brake fluid, so when he hit the brake pedal it simply compressed the vapour in the system and the pedal went straight to the bulkhead without applying his brakes at all...

Scary stuff indeed.

By the late 1970s carbon brakes were gaining widespread acceptance throughout the aircraft industry. A landing aircraft only needs one major braking application, after which taxiing needs are relatively intermittent and mild. Operational demands in racing cars could hardly be more different; ferocious,



frequent, repeated many times.

In Brabham's pioneering case Gordon heard of a specialist Californian company named Hitco – a division of Armco steel – which manufactured carbon brakes for the aircraft industry, not only for undercarriage wheels but also as rotor brakes in helicopters. Gordon struck up a productive working relationship with Dave Gibson of Hitco and they reached an exclusive co-development agreement for F1 to perfect an 'all-plastic' disc brake rotor that would replace the Dunlop pucktype halfway-house system.

Initially, in 1980, Brabham used 0.7in-thick solid carbon-carbon Hitco discs. Theoretically, carbon pads on carbon discs should have been good for 2500deg C without degrading but as Gordon recalled: "We found in practice if we ran the material to just barely above Brabham-Alfa BT45 of 1976, top, employed an interim carbon/steel brake disc. By 1983, SEP had developed a full carbon/carbon system for McLaren, above. silver-plated aerospace nuts which could withstand the temperature range ramping up and down so rapidly around a circuit without working loose, chattering and eventually letting something vital come adrift.

"For some time we took the conservative option and ran conventional cast-iron brakes on circuits like Monaco, Montréal and Detroit, and only used carbon-carbon on 'light demand' circuits like Silverstone, Hockenheim and Monza. But the system developed quite rapidly, and by the end of 1983 we were sufficiently confident to rely exclusively upon carbon brakes."

As also, by that time, were McLaren with rival French-made SEP carbon brakes. Contemporary McLaren designer John Barnard worked initially with Goodrich in California "...and I vividly remember organising a test at Donington with Niki Lauda driving. We had one set of each alternative to try. We were using the standard small twin AP caliper, and there was a set of Goodrich solid, non-ventilated discs, a set of new SEP discs from France and our normal iron disc as a baseline.

"We set up the car with the carbon discs, ran it and it was just stunning! It instantly shortened the braking distance at the end of the Donington Park straight from about 100 yards on the iron brake down to 60 yards on carbon." With their contemporary ground-effect car "Niki could just stand on the pedal at the last possible moment, and the thing would just stop. That test really drilled it home, carbon was the way to go." While the Goodrich system was basically a helicopter rotor brake, SEP was committed to developing specialised carbon brakes for racing cars, and so JB worked with them and ran their brakes through 1983.

But what he recalled of development was how, "With the conventional iron disc, once it was soaked with heat you then had to get rid of it. You could see it while testing near dusk. You'd see the car coming down into the braking area, and with iron discs you'd just see a dull glow slowly build up, then dim down slowly after the brakes had come off as the heat was slowly dissipated."

In vivid contrast, "With the carbon brakes you'd suddenly see this orange light bulb switched on inside the wheel.... It literally looked like that, the heat would build up so rapidly. And then they'd come off the pedal and *boomp* – literally just like that – the light bulb was switched out."

I vividly remember one of the Carloses' Brabham BT45s having just flurried into the pits during practice at the Nürburgring, front hubs apparently bursting into flame as it stopped. Gordon: "The carbon disc would heat up to a surface temperature of 1000 deg C – and at that level anything that could see it would suffer. Heat radiation alone would ignite bearing seals, melt the hub grease, boil fluid in the calipers, heat up the wheels and cause the tyres distress..."

And the most vivid report I have ever heard of carbon-brake heat radiation is of the wind-blown summer butterfly that came innocently fluttering by only to be blown too close to the just-parked Brabham with its incandescent prototype brakes. And in mid-air, mid-flutter – *pooph!* – mother nature's most delicate and fragile beauty just burst into flame...and was gone.

The reign begins in Spain

HIRTY YEARS AGO THE 1987 WORLD Sportscar Championship opened in March with qualifying races run on successive weekends on the Jarama and Jerez circuits in Spain. The first race was over 240 miles, the second a full six hours. Porsche had already announced a reduced Group C programme for that new year and arrived with just two cars, but only one pair of works drivers – Derek Bell and Hans Stuck Jnr. They rejected their 1986 manualgearbox Porsche 962 in favour of a freshly built works car that had the latest PDK semi-auto dual-clutch transmission and Kevlar body panels saving about 60lb in weight.

Britten-Lloyd Racing ran its honeycombchassised home-built 962 clone, the Kremer brothers' team had two TC Prototypes-built honeycomb-chassised '962s' and Brun two standard ones, plus another TC-tubbed version. But Porsche's finest were all humbled by the TWR Jaguar team in practice as the Silk Cut-liveried 7-litre V12-engined XJR-8s locked out the front row.

The Jan Lammers/John Watson Jaguar would win the Jarama race from the Bell/Stuck Porsche, with Wattie giving TWR team chief Tom Walkinshaw fits in the closing stages as he allowed his lead to be eroded while attempting to save fuel. In fact there was no need – or he was supremely successful in doing so – because his winning XJR-8's tank – or at least, the one the scrutineers knew about – still had eight litres in it after the finish, while the Porsche's tank was down to just three.

For the following weekend's six-hour race the Jerez circuit's then-bumpy surface proved a major problem. Those Group C cars generated enormous downforce from their huge-area ground-effect underwing sections, and while the initial shorter race had gone largely hitch-free, for half the grid this longer haul proved a stretch too far. As the race ground on, suspension and steering failures led



to half the entry flurrying off in all directions – as one report said "Into the gravel if they were lucky – the Armco if they were not – and all the while [the track] shook the cars to pieces.... Damaged suspension was the order of the day (only the first and second in each class escaped the worst effects) as the pit lane rang to the merry clang of hammers on pick-up points...". Oh what fun.

The TWR-Jaguar team triumphed again – with Eddie Cheever/Raul Boesel bringing home the winning XJR-8 ahead of Kremer's Porsche 962 driven by Volker Weidler/Kris Nissen, which relegated the works Bell/Stuck 962 to third, much to the Kremer guys' delight.

Group C racing was not immune to some of the regulation inanities more publicised – then and now – in Formula 1, and Eddie Cheever's race win for TWR in some way compensated for an \$8000 FIA fine incurred because he had forgotten to report for signing-on...

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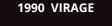
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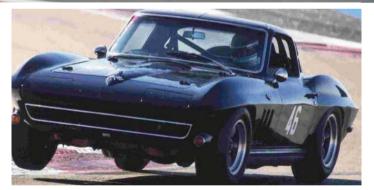
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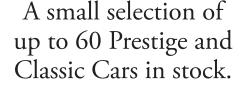


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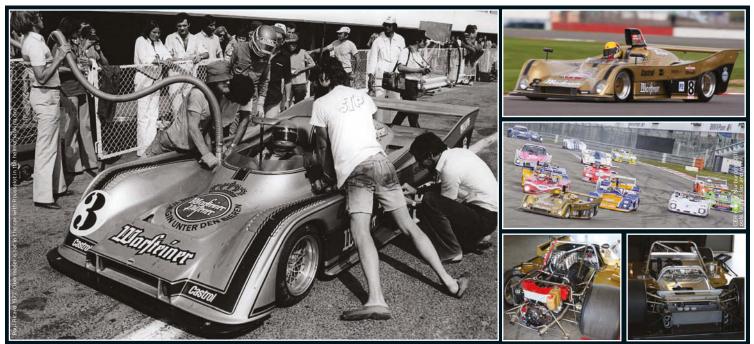
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Lotus Elan GTS spec Race Car. Just finished with new HTP papers. Smirthwaite Steel engine 170bhp Yarwood Straight Cut Close Ratio gearbox. Alloy Bellhousing Salisbury LSD. The car was constructed for long distance racing with the emphasis on reliability. This is a very strong car that would suit a novice racer.



Lotus Elan S4 FHC. 1970. This Elan is in a lovely condition and is fitted with Spyder Spaceframe Chassis. Safety Devises. Roll Bar. Side Intrusion Bars. Alloy Radiator. A good road or Hillclimb/ Sprint car. Excellent Value.

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This car is in 1982 87B specification which included a wider body, swept rear suspension and a longer wheel base to aid aerodynamics and therefore performance. This particular car was raced by future world Champion Nigel Mansell during his first season of F1.

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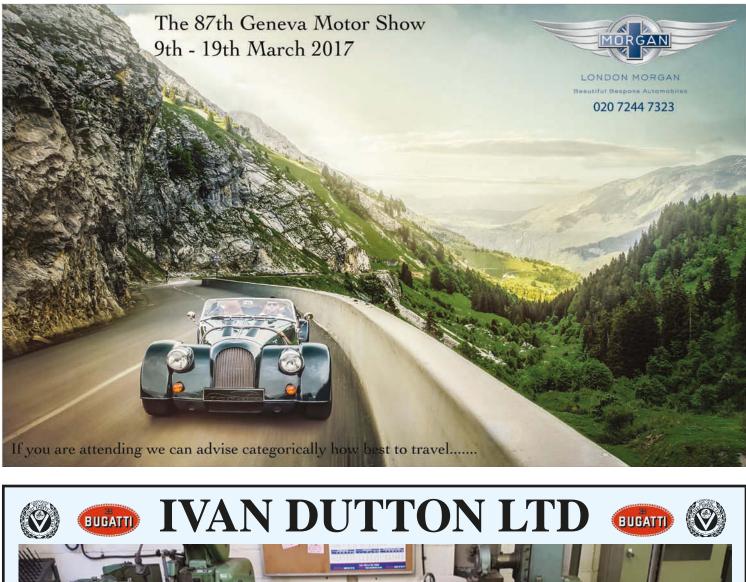
The car has a new 1.5 litre engine built by Jim Evans Alfa and has only dyno hours running time. It is beautifully presented and ready to race. It benefits from a very large spares package including bodywork.

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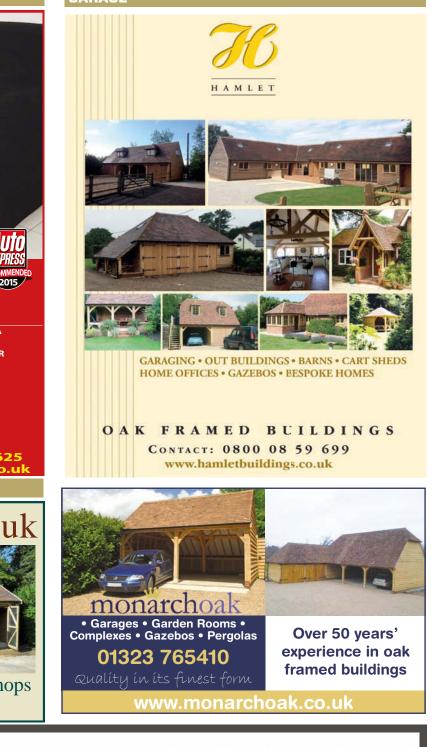




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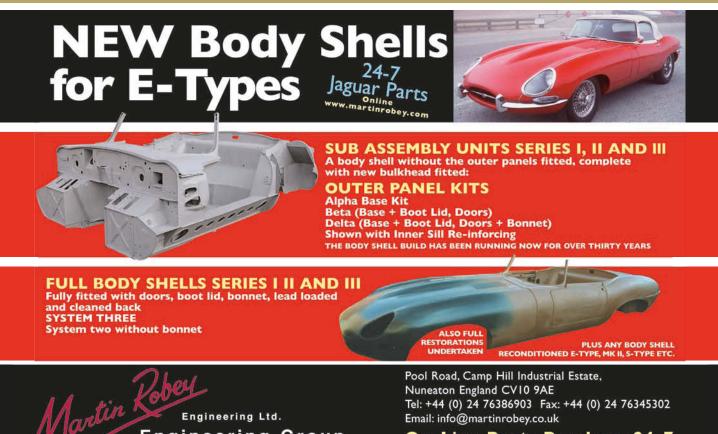


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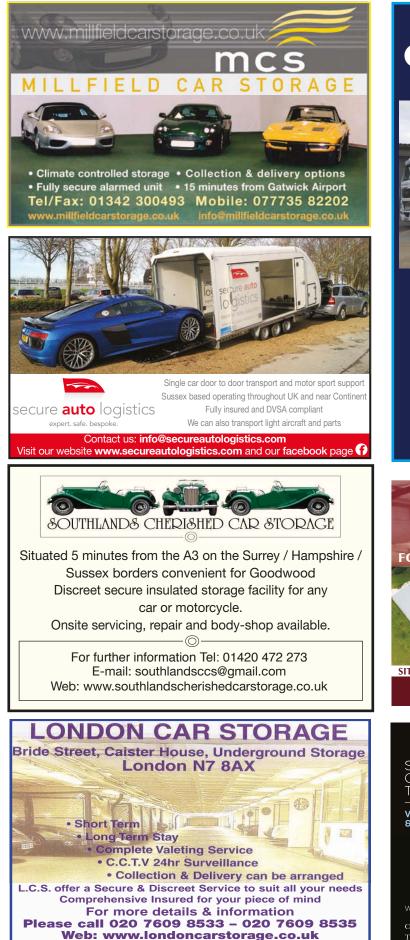
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m o t o r s p o r t manufacturing & machining

WORK FROM DRAWINGS **OR ORIGINAL COMPONENTS**

FULL CNC 4-AXIS MACHINING CAPABILITIES

> **FULL PATTERN SHOP** ASSOCIATION

FULL FOUNDRY ASSOCIATION DIGITISING FACILITY



Alfa Romeo 8C 2300 Gearbox





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