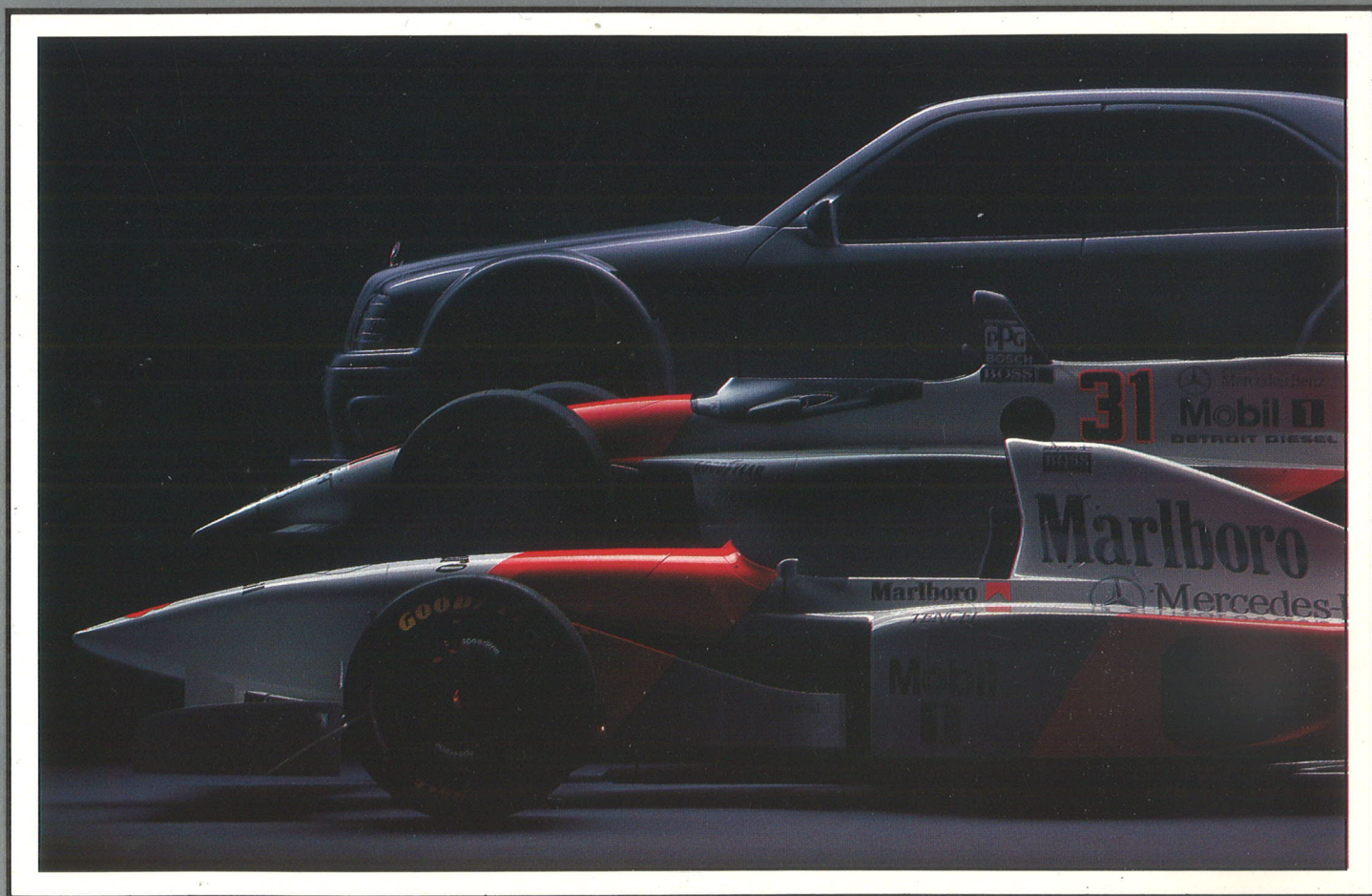


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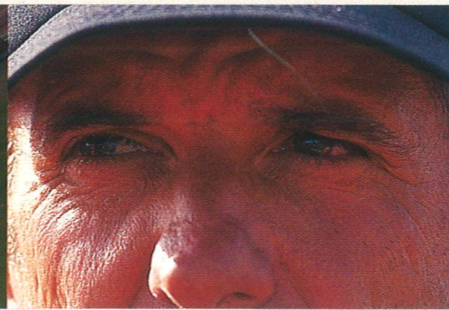
McLAREN AND MERCEDES GEARING UP
JOIN OUR HEROES UNSER JR & FITTIPALDI
ONE C-CLASS WINS TWO CHAMPIONSHIPS



SPRING '96



FORMULA 1
DTM/ITC
INDY CAR



STARS & CARS

THE MAGAZINE OF MERCEDES-BENZ MOTORSPORT

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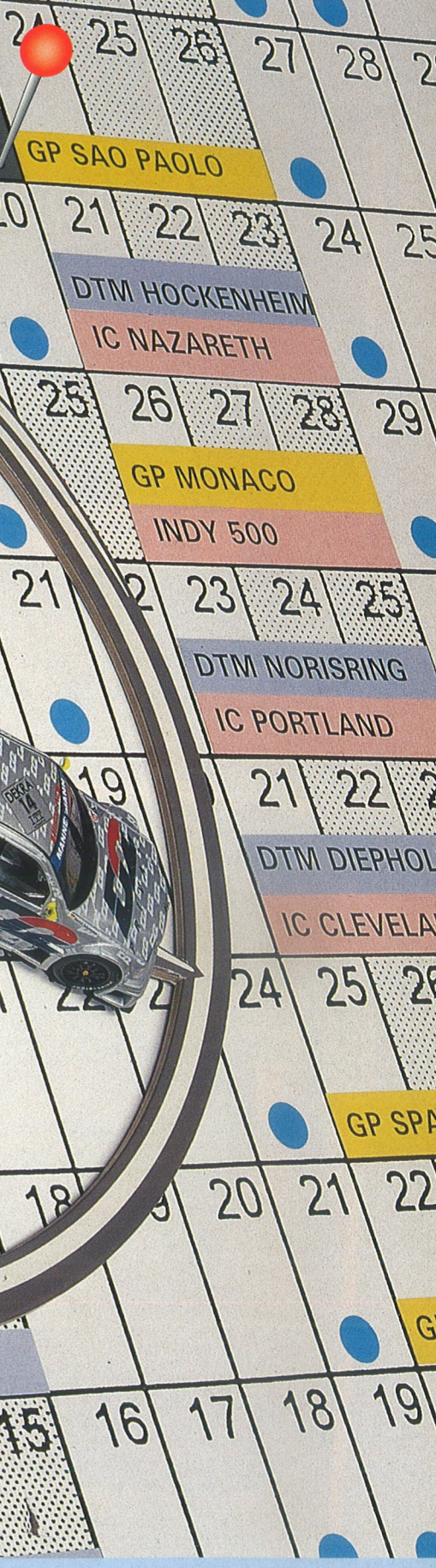
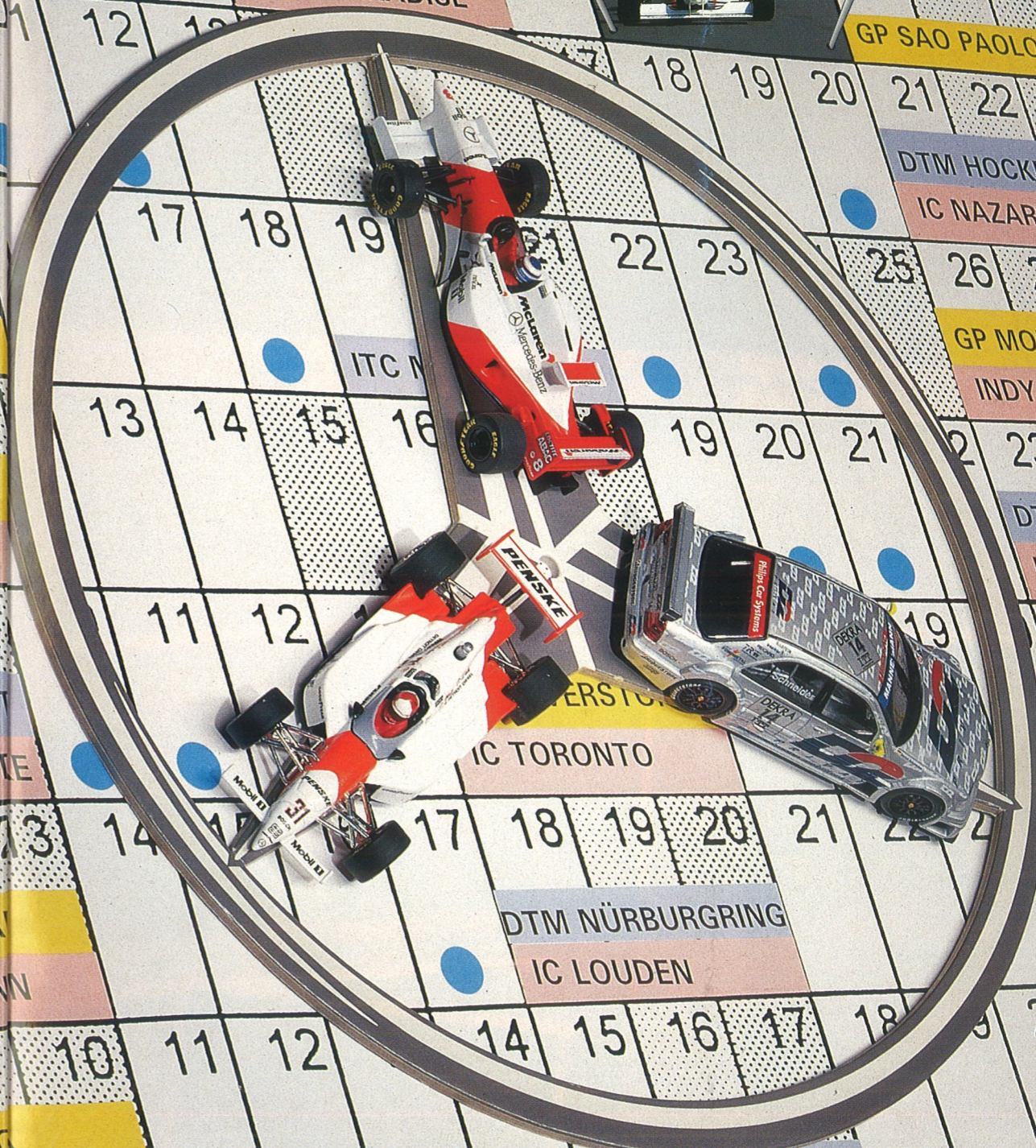
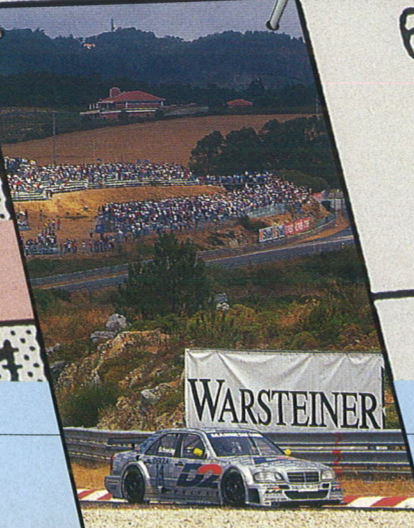




REVIEW

THREE ROUTES TO ONE GOAL

The Mercedes-Benz motorsport programme is intensive. Virtually every weekend through the busy season Mercedes-Benz participates somewhere in the world with its three disciplines: Formula 1, International Touring Cars and Indy Cars. There is a saying that a picture is worth 1000 words: this is the way we review last season - Every picture tells a story





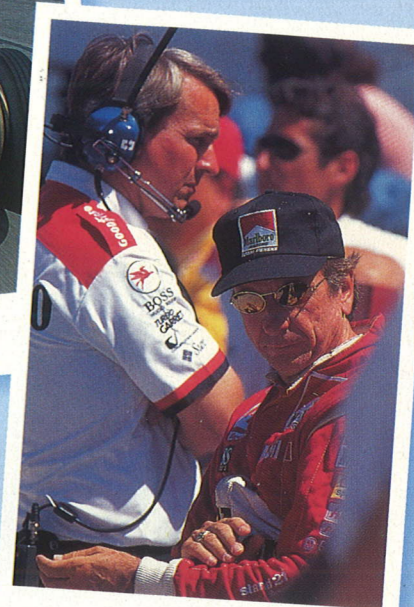
Many of our friends came to the International Touring Car race at Helsinki



Two masters: Fangio and Schumacher in 1952

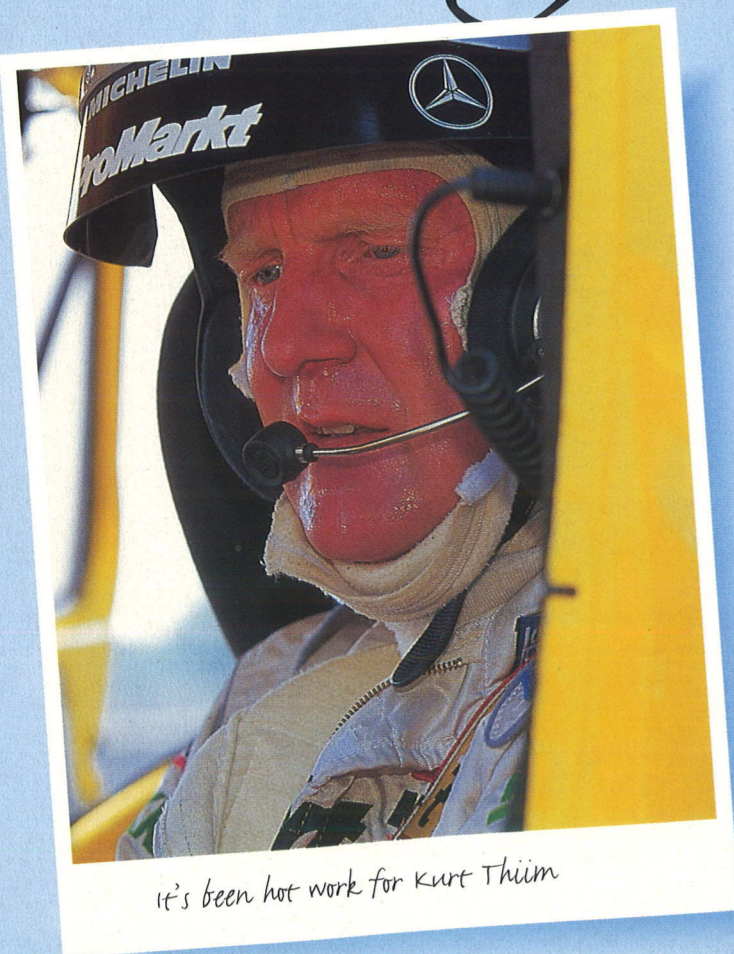


Technical innovations in F1

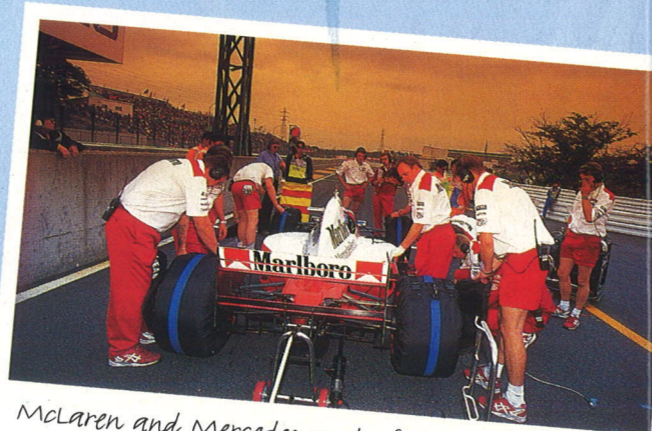


Fittipaldi - Indy Car hero

Every picture tells a story...



It's been hot work for Kurt Thiim



McLaren and Mercedes ready for action



Schneider celebrates his championship wins with his father and the Mercedes Motorsport team



The C-Class was a double title winner

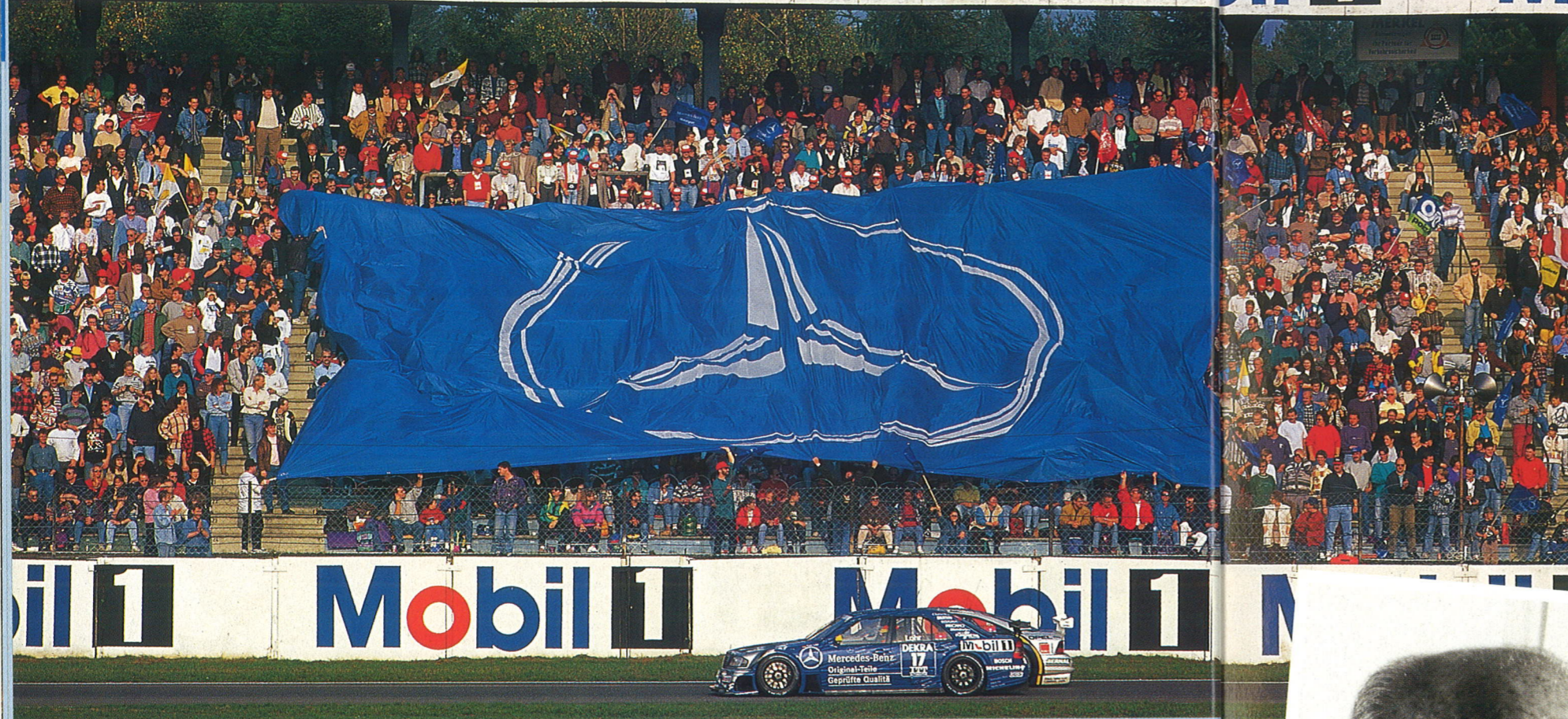


Mercedes juniors were in the same boat



Al Unser junior took the Indy Car title-battle right to the final round of the series

Mobil 1 Mobil 1 Mobil 1 Mobil 1 M



STARS & CARS



The traditional end of season open day at the Mercedes-Benz headquarters in Stuttgart attracted record crowds in 1995 (left). Formula 1, Indy Car and Class 1 teams and drivers were all present to show their skills to the staff of Mercedes-Benz and their families. Jan Magnussen displayed his McLaren-Mercedes F1 car which Ron Dennis then presented to the Mercedes-Benz museum; Emerson Fittipaldi (below) and his mechanics took his Penske-Mercedes PC22 to first spot in the wheel-changing competition as Team Penske changed all four tyres in just 6.9 seconds, and the AMG Class 1 squad changed the engine of its C-Class racer in a world record on 3m 17s.



The works commitment to Formula 1, Indy Cars and Class 1 Touring Cars can be reduced to a common denominator: Mercedes-Benz is pressing ahead with a worldwide motorsport programme in the most prestigious series



Ordinary people have aspirations - people involved in motor racing even more so. The key to life for them lies in their aspirations surrounding the race. An outside observer might easily simplify such aspirations, condensing them to their most basic form - the triple pursuits of line-up, start and victory.

But that's not all there is to it, by any means: motor racing is a team sport, and when it is practiced fairly generates sympathy and enthusiasm for a vehicle marque. It is a process controlled by the throttle pedal and sheer acceleration, the dynamics of which hold an instinctive fascination for both participants and spectators alike. In this respect 1995 turned out to be a record year. About 2.8 million live spectators, and more than seven billion television viewers, were captivated by the races of the three major international motorsport championships of the world.

Mercedes-Benz features in the starting line-up of three classes which, in a way, mirror the three rays of the world-famous Mercedes star: Formula 1, Indy Car series and Class 1 touring cars. Motor races have become trials of worth open to public scrutiny. Here it is the worth, not just of the products, but of the competing teams which is on trial - from production workers and mechanics, technicians, engineers and racing strategists to the experts of the track - the drivers themselves. Mercedes-Benz has always acknowledged the value of clear performance comparisons.

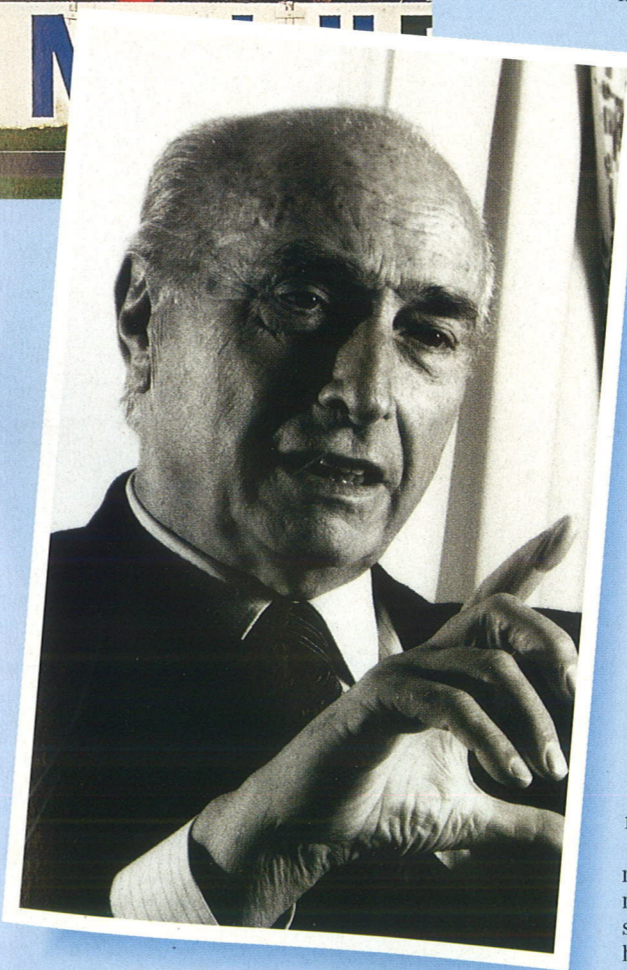
Such preliminary remarks are necessary to keep things in perspective when weighing up a season's performance. At the end of a racing year you are always left with statistics, casting every countable result into a sober column of figures. Then the entire spectrum of racing experience - the joys and hopes, the trials and tribulations of a long motorsport season, are locked away in tables of statistics, as if in a cast-iron safe.

Only those who were actually there can appreciate the fortitude involved. In 1995 Mercedes-Benz took part in a total of 59 races in the Formula 1 World Championship, the American Indy Car series, the German Touring Car series (DTM) and the International Touring Car Championship (ITC). Hard on the heels of this statistic are the figures behind the figure: 59 races mean around 12,000 kilometres raced against the toughest competition (F1 approx. 5,100 km, DTM/ITC approx. 2,100 km and Indy Car approx. 4,800 km).

Hebbel's words "no one travelling to the stars turns back to consider society" applies to all aspects of life except motor racing. Reaching for the stars, the contest for victory and the title motivates all competitors with equal force. The pressure of anticipation which Mercedes-Benz faces is high. It stems from a racing history which began with a Daimler engine winning the first race in the world in 1894. The works have been devoted to motorsport ever since.

As a consequence Daimler, Benz, Daimler-Benz and Mercedes-Benz racing cars and engines have become a legend against which each new racing Mercedes is measured - even before it first takes its place in the starting line-up - not just in the eye of the media or the public, but in the hearts of all those who design, build and drive the racing Mercedes. Indeed, Mercedes factory has become rather proud that it is being compared with the best.

In 1995 the new C-Class showed signs of becoming a new legend itself. Mercedes works driver Bernd Schneider won both the German Touring Car Series (the DTM) and the International Touring Car Championship in the 500 bhp C-Class saloon, weighing just over 1,000 kilograms.



Above: Juan Manuel Fangio, the legend of motorsport who died on July 17 1995 at the age of 84, was central to Mercedes success



The most successful touring-car racing concept of the '95 season deserves a drum-roll accompaniment. Fine-tuning the C-Class for Class 1 is, in a manner of speaking, the most extreme stage in the car's development. However, not all the liberties offered by the touring-car rule-book have been exploited. In contrast to its Alfa Romeo and Opel competitors, for instance, the racing Mercedes doesn't depend on four-wheel drive, but on the principle of "engine at the front, drive axle at the back," customary in the road-going C-Class.

The V6 racing engine, known technically as the TC 106, has its origins in the tried and trusted production engines of the Mercedes SL, S and E classes. With a specific performance of 200 bhp per litre, the sporting junior of a family of engines which is oriented more towards comfort, low usage and long life, has approached Formula 1 performance levels. It is also clean, thanks to a catalytic converter and lead-free petrol.

Its success record speaks for itself. With 27 victories in 45 races in 1994 and 1995, the C-Class has continued, almost seamlessly from where its predecessor, the Mercedes 190, left off. The Mercedes 190, with 50 DTM victories, had what it took to be the most successful touring car racer of all. In 1995 the C-Class pulled off an undisputed victory, with a DTM manufacturers total of 224 points. Alfa Romeo was in second position with 150 points and Opel third with 107.

The AMG Motorenbau partner team from Affalterbach, headed by Hans-Werner Aufrecht, was also amongst the winners. 364 points in the combined DTM and ITC team championships gave the team first place, followed by Alfa Corse (241 points), the second Mercedes crew Promarkt Zakspeed (225) and Reinhold Joest's Opel team (192).

The figures include 13 victories, seven pole positions and 11 fastest laps for AMG in 1995. The Zakspeed team cars finished victorious three times and embellished this triumph still further with two pole positions and five fastest laps.

The leader-mileage statistics too document the triumphs of the C-Class. For example, the DTM series covered 1,292 kilometres of race track, and a Mercedes was out in front over 846 of them - more than two-thirds of all the rounds put together. The top team's profile was even more pronounced in the ITC. For 622 kilometres from a total of 824 or, in other words, three-quarters of the distance, the cars with the stars on their bonnets were leading the way.



The power behind McLaren. The 3.0-litre Mercedes Benz V10 engine was an all-new design for 1995. Further advances are expected for the coming season.



One more record: Mercedes drivers not only notched up a total of 45 podium places but were also

included in the points category 119 times in the 1995 DTM and ITC. Alfa Romeo, second in the championship, took 15 podium places, ahead of Opel (11).

The Alfa drivers were rated 60 times among the top-ten point-scorers, the Opel drivers joined this select company 51 times overall.

In the joint DTM and ITC driver ratings, the top is dominated by a foursome. AMG drivers Bernd Schneider, Jörg van Ommen, Dario Franchitti and Jan Magnussen made a friendly and stylish gathering in first, second, third and fourth places. Their points rating (DTM/ITC): Schneider 293 (138/155), van Ommen 163 (113/50), Franchitti 154 (74/80), Magnussen 132 (49/83). Rivals from the same stable, Kurt Thiim, Alexander Grau and Ellen Lohr, in Zakspeed-Mercedes,

came sixth, seventh and 18th respectively.

It would hardly seem possible to do better in one season than to win both championships.

Anyone who has attained such a goal must set himself another. Our catchphrase for 1996, therefore, can only be: "Do it again, C-Class!"

By contrast, the contest for the transatlantic title in the Indy Car series was soberingly difficult.



Left: Mercedes junior Jan Magnussen made in impressive F1 debut in Aida. Norbert Haug listens as the Dane tells of his experiences.

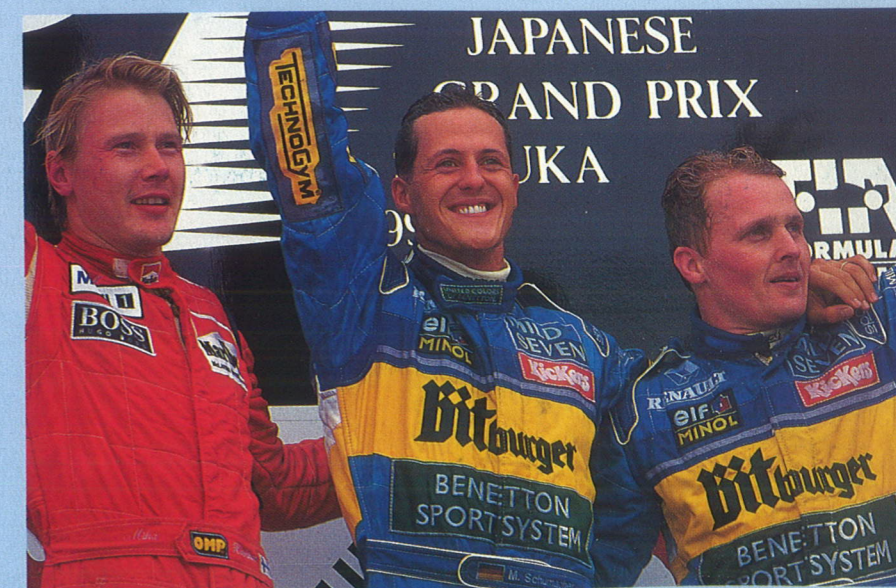


Left: Mika Hakkinen concentrates as the McLaren technicians complete final checks on the grid. Below: The flying Finn celebrates his fine second place at the Japanese Grand Prix last season

The sporting clashes on the widely-varying Indy Car tracks - the series includes street races, an airport, European-style tracks and ovals - developed into the most exciting competition of the 1995 Formula season. After 17 races, Ford driver Jacques Villeneuve had nudged the narrow nose of his car into a slight lead with 172 points. Penske driver Al Unser Junior finished up

Mercedes-Benz, having increased its manufacturing presence in the USA with the new AAV works in Tuscaloosa, Alabama, provided the engines for the Roger Penske team for the first time for an entire season. They also supplied engines to the client teams Rahal-Hogan, Galles, Bettenhausen and Hall.

If the 1995 Indy Car season were to be framed by a motto instead of by laurel wreaths, that motto should be that the nearer one gets to one's goal, the greater the difficulties. Mercedes-Benz's racing-engine arm at Ilmor in Brixworth in the UK deployed the 2.65 litre, eight-cylinder engine known as the type IC 108 exclusively in 1995. A calculated change in the rules snatched its chances of a win on the famous 2.5 mile Indianapolis oval from the 3.4 litre V8, with which Mercedes-Benz won a magnificent victory in the legendary Indianapolis 500 in 1994.



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Left: The 1996 C-Class comes from an impressive pedigree. Bernd Schneider has spent much of the winter testing developments on his silver racer. Below: Mika Hakkinen and David Coulthard. Centre: Al Unser Jr puts the miles on his all-new Penske Indy Car Bottom: Alain Prost with the elegant 1996 McLaren-Mercedes MP4/11

second in the final championship standings with 161 points, in front of Mercedes client Bobby Rahal (128 points).

The success of Indy Cars equipped with Mercedes engines grew to the end of the season, making overall victory a realistic prospect. Three of the last four races were won by Mercedes aces Unser Junior and Gil de Ferran. The latter secured the sensational newcomer's title of "Rookie of the Year" with his victory at Laguna Seca. The goal for the 1996 season is as clear as a spring morning over the Arizona desert: victory in the championship.

The American fans always appreciate an exciting, fair duel and paid appropriate tribute to the Indy Car teams. The spectator figures climbed 18 per cent than those from 1994, itself a record year. The figures alone are impressive enough: an average of 161,000 spectators attended each of the 17 Indy Car races. The television coverage enthralled some 94 million people around the world per race.

In the world of international motorsport, there is only one higher echelon: Formula 1. The characteristics of Formula 1 include the application of the principles of light-weight design taken to the utmost extremes, extraordinary engine performance, avant-garde technical solutions and an intensity of competition which is not even approached by other racing series - between the eight engine manufacturers as well as chassis specialists, teams and drivers. The result is that Formula 1 is motorsport in its highest form, attracting by far the greatest public interest - in 1995 a total of seven billion spectators in 160 countries around the globe followed the 17 races on TV.

The past season will go down in the Mercedes history book as year one of the partnership between the Mercedes-Benz engine-suppliers and the English McLaren team. Long-term Formula 1 sponsor Philip Morris's regular team has a fine pedigree

and when the contract was concluded in the autumn of 1994, McLaren had an unsurpassed performance record: of the 10 titles contested since 1984, it had won seven of them.

The partnership combines the virtues of Mercedes-Benz and the perfectly-schooled McLaren team headed by Ron Dennis. Uncompromising competitiveness is the greatest common denominator, fair play the basis of the co-operation. Mercedes-Benz takes on the role of the control centre, McLaren is the highly-experienced, committed and adaptable F1 virtuoso.

Duties and responsibilities are clearly marked out. McLaren is in charge of construction, development and deployment of the racing car as well as its financing. Mercedes-Benz contributes the type FO110 high-performance engines, and a part of the development and drivers' salary budget.

The technical rules for the 1995 season proved to be as new as the partnership. New engines with a capacity reduced to three litres, new chassis regulations and amended technical regulations transformed overnight the knowledge built



up from the experience of previous years into a worthless heap of data.

The intensity of the competition made it seem unlikely, even at the beginning of the season, that this new Grand Prix venture would be the stunning sensation of 40 years ago. In 1955, Juan-Manuel Fangio became the Formula 1 World Champion with his Mercedes-Benz W196.

In 1995 four top teams - McLaren-Mercedes, Williams-Renault, Benetton-Renault and Ferrari - competed on an equal footing for the lion's share of the points in the World Championship. Moreover, a second wave of points-winning teams, including Jordan and Ligier, waited in the wings to take advantage of even the slightest slip by the favourites.

It is part of the ruthless routine of Formula 1 that quiet hopes are dashed by merciless reality when it

comes to the results. New partners McLaren and Mercedes-Benz didn't even enjoy beginners' luck. Although by the end of the first season the goal of being among the first four had been achieved, hopes (boosted by some incurable optimists) of landing one or two places further forward within this group had not been realised.

In the face of the pressure imposed by the competition, improving all the time itself, often all that remained was to mount an offensive campaign of experimentation by using new, but still largely untested components in the actual Grands Prix and hope that these parts would live up, on the race track, to the promises which their designers had made for them on their computers. The cars did go faster as a result, but retirements at the Hockenheim and Budapest races was a reminder that such tactics do not always pay off.

Yet where there are dark depths, there are also giddy heights. On the fast tracks of both Monza and Suzuka, which make extreme demands on an engine's performance, Finnish McLaren driver Mika Hakkinen achieved excellent second places. Analysis of these successes shows the potential of his red and white McLaren MP4/10 - potential with which victories will be gained.

Both in Italy and in Japan, Hakkinen caught the leader by up to six hundredths of a second per kilometre of the race. After 193 kilometres at full throttle in Suzuka, he was only 20 seconds behind the winner Michael Schumacher - the German

double World Champion another to learn the complicated craft of the professional racing driver long ago in the Mercedes-Benz junior team.

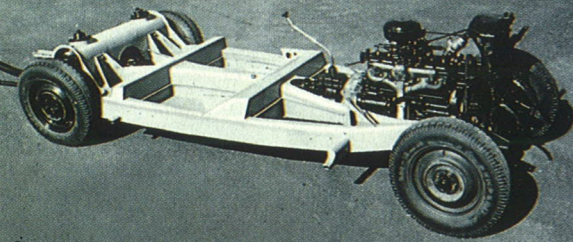
Two second places, 30 Constructors' World Championship points, and Mika Hakkinen (seventh) and Mark Blundell (10th place) both in the top 10 of the drivers' Championship - an unsuccessful year would have yielded far less.

Following a learning year in Formula 1 with new partner McLaren, Mercedes-Benz's objective will be finishing that all-important one place higher than their best results of 1995! After all, it's good to have high aspirations - they always allow room for growth.

The exciting new cars for the three disciplines - Formula 1, Touring Car and Indy Car - were all being thoroughly tested on the track weeks before their first races. The development and preparation work never stops. The information-gathering and learning is an essential process for a successful season, and one that is tackled with vigour and dedication by the teams.

This vital work reaps the rewards. ■

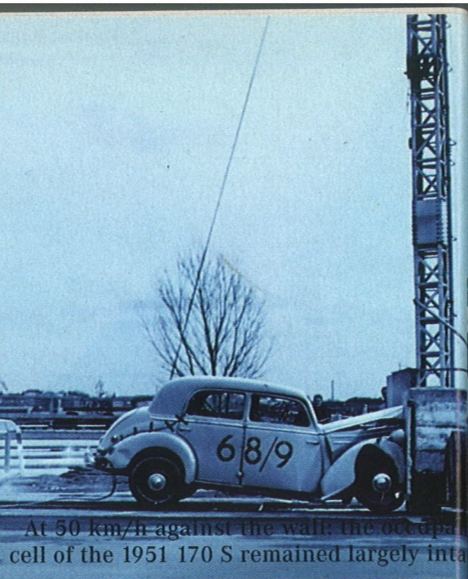




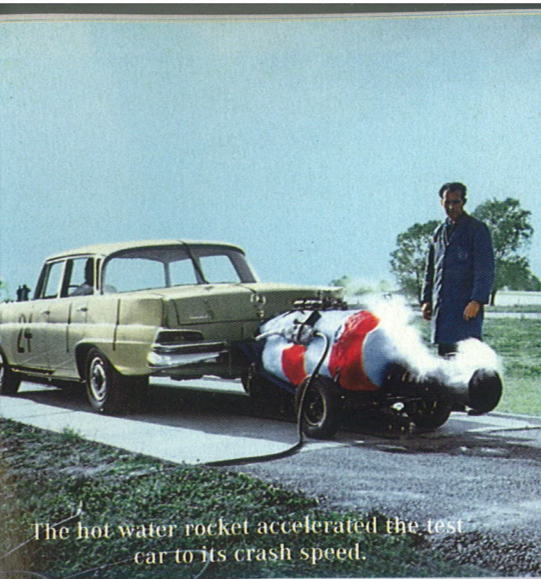
1940: the first crashworthy floor unit. Cross members provided good lateral protection.



Support from the steering wheel? The test sledge showed the limits.



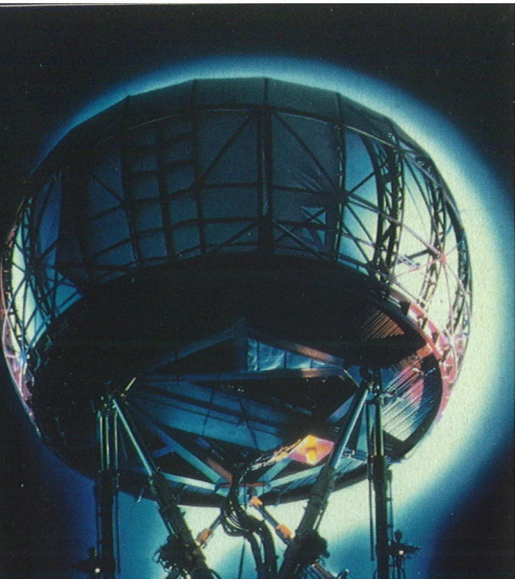
At 50 km/h against the wall, the occupant cell of the 1951 170 S remained largely intact.



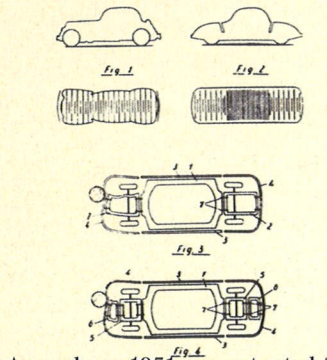
The hot water rocket accelerated the test car to its crash speed.



Side impact was on our agenda as early as the 1970's.



What would in reality be too dangerous, we assess in the driving simulator.



As early as 1951, we patented the principle of the safety passenger cell.



The landing was also excellent: the 220 SE at the start of the 1960's.

Catch up on 50 years' safety research in a few years? It would be nice.

► When, many years ago, we began to assess vehicles systematically in crash tests, more than a few eyebrows were raised. Nobody used to think much about the safety of cars in those days.

► Today, things are quite different. And because we make

important research discoveries available to all other manufacturers too, and thus to all car drivers, Mercedes-Benz developments such as crumple zones, the safety steering column, ABS and the airbag can now be found in many of our competitors' cars - in many cases, only

a few years after these safety features started to find extensive application in our own car range.

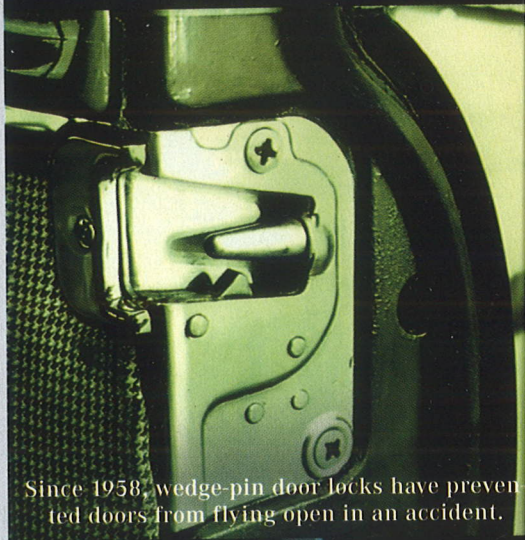
► However, we shall maintain our leading edge in future, too, and certain safety innovations will appear first in a Mercedes-Benz. There is a quite simple reason for

this: the first to start thinking is the first with the new ideas.



Mercedes-Benz

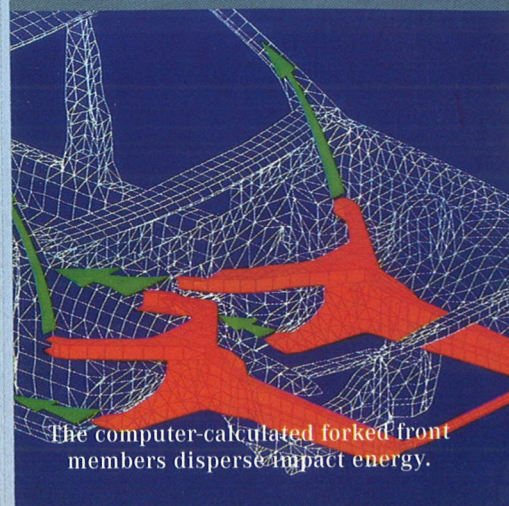
Engineered like no other car in the world



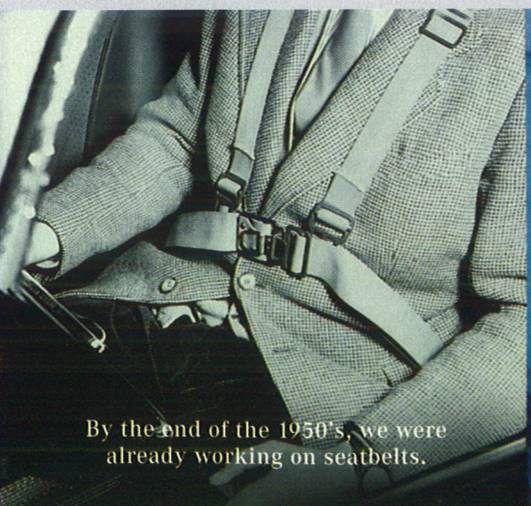
Since 1958, wedge-pin door locks have prevented doors from flying open in an accident.



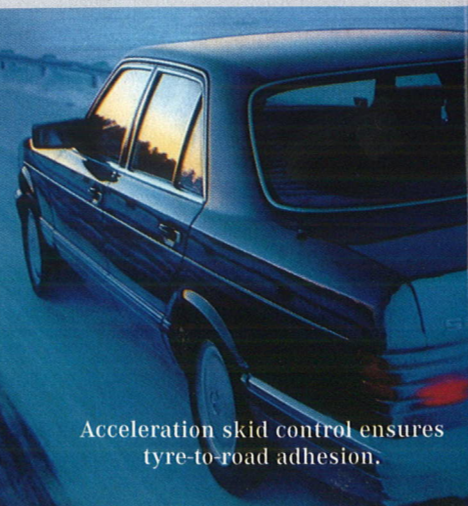
The most common type of accident: the offset crash. It has been a part of our test programme since the 1970's.



The computer-calculated forked front members disperse impact energy.



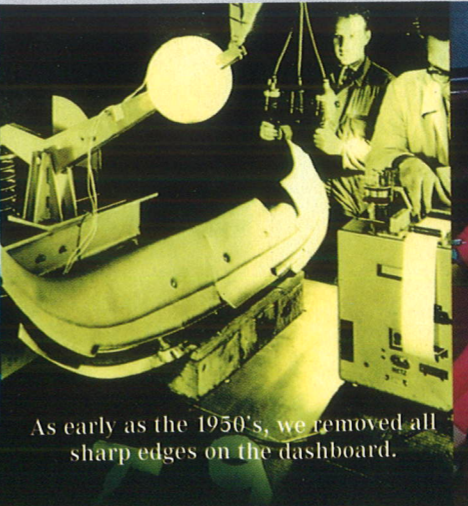
By the end of the 1950's, we were already working on seatbelts.



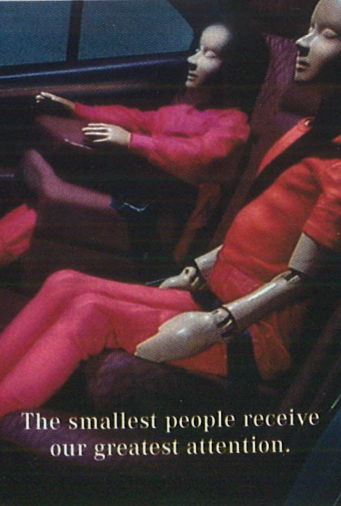
Acceleration skid control ensures tyre-to-road adhesion.



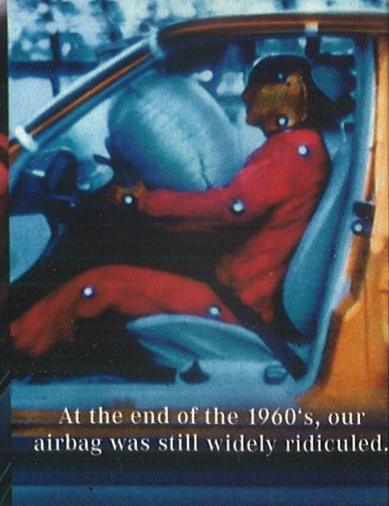
Leather head restraints afford protection in an accident.



As early as the 1950's, we removed all sharp edges on the dashboard.



The smallest people receive our greatest attention.



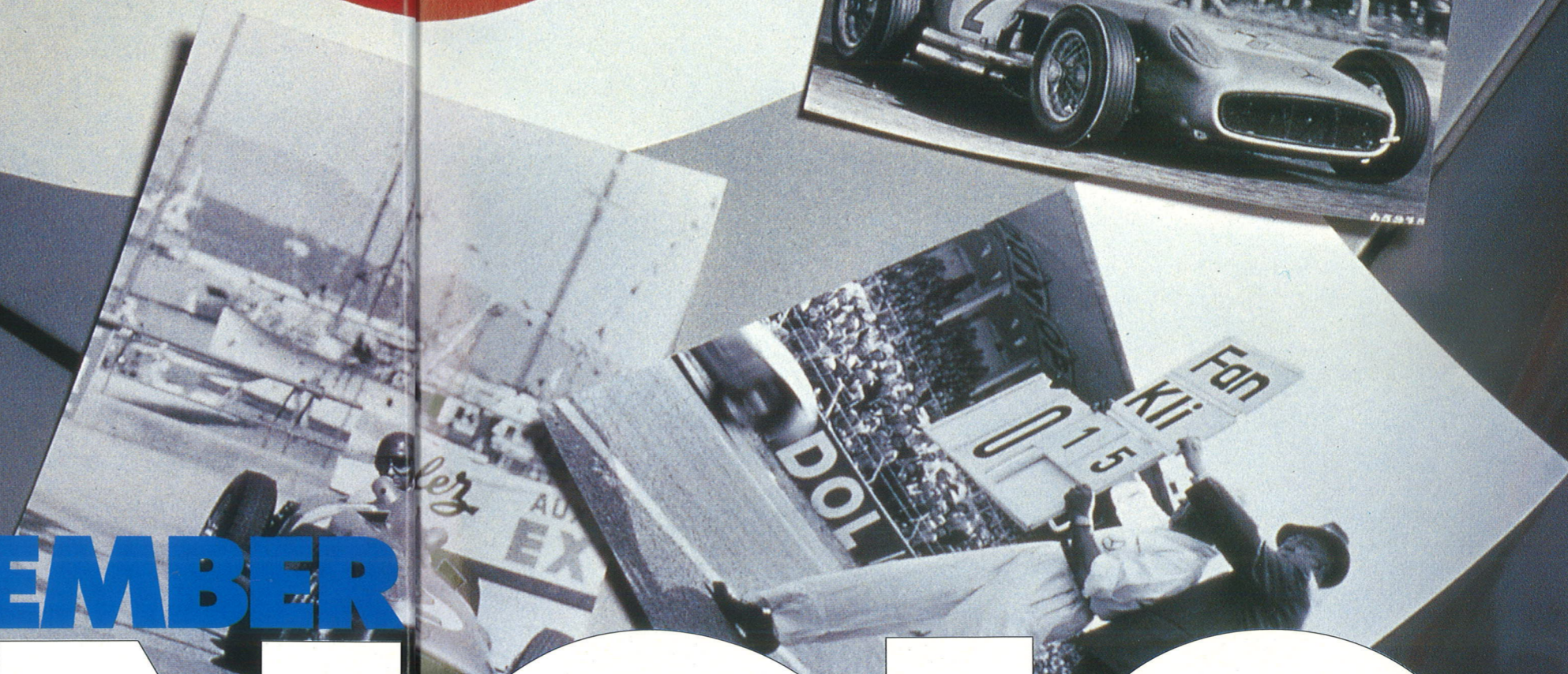
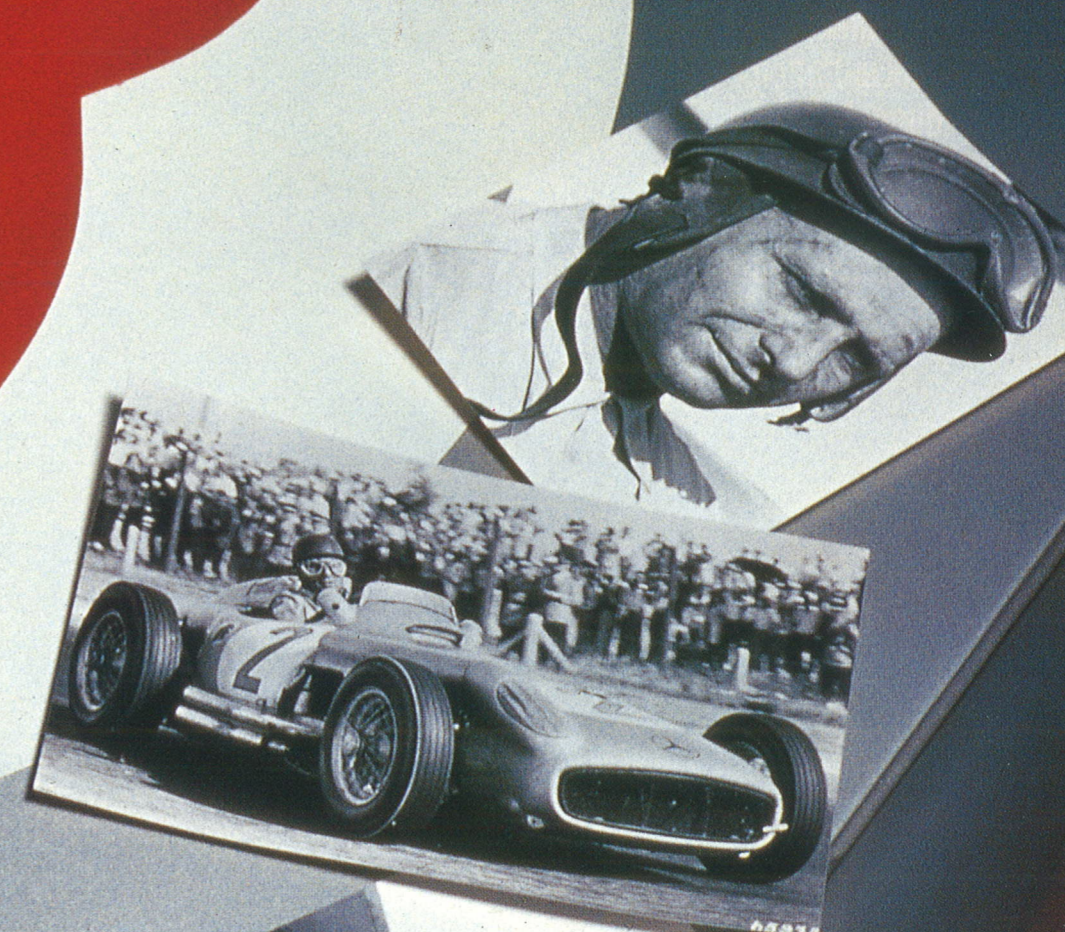
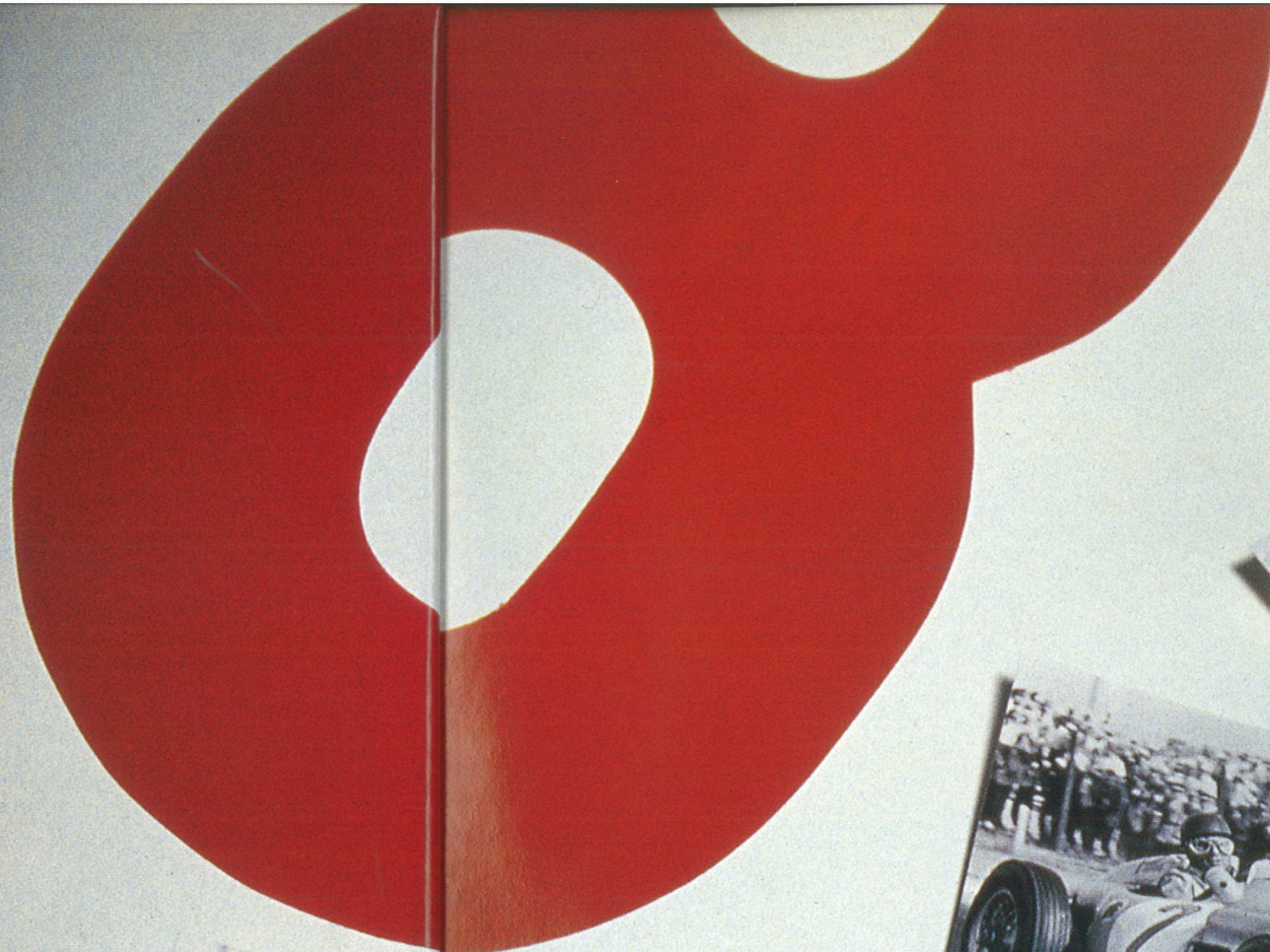
At the end of the 1960's, our airbag was still widely ridiculed.



FANGIO AND ME AT MERCEDES, BY STIRLING MOSS

LEGEND

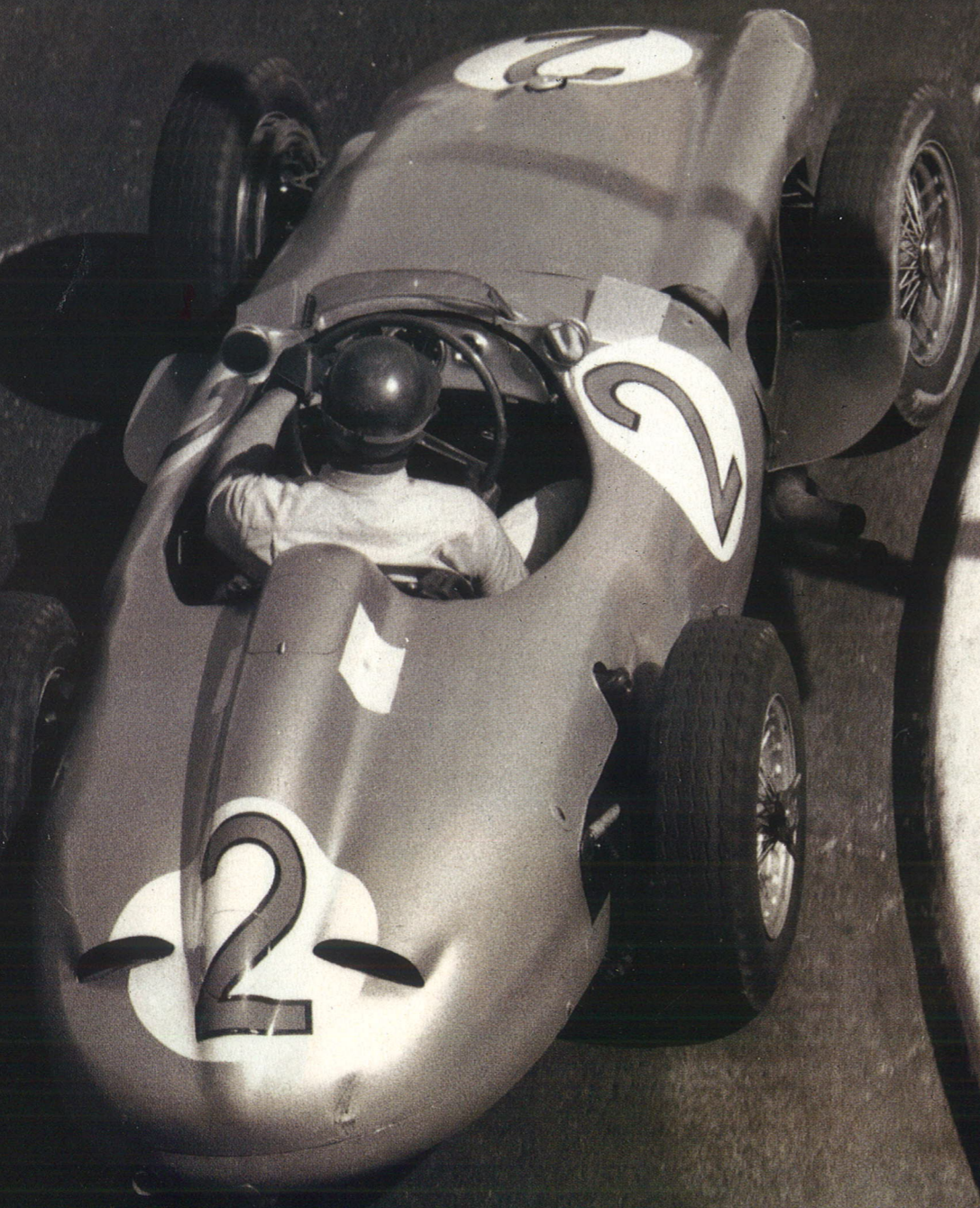
For my money Juan-Manuel Fangio, who died at the age of 84 on July 17 1995, was the greatest racing driver of all time. I have Mercedes-Benz to thank for being able to get to know him really well, as a teammate, a colleague and a friend, and he will always stay in my memory



REMEMBER

FANGIO

Stirling Moss
"He had an extraordinary tenacity, an ability to retain concentration through fatigue. He was also, in absolute terms, very, very quick"



*Left: Master at work - inch-perfect precision driving in the 1955 Monaco Grand Prix.
Top: Subject and author in Buenos Aires, 1993.
Below: Fangio leads the 1955 British GP*



When Stuttgart decided, in 1952, that Mercedes would come back into Grand Prix racing, they did their sums carefully. For them, the whole team had to be right.

They had Neubauer, the hugely experienced team manager who'd run the pre-war Grand Prix team; and they had Uhlenhaut, the engineering genius. They had a car on the drawing board which they believed was going to be a world beater. And they wanted the best man in the world to drive it.

So, early on in the programme, they made sure they had Fangio under contract for 1954. For them it was as vital a part of the package as the three-pointed star on the nose of the car.

I had first met Fangio around the Continental paddocks in 1950, but of course he was already a top driver in the Alfa Romeo team, and I was just a young lad from England in an under-powered, under-funded HWM. But I clearly remember what was, I suppose, our first meeting on the track.

It was in the Bari Grand Prix in Italy. This was effectively my first Formula 1 race, even though my HWM was a just 2-litre Formula 2 car. Farina and Fangio were battling away in the works F1 Alfa Romeos, and they came up to pass me. Farina came by under braking into a corner, and carved me up a bit - he was like that - and in so doing he ran wide, and I repassed him on the exit of the corner in my little HWM. Of course he was pretty upset about that, but once he'd sorted out his moment he put his foot down and tore past me.

Fangio came through right behind him, and as he drew abreast of me he looked across and gave me a big grin, as if to say: That was a bit cheeky! He obviously thought it was a huge joke.

By 1953 it was an open secret around

motor-racing that Mercedes were coming back for the 1954 season. So Ken Gregory, my manager, and my father flew to Stuttgart to see Neubauer, and asked: What about a drive for our boy? Neubauer said they'd been watching me and I was on their shopping list, but most of my Grand Prix experience had been in make-weight Formula 2 cars, and they wanted to know how I'd get on in something with comparable power.

So Ken and Dad bought a customer Maserati 250F for me in 1954, and I put it on the front row for four Grands Prix running, ahead of the other Mercedes drivers (but not, of course, Fangio!). At the end of that season I got the call to go to Germany to try the car, and I joined the team for 1955. I was the World Champion's team-mate in Formula 1 and in sportscar racing.

He'd already been Champion twice by then. And I was in the wonderful position of being able to race with him, in a difficult but highly competitive car, and work with him and learn from him.

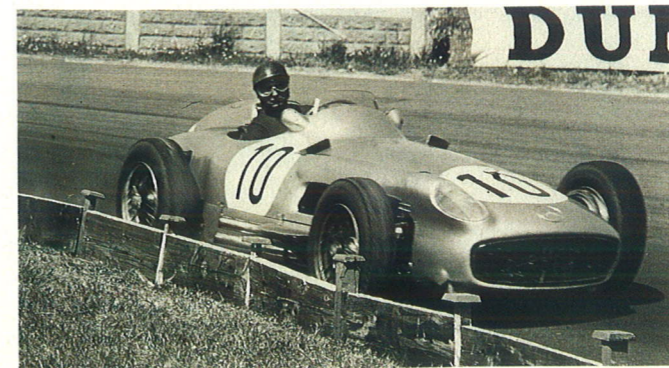
That year there were only six rounds in the World Championship (apart from Indianapolis, which still counted in theory, but was ignored by the Formula 1 teams). Mercedes won five: four victories, one second and one retirement for Fangio; one victory, two seconds and three retirements for me. My win came in my home Grand Prix at Aintree, when I beat Fangio for pole position, swapped the lead with him several times in the race, and led him over the line by a fifth of a second. And to this day I don't really know whether he let me take that home win. When I asked him years later, he said I had the legs of him that day, but somehow I've never quite been sure...

In sportscar racing, the Mercedes 300SLRs dominated five out of the six races entered. I won three, and had two seconds; Fangio won two and had two seconds. The sixth race was Le Mans, where Fangio and I shared a car. We were leading by almost 20 miles when, in the early hours of the morning, it was decided we should withdraw from the race because of the tragic accident that had happened earlier when Pierre Levegh crashed into the crowd. Without that executive decision from Stuttgart, I'm sure it would have been six out of six.

Fangio had amazing strength and stamina. Remember that in those days Grands Prix were at least three hours, or 300 miles. In Argentina that year the heat was so great that most cars that finished had two or three drivers, because everyone was passing out with heat exhaustion. Fangio raced on alone, to win and set fastest lap: afterwards he said he kept going by thinking of the Swiss Alps, and persuading himself that the sweat running off him was ice-cool water.

It was a sort of indomitable mental strength, an extraordinary tenacity, an ability to retain concentration through fatigue. But he was also, in absolute terms, very very quick - when he needed to be.

His car control was exceptional, too. I think that came from the same roots as his stamina - those extraordinary long-distance South American races he did as a young man, slithering through the dust in old



LEGEND



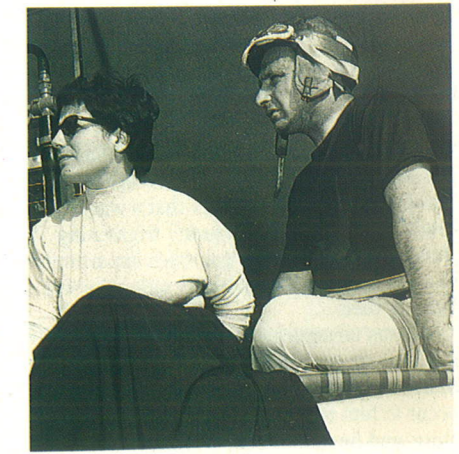
LEGEND



Stirling Moss

"He was never flamboyant about his work. He would drive just as fast as seemed necessary"

Clockwise from top: Fangio with his father, Loreto, and his mother, Herminia in 1949. Sitting in the hand-built Ford with his good friend Pichon Bianculli. At Silverstone in 1950 with Alfa team mate Giuseppe Farina. Fangio with his wife. In the 1954 British GP, Fangio finished fourth overall in the Mercedes-Benz W196. He started 28 of his 51 Grands Prix from pole, including the 1953 Belgian GP. Winning the President's Cup after the Boa Vista race in Rio, December 1957





LEGEND

Stirling Moss

"As a man, he epitomised two words which are now out of fashion. He was a sportsman and a gentleman"



McLaren Mercedes drivers Mika Hakkinen and Mark Blundell joined Ron Dennis and Norbert Haug to visit Fangio in Argentina last season

American saloons, on the limit for days at a time. That was the early learning that he carried with him when he came to Europe and Grand Prix racing.

He was never flamboyant about his work. He would drive just as fast as seemed necessary to get pole position: then, if someone beat his time by a tenth, he'd go out and find another two-tenths. He always seemed to be able to find the extra from somewhere when he wanted it.

But Fangio didn't just stand out as a driver. As a man, he epitomised two words which are now rather out of fashion. He was a sportsman. He was a gentleman.

I never saw him do anything that you wouldn't like to do yourself. Racing was much cleaner in that era than it is now, but even then you'd see drivers carve people up, put a wheel on the rough to throw stones in the face of a pursuer, that sort of thing. Fangio would have none of that. He only won races on his speed and skill at the wheel.

If someone tried to carve him up, he wouldn't get angry. He'd just wag a finger at the culprit. But so great was the respect for him among the other drivers that a wagged finger from Fangio was a pretty frightening thing. Not that anybody got much opportunity to carve him up, to be honest - unless he was lapping them....

He was never critical of people, and you could never get any gossip out of him. He just didn't like running people down - it didn't occur to him to do it. He wasn't any good for a story, and he didn't seem to want to go out on

the town after a race and have a bit of fun, as most of us liked to do then. He was always discreet and diplomatic.

But he enjoyed the people around him. He loved being in the Mercedes team, and he treated the mechanics as friends and colleagues. He seemed to have endless time for the fans who mill around you at a race. He was extraordinarily tranquil and relaxed out of the car, and very patient. But he was also an emotional man. I remember he was devastated when his young protege, the Argentinian Onofre Marimon, was killed at the Nurburgring. He was weeping.

From the start of the World Championship in 1950, he did seven full Formula 1 seasons. Five times he was World Champion, and the other two years he was runner-up. He was nearly 40 when the World Championship began, and 46 when he drove in his last race. He drove in 51 Grands Prix, and he won 24 of them - an extraordinary 47 per cent success rate. Comparisons across different eras of motor-racing are always difficult, but that percentage is surely one record that can never be broken.

I never talked to him about it, but I think he would have been upset by the way motor-racing has become less of a sport and more of a business. You didn't sit down in those days and negotiate a hard deal with a company like Mercedes. They would offer you a good deal - salary, car, living allowance (in 1955 I got \$20 a day, which seemed pretty generous then: perhaps he got more, as the champion and team leader). With Mercedes you didn't

stare them in the face and ask for more!

But that's not to say that Fangio wasn't extremely shrewd. He knew very clearly how different teams behaved, how they treated their drivers. When Ferrari offered me a drive, I asked Fangio's advice. Should I take it? Drive for them, he said, but don't sign. Never sign for Ferrari.

In all the time I knew him, we had to communicate in Italian. He spoke no English, I speak no Spanish. When he retired, five times World Champion, he gave me a clock. It's on my study wall to this day. It has an inscription round the rim: To the future World Champion, signed J.M.Fangio. I think he expected me to take the title when he stopped - which of course was not to be.

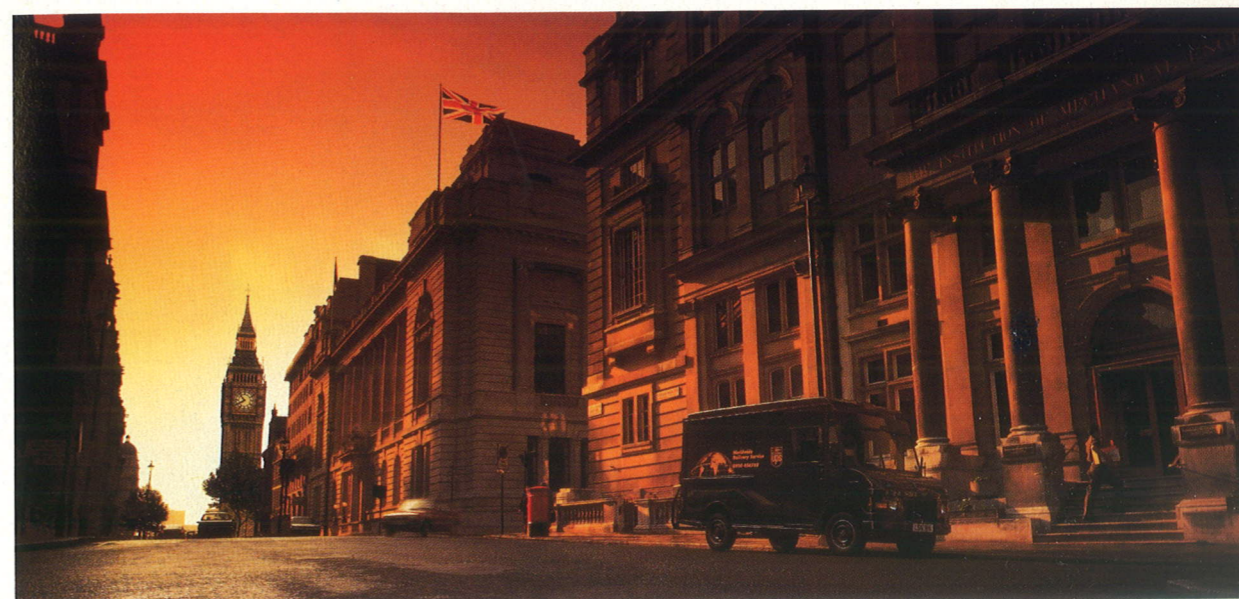
It was my privilege to race with the man who was the best driver in the world. You can't fail to benefit from something like that. All I was doing was trying to emulate him, to be as good as him. You're very fortunate if you can be working with the best, and have that to set your standards by.

But I think I learned just as much from being around him. He taught me humility, because he was hard to beat. I like to think he also taught me humility because, as the best in the world, he was a humble man.

He was on the international scene for barely eight years, but his name and reputation will live for ever. And if you look at every part of his career, every detail, you won't find anything he ever did, or said, that wasn't good for motor-racing.

We won't see his like again. ■

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McLaren and Mercedes-Benz are two companies that are steeped in motorsport history, partners who are aiming for success. By Alan Henry

F1



MCLAREN + MERCEDES

A PHILOSOPHICAL MEETING OF MINDS

When Mercedes-Benz forged its partnership with McLaren for the 1995 FIA Formula 1 World

Championship season, it was motivated by a confidence that its new partner had the same feeling for tradition, high standards and technical competence on the international motor racing scene.

The very nature of Grand Prix competition has changed fundamentally since Mercedes's own Silver Arrows last raced in F1 during 1954/55. In those days, the legendary W196s designed by the highly respected Rudolf Uhlenhaut, with their angled eight-cylinder engines, direct fuel injection and desmodromic valvegear were rightly regarded as state-of-the-art contemporary F1 challengers.

Four decades later, the engineering complexity of Formula 1 has resulted in a totally different approach. The current ethos calls for a partnership between specialist chassis and engine manufacturers and success is judged by how effectively those two sides integrate to positive effect.

One year into the McLaren-Mercedes alliance and both parties have learned an enormous amount about the challenges and frustrations of attempting to compete at the very highest level of international motorsport. Yet the setbacks have brought McLaren and Mercedes even closer together, strengthening their resolve to succeed in 1996.

"When we first entered our partnership with McLaren I realised that it was fundamental that we should regard ourselves as contributing to a single effort, a single unit," says Norbert Haug, the Mercedes Motorsport manager.

"It wasn't a question of McLaren on one side and Mercedes-Benz on the other. If there were setbacks, we would suffer them as a family does and would celebrate success in the same way. I think the commitment to this close relationship has been one of the most outstanding elements in our association."

The McLaren-Mercedes partnership was not finalised until October 1994, so the challenge of preparing a completely new car and engine in time for the opening

race in March 1995 might have proved overwhelming for a less structured organisation.

At first glance, it might have seemed logical for McLaren to use a 3-litre version of the Mercedes V10 engine previously used by the Sauber team. Yet on examining the revised 1995 F1 technical regulations in further detail, the engineering teams at McLaren and Ilmor, the Mercedes F1 engine division, decided that a completely new design approach would be needed to the architecture of the new engine.

The introduction of the 50mm stepped undertray rule, part of a package of measures to reduce downforce and control cornering speeds, seriously restricted the amount of space alongside the engine

Norbert Haug

"I think the commitment to this close relationship has been one of the most outstanding elements in our association"

itself. It would be extremely difficult to package such ancillaries as the exhaust manifold and oil, water and hydraulic pumps within the space available.

It was therefore decided to design a totally new 3-litre V10 engine, opening out the vee angle from 72 to 75-degrees in order to locate the hydraulic pumps between the two banks of cylinders.

The new Mercedes F0110 engine was installed in the distinctive new McLaren MP4/10 chassis which



The McLaren mechanics and Mercedes engineers had a busy year, with on-going developments to the car and engine throughout the 17-race season

duly had its official unveiling at London's Science Museum on 17 February - only five weeks before the green light would signal the start of the first race of the season in Sao Paulo.

Mercedes and McLaren make no excuses for the teething troubles they encountered during the first half season of their F1 partnership.

"It wasn't simply a question of a fresh technical package for the new rules," continues Norbert Haug. "It was also the fact that both Mercedes and McLaren were learning to work with each other at the same time. Under the circumstances, the record books show that we made steady progress to begin with which

accelerated significantly during the second half of the season."

Although in the opening races of the year the team was qualifying little more than a second away from the Williams and Benetton pacemakers, the McLaren-Mercedes performances faded disappointingly as mid-season approached. Yet these setbacks served only to strengthen their resolve.

Ilmor concentrated its efforts on improving the Mercedes' mid-range torque and driveability, while also edging forward in terms of absolute power output. Meanwhile, Ron Dennis freely admitted that the need to progress quicker than the opposition in order to catch up resulted in

McLaren pushing its workforce harder than ever throughout the year.

This overwhelming level of commitment was perhaps best displayed in the aftermath of a spate of engine failures at the Hungarian Grand Prix. During the week after the race, Ilmor stripped the engines, identified the problems, manufactured fresh components and bench tested the rebuilt engines in time for a test at Silverstone only eight days after the problem race.

At the same time, McLaren displayed its remarkable engineering strength in depth by producing a revised gearbox casing to accommodate new rear suspension geometry within a similar time frame.



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Mika Hakkinen always gives 100 per cent, and rewarded the team with a fine second place in the tricky conditions of the Japanese GP at Suzuka

The revised cars were ready for the Belgian GP where Mika Hakkinen rewarded the team by qualifying an excellent third on the grid.

By the end of the season, the McLaren-Mercedes was right back at the front of the field. At Suzuka, Hakkinen again qualified third, only 0.8sec away from Michael Schumacher's Benetton-Renault and stormed home to finish in second place in the race, only 19sec behind the World Champion.

McLaren's Managing Director is firm in assertion that Mercedes has been enormously supportive throughout the 1995 season.

"After the European Grand Prix there was a scheduled meeting to discuss the overall strategy and results of the Mercedes-Benz motorsport programme," he explained.

"The overwhelming point of the meeting was the desire of Mercedes board members Mr Helmut Werner and Mr Jurgen Hubbert to convey to all of us the absolute support that the company has in its motorsport strategy.

"This is not an involvement based on the enthusiasm of specific individuals; it is a clear motorsport strategy with sound marketing reasons behind it.

"Mercedes indicated their unwavering commitment and their questions were designed more to understand how they could contribute more to achieving on-circuit success. When I left, I felt I was not partnered by fair-weather friends."

PROST: PRICELESS EXPERIENCE

The McLaren-Mercedes alliance will be immeasurably strengthened for 1996 by the arrival of four times World Champion Alain Prost in his new role as F1 Technical Consultant.

Alain spent much of 1995 mulling over whether or not to make a fulltime return as a McLaren team F1 driver, but eventually decided that at the age of 40 he had nothing more to prove. Nevertheless, he was anxious to remain closely connected with the sport he loves and his latest deal with his old friend Ron Dennis revives a link with the team for which he won three of his four title crowns.

The Frenchman firmly believes he can contribute to the process of restoring McLaren to the winner's circle. "I think with my experience, I can bring a few things to the drivers, the way they work with the engineers and perhaps help them avoid some mistakes, which is very important in F1," he explains.

He is also looking forward to getting back behind the wheel in a testing role. "I will not be testing for just running the cars," he adds, "because sometimes it will be helpful to bring the young guys up to a new level."

Alain Prost's role is more than just test driver. He will have a significant technical input as well as help coach the drivers like Mercedes touring car star Dario Franchitti





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The only corner-cutting in the McLaren-Mercedes partnership came on the race track

David Coulthard joins the McLaren-Mercedes programme for 1996. The Scot was impressed after his first test at Jerez

It was also a relationship characterised by its frankness beneath the unrelenting media spotlight. From the outset, Norbert Haug and Ron Dennis agreed that there would be no excuses made to the press, no concealing of information. Honesty would be their hallmark at all times.

"I think this was painful sometimes when things were not going right," admits Haug, "but I firmly believe that Mercedes and McLaren will reap the benefit of this honest approach when we achieve what I regard as an inevitable level of success in the future."

"If you are totally open when things are not always going well, I am confident the media will be even more appreciative of your approach when things go right. I have never once doubted that this was the correct strategy."

The lessons of 1995 have certainly been well learned by both partners. With David Coulthard joining Mika Hakkinen in the McLaren-Mercedes squad for 1996, the team is now preparing for a further push forward to establish itself as a regular front runner and potential winning force. ■

COULTHARD'S NEW CHALLENGE

David Coulthard won his first Grand Prix in Portugal last season and finished third in the Drivers' World Championship in only his first full F1 season. Now the 24-year old Scot is embarking on a two year contract with McLaren-Mercedes. And he is absolutely determined to improve on his own personal level of achievement.

Coulthard had his first experience of McLaren-Mercedes motoring during a test at Jerez early in December '95 and reported some very positive elements of the MP4/10B package. "My first impressions were that, as far as the aerodynamic balance was concerned, the car was surprisingly good," he said. "And when I say surprised, I mean because I can remember what the car looked like at the start of the season, when it was obviously not that good. People tend to overlook the fact that it improved to the point where, at Suzuka, it was very competitive." Coulthard was also impressed with the Mercedes F0110 engine. "It is very smooth and there is very little vibration," he said. "In the mid-range it is quite strong in the way it revs up, but I think the bottom end needs a little attention to improve driveability. But there are not any insoluble problems."



HAKKINEN FIGHTING BACK

When Mika Hakkinen took the chequered flag to finish second in the 1995 Japanese GP at Suzuka, he was looking forward to going one better in the final race of the season.

Sadly, the Australian GP at Adelaide was marred by the Finn's high speed accident in qualifying which left him hospitalised for several weeks with serious head injuries. But now the Flying Finn is preparing for an F1 comeback to pick up the threads of what he hopes will be a winning F1 career.

Hakkinen was signed off as fit by the doctors in the second week of January and immediately began preparing to start an intensive programme of physical training in preparation for the new season. The plan was that he should have his first run at the wheel of a McLaren MP4/10B in early February to further assess the progress of his recovery.





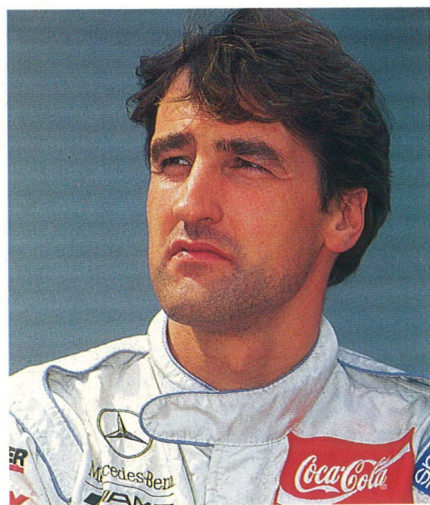
DTM

It's eight years since Bernd Schneider won a championship, but in 1995 he won two – the German and International touring car titles. He tells Jonathan Noble how he managed the double

As far as touring cars are concerned, it's been a remarkable year for Mercedes in general and for Bernd Schneider in particular. The Saar-born driver has turned around his career and fortunes, fought off the precocious challenge of a second wave 'junior team' and ended the year as winner of both the German and International touring car titles.

"Both championships are very important to me and doing the double is just fantastic," admitted the former Grand Prix driver. "I would say this is the most important championship victory of my career and I have been waiting since 1991 to do this. I've had such bad luck that sometimes I've wondered what I had to do to win. It is easy to see why I am so very, very happy."

Schneider's stunning results – four pole positions and 11 wins – make it look easier than it was. But throughout the year he faced tough opposition, not least from the new young breed of drivers brought into the team. "Dario Franchitti made it an especially hard time for me," said Schneider. "He was always very fast and I



31-year-old Bernd Schneider answered the question as to which was the more important championship – the DTM or the ITC – in the most emphatic manner possible, by winning both



SCHNEIDER'S TROPHIES

had to push myself up to his level. When somebody next to you is going slow, you never know how fast you can go with the same car. Dario was very fast and when he beat me in qualifying he showed me that there are another five-tenths to go. That made me try harder to find the right balance in the car to equal his times.

"I couldn't say that I knew I would be champion from the first race", he adds, "because before the year you never know how competitive you will be or how strong the other manufacturers are. I won the

first race, but I still didn't know about the other teams because the guys who were making my job harder were the guys in my team.

"I've been disappointed a few times in my career, but at Singen when I finally won the German title, I couldn't believe it. I had only been 14th in qualifying and it was incredible. After Estoril, in the International Touring Car series, when I needed only five more points to be champion, I still wasn't sure that I would claim the title at Magny-Cours. It may

sound funny, but that's the way it is."

You don't have to spend long in Bernd Schneider's company before you recognise that this is a man who is enjoying his motor racing. He has won his first championships since clinching the German Formula 3 title in 1987, and has finally put behind him an unhappy move into Formula 1 with the Zakspeed team in 1988.

Schneider's whole attitude to the sport has changed since he started racing in Class 1 touring cars. The ITC and DTM may be just as competitive, high-tech and



DTM

**SCHNEIDER'S
WHOLE
ATTITUDE TO THE
SPORT HAS
CHANGED SINCE
HE STARTED
RACING CLASS 1**



"IF DARIO FRANCHITTI BEATS ME IT'S NOT THE END OF THE WORLD BECAUSE THE TEAM HAS STILL WON"



DTM



Bernd Schneider
"It's the team that dominates this class of racing. Personal egos must come second"

Left: Close rivals, but teammates in every sense - Bernd Schneider and young Scottish charger, Dario Franchitti

popular as Formula 1, but there is a different approach to how the two series go motor racing. And it's this that makes Schneider feel more at home with touring cars.

"It's the team that dominates this kind of racing," he explains. "Personal egos must come second. It can perhaps serve as an example by showing the other classes that there is only one right way of doing things.

"Success on the race track is the reward for the hard work done, not just for the driver, but also for the mechanics and the rest of the team. As a racing driver it is constantly impressed upon you that it is only you who count, that only your personal success is important and that you must think only of yourself. But in the Mercedes-Benz team you can be as fast as you like, yet if you don't fit into the team you will not be as successful as you might. For many people that's a new approach - and a learning process.

"But it's very good to have the team around you because you have to work together a lot more. In Formula 1, the most important person to beat is your team-mate and if you're beaten by him then that is a disaster. But in the ITC things are very different. You're not really driving for yourself, you're driving for the team and you have to work with the team. If Dario beats me than it is not the end of the world, because the team has still won."

Working and winning with Mercedes is a dream come true for any German driver, just as driving for Williams would be the dream of an Englishman, or being in a Ferrari that of an Italian.

"I think it is very similar, because our country is based on Mercedes and

although Class 1 and Formula 1 are not on the same level, it means a lot for me as a German to be racing for Mercedes in an international championship."

As double champion, Schneider knows that the pressure will be on him to win the ITC again next season, now that it has full sanctioning from motor sport's ruling body.

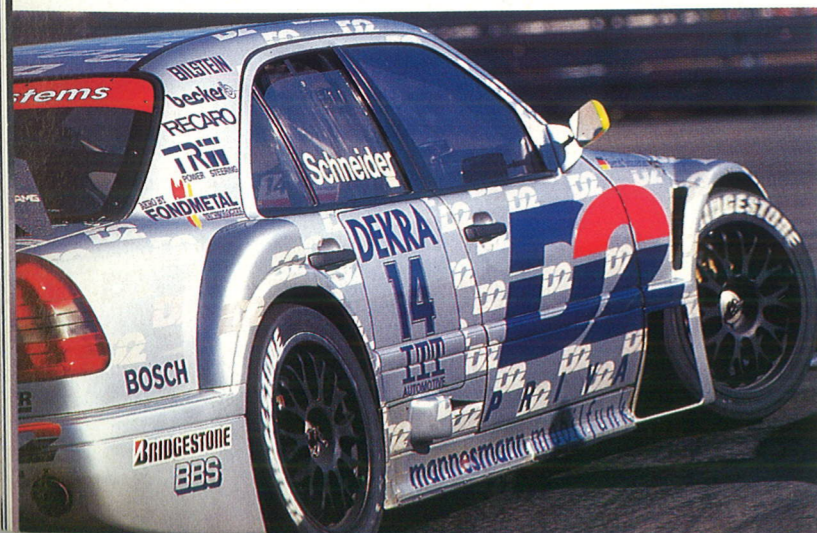
"I think it is brilliant for Class 1 racing to go international because it now means so much more to everyone - the fans and the media - and, hopefully, it will bring another manufacturer into the series. But it will also be nice to battle for just the one championship next year, because this year there was a lot of argument over which title was more important - the DTM or ITC. Thankfully, I won both so I didn't have to worry about answering that question.

"Things are very difficult to predict in Class 1 and you never know which of the manufacturers is going to be winning. You only need to look at how good Opel was in the last race of the series. But over the winter we will push very hard and I am sure that we can be as good next year as we were this year. But I suppose all the manufacturers will be thinking like that. What's more, we have to watch out for the youngsters as well."

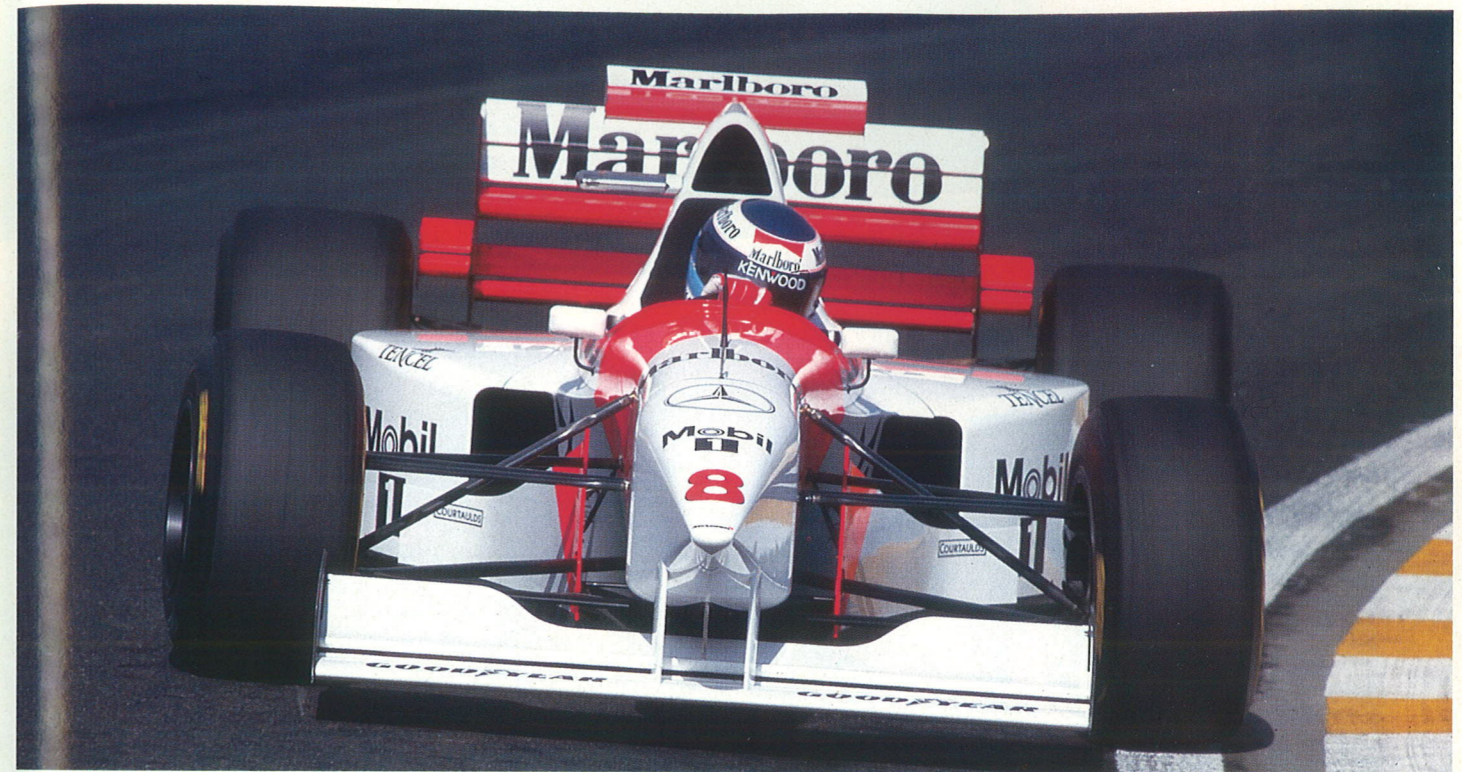
Schneider's views are clear, but it is perhaps Mercedes' motorsport boss Norbert Haug who gives the wisest insight into just how much Schneider's double-title-winning 1995 season will mean to him in the future. "To every German driver, the DTM is something very special," he said. "But in years to come, when the series gets bigger, the first ITC title may be even more significant for Bernd." ■



Left: Schneider's mastery of his Mercedes C-Class brings plentiful rewards (right)



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For the Marlboro McLaren Formula 1 team, Mercedes builds a 3-litre V10 multi-valve engine that operates at over 15,000 rpm. Mercedes chose Mobil 1 to keep the engine's 901 moving parts in peak condition and survive internal temperatures exceeding 300°C.

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Reaching speeds of 390 km/h, Penske cars scored more victories than any other team in 1995.

Mercedes high-tech Class 1 racers won both the 1995 International and German touring car championships. These AMG Mercedes models sport a 24-valve 2.5-litre V6 engine that's lubricated by Mobil 1, and because it's a Mercedes, it's engineered like no other race car.

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ENGINES



When Mario Illien and Paul Morgan fix the small plate to the cylinder block assigning the finished racing engine its production number, it signifies much more than the legal fulfilment of a business contract. Their partnership with Mercedes-Benz goes much deeper; creatively, technically and emotionally.

For Mercedes, the co-operation with Ilmor is the logical continuation of its company philosophy of strong, lasting teamwork, something which is not limited to its sporting activities. As a global player, Mercedes-Benz aspires to work with the best people in the business, to the advantage of all concerned.

For their part, Mario Illien and Paul Morgan are glad to draw upon the enormous reserves of expertise, especially in areas like research and development, that are found at Mercedes-Benz in Stuttgart. These racing engine constructors know that success can only be achieved together: Stuttgart and Brixworth in tandem.

The racing season in 1995 was the first of the association with McLaren and both partners had anticipated a year of learning. From the start there were ups and downs for the new combination, with quite a few lessons in humility both for world champions McLaren - a team more than used to success - and for Mercedes itself.

The fact that the technical rulebook was rewritten for the 1995 Formula 1 season - including reducing the engine's cubic capacity from 3.5 to 3 litres - meant that instead of refurbishing the existing engine, a brand new unit would have to be engineered. The development and construction schedules would set new records for Mario Illien and represented an enormous challenge for the whole team.

The flexibility and adaptability of a smaller partner also has an effect in terms of synergy on the R&D schedules of the larger company, in just the same way that a commitment to motor racing represents an arduous fitness and development programme for any motor manufacturer. Ingenuity, precision and speed are vital elements for the sporting arena, forming a team which should have the decisive edge outside in the market.

Barely three months after signing the contract with McLaren, Mercedes' 1995 engine ran for the first time on the test bench. It was January 16, at exactly 4.35pm.

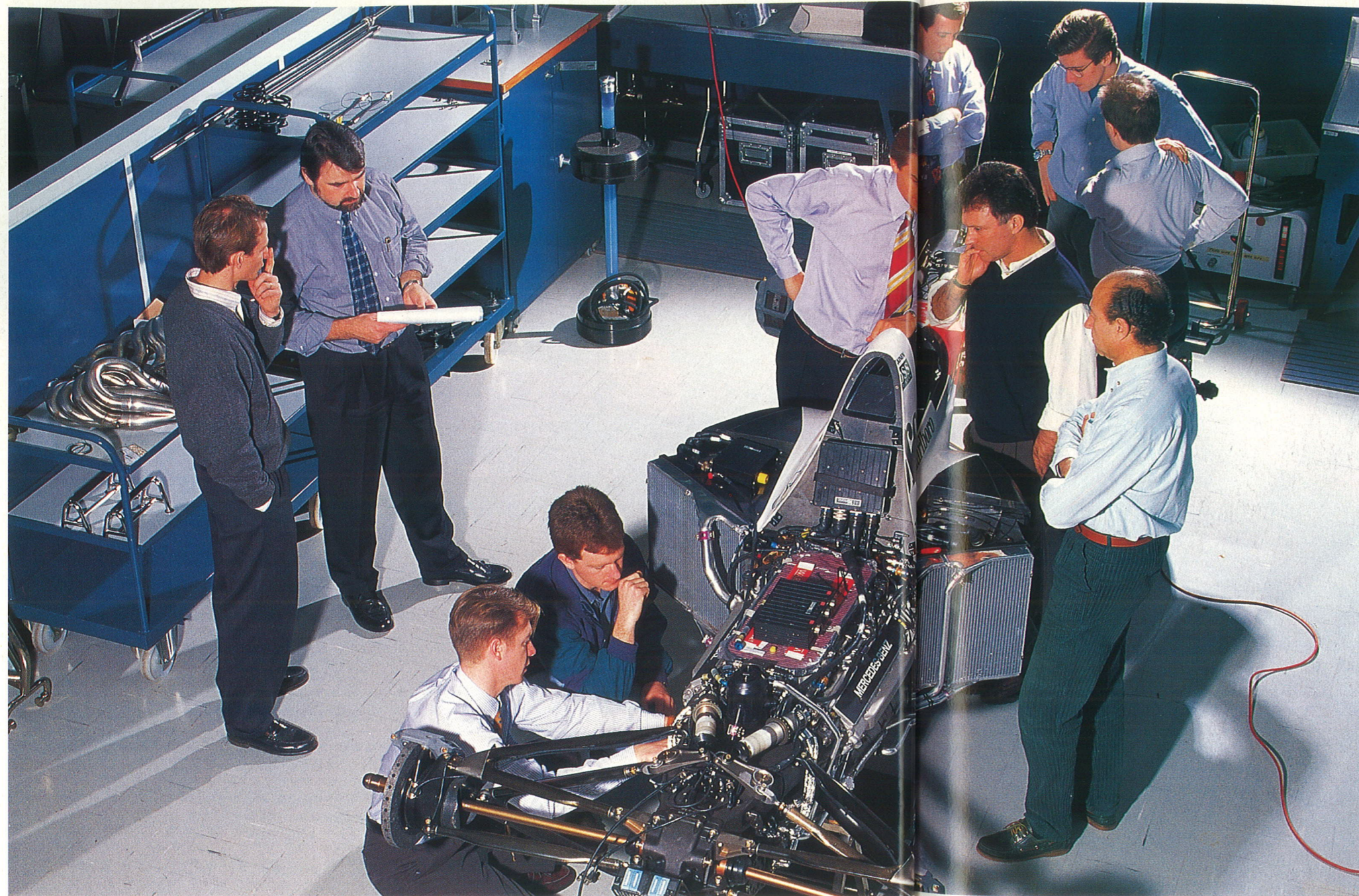
First the resplendent motor roared contentedly, at low revs in a neutral gear, warming up its muscles. As the engineer pushed the massive lever, alias accelerator, forward, the onlookers' pulses began to quicken. Slowly the engine climbed into the high spheres of revolutions per minute required - 15,000rpm and more.

After a few seconds at full power, the engineer took the

Content and proud, they could report to Stuttgart that a bouncing healthy baby had just given its first joyous cry

WE'VE GOT THE POWER

The story of the development of the Mercedes Formula 1 engine



Left: A few short, action-packed months after Mercedes-Benz finalised the 1995 Formula 1 deal with McLaren, and a completely new chassis and engine are brought together for the first time. The McLaren-Mercedes MP4/10 made its debut at Brazil – taking fourth and sixth

accelerator lever back down, and the spectators' features relaxed. Content and proud, they could report to Stuttgart that a bouncing healthy baby had just given its first joyous cry.

Just beside the test bench, the Ilmor bosses demonstrated that their supply of ideas and solutions isn't limited to the engine itself. The heat produced by the motor is diverted to a 50,000 litre water tank, where a system designed by Mario Illien heats the whole factory. Just one more example of the innovative power of motor sport.

At the end of February the new V10 ran for the first time in an actual racing car at Silverstone. Everything went well, but the true test of the merits of the new McLaren-Mercedes combination would be proven in the heat of actual competition. The debut in Interlagos, Brazil was encouraging. Both of the McLaren-Mercedes ended the race

in points collecting positions: Mika Hakkinen in fourth place, Mark Blundell sixth. The reliability of the new engine had been established beyond doubt. It was now a question of closing the gap on the rivals by fine tuning both chassis and engine. Mercedes put itself under tremendous pressure to bring innovation to each and every Grand Prix and join the front runners.

At Silverstone, Mercedes introduced a new engine, known as Phase Two, which was conceived specially for running a few, fast, qualifying laps. Since Saturday's qualifying had been disrupted by rain, the engine was first used on Sunday morning during the warm-up session prior to the race. Mika Hakkinen set the fastest time of the whole field. Obviously things were progressing, even though the Finn lost his fourth place in the race due to an electrical fault.

Similarly, at the next race at Hockenheim, Hakkinen sacrificed his third place 10 laps before the finish line due to motor damage. One of the qualities of the Mercedes-Ilmor-McLaren people is that in a situation of this kind there is no hunting for scapegoats but a communal effort to promptly find improvements.

At Monza, Italy, a Mercedes led a Formula 1 Grand Prix for the first time in 40 years. However brief the lead, it was a kind of Christmas come early. When Hakkinen reached the chequered flag in the Italian Grand Prix he was in second place. In the penultimate race of the 17-race season, at Suzuka in Japan, he finished runner-up again, only 20 seconds behind the double World Champion Michael Schumacher.

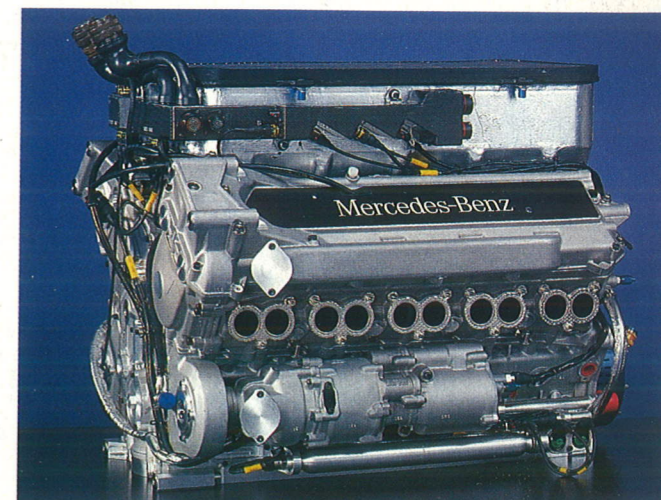
While the Formula 1 season was still in progress, Mario Illien began construction of an entirely new engine for 1996.

Having started work on October 10, 1995, the pulses were rising again at the side of the test bench on February 3, 1996. From the previous year's 10-cylinder engine, only the oil and water pumps and a few small peripheral parts were kept. Between Stuttgart and Brixworth there has been a lively exchange of ideas during the winter months, and the engine is already capable of more than 16,000 revs.

Data has been collected at the stationary testing area in Unterturkheim where complete races can be simulated and monitored. In Stuttgart, one-cylinder models were experimented with before the design of the three-litre engine for 1996 was finalised.

All this co-operation between engineers should guarantee a step forward in direction for McLaren-Mercedes' competitive ability. ■

The latest version of the Mercedes-Benz F0110-Phase 3 V10 engine which powers the 1996 McLaren MP4/11. Work began on the unit in early October, 1995



ONE-OFF INDY WINNER

May 1994. America's Al Unser Jr, has just won the Indianapolis 500 – the largest single sporting event in the world – in a Penske-Mercedes. The Mercedes engine in the rear is a unique source of power: conceived, built and honed to racing standard in just 26 weeks. For the previous Mercedes victory at the Indy 500 you have to look back a long way, 79 years in fact: Ralph de Palma won in a Mercedes in 1915.

The inspired triumph of 1994, justly celebrated in the American media, took its impetus from one main source: Roger Penske. Penske, Mercedes partner and a legendary figure in American racing, together with Mario Illien and Paul Morgan recognised certain advantages within the regulations specifically for Indianapolis, and felt that a 3.6-litre stock-block engine would be beneficial in comparison to the usual 2.6-litre Indy engines. Nobody seriously thought that a manufacturer would build such an engine, which straight after the race would be consigned to the technical museum.

It had already been decided that Roger Penske's Team was to be the Mercedes' partner for the Indy Car Series in 1995. Having been studied from all angles, the decision was taken in Stuttgart to go ahead with this technical tour de force – a one-off Indy engine. It was a risky project, but was sure to appeal to audiences too.

Mario Illien had just 26 weeks to build this most unusual racing engine. Once the unit was on the test bench, its test results were truly spectacular. The eight-cylinder turbo produced 1000bhp, which was plenty of power, as later proved to be the case.

Unser Jr started from pole position with team-mate Emerson Fittipaldi starting in third place. Both Penske-Mercedes ran away from their rivals, and had lapped the entire field before the race was even half way run. But Fittipaldi, who was in the lead, glanced off the wall a few laps before the finish, leaving Al Unser Jr to win the Indy 500 and more than 2,000,000 dollars in prize money.

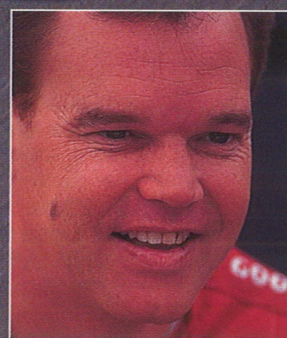


ENGINES



INDY

YOU CAN CALL ME LITTLE AL



The Unser name is already well established in the motor sport history

books. Al Jr is one of the most successful of the Unser dynasty. By Gordon Kirby

The pressure on Al Unser Jr to win races has always been greater than other top-line Indycar drivers. All his racing life, Unser has had to live up to the racing reputations of his famous father (Big Al) and his uncle (Bobby), who were among the Indycar's most successful drivers between the late 1960s and early '80s. But, if living up to the family reputation presents a problem, Al Junior has rarely let it show. For one thing, he benefited from the family's deep knowledge of racing during his championship-winning rise through the ranks of Super Vee and CanAm. For another, Little Al is now a vastly experienced driver of 33 with his own

impressive record of achievement to stand on – including Indy 500 wins in 1992 and '94, and PPG Cup championships in 1990 and 1994.

These days, Al Jr's reputation is as just about the safest pair of hands around: he rarely makes mistakes, finishes most races, makes the most of his opportunities and just gets on with the job.

When he joined Penske Racing for the 1994 season, Unser described the move, with typical optimism, as "the opportunity of a lifetime". Back then, he knew he badly needed to take a step forward. During 1993 he had grown frustrated with the Galles team, who seemed unable to come up with either the top-notch machinery his skill justified, or the time he needed to develop its race-winning potential.

Unser told insiders he felt he was losing his motivation, but the situation was complicated by the fact that team owner Rick Galles, a long-time friend, was the man who gave Unser his start in IndyCar back in 1984.

But in 1994, everything came right for Little Al. He got the big offer from Roger Penske Racing, and didn't once look back. "I had to hire him," says Penske. "He'd been in the business for 10 years. He'd won Indy and the championship and was a very consistent driver."

Above everything, shrewdness and commitment are the qualities Penske values most about Unser. "He's committed to racing, his life revolves around it. He's shrewd, too, knows just what he wants. He's always putting money in the bank for the race during practice and qualifying, instead of taking it out. He doesn't use up

Al Unser Jr
"After Cleveland Dad said I'd made it look easy. From Dad that's a heck of a compliment"

his tyres. He knows the set-up. He's the kind of guy who knows when it's time to go. He's not just out there running eleven-tenths all the time. He settles down and then he goes."

In 1994 Unser started out with a win at Long Beach in April, and scorched through the season with a total of eight victories, including the memorable win in the Indianapolis 500 with the awesome power of the Mercedes 500I stockblock V8, plus four pole positions and 677 laps in the lead. Nigel Mansell and the rest of the stars hardly saw which way he went. By the end of 1994, the pundits were rating him top IndyCar driver, an accolade he hadn't had before. Some even said he was America's best racing driver, bar none. Unser reckons one of the finest

compliments he was paid for his 1994 season came from his father Al Senior after the Cleveland race. "He said I had really done good, that I made it look easy. Coming from my Dad, who knows it's not easy at any time, that's a heck of a compliment."

The fact that Unser Jr managed to maintain the high esteem of the critics in a far more difficult 1995 season which saw the emergence of Jacques Villeneuve's precocious talents, shows what a fine racing driver he really is. Inexplicably, neither Unser Jr nor team-mate Emerson Fittipaldi were able to qualify for the 1995 Indy 500 (the first time in history a winner was unable to make the grid for the next year's race), but Unser was still able to lead races for half as many more laps as Villeneuve and to match his four race wins.

In fact, on an F1-style points-scoring system Unser Jr would have dead-headed with the young Canadian in the championship. On the IndyCar system, which awards points down to 12th place, Unser scored a strong second place in the PPG World Series with 149 points to Villeneuve's 166. Penske Racing still won more races than any other team in 1995 because Emerson won in Nazareth, bringing the season total of Penske victories to five.

Critics continue to wonder why the Penske cars suffered at Indy, given their competitiveness elsewhere in the series. Nigel Bennett, Penske's chief designer since 1988, reckons it was a combination of various things.

"We had a lot of theories throughout the first week of practice and to be fair, we tried a lot of things and many were duff. Some of them were gains, but we never got to the root of the problem.

"I'm not blaming anyone," says Bennett, "Because that's the way things happen. There was an awful lot we learned... And to be honest, the car was capable of qualifying in mid-field. If we had got it into the race... We probably could have done rather better than that."

One thing that surprised observers – including Penske, Bennett and Unser during 1995 – was a lack of pole positions: Unser notched-up four in 1994, but failed to claim a single one in '95, and this was the first time for years that Penske cars have taken no poles all season. Part of the explanation might be that Unser has always been better at racing than qualifying, but Bennett believes the car also behaved better in races than in qualifying. People tend to stop and take notice when Bennett speaks: he's been Penske's designer since 1988, and his designs have won 55 PPG races, including five Indy 500s.

And what of 1996? The team had its new-season's car, the PC25, built by the end of November, and it was out testing early in December. According to Nigel Bennett an intensive test programme is planned for the car on both road and oval



Preparing for action. Al Unser Junior gets ready to climb aboard his Penske-Mercedes, which he reckons has all the best elements in its '1996 package

courses, running late into January.

The departure of Villeneuve for F1 in 1996 must auger well for Unser's and Penske's chances in the upcoming series, though the competitiveness of the Reynard chassis and Ford XB engines will present significant hurdles to the Penske-Mercedes combination.

Honda's engine presents a threat too, as Andre Ribeiro showed at New Hampshire with his Honda-powered victory in the third from last round of the series.

Tough competition or not, Al Jr says he'll be more than happy to continue with

Penske, who he acknowledges provides the best of everything: equipment, testing, commitment and personnel.

"As long as we keep doing what we're doing," he says, "I think Roger is going to be happy. That's all I really want, to keep Roger and the guys happy."

Even away from the track, Al Jr can't leave speed behind. The Unsers are a tight-knit family, who spend part of their off-season at their holiday homes at Oso Lodge in northern New Mexico, where they have the run of 1300 acres. One of their favourite pursuits is snowmobiling.

Over the New Year break there's a chance you might see the three most famous Unsers – Bobby, Al Senior and Junior – all chasing across the snow and ice at speeds beyond 90 mph. Travelling at such a speed probably seems slow to them: they've scored no fewer than nine Indy 500 victories between them.

But spare time is a rare commodity, and soon the preparations begin for the next season. Al Jr's wish is to elevate the Unser family's haul of Indy 500 trophies to double figures.

Perhaps even a dozen... ■



PHOTO: BILL ALSUP



INDY

In Roger Penske, Mercedes has a partner whose success in American racing circles is unparalleled. He tells Gordon Kirby of his hopes for the 1996 season.

THE IMPORTANCE OF BEING ROGER

Roger Penske, Mercedes-Benz's partner in America's Indycar racing series, is an extraordinary man. He has combined a lifetime in motor sport, as driver and later team owner, with a parallel career in business. In both arenas he has been incredibly successful in anything he has tackled. He is highly respected as an achiever par excellence, a man who gets the job done.

That's why Mercedes chose to team up with Penske for its entry into the highly competitive world of Indycar racing. The decision was vindicated when their first race together, the 1994 Indy 500, resulted in a spectacular triumph for Al Unser Jr and the Penske-Mercedes PC23. The victory may have looked straightforward, but it was the result of some bold decision making and meticulous planning by both Penske and Mercedes.

Ohio-born Roger Penske made his first steps in motor sport as a driver, but retired in 1965 to concentrate on business, initially as a motor dealer. He was just 27, and didn't want to leave the sport entirely. He continued as a winning team owner, mostly in North American sportscar racing. In the 1970s he briefly entered Formula 1, but after winning one Grand Prix in 1976, decided to concentrate on America.

It is in the world of Indycar racing, which combines oval tracks with more familiar road and street circuits, that Penske and his team have really made their mark. Since capturing its first success in 1971, Team Penske has won 96 Indycar events, including a record 10 Indianapolis 500s. Along the way there have also been nine championship titles for star drivers like Rick Mears, Danny Sullivan and father-and-son duo Al Unser Sr and Jr.

For most of that golden period Team Penske has designed and built its own cars. They are constructed at the company's factory in the English town of Poole to the same exacting standards as the top F1 machines. The racing team itself is run from a base in Reading, Pennsylvania.

In addition to operating this successful Indycar team, Penske is a driving force in the administration of the championship, runs a leading team in the popular NASCAR stock car series, and owns the Michigan and Nazareth oval tracks. He is currently constructing a third, state-of-the-art facility in southern California.

Penske also helped to fund the birth of

Ilmor Engineering in 1984, which resulted in the production of a highly successful Indycar engine. He retains a stake in the company.

Such a diverse range of motor sport interests would be enough for most men, but for Penske it's just the tip of the iceberg. His Penske Corporation has a turnover of more than US\$4bn, and employs 16,000 people.

From the early days of car dealerships, Penske expanded into truck leasing, and in 1988 he bought the Detroit Diesel engine concern. At the time the company was struggling, but true to form Penske turned it round and made it thrive. He also serves on the board of Phillip Morris, his longtime racing sponsor.



Roger Penske (left), Al Unser Jr and Mercedes combined their skills to challenge for the 1996 title

Since 1971, Team Penske has won 96 Indycar events, including a record 10 victories in the Indianapolis 500

It was in truck leasing that Penske had his first dealings with Mercedes, and that grew into a partnership when Mercedes bought a stake in engine supplier Detroit Diesel. It was perhaps inevitable that Penske and Mercedes would eventually collaborate in racing, and as soon as the chance came, the two parties wasted no time in joining forces.

Nearly a decade after Penske helped to start it, Ilmor Engineering joined forces with Mercedes to produce an F1 engine. With Penske's encouragement, the partnership soon extended to Indycars.

The first fruits were seen in the memorable 1994 Indy 500, when Mercedes and Ilmor produced a unique engine for the three Penske cars, which dominated the classic American event.

An all-new Mercedes Indycar engine was introduced at the start of 1995, and it was used by Penske and several other leading teams, winning several races. Al Unser Jr finished a close second in the Indycar championship.

Penske's skills as a leader and manager have been proven by his consistent results. His limitless energy and attention to detail are keys to his success, along with an ability to delegate and surround himself with talented people.

"The reason that we're successful is the quality and commitment of the people,"

Penske explains. "We really have people in this organisation that take this race team home every night. They don't just leave at 5 o'clock."

In 1996 Penske will run a pair of Mercedes-powered cars for Unser Jr and Paul Tracy, as well as supplying a third for the 'satellite' Penske-Hogan team, which will be handled by Emerson Fittipaldi. Having taken runner-up honours last season, Penske and Unser Jr will be hoping to go one better in 1996 - and give Mercedes its first title.

"We're going to have a good car and I'm very confident about the Mercedes engine," says Penske. "Testing has gone well and we've done a lot of homework. For me, personally, we're excited. We're probably better prepared than we ever have been." ■

ZUCKER
FRISCH MINT
DER GRÖÑE PUNKT
LOFTHOUSE'S
HERMAN'S FRIEND
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25

SIND SIE ZU STARK,
BIST DU ZU SCHWACH.



JUNIOR TEAM

Mercedes-Benz's first junior team produced Michael Schumacher. Now, three new talents are being groomed for stardom. Jonathan Noble reports

THREE OF A KIND

Jan Magnussen's high-profile debut for the McLaren-Mercedes team in the Pacific Grand Prix at Aida may not have provided the blockbuster win that a novelist would have written, but it can still be regarded as a victory for Mercedes-Benz.

Magnussen, from Denmark, is the first of the second-generation 'junior drivers' to be plucked by the German car manufacturer, taken under its wing, and nurtured for life in Formula 1. He follows close behind former junior drivers Michael Schumacher, Heinz-Harald Frentzen and Karl Wendlinger, who each enjoyed a period with Mercedes in sportscar racing.

Such has been the success of Mercedes' youth development policy in both the International and German Touring Car championships, that it is likely that the other two youngsters - Scotland's Dario Franchitti and Germany's Alexander Grau - will have just as famous names in the next few years.

In 1995, just as Schumacher, Frentzen and Wendlinger did when they raced in the World Sportscar Championship, the young men in the Class 1 junior team have given their more illustrious and experienced rivals a run for their money.

Magnussen finished second in the ITC series behind Bernd Schneider, scoring his first Class 1 race victory at Estoril in August just six weeks after breaking his leg in a motorbike accident. Franchitti finished third, having been on the pace all year and winning his first race at Mugello in May. Grau secured podium finishes throughout the season.

"We are investing in the future of the sport," explained Mercedes' motorsport boss Norbert Haug when asked why another junior team was created. "Whoever

likes to have sport in the future has to look for young people. It is the future of life although, particularly at the beginning, it is a big risk.

"But there are plenty of advantages. The guys are fresh, they like to learn and they go for it all the time. For Mercedes, it is a big task to build the right surroundings and it is a big responsibility.

"The guys have a lot of talent, but they also have much to learn. Pure speed is one thing, but you need the experience, you need the brains and you have to learn to operate as a team. We feel that if we treat them as complete drivers, we will get everything we want out of them. It is a risk though."

The risk is not only of the youngsters failing to perform under the pressure but, as in the case of Schumacher, taking their talent and skills elsewhere.

"That's the way life is," admitted the realistic Haug. "It fitted well together with Michael and Mercedes when we were in sportscars, but it took us a while to get into Formula 1. In the meantime Schumacher has got a good profile and our marriage with McLaren is only at the beginning. Schumacher was in Formula 1 before Mercedes, but we had to take a chance with him.

"We will never block a driver in what he wants to do. Our system is there to help them and to help us. We even helped Schumacher get his Formula 1 drives with Jordan and Benetton."

Philanthropy of this kind is rare, but good news for the young men concerned, all of whom are hungry to climb to the top of the motor racing ladder. Magnussen, aged just 22, dominated the 1994 British Formula 3 championship in a manner not seen since Ayrton Senna in 1983. With that

kind of success behind him already, he is keen not to let his career stall.

"Mercedes were the reason I chose to go touring car racing," he said. "They've got a good deal of power in motorsport and to have that behind me can only help. It can never come back and hurt me. The Mercedes cars are the best in Class 1 racing and their people have given me all the help they could. But they do that to all the drivers because that is the way Mercedes is."

Franchitti, who was just pipped to third place in the ITC series by Magnussen, is much more patient about his future and more willing to sit back and wait for the right





JUNIOR TEAM

Dario Franchitti
"Driving for Mercedes will be very good for my career. It's incredible driving for them"

opportunity before moving on. "I don't want to do Formula 1 just to make up the numbers," said the Edinburgh-born driver, who amazed everyone at the start of the year by scoring a pole position in his first DTM race and winning his second ITC event.

"Driving for Mercedes will be very good for my career," said Franchitti. "It is an important manufacturer and is involved in all forms of motor racing. It's incredible driving for them in touring cars. I get to the race track, look at my race car and just think, 'Wow, that's mine'. And I love racing the thing. They're great to drive.

"Schneider and the more experienced drivers have a lot of pressure, though I'm not sure how much of that is self-imposed. We don't have that, which is a big advantage. I think racing here is a better way of getting into F1 than F3 or F3000. And you've got all these former Grand Prix drivers down here, you can learn so much from them.

"I tested a McLaren at Jerez at the end of the 1995, but I'm in no rush to get into F1. I'm getting a lot of help here and there is plenty to learn. F1 is in the future."

For Alexander Grau, the 22-year-old from Augsburg in Germany, just racing in Class 1 for Mercedes is an achievement in itself. "I have to be realistic and to recognise what is possible and what is not," he admitted. "As far as I am concerned I have already hit the jackpot by obtaining a works contract with Mercedes.

"I would rather be a respected driver in Class 1 than an unknown also-ran in F1. As a works driver I'm compared with the likes of Keke Rosberg and Nicola Larini and that is a big responsibility, but fantastic for us youngsters."

Mercedes is laying the foundations for the Grand Prix racing of the future and, now that it is racing in F1, the company is praying that - as with Schumacher - having faith in the youngsters will once again pay handsome dividends. ■



Above: The first juniors - Schumacher, Wendlinger and Frentzen. Below left: the car in which they learned their trade in 1990. Below: Frentzen and Wendlinger graduated to F1 with Sauber in 1993

THE FIRST JUNIORS

WHATEVER HAPPENED TO THE LIKELY LADS? BY ADAM COOPER

The first Mercedes junior team was announced at the end of 1989. Michael Schumacher, Karl Wendlinger and Heinz-Harald Frentzen were the stars of a highly competitive German Formula 3 Championship that year. Mercedes offered to train them in sportscars in 1990, while still allowing them to race single-seaters. Schumacher stayed for another year of F3, while the others moved up to F3000.

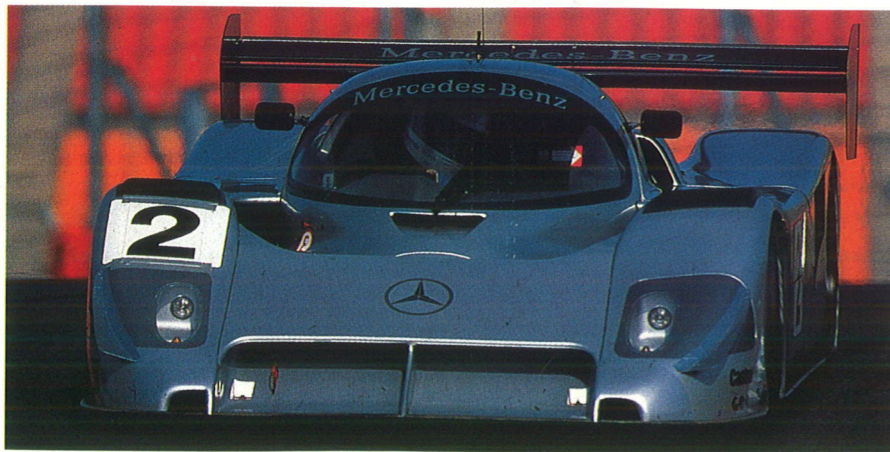
They spent a winter testing the turbocharged Sauber-Mercedes sportscar, and then took turns to race alongside veteran Jochen Mass. Schumacher and Wendlinger each won a race with Mass, while Frentzen made a big impression on his one race appearance at Donington Park.

At the end of the year Frentzen dropped out of the scheme to concentrate on F3000, while Schumacher and Wendlinger teamed up to form a junior partnership in 1991, alongside regular drivers Jean-Louis Schlesser and Mass.

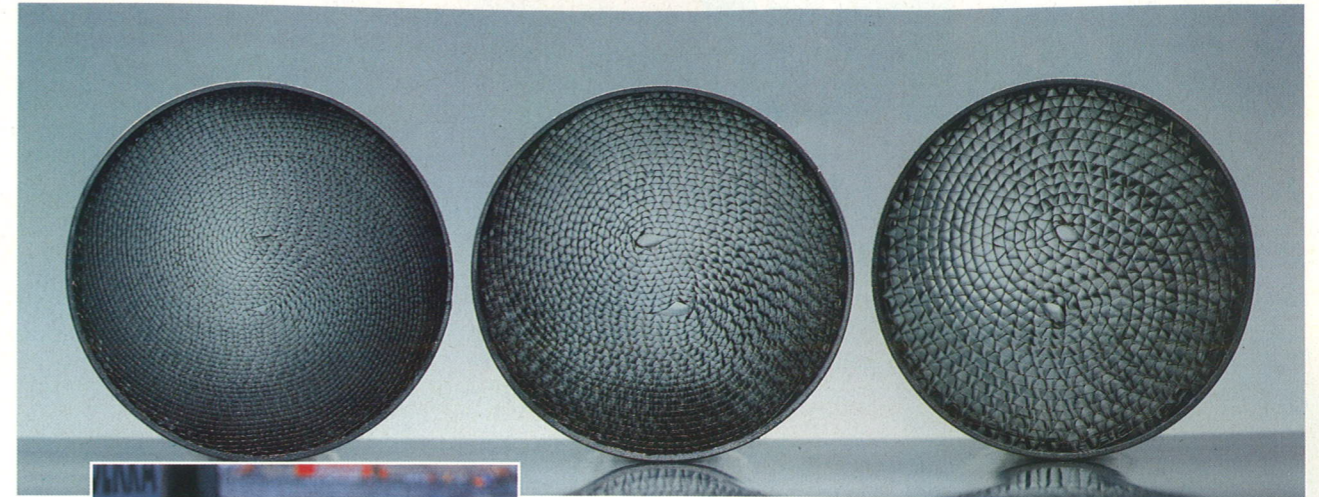
The late-season race in Autopolis saw Schumacher and Wendlinger score a memorable win. That marked the end of the 'L-Team', although by then both men had already made their F1 debuts, thanks largely to support from Mercedes. After a spell racing F3000 in Japan, Frentzen was to follow them to F1 three years later - with the Sauber-Mercedes team.

"There were a lot of different opinions about the wisdom of the junior team. Not everyone favoured it the way I did," says Schumacher. "But being in sportscars paid off in the end. Jochen [Mass] helped not so much in the driving as in helping you to get better in your mind, to do the right thing at the right time. I learned a lot of the things that have been useful for me in F1 from him."

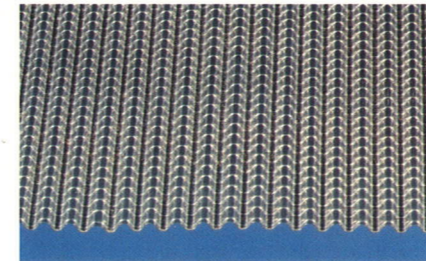
Karl Wendlinger has good memories too: "It was a big jump from an amateur F3 team to a professional race team. We could do a lot of testing, and we learned how to be professional racing drivers, with all the technical meetings and development on the car. For that reason the junior time was very good for our careers. Jochen was a good teacher, and the team was a big help all around. It would have been very difficult to get into F1 on our own. Mercedes made it possible."



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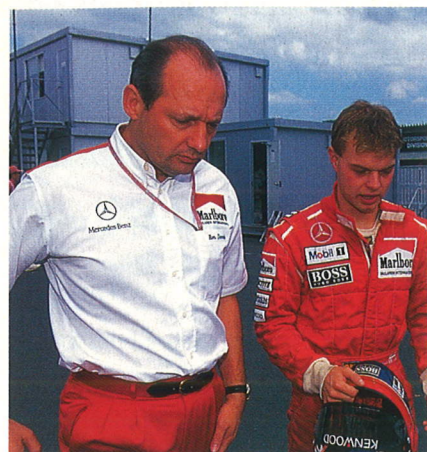
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F1

JAN'S DIARY

Or how I became an F1 driver in 8 days by Jan Magnussen



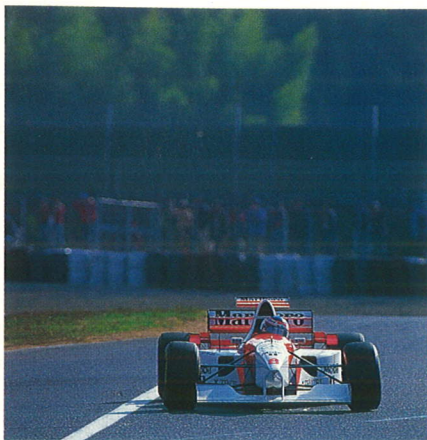
Jan Magnussen
"I've been thrown in the deep end, but it was a good weekend and everyone helped"

Sunday, Oct 15

I started hearing rumours yesterday that Mika Hakkinen was sick. And today Mercedes told me that I was 99 per cent sure of doing the race.

Monday, Oct 16

I was in Frankfurt Airport on my way home to Copenhagen when McLaren boss Ron Dennis told me it was definite. I couldn't believe it. When I got back there was a surprise party, because it had already been on the Danish news! I picked up some stuff, and headed straight out to England to test at Silverstone the next day.



Top: McLaren boss Ron Dennis had the faith in Jan Magnussen to give him his GP debut. Above: on his way to a respectable ninth place

Tuesday, Oct 17

On my way out to Japan with time to draw breath and think through the test. I haven't driven the McLaren much. I did one test in 1994 and six last year, one came just five weeks after I'd broken my leg at Norisring. I'd done a few starts, but until today no pit-stops, so we concentrated on those. And this was the first time I'd ever run on full tanks. But it was half-wet, half-dry, which made it impossible to do some real testing.

Wednesday, Oct 18

Arrived in Japan. I've been here five times already for karts, so it isn't too much of a culture shock.

Thursday, Oct 19

Reached Aida, and did the FIA weight check, and the test to see if you can get out of the cockpit in a hurry. No problem.

Friday, Oct 20

First session in Aida and the chance to learn the track and the car. Circuit is a bit technical but no real trouble. Got through first qualifying with only one stupid mistake - fined for speeding in the pits. The limiter only works in first and second gears, but I was in third. It cost me \$7500. Mark Blundell was a great help. I could ask him anything about lines or set-up, or when to start pushing on new tyres. You've got one lap, really. I had confidence in the car, but not enough laps behind me for 100 per cent effort.

Saturday, Oct 21

We changed just about everything overnight, and then changed it all back again today. We weren't any quicker. The car felt good in most places, but it wasn't fast enough. I'm hoping it will be a different story when it comes to the race, and that the tyres last a bit longer than one lap. But I'm 11th fastest, which is okay, and nothing has come as a big surprise. I suppose I'm lucky because Aida is fairly low key. Ron told me today that if he could have chosen any place for me to make my F1 debut, this would have been it.

Sunday, Oct 22

Got a fairly good start, picking up a couple of places, which is all I could expect really. Took it fairly easy throughout the race,



Jan Magnussen's dream of becoming a Grand Prix driver came true very quickly. He exchanged the toy for the real thing for the 1995 Pacific GP

keeping out of trouble and watching what was going on. Had a good fight with Rubens Barrichello. He passed me three times, but he kept outraking himself into the hairpin, and I got him back again every time! Had a bit of a problem with under-steer for much of the race, except after the last pitstop when I got a really good set of tyres. In the last couple of laps I was trying to catch Mark, but I didn't want to throw it into the gravel to finish ninth. I finished okay. Physically it's not that difficult a circuit and I wasn't too tired.

... And finally

It was a good experience, and great to be back in a single-seater. I've had a good season in touring cars, but F1 is really what I want to do. I'll never forget

anything that's happened in this last week, although already I can hardly believe it really did happen.

Everything has moved so quickly. This time last year I was still in Formula 3. The year before that I was in the Opel Lotus series, and it's almost exactly three years since I won the Formula Ford Festival. I've been thrown in at the deep end, but it was a good weekend, and everyone helped me a lot. I don't think I made any big mistakes, other than getting caught for speeding in the pitlane.

Everyone seemed pleased with how I had done. When I saw Mika Hakkinen at Suzuka, he asked if I enjoyed it. Then I asked if he did! As for 1996, my plan is to wait until the last moment.

There's a seat at AMG for me, although I

think they're aware that my ambition is not to become a long term touring car driver. I'm waiting to see what happens in F1, but Class 1 is the next best place to be.

I'll have to speak to Mercedes and Ron, and see what my options are. ■





ROAD
TEST

Dario Franchitti drives his road-going Mercedes-Benz C36 around the classic 14-mile Nurburgring track. Henry Hope-Frost hangs on for the ride of a lifetime



9 MINUTES IN GREEN HELL

SERIENMÄSSIG
MIT ZEHN
AUSGESUCHTEN
VITAMINEN.

DER SAFTIGE UNTERSCHIED

Vaihinger

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V A I H I N G E R F R U C H T S Ä F T E



First time round the 14-mile circuit for Dario Franchitti, who was still in short trousers when the track closed for grand prix use after the 1976 race

Dario Franchitti's mentor and fellow Scot, three times World Champion Jackie Stewart, describes the classic 14-mile circuit as "the Green Hell". With the words still ringing in my ears, I knew this opportunity was just too good to miss - sitting alongside Mercedes Class 1 star Dario Franchitti while he experienced the Nurburgring Nordschleife for the first time.

He took to the circuit like a duck to water. And I was lucky enough to join him.

The road-going derivative of Dario's race-car is a potent 3.6-litre, 24-valve unit pushing out 280bhp through its user-friendly four-speed automatic box. After a brief drive, I could easily see how a race car of the calibre that carried Franchitti and team mate Bernd Schneider to numerous wins was created from such a fabulous piece of engineering.

It was the former Formula 1 driver and 1995 King of Class 1 touring cars, Schneider, who introduced his young teammate to the old circuit. What tips did he give Dario?

"Bernd just pointed out the bits to watch for, the bits that can catch you out," Dario told me, confidently brushing off the mammoth task faced by drivers who don't know their way around. "Bernd took me

Dario Franchitti
"Bernd pointed out the bits to watch for - that can catch you out. I couldn't have had a better teacher"



round and showed me just how well he knows the place. Two-up in a road-going C36 we lapped in eight minutes. I couldn't have had a better teacher."

My feelings exactly, as Dario chauffeured me around in just nine minutes. A whole minute can seem like light years in motor racing, but when we're talking about 14 miles and 157 corners, coupled with total circuit blindness, the nine-minute time is pretty impressive.

My experience of Mr Franchitti's driving came on the Friday before Sunday's race. Having presented himself to the media after qualifying in his customary relaxed, yet boyishly enthusiastic manner, he excitedly took me to one side saying: "Can we go now?" I was hardly likely to refuse. A one-to-one with arguably the fastest rookie touring car driver in the world, around the most challenging race track in the world, in one of Hans Werner Aufrecht's finest sports saloons. Couldn't resist.

But was Dario risking too much by thrashing around an alien circuit with the ultimate frustrated racing driver - a motor racing journalist? "Absolutely not," exclaimed Dario. "I've heard so much about it, I just have to try it out."

As we approached the old pits where the drivers of an assortment of machinery,



ROAD
TEST



ROAD TEST



AMG Mercedes C36 is powered by a 280bhp 24-valve 3.6-litre engine. According to Franchitti it's a bit soft after the race car, but still 'quite fun'

ranging from a family-filled Volvo estate to a full-blown Group A BMW M3, were getting ready to frighten themselves, heads turned and fingers started to point as my esteemed chauffeur was recognised.

Ten years ago, on my first visit to the Nordschleife, I was amused by an old man in a flat cap, with a satchel around his waist, standing by a barrier across the circuit. I thought my eyes were deceiving me as Dario eased the Mercedes into the queue on the old startline because the old man was still there. Still taking the money and handing out the little brown tickets.

Barely had I given the old man my 15DM and taken my ticket, when Dario served notice of his intent. The throttle pedal was planted deep into the carpet and the car thrown into a steep downhill left-hander as though it were a ground-effect Group C racer. "It's a bit soggy compared to my race car, but quite fun," he mused. It brought home to me what a Class 1 car must be like - and I thought this was quick.

As the twists and turns unfolded before us, fear, horror and other such sentiments faded away. The man behind the wheel was too good. I was witnessing how natural talent makes it look easy.

"How do you remember where the circuit goes?" I asked as we swept round,

Dario Franchitti
"The way the trees shape round the corners helps you on the blind brows"

hoping he wouldn't lose concentration while he thought of an answer. "You remember it in sections really," he quipped confidently. "The way the trees shape round the corners helps you on the blind brows that are typical of this circuit."

So that's how he knows. When I drove the C36, I relied on the large central pedal in the footwell for guidance. Therein lies the difference between us.

Half way round the lap I nervously pointed out the flat-out left hander at Bergwerk where Niki Lauda had his huge accident in 1976. To most drivers, this would have been a signal to lift off at the very least, perhaps even to brake like hell. But Franchitti just kept the C36 nailed to the road as I was left to wonder what had been going through Lauda's mind on that day nearly two decades ago.

Corners such as Flugplatz, Adenau, Karussel and Schwalbenschwanz - names that had put the fear of God into drivers for more than 50 years - were attacked with consummate ease. My confidence and admiration for Dario's driving escalated through every bend.

It was a dazzling hypnotic experience. My pulse was racing as we pulled in. The driver, however, wanted to do it all over again. But the Nurburgring does that to you. ■

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DTM

HOW DO YOU GET 500 HORSES IN A FAMILY SALOON?

TAKE OUT THE SEATS...

Then you lop two cylinders off a V8, rebuild the block and head, and persuade it to rev to 12,000rpm. Keith Howard gets under the skin of Europe's fastest touring car racer

The motor industry adage that racing improves the breed is increasingly difficult to sustain in a modern world where hundreds of millions of pounds, and man-decades of computer time, are routinely spent developing new road cars. Cars which, moreover, often incorporate more sophisticated technology - anti-lock brakes, traction control, variable valve timing - than is permitted in most racing formulae.

But motor racing can still, as it always has, bolster a breed's image and its road car safety and performance. That is, provided you win. There's precious little kudos to be gained in being an also-ran.

In Class 1 touring cars - particularly the new ITC series which took the popular DTM German Touring Car circus on a grand tour of the World - that imperative for success is given its sharpest edge. In the top open-wheel classes - Formula 1 and Indycars - any link with road-going machinery is entirely illusory.

But Class 1 international touring cars are different. Not only do they look recognisably like cars that can be bought for the road, but that resemblance is more than superficial. While the race and road

Right: ABS technology developed for the road-going Mercedes models is an integral part of the C-Class racer



BEAUTY & THE BEAST

	Road car	Racer
TOP SPEED	155MPH	200MPH
WEIGHT	1560KG	1020KG
ENGINE	3.6-LITRE IN-LINE SIX	2.5-LITRE V6
POWER	280BHP	500BHP
SPECIFIC OUTPUT	78BHP/LITRE	190BHP/LITRE
POWER-TO-WEIGHT	179BHP/TONNE	460BHP/TONNE
HEIGHT	1385MM	1280MM
WIDTH	1720MM	1789MM
LENGTH	4487MM	4666MM
ENGINE CHANGE TIME	330MINS	15MINS

cars could never be called siblings, they do at least share common genetic elements, particularly in the bodysell and engine. Class 1 racers are also allowed four-wheel drive, and hi-tech driver aids such as anti-lock brakes and traction control. The link to everyday motoring is thus stronger than in any other form of circuit racing, which adds to the marketing benefit of finishing in front, and to the pressure to do so.

Mercedes-Benz's mighty Class 1 racer, derived from the car that carried off the DTM championship in 1994, begins life as a regular C-Class bodysell, fetched up at

the Affalterbach HQ of AMG - renowned tuner of Mercedes road cars and eminent race car constructor - 30 minutes' drive from Stuttgart. Here begins its metamorphosis from conservative saloon into 200mph, in-your-face racing machine.

First, the shell is extensively seam welded, and a complex tubular steel roll cage is meticulously integrated into the bodywork. The ostensible purpose of this frame tent from hell is to provide the enormous strength and safety expected from modern racing cars in the event of a crash, but it's as significant for the fact

that, together with the seam welding, it improves torsional stiffness 300% over that of the already rigid saloon. With the high suspension input loads generated by a ground effects racer, this is a vital element in achieving stable, predictable handling.

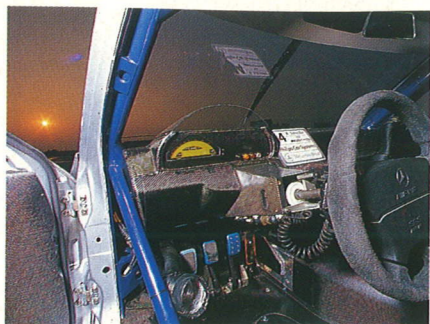
The sport's legislators have further enhanced driver safety over 1994's DTM cars by permitting the fuel tank to be relocated within the cabin - only 70 litres of fuel can now be carried in the boot - and the driver's seat to be placed centrally within the car. Once again, though, there's

a hidden performance benefit to these changes, despite the central driving position complicating transmission layout. Concentrating two major masses - driver and fuel - closer to the car's centre of gravity improves handling by reducing the car's polar moment of inertia in yaw (which speeds up steering response), and by minimising changes in front/rear weight balance with dwindling fuel load.

Once the base structure is complete, and the floorpan suitably reshaped to accept the revised layout of transmission and exhaust system, attention switches to the



DTM



ITC racer starts life as a Mercedes C-Class bodyshell, which is stripped and almost completely rebuilt with lightweight composite materials

bodyshell's extremities. The steel front wing panels of the road-going C-Class are binned and replaced with a complex carbon-Kevlar composite moulding which forms the entire front end of the race car. This retains the appearance of an everyday C-Class, but there the resemblance ends. Housed within it are twin radiators, as well as the labyrinthine inlet and cooling ducts for engine and front brakes. All unions are designed to be quickly removable, so that the entire front section can be lifted clear of the car in a couple of minutes – a vital consideration in a formula where two races are run at each circuit, and engines routinely replaced in the short respite between them. AMG's pit crew can swap a C-Class's engine in just 15 minutes.

At the back of the car, carbon-Kevlar is again deployed to remould the rear wheelarches. Together with the stripping out of all trim and other non-essentials, this extensive application of composites cuts the racer's kerb weight down to 1020kg – around two-thirds of that of the road car, and 20kg under the new minimum for Class 1 machines. Ballasting takes the race weight up to the legal level of 1040kg.

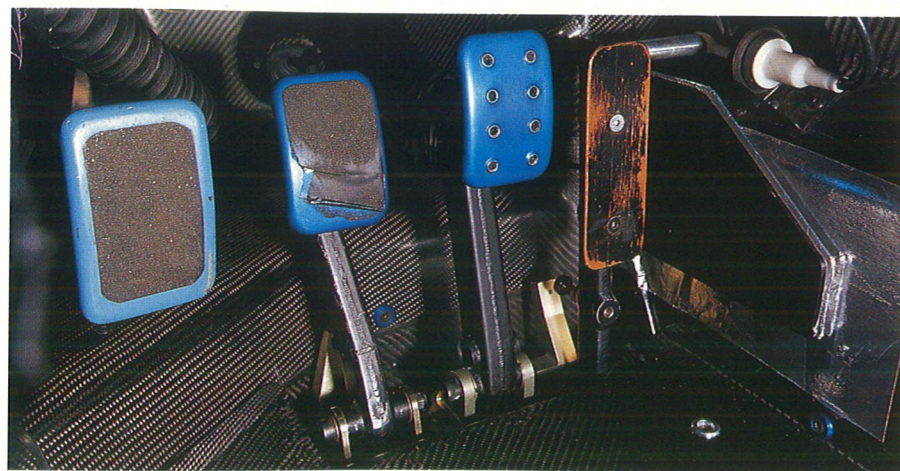
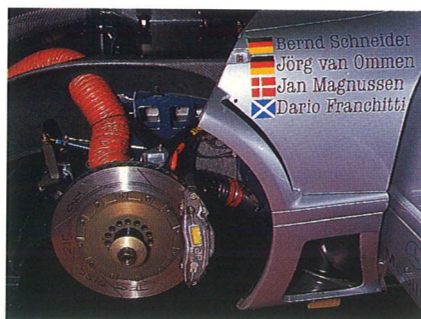
The engine has to be derived from a road-going powerplant, so the block, like the bodyshell, begins as a standard component: the eight-cylinder aluminium alloy crankcase out of the E420/S420. Amputating two cylinders from this creates a 90-degree V6 of 2499cc capacity – a whisker under the 2.5-litre class limit. Purpose-designed four-valve, dohc heads are then fitted atop each cylinder bank,

Titanium valves, lightweight forged aluminium pistons, high strength steel con rods and a forged steel crankshaft are part of the recipe

and the block substantially reinforced by the attachment of a stiff, cast aluminium dry sump. Three-way catalytic converters are mandatory; the C-Class's twin cats are in the boot.

Mercedes is deliberately vague about just how much power the engine produces, though it does admit to a peak output in excess of 450bhp at 11,500rpm. Even at a genuine 470bhp, that translates into a specific output of almost 190bhp per litre. To put that into context, the Formula 1-derived 4.7-litre V12 engine in the Ferrari F50, which claims the highest specific output of any road-going powerplant, manages only 109bhp per litre. Peak torque of the C-Class engine is specified as around 300Nm (221 lb/ft) at 9000rpm, though that too is certain to be a conservative figure.

ITC rules outlaw engine speeds in excess of 12,000rpm, the intention being to prevent silly money being expended on powerplants, especially for qualifying. But that's not to say some exotic materials aren't still required. Mercedes is tight-



lipped on the subject, but titanium valves, lightweight forged aluminium pistons, high strength steel conrods and a forged steel crankshaft are part of the recipe. From mid-season, pneumatic valve actuation has been part of Mercedes's armoury.

Transmitting all this power to the wheels falls to a carbon clutch, a six-speed semi-auto sequential gearbox, a carbon-Kevlar composite propshaft, and locking rear differential. Because the C-Class is rear-wheel driven, unlike some of its competitors (Opel, Alfa) which have opted for four-wheel drive, traction is a vital concern. The locking diff – another closely guarded secret – reins in wheelspin, aided by electronic traction control.

Suspension is what you would expect of a no-holds-barred racing car, with double wishbones at all four corners and coil-over spring/damper units operated by pull-rods. Less predictable are hydraulically adjustable anti-roll bars front and rear, which allow the handling balance of the car to be adjusted to the drivers' demands to suit each corner on the circuit. Steering is power assisted, as are the large-diameter vented disc brakes, acted on by six-pot and four-pot calipers.

Aerodynamic performance is a vital

factor in all senior racing formulae. Just how important it is in Class 1 you can judge, without knowing the first thing about drag coefficients or lift-to-drag ratios, simply by noting that Mercedes' publicity on the C-Class racer says nothing about it whatsoever. Requests for further information are politely but firmly rebuffed too, confirming the data's sensitivity. So only the most basic description of the car's aerodynamic design is possible, while the orders of downforce achieved become a matter of informed speculation.

A splitter at the lower lip of the front air dam first divides the airflow as cleanly as possible, ensuring that that passing beneath the car is as turbulence-free as possible. This and the flat undertray ensure that the under-car airflow remains as fast as possible, generating a region of reduced pressure which 'sucks' the car down to the road. Around the back axle the undertray then slopes upwards to form a diffuser panel which, by encouraging the reduced air pressure within the car's wake to act under the rear of the body, increases downforce still further. Likewise a small multi-element inverted wing on the bootlid.

How much downforce does this all produce? Much less than the more complex

airflow management of F1 cars, but a significant amount nevertheless. A figure of between 200 and 400kg at 150mph is typical of the class, so at maximum speed on high-downforce circuits the total load mashing tyres to tarmac amounts to roughly one-and-a-half times the car's weight. The result is maximum cornering and braking accelerations of 2g or so in the dry – not F1 territory, granted, but still a very different world from road cars, most of which struggle to better 0.8g in corners and 1.0g in panic braking.

It's an intriguing exercise, dismantling a racing car into its component parts. But

Above: Racing 2.5 litre V6 is derived from the 3.6-litre V8 of the Mercedes E420, with purpose-designed four-valve dohc heads.

Peak power is kept under 500bhp. Right: Despite the external appearance, ITC racers are now no-compromise thoroughbred race cars

as anyone in the pit lane will tell you, at the end of the day it's the overall package that counts for most, including team leadership, organisation and, of course, the drivers. For proof that Mercedes got everything right in 1995, look no further than the outcome of a remarkable season for the Stuttgart cars: DTM Champion Bernd Schneider (AMG-Mercedes), runner-up Jörg van Ommen (AMG-Mercedes); ITC Champion Bernd Schneider (AMG-Mercedes), runner-up Jan Magnussen (AMG-Mercedes), not forgetting Mercedes-Benz also won the Constructor's title in both competitions. ■





INDY

A quarter of a century after his first Grand Prix victory, Indy 500 winner and Indycar champion Emerson Fittipaldi remains right at the top of his profession. Gordon Kirby listens to the Brazilian's tales from those 25 years

STILL RACING AFTER ALL THESE YEARS

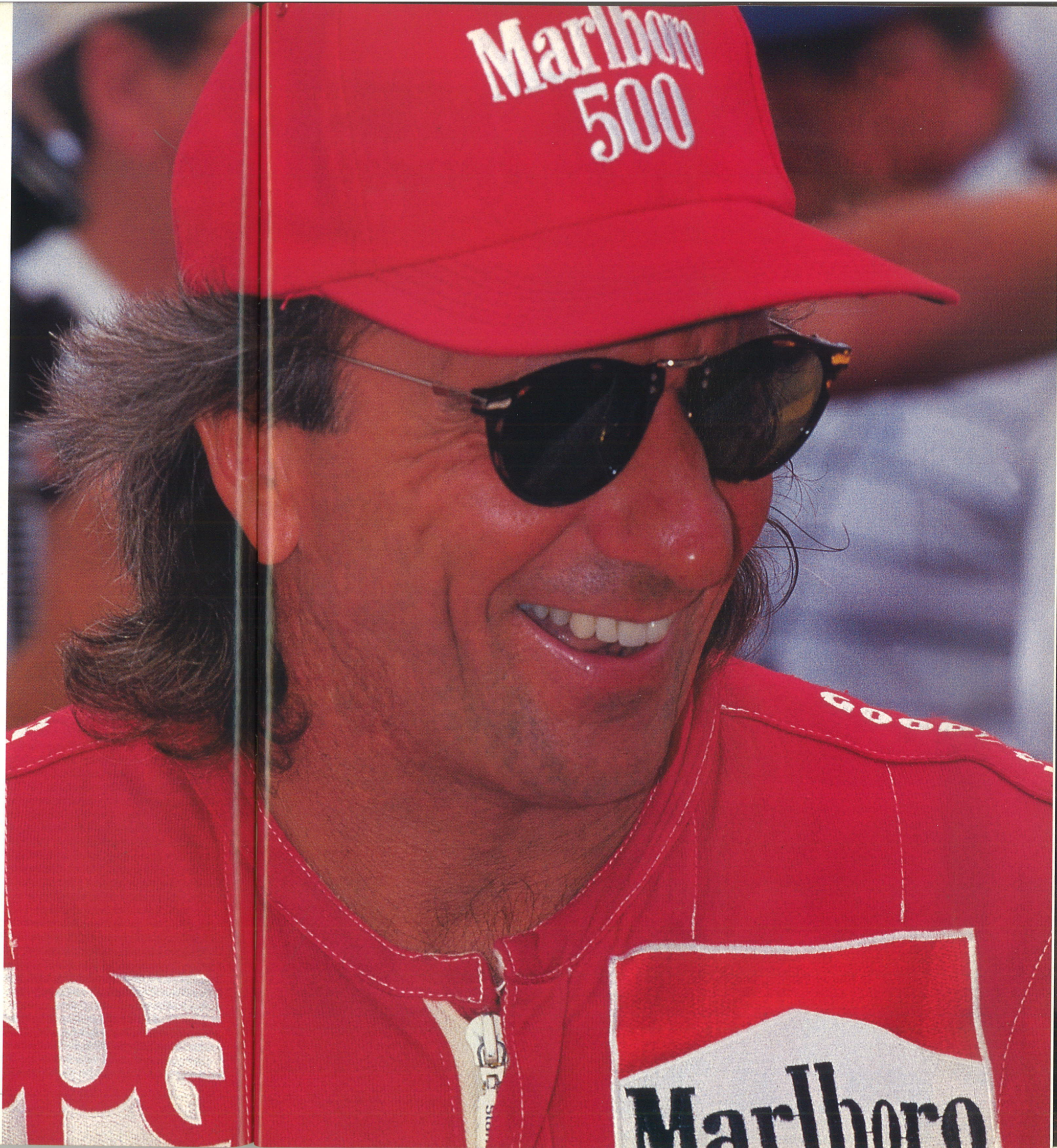
In 1970, a quarter of a century ago, Emerson Fittipaldi was a 23-year-old with just a single season of racing in Europe behind him. The previous year he had won the British Formula 3 title and, for 1970, he was aiming for the European Formula 2 championship driving for Lotus. He had raced successfully in karts and junior league single-seaters back home in Brazil, but was little known in Europe.

But in 1970 Fittipaldi's career took off. Impressed by his driving in F2 and F3, Lotus founder Colin Chapman decided to call him up to replace John Miles in the F1 operation. Lotus was chasing the world championship with Jochen Rindt leading the team very effectively, but Chapman wanted a faster second driver and first talked to Fittipaldi about F1 in April that year.

"I remember someone from Lotus said, 'Mr Chapman wants to talk to you,'" recalls Fittipaldi. "I walked into his office and he was sitting at his desk and I was shaking! I was saying to myself, 'He's going to ask me to drive one of his F1 cars.' That was such an important moment in my career."

Fittipaldi thanked Chapman for the offer but told him he wanted to wait a few more months, believing he needed more F2 experience. But two months later Fittipaldi drove an F1 car for the first time, and then made his Grand Prix debut in the ageing Lotus 49C at the British GP at Brands Hatch in July.

"I remember testing the car on the old Silverstone track which was very quick," Fittipaldi remembers. "Jochen Rindt did a few laps in the car, trimmed it out and gave it to me. I have a picture of Jochen giving me a pit signal with my lap time. I was very enthusiastic, very motivated and he was a tough teacher. I came in and said the car had too much understeer. Jochen looked at me and he looked at Colin and said, 'Well, you just have to use more throttle. When you do that the understeer will go away.' He was right!"





Left: On his way to victory at Watkins Glen in 1970. Above: Celebrating with Colin Chapman. Right: F1 champion for the second time. Below: A kiss for his wife after another CART win. Bottom: The "stretch test" 20 years ago. Below right: Leading with Penske-Mercedes



Fittipaldi finished a very respectable eighth in the four-year-old Lotus at Brands Hatch. 'I remember that I was on the grid next to Graham Hill and I was thinking to myself: I could be dead tomorrow and I would be a happy man because I have achieved my dream.

"For me, not just driving the Lotus 49 next to Graham, but to be driving for Colin Chapman, to be driving for Lotus and to be in a Grand Prix, well that was a dream come true."

Tragedy struck Chapman and Lotus at the Italian GP at Monza in September 1970. Rindt, seemingly unbeatable in the championship, died after an accident during qualifying. Chapman withdrew his cars from the race and regrouped, missing the Canadian GP.

"There were some very important people that gave me good advice, motivation and inspiration in the early part of my career and Jochen was one of them," remembers Fittipaldi of motor racing's only posthumous world champion. "The last time I spoke to Jochen was at breakfast in Monza the morning he died, and he asked me to join his F2 team in 1971. He was going to run it with Bernie Ecclestone and he wanted me to be the number one driver. He was going to retire from F2 and just drive in F1. That was the last time I saw him, but I have great, great memories of Jochen."

The Lotus team reappeared at Watkins Glen for the United States GP with Fittipaldi suddenly promoted to team leader, joined by Swedish rookie Reine Wisell. By this time the Lotus 49 had been wheeled into honourable retirement and replaced by the wedge-shaped 72, with which Rindt had reeled off four wins in mid-season. Fittipaldi would go on to win nine Grands Prix and one World Championship aboard Lotus 72s over the next three and half years, with the first of those victories coming in memorable style in only his fourth F1 race on that autumn afternoon in upstate New York.

"Just going to Watkins Glen was difficult," he says. "I knew I couldn't replace Jochen, but I had to try, even though I wasn't really ready for the job. And the night before the race I got a bad cold. I had a very high temperature and a fever. I remember Colin walking into my bedroom at the Glen Motor Inn with a doctor who gave me a lot of medicine."

He wasn't much better in the morning

but once he was strapped into the car, which he'd qualified third fastest, Fittipaldi forgot his worries. "On race day I was feeling a little better although I was still sweating and had a very high temperature. But when I sat in the car at the start I forgot all about the cold.

"What I remember from the end of the race was Pedro Rodriguez leading in the BRM, but with six or seven laps to go he had to come in for fuel. I took the lead and going over the finish line I saw for the first time Colin jumping and throwing his hat into the air. It was something I'd seen him do for Jim Clark and Graham Hill and Jochen, and I kept saying to myself, 'He's doing that for me. He's doing that for me.' It was unbelievable."

Rindt's death put a lot of responsibility and pressure on Fittipaldi's young shoulders, but he rose to the challenge. In 1972, still only 25, he won the first of his two world championships. He is still the youngest man to become champion.

Looking back, Fittipaldi says he finds the passing of a quarter of a century more difficult to grasp than becoming an F1 winner at only his fourth start. "To me what is more amazing is how quickly 25 years goes by. But I remember every second that I've enjoyed in racing."

He turned 49 on 12 December 1995, yet Fittipaldi is looking forward to the 1996 season. "Unfortunately, the situation we were in in 1995 made it difficult to commemorate 25 years, but I hope that I will be able to celebrate 26 years in a better situation.

"I've been through other periods of my career with problems like this," he points out. "You just have to face it. It can happen to anybody in any sport and it happened to us in 1995. You have to be strong to go through it and know there is a way out, but it has been very tough mentally and physically, and very frustrating.

"But in my opinion Penske is the best team in the business. We have the best team owner and an incredible amount of good people behind us. We will recover."

Fittipaldi is very fit, working out rigorously. Retirement remains far from his mind. "I work out very hard, more than ever," he says. "When I do the stretch test now I'm in much better shape than I was 20 years ago. I think as long as I have the motivation and the physical fitness to keep up, I will continue." ■





Mika Häkkinen im Marlboro McLaren Peugeot MP 4/9 mit Bilstein-Gasdruck-Stoßdämpfern

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APRIL 28	NURBURGRING (D)
MAY 5	IMOLA (RSM)
MAY 19	MONACO (MC)
JUNE 2	BARCELONA (E)
JUNE 16	MONTREAL (CDN)
JUNE 30	MAGNY-COURS (F)
JULY 14	SILVERSTONE (GB)
JULY 28	HOCKENHEIM (D)
AUGUST 11	BUDAPEST (H)
AUGUST 25	SPA-FRANCORCHAMPS (B)
SEPTEMBER 8	MONZA (I)
SEPTEMBER 22	ESTORIL (P)
OCTOBER 13	SUZUKA (J)

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MARCH 17	RIO DE JANEIRO (BR)
MARCH 31	SURFERS' PARADISE (AUS)
APRIL 14	LONG BEACH (USA)
APRIL 28	NAZARETH (USA)
MAY 26	MICHIGAN (USA)
JUNE 2	MILWAUKEE (USA)
JUNE 9	DETROIT (USA)
JUNE 23	PORTLAND (USA)
JULY 14	TORONTO (CDN)
JULY 28	MICHIGAN (USA)
AUGUST 11	MID-OHIO (USA)
AUGUST 18	ROAD AMERICA (USA)
SEPTEMBER 1	VANCOUVER (CDN)
SEPTEMBER 8	LAGUNA SECA (USA)



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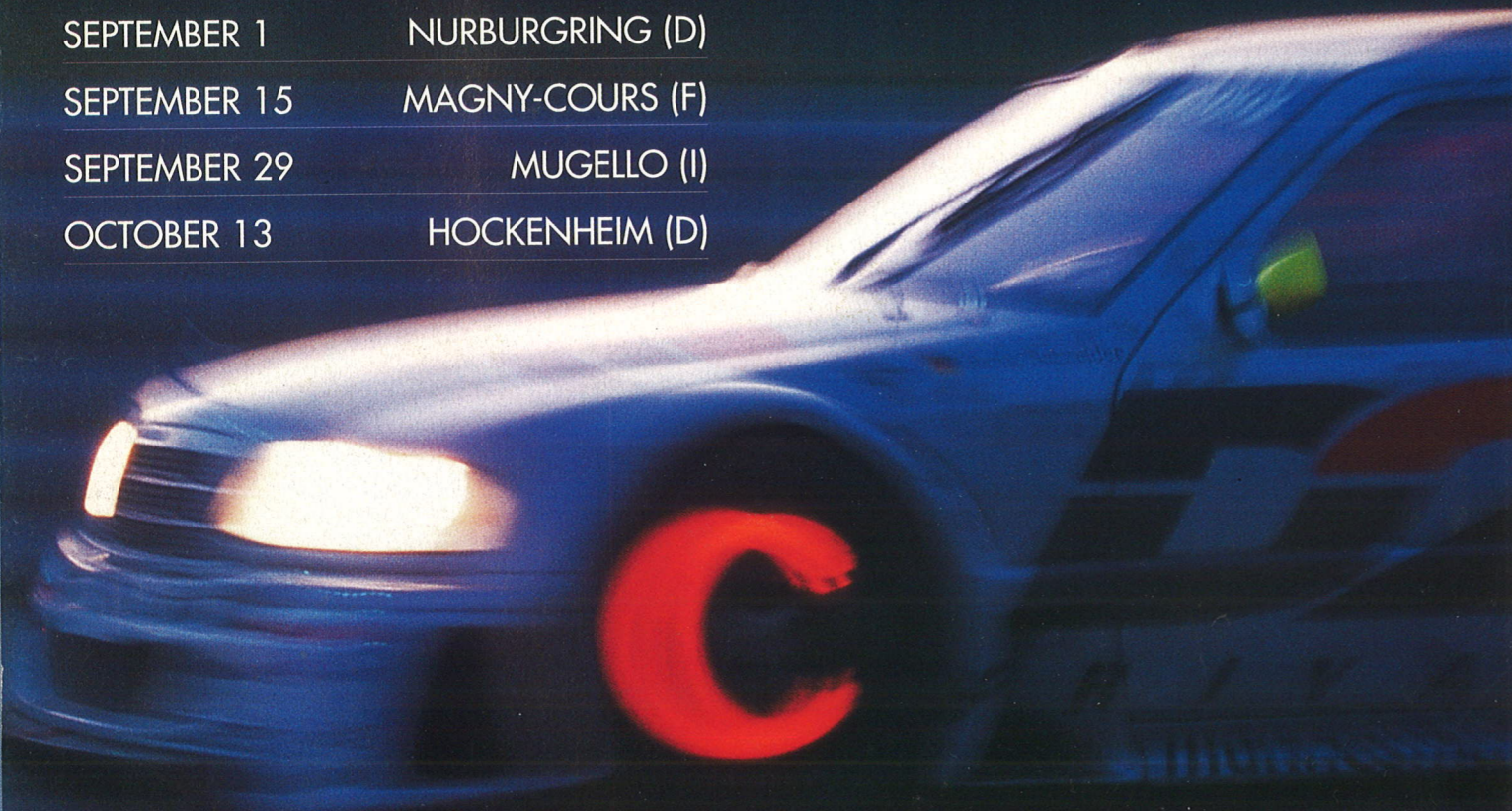
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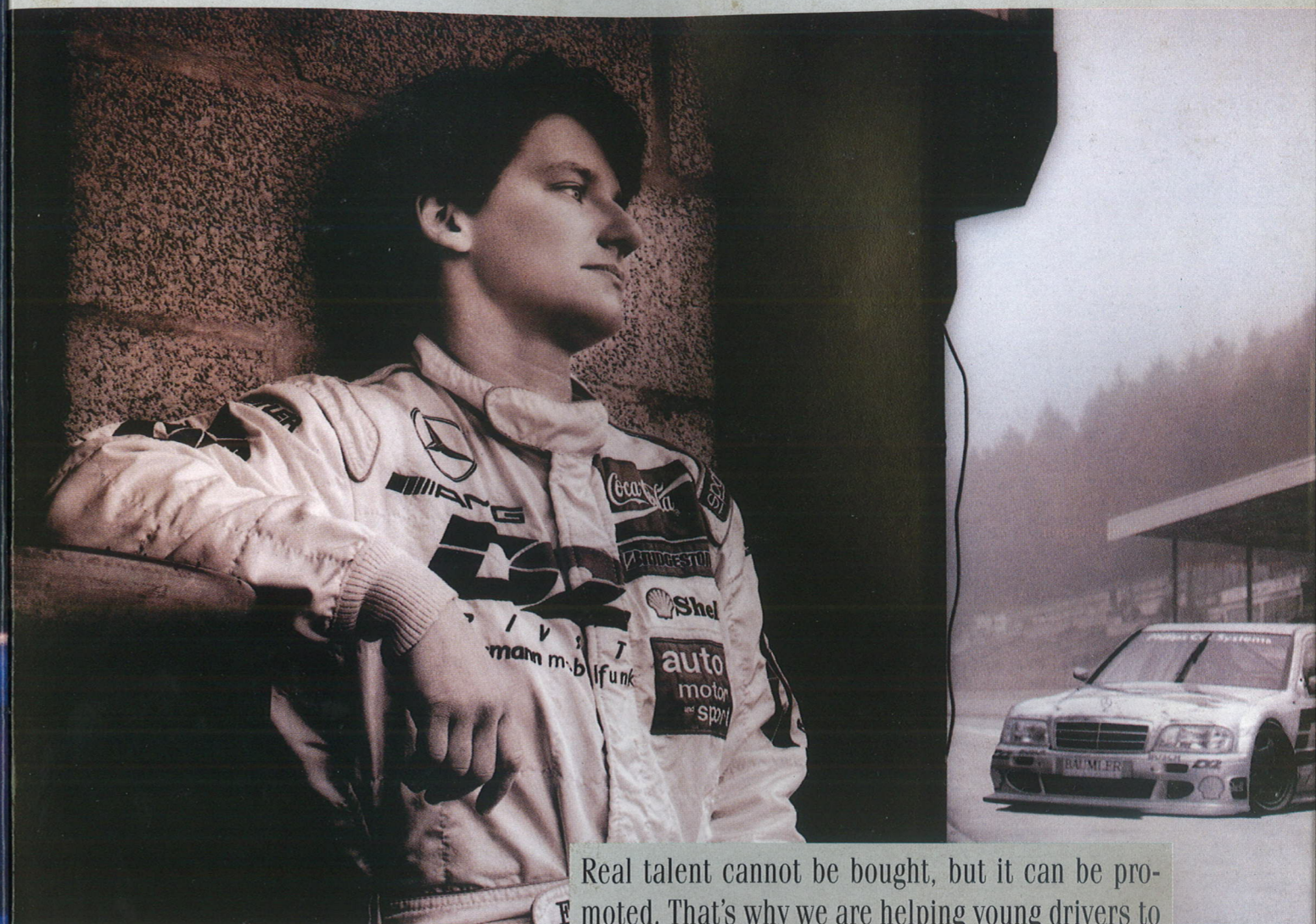
APRIL 14	HOCKENHEIM (D)
MAY 12	NURBURGRING (D)
MAY 26	ESTORIL (P)
JUNE 9	HELSINKI (SF)
JUNE 23	NORISRING (D)
JULY 7	DIEPHOLZ (D)
JULY 21	SAO PAULO (BR)
AUGUST 4	AIDA (J)
AUGUST 18	SILVERSTONE (GB)
SEPTEMBER 1	NURBURGRING (D)
SEPTEMBER 15	MAGNY-COURS (F)
SEPTEMBER 29	MUGELLO (I)
OCTOBER 13	HOCKENHEIM (D)

1996

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Real talent cannot be bought, but it can be promoted. That's why we are helping young drivers to work their way up in the hotly-contested world of motor racing – through professional sponsorships and active support in word and deed. Ellen Lohr was with us from the very beginning. Together with Bernd Schneider and Sandy Grau – who came to our squad fresh from the Junior Formula – she will be racing this year again under the auspices of auto motor und sport, Europe's big car magazine, always out in front.

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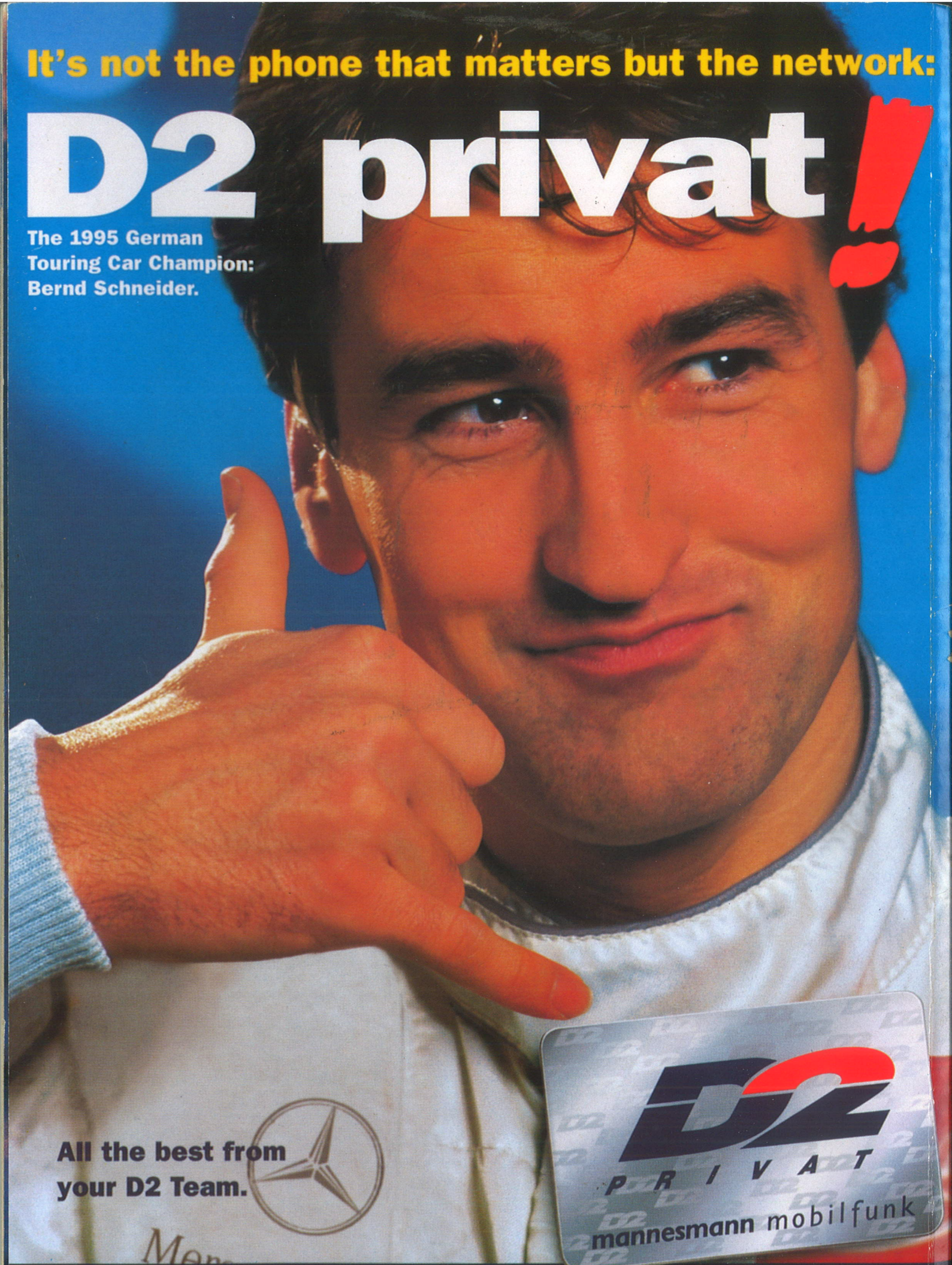
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