

# STARS & CARS

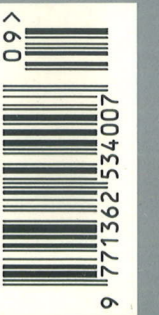
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## OUT OF THIS WORLD

How West McLaren-Mercedes joined  
the space programme

- FORMULA 1 Building a championship winning engine
- CART Helio Castro Neves, the new Mercedes star



# STARS & CARS

The magazine of Mercedes-Benz Motorsport

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### Canada glory at last

For Mika Hakkinen the Canadian Grand Prix had always been one to dread. His luck in Montreal had been poor, until this year. When he finally won the race his joy overflowed and he arrived on the podium with hands held high.

PHOTOGRAPH BY SUTTON MOTORSPORT IMAGES



GALLERY



### A sparkling performance

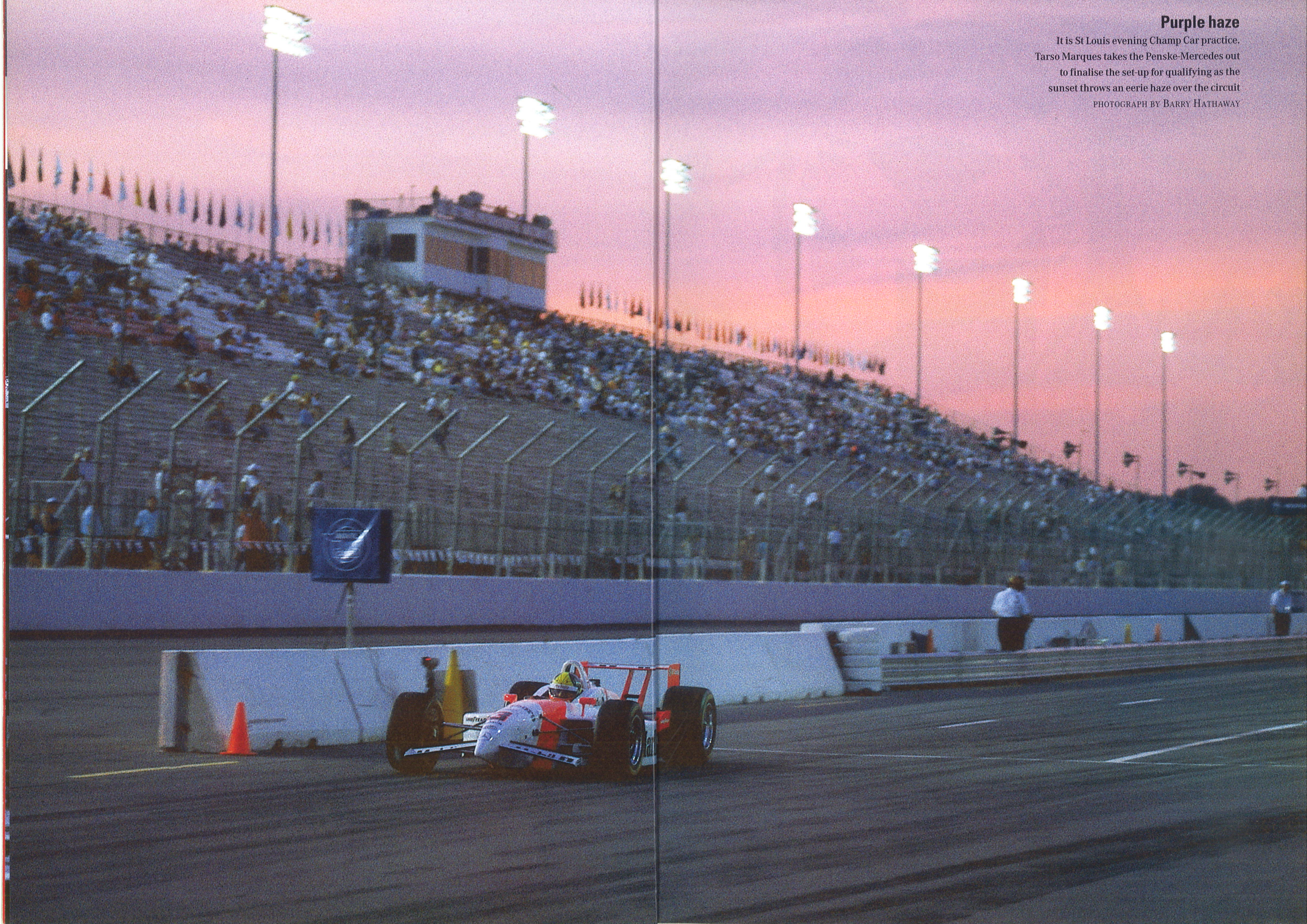
David Coulthard's extraordinary drive in the Magny-Cours rain. Not only are the droplets of water perfectly captured, so is the look of total focus in his eyes.

PHOTOGRAPH BY DARREN HEATH

## Purple haze

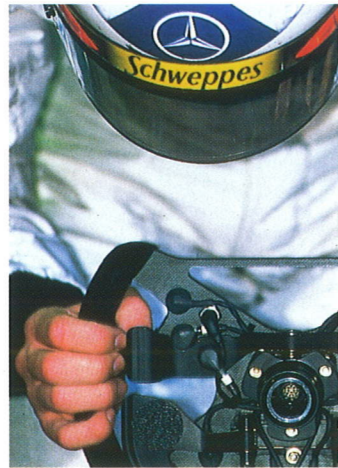
It is St Louis evening Champ Car practice. Tarso Marques takes the Penske-Mercedes out to finalise the set-up for qualifying as the sunset throws an eerie haze over the circuit

PHOTOGRAPH BY BARRY HATHAWAY





GALLERY



### Turning point

The time has come. The car is prepared, the track is right and the team are confident. Now all that's left is for David Coulthard to climb in. As he does so, the amazingly hi-tech McLaren steering wheel is exposed. The gearshift paddles and electronic connections visible, but neatly packaged. Now, the battle commences.

PHOTOGRAPH BY SUTTON IMAGES



GRAND PRIX  
CE 1999  
Paris-Les Invalides



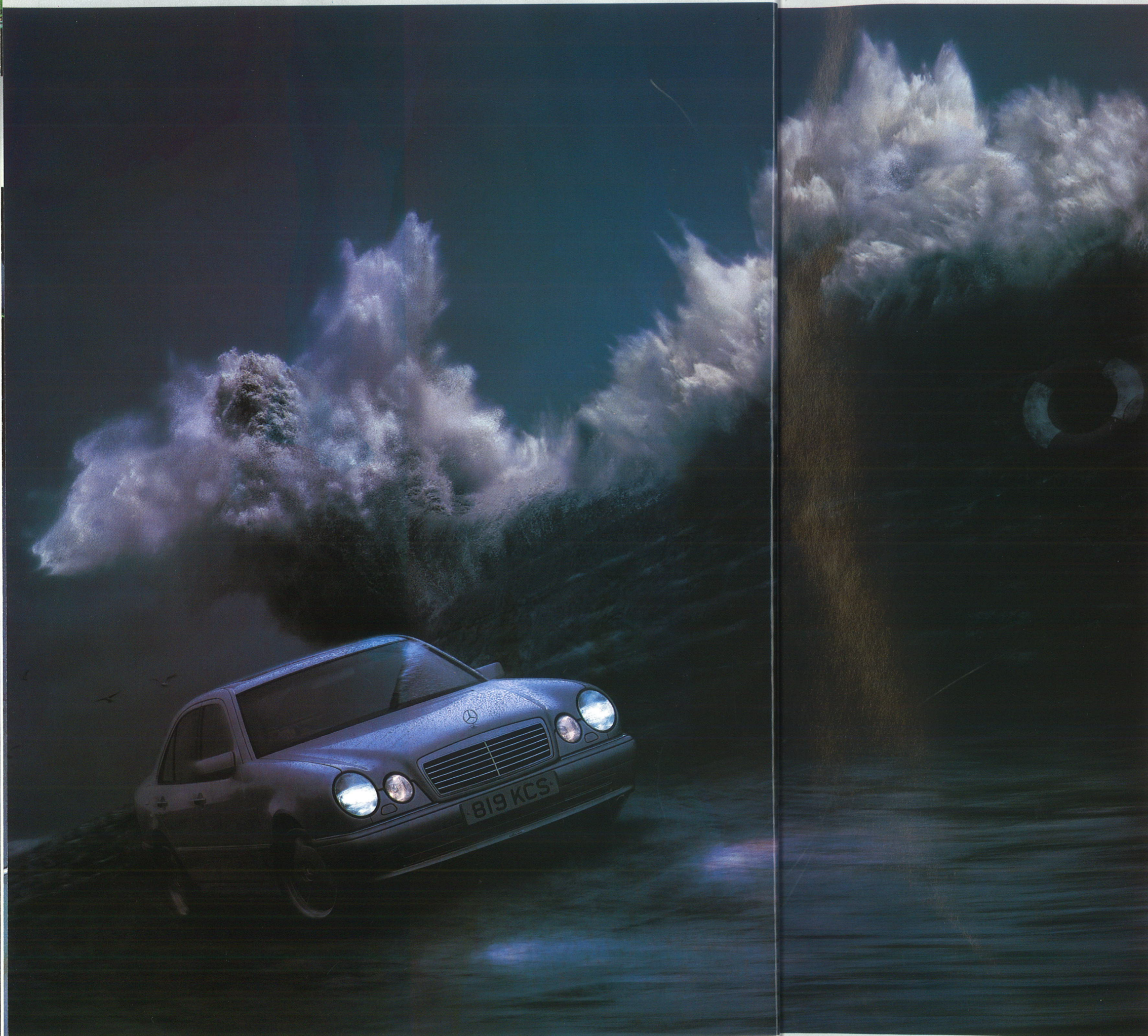
GALLERY

### A hive of activity

Mika Hakkinen waits to go on to the track during practice for the French Grand Prix. His mind is completely focused as he watches the timing screen. Around him, though, there is frenzied activity as the team puts the finishing touches to his car.

PHOTOGRAPH BY STEVEN TEE/LAT





There are days  
when the ocean reminds me of her  
awesome hidden power.

In moments of tranquillity she charms me.

Then suddenly

*very suddenly*

she assumes a distinct and very definite existence.

From fathomless depths she produces that elemental sound.

That grumbling groan of pure, potential power.

As if for the first time,

I'm aware of the phenomenon that lurks beneath the surface.

All the while the current acquires a momentous velocity.

Each second adding to her speed

to her inevitable urge.

And I'm left captivated by her eternal energy.



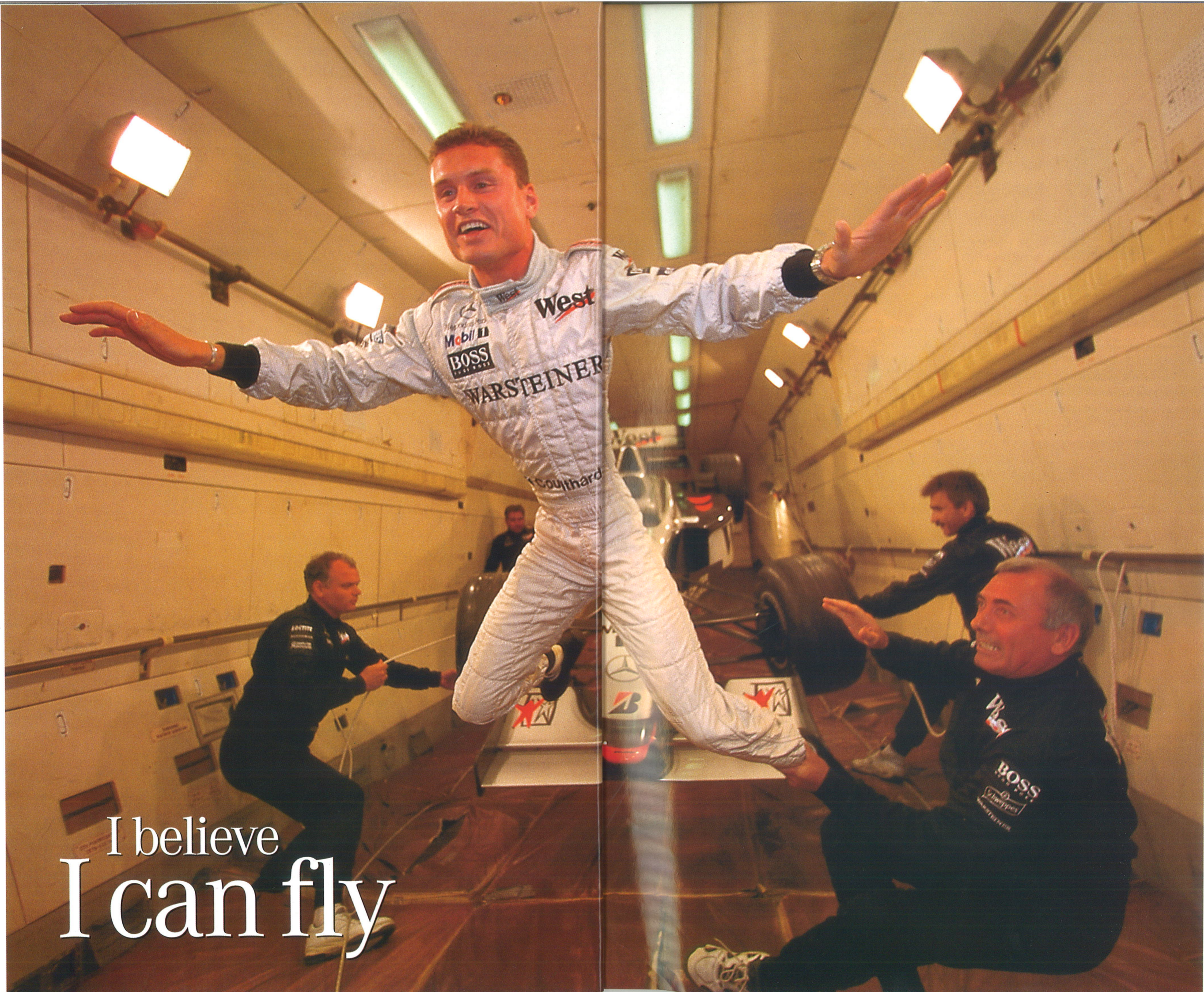
E-class AMG





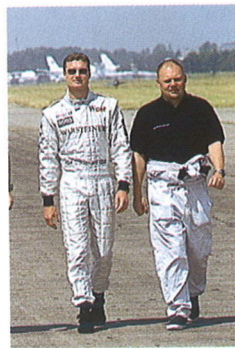
F1

I believe  
I can fly





F1



In July David Coulthard visited the Yuri Gagarin Cosmonaut Training Centre near Moscow. Matt Bishop went with him. It's enough to make you sick...

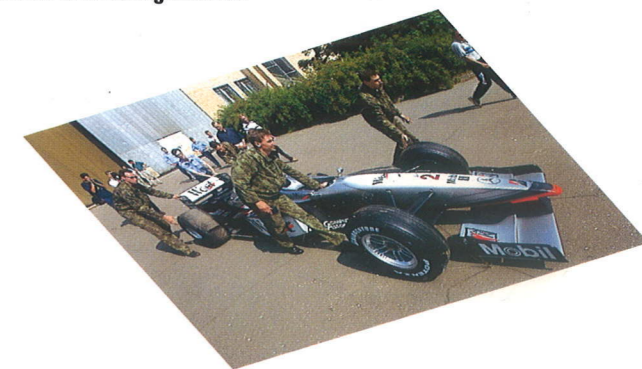
PHOTOS HOCH ZWEI



Below: The imposing building of the Yuri Gagarin Training Centre. Right: The McLaren MP4/12 had to be gently manhandled into the cushioned interior of the plane.



Above & Left: From the outside it is hard to imagine that these giant Ilyushin 76 MDKs could provide the ride of a lifetime. Below: Soldiers manhandling the sophisticated McLaren MP4/12 emphasised the contrasting cultures.



**T**wenty miles from Moscow, along a rutted trunk road dotted with tattered wooden houses, lies the small town of Zvezdnyi Gorodok. It's a peaceful place of just 5000 inhabitants, architecturally unremarkable, quiet and crime-free – the kind of place, were it in the United States, in which *The Wonder Years* might have been conceived.

But Zvezdnyi Gorodok is no normal backwater. It houses – it *is* – another world. For Zvezdnyi Gorodok is better known by its literal translation: Star City – the home of the Yuri Gagarin Cosmonaut Training Centre, the epicentre of Soviet and Russian space exploration since its inauguration on 11 January 1960.

Since the collapse of the Soviet Union, the Centre has not been funded with the roubles-no-object prodigality one associates with the heyday

of its heroic eponym. Even so, it's a mighty impressive place. Though some of its mainframe computers appear to be more *2001: A Space Odyssey* than *The Phantom Menace* – all levers and switches and banks of dials – its employees are enormously proud, unwaveringly optimistic and irretrievably locked into their country's continuing love affair with space.

In June 1997 Mika Hakkinen made what he called "the longest long-distance call of my whole life" (no, he wasn't relating his impressions of Melbourne qualifying to the Mercedes management in Stuttgart); rather, he was chatting via satellite link to Vassily Tsibliyev, who was at the time of chatting engaged in the more than somewhat taxing task of commanding the MIR space station on orbital tour somewhere in our solar system. During this *very* long-distance call, ▶



Top: The MP4/12 is tethered down as it prepares to become the first Formula One car in history to go weightless. Above: David's face peers eerily from the screen of the centrifuge monitor as (far right) he is put through his paces. Above right: Like something from a James Bond film, the Ilyushin welcomes its illustrious cargo

## HOW PARABOLIC FLIGHT CREATES WEIGHTLESSNESS

To achieve weightlessness, the Ilyushin 76 MDK follows a trajectory as depicted in the graphic (shown on the right).

The aircraft attains a speed of 450mph and a cruising altitude of 6000meters. The pilot then pitches the aircraft into a 2g climb, maintaining air speed of 450mph. Just as the aircraft's flightpath is about to go vertical, the pilot throttles back to a pre-set low throttle opening (to counteract air resistance—in a theoretical vacuum he would throttle back completely) and pitches the aircraft in to a forwards-facing parabola. Because the aircraft is now following a trajectory exactly corresponding to that which it would describe if it were in unpowered 'freefall', people or objects inside it (which are, of course, themselves unpowered) will as appear to be weightless or 'in mid-air'.

The aircraft continues to climb 'freefall' to an altitude of 9000 meters, at which point it has reached the top of its 'freefall' parabola. The aircraft has now been weightless for some 12 seconds. The aircraft now begins to 'freefall' downwards for the first time. After a further 12 seconds, the pilot pulls the aircraft into a 2g levelling-off to 6000 meters once again, in preparation for the next parabola.

Coulthard is mega-fit even by Formula One standards, no-one expects him to struggle with the body-battering such a flight involves.

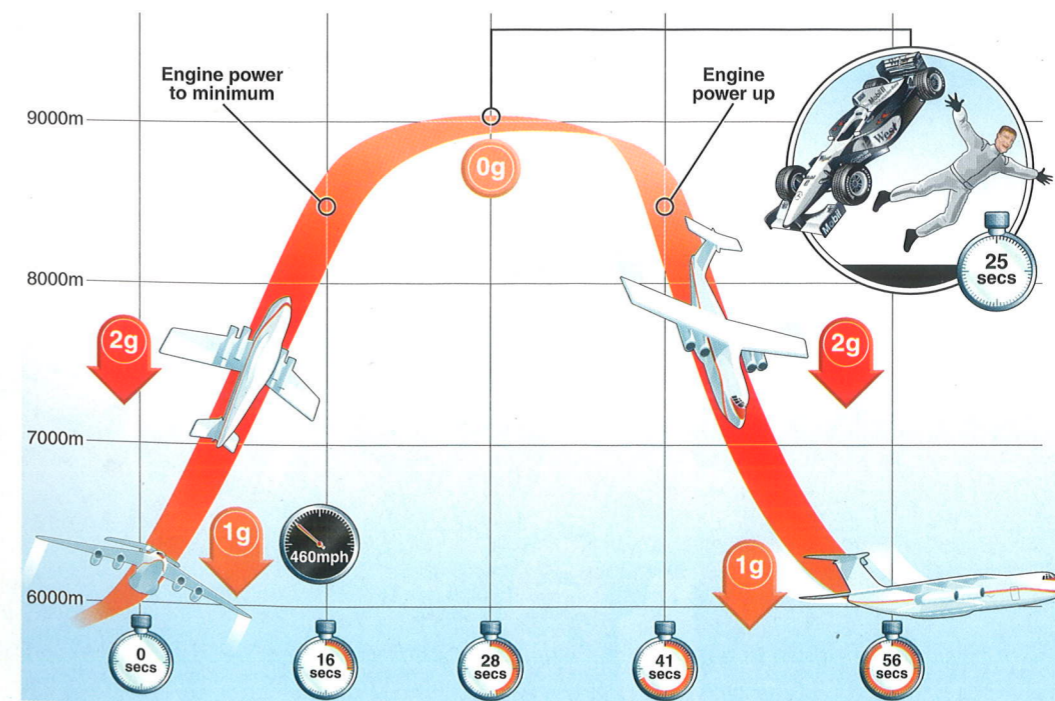


Mika invited Vassily to attend a Grand Prix of his choice as an official guest of the West McLaren-Mercedes Formula One team— an invitation which he gratefully accepted and honoured at the Nürburgring last year. By all accounts Vassily had a whale of a time, the highlight of which was being piloted by Martin Brundle in the sensational West McLaren-Mercedes MP4-98T two-seater Formula One car.

All of which might lead you to suppose that David Coulthard, Mika's team-mate at West McLaren-Mercedes, might be feeling not a little envious. And your suppositions might be right, which is how he comes to be here, now, in early July 1999. And, the better to bring you this account of his momentous jaunt, so, dear reader, am I.

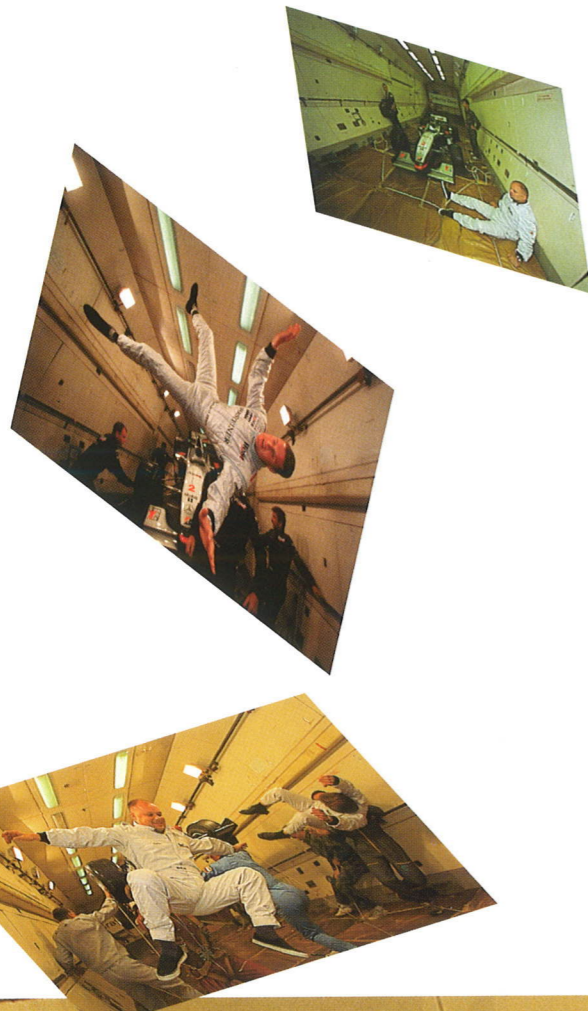
Coulthard arrives in a chartered executive Mercedes S-class, having flown to Moscow by jet. The previous day he was at Silverstone, carrying out final pre-race testing prior to the British Grand Prix. He's tired, no question, but as he walks across the apron to the waiting Ilyushin76 MDK it's clear that fatigue is the last thing on his mind. "I wouldn't miss this for the world," he tells me as he scales the ladder and enters the plane.

Zero-gravity flights have been a mainstay of the Centre's cosmonaut training programme for a generation; since Coulthard is mega-fit even by Formula One standards, no-one expects him to ▶





F1



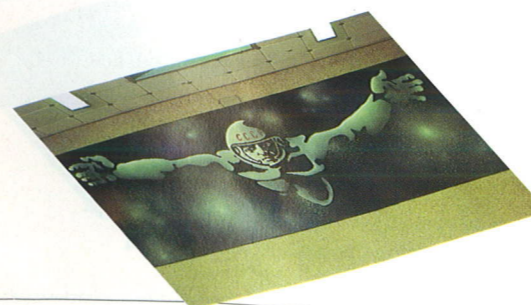
◀ struggle with the body-battering such a flight involves. As a moderately flabby pen-pusher approaching my fifth decade, however, I am considerably less sanguine about my own prospects. (Not that the Ilyushin's immensely experienced crew – zero-gravity experts, to a man – seem overly bothered, rather hearteningly.) What they *are* concerned about – *very* concerned, it appears, and with good reason – is the safe-keeping of a rather unusual item of cargo which will accompany us on our roller-coaster flight. For inside the giant aircraft, sitting in silent splendour on its flight deck, is a West McLaren-Mercedes MP4/12 Formula One car. And it's about to go weightless with him. And though the Ilyushin has been expressly modified for this peculiar exercise – uprated engine, bolstered wings – it still looks markedly old-fashioned compared with this ultra sophisticated F1 car.

Where the West McLaren-Mercedes MP4/12 is all carbon fibre and Kevlar and titanium and carefully wind tunnel-profiled edges, the Ilyushin is big and heavy and blunt and flecked with peeling paint. Fitness of purpose, you could call it, but you can't help thinking that Ilyushin technology is more akin ▶



Though the Ilyushin has been expressly modified for this peculiar exercise it still looks markedly old-fashioned compared with this ultra sophisticated F1 car.

Above & far left: Coulthard and Bishop clearly enjoy their 25 seconds of weightlessness. Below: But the experience of floating finally catches up with the writer. Below left: The huge mural in the main building gives away the purpose of the training centre





Above: Even sitting among pieces of Soviet spaceship, the Grand Prix car soon became the centre of attention.

to that of a mid-'50s W196 Mercedes Grand Prix car than it is to Coulthard's pride and joy.

Even so, David looks calm - if a little apprehensive. I try to fake a similar sangfroid. "What will weightlessness feel like, d'you think?" I ask him. "D'you think you'll enjoy it? D'you think you'll feel sick? D'you think you'll be sick? D'you think your precious car will be damaged?"

"Dunno," he smiles, amused at my jitters. We fall silent, awaiting our fate. The crew look cool enough - back-slapping, laughing, general jauntiness - but we can't follow their conversation and nothing alters the fact that we are facing the unknown.

Take-off is pretty normal, and we begin to relax. Easy. No problem. Then the announcement: zero gravity will commence in one minute. Coulthard

**David, the MP4/12, the crew and I begin to levitate. David starts to laugh and then decides to 'fly' around a bit.**



eyes his car, and is spotted doing so by one of the expert zero gravity instructors, who smiles and mutters something in broken English. A word of encouragement, presumably. Who knows?

We're flying at 6000 meters. Suddenly, sitting on the floor beside the MP4/12 - this aircraft has nothing so luxurious as seats - we're pushed firmly downwards as the pilot pulls into a 2g upward climb. Fifteen seconds later we're travelling almost vertically, at which point the pilot throttles back, causing the massive aircraft to pitch into a perfect forward-facing parabola - just like a giant arrow fired from a longbow. Inside, zero gravity has arrived.

And, in perfect unison, David, the MP4/12, the crew and I begin to levitate. David starts to laugh - involuntarily, like a child - and then decides to 'fly' around a bit. Next to him, the MP4/12 floats and flutters, rocks and rolls. I'm upside-down in mid-air, trying to work out which is the floor and which is the ceiling. Suddenly one of our instructors, Major Boris Naidyonov, 'flies' towards me, gently pushes me into a foetal position, and spins me around and around in a superfast mid-air tuck-somersault like a magic human catherine wheel. Then he does the same to David.

By now - some 20 seconds into weightlessness - the plane is dropping like a stone, and the pilot

announces that 'normal service' will be resumed. Four seconds later he pulls the plane level again, and car and driver are pushed into the aircraft floor by another 2g force - this time required to pull the plane out of its ferocious dive. But not before the crew have 'flown' towards the MP4/12, wrestled it to the floor, tethered it down and sprung clear. I vomit. David doesn't.

Almost everybody is sick. I purposely avoided breakfast in the hope of being one of the lucky few. I failed. The instructors expect it and we are provided with sick bags. Generally everyone is able to delay the inevitable at least until the end of each period of weightlessness. But when gravity returns it begins. The bags are used constantly and have an alarming tendency to leak in later spells of weightlessness.

**"I think I'm driving the world's first ever zero gravity Grand Prix!"**

DAVID COULTHARD

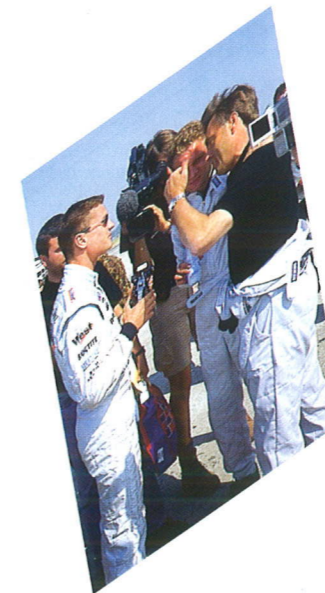
Above right: The concrete buildings looked the most unlikely place to find a Formula One driver.

Below right: David tries to explain to the waiting press what it's like to 'fly'.

Below: Russian guards can't help staring at the strangers in town.



Left: Bishop and Mercedes Motorsport Communications chief Wolfgang Schattling looked more than a little unsteady after the flight. Below left: Just in case you wondered where you were, a moving map pinpointed geographical location.



In all, 10 parabolic flights are performed, and during one of them David even climbs into his airborne car. "I think I'm driving the world's first ever zero gravity Grand Prix!" he shouts. I attempt a graceful 'fly-past', one arm extended ahead of me, Superman-style, and more or less succeed ... then vomit. Again, David doesn't.

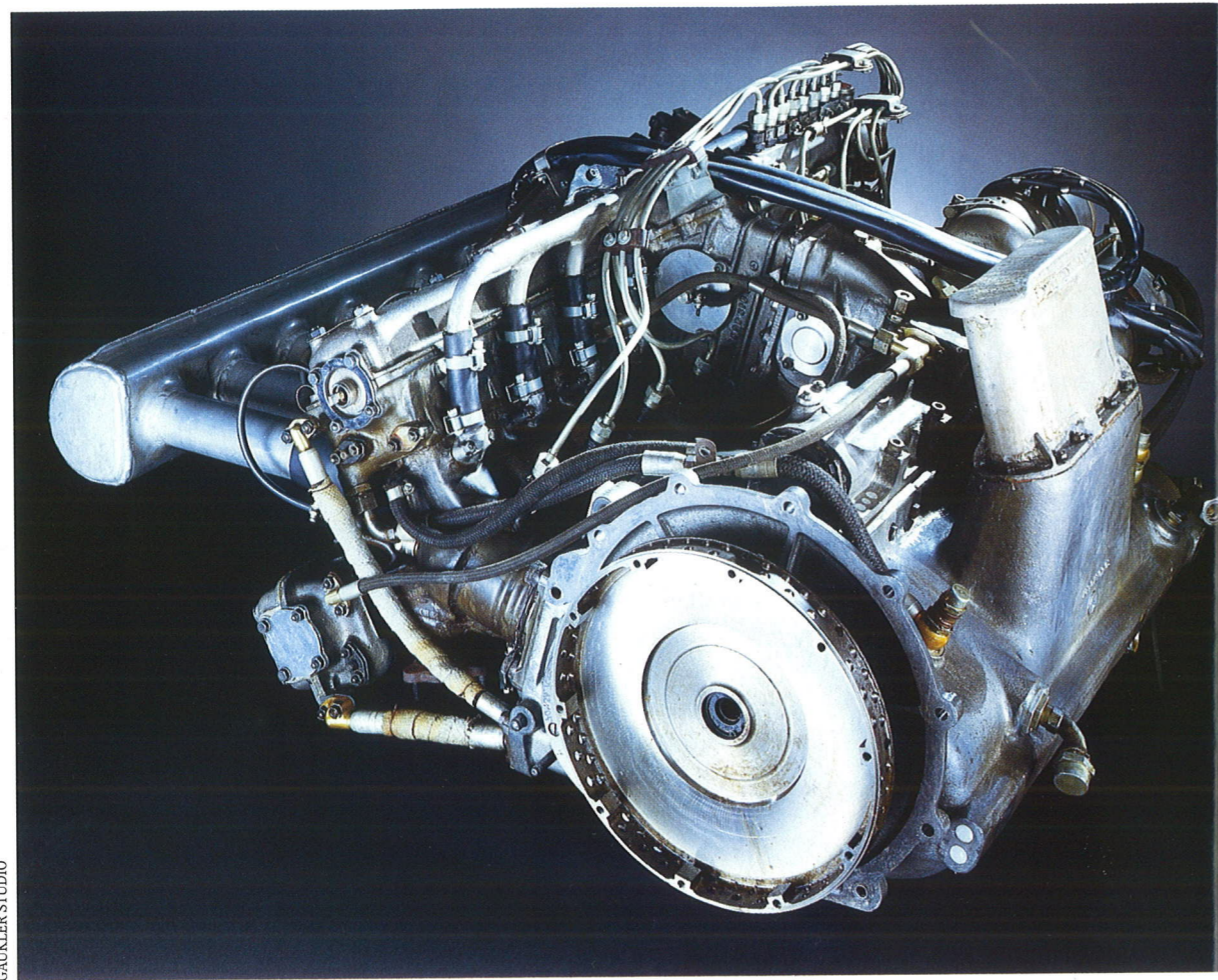
Back on dry land, David tries to explain what he's just experienced to waiting TV crews - and fails. "I just ... you can't believe it ... amazing... it's like you can fly," he goes on, each phrase accompanied by waving and flapping of arms and legs, the better to convey the unconveyable. I look for a lavatory.

Would we do it again? "I'd love to," says David. And, believe it or not, so would I. Yes, I'm feeling decidedly nauseous; yes, my face has turned a very peculiar shade of green; yes, I've proved myself to be considerably less of an all-round athlete than David Coulthard. But then who's going to be surprised by that? Certainly not me.

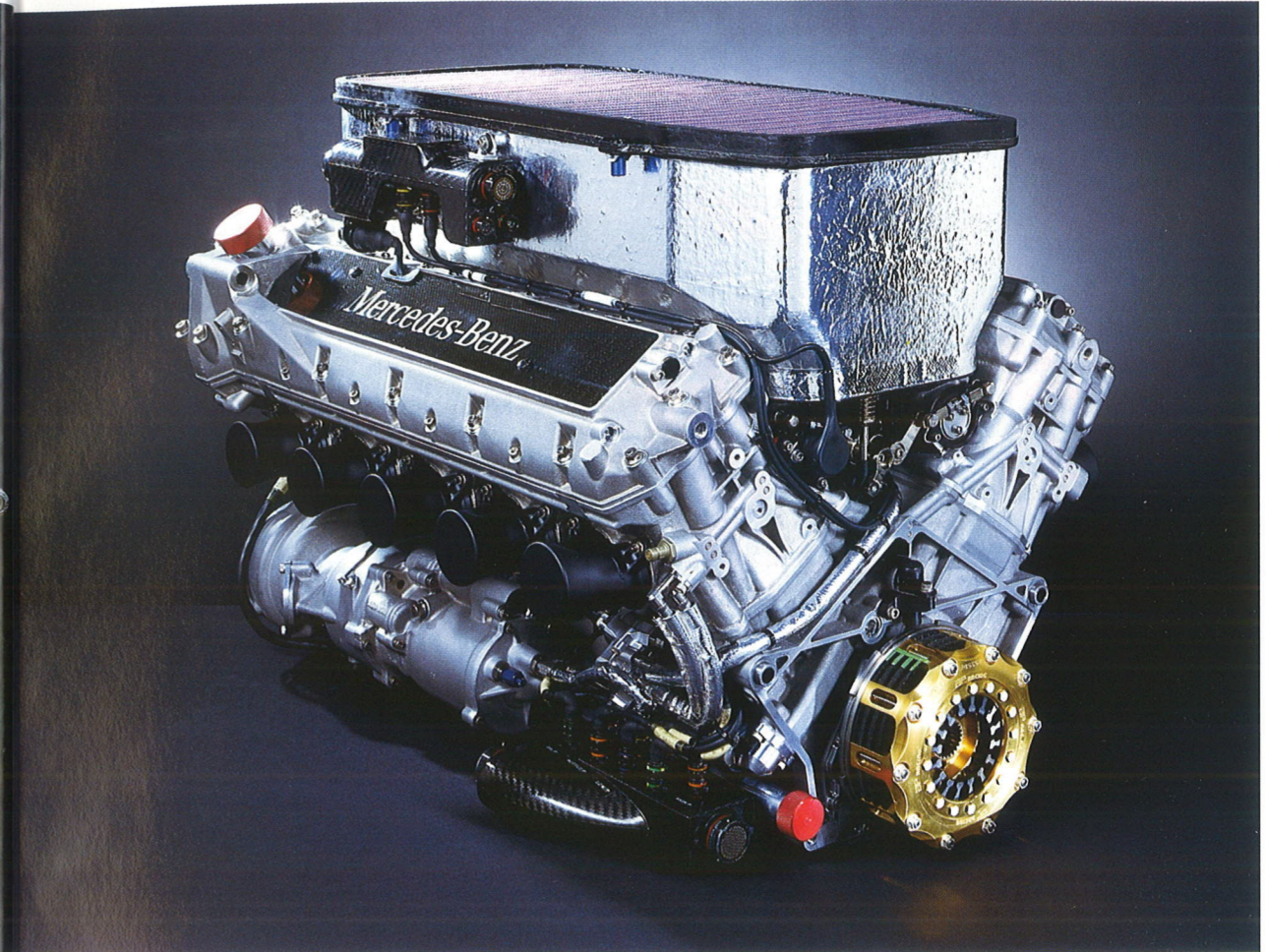
Besides, did you know that 70 per cent of cosmonauts vomit during zero gravity training? Well, they do: Boris tells me all about it over the oceans of vodka he and the crew ply me with afterwards. Oh yes: that's another thing they're good at. And this time I (almost) hold my own. Well, at least I manage not to be sick. ☺



F1



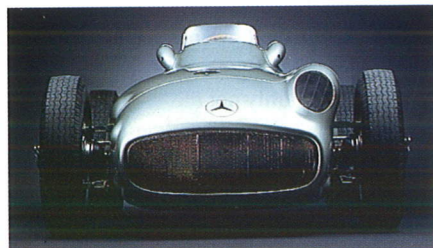
GAUKLER STUDIO



Above left: The 1955 M196 straight eight engine that was fitted to the Mercedes W196 (below left). Above right: The F110G V10 title winning engine that West McLaren-Mercedes used in its 1998 championship winning year

TEXT: CLAUSPETER BECKER

Above are two engines, both built by Mercedes, both breaking new ground in technology and both Formula One World Champions...43 years apart. So what has changed?



# A Tale of TWO ENGINES

**W**hen Mika Hakkinen crossed the line to win the Japanese Grand Prix at Suzuka last year it was more than just another race victory for Mercedes, it marked the culmination of a dream. For that victory meant Mercedes-Benz has won the Formula One World Championship for the first time for 43 years.

Back in 1954 and '55 the whole effort was created and coordinated in Stuttgart. Now, though, it is the engine technology from Germany that powered the

champion team. So how have things changed in F1 power plants between Mercedes' last two titles?

Well for a start, while Juan Manuel Fangio was powered to victory in 1954 and '55 by a straight eight, it was a V10 that took Mika Hakkinen to the title in 1998. But the differences don't end with the layout and number of cylinders. There is also the small matter of 500 brake horsepower.

Asked about Formula One engine design in the fifties, Britain's Lawrence Pomeroy once provided a neat set of technological similes: "Figuratively ▶



F1

speaking," he began, "if the BRM be likened to a typewriter, the four-cylinder Ferrari is the equivalent of an abacus and the Mercedes cars rate as an electronic calculating machine."

Just under fifty years later, how things have changed. The "electronic calculating machine" in its modern guise has become an integral part of every racing engine. Without computers, ignition and mixture formation processes, for example, would be literally non-starters. Yet it is a surprisingly simple and uniform engine architecture that has succeeded the complex engineering of yesteryear. Where in the past, engines with different numbers of cylinders would regularly do battle in F1 races, today it's one V10 against another. Stealing a march on the competition is no longer a question of adopting a different concept, it is more about honing every last detail.

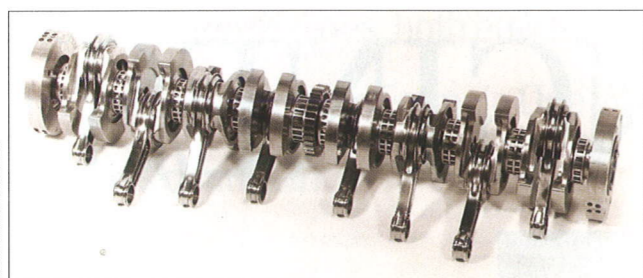
The old Mercedes F1 engine - known in-house as the M 196 - was a good example of the classic Mercedes strategy of "superiority through sheer effort". When it was first developed in 1952, its designers, Hans Gassmann, Fritz Nallinger, Hans Scherenberg and Rudolf Uhlenhaut, opted for an eight-cylinder in-line unit, thinking it lighter than a V-engine. To minimise

torsional vibration from the long crankshaft, which ran in no less than 10 bearings, power was tapped not from the end of the shaft but from the middle, making the engineering even more complicated and the engine itself longer still.

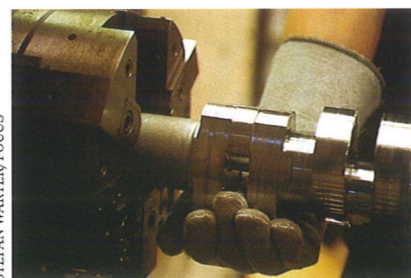
In retrospect, the design of the two cylinder blocks also deviated more than just a fraction from orthodox metallurgical practice. Each cylinder and its combustion chamber comprised a single component made of pressed steel. Expert welders would then weld on inlet and exhaust ducts made of tube steel, carriers for the camshaft housing made of flat-bar steel and a water jacket made of sheet steel. The two four-bore cylinder blocks were bolted to a single light-alloy crankcase. This contained a Hirth crank assembly which ran in roller bearings and was made up of more than 40 separate parts. This may give the reader some idea of why, in 1954/55, when it was building not just engines but complete racing cars, the racing department at Untertürkheim would occasionally employ more than 300 people.

Compared with the M 196, the basic concept behind today's V10 engines is simplicity itself, and not all that far removed from standard production designs. As with

**Compared with the M 196, the basic concept behind today's V10 engines is simplicity itself, and not all that far removed from standard production designs.**



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STEFAN WARTER/FOCUS

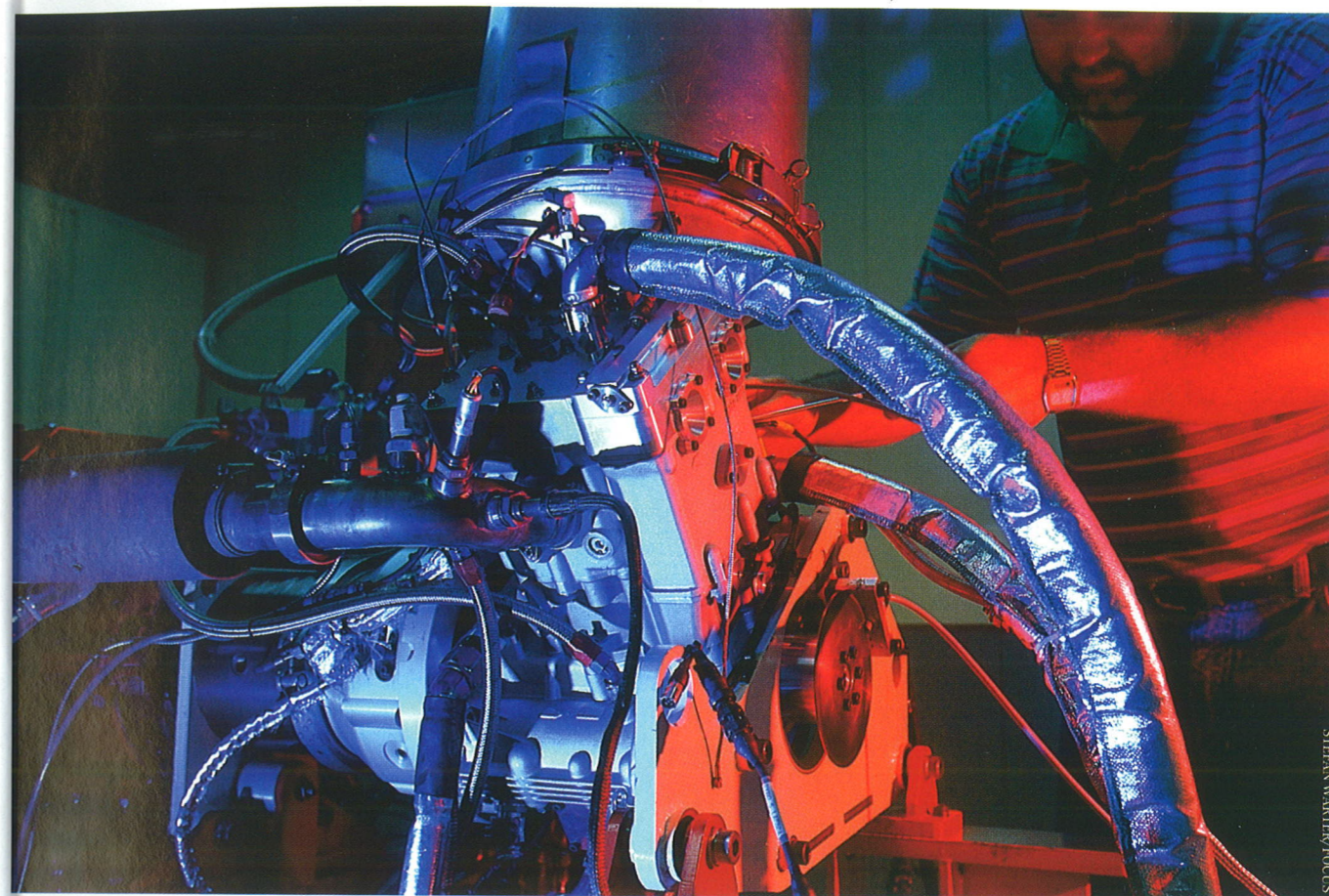


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**Above left: The M196 engine used a crankshaft with 16 counterweights  
Above right: the camshaft of the Ilmor F1 engine. Left: Hans Gassmann and Right: Mario Illien, linked by the fact that they both designed Championship winning Mercedes engines**



STEFAN WARTER/FOCUS



STEFAN WARTER/FOCUS

**Above: One of the 14 single-cylinder engines built by Ilmor every year is fired up on the test bed**

its mass-produced counterparts, the cylinder banks and the upper section of the crankcase form a single cast light-alloy block. The cylinder liners are press-fitted so they can be easily replaced if damaged. The cast component which seals off the bottom of the cylinder block contains the lower bearing brackets for the crankshaft, which runs in plain bearings, as well as all the numerous oil pumps - but not the oil itself, since modern Formula One engines use dry sump lubrication. Again, like production engines, the two cylinder heads are made of cast light alloy.

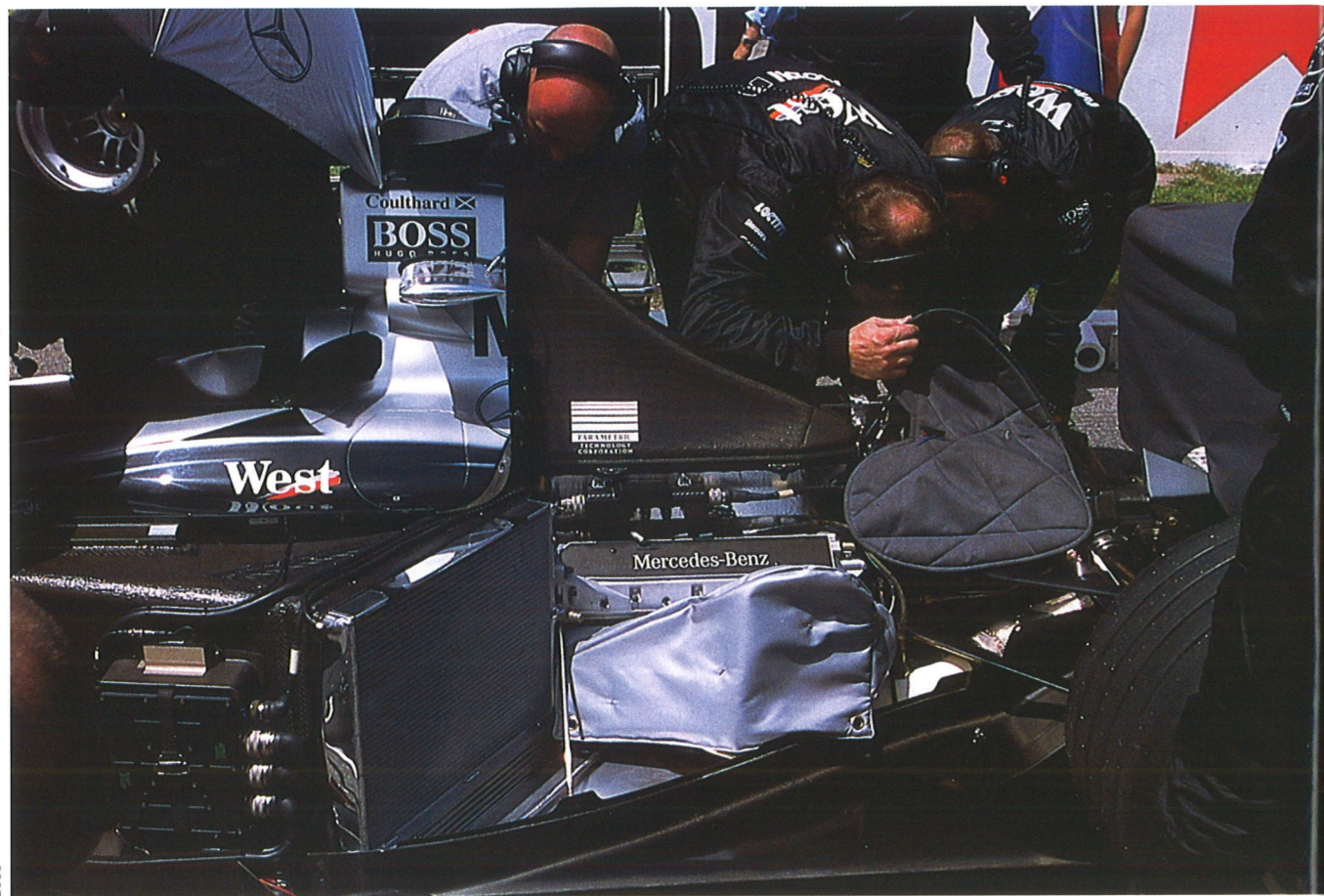
As in 1954, the four camshafts are driven by gear wheels. And even without the artistic welding work required on the power plant of the fifties, building an engine at Ilmor, the Mercedes racing engine subsidiary in Brixworth, England, remains a time-consuming business. It takes 130 hours in all, many of them spent in precisely matching the volumes of the 10 combustion chambers. As a result, Ilmor now employs 380 people building between 60 and 80 engines a season for Formula One and roughly 100 for the U.S.

ChampCar series. One key reason for the larger workforce is the blistering pace of modern-day development work. In the fifties, it used to take roughly two years before an engine was fit to race. For today's Chief Designer Mario Illien, the rule is: "A new engine must be finished in six months, eight at the most."

The vast difference in size between the old straight eight and the new V10 illustrates how the rules imposed by car design have changed. While the old engine was slim but extremely long at well over a metre, the new unit is compact and basically cubic in shape: it is 590 millimetres long, 506 millimetres wide and 476 millimetres from top to bottom. In today's F1 engine, that compact design plus the systematic use of aluminium and titanium have slimmed down this masterpiece to a mere 107 kilos. Despite all the efforts of the M 196's designers to make their engine as light as possible too, all that iron meant it tipped the scales at 202 kg. In the fifties, the car was a conveyance for the engine. Today the focus has shifted from power plant to aerodynamic aesthetics, as Mario Illien is well



F1



DPTI

**A contrast in culture. Above: The West McLaren-Mercedes team cover all available parts of the engine from prying eyes. Above left: The M196 engine was also ahead of its time, but available for anyone to see in an age when industrial espionage was unheard of in sport.**

aware: "A modern racing engine is part of an overall package," says the Mercedes engine wizard. "It must be able to handle a structural role reliably, its dimensions have to match the car's aerodynamic concept, and it must be easy to replace."

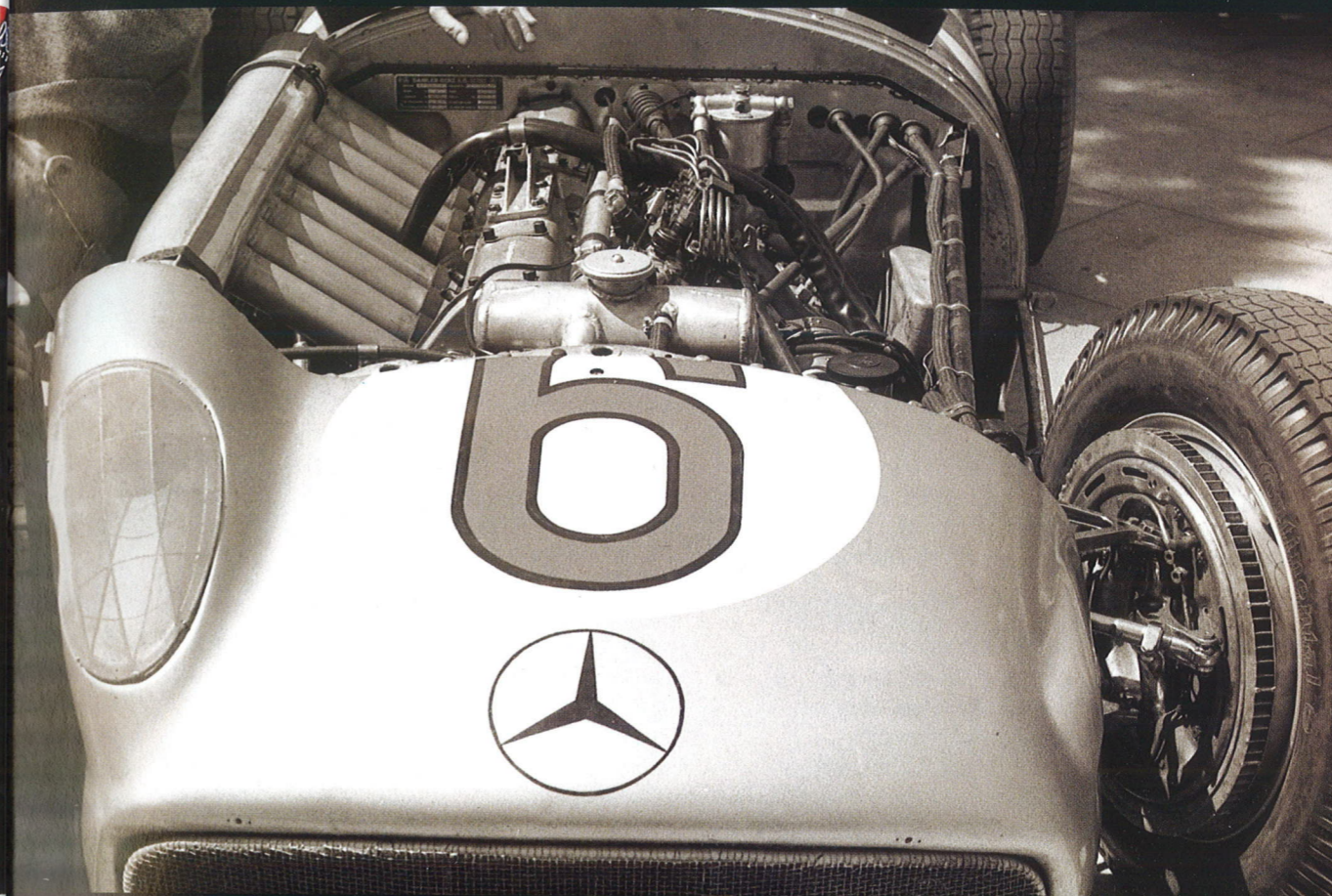
In a racing context, success has less to do with highest possible power output and more with best possible compromise. Take coolant temperature, for example. It used to be at around 80 degrees Centigrade in racing engines but today can reach 120C. "That can cost a bit of power," explains Illien, "but the higher temperature differential means more effective cooling. We can get by with smaller radiator cross sections, and that means a substantial drop in aerodynamic drag."

For their research into the fundamentals of engine performance, the Ilmor crew of the late nineties use the same tools as Rudolf Uhlenhaut's team employed back in the early fifties. Then as now, the power eventually unleashed on the race track is ultimately derived from scaled-down single-cylinder engines, 14 versions of

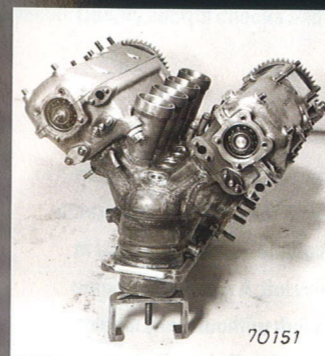
which are built at Ilmor every year. Divide the displacement of the old and new engines by the number of cylinders and the results - 313 cc versus 300 cc - look fairly similar. But that is where the similarities end. For the old eight-cylinder unit, which delivered its 290 bhp at 8500 rpm, featured a virtually square design, with a bore of 76mm and a stroke of 69mm. Specifications for the new V10 call for "less than 800 bhp at just under 18,000 rpm" - extreme engine speeds that make it imperative to shorten the stroke dramatically.

Consequently the stroke in today's F1 engines is about half the bore - or 45 mm in an engine with 300 c.c. cylinders and a bore of 90 mm. Such high revs also call for much lighter moving parts. Modern titanium con-rods weigh less than half as much as their forebears, and despite their larger diameter, the pistons in one of today's racing engines tip the scales at just over a third of the weight of their ancestors, which topped a fairly hefty 460 grams apiece.

It was again to the single-cylinder experimental

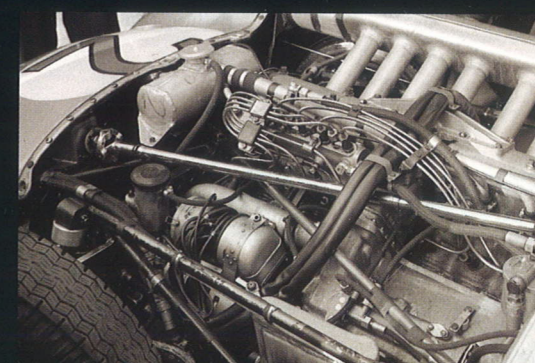


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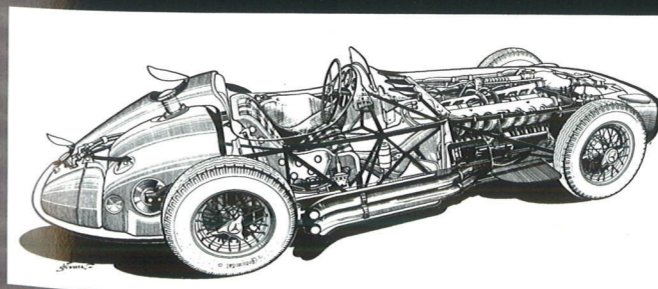


70151

**Left: The full engine housing of the M196. Right: The 1955 engine used straight air inlet pipes, which required a substantial bulge in the bonnet and a screened air intake**



### The pistons in one of today's engines are just over a third of the weight of their ancestors



**Above: In the 50s the car was merely a conveyance for the engine**



**Above: In 1954 the Silver cars attracted much attention**





F1

◀ engine that both generations of development engineers turned in their search for the ideal valve gear. Interestingly enough, both teams had the same aim in mind: they were out to dispense with the valve springs – always a major obstacle to higher engine speeds. In 1952, the engineers in the Mercedes racing department started experimenting with positively controlled valves which were opened by one cam and closed by another. At the time, this desmodromic control of two valves per combustion chamber proved superior to a four-valve cylinder head with conventional valve springs. So it was that, in 1954, Mercedes-Benz introduced the principle of desmodromic valve gear in Formula One engine design, although to this day no-one has ever followed their example.

That includes Ilmor. When the team was faced with designing the first Formula One engine for Mercedes-Benz in 1994, “pneumatic valves” were the state-of-the-art solution. Here the valve stem is surrounded not by a spring but by a tightly-sealed piston running in a cylinder. A specific pressure acting on the underside of the piston keeps the valves closed. This means that each time the engine is started, it needs a shot of compressed air before a mini-compressor takes over the job of maintaining pressure in the system.

Pressure-controlled valve gear is capable of matching the engine speed with great precision, even at very high revs. Difficult as it may be for us to imagine, each of the 40 valves opens and closes 150 times per second.

High-revving engines have transformed the useful engine speed range beyond recognition. Hans

STEFAN WARTER/FOCUS

Hermann, who drove for Mercedes-Benz in the Grands Prix of the fifties, recalls how “Our engines were in their element at between 5,500 and 8,500 rpm.” Today, Mika Hakkinen and David Coulthard have a much broader performance band to play with. “The engine is absolutely drivable between 5,000 and just under 18,000 rpm,” explains Mario Illien, “but of course in a race you actually use a much narrower range.”

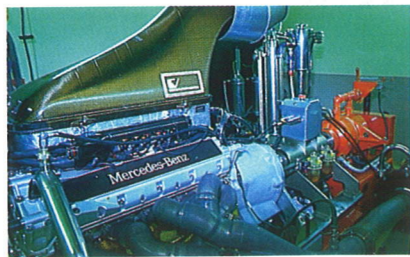
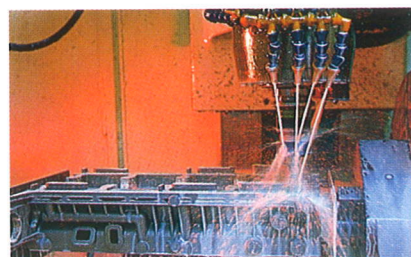
To achieve a wide power range, a high volumetric efficiency is essential. On the old engine this was achieved in part by the desmodromic valve gear and in part by specially tuned intake pipes with a resonating air column, the volume of which was controlled by a large throttle valve.

On the V10, a great deal more output and torque – over a much wider band – are made possible by a complex system of features: variable valve timing, a variable-length intake manifold and precision control of the intake air. The cylinder heads accommodate rotary slide valves which turn when the accelerator pedal is depressed to open up the inlet ports. “There just isn’t room,” says Illien, “for conventional throttle valves.” When it comes to their compression ratios, on the other hand, the two engines exhibit a similarity that belies the generation gap.

The old engine crammed the mixture into the cylinders at a ratio of 12.5:1 while its modern-day descendant manages 13:1. But what they mix with the intake air is world’s apart. The straight eight was fed a highly toxic mixture: 45 percent benzol, 25 percent methanol, 25 percent 130-octane petrol, three per cent



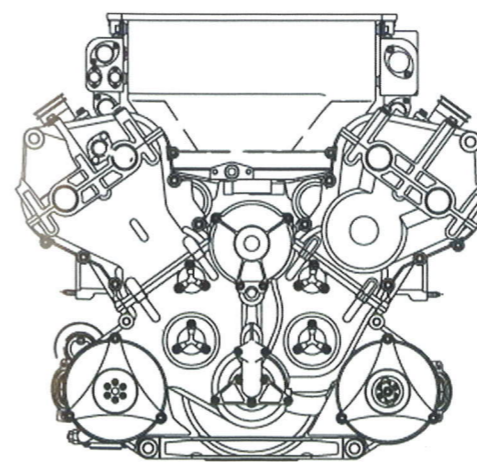
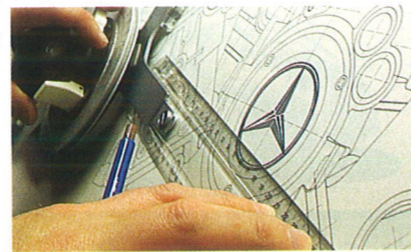
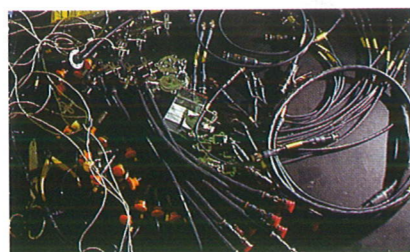
Above: Quality control checks and double checks ensure that every component is perfect.



Far left: Computer precision is required to ensure that all the cylinders are exactly the same volume. Left: The test bed at Ilmor. Below left: A modern F1 engine could not work without many meters of electronic cables: Below: Forty three years on, the badge remains the same.

**“The engine is absolutely drivable between 5,000 and just under 18,000 rpm, but of course in a race you actually use a much narrower range.”**

MARIO ILLIEN



acetone and two per cent nitrobenzene. Today’s F1 engines are required to use unleaded petrol which is almost the same as you and I buy at the pumps, with octane values no higher than 102 RON and no lower than 85 MON. In fact, according to Mario Illien, in tests the engine has run superbly on Super Plus unleaded. “You see, anti-knock qualities aren’t so much an issue for us as a fuel that will ignite fast.”

Rapidly setting light to the mixture in the cylinders was a familiar problem for the engineers of the fifties. In the M 196, they used two spark plugs per cylinder to ignite the volatile cocktail. In the four-valve Mercedes V10 a central spark plug performs the same job. “But the wider the cylinder bore,” complains Mario Illien, “the harder it is to get the flame front to spread fast enough.”

There is one aspect, though, in which the old Mercedes engine appears to be ahead of our time, never mind its own. Back in 1954, the M 196 featured direct petrol injection, a method currently being advocated as the fuel injection system of the future. That said, the experts take a sceptical view of the advance this represented at the time. They believe that Fangio won the title despite direct injection, not because of it. ☺

TEXT BY RICHARD BLEHN PHOTOS BY LAT

# TEMPTATION ON WHEELS

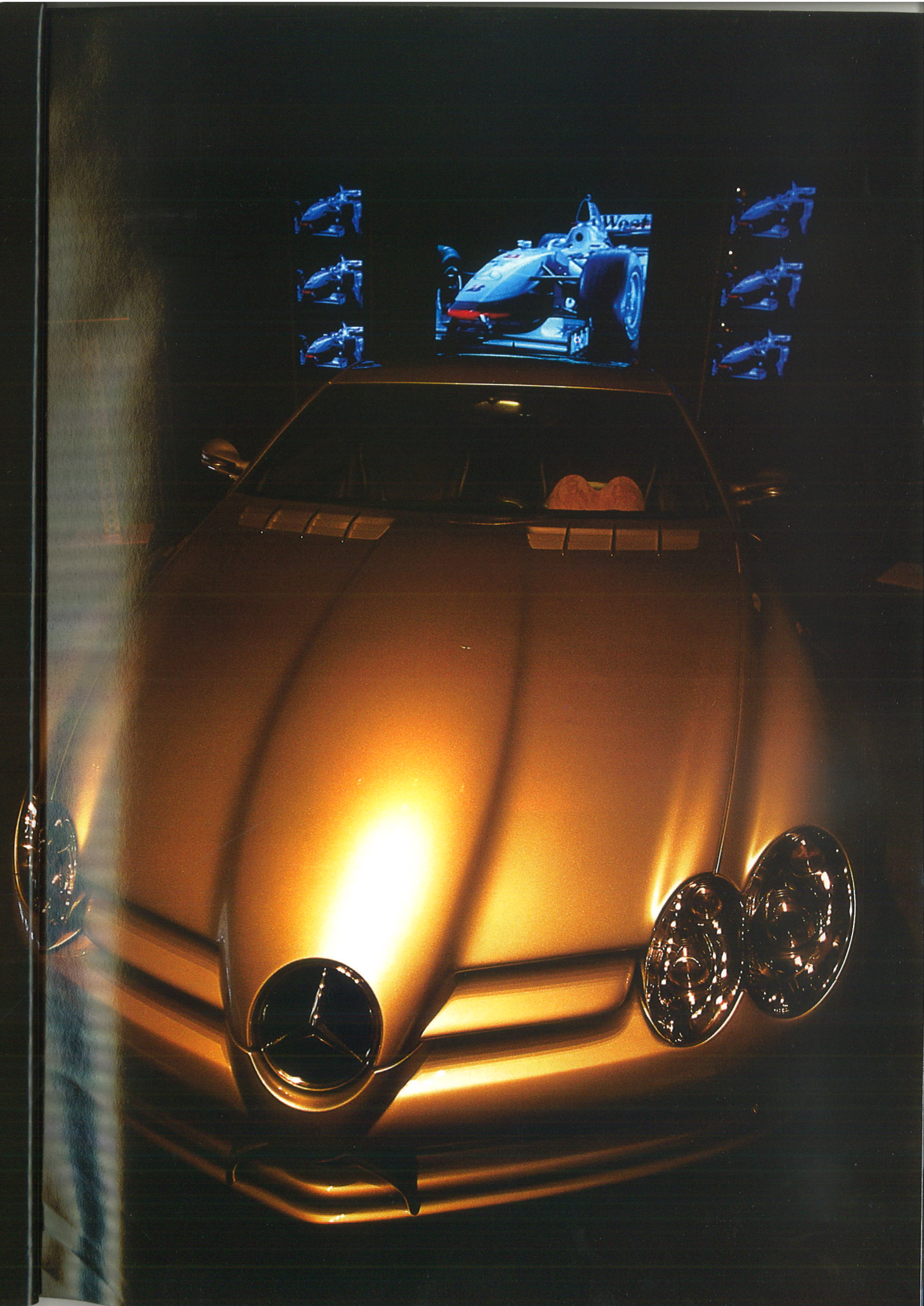
## Back to the Future — Formula One on the road

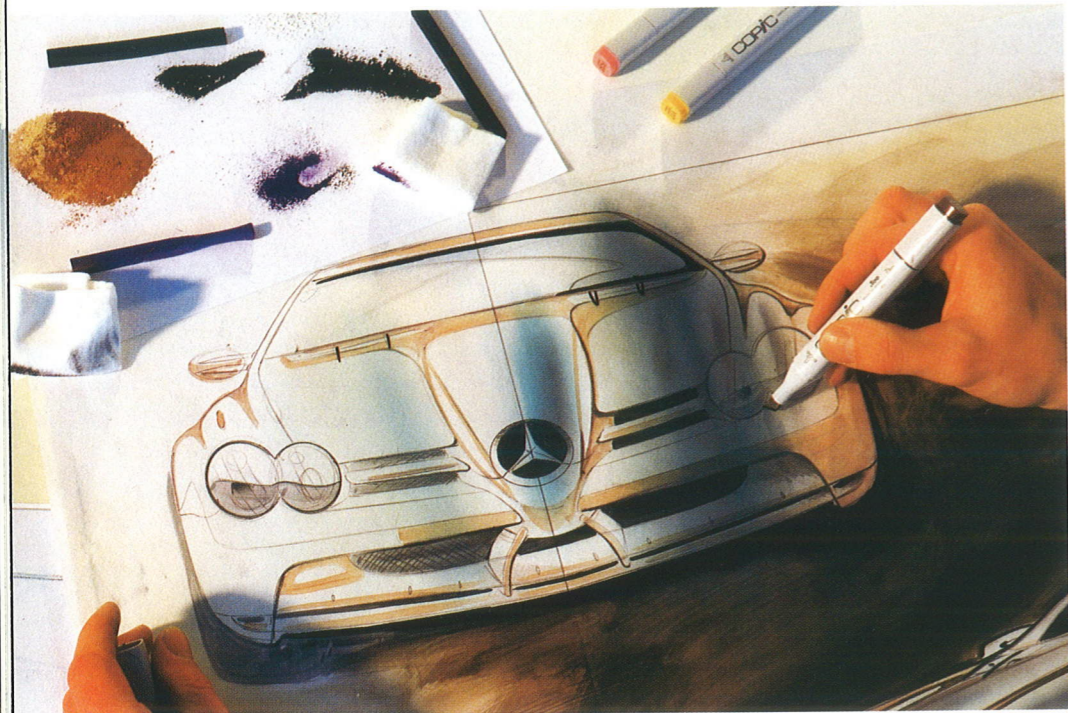
**T**ap, tap, tap. That's the sound of a racing driver getting to know an unknown car. David Coulthard and Mika Hakkinen got to know the Mercedes-Benz SLR with gentle tapping. The sound was familiar, and when they turned to Jürgen Hubbert with a questioning look the man responsible for Mercedes-Benz motorsport on the board of DaimlerChrysler gave them a silent nod. Yes, he seemed to say, it's not made of metal but carbon fibre. Just like their McLaren-Mercedes MP 4/14. And the paintwork of the car is just as shiny as the one that won the World Championship.

It's not an exaggeration to say that with the birth of the SLR Formula One now exists on the road in terms of technology and aesthetics. Even the McLaren team supports the idea. "We shall work on this project with the same kind of enthusiasm that we have shown in Formula One", says Ron Dennis, Managing Director of the TAG McLaren Group. All the partners are convinced that the introduction of racing technology to this incredible car is not only logical but also enticing.

It is therefore no coincidence that the SLR was first introduced at the British Grand Prix. The choice of surroundings underlines the heritage of the car, and served to form even closer links between Mercedes-Benz and McLaren who joined forces in 1995 with the goal of winning the Formula One World Championship.

DaimlerChrysler is planning to acquire 40% of the shares of the TAG McLaren Group. For the ►



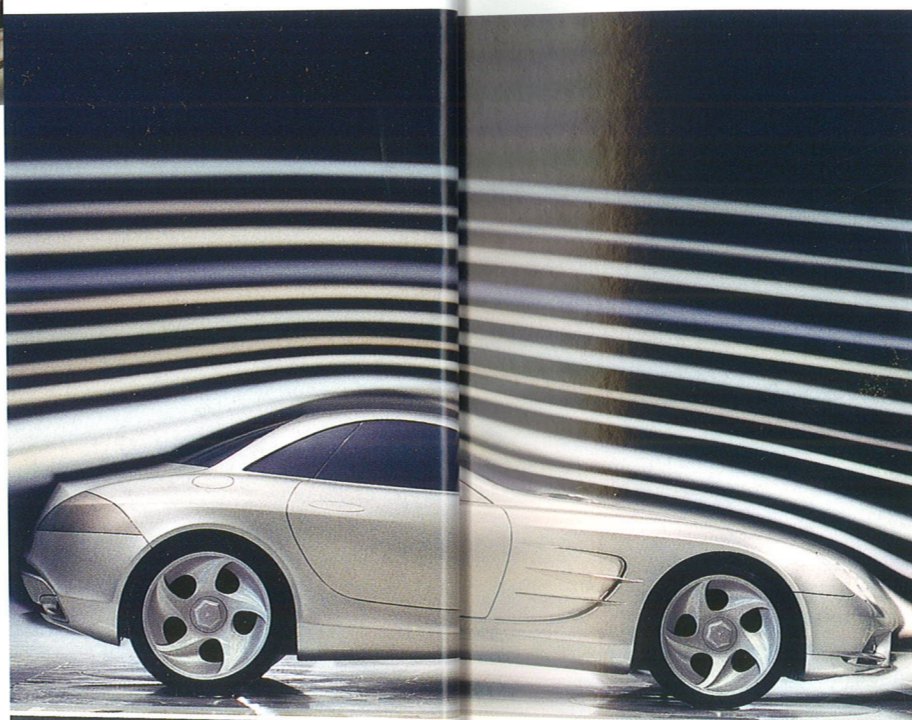


**"The unusual SLR fits perfectly into our product series. Its line can easily be recognised - it is without doubt a Mercedes."**

**JURGEN HUBBERT**

chairman of the board, Jürgen E. Schrempp, this step, which still needs to be officially signed and sealed, is a clear indication of "a long-term strategy to secure the unmistakable standing of Mercedes-Benz in an area of intense competition for the future. This decision stands alongside others, such as acquiring the majority stake in AMG, our partner for exclusive and sporty limousines and to build the Mercedes-Benz Maybach."

It is a foggy Saturday morning in England but the SLR is sparkling in the piercing spotlights which set the scene in the large tent at the edge of the Silverstone race track. The DaimlerChrysler board only gave the go-ahead for the project the previous afternoon, although the idea was first tossed around at the German Grand Prix in Hockenheim last year. At the motor show in Detroit in January



they exhibited a driveable concept car. And six months on, the idea of an innovative super sports car for the 21st Century has finally taken shape, further enhancing the working (if not to say flourishing) partnership.

Mercedes and McLaren will not only work together on a sporting but also on an economic level. Both companies will invest around £140 million in the project. The design suggestions and ideas of the innovations pool at Mercedes-Benz will be turned into cars at McLaren's new Paragon headquarters in Woking beginning in January 2002. The introduction of the car to the global marketplace is planned for 2003. Experts predict a worldwide increase in the high-quality sports car segment to 2500 cars over the next five years. DaimlerChrysler aims for a 20% share in that



**Above left: In the future designs developed in the Mercedes-Benz innovations pool, will be converted into working cars at McLaren's paragon headquarters.**

**Above: Windtunnel testing of the long-bodied, aerodynamic SLR.**

**Right and top: The new car will be as close to Formula One as you can get on the road.**



particular market with the SLR. The factory in Woking may still be a building site at the moment, but its full potential will be exactly those 500 cars.

Hakkinen and Coulthard continue with their inspection. Only the shiny Nomex overalls separate them from any other excited driver taking the seat for the first time in a car that he had only dreamt of up until now. Their enthusiasm is genuine. The Finn and the Scot take it in turns to fiddle with switches, buttons and levers to check for reactions. It's as if they want someone to pinch them to assure them that this is not a dream. The final proof comes when the ignition works and the four headlights follow David's tentative steering manoeuvres. The two pilots experience the future in the present.

The Mercedes-Benz SLR will hit the roads in four years for a price of around £170,000 estimates Jürgen Hubbert. Judging by what will be included in the long and elegantly finished high-tech super road sports car it's a real bargain. Orders for the car will only be accepted once the detailed price lists have been published. "The unusual SLR fits perfectly into our product series. Its line can easily be recognised - it is without a doubt a Mercedes". Hubbert's opinion was probably shared by all the invited guests. A car which includes both comfort and some revolutionary technology.

The superlight doors move diagonally upwards in quick succession to allow the experienced Formula One pilots a quick look into the interior of the road-version of a Silver Arrow. Mainly, they want to change places. Each of them wants to touch the small steering wheel that reminds them of their company cars. The second walk around the car ▶



SLR



SLR



Left: The front of the SLR clearly mirrors the McLaren nose and front wing.

Right: The SLR's elegance is emphasised by details such as its dominating headlight cluster.



Left: Coulthard and Hakkinen excitedly explore the new car, testing the switches and levers.

Right: The Mercedes racing heritage is emphasised by the air scoop on the side of the car which echoes the 300 SLR sportscar of the 1950s.



**"The SLR is a car that captures the spirit of Formula One."**

**RON DENNIS**



Above: The historic Silverstone circuit proved a perfect setting for the Mercedes-Benz SLR, with its classic sportscar raised doors

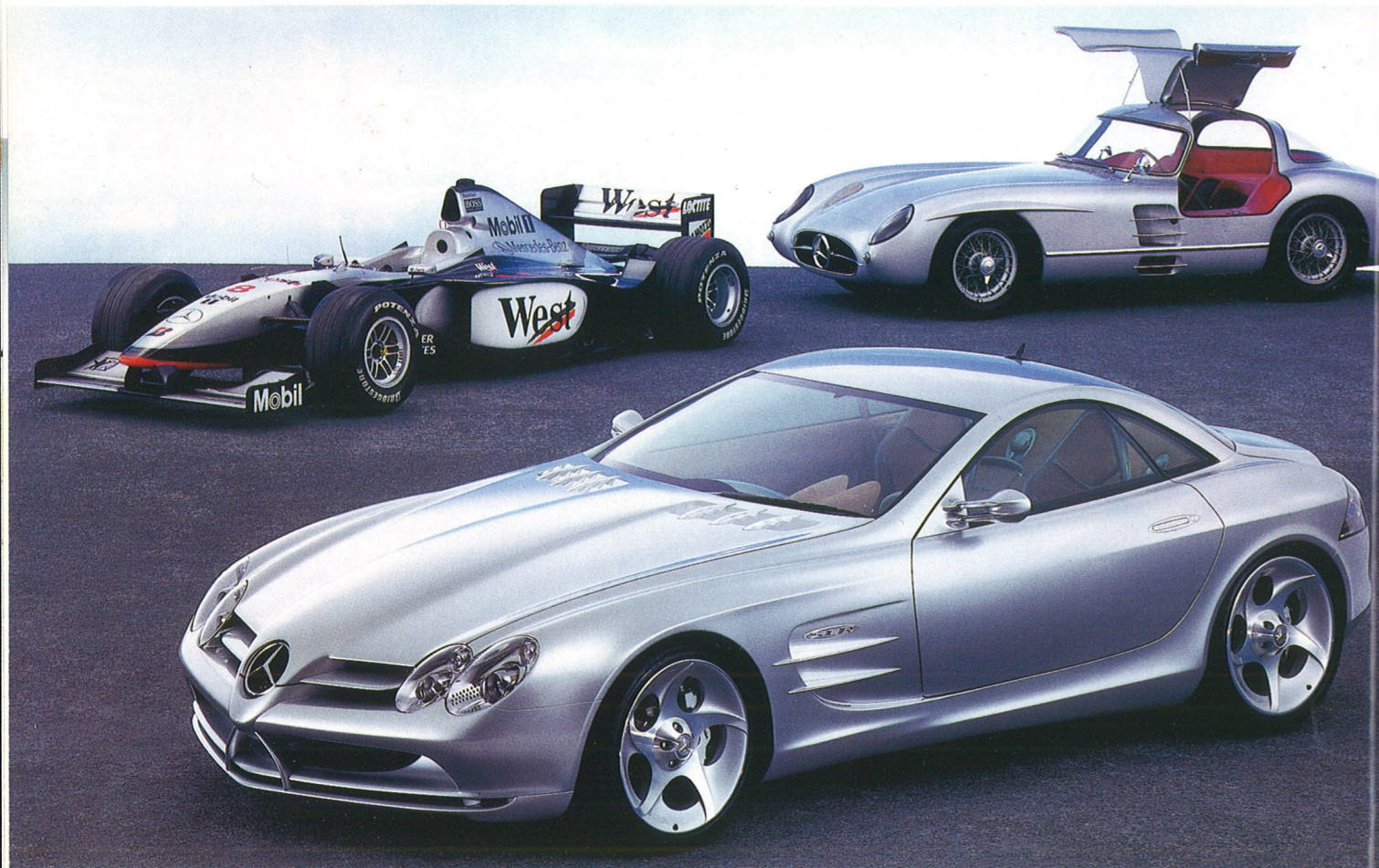
stops at the back. A boot, in the same colour as the remainder of the car interior, is far more interesting for racing drivers, as they normally have the engine behind. The same amount of interest is reserved for the elegantly hidden spare tyre.

Hubbert, though, heads straight for the bonnet. He wants to show Mika and David what is waiting there. The SLR is powered by eight cylinders offering 544 bhp. Acceleration and top speed lie in the region of 190mph. With a total weight of just 1400 kg the SLR definitely meets the F1 standard. Ideal for a short sprint on the forest straights at Hockenheim. For those who are interested in such things: the V8 engine produces a maximum torque of 700 Newton meters at 4000 rpm. The engine of this Mercedes McLaren with its compressor charging and special water-intercooling system extends the partnership even further. The latter is produced by the AMG factory in Affalterbach which complements the DaimlerChrysler resources.

The principle to rely on highly specialised and flexible partners was christened within the company as the "Competence Center". It will extend the partnership between Mercedes and McLaren

even further. "It is a big step towards the future", says Ron Dennis who will continue his work as Managing Director of TAG McLaren in a similar fashion. "We are very flattered to be part of the future of DaimlerChrysler." There is no reason to change existing patterns. This is also reflected on a percentage-level. "Our partnership is more than just a business relationship, therefore we don't need a majority", explained Hubbert. The goals remain the same for Ron Dennis, even with the changes on the legal side: "The goals of the partnership are ambitious and clearly defined. It is very important that we maintain our strengths to secure success in a new area."

The subject of safety is also worth mentioning. Every racing car starts with the same thought, which is also obvious in the Mercedes-McLaren aimed for daily use. The panel of Hubbert, Mika Hakkinen and David Coulthard spend a lot of time discussing the safety systems. The crash structure gains its strength from the bodywork combining carbon fibre and other high-quality materials. A positive effect is the reduction of the overall weight which hopefully will become the standard in this



Above: The SLR clearly shows its historic relationship to the SL sports model of the 1950s as well as to the Formula One car.

**"It is very important for us to hold our present position in Formula One."**

category. Maximum rigidity and passenger safety are guaranteed by materials that have been used in Space. Technical innovations form the basis when it comes to controlling the SLR - the brake discs are made from fibre-reinforced ceramics. Electronic regulators reduce reaction times and additionally increase overall safety.

Finally Ron Dennis and Mercedes Motorsport Director Norbert Haug join the impromptu SLR test team of Hubbert, Hakkinen and Coulthard, who are not just praising the latest Silver Arrow out of respect. It's part of the fact-finding process. The arrow-shaped nose reminds of those seen on the front row of the F1 grid. The double spoiler with its two curved struts sits below the tip of the bonnet. They work together with the winglets that are placed laterally behind the front wheels to achieve an aerodynamic resemblance to the modern Grand Prix car. Breathtaking details such as indicators that

have been integrated into the wing mirrors indicate a wealth of new ideas. As required in motorsport.

The joint effort in Formula One will not change. The budgets ("We only spend what is necessary to win") as well as the goals remain undimmed: As Dennis says; "It is very important for us to hold our present position in Formula One. And the SLR is a car that captures the spirit of Formula One."

However, the titles will differ slightly. The MP4-14 and its team on the track continue to be McLaren-Mercedes, but the road version will be known as Mercedes-Benz.

The changes in the car industry, believes Jürgen Hubbert, are also reflected in the highest level of motorsport. More and more of the manufacturers are looking to intensify their relationship with the teams, as is the case with Ford and Stewart. This is a development which Mercedes and McLaren do not need to follow necessarily. The intense partnership

**"An incomparable combination of design... safety, quality and performance."**

JURGEN HUBBERT

was already formed before any of this happened. Not one minute was spent discussing the existing Formula One contract: "There is no reason for it. The contract runs until 2002 and is automatically extended if none of the partners give notice."

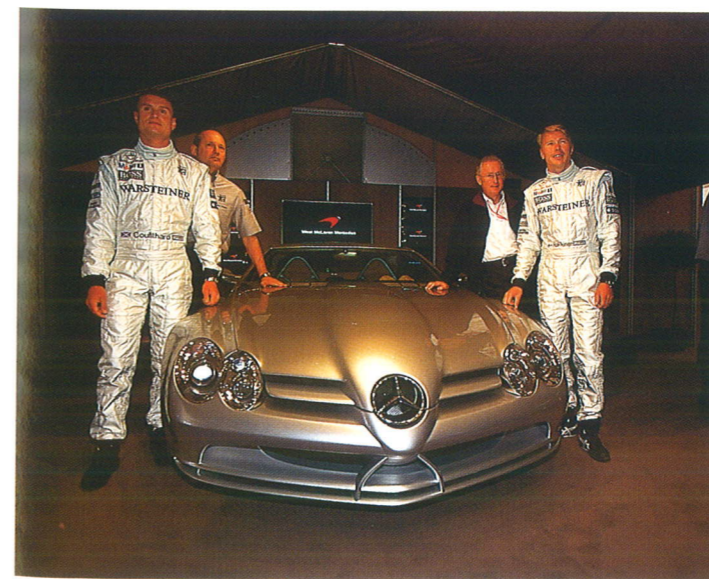
The Mercedes-Benz SLR completes the circle from innovation to tradition and back to innovation. The bodywork takes up the typical characteristics of the SL sports model of the 1950s. The winglets placed under the SLR badge, the bonnet and bumpers are perfect examples. But they are not copies so much as new interpretations of an old idea. The gullwing doors are an updated version of the original ones - attached to the roof because tighter parking spaces made a design re-think necessary - but still maintain a strong link from history to present day.

But one thing will remain exactly the same. A change in motorsport regulations in 1955 made it necessary to rename the 300 SL by adding one more letter: S = super, L = light, R = racing. The internally used model name W196 S already shows a close relation of the Formula One racing cars.

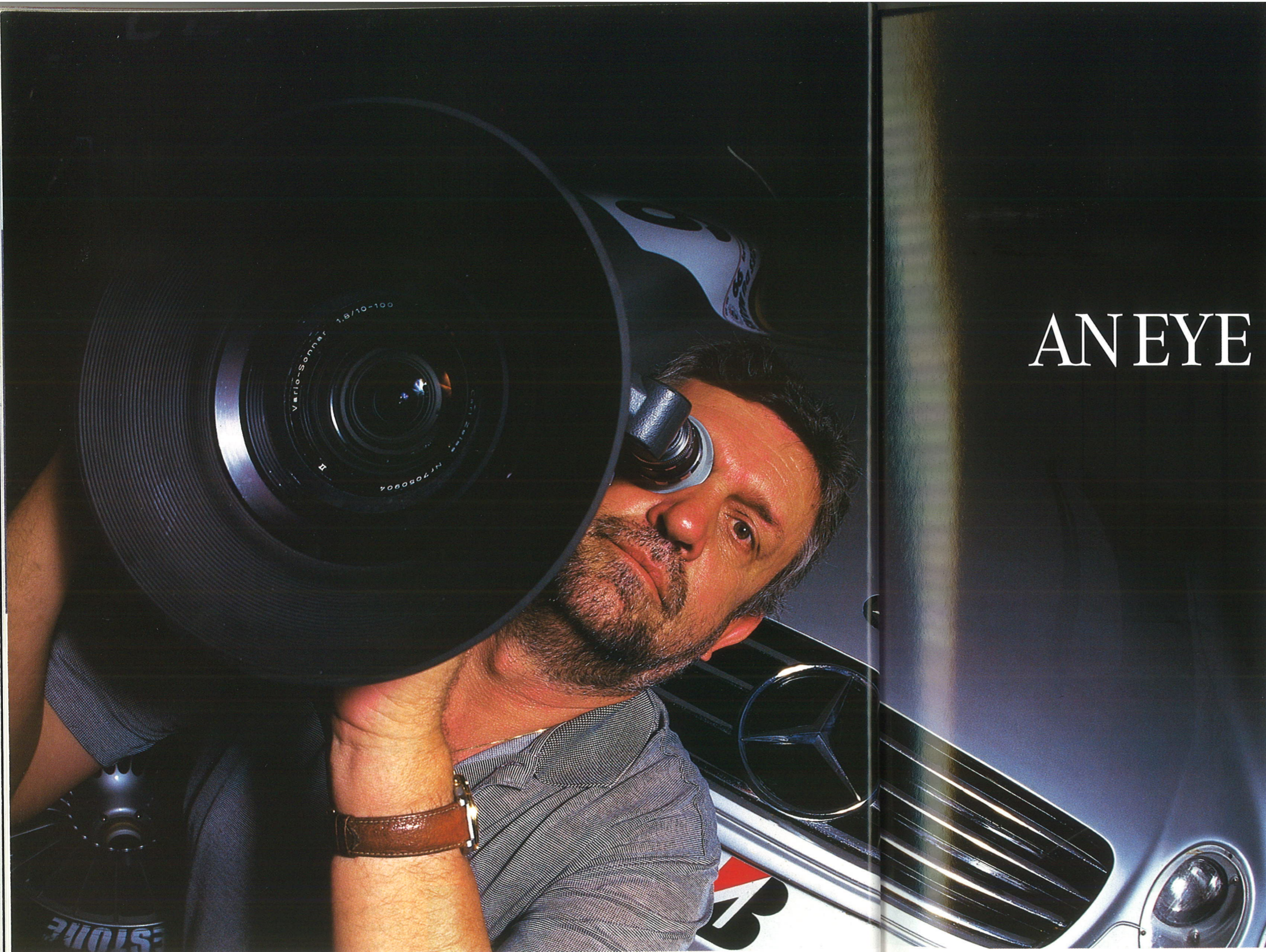
Hubbert calls the SLR "an incomparable

combination of design, with all the typical characteristics, future-oriented innovations and high levels of safety, quality and performance" with which Mercedes-Benz and McLaren will return to the category of high-performance sports cars. The time elapsed between showing the concept car in Detroit and presenting the car in Silverstone is proof for Hubbert of the efficiency of Mercedes designers and McLaren's exceptional construction team around Gordon Murray and will separate their work from others. The changes in the details of the SLR are not always due to the ideas of experts. The concept car has already undergone extensive testing with potential buyers. According to market research the "reactions were extremely positive" resulting in the drastically reduced and Grand Prix-like turnaround.

Which leaves only one question. Will the SLR only be available in silver, ask the journalists. "The SLR will be available in any colour the client wants", answers Hubbert. "I can imagine it very well in black." He pauses and adds with a grin: "But not necessarily in Ferrari red..." ☺



Left: Four men and a car: Ron Dennis, Jürgen Hubbert, David Coulthard and Mika Hakkinen proudly act as guard of honour to Mercedes-Benz/McLaren's newest star - the Mercedes-Benz SLR.



LAURENCE BAKER

## AN EYE FOR BEAUTY

Where ever you see a Mercedes-Benz racing, the chances are that you won't be far away from Helmut Deimel, his eye pressed against the viewfinder of his camera. He is no ordinary film maker though, he is an artist. And his art is to capture the beauty of the silver cars in action.



F1



WORDS: ELMER BRÜMMER

**H**elmut Deimel is sitting by the marina at Monte Carlo. It's the early shift. The sun hasn't quite risen above the mountains; and the Formula One drivers are still in their beds. But it's light already. And Helmut is wide awake. He pans across the rows of yachts. A gentle twitching of his eyelids is a clear sign that he has a specific shot in his mind. It is the imaginary pole-position for close-ups he is planning. If you want to ensure you have the best position for the best shots from the crash barrier you have to get up even before the smell of

croissants fills the air. "Ahhh," he sighs. "I love this job, and it all happened quite by chance."

Deimel's relationship with cars was put to a tough test almost as soon as he had turned 18. He had just passed his driving test when it happened: the first accident. He escaped with shock; his car with dents. Helmut convinced himself that the accident was due to a problem with his Mini Cooper rather than 'new driver error', and it was worthy of a film, with the screenplay and stunts by Deimel himself. It was instantly clear that the boy had a special talent, for filming anyway.

Since then, his talent for driving has followed a more sensible road. However, his unusual angle on films not only persists, it's positively demanded.

The subject is always the same, as is the approach and attitude of the film maker. But the interpretations are always new. When Mercedes-Benz produces films about motorsport, this Viennese man's blood and sweat flows into them.

Curiously, he is less interested in the many plaudits he receives for his creations than in the anticipation and production. He's never happier than when he and Mercedes Motorsport manager ▶



F1

When Mercedes-Benz produces films about motorsport, a lot of this Viennese man's blood and sweat flows into them.

Norbert Haug find a client who shares their weakness for the aesthetics of racing. What really excites Deimel more than anything is to watch the audience when his films are shown. "The best thing is when non-motorsport fans start to understand the beauty, the art and the complexity of the discipline," he purrs. But of course it has to appeal to the cognoscenti and making his films accessible to both film buffs and motorsport fans is the great challenge he faces. His philosophy is guided by the need to allow the viewer to pause, and linger a while, despite the high speed of the action. "The pure fascination of racing has to be intrinsic to the film," he says. Deimel's annual film review - which premieres at the Stars & Cars party in the Mercedes facility at Unterturkheim in November - has now become a tradition. So how did it come into being? "One thing led to another," he shrugs modestly, before taking another gulp of coffee to the accompanying sound of the water lapping at the Monte Carlo harbour wall. "My enthusiasm for the sport is a great help in this job," he tells me. That enthusiasm has to be awoken by a strong filter coffee from the Mercedes hospitality marquee this morning. In the last decade, getting his job done in a Grand Prix world that has become dominated by security barriers and wire fences has become increasingly difficult. Sometimes, he says, it is a real battle with the marshals at each circuit. "They have their



WILHELM

Right: Deimel in his natural habitat, filming from close to the barrier. Far right: Deimel will hope to get between three and five perfect shots per race weekend. Above right: Deimel is always on the lookout for new locations to shoot from.



MICHAEL C. BROWN

Only when each sequence is sufficiently expressive can the threads of tension within the film weave their magic.

instructions, but no idea about camera angle...!" Deimel, thought, still pursues his preset goals. "But sometimes," he admits, "my work is characterised by spontaneity." But he has absolutely no problem with that. In fact, the Deimel films really come alive through surprises; they need these turning moments. Only when each sequence is sufficiently expressive can the threads of tension within the film weave their magic. Simply because a picture can express more than a thousand words, sequences can often easily run without a commentary. But if words need to be expressed, they are spoken by Herbert Völker, a master of sensitivity and nuance. Völker's influence on Deimel goes back a long way to when Helmut was an avid reader of the Austrian motor revue, large sections of which were made up of rally reports by Völker. Deimel remembers that he was "struck by the fact that Völker didn't write about the theory of differentials, but instead he captured the atmosphere". Helmut was still captivated by the articles when he became

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**"If a sequence holds up the film, no matter how beautiful it is, it has to be cut."**

**HELMUT DEIMEL**

◀ a student, and the only therapy that could free him from this captivation was to grab a super-8 camera and set off for the 1000 Lakes Rally in Finland.

The showing of the film he made at the Vienna Rally Club was to be a truly remarkable event. Things didn't stop at the premiere, as the audience demanded four encores. That night gave the young film maker the self-belief he needed to continue.

During the subsequent years at film school his enthusiasm was more contained, but this was due to a subdued air shared by both students and lecturers. Deimel shrugs. "They were all so melancholic. Anything that fleetingly smacked of

entertainment or was even vaguely comprehensible was frowned upon."

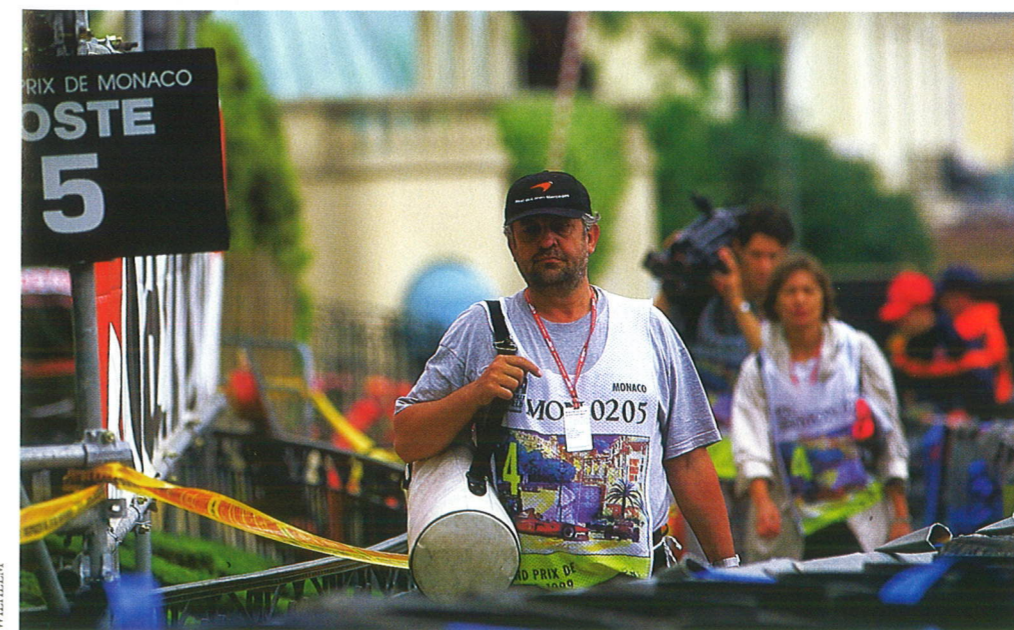
It was time to cut loose from the constraints of film school and go freelance. "I didn't care what happened; I just wanted to work as a free person." He had no preconceived ideas...and no clients either. He did have a roll model in the guise of Herbert V. Eventually their adherence to the "all-wheel-drive" school brought the two together.

Since then, it has been true to say that in Deimel films, the places and the people come alive. That isn't the full extent of his secret, though. "Perhaps it also has something to do," he says, "with the fact that I'm still in love with pictures. But without my rally trips with Völker, I'd be lacking something."

Today, a Helmut Deimel season – measured in celluloid of course – is 40,000 metres long. The Formula One, Sports Car and CART series would fill days and nights of viewing. But before any critics have a chance to comment, some serious editing is required. The Austrian admits that some cuts really hurt. "If a sequence holds up the film, no matter how beautiful it is, it has to be cut."

Between three and five unusual scenes per weekend's racing is considered excellent work. Often at least half of that footage is purely for the archive and is only revived in smaller films for dealers or hospitality marquees. Deimel calls these 'appetisers.' They give you a hunger for the big movie – the Mercedes Motorsport family film.

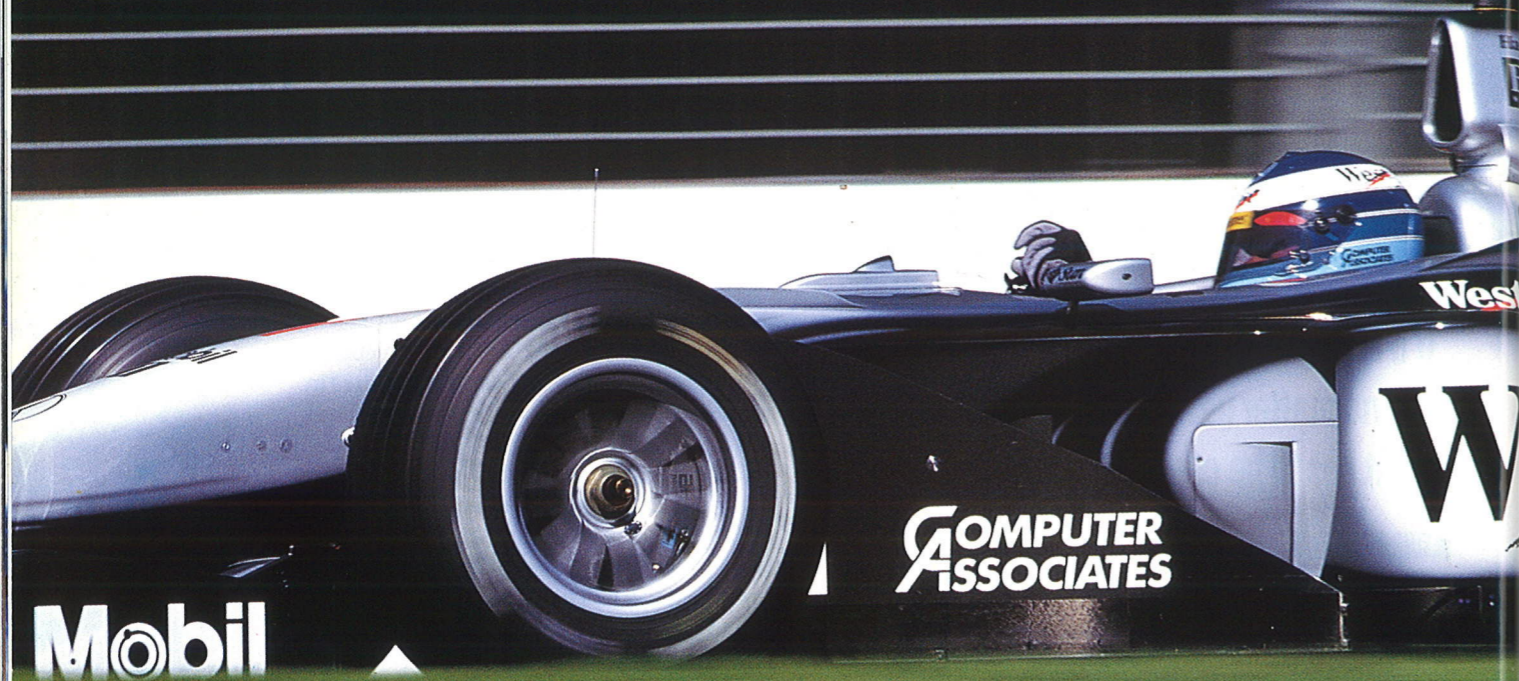
Forty nine-year-old Deimel is always accompanied during work assignments by his girlfriend, Helga Scherzer, and can often be seen trudging around the circuits with his rather bulky, 170 frames-per-second, ARRI SR2 16mm camera on his shoulder, which he calls the Pullman of the ▶



**Above: When all the film is shot, there are still some painful decisions to be made in the editing room. Left: Deimel covers a lot of ground over a Grand Prix weekend, often leaving his girlfriend and assistant struggling keep up.**

WILHELM





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GAVIN LAWRENCE

Left: The ARRI SR2 16mm camera may be slightly large and cumbersome, but Deimel swears he will never swap it for a video or digital device. Below: The Deimel motorsport season covers hundreds of hours of film, all carefully labelled and awaiting editing for the review of the Mercedes Motorsport year.



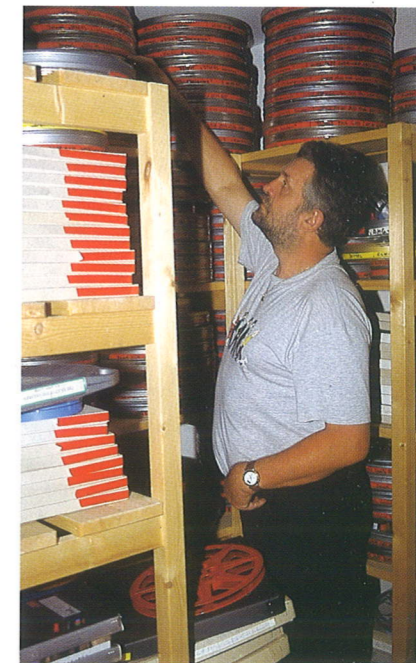
F1

class. But what of the sleek, modern video cameras? "Are you trying to offend me?" His facial expression speaks volumes. "Digital cameras and electronics," he says, "destroy the look of the film, perhaps even the logic of the film." He loves the ARRI's multiple apertures, the fact that - compared to videotape - the ARRI's films last forever; and he loves the fact that every last detail is down to him: including any camera wobble!

Each newly-discovered, optimum camera position along the race course is immediately followed by 50 more new ones, which must be tried out. In such a job you always have to be ready to film, even if walking to each spot - particularly in Monte Carlo - is a real strain on the legs. The thinking process is then done on the Tuesday and Wednesday after the race. Deimel says that it is always an exciting moment when you start to review each of the reels of film you have shot.

Up to 15 people are ultimately involved in preparing the review of the year film. The process takes four weeks in the late autumn. It is a frenzy of activity, Deimel says. The season might have finished for the drivers and teams, but in the film studio that last-minute fine-tuning goes on almost until the lights dim and the opening credits roll.

As the sound of cars fills the air around Monaco again Deimel gets up, drains his coffee and heads for the door shouting "Auf Wiedersehen" over his shoulder. It's a word which could be translated as "until we see things again...and again...and again". He truly is 'Deimeler-Benz.'

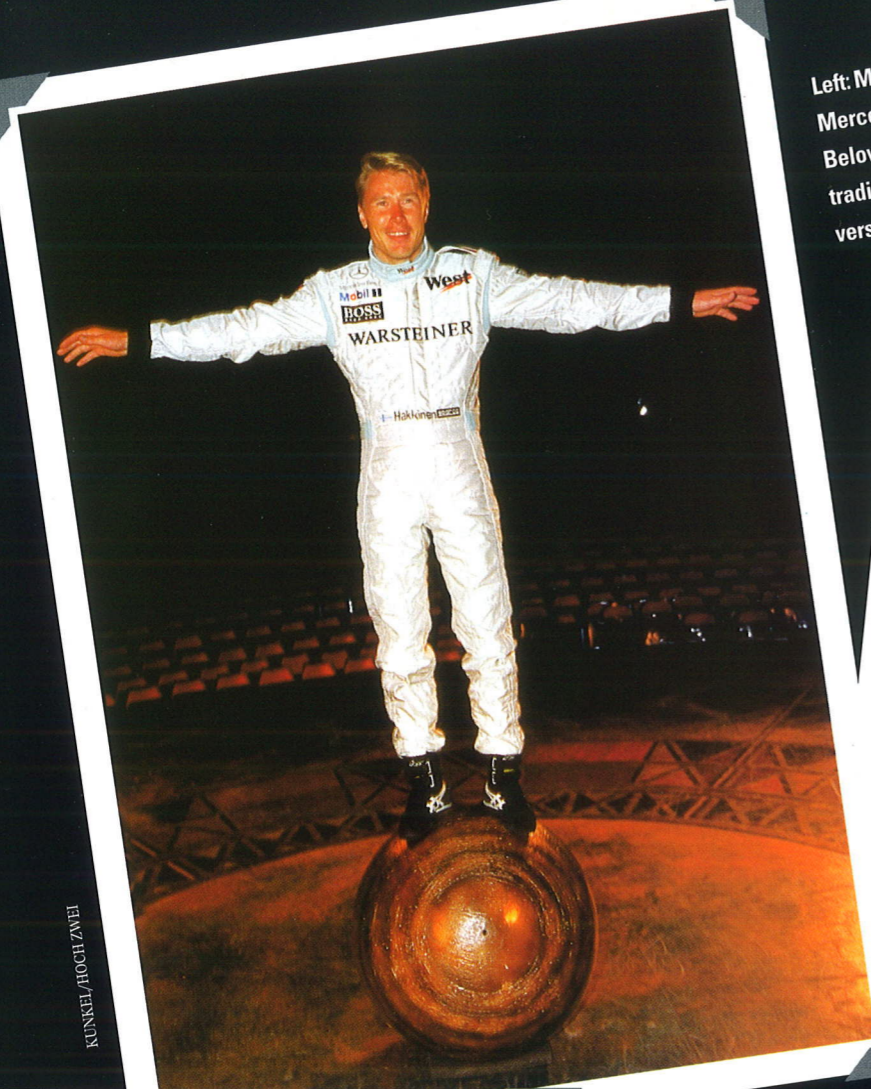


**"Digital cameras and electronics destroy the look of the film, perhaps even the logic of the film."**

HELMUT DEIMEL



POSTCARD

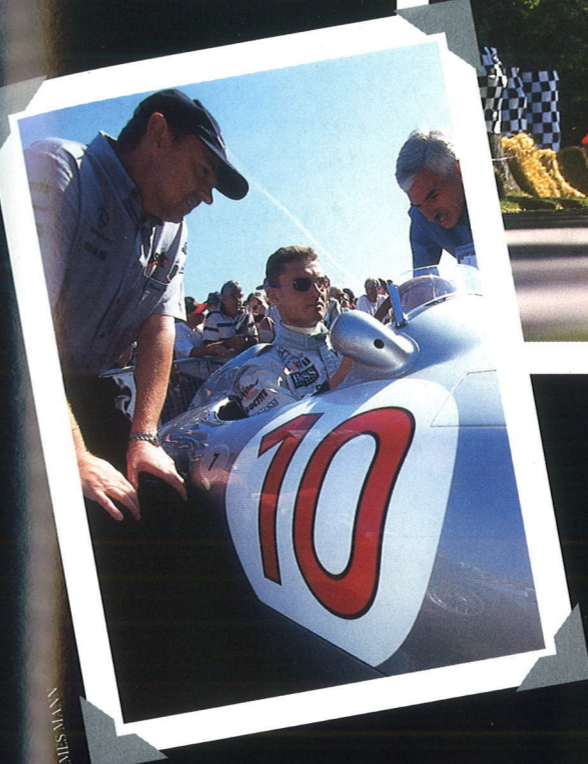


KUNKEL/HOCH/TEMKEL

Left: Mika proves that it's not just this McLaren-Mercedes MP4-14 that has perfect balance. Below: Referee! David Coulthard upheld the long traditions of Scottish football at the F1 drivers versus Prince Albert XI at Monaco.



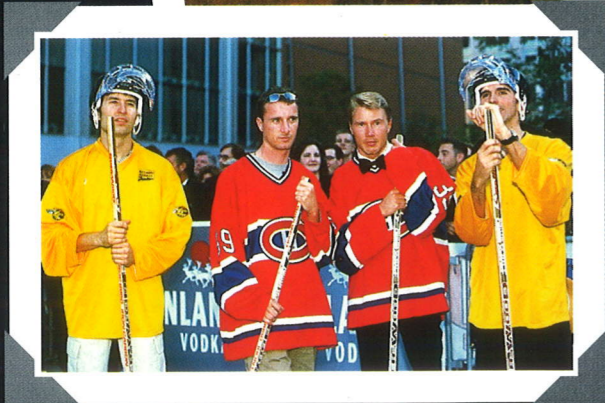
Below and below right: David Coulthard got acquainted with another Mercedes at the Goodwood Festival of Speed when he had a run in the W196. Right: The 1990 World Sportscar Championship-winning Mercedes C11 whips up dust at the start.



JAMES ALAN



JEFF BROWN/LAT



SUTTON/ROSE

Pedal power replaced horsepower when Mika and David raced against each other on the start/finish straight before the serious work began at Magny-Cours.

Mika Hakkinen stayed ice cool when he and fellow Formula One drivers tried their hand at the Canadian national sport of ice hockey during the Montreal Grand Prix weekend.

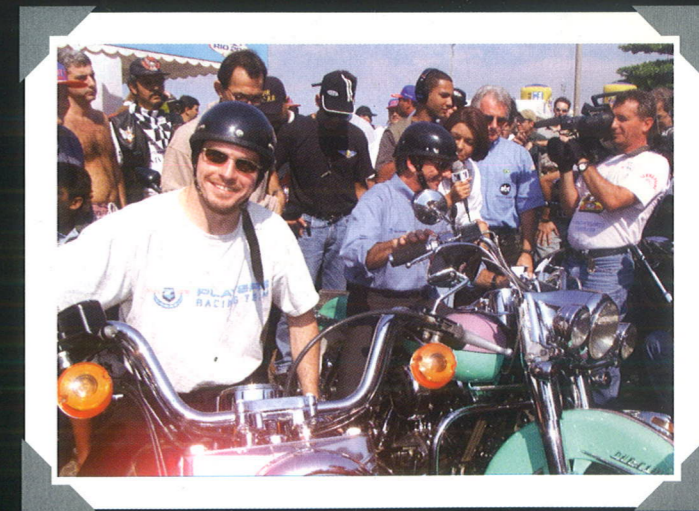


Mark Blundell's birthday just happened to fall during the Motegi Champ Car race weekend, and there just happened to be a couple of *Playboy* playmates who wanted to help him celebrate the occasion.

The West McLaren-Mercedes catering crew performs miracles to feed several hundred hungry mechanics, drivers, team members and journalists.



ANASTAS/REUTERS/EMMA



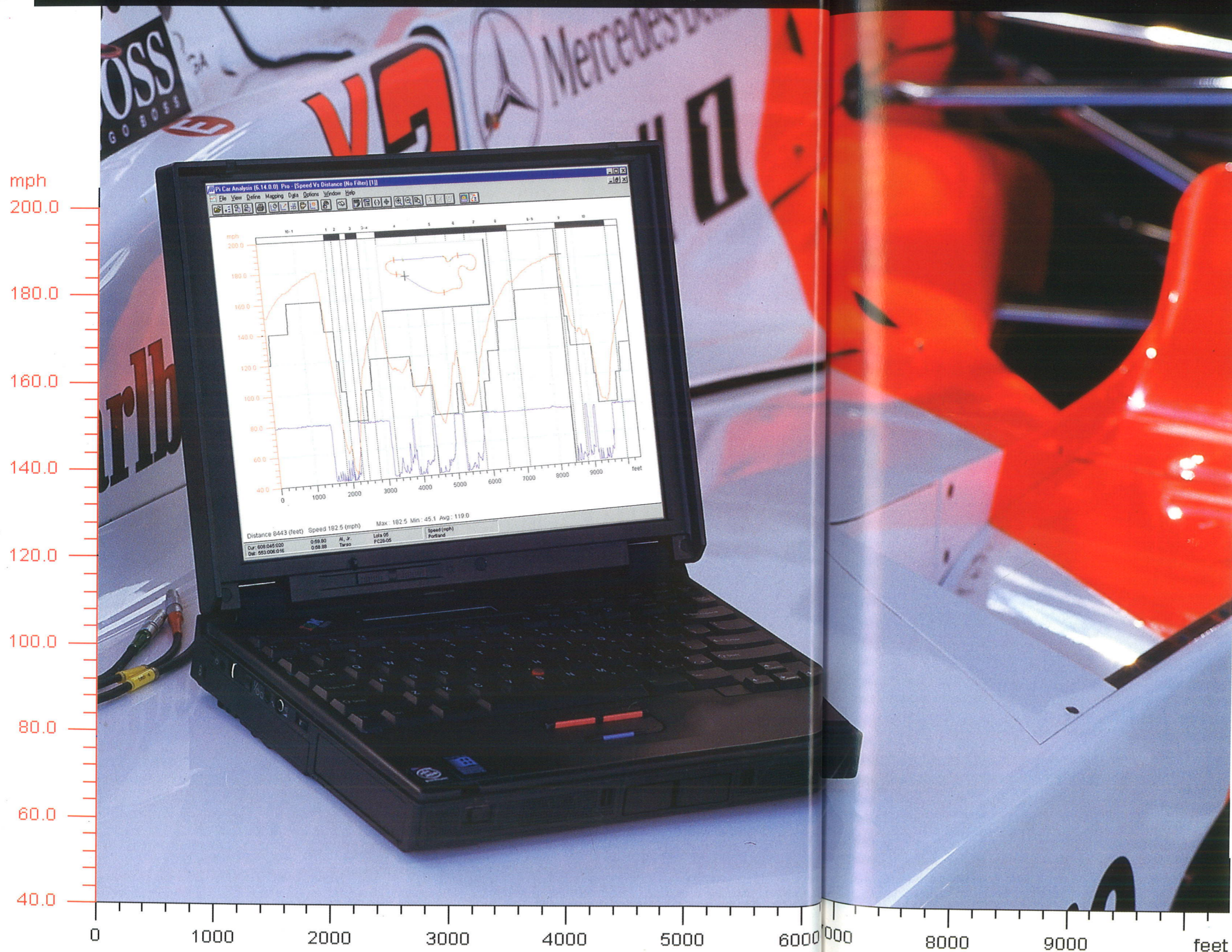
It's not all work, as Patrick Carpentier and Emerson Fittipaldi enjoy getting to grips with some heavy duty Harley Davidsons.

# Every picture tells a story



For over 10 years telemetry has played a massive role in motorsport, but how much does the average fan actually know about this dark art?  
 BEN EDWARDS asked Penske to explain it. PHOTOS: MIKE LEVITT, ILLUSTRATIONS: PETER LIDIARD

CART



## INFORMATION SUPER SPEEDWAY

**Y**ou don't need to tell me that telemetry is a mystery. I have a vague idea of information being passed through the airwaves between car and pit, but beyond that my mind goes fuzzy. On the lap-top computers ranged up and down the pit area, however, it's crystal clear; engine health checks, fuel consumption, turbo boost and tyre pressure readings all listed and constantly updated. Enough information to keep the most statistically-starved techno-freak happy for hours and hours.

Those of us observing and writing about the sport tend to use the word telemetry rather loosely as a collective term for all the information that engineers spend hours studying throughout a race weekend. In fact, the word relates only to the data that is received via radio waves to the towering antenna that waves in the breeze above the pit box. This 'real-time' information allows the specialists to keep an eye on operating conditions and any potential problems that may crop up while the car is on track, but for the detailed data on what's happening with the chassis and how the driver is responding it is necessary to plug in the lap-top at each pit stop ▶



CART

The telemetry is providing real-time information on all aspects of engine behaviour, including pressures, temperatures, revs, boost readings, fuel pressure, battery voltages etc.



Above: The Penske engineers can inform the driver of impending problems or tell him to push harder according to the data they receive. Right: The men from Mercedes engine partner Ilmor are able to ensure the best is extracted from their IC108E engine at all times.

and download the files. Chris Gantner is the Data Acquisition Engineer for Marlboro Team Penske and he is responsible for no less than four separate computers in the pits every time the car goes out.

"I have one lap-top which is displaying the telemetry from the car as it goes around each lap, then another to analyse the data that I download each time the car comes into the pits. The third screen is connected into the Omega timing and scoring system and the fourth, a more basic telemetry, is on display for the race engineer and the mechanics to keep an eye on the essential temperature readings in the car and to establish the whereabouts of the car on circuit. That's so we don't call up the driver on the radio when he's in the middle of the most difficult corner."

Like a keyboard player in a rock band, Chris turns from one instrument to another to extract the information required for both reliability and performance.

"The telemetry is providing real-time information on all aspects of engine behaviour, including pressures, temperatures, revs, boost readings, fuel pressure, battery voltages etc. It is also monitoring gearbox oil pressure and temperature, and each reading has an alarm so if it goes beyond limits, we are warned instantly."

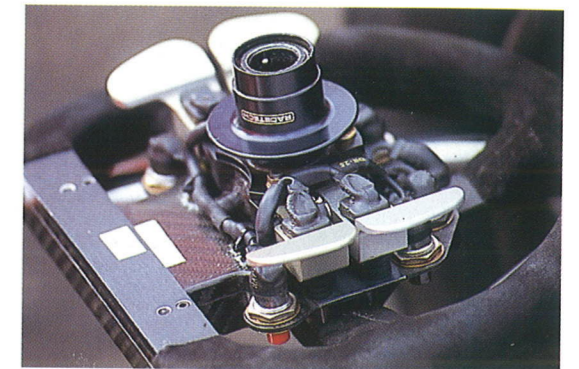
The subsequent action taken depends on whether the car is out in testing, practice or race. If, for example, the gearbox oil temperature starts to climb during a test session, the car will be brought in to prevent damage spreading. In the middle of the race, however, there's little that can be done except warn the driver and keep fingers crossed. Rising engine temperatures can sometimes be controlled if the fuel mixture is made more rich, but that depends on fuel strategy and the tactical position in the race. A huge amount of information is being beamed through the air, up to 96,000 Kilobytes per second, but occasionally modern technology can be





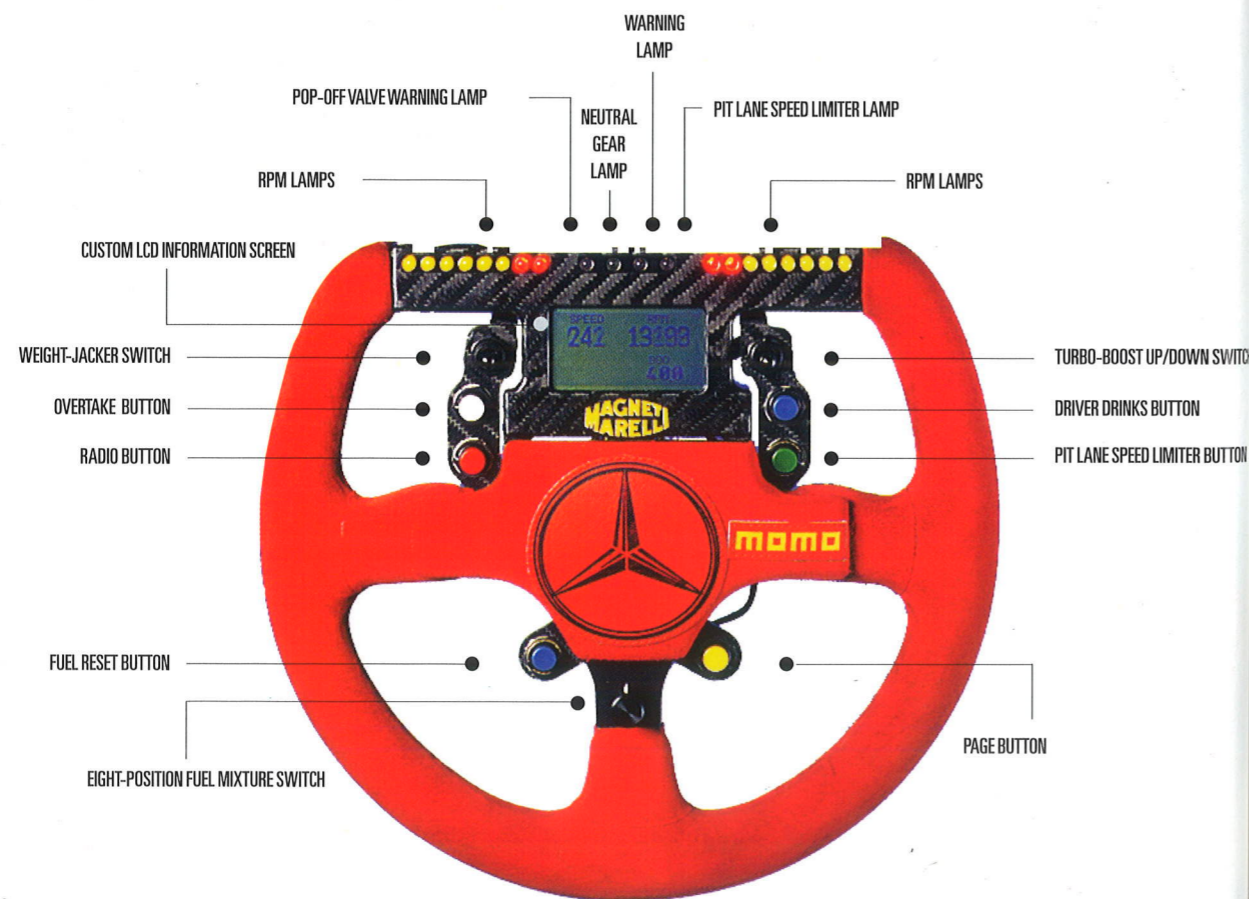
CART

"At Portland we have a clear signal right around the track but at places like Surfers' Paradise with buildings and bridges in the way, we end up with blank areas which we call 'data tears'." **CHRIS GANTNER**



Above: Front and back views of the Penske steering wheel demonstrate the complexity of the many electronic systems that are now at the drivers' fingertips.

### Designed by Ilmor, engineered by Magneti Marelli, constructed by Momo.



### THE STEERING WHEEL

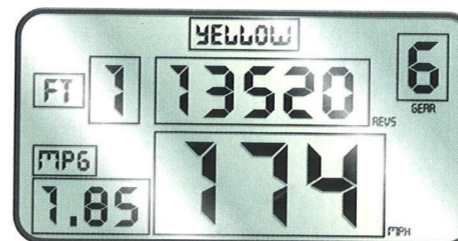
The steering wheel used by the Mercedes powered teams is an example of the technical co-operation within Champ Car racing which allows the driver to do a better job. All the information that the Data Acquisition Engineer has access to via his lap-top can be displayed for the driver on the wheel-mounted LCD screen by scrolling through the options, but in practice, the drivers tend to have their favourite displays when out on track. Al Unser Jr, for example, likes to have the read-out of tyre pressures on screen, useful both in qualifying and in the race to know when the tyres are at optimum temperature for peak performance. These will be shown on the so-called Race Page, along with boost level, fuel in the tank, weight jacker setting, fuel mixture setting and water temperature. The Start Page shows a different set of parameters that are more vital when the engine is fired up, such as oil and fuel pressures. The third display is the Yellow Page, not, as may be expected, a listing of local amenities, but useful readings during a caution period, such as speed in miles per hour, fuel economy on previous lap and engine revs.

Marlboro Team Penske drivers have three pages of info to choose from, 'Race', 'Start' and 'Yellow'. The driver is able to scroll through them by pushing the 'page' button.



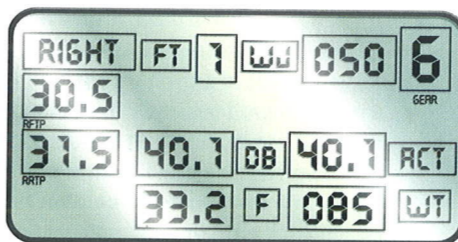
#### ENGINE START PAGE

BAT	battery voltage	WT	water temperature
OP	oil pressure	OT	oil temperature
FP	fuel pressure	DESBST	desired boost
TOT	total fuel used	REVS	engine revs per minute



#### YELLOW FLAG PAGE

FT	fuel trim slot	MPH	speed
MPG	fuel economy on last lap	GEAR	current gear
REVS	engine revs		



#### RACE PAGE

RIGHT	front and rear tyre pressures	WJ	weight jacker position
FT	current trim slot	GEAR	current gear
DB	desired turbo boost	ACT	actual turbo boost
F	amount of fuel in tank	WT	water temp

hampered by good old-fashioned concrete.

"Here at Portland we have a clear signal right around the track," explains Chris, "but at places like Surfers' Paradise, with buildings and bridges in the way, we end up with blank areas which we call 'data tears'. That can make life difficult."

When it comes to chassis performance, Chris has to wait until the car stops in the pits to retrieve the data. "Some Formula One teams are using a microwave system of wireless download which means they can obtain the information while the car is on track, but we are not there yet in CART. That will come in the next year or two."

During practice, Chris plugs in the computer to access data on aerodynamic balance and suspension movements and this is where his job can really help to improve performance within a session. Aerodynamic downforce is critical on any kind of circuit, and through studying the data from strain gauges on the pushrods, Chris can assess the front-to-rear downforce balance, as well as checking

Pole Position.



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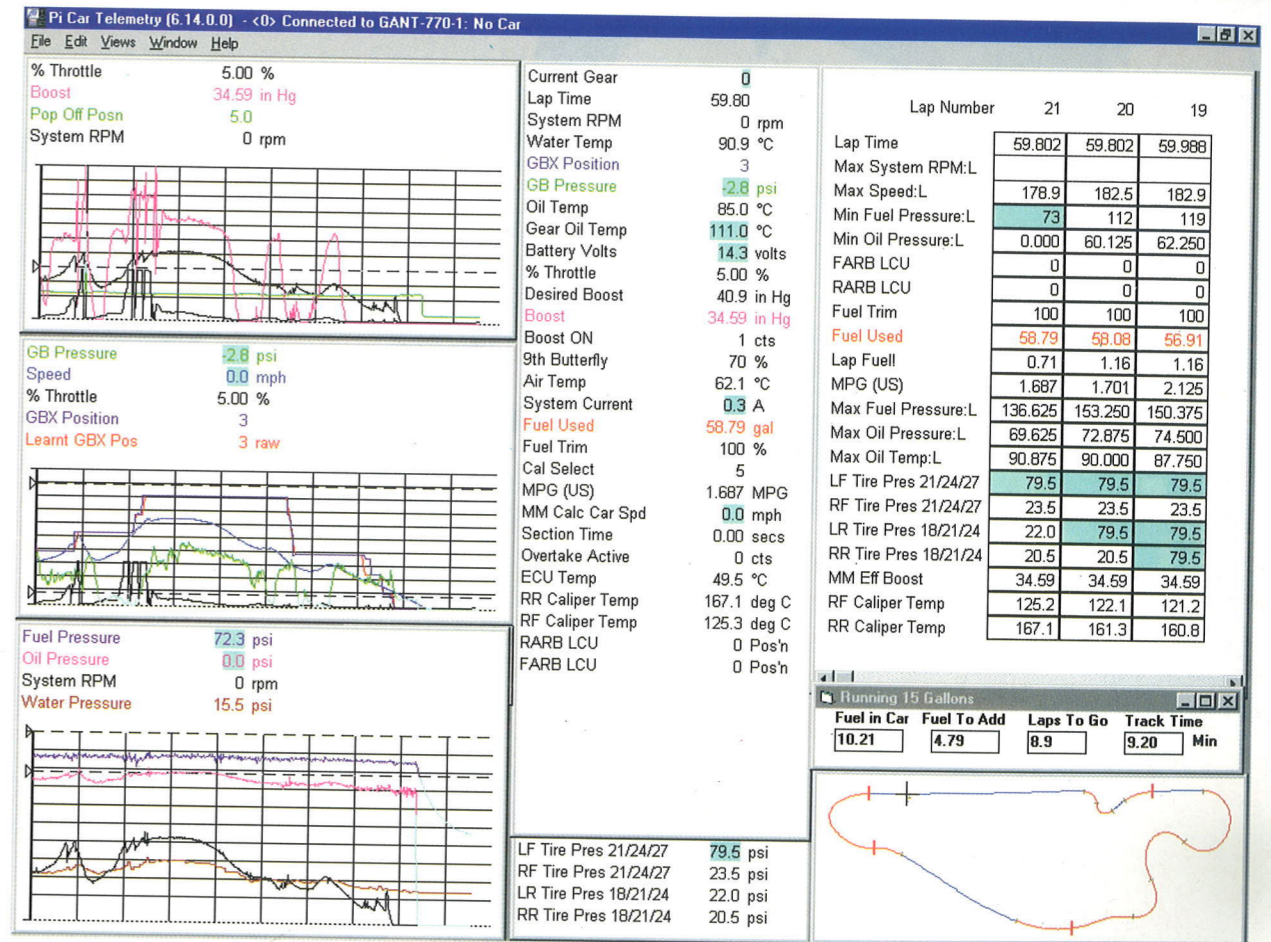
DAS EINZIG WAHRE



WARSTEINER

Spitzen-Pilsener der Premium-Klasse

The sheer amount of information to sift through can be daunting.



the result of any changes made. It can save a great deal of confusion.

"This morning we had a situation where we altered the front wing in such a way that we should have increased front downforce, according to the wind tunnel figures. When Al Unser Jr tried it on track, he reported he could feel nothing different. I was able to confirm that opinion through the data which showed that in spite of the change, the front downforce had remained exactly the same. That sort of back-up increases the driver's confidence in what he's feeling and saves time and confusion for the engineers."

The sheer amount of information to sift

through can be daunting, and normally Chris will report his findings to the race engineer once the car is back on circuit, unless it's something clearly wrong, like the wing has stalled. The introduction of F1-style microwave links for this type of chassis data will require more personnel to cope with the extra analysis, so increased technology does not always mean fewer jobs. In motorsport, the opposite can apply. Since 1988, when telemetry began to make its mark on the scene, the number of electronics experts in the paddock has exploded.

There is one other extremely vital aspect to Chris' work when it comes to the race. Fuel

**Above: Penske's lap-top data information screen demonstrates how many and varied parameters are monitored at all times. The blue areas are warnings that measurements have gone beyond acceptable levels.**



CART

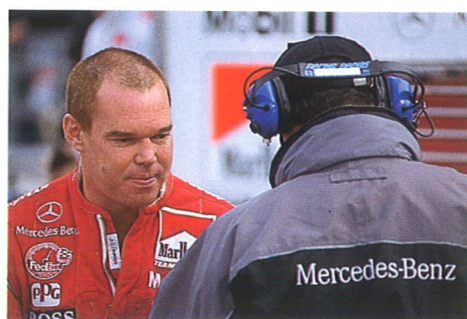
Fuel consumption can be altered through a wide range of settings by the driver, on advice from the pits, and that advice is based on the telemetry readings.



consumption can be altered through a wide range of settings by the driver, on advice from the pits. That advice is based on the telemetry readings of fuel remaining in the tank, and the consumption at any particular time. The calling of pit stops will depend on this information, and therefore Chris can be responsible for making up a number of positions if he calls it right. It is something that has to be done in the heat of battle.

"Fuel consumption can vary hugely, even with the same driver, depending on whether he is battling for position or maintaining a gap. Al Unser Jr is a left-foot braker and on some tracks that means he will use a bit more fuel than someone who brakes with the right foot. All this has to be allowed for."

The race at Portland was a good example of a fuel economy race, and in spite of running a lean fuel mixture, Little Al needed to make three stops and was unable to make up much ground.



On the lap-top, Chris was able to confirm that Al had switched off the 'shift without lift' gearchange system following a problem, and he was able to determine the chassis balance as being almost neutral due to the even increase in tyre temperatures front and rear. It was not an event where telemetry made all the difference, but you never know; maybe next time? 🏁

**Above: No serious racing car is without its PC interface socket. Left: Al Unser Jr's on-track perception of the changes made to his machine are discussed at length. His points can now be supported by the data to save valuable time.**

Welcome to the team.



Not everyone can become a World Champion.



Mercedes-Benz

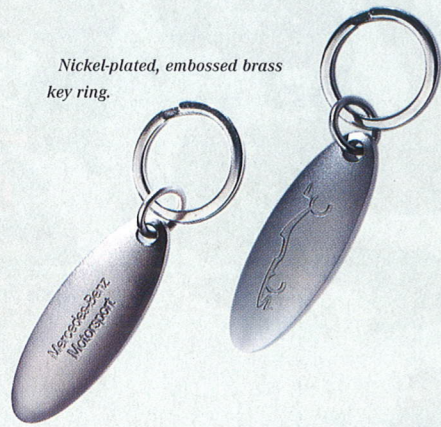


Motorsport watch with quartz movement, stainless steel brushed matt case, screwed stainless steel back and crown, double-strength high quality glass, water resistant to 100 m, soft calf leather strap, stainless steel fastening, tachometer ring, date display, hh:mm:ss/10.



Black nylon reversible waistcoat made of high quality Rip Stop fabric with silver appliqué designs, transforms in seconds into a silver waistcoat, lightly padded and attractively quilted.

Nickel-plated, embossed brass key ring.

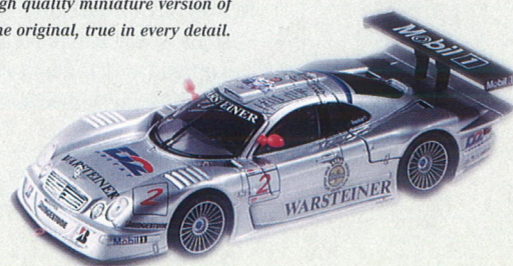


But everyone can look and feel like one.

Promo watch with quartz movement, sturdy plastic case, display shows hh:mm:ss, plastic tachometer ring, soft plastic strap, water resistant to 30 m.



High quality miniature version of the original, true in every detail.



Flag made of 100% satin, black wooden stick 150 cm x 1.5 cm, flag sizes 60 x 90 cm or 100 x 140 cm.



Short-sleeved shirt with button-down collar made from pure combed cotton, sizes S - XXL.

Nylon baseball cap with black cotton lining.



Windcheater with high-quality nylon outer fabric, mixed fabric lining, concealed hood, sizes S - XXL.



Polo piqué shirt made from 96% silk and 4% elasthane with silver buttons, sizes S - XXL.



Fans' nylon umbrella, black underside, diameter when open 65 cm.



Robust Rip Stop quality fabric nylon rucksack with padded shoulder straps and removable seat cushion measuring 24 x 28 x 3 cm.





Lightly quilted nylon/polyester children's jump suit, cotton/polyester mixed lining with black cuffs and an elastic waistband. Sizes\* 98 - 104, 110 - 116, 122 - 128. Warning! The children's jump suit is not a racing suit as it is not made from fireproof material.

\*European sizes



Pure combed T-shirts. Front shows either David Coulthard's or Mika Häkkinen's car. Sizes\* 140 and 152.

\*European sizes

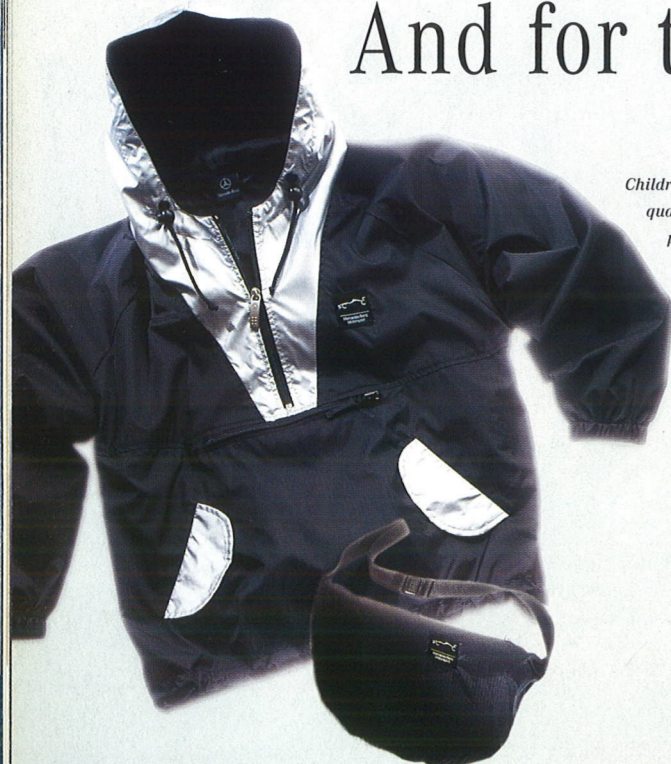


Original miniature version of the Silver Arrow, made from highly polished silver-plated brass. Flat split ring made from silver-plated brass.



Nylon baseball cap with cotton lining and embroidered signature.

## And for the little ones...

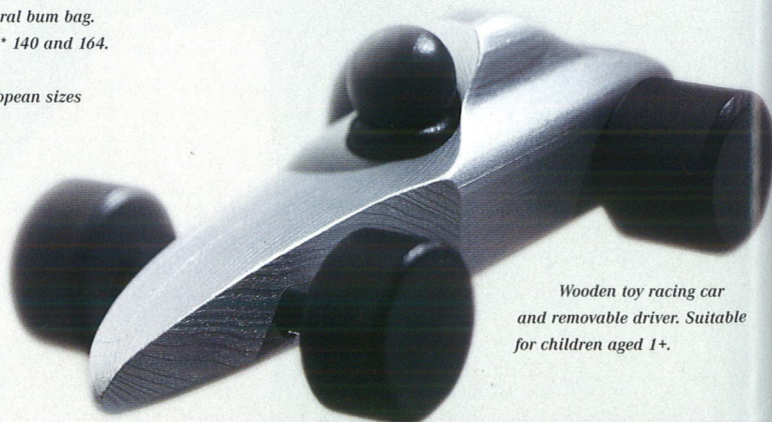


Children's all-weather jacket in high-quality Rip Stop fabric. Plenty of pockets and hood with cord-pull, stopper and 1/3 mesh lining. The cape can be quickly and easily packed away in the integral bum bag. Sizes\* 140 and 164.

\*European sizes



F1 '98 A-class. Scale 1:18.



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**West McLaren Mercedes**  
FORMULA ONE WORLD CHAMPIONS 1998



CART



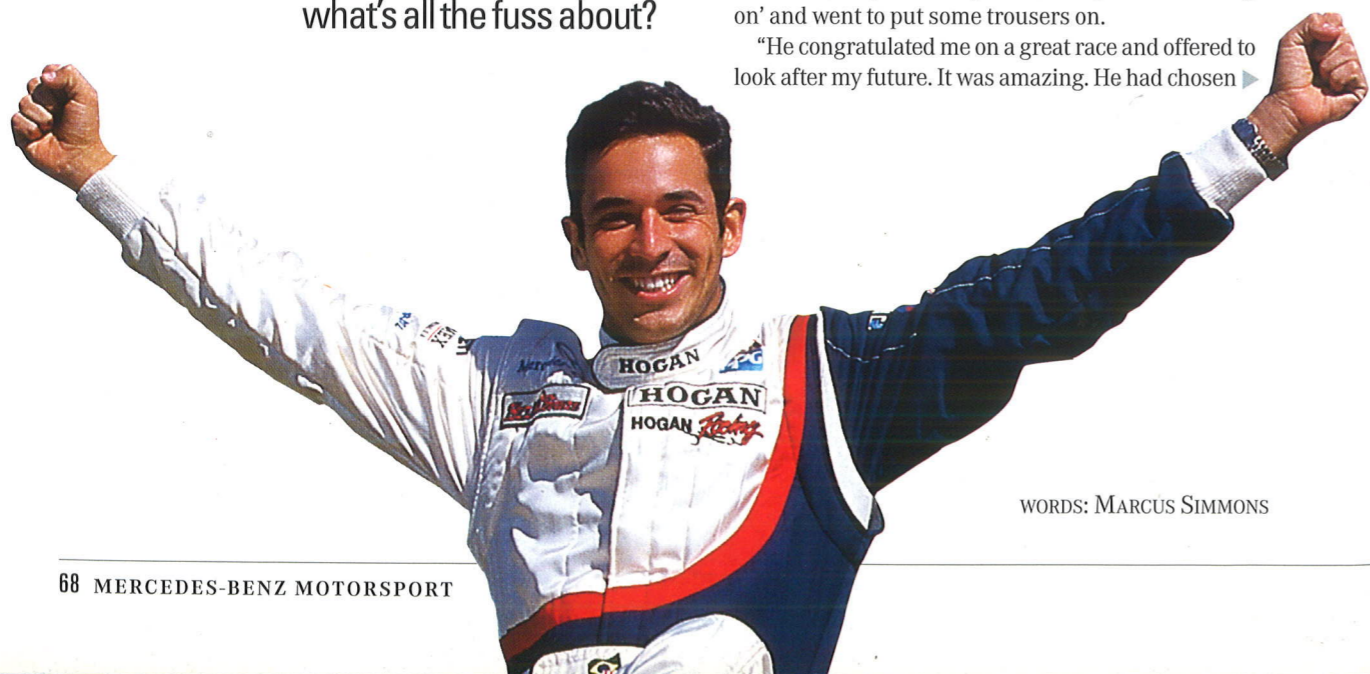
PHOTOS MIKE LEVITT

A few weeks before the start of the Champ Car season it looked like Helio Castro Neves would be sitting out the series. But after being called up late by Hogan Racing, the Brazilian is being touted as the next big thing, so what's all the fuss about?

**H**elio Castro Neves was in a dilemma. It was 1997 and the young Brazilian had just won his first race in the Indy Lights category. He was staying with a friend, it was very late, and the phone began to ring...and ring...and ring. "It wasn't my house," he recalls, "nobody knew I was there and I didn't really want to answer it. And hell, it was 10pm".

Anyway, eventually I picked it up and said 'hello', and this voice said 'hello, this is Emerson'. I mean, come on. It was 10 o'clock at night and I was in a strange house. 'Which Emerson?' I said. 'It's Emerson Fittipaldi,' he replied. I couldn't believe it. I was only wearing my underwear. I thought 'I can't talk to Emerson Fittipaldi in my underwear,' so I said 'hang on' and went to put some trousers on.

"He congratulated me on a great race and offered to look after my future. It was amazing. He had chosen ▶



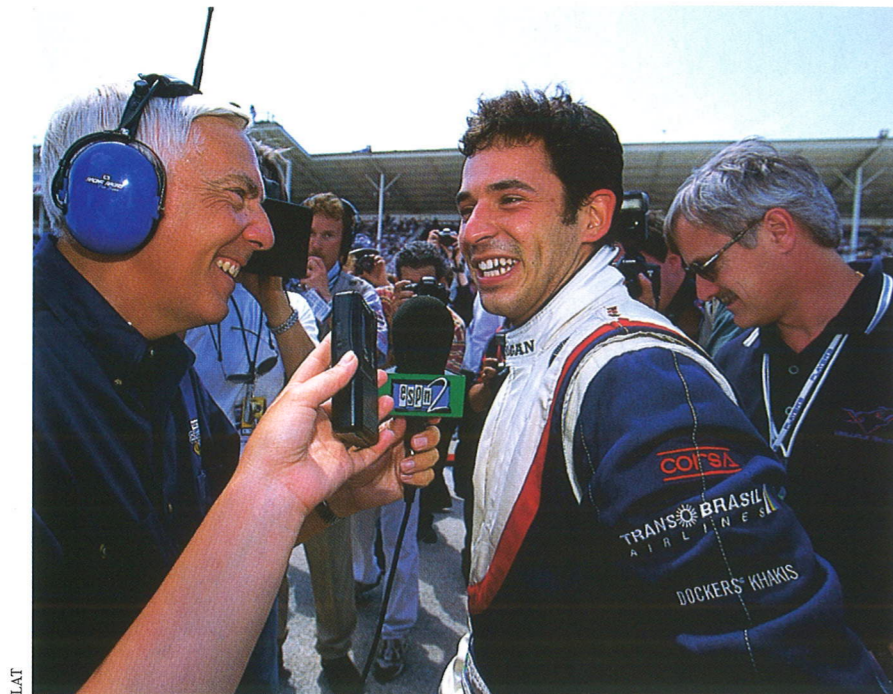
WORDS: MARCUS SIMMONS



# Jump start



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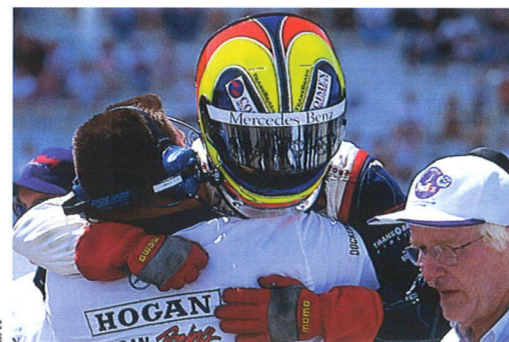


LAT

### CAREER PROFILE

- 1987 Began racing in karts in Brazil
- 1989 Won Brazilian National Kart Championship
- 1991 Raced in World Kart Championship
- 1992 Brazilian Formula Vauxhall, finished 2nd
- 1993 South American Formula 3, finished 2nd
- 1994 Brazilian F3, finished 2nd
- 1995 British F3, finished 3rd
- 1996 Indy Lights, finished 7th
- 1997 Indy Lights, finished 2nd
- 1998 Champ Car with Bettenhausen Motorsport, 17th in series, scored points eight times and was 2nd at Milwaukee
- 1999 Champ Car with Hogan

**Above:** After leading several races and taking his first pole position, the Brazilian is suddenly in huge demand. **Right:** Pole position in Milwaukee was greeted with undiluted joy by both Helio and the Hogan team. **Below:** The Hogan Lola stunned CART regulars with some superb performances on the ovals in the early races. **Below right:** Leading the Portland race in convincing fashion left the team feeling upbeat for the season, despite Castro Neves eventually being forced out by a technical problem.



LAT

LAT



CART

me, it was a great honour. One day when I'm 70 I can tell my grandchildren."

Two years on and his momentum has carried him into Champ Cars. His talent has taken him to the edge of glory, but as yet his bad fortune has left him frustrated. As I talk to him it's three days after he has lost a likely maiden Champ Car win in Portland, only two weeks after a similar disappointment in Milwaukee.

"Aaaaagggghhhh. Aaaaahhhhhhaaaaaaa." He screams in mock despair. He still can't believe his bad luck. But he's still smiling, cheerful and optimistic for the future after such a competitive performance. You get the impression that, if he actually reversed this fortune and won a race, he'd burst with joy.

"Ah - I was so focused," he continues. "Nobody could beat me. I had such a good rhythm in the car and at the same time I was still saving fuel. I was so disappointed, but that's racing."

If rookie Juan Pablo Montoya has been the sensation of the Champ Car season, 24-year-old Brazilian Castro Neves has been the next biggest eye-opener, but where has he come from?

After a season in British Formula 3 in 1995, during which Montoya was his team mate but raced in a more junior category, the Sao Paulista moved to the United States in '96 to compete in Indy Lights.

In his second year in Lights, Castro Neves took the runner-up spot in the title. Although money was in short supply he had caught the eye of Fittipaldi, who took on the role of finding sponsors and team for his new charge. He was soon offered a ride for the '98

Champ Car season in a Bettenhausen Motorsports Reynard-Mercedes. But he was still short of money and at the end of the season the team was forced to let him go due to his limited finances. Just as it seemed his career was about to stall he received a call from Carl Hogan, who had run Fittipaldi in his final CART season, and who needed an experienced and quick driver urgently. The team boss installed him aboard his Lola-Mercedes at the very last minute for '99.

**"I have to thank Carl Hogan, but the chance he gave me came very late."**

### HELIO CASTRO NEVES

It was a tough call for Castro Neves, who was required to help develop the B99/00 chassis from scratch as car maker Lola attempted to win back its share of the Champ Car market.

"At the beginning I was concerned about it," he recalls. "I have to thank Carl Hogan, but the chance he gave me came very late, just one week before the big Spring Training test. It was my first time with the Lola chassis and the Firestone tyres. Thank God I had one thing from last year - the Mercedes engine.

"I saw our early testing results as failure, but when you develop a chassis you have to be patient because

MSI/SUTTON





CART

## PERSONAL PROFILE

**BORN** May 10, 1975, in Sao Paulo, Brazil

**NOW LIVING** Miami

**FIRST FILM SEEN** I don't even remember what I had for breakfast, but I very much liked ET.

**MOST RECENT FILM SEEN** The General's Daughter.

**FIRST CAR OWNED** A Volkswagen pick-up. It was a bit like a Golf, with two seats.

**CURRENT CAR** A Mercedes E430. Last year I didn't have a car, but this year I think I made the right choice!

**DO YOU BELIEVE IN GOD?** Yes, very much.

**WHAT DO YOU HATE MOST?** Waiting in a queue.

**WHAT'S YOUR WORST HABIT?** Oh, I'm such a nice guy, you know? Er, I bite my nails.

**BEST DRIVER YOU'VE EVER RACED AGAINST** Ayrton Senna. It was in a kart race in 1988 on his farm. I won and he was third.

**FIRST CONCERT** The Phantom of the Opera when I was living in England.

**MOST RECENT CONCERT** The Phantom of the Opera. I went twice. It was my first concert and my last.

**FIRST MUSIC ALBUM** Belinda Carlisle. That was great. I used to listen to it in my Volkswagen.

**LATEST MUSIC ALBUM** Shania Twain.

**FAVOURITE FOOD** Sushi

**FAVOURITE LINE FROM A MOVIE**  
Too many to mention

**WHAT WOULD YOU DO IF NOT RACING CARS**

I don't know, I'd probably be a chauffeur

**WHAT HAS BEEN THE BEST MOMENT IN YOUR LIFE**

When Emerson rang me

**DO YOU PREFER MORNINGS OR EVENINGS**

Evenings

**WHERE DO YOU GO TO RELAX** My home in Miami

**WHO WAS YOUR CHILDHOOD HERO** My dad

**FAVOURITE GADGET** My mobile phone

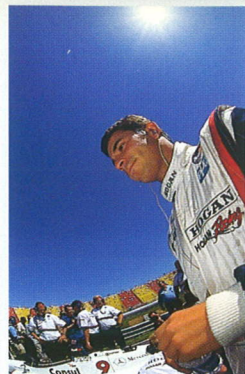
**HAVE YOU EVER HAD A PET** No

**WHERE WAS YOUR LAST HOLIDAY** Uruguay – just before the 1999 season

**HOW OFTEN DO YOU GO BACK TO BRAZIL**  
Three or four times a year

**WHAT DO YOU DO ON DAYS OFF** I come to the Fittipaldi office and try to go to the gym

**WHAT IS YOUR FAVOURITE JOKE** I tend to play around with the mechanics rather than tell jokes. I like to keep everyone happy, however I do it.



MIKE LEVITT



LEVITT

◀ you're not always going to do good times. Definitely in the beginning I was saying, 'Oh Jesus, can we change the chassis?' but Carl chose to go in the right direction.

In fact, Castro Neves believes that it could be because of the Lola that his results are so good. "It is tough, but I have a good thing on my side, and that's being able to develop a car the way I like to drive it," he admits. "I believe we're doing a great job so far."

He's been helped in this department by the great relationship he's forged with the crew. He doesn't denigrate Bettenhausen - "I learned a lot from Tony and if it wasn't for him I wouldn't be here today" - but you can tell that he's even happier with life at his new team.

"I don't even need to tell them what I want from the car," he explains. "They can see from my eyes what I need. That's good, because when you have a relationship like that it means the team can keep growing. We're growing step by step and, I'm telling you, I'm so hungry to finally win this first race."

It's an attitude which has impressed Hogan too. The veteran owner rates Fittipaldi's young protégé "as good as any young driver I've ever had. One thing he has which impresses me in addition is the positive attitude that he has at all times and his patience to get the job done. That's particularly good for his age."

While he shapes up well against the Champ Car comingmen, though, is Castro Neves good enough to join the Brazilian legends such as Fittipaldi himself? "Yeah - I think he has that potential," considers Hogan. "What is certainly a plus for him is the fact that he's done so well on the various types of courses. He's not



HATHAWAY

Above: Helio enjoys a lighter moment with his emotional team boss, Carl Hogan. Left: Castro Neves has a lot to thank mentor Emerson Fittipaldi for. Right: team and driver have grown into a slickly-drilled outfit

strictly an oval driver, a road-course driver or a city-street driver - he's shown well on all of them."

This is clearly one of those relationships where driver and team owner bring out the best in each other. Castro Neves - the emotional, popular, ever-smiling racer - gels perfectly with the bear-like Hogan, who, like his driver, wears his heart on his sleeve.

"Carl is a great man," acknowledges Helio. "He's not only a team owner, but one of the most passionate men in racing. When people see Carl they say, 'Oh, he must

## "Since I started racing, my dream was to be an F1 driver, but you have to do everything step by step"

HELIO CASTRO NEVES

be a tough, strong man', but no, it's the opposite. He's such a sweet guy, not only with me but the whole team. He hugs everybody."

That must be frightening! "Ah - I'm telling you. He came to hug me in St Louis and I was going, 'Hold on, I need to drive the next race!' He's so emotional. I had to tell him, 'Don't come to me after qualifying or the race because you cry, and that makes me cry as well. Stop it!'"

The relationship with Fittipaldi works well too, even

though sometimes there's a better outcome when the younger man ignores the 52-year-old's advice.

"He was at the Goodwood Festival of Speed when I was at Cleveland," says Castro Neves. "I called him and said, 'Look, I'm second on the grid'. He said, 'Tomorrow, take it easy at the start'. I said, 'No, no, no, I took it easy in Nazareth from pole position and Juan took the lead off me'. 'OK,' he said, 'but take care'. I went around the outside of Juan and took the lead."

Does the young star want to emulate his mentor and become a winner in Formula One? "Since I started racing my dream was to one day be an F1 driver, but you have to do everything step by step. You can't just jump in. I can wait a little bit. First, I need to win a Champ Car race, and then the series.

"I'm not looking for money, I'm not looking to be a star or anything like that. I just want to win races. All these records, money, success - they come from being in the right place at the right time. I'm really happy where I am at Hogan Racing."

It's hard to imagine Hogan not taking up his option on Castro Neves for the 2000 Champ Car season. Both believe that, by the time the New Year comes around, they will be a race-winning combination. "It's just a matter of getting our reliability so that we finish these races we start so well," says Hogan.

Castro Neves adds: "My time will come - everyone is telling me that. Now it's a question of keeping positive. It's a matter of everything coming together at the same time and we will do it." When it does, you'll probably hear the explosion of joy in Europe. ☺

SUTTON



CART



RETRO

They are the queens in the microcosm of model cars - unique specimens of enormous value in 1:12 scale - and this collector has dozens of them. His favourites are Mercedes-Benz, though, simply because he loves the marque, its history, and because the people from Stuttgart supply him with all the data he needs.

WORDS BY HARTMUT LEHBRINK & DIETHELM DOLL. PHOTOS BY ACHIM KROPSCH & DIETHELM DOLL

# SMALL BUT BEAUTIFUL



LAT ARCHIVE

**Left: A perfect gem: the highly detailed model of the W196 driven by Juan-Manuel Fangio in the 1955 Belgian Grand Prix at Spa (shown above)**

**S**tare at the artfully-displayed models too long, and you begin to feel like Jonathan Swift's novel hero Gulliver at a race track in Lilliput. With a little imagination the scenery soon becomes alive. In a second, Christian Lautenschlager, shrunk to dwarf size, will surely leap behind the wheel of the 140-bhp Mercedes to take part in the 1908 Grand Prix de France in Dieppe - with his defiant mind set on victory.

Blink, and a miniature Stirling Moss will vault over the door of his 300 SLR, start the 8-cylinder motor and, leaving two minute rubber traces behind him, fling himself into the 1955 Le Mans 24 hours. The little engine is a gem of filigree work; a testimony of its Turin master's near-obsessive dedication to detail.

So how did this love for miniature cars, all of which are unique and often created in close cooperation with Conti or other greats of the car modelling scene, come about? "Simple," he replies, "because the real ones would take up too much space. In this part of town it would be impossible to have a collection of 12 Mercedes, Benz or Mercedes-Benz, plus around 25 Ferrari, Maserati, Ford, Borgward and BRM machines.

"It's also because most of the real cars are in other people's hands, like the white 140 PS type or the silver 300 SLR, which are nowadays living the relatively peaceful life of pensioners at the Mercedes-Benz museum in Untertürkheim. ▶



◀ “On top of that, some of the original cars have bitten the dust, like the 1961 Ferrari 156/F1 which *Il Commendatore* had smashed in a fit of incomprehensible destructive mania.”

Behind the collection lies a passion for motorsport which began long before the current Mika-and-Michael era. His original plan, to concentrate on the winning cars from that oldest of all Grands Prix, the French, has grown into the a desire to possess miniature machinery from the greatest moments throughout motor racing history. That isn't all, though. This is a serious motorsport fanatic, whose collections contains a whole range of relics and memorabilia. It encompasses everything from Alice Caracciola's lap charts, one of German aristocrat Graf Berghe von Trips' helmets to the trophy Jochen Rindt received for his win at the 1970 Monaco Grand Prix.

However, only a select few, such as family and friends and the odd visitor, will ever be able to enjoy it. The owner guards his treasures as if they were the crown jewels, and wants to stay anonymous to avoid any kind of fan tourism. Not that the models could be touched by anyone, because they are all

**In this part of town it would be impossible to have a collection of 12 Mercedes, Benz or Mercedes-Benz, plus around 25 Ferrari, Maserati, Ford, Borgward and BRM machines.**

displayed behind glass in purpose-built wall cases in a cellar room, each case illuminated by miniature halogen lamps. The cars even stand on rotating disks which can be started and stopped via a button on the outside.

The cases are used because people, as the collector has found out, always want to touch the models they like. How does he know? Well, every time he leaves his 300SL Coupe unattended with one of his friends it seems to get covered in fingerprints...

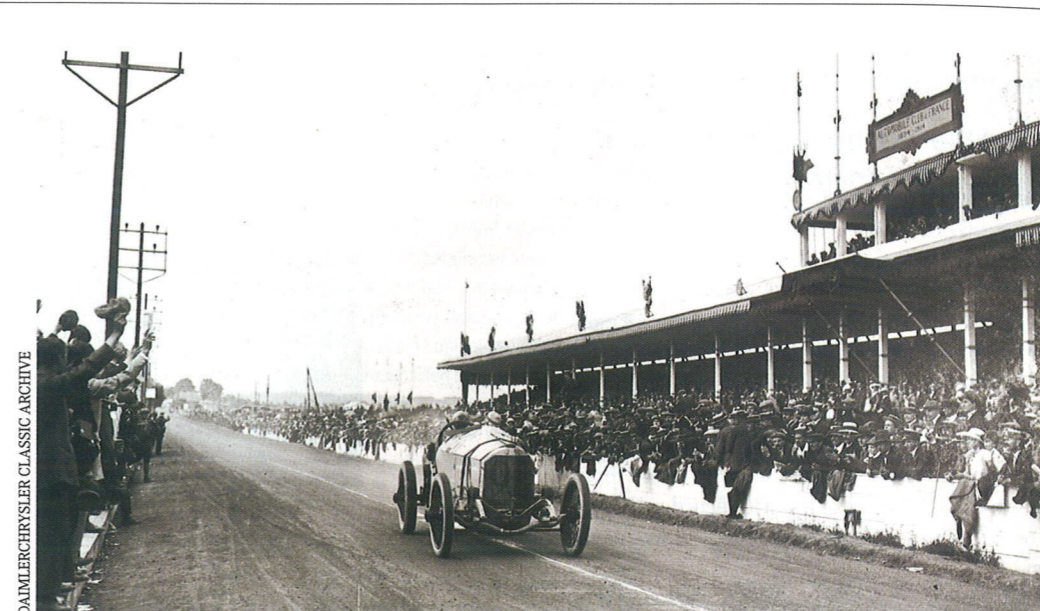
Each model commemorates a specific race or event, and each is exact in every detail to the original. But why would anyone want to be so focussed on one event? We have taken three models and will try to explain why those could be so important, and evoke such emotions that anyone would want to replicate them and keep for ever. ☺



**Above: State-of-the-art model of the 18/100 PS driven to victory in the 1914 French Grand Prix.**

**Right: The victors, driver Christian Lautenschlager and co-driver Hans Rieger pose for a photo in the original.**

**Above right: The 18/100 in action.**



### GREAT HISTORIC MOMENTS (I): The 1914 French Grand Prix

**M**ercedes' triumph at the French Grand Prix in Lyon on 14th July 1914 was made possible by three main factors. First, there was the manufacturer's state-of-the-art 18/100 PS car. Its engine statistics would give many a manufacturer cause to boast even now. Each of the four cylinders was ventilated by four valves and lit by three sparkplugs.

Second, the Lyon enterprise has been prepared with Prussian-like accuracy. Not only were there five race cars for drivers Christian Lautenschlager, Max Sailer, Otto Salzer, Louis Wagner and Theodor Pilette, all neatly tucked away, but also a spare chassis and an enormous amount of spare parts which could have been assembled in no time to make another engine.

Thirdly, the hand of fate took over in such an odd way, later interpreted as cunning strategy.

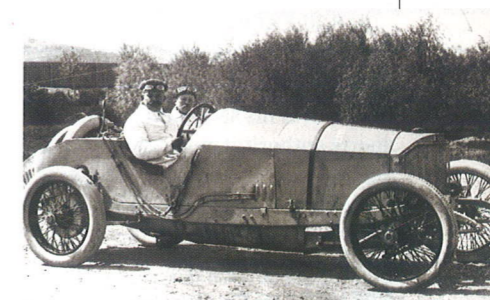
It wasn't easy, though. Even the favoured Peugeot marque, which ran top French drivers Georges Boillot and Jules Goux, splashed out on technical advances. They had four brakes instead of the two with which the Germans had to make do.

In the early stages, Sailer sped away from the alarmed French drivers like a greyhound, simply because he didn't know how to use his car and pace himself economically over the seven hours and more than 450 miles. However, he paid the price at the end of lap six, when a connecting rod made an unscheduled appearance through the side of his engine.

Boillot took over the lead, but mercilessly the white cars began to close him down. The tortured Peugeot eventually gave in with a burst valve on the final lap.

Lautenschlager crossed the line first, with Wagner in second and Salzer third. The winner was delighted at winning the 120,000 Goldmarks the Automobil Club de France offered as prize money and which was meant to stay in the country.

Co-driver Hans Rieger won't have seen much of it. He was only part of the standard equipment demanded by the authorities, just like a spare wheel.





## GREAT HISTORIC MOMENTS (II): World speed record on the motorway between Frankfurt and Darmstadt on 28th January 1938

It was a nasty day. Long before dawn, a group of men arrived on the Frankfurt-Darmstadt motorway. In the freezing wind, the men around Mercedes motorsport director Alfred Neubauer and his superstars, Rudolf Caracciola and Manfred von Brauchitsch, pulled their coat collars tight around their necks. They were there for one reason – the establishment of a world record: a flying kilometre and a flying lap on public roads. It was a matter of prestige.

The stretch of road has been carefully chosen. It is as straight as an arrow and protected by forests and embankments. The only perilous part is the funnel-shaped aisle at the Mörsfelden exit where a crosswind was possible.

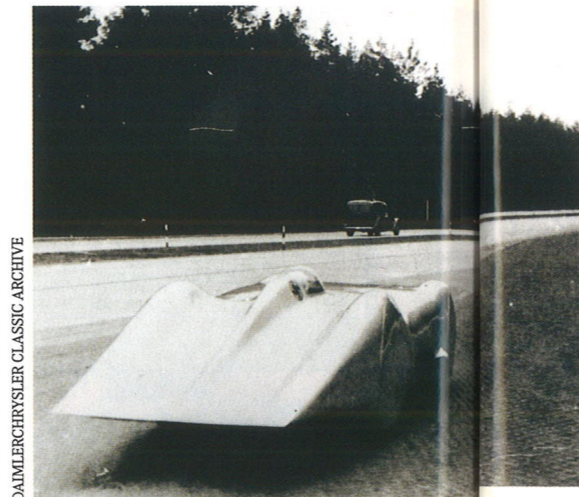
The weather station at Frankfurt airport had good news, though. Foehn wind had melted the ice from the roads overnight; the autobahn would be dry by 7am and the wind settled by 9am.

The transporter carrying the record car arrived at 5am. The silver projectile contained within was 6300 millimetres long and 1850 millimetres wide. For aerodynamic reasons it had no ventilation ducts. Instead, the radiator of the W125 Grand Prix car was bedded into half a cubic metre of ice. It meant an extra 100 kilograms, but engineers considered it worth the deficit. The 12-cylinder engine, which generates 736 bhp from 5.577 litres received its air through two little nostrils.

At 8.10, Caracciola kissed his wife, Baby, goodbye and gave dachshund Teckel, which always accompanied the couple, a final caress. Five minutes later the acrylic glass hood was placed over his seat. At twenty past eight the ONS (national sports authority) motorsport delegate gave the starting signal and the car disappeared south, its compressor howling.

Half an hour later the deed was done. Caracciola managed both distances at over 270mph. That's 120 metres per second. Some of the people who witnessed the record-setting speed said later that the most impressive thing was the terrific squeal of the engine.

The opulent breakfast at the Frankfurt Park Hotel soon turned into a boisterous victory party. Shortly after midday though, a sombre message was received. Bernd Rosemeyer had ignored all warnings and gone on to the track in his rival Auto-Union car after the Mercedes had left. The national hero from Lingen, beaming and seemingly indestructible, was killed - grasped by a gust of wind near the exit of Mörsfelden. A whole nation mourned.



DaimlerChrysler Classic Archive

**Spot the difference:**  
The 1938 record breaking W125 (above), and the artfully displayed Liliputian model (below).



## IN BLACK AND WHITE

The road to the perfect model is strewn with hurdles. The most irritating thing is that if you fall at one, the whole project can fail - at least that's the way the perfectionist sees it.

It all starts with the colours. There is no such thing as a standard Italian racing red. Instead, what you have is Ferrari red, Maserati red, Lancia red and Alfa red. British racing green is nothing more than a liberal collective term that covers every shade of green you can imagine. It is fortunate then that, at the beginning of the 1960s, a friendly BRM mechanic filled a small can - direct from the barrel, as it were - of the unmistakable British Racing Motors colour for our collector to make a miniature P57.

The other fortunate thing is that there are still a few colour photographs from the pre-war years, such as those by Italian journalist Corrado Millanta, or British Kodak employee George Monkhouse, who was a truly remarkable observer of the racing scene in the 1930s.

In black and white, though, there are just shades of grey; so you have to know that Dick Seaman sometimes had green markings on his car which matched the colour of his bonnet; or that Manfred von Brauchitsch's car had a red stripe across it. On the photographs of the

War, and during the German Democratic Republic era some things went into private ownership, only to be sold later for enormous sums of money. Meanwhile, Enzo Ferrari would often go to his factory in a positively destructive rage. For example, he shredded the victorious 1961 156/F1, with its characteristic shark nose. He also destroyed the drawings by the designer, Carlo Chiti. That is how pop star Chris Rea's attempts to reconstruct a replica, using just photographs, failed. "The thing isn't right at the back or the front," he says, angrily.

Then, of course, there are hundreds of details: shape, colour, materials, positioning of equipment. Early photographers weren't too bothered with how the pedals were arranged, or the gear lever, or whether or not a steering wheel was wrapped in raffia - as was the custom of the day. Very few pictures remain of dashboards, and there are even fewer of individual clocks. Consequently, the collector often has to go on 'detail' tours of museums, photograph individual instrument and fittings, reduce them to the proportions of the model he is working upon, and then insert them.

Furthermore, the modelmaker has to bridge the gap between the vast number of questions and limited



**Above: Attention to detail. Today's model-makers have to carry out extensive research to ensure that examples such as the 1955 Le Mans 300SLR and the 1937 Monaco GP winning W125 are perfect miniature copies.**

Mercedes-Benz SSKL - in which Rudolf Caracciola won the Mille Miglia in 1931 - the racing numbers are darker than the car's wings. This shows that the numbers were painted in black on a white background and that the wings were red.

Another difficult area is in proportions. The model-maker is on safe ground provided that, in addition to numerous pictures, he also has the design drawings at his disposal. That is often where the rub lies. Mercedes-Benz has a well organised and lovingly preserved archive, and the firm's support for collectors has been exemplary. The company has, for example, provided copies of plans of the first generation Silver Arrow.

Things are much more difficult when it comes to the rival company, Auto-Union. In its case, some things simply disappeared in the chaos of the Second World

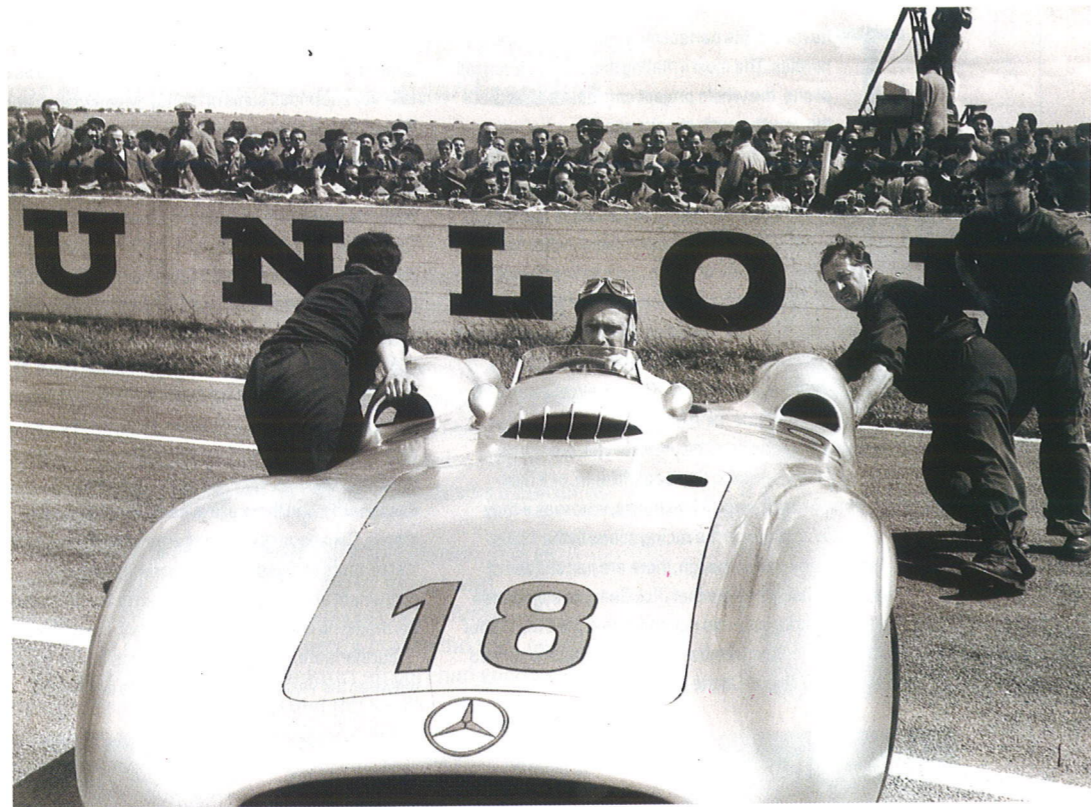
number of answers by detailed research, going into minutiae where necessary. Did the Deussenberg in which Jimmy Murphy won the 1921 French Grand Prix at Le Mans have an American flag on one or both sides? And how can the most accurate mix of the bright colours on the car's corded tyres best be achieved, before the minute iron shapes are vulcanised to fit the model? Do the pictures of the Mercedes record car at the end of the 1930s show the actual vehicle in its final form, or are they of the vehicle at an early stage, before it was sent back to the workshop for retouching?

People are not quite so prissy when it comes to the materials on the larger cars. From 1934 onwards the fully-grown sports cars had smooth outer skins. At least, for the purposes of models, this can be moulded from plastic, without it being obvious that it isn't the real thing.

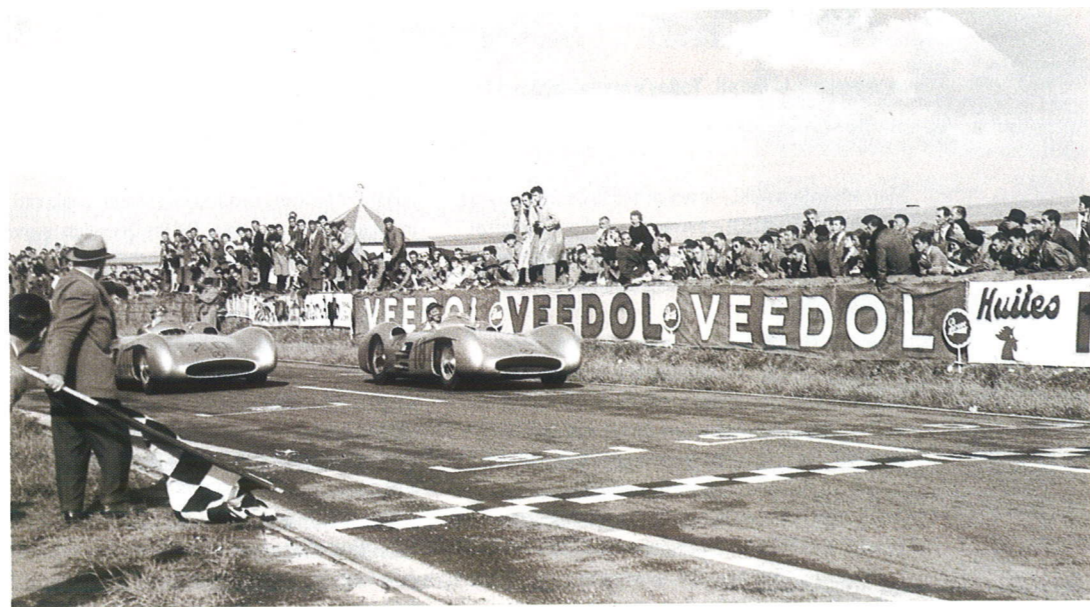




RETRO



**Above: Tactical winner, Juan-Manuel Fangio in the petrol-guzzling W196 - the first time an average speed of over 125mph was achieved, and below: following this up by winning the 1954 Grand Prix a length in front of Karl Kling.**



### GREAT HISTORIC MOMENTS (III): The 1954 French Grand Prix

**T**he Mercedes successes at the French Grand Prix had a certain symmetry. In 1914, the manufacturer scored the last pre-war victory on national roads near Lyon. Two decades later, on a circuit which was half permanent race-track, half country road at Monthléry, the Swabians failed to finish the race as all three W25 race-cars dropped out. Another 20 years on, the marque scored the first post-war victory on national roads near Reims - on 4th July, the same day as in Lyon.

If Mercedes-Benz was to take part in races again, motorsport director Alfred Neubauer had said a few years earlier, it would not do things by halves. It didn't.

The Automobile Club de Champagne offered 50 bottles of Pomméry champagne to the first driver to lap the hilly, triangular course at an average speed over 125mph. Juan-Manuel Fangio, in his streamlined W196, took this trophy within the first hour of the first practice session.

It was a tactical stroke, as the great Argentinian later said in his autobiography. A small psychological trick to discourage his opponents and to impose his will on them right from the beginning.

However, his champagne-winning lap also displayed a weakness of his silver single-seater. The 8-cylinder engine used 35 litres of petrol on one hundred kilometres. His petrol tank took 185 litres. The race was over 506 kilometres, so it was going to be tight. To solve the problem, the race team ordered small additional tanks from the factory at Stuttgart. Rudolf Uhlenhaut himself, the man responsible for the W196 project, picked them up with his 300 SL, and broke almost every speed limit on the way back.

The race got under way at 2.47pm. It turned into a duel between the elderly gentlemen: Juan-Manuel Fangio against Karl Kling, both 43. Mercedes youngster Hans Herrmann fought his way up to third place and set fastest lap before his car dropped out on the 16th lap of 61 due to engine problems. It would appear that even Mercedes was vulnerable.

In the end Fangio won, a car's length in front of Kling. Behind them, though, lay a battlefield. Fifteen out of the 22 entrants fell by the wayside. Among them the Ferraris of Mike Hawthorn and Froilan Gonzalez and also the Maserati of double world champion Alberto Ascari, whose Lancia D50 had not been ready to race. That was why his employer had rented him out to the marque with the trident crown badge. Alas, there was no remedy against the three-pointed star on this day.



**Above: The small, but perfect model built to commemorate Fangio and Mercedes' extraordinary success. The W196 was one of only seven cars to complete the race.**



A race day in the life of...



## JUAN MANUEL FANGIO II

# A dream come true at Goodwood

**"It was fascinating to find out that a perfect racing car is quite easy to drive"**



**Top: The names Fangio and Moss hit the track again at Goodwood 1999. Bottom: The formidable Mercedes W196 team mates in '55.**

**W**hen I received an invitation to drive the legendary Mercedes W196 at the Goodwood Festival of Speed, I realised that a dream was about to come true. My uncle had driven to victory at the wheel of this car in two out of his five World Championship title years. Now I was going to have the opportunity to see things from his perspective.

I started to remember the anecdotes that Uncle Juan told us so often. The fact that he thought so fondly of his years with Mercedes was not only a question of his sporting success, but was bound up with the team's unique atmosphere. When he talked about the good old days he never failed to mention the Mercedes team mechanics. He gave them top marks for their know-how, their attention to detail and their decency.

One of his favourite stories was about a Grand Prix practise somewhere in Europe - I'm not sure anymore which race track it was. My uncle had already brought his car back to the pit when he was asked if he wouldn't mind going out for another couple of laps - a competitor had just dislodged him from first place. Yes, of course, he replied, he would try and recapture the lead.

The car was given a thorough check-up. He drove off, and (against the odds) managed to fight back to pole position. Not only that, he clocked up a new unofficial track record. My uncle didn't speak German, and his mechanics didn't speak any Spanish. That evening, the mechanics went off and found a meadow somewhere. They came back and presented him with a freshly-picked bouquet. The flowers bridged the language gap and expressed the mechanics' respect for my uncle's achievement. He never forgot it.

I came to Goodwood with quite a few memories like that in mind.

Having Stirling Moss alongside me driving another Silver Arrow made the trip extra special. My uncle valued his British rival as a person, a friend, and a pilot. I felt honoured to meet him face-to-face.


Stirling Moss and the W196 all in one day. Fantastic. Almost overpowering. Who wouldn't dream of a day like that?

My impressions were all eclipsed by the sheer thrill of driving the Mercedes. I couldn't even recall the technical details of this rocket-on-wheels.

My respect for the car has to do with the fact that it is more than just a unique car. It represents a significant period of racing history. It was fascinating to find out, too, that a perfect racing car is quite easy to drive. This is one of its great qualities. A good car remains a good car, irrespective of when it was built. Driving it, the pilot feels he is at one with the machine.

At Goodwood, the romance of the early Grand Prix years also came to mind. It's important that these cars are being maintained for posterity. Motor sport was pretty dangerous back then, which in my eyes made it even more romantic.

In spite of the danger, the pilots took up their place at the starting line without a moment's hesitation. It just goes to show that their love of racing was immeasurable. Today everything is vastly commercialised. I suppose success is unthinkable any other way. But the times shouldn't be forgotten when passion had pride of place. The pilots back then never knew whether or not they would come back from a race alive.

At Goodwood, I had a chance to relive something of the spirit of that Golden Age. I will never forget it. 



## FORMULA 1 WORLD CHAMPIONSHIP

7 March	Australia
11 April	Brazil
2 May	San Marino
16 May	Monaco
30 May	Spain
13 June	Canada
27 June	France
11 July	Britain
25 July	Austria
1 August	Germany
15 August	Hungary
29 August	Belgium
12 September	Italy
26 September	Luxembourg
17 October	Malaysia
31 October	Japan

### DRIVERS CHAMPIONSHIP UPDATE

1	MIKA HAKKINEN	40
2	Michael Schumacher	32
=	Eddie Irvine	32
4	H-H Frenzen	26
5	DAVID COULTHARD	22
6	Ralf Schumacher	19
7	Giancarlo Fisichella	13
8	Rubens Barrichello	10
9	Damon Hill	5
10	Johnny Herbert	2

### MANUFACTURERS CHAMPIONSHIP UPDATE

1	Ferrari	64
2	McLAREN-MERCEDES	62
3	Jordan-Mugen Honda	31
4	Williams-Supertec	19
5	Benetton-Playlife	14
6	Stewart-Ford	12
7	Sauber-Petronas	3
8	Prost-Peugeot	2
9	Arrows	1
10	BAR-Supertec/Minardi-Ford	0



## FEDEX CART CHAMPIONSHIP SERIES

21 March	Homestead
10 April	Motegi
18 April	Long Beach
2 May	Nazareth
15 May	Rio de Janeiro
29 May	Madison
6 June	Milwaukee
20 June	Portland
27 June	Cleveland
11 July	Elkart Lake
18 July	Toronto
25 July	Michigan
8 August	Detroit
15 August	Mid-Ohio
22 August	Chicago
5 September	Vancouver
12 September	Laguna Seca
26 September	Houston
17 October	Surfers Paradise
31 October	Fontana

### DRIVERS CHAMPIONSHIP UPDATE

1	Juan Montoya	113
2	Michael Andretti	95
3	Gil de Ferran	87
4	Dario Franchitti	85
5	Christian Fittipaldi	82
6	GREG MOORE	81
7	Adrian Fernandez	79
8	Paul Tracy	60
9	Max Papis	51
10	Jimmy Vasser	34

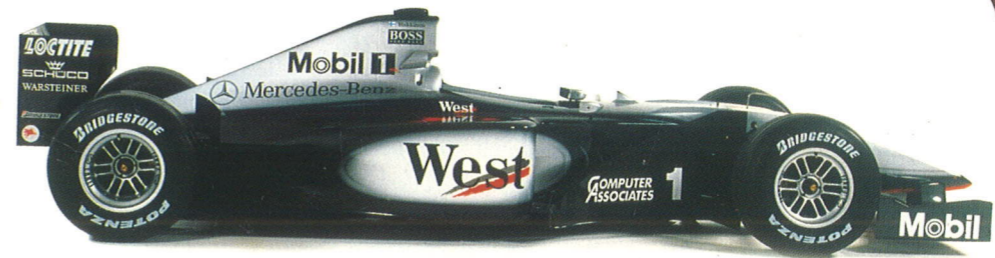
### MANUFACTURERS CHAMPIONSHIP UPDATE

1	Honda	185
2	Ford	160
3	MERCEDES	109
4	Toyota	32



C A L E N D A R

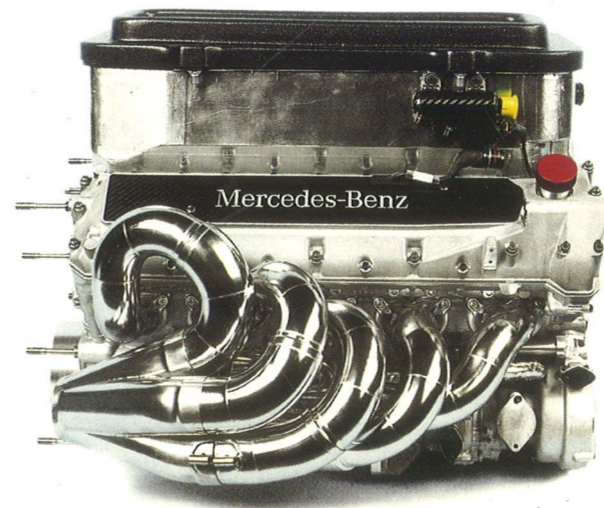




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