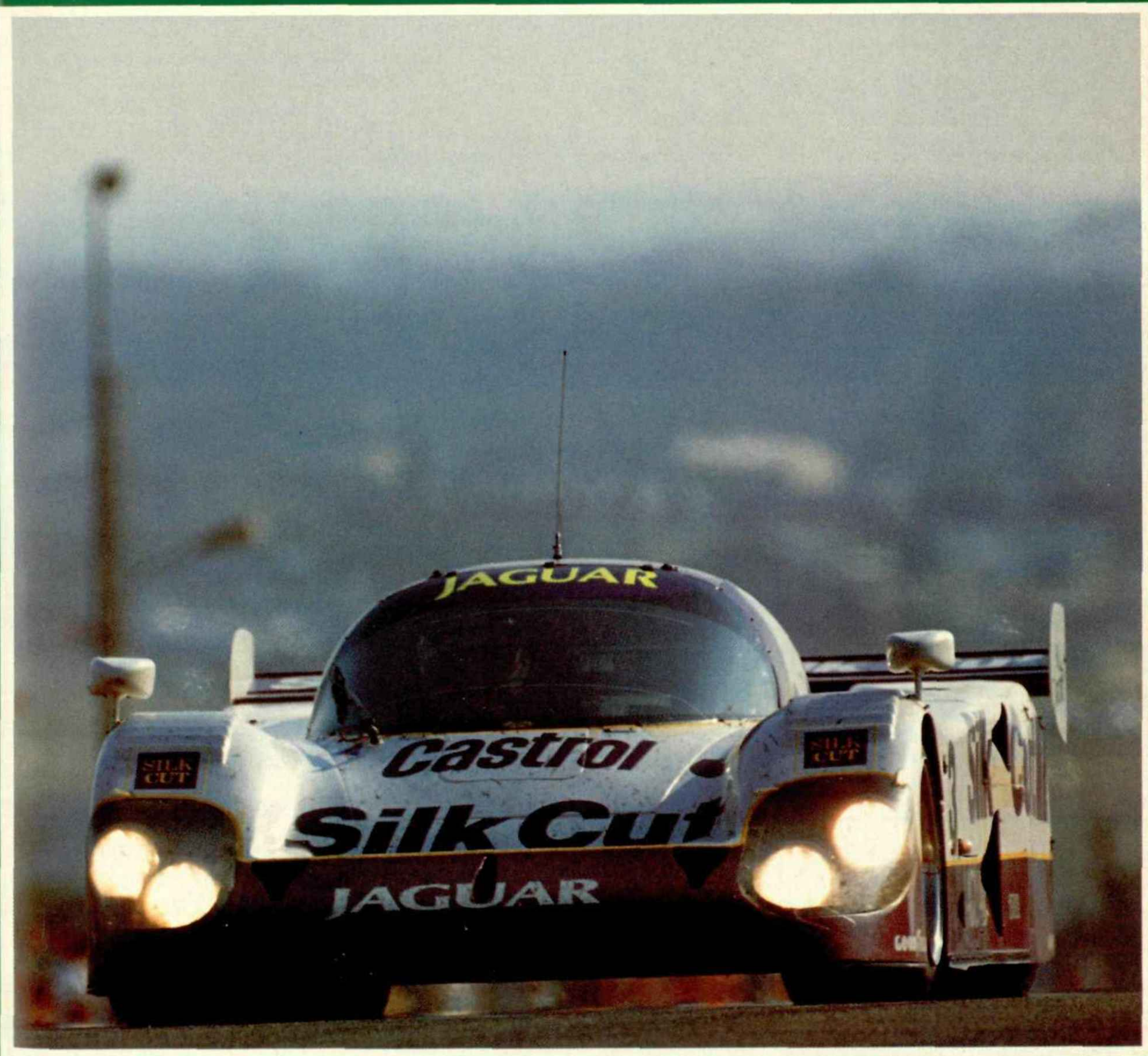


MOTOR SPORT



LE MANS: A Jaguar victory first and second

**PREVIEW TO
THE BRITISH GRAND PRIX**

ISSN 0027-2019





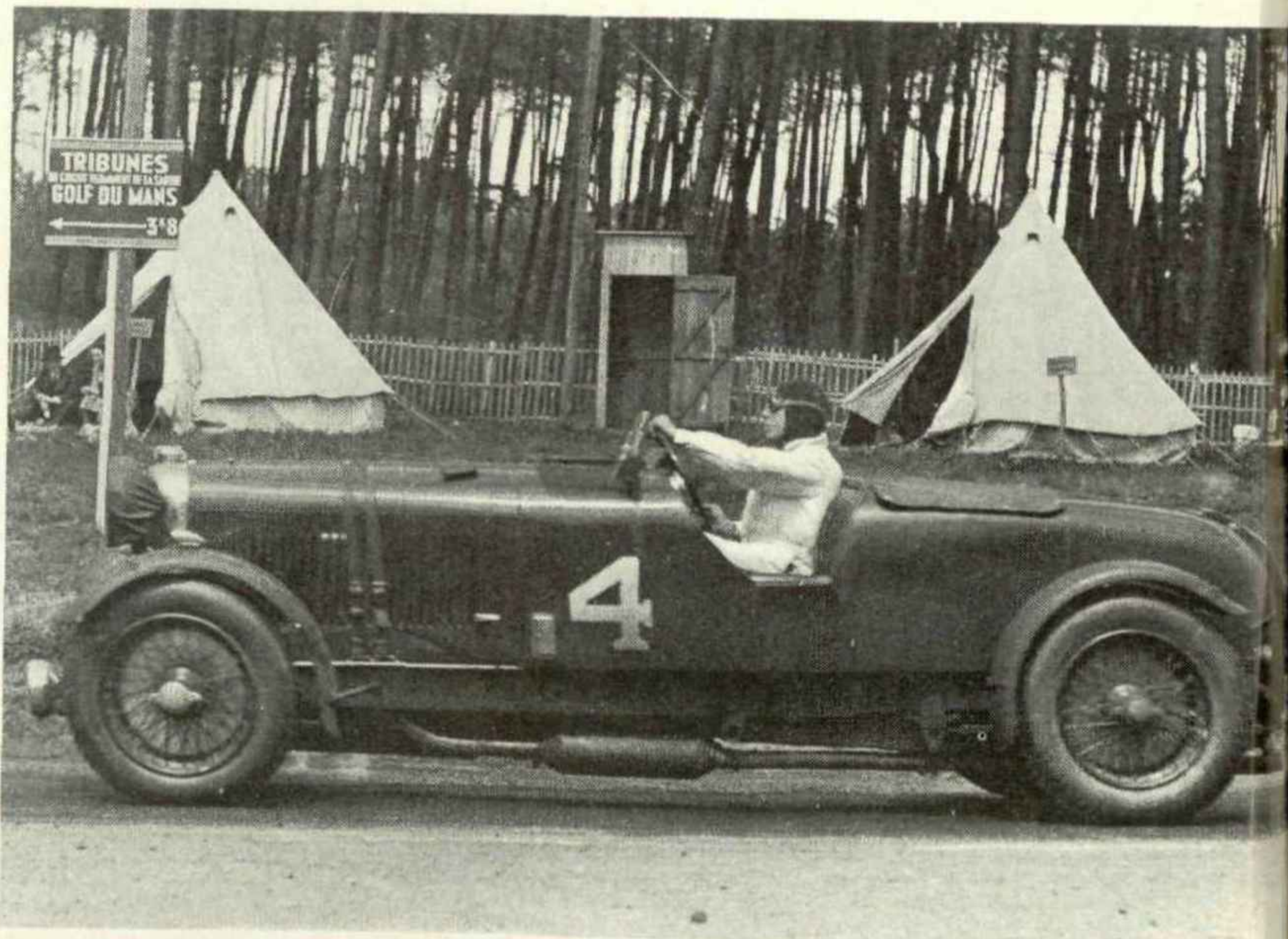
1935 LE MANS WINNING 4 1/2 - LITRE LAGONDA RAPIDE

OLYMPIA MONDAY 19th NOVEMBER

'T'WAS A FAMOUS VICTORY. THE 4 1/2-
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FRONT COVER: Jaguar had their seventh win of the Le Mans 24 Hours sweeping to a 1-2 victory on the 58th running of the race.

MOTOR SPORT

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MATTERS OF MOMENT

Going Green

The Global-warming panic is on! HRH The Prince of Wales has presented convincingly his own long TV documentary telling how we are destroying the environment. Mrs. Thatcher has said what she will do to combat the "greenhouse" effect. So how will "going Green" affect the car owner?

Already much nonsense is being bandied about. One professor wants a 500% VAT increase on fuel, just the excuse the petrol companies need to raise prices again. It is suggested that cars be used only for essential journeys and be banned from big towns. But many people regard their car as their most valuable possession after their family and home (some say the other way about!) and it is only necessary to look at the enormous use made of private cars by commuters to know that such restrictions would not work. The PM is being blamed for promising vast increases in expenditure on new roads, regardless of the fact that even if the number of cars has to be reduced to meet emission requirements, better roads will reduce pollution from vehicles which are at present frequently stationary in traffic snarl-ups.

The threat to the Earth from carbon-dioxide comes 80% from factory emissions, etc, 20% or less from road vehicles. The required reduction represents about 12% in the latter case, a not impossible target. The Motor Industry deserves praise for its work on reduced lethal exhaust emissions long before the present scare. Peugeot/Citroën and Volvo, for example, already have more fuel-efficient power-units, and Ford has spent over £50 million on "friendly" engines and has catalyst-converters on some of its engines. Lead-free petrol is now used by 35% of British drivers and we have more service stations supplying it (90% of 20,000) than anywhere else in Europe, says the AA. Diesel engines are another useful development on the environmental front. Forget electric

cars, which are yet far from practical for ordinary use.

It is obvious that improving the atmosphere will make motoring more expensive. And the Government could use obvious means to reduce car usage if it deems this desirable. But doing so would jeopardize the transport system and have a dire effect on our already brittle National Economy. A better way might be to encourage smaller engined cars and make unleaded fuel compulsory. The only naughty lead-burners now seem to be those who run 635CSi BMWs, Turbo Bristols, Dacias, De Tommasos, Maseratis, Ferrari Testarossas, the more powerful Lancias, Escort Turbos, top-poke Peugeots, the big TVRs, some Lotus models and Lamborghini Countachs — and there cannot be too many of those. Along with those too casual to have other engines converted

So we hope the Greens will not point accusing fingers too readily at the motor car! Nor at competition motoring, which is now very Big Business for Britain, with many thriving small firms making chassis, engines, speed equipment, tyres (Avon in F3 for example), drivers' kit, etc, while the crowded fixture lists prove just how much the Sport benefits hotel, catering and tourist trades. Lead-free petrol might be encouraged in competition motoring as alcohol-fuel was promoted in this way, and maybe we should re-introduce motor-coach classes (as in early Monte Carlo rallies), with each passenger taking a turn at navigating, thereby preparing motorists for a reduction in the permitted quantity of private cars (Or perhaps we shall get alternate-day licences, with a higher tax for Sunday motoring?).

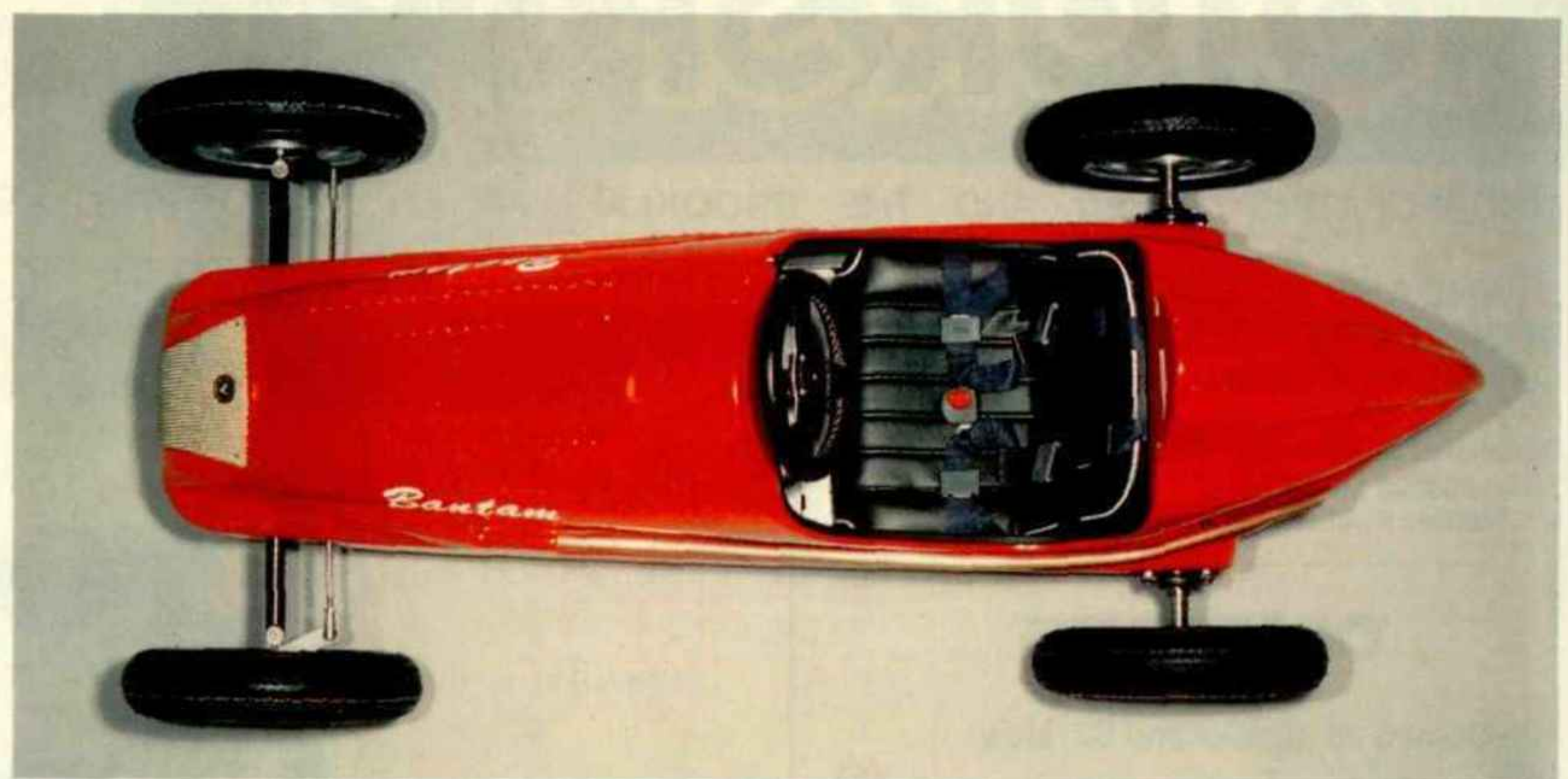
However, apparently nothing too awful is due to happen to this planet in the next 40 years. The cynics will say that, before then a greater threat to *Homo Sapiens* may come from atomic disasters, riots, war and famine than from the first effects of Global warming. WB

AROUND AND ABOUT

Over the weekend of June 30/July 1, Brands Hatch is hosting a round of the Mulberry championship for members of the Historic Grand Prix Cars Association, but it is being rather overshadowed by the next race in the series, that being held at Silverstone on the last weekend in July. In what promises to be the best grid of Historic GP cars ever assembled anywhere, what is purported to be the entire 1957 Maserati team is expected to turn out as well as a lone Vanwall. The Mulberry race is the main event of what should be a tremendous weekend of historic racing. The Association has also been involved in the planning of two other events, the Christie's Sports Car race and the BRDC race for pre-1965 GP cars, both of which have first class grids.

The "Oldtimer" Grand Prix at the Nürburgring on the weekend of August 11/12 is the third date and venue for a Mulberry race for cars up to and including 1957. There will also be a round of the FIA championship and invitation races for pre-1957 sports cars. If last year's event is anything to go by, it is worth making the expedition across to Germany to see some superb cars in action.

Practice takes place on Friday followed by two full days' racing on the Saturday and Sunday.



The replica single seater racing car fitted with 76cc Kawasaki engine.

For the younger enthusiasts, Bantam Cars of Warwick Ltd have manufactured and instigated the Bantam Challenge for children.

Developed by club racing drivers David Eccles and Richard Dencer, the Bantam is a child-size replica of a 1930s single seater racing car powered by a 76cc Kawasaki engine which runs on unleaded petrol. The attractive car is suitable for children aged from 5 to 10 years old, depending on size.

The challenge takes the form of driver

skill tests and timed events as well as seminars on vehicle safety and maintenance. The next round is at Silverstone on July 29 where MOTOR SPORT will be represented by a driver in a 'works' car.

Following WB's article on Crystal Palace last month, it was with interest that we noted that the circuit, or that part of it which is still discernible, was used as the venue for a publicity stunt for a road safety campaign in association with the Metropolitan police.

JULY FIXTURES

C—Closed. CI—Closed Invitational. R—Restricted. N—National. INT—International

Date	Organiser	Venue	Event	Type
24 June	BARC	Brands Hatch, Dartford, Kent	Race Meeting	NR
23-24 June	Bugatti Owners Club	Prescott Hill, Gotherington, Glos.	Hill Climb	N
24 June	Vitesse 2000	Mexico City, Mexico	Mexican Grand Prix	INT
24 June	Aberdeen & DMC	Fintray, Aberdeen	Hill Climb	N
29 June-1 July	AC Targa Florio	Ypres, Belgium	24 Hours d'Ypres (ERC)	INT
30 June	Brands Hatch Leisure RC	Oulton Park, Tarporley, Cheshire	Race Meeting	NR
29 June-4 July	Rally Organisers Assoc Od NZ	Auckland, New Zealand	New Zealand Rally (WRC)	INT
1 July	Brands Hatch Leisure RC	Brands Hatch, Dartford, Kent	Formula 3000 Championship	INT
1 July	BRDC	Donington Park, Donington	Formula 3 Championship	INT
1 July	Brands Hatch Leisure RC	Cadwell Park, Louth, Lincs.	Race Meeting	NR
1 July	BARC London & Home Counties	Lydden Circuit, Dover, Kent	Race Meeting	NR
1 July	BRSCC	Snetterton, Norwich, Norfolk	Race Meeting	R
1 July	AMK Brno	Brno, Czechoslovakia	F3000 Championship	INT
8 July	Brands Hatch Leisure RC	Snetterton, Norwich, Norfolk	Race Meeting	NR
8 July	Lydden IMRC	Lydden Circuit, Dover, Kent	Rallycross	INT
7-8 July	BARC Yorkshire Centre	Harewood Hill, Leeds, West Yorks.	Hill Climb	N
8 July	BRSCC	Brands Hatch, Dartford, Kent	Race Meeting	INT
7-8 July	Nürburgring 24 Hours	Nürburgring, West Germany	F3 Championship	INT
7-8 July	VSCC	Oulton Park, Tarporley, Cheshire	Race Meeting	N
8 July	Sa Ricard Dept Le Castellet	Circuit Paul Ricard, France	French Grand Prix	INT
8 July	BRSCC	Donington Park, Derbyshire	Race Meeting	NR
8 July	Automobile Club von Deutschland	Hockenheim, Germany	F3 Championship	INT
13-15 July	RAC/MSA	Silverstone, Towcester, Northampton	British Grand Prix	INT
15 July	Jaguar CC	Pembrey, Llanelli, Dyfed	Race Meeting	R
20-22 July	BRSCC	Brands Hatch, Dartford, Kent	Race Meeting	INT
21 July	Brands Hatch Leisure RC	Oulton Park, Tarporley, Cheshire	Race Meeting	NR
21 July	BRDC	Donington Park, Derbyshire	Race Meeting	INT
July 22	BRSCC	Cadwell Park, Louth, Lincolnshire	Race Meeting	R
July 22	Scottish MRC Ltd	Ingliston, Edinburgh	Race Meeting	R
22 July	ASA Dijon Prenois	Dijon, France	WSPC	INT
22 July	AC Enna	Enna-Pergusa, Sicily, Italy	F3000 Championship	INT
22 July	Royal Automobile Club de Belgique	Francorchamps, Belgium	GpA Championship	INT
23-29 July	Automobile Club Argentina	Buenos Aires, Argentina	Argentina Rally	INT
28 July	Historic SCC	Oulton Park, Tarporley, Cheshire	Race Meeting	R
28 July	Lydden IMRC	Lydden Circuit, Dover, Kent	Race Meeting	N
28-29 July	BRDC	Silverstone Circuit, Towcester	Race Meeting	INT
29 July	Brands Hatch Leisure RC	Brands Hatch, Dartford, Kent	Race Meeting	NR
29 July	BARC	Knockhill, Dunfermline, Fife	Race Meeting	NR
29 July	Automotosport Srl	Misano, Italy	Italian Touring Car Championship	INT
29 July	Lydden IMRC	Lydden Circuit, Dover, Kent	Race Meeting	N
29 July	Automobil Club von Deutschland	Hockenheim, Germany	German Grand Prix	INT
4 August	BRSCC	Castle Combe, Chippenham, Wilts	Race Meeting	R
4 August	BRSCC	Oulton Park, Tarporley, Cheshire	Race Meeting	R
4-5 August	BARC	Snetterton, Norwich, Norfolk	F3 Championship	INT
5 August	BRSCC	Brands Hatch, Dartford, Kent	Race Meeting	R
5 August	BRSCC	Mallory Park, Kirby Mallory, Leics	Race Meeting	R
5 August	ASA Dijon Prenois	Dijon, France	GpA Championship	INT

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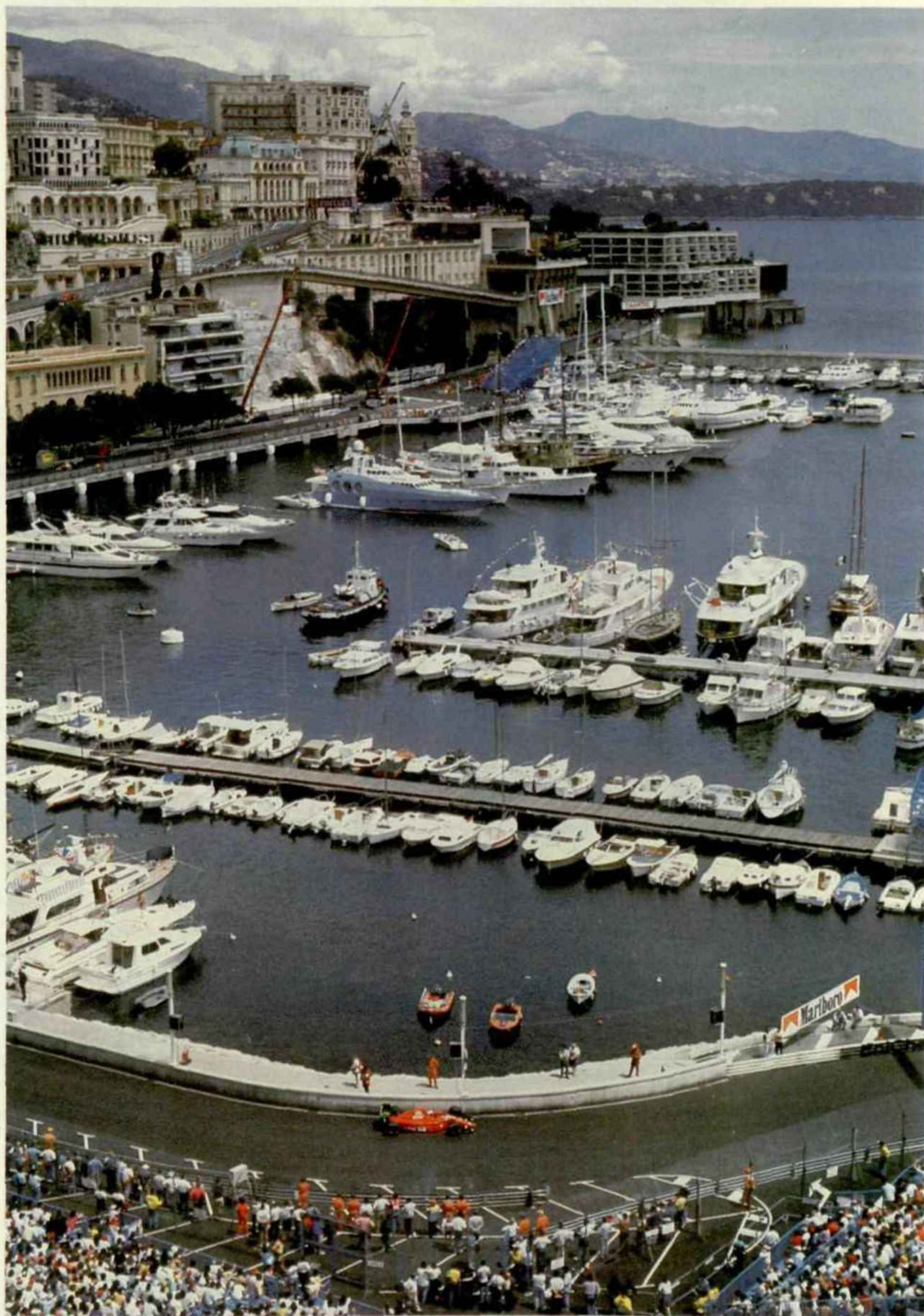
For Ayrton Senna fans, and there are a lot of them among the paying public, in spite of the anti-Senna lobby among the English press, the 48th Monaco Grand Prix was sheer delight. Fastest time in both qualifying sessions, claiming pole position on the grid without question, led the race from start to finish and made fastest race lap. It is difficult to improve on that, and at no time during the weekend did anyone look like presenting a challenge to the Brazilian and the McLaren-Honda.

The Monte Carlo circuit continues in its enigmatic role of being the best loved (or most hated) street circuit of all time, everyone putting up with all manner of bad things because it only happens once a year, and it is the father-and-mother of all street circuits, and has been since 1929 (but don't tell the Marlboro World Championship Team, or their disciples, who think it all started in 1950!). It is not the sort of circuit around which any self-respecting Grand Prix driver would want to race every weekend, but most drivers are prepared to accept its challenge once a year as part of the overall scene that makes 'complete' Grand Prix drivers.

While it is not fast by real Grand Prix circuits, its 85-90mph lap speed is shatteringly quick for the confined conditions and hair-raising hazards, and for the drivers it presents a great challenge in accuracy, judgement, consistency and concentration. Most of the drivers seem to view it as a personal challenge to their faculties rather than a test of motor racing. For the engineers, designers and mechanics it is an equally daunting test for nobody gets to run on the circuit until official practice begins. There is no 'testing', no pre-practice acclimatization, no hard and fast technical data to go on, and nowhere else like it where you can simulate the conditions. But it is the same for everyone.

By Thursday morning the weeks of preparation were complete, with more nuts and bolts and scaffold pole clamps having been tightened than you can imagine. Grandstands, bridges, crash barriers, pit counters, wire netting, escape roads, marshals posts, circuit television surveillance systems, radio and TV stations, medical equipment all had to be brought in and assembled on the spot, because once the Monaco Grand Prix has been run all signs of this 20th Century manifestation have to be erased from the home of the rich and notorious.

The Thursday before the Monaco Grand Prix is Ascension Day and a public holiday, so what better day to start practice and qualifying and then have Friday off to recover, continuing the normal process again on Saturday. The pre-qualifiers sorted themselves out between 8am and 9am on Thursday morning, the most encouraging thing being that Bruno Giacomelli coaxed the Life Racing Engines car with its 12-cylinder engine round for nine whole laps. It was still the slowest of the pre-qualifiers but at least it kept going for a bit. The Gerard Larrousse team have



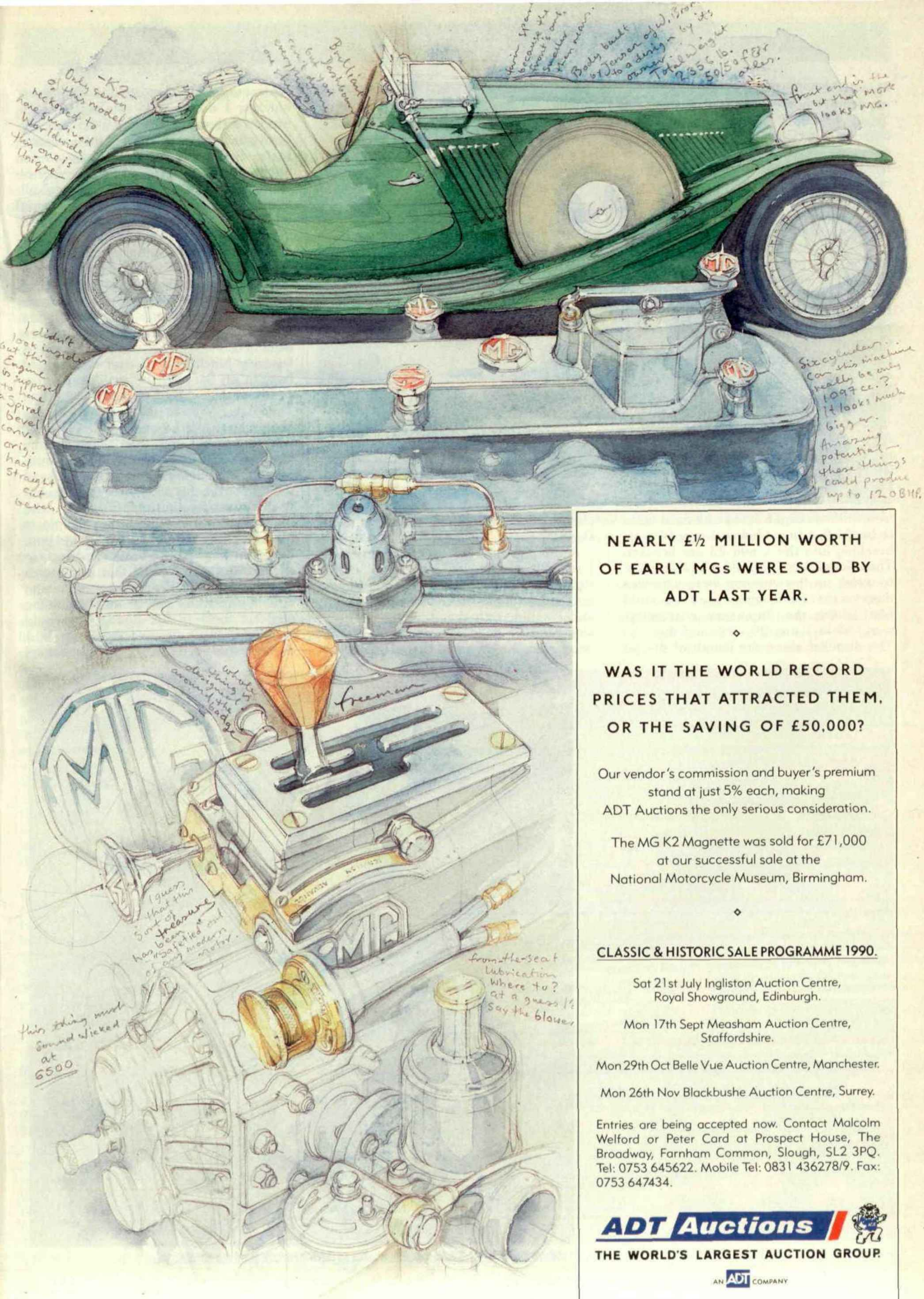
The beautiful setting at Monte Carlo is not the ideal venue for a racing circuit these days.

Senna Superb

to take this part of the proceedings pretty seriously, for it is only misfortune, rather than lack of ability, that relegated them to the pre-qualifying category. Consequently both the drivers have a pair of Lola-Lamborghini V12 cars to use because only one hour after this early morning session they have to be out again for the serious business of the weekend. The other two to join the seeded 26 drivers were Roberto Moreno and Olivier Grouillard.

The morning hour and a half of testing has no bearing on qualifying or the starting grid, and though the Longines-Olivetti system is working and the times are

published, they are meaningless as far as winning the race are concerned. However, everyone wants to be in front, no matter how important it might be, so towards the end of the testing time there is usually a bit of a scramble to establish a 'pecking order'. At the end of the Thursday session the paddock and pits had a distinct air of having been shell-shocked. Fastest lap was down to Jean Alesi in a Tyrrell 019 with a Brian Hart-tuned Cosworth DFR, a normal Cosworth production unit breathed on by Hartpower, not one of the super-tweaked-up special Ford-sponsored EXP engines as used in the Benetton. While



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Unique.

Brilliant
but you
can't drive
on it.

Thin span
because the
front is out
swelled
from rain.
Body built
by Jensen of W. Brom.
to a design
owner.
Total weight
2356 lb. 28r
50/50 axle.

front end in the
but that more
looks MG.

I didn't
look inside
but this
engine
is supposed
to have
a spiral
bevel
conv.
orig.
had
straight
cut
bevel.

Six cylinder
can this machine
really be only
1097 cc.?
It looks much
bigger.
Amazing
potential -
these things
could produce
up to 120 BHP.

Whole
thing
designed
around
the
badge.

I guess
that this
sort of
"treasure"
has been
"safetied"
out
of any modern
motor.

This thing must
sound wicked
at
6500

from the seat
lubrication
where to?
at a guess 1/2
say the blower

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Monaco may not be about high speed and maximum horsepower, engines need 'grunt' which can be described as a combination of horsepower, torque, weight and the shape of the power curve; and then you need a chassis that can use it and even more important, a driver that can use everything he is given. In Jean Alesi the Tyrrell team obviously has a driver who can use the right amount of everything.

This was Alesi's first drive at Monaco, though not his first visit, for living in Avignon he had been a regular spectator for many years, even before he took up racing in the lesser categories. If his initial performance round the streets of Monte Carlo was a surprise to anyone, then all I can say is that they haven't been paying attention since the middle of last year. Much had been expected, but this much seemed a bit of an exaggeration!

At 1pm, when qualifying began, it was Alesi who was first out to set a 'benchmark' and it was a good one, at 1 min 24.162 secs. He was soon followed by the fast and the famous at around the same sort of lap times, and all the regular front-runners began vying with each other to be the first to get below 1 min 24 secs, breaking into the 1 min 23 sec bracket. Then Senna went out; did a 'cruising lap' to weigh up the situation as to who was there on the circuit, while his pit radio told him where the important contestants were, all in 1 min 29 secs, and then . . . The disbelief along the length of the pit

lane could be felt. 1 min 21.877 secs. Two whole seconds faster than anyone else. When Senna says it needs total commitment, total confidence, total concentration and total anything else you can think of, he is not joking. These are the occasions when you simply have to be there to experience it all first hand.

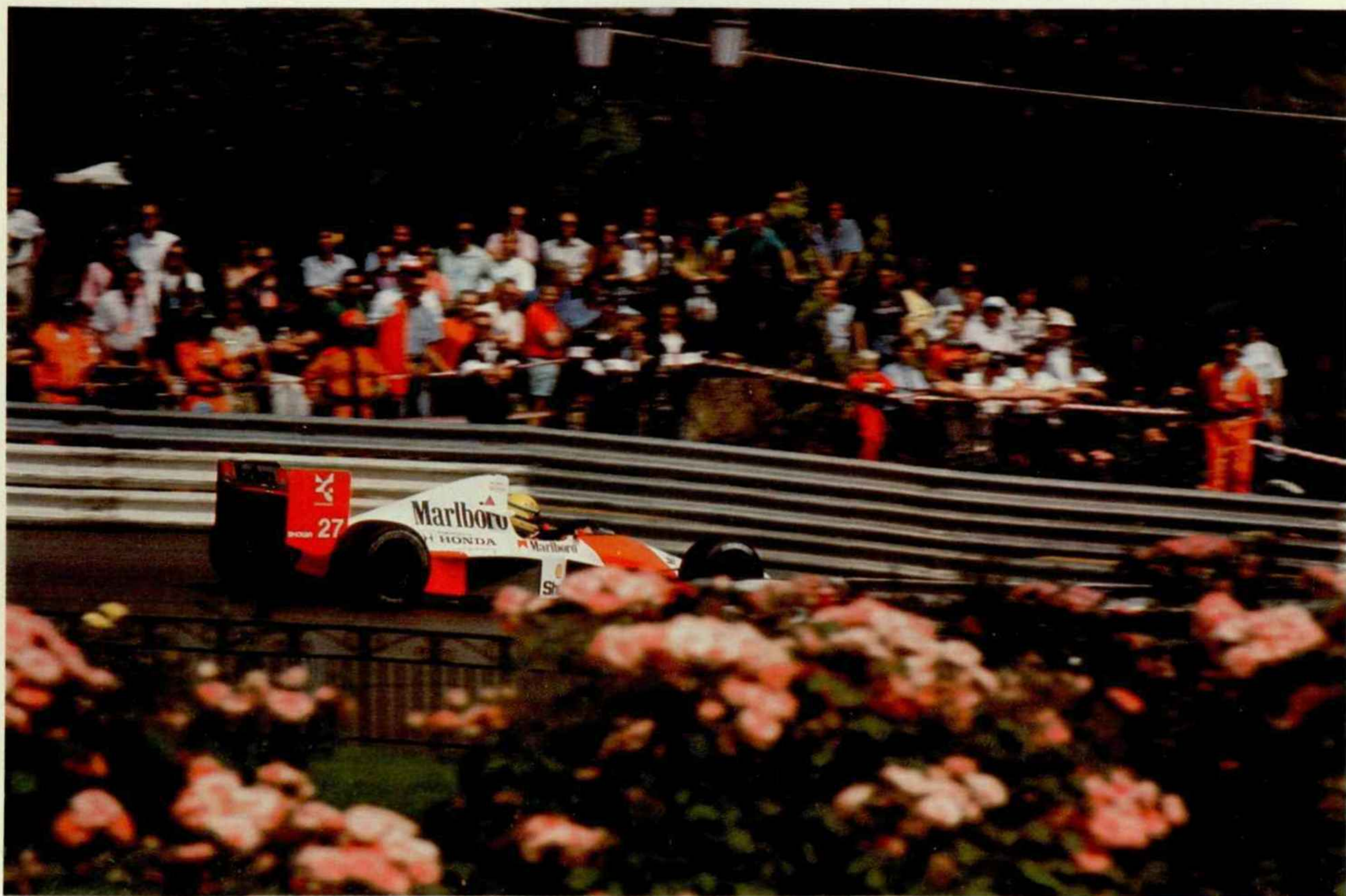
This first effort by the fastest man in motor racing today, spurred everyone on to some heroic efforts. Alesi responded with 1.23.372, then Berger gave the McLaren team full support with a lap 1.23.001, Prost revived the sagging Ferrari hopes, with 1.23.449 and Thierry Boutsen did an excellent 1.23.936 to give the Williams-Renault team good hopes of staying near the front. In the 1.24 bracket were seven drivers, heroes all, for a 1 min 24 secs lap is no mean feat round Monte Carlo, but being 3 seconds away from Senna's pace was very depressing for some of them, particularly Patrese and Mansell, though Warwick and Donnelly in the Lotus-Lamborghinis were pleased to be that close, as were Pierluigi Martini, still limping a bit from his Imola accident, Nicola Larini in a Ligier and Pirro in a Dallara.

A group of eight drivers ended up in the 1 min 25 sec bracket, which really was slow by comparison with the Senna standard, and not happy to be there were Piquet and Nannini with the Benetton. There was no real need for Senna to make another run on his second set of qualifying

tyres, but he did anyway, and went even quicker; 1 min 21.797 sec just to show everyone that the first quick lap had not been a lucky one. This sort of performance really does make the excuses by others about 'traffic', 'tyres', 'engines', 'adhesion', 'grip', 'understeer', 'oversteer' all very boring. Few will admit to being inferior drivers, but you can't blame them. If nobody thought they could be World Champion we wouldn't get much racing!

Qualifying had only lasted for one hour, but it had the adrenalin flowing in a lot of people, like the 'good old days' of free-turbo boost qualifying. They really were good old days. With no Formula One activity on Friday there was time to have a leisurely lunch and discuss what might happen on Saturday in qualifying, when conditions could be even better than Thursday. Already the race itself was beginning to lose interest!

Saturday did not disappoint us, the weather was not very good for the beautiful people lounging about on the decks of their rented yachts and motor cruisers, but it was ideal for the racing drivers, who really are the most important people in Monaco at this time of the year. Mind you, it would be easy to overlook the drivers in the Monte Carlo festival that occupies a whole week, and if the sun was shining and the auction sales and gambling emporia were in full flood, you could probably quietly remove the Formula 1 cars and drivers, and no one would notice!



Yet again Senna, McLaren and Honda were in a class of their own. The Brazilian unreachable in both practice and the race.

The money-spinning extravaganza would probably go on unabated.

But the serious business for us was 1 pm to 2 pm on Saturday afternoon, after the usual hectic hour and a half of testing in the morning.

Everyone had had their last chance to fiddle about with all the settings on the racing cars and try and settle for an optimum that would keep everything going for 78 laps on Sunday. The great joy about qualifying is that there is no need to compromise; apart from each driver being limited to two (marked) sets of tyres, and random weight checks and rear aerofoil heights being checked, it is a glorious engineers' and drivers' free-for-all. Everything has to hang together for just one fast lap and if nothing breaks or the driver does not hit a barrier, there is the opportunity for a second fast lap, the best one of the pair counting for the all-important grid position. Not everyone watches a whole race, but you can be sure that nobody misses the start, and all eyes are on the car on pole position. Apart from being good for the driver's ego, he has a clear road ahead of him and there are twenty-five cars behind him and if any of the drivers have thoughts of winning they have got to get past the man on pole-position.

Conditions were excellent, with hazy sunshine which removed the glare and sharp contrasts in the shadows of the buildings, while the track had taken on a satisfactory coating of sticky rubber. The 'bench-mark' was loud and clear, a time below 1 min 22 secs was necessary, while times in the 1.23 bracket, which had been good on Thursday, would now be very mediocre. Prost, Alesi, Mansell, Berger and Patrese all got into the 1.22 bracket, which was exciting stuff if you overlooked Senna's 1.21.797 of Thursday. Then, about one third of the way through the hour McLaren number 27 headed off down the crowded pit lane with that remarkable Brazilian brain at work under the yellow helmet.

Senna did a gentle lap in 1.36.920 and then went through the start-line speed trap at 150 mph with the Honda V10 really on full song and 1 min 21.314 seconds later he broke it again at 153mph! Hardly had he finished this virtuoso display than Alesi really stirred things up with a lap in 1 min 21.801 secs, and this got everyone on their toes, even more than Senna's time, bearing in mind it was the young Frenchman's first F1 race at Monaco and comparing the quality of the equipment used by him and Senna. This really got Alain Prost wound up and he came alive with a searing lap in 1.21.776, to take second place on the grid, these three being the only ones to get below 1.22, though Patrese came mighty close with 1 min 22.026 secs. But it was not over, for Senna still had his second set of tyres to use. Everyone held their breath when he was seen heading down the pit lane once more and just as before it needed one warm-up lap and then 150 mph over the start-line, and 153 mph next time round. Lap time 1 min 21.544



Eric Bernard scored his first World Championship point and, more importantly, one for the Larrousse team.

secs, just two-tenths of a second lost as he passed a slower car towards the end of the lap, and this was the second fastest lap of the whole qualifying period, so he could justifiably claim first and second places on the grid.

This excitement among the front runners completely overshadowed the rest of the field even though there were some valiant efforts being made. A study of the starting grid on the statistics page tells it all, for the end result of two days of testing and qualifying is seen by your position on the grid. Pierluigi Martini in the Minardi M190 continues to be near the front, in spite of still limping a bit, Emanuele Pirro in the Dallara BMS was just behind him, and Martin Donnelly was well up. The Benetton's were right off the pace, being surrounded by some lesser machinery and lesser drivers, while at the back David Brabham took the penultimate grid position, and Lehto was at the back convinced that his Onyx Monteverdi was much inferior to his team-mate Gregor Foitek's car. It must be said that Foitek did a good job, compared with his efforts last season when he vied with de Cesaris for the number of accidents that he had.

Left to watch from the sidelines were Alboreto (Arrows), which is becoming a habit, Grouillard (Osella), Gugelmin (Leyton House) which is difficult to accept when his performance is compared to the same car when it was called a March, and Moreno (EuroBrun). It had been an exciting two days and it was hard to believe that Sunday was going to be better, but the whole point of the Monaco Grand Prix is the Sunday race, so we just had to look forward in anticipation.

Sunday was another day for racing drivers, not for beautiful people, as the sky

was grey and overcast with wet looking clouds hovering around the tops of the mountains behind the Principality, and all the craft in the harbour were bobbing about as the ruffled sea came in through the entrance, spoiling quite a few Sunday lunches no doubt! Late on Saturday afternoon it had rained on the Formula 3 race, and there was every chance of it doing the same on the Grand Prix, with the start scheduled for 3.30pm. In the morning warm-up half-hour the McLaren team was pretty confident, but remarkably so was Prost, there being nothing to whinge about with the Ferrari. Alesi blotted his copy-book by bending the left-rear corner of his Tyrrell 019 against the guard rails, but such was his standing with the Tyrrell team that he could have thrown the whole thing in the harbour and Uncle Ken and his lads would have smiled and said "Don't worry, we'll make another one." As it was they set to with vigour and rebuilt the left-rear corner of the damaged 019.

Watching in the Casino Square everything looked to be in fair order as Senna led the field on the opening lap, but down the hill to the Mirabeau hairpin it all went wrong. While everyone in the Square craned to see what had happened, television viewers wallowed in the excitement of a silent accident, and when the dust had settled there was a Ferrari and a McLaren *hors de combat*, as they say, with Alain Prost running down the hill, and Gerhard Berger running up the hill, while the red flag was being shown at the start and the race was stopped. Prost, in second place, had looked in his mirrors and seen Alesi's Tyrrell hell-bent on overtaking down the inside into the hairpin, and discretion being the Prost watchword, the World Champion had moved aside to the left, to

let the hard-charging newcomer through, Berger was hard-charging after Alesi and was unprepared for Prost to move back onto his line for the corner and the McLaren rammed the back of the Ferrari.

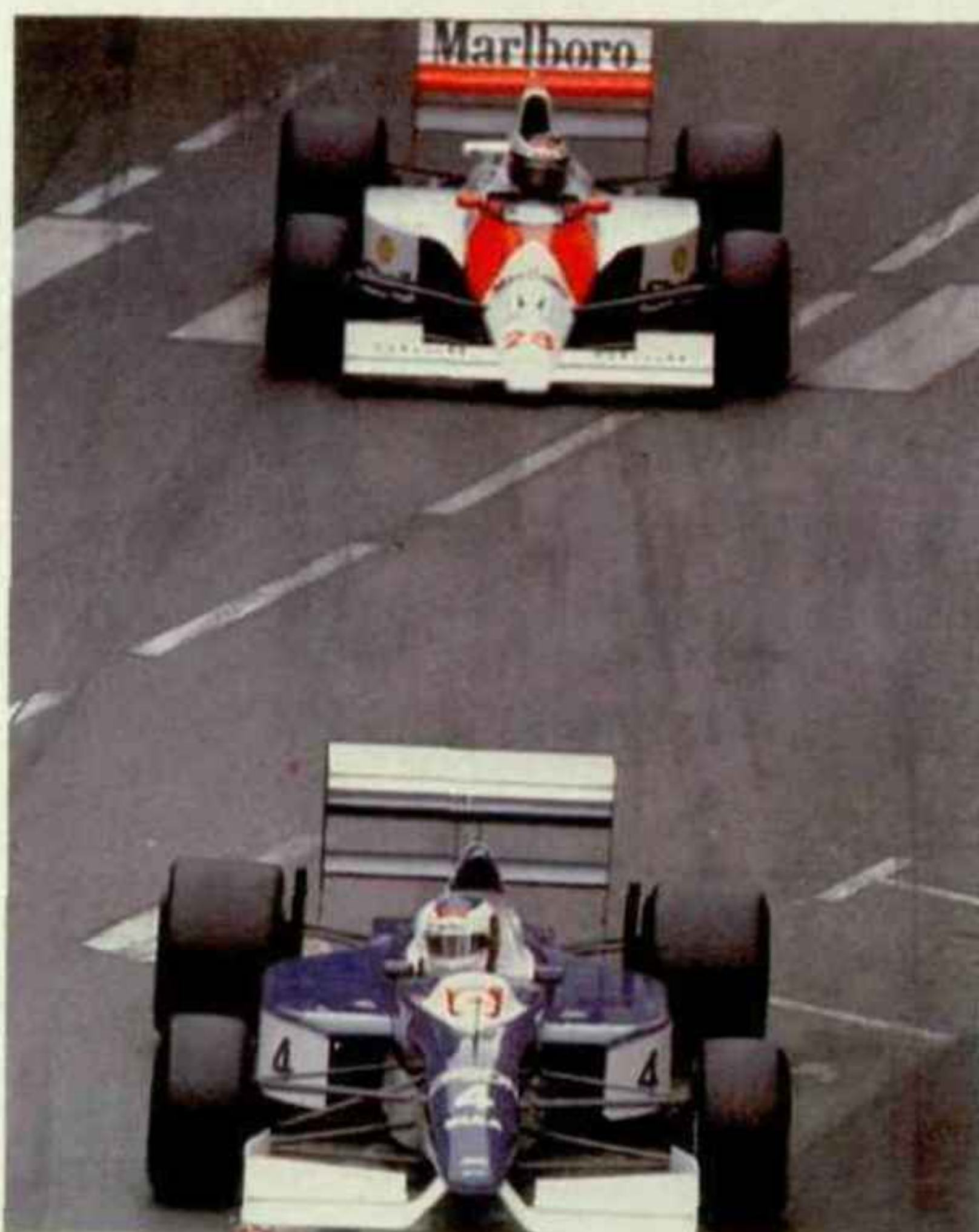
While Berger was running across Casino Square and down the hill to the pits, Prost got a lift back in the course car which had come out, and McLaren and Ferrari mechanics were frantically preparing their spare car. The McLaren was all set up for Senna, and the Ferrari for Mansell, so there was some hasty re-adjustment of pedals and controls and the various aerodynamic and suspension setting to suit the change of driver. The big problem was for Prost, as his own car was using a specially programmed gearbox that only used six speeds, whereas the Mansell spare car was using standard seven speed layout, and nothing could be done about that, so Prost had a quick word with his team-mate to get an idea of the different driving technique required. The lanky Berger was being squeezed into Senna's spare McLaren as best as could be managed, but both drivers were going to re-start the race with a handicap. Capelli's turquoise car set itself on fire at the start, so he took the team's spare car for the re-start.

Some twenty-five minutes later the re-start was given and this time all went well, but as a race it was virtually over before it started. However, there were 78 laps to run and anything could happen, but if the McLaren-Honda kept going and Senna did not put a wheel wrong, he was assured victory. Thus it was. Senna drove away from everyone to lead from start to finish, running the whole race at his own pace, and having sufficient margin in hand to be able to ease right off towards the end. This was most fortunate as his Honda engine began to show signs of distress towards the end of the 78 laps, so he was able to be very gentle with it and not aggravate any impending trouble.

Behind him there was a very different story and a lot of racing was going on, not only for places near the front, but also at the back and a lot of drivers were enjoying themselves. Like most drivers, Alesi knew there was nothing to be done about Senna, but he was very determined to annexe second place and was totally unimpressed by the drivers all around him, even the reigning World Champion! He was safely sandwiched between Prost's Ferrari and Berger's McLaren while the two drivers were getting used to the T-cars. Behind this trio were the Williams pair in fifth and sixth places, though Boutsen was having a difficult time keeping up as the throttles on his Renault V10 were not shutting properly. Mansell's poor grid position, due to various problems, meant that he got a bit bogged down in the opening laps, and could not really get his teeth into the race until he got past Martini's Minardi, but once by he motored in typical Mansell aggressive style and closed up on the two Williams cars. Not realising that Boutsen

had a sticking throttle problem he closed up too close on lap 21 and bent the Ferrari nose, which meant a pit stop for a replacement. Undeterred he then started a charge back through the field.

By sheer chance Mansell rejoined the race in the midst of the group who were in the running for second place, actually being between Alesi and Berger, though a lap in arrears. He made the most of this situation as it meant that all the cars around him were going at his pace, so there was no time wasted being stuck behind slow cars. The attrition rate was very high as engines, gearboxes and transmissions gave up the ghost among the back end of the field, but on lap 31 disaster struck at the front. Prost had been running in a fairly secure second



The tussle for second place between Alesi and Berger was the sole point of interest at the head of the field.

place right from the start, being unruffled by Alesi's attempts to challenge with the Tyrrell 019, while Berger was holding station in fourth place unable to do anything about the blue and white car. The first thing Prost knew of impending trouble was a strange smell in the cockpit of the Ferrari. There was a systems failure in the Ferrari battery charging circuit, and the battery was being desperately over-charged, giving off acid fumes, and on lap 31 the battery burst asunder spraying the driver with acid. It also meant that the whole electrical system died, including control of the gearbox, and Prost was lucky to be able to get back to the pits, where he was quickly attended to by the Ferrari team doctor before there were any bad effects.

This left Alesi in a comfortable second place, which was where he had been aiming to be, and Berger in trouble behind him as first gear had ceased to function on the McLaren and he was having to re-adjust his driving pattern to make do without it. Once he had got this sorted out he closed up on Alesi again, but there was no way he was going to get by, and Alesi was not going to help, nor

was the young Frenchman looking like making any mistakes, his driving being impressively constant and sure. This stalemate between the Tyrrell and the McLaren went right through to the finish at unabated pace, so much so that it looked as though they were gaining on Senna, but Senna was slowing down in a totally controlled manner and knew exactly what was going on behind him. The battling pair were 1.1 seconds behind the winner at the finish, which got a lot of people excited, but they clearly did not know Senna. As he said afterwards, when someone excitedly said what a close finish it had been, "It was enough". Very cool is our Mr. Senna, and it was interesting to see that Jean Alesi was equally cool at the finish.

Back in the race fortunes were still wavering as the leaders had their little dramas. Piquet had a spin when trying to get by Boutsen and was pushed back onto the track by marshals, but this meant instant exclusion under a new 1990 rule, and to really confuse things the Longines-Olivetti computer programme had the DELETE button pressed for car number 20, and Piquet was erased from all (or nearly all) the time-sheets and the official lap chart! A very strange happening.

Mansell's heroic charge back after his pit stop got him up to a fine fourth place, but then the Ferrari electrical system had a failure and he was left with no way to operate the gearbox, so both Ferraris were out with what many people loosely described as 'gearbox trouble' which was not very accurate. Derek Warwick was having a good race with the Lotus-Lamborghini V12, the engine looking like lasting the race, but the Lotus brakes gave trouble and he eventually spun into retirement, nearly being collected by Senna's McLaren when the leader arrived on the scene amid confusing marshal signals. Patrese's run came to an end when his Renault V10 engine broke something in the valve gear, but Boutsen managed to bring his Williams-Renault home into fourth place, though a lap behind the leader. With so many cars breaking down, there being only six cars still running at the end, the tail-enders scooped up the last two places, which scored some important points for the Footwork-Arrows team and the Larrousse team. For Senna, McLaren and Honda it had been a real *tour de force* and a highly satisfactory Monaco Grand Prix, and for Alesi and Team Tyrrell it had been more than they could have realistically hoped for, but for most others it had been an unmitigated disaster, with a few crumbs of satisfaction scattered here and there. Although there was a general air of enjoyment about the place everyone was very glad that they do not have to do it all over again in a fortnight's time, Monte Carlo itself could get on with the enormous task of undoing all the nuts and bolts, clearing up the unholy mess left by the public and getting everything back into some semblance of order. DSJ

STARTING GRID



<p>1 PROST Ferrari F1/90 1 min 21.776 secs</p> <p>6 PATRESE Williams FW13B 1 min 22.026 secs</p> <p>5 BOUENSEN Williams FW13B 1 min 22.691 secs</p> <p>23 MARTINI Minardi M190 1 min 23.149 secs</p> <p>20 PIQUET Benetton B190 1 min 23.566 secs</p> <p>22 de CESARIS Dallara BMS 190 1 min 23.613 secs</p> <p>8 MODENA Brabham BT59 1 min 23.920 secs</p> <p>19 NANNINI Benetton B190 1 min 24.139 secs</p> <p>26 ALLIOT Ligier JS33B 1 min 24.294 secs</p> <p>35 FOITEK Onyx Monteverdi 1 min 24.367 secs</p> <p>10 CAFFI Arrows A11B 1 min 25.000 secs</p> <p>29 BERNARD Lola L90 1 min 25.398 secs</p> <p>36 LEHTO Onyx Monteverdi 1 min 25.508 secs</p>	<p>27 SENNA McLaren MP4/5B 1 min 21.314 secs</p> <p>4 ALESI Tyrrell 019 1 min 21.801 secs</p> <p>28 BERGER McLaren MP4/5B 1 min 22.682 secs</p> <p>2 MANSSELL Ferrari F1/90 1 min 22.733 secs</p> <p>21 PIRRO* Dallara BMS 190 1 min 23.494 secs</p> <p>12 DONNELLY Lotus 102 1 min 23.600 secs</p> <p>11 WARWICK Lotus 102 1 min 23.656 secs</p> <p>30 SUZUKI Lola L90 1 min 24.023 secs</p> <p>25 LARINI Ligier JS33B 1 min 24.206 secs</p> <p>24 BARILLA Minardi M190 1 min 24.334 secs</p> <p>3 NAKAJIMA Tyrrell 019 1 min 24.371 secs</p> <p>16 CAPELLI Leyton House CG901A 1 min 25.020 secs</p> <p>7 BRABHAM Brabham BT59 1 min 25.420 secs</p>
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*Pirro (Dallara BMS 190) failed to make re-start
Prost (Ferrari F1/90) took re-start in Mansell's T-car
Berger (McLaren MP4/5B) took re-start in Senna's T-car
Capelli (Leyton House CG901A) took re-start in T-car

1990 WORLD CHAMPIONSHIP

DRIVERS	CONSTRUCTORS
Ayrton Senna.....22	McLaren-Honda.....38
Gerhard Berger.....16	Williams-Renault.....18
Jean Alesi.....12	Ferrari.....15
Alain Prost.....12	Tyrrell-Cosworth.....14
Riccardo Patrese.....9	Benetton-Cosworth.....10
Thierry Boutsen.....9	Brabham-Judd.....2
Nelson Piquet.....6	Arrows-Cosworth.....2
Alessandro Nannini.....6	Lola-Lamborghini.....1
Nigel Mansell.....3	
Alessandro Caffi.....2	
Stefano Modena.....2	
Eric Bernard.....1	
Satoru Nakajima.....1	

LAP TIMES

No	Driver	Car	Tyres	Pre-qualifying	Thursday Qualifying	Saturday Qualifying	Best Race Lap (on lap)
1	Alain Prost	Ferrari F1/90	G	1m 23.449s	1m 21.776s	1m 25.888s	(17)
2	Nigel Mansell	Ferrari F1/90	G	1m 24.433s	1m 22.733s	1m 24.971s	(47)
3	Satoru Nakajima	Tyrrell 019	P	1m 25.679s	1m 24.371s	1m 27.557s	(31)
4	Jean Alesi	Tyrrell 019	P	1m 23.372s	1m 21.801s	1m 25.353s	(62)
5	Thierry Boutsen	Williams FW13B	G	1m 23.936s	1m 22.691s	1m 26.366s	(18)
6	Riccardo Patrese	Williams FW13B	G	1m 24.179s	1m 22.026s	1m 26.255s	(9)
7	David Brabham	Brabham BT59	P	1m 28.339s	1m 25.420s	1m 31.639s	(9)
8	Stefano Modena	Brabham BT59	P	1m 25.485s	1m 23.920s	1m 32.072s	(2)
9	Michele Alboreto	Arrows A11B	G	1m 27.282s	1m 25.622s		
10	Alessandro Caffi	Arrows A11B	G	1m 26.520s	1m 25.000s	1m 26.421s	(63)
11	Derek Warwick	Lotus 102	G	1m 24.070s	1m 23.656s	1m 27.339s	(26)
12	Martin Donnelly	Lotus 102	G	1m 24.724s	1m 23.600s	1m 28.366s	(5)
14	Olivier Grouillard	Osella FA1M	P	1m 27.938s	1m 26.781s		
15	Mauricio Gugelmin	Leyton House CG901A	G	1m 26.943s	1m 26.192s		
16	Ivan Capelli	Leyton House CG901A	G	1m 26.969s	1m 25.020s	1m 29.374s	(11)
17	Gabriele Tarquini	AGS JH25	G	1m 28.677s			
18	Yannick Dalmas	AGS JH25	G	1m 30.511s			
19	Alessandro Nannini	Benetton B190	G	1m 25.926s	1m 24.139s	1m 27.542s	(20)
20	Nelson Piquet	Benetton B190	G	1m 25.273s	1m 23.566s	1m 26.055s	(36)
21	Emanuele Pirro	Dallara BMS 190	P	1m 24.766s	1m 23.494s		
22	Andrea de Cesaris	Dallara BMS 190	P	1m 25.849s	1m 23.613s	1m 26.931s	(10)
23	Pierluigi Martini	Minardi M190	P	1m 24.012s	1m 23.149s	1m 28.700s	(4)
24	Paolo Barilla	Minardi M190	P	1m 26.352s	1m 24.334s	1m 27.539s	(51)
25	Nicola Larini	Ligier JS 33B	G	1m 24.206s	1m 24.270s	1m 29.165s	(10)
26	Philippe Alliot	Ligier JS 33B	G	1m 25.387s	1m 24.294s	1m 28.265s	(47)
27	Ayrton Senna	McLaren MP4/5B	G	1m 21.797s	1m 21.314s	1m 24.468s	(59)
28	Gerhard Berger	McLaren MP4/5B	G	1m 23.001s	1m 22.682s	1m 25.021s	(48)
29	Eric Bernard	Larrousse-Lola 90	G	1m 27.134s	1m 25.398s	1m 25.541s	(60)
30	Aguri Suzuki	Larrousse-Lola 90	G	1m 27.548s	1m 27.193s	1m 24.023s	(5)
31	Bertrand Gachot	Coloni-Subaru	G	1m 39.295s			
33	Roberto Moreno	EuroBrun 189B	P	1m 28.295s	1m 26.604s	1m 27.265s	
34	Claudio Langes	EuroBrun 189B	P	1m 33.195s			
35	Gregor Foitek	Onyx Monteverdi	G	1m 26.183s	1m 24.367s	1m 27.296s	(66)
36	JJ Lehto	Onyx Monteverdi	G	1m 27.923s	1m 25.508s	1m 28.587s	(29)
39	Bruno Giacomelli	Life RE	G	1m 41.187s			



RESULTS
Monaco Grand Prix, Monte Carlo, May 27
78 laps of 3.328 km circuit (259.584 km; 161.298 miles)

Pos.	Driver	Nat.	Car/Engine	Time
1st	Ayrton Senna	(BRA)	McLaren MP4/5B-Honda V10	1hr 52min 46.982s
2nd	Jean Alesi	(F)	Tyrrell 019-Cosworth V8 DFR	1hr 52min 48.069s
3rd	Gerhard Berger	(AUT)	McLaren MP4/5B-Honda V10	1hr 52min 49.055s
4th	Thierry Boutsen	(B)	Williams FW13B-Renault V10	1 lap behind
5th	Alessandro Caffi	(I)	Arrows A11B-Cosworth V8 DFR	2 laps behind
6th	Eric Bernard	(F)	Lola L90-Lamborghini V12	2 laps behind
7th	Gregor Foitek	(CH)	Onyx-Monteverdi-Cosworth V8 DFR	retired on lap 73
8th	Derek Warwick	(GB)	Lotus 102-Lamborghini V12	retired on lap 67
9th	Nigel Mansell	(GB)	Ferrari F1/90-Ferrari V12	retired on lap 64
10th	Paolo Barilla	(I)	Minardi M190-Cosworth V8 DFR	retired on lap 53
11th	J.J. Lehto	(FIN)	Onyx-Monteverdi-Cosworth V8 DFR	retired on lap 53
12th	Philippe Alliot	(F)	Ligier JS33B-Cosworth V8 DFR	retired on lap 48
13th	Riccardo Patrese	(I)	Williams FW13B-Renault V10	retired on lap 42
14th	Andrea de Cesaris	(I)	Dallara BMS 190-Cosworth V8 DFR	retired on lap 39
15th	Satoru Nakajima	(J)	Tyrrell 019-Cosworth V8 DFR	retired on lap 37
16th	Alain Prost	(F)	Ferrari F1/90-Ferrari V12	retired on lap 31
17th	Alessandro Nannini	(I)	Benetton B190-Cosworth V8 EXP	retired on lap 21
18th	David Brabham	(AUS)	Brabham BT59-Judd V8	retired on lap 17
19th	Ivan Capelli	(I)	Leyton House CG109A-Judd V8	retired on lap 14
20th	Nicola Larini	(I)	Ligier JS33B-Cosworth V8 DFR	retired on lap 13
21st	Aguri Suzuki	(J)	Lola L90-Lamborghini V12	retired on lap 12
22nd	Pierluigi Martini	(I)	Minardi M190-Cosworth V8 DFR	retired on lap 8
23rd	Martin Donnelly	(GB)	Lotus 102-Lamborghini V12	retired on lap 7
24th	Stefano Modena	(I)	Brabham BT59-Judd V8	retired on lap 4
25th	Emanuele Pirro	(I)	Dallara BMS 190-Cosworth V8 DFR	did not take re-start
26th	Nelson Piquet	(BRA)	Benetton B190-Cosworth V8 EXP	disqualified on lap 37

Fastest lap: Ayrton Senna (McLaren MP4/5B) 1min 24.468secs on lap 59, 141.838 kph (88.134 mph).
Winner's average speed: 138.097 kph (85.809 mph). Conditions: Dry and cool.

DNQ	Michele Alboreto	(I)	Arrows A11B-Cosworth V8 DFR	1min 25.622secs
DNQ	Olivier Grouillard	(F)	Osella FA1M-Cosworth V8 DFR	1min 25.785secs
DNQ	Mauricio Gugelmin	(BRA)	Leyton House CG901A-Judd V8	1min 26.192secs
DNQ	Roberto Moreno	(BRA)	EuroBrun ER189B-Judd V8	1min 26.604secs
DNPQ	Gabriele Tarquini	(I)	AGS JH25-Cosworth V8 DFR	1min 28.677secs
DNPQ	Yannick Dalmas	(F)	AGS JH25-Cosworth V8 DFR	1min 30.511secs
DNPQ	Claudio Langes	(I)	EuroBrun ER189B-Judd V8	1min 33.195secs
DNPQ	Bertrand Gachot	(L)	Coloni-Saburu Fiat 12	1min 39.295secs
DNPQ	Bruno Giacomelli	(I)	Life 12 cylinder	1min 41.187secs

Speed Week Monaco

Dear reader, A great deal happens in Monte Carlo during the annual speed week, for it now starts off very static with auction sales for old cars and the speed and excitement builds up as the week progresses, culminating in the Grand Prix on Sunday. Apart from the auction sales there are photographic exhibitions, painting exhibitions, book presentations, lunches, banquets, dinners and cabarets, gatherings of old drivers, races for Formula 3 and saloon cars and a continuous movement of the latest and best in production cars, and the biggest and best in motorcycles.

That is just on land; at sea there is an equal show of the latest and best in dinghies to ocean going liners, while the powerboats make Ferraris and Porsches look like toys. There is certainly much more to the Monaco Grand Prix round the streets of Monte Carlo, than the Grand Prix. If you happen to be interested in civil engineering there is much to enthral you in the way of excavations and tunnelling and land reclamation, for the Principality of Monaco is tightly surrounded by France and the Mediterranean and can only expand either up or down. As the tower blocks get higher, obscuring the view of people living in France up behind Monaco, so the holes get deeper to build more and more underground shops, car parks and leisure facilities.

As can be imagined the traffic density in Monte Carlo is bad news and most people find it easier and quicker to walk about town, rather than drive and find a parking space. This year there was a noticeable difference in the traffic scene and that was the proliferation of two-wheelers. Everything from 1200cc Rocket-Ships and 1500cc Honda tourers were as big as a small car, down to very old and grotty mopeds were being used and the big problem seemed to be finding somewhere to park your two-wheeler! One motorcycle on its own never presents a parking problem, but when everyone is on a motorcycle it becomes nearly as bad as having a car, the only difference being that you can usually lift bikes in closer to one another to make room for one more.

Looking around the sea of motorcycles in Monte Carlo it struck me that it could be quite a problem finding your bike at the end of the day. One morning, while walking to the circuit, I saw a police vehicle towing a trailer full of motorcycles and mopeds, which seems a strange thing to be doing, so I watched where it went. It stopped at a cordoned-off area by the police headquarters and all the bikes were off-loaded and stacked in this compound. There had been a purge on casual parking, particular on footpaths. One bike parked on the footpath outside a shop or hotel causes no real problems, but twenty or

thirty bikes in the same place soon attract the attention of the police, and this year things had obviously reached saturation point. It was interesting that most of the two-wheelers were small bikes or mopeds and scooters; the police were not attempting to carry away a Honda Gold Wing or an 1100cc Yamaha. They presumably stuck parking tickets on them. As I watched the police van and trailer set off for another collection I could not help thinking of the London dogs-home where you can see the arrival of a van-load of stray dogs that have been rounded up. As I said, finding your bike at the end of the day could present a problem.

"There have always been strange people in this world, and without them places like Monte Carlo would not exist . . ."

If you had the right sort of car and you were the right sort of person then parking was not such a problem, but the problem was deciding what was the right sort of car, and how do you become the right sort of person? Outside one hotel was a roped off area containing four cars which were obviously 'right'. A Porsche 959, a Porsche Carrera 4, a Ferrari 348ts and a Porsche 928S4 which presented a sight worthy of a Motor Show. The 959 was a silver one, registered in Paraguay (!), the Carrera 4 was dark red and had come from Germany, at high speed judging by the squashed flies on the nose, the Ferrari was Ferrari red (what else?) and he had come from Italy, and 928S4 was dark blue and had also come from Italy.

Looking at this quartet of new "super cars" gave me a sense of proportion on events that had taken place earlier in the week. I refer to the auction sales of old Ferraris that had taken place where anything red was snapped up by "collectors" and "dealers" for ridiculously high prices in order to invest money to make a profit in the future. The cost of buying all four "super cars" in the row outside that hotel, using them for the purpose they were built, and servicing them for a year of fantastic motoring, would not go half way to buying an old (and fairly unusable) Ferrari at one of the auctions. There have always been strange people in this world, and without them places like Monte Carlo would not exist, but when you get close to some of them because they happen to be in your own motoring enthusiasm world, they are not very pleasant.

Last month WB wrote about a 1957 sports Ferrari that Christies Auction House told him was about to set a "new World Record" and rightly so the Editor queried the use of the term "World

Record" as records are established to known and accepted rules laid down by the governing body; in our world, the FIA who looks after motoring. Presumably there is an international Federation of Auction Houses, who set the rules for record-breaking, though it seems that such records are only involved with figures representing money; speed and endurance do not come into the activity. That much publicized record-attempt was a total failure by all accounts. The sports Ferrari did not sell and the bidding, such as it was, barely passed the half-way mark to the projected "World Record". Perhaps the car will reappear in a few years time, heralded as 'the famous Monte Carlo record attempt car'.

There were three big auction sales at Monte Carlo, all three houses trying to establish 'world records' and all trying to put on the biggest and most extravagant show, with the effect that they virtually 'neutralised' each other. From words inside the auction 'game' (I nearly said 'racket') it would appear that the Golden Goose is beginning to sit fatly and not lay any golden eggs. After all, a goose egg is a nice large thing to have, much bigger than a chicken or duck egg, but there are limits to its size and if too many people and auction houses want to live off it there is not going to be enough to go round. I don't think the golden egg had actually broken, though there were people in Monte Carlo with what looked like egg on their face, but it has certainly cracked its shell.

In the middle of "Speed Week Monaco" there was something of a panic among the organisers and Principality officials for the French railways went on strike, as did the air traffic controllers at Nice airport. The panic was that everyone would attempt to get to Monaco on race day by car, and there was visions of the whole of the Cote d'Azur becoming one enormous traffic jam, from the Italian border in the east to way beyond Nice and Cannes in the west. The fact that most of the people involved with the Formula 1 teams had arrived by air and might be marooned in Monaco until Tuesday after the race seemed insignificant in comparison with the vast crowds of public trying to get into the Principality for race day. A big police operation was planned to try and cope with the anticipated problems, but luckily they were not needed as the strikers were called off (more money and shorter hours were the demands, naturally!), and everything was normal for race day. In truth race day was sub-normal, as the crowd estimate was down to 30,000 from previous years 40,000 and unbelievably there were empty spaces in the car parks. It is interesting that the Monaco Grand Prix can survive on an attendance of 30-40,000 whereas that sort of figure at Silverstone would be a disaster for the British Grand Prix. Yours DSJ. PS. Those four super cars were parked outside the hotel for a day or two until the magic was broken by someone parking a brash and vulgar Lamborghini Countach alongside them.

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The familiar McLaren front row start was thrown out of gear when Gerhard Berger jumped the start and was penalised 60 seconds.

Canadian Grand Prix = A bit confused

Montreal, June 10

It all started off quite well. The big transport planes delivered all the cars and equipment to Canada, the airlines delivered all the personnel safely and by 8 am on Friday morning the nine drivers who had to battle for the four places available in official practice and qualifying were ready to go. The result of this brief hour of competition, with no prior practice, was the same as in Monte Carlo; Moreno (EuroBrun), Grouillard (Osella), Suzuki and Bernard (Lola-Lamborghini) were in with a chance of qualifying for the actual race, while the rest had made a long and fruitless journey.

At 10 am the big boys came out to play, and like Monte Carlo the circuit on the Notre Dame island in the St Lawrence river at the lower end of Montreal suffered from being used only once a year. There was a lot of surface dust to be blown away, much of it having come from construction work around the edge of the lake in the centre of the circuit which had nothing to do with the racing scene. The track surface was 'green' in as much as it had no layer of racing rubber on it on the racing line and with no pre-race test sessions the drivers had forgotten where the bumps were, until they found out the hard way. On all the 'once-a-year' circuits it needs the first day of official practice to get the circuit bedded in for serious use.

Twelve months of development with the new 3½-litre Formula has seen huge

strides being made on engines, suspensions, aerodynamics and handling, offering a new set of parameters, which some drivers overlooked, or did not appreciate, when they started to complain about the circuit conditions. However, it did not deter them from getting on with the job and anyway they had something much more important to worry about. That was the weather forecast.

The day was warm and dry but communications said that it was raining in Detroit, southwest of Montreal, and by known weather patterns it was predicted that the rain would reach the circuit by Saturday. Consequently all along the pit lane practice and testing programmes were speeded up or modified and the afternoon qualifying session was viewed more seriously than normal, as everyone became conscious of the fact that it might be the only chance to claim a good grid position. Under normal conditions there is time to spend the morning practice session on Friday experimenting with different tyres and aerodynamic settings to arrive at a suitable compromise for qualifying on Friday afternoon, and then on Saturday morning to arrive at a compromise suitable for the race, all the time bearing in mind that gear ratios, suspension settings, fuel consumption and engine management systems have to be experimented with as well, to find the best settings for all-out qualifying laps and the best for the race distance, also dependent

on race tactics and whether you view the first half of the race more important than the second half. In other words there is more than enough to do during the two morning test sessions and the two afternoon qualifying sessions, always assuming that the track conditions are stable and remain so for the race. When Friday is getting oppressively warm and 'heavy' and you are guaranteed rain for Saturday, with race day predicted as being 'unsettled' it is easy to see how careful pre-planning can go wrong. If you introduce some engine or gearbox problems into the work programme, or worse still, your driver has an accident, it tries the team management and control pretty severely.

With the sure knowledge that Friday was the end of the good weather there was no question of the qualifying hour seeing the front runners doing only two fast laps on their chosen qualifying tyres. Every moment of track-time was needed to fit two days work into one and a lot of the drivers spent time out on the circuit on race tyres working at their problems, restricting themselves to one fast lap in qualifying tyres. Those with spare cars were at an advantage here, being able to swap quickly from one car to the other, each car having its own particular characteristics as part of the test programme. In actual fact many of the drivers made their best lap times running on relatively hard racing tyres, rather than softer qualifying tyres, simply because they were



Nelson Piquet drove his Benetton with the verve and determination not seen for a long time.

not really sufficiently far advanced with their experiments to get the best out of the softer rubber. Apart from the impending rain the total lack of pre-race testing on the Circuit Gilles Villeneuve meant there was no information in the memory-tank to assist them.

The end result of this rather muddled first day of qualifying was not a lot different from normal, with Senna and Berger dominating the scene with the McLaren-Hondas and Prost a challenging third, but the two Benettons of Nannini and Piquet in fourth and fifth places surprised a lot of people as the Montreal circuit is pretty fast, with a-lap speed average around the 120mph mark. On the other hand there are a lot of fairly slow corners which call for good torque and low speed response, which is where a V8 engine can have an advantage over a V10 or a V12. The 'wonder boy of Monte Carlo', Jean Alesi, was still well up with a Tyrrell 019, holding eighth place, while Stefano Modena was going well in tenth place with a Brabham-Judd V8, ahead of the two Lamborghini-powered Lotus cars of Warwick and Donnelly. When the qualifying hour ended the atmosphere was getting very 'heavy' suggesting the approaching rain and it was generally accepted that only a freak of circumstance was going to alter the qualifying pattern, so anyone who had failed to get into the select twenty-six for the grid on this first afternoon hadn't got much hope for improvement on Saturday. Friday evening confirmed everyone's worst fears as the rain started, and it was still raining on Saturday morning with little hope of a bright future for the rest of the day or even for Sunday.

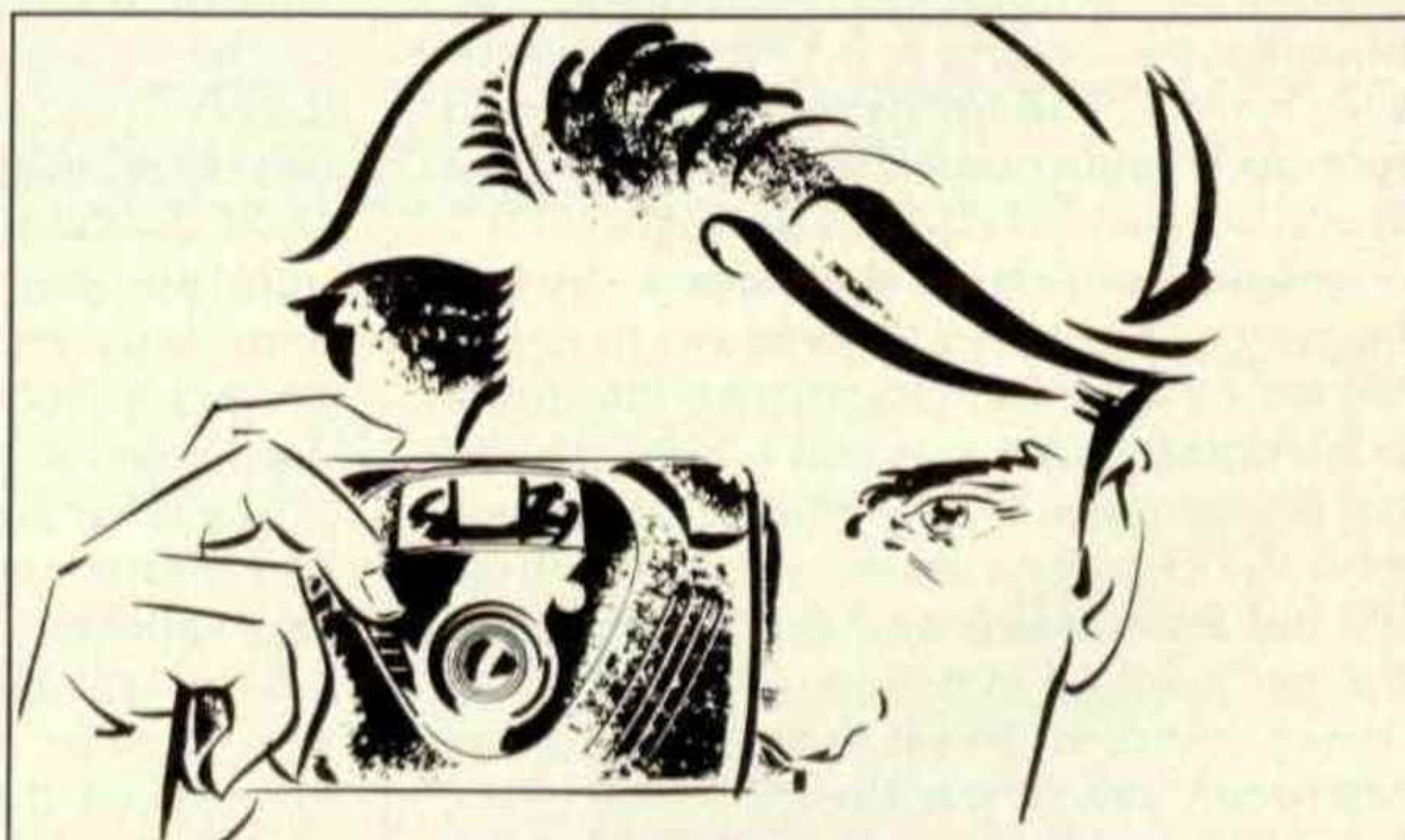
When the Saturday morning test session began there was little point in worrying about the afternoon qualifying hour, for even if the rain stopped the track was never going to be in a condition to improve on the times established on Friday afternoon, so everyone concentrated on learning to go as fast as possible in the wet. Some found the limit the hard way, by spinning off the track, and Eric Bernard crashed his Larrousse Lamborghini-Lola very heavily bringing out the red flag and a stop to proceedings while the wreckage was cleared away, the driver escaping unhurt and transferring to a spare car. Some thirty minutes were lost removing the crashed car and the race Stewards made the unusual decision not to extend practice to make up for lost time, making it clear to everyone that the morning session would terminate at 11.30 am as scheduled.

What most drivers were trying to learn was 'throttle control' on the slippery surface, for though the rain was consistent it was not heavy and rather than flooding the track it covered it with a slippery coating on which the cars skated about, even with heavily treaded rain tyres, either Goodyear or Pirelli. Those teams with strong factory-backed engines, like Honda and Renault, had their electronic experts working on the management systems and 'chips' to give

the engines more 'driveability' as the Honda engineers describe it, altering the torque spread, the usable power band and the response to throttle openings.

For those drivers who had failed to get into the top twenty-six on Friday afternoon, namely Moreno, Gugelmin, Barilla and Brabham, Saturday was a complete loss for there was no hope of improving their times and if any of them had made fastest time in wet it would still not have got them on the grid. For those who had already staked their place on the grid the day was frustrating if they felt they hadn't achieved their best on Friday, and the two Williams-Renault drivers came into this category. The Benetton drivers were very happy with their places near the front, but Mansell was less happy about being so far behind Prost.

Although the rain had stopped by the time the qualifying hour began everything was still dripping wet and the track was being slow to dry out so that times were all a bit meaningless, the only people benefitting from the conditions being the marshals at the pit-lane exit who were checking competitors' tyres. Under normal dry conditions each driver chooses two sets of tyres at the end of morning testing for his use in the afternoon qualifying hour, and these are marked with his racing number by FIA officials. Each time that a competitor goes out of the pit lane he has to stop at the exit where four marshals check the stencilled number on each tyre. When all four have given a 'thumbs up' to the flag man,



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Derek Warwick staved off the rigours of pre-qualification with his and the team's first point this year.

he gives the driver the signal to proceed. This is very simple, a speedy operation and more often than not a driver need not come to a complete stop. If he does not slow down or has the wrong number on a tyre, or no number at all, he is immediately eliminated from the lap time list and there have been instances of a driver trying to get away with using team-mate's tyres or unmarked tyres, but they have never got away with it as the marshalling at all the circuits is very efficient.

If conditions are wet a driver can use rain tyres without restriction and they do not have to be marked, so under the wet conditions of Saturday afternoon the marshals had a simple job; it was easy to see if a car was on heavily-treaded rain tyres as it came down the pit-lane, and if it was it was waved straight through.

Towards the end of the 'hour' a dry line began to appear and it was worth trying 'slicks' to establish a Saturday afternoon benchmark, but it was still a long way off the Friday pace. Nelson Piquet was fastest with the Benetton B190, driving with all his old enthusiasm and flair, feeling that the car justified maximum input from the driver, but even so his fastest time of the afternoon was slower than the time of the last non-qualifier on the previous day, which explains the conditions adequately.

Sunday morning saw rain and yet more rain over Montreal with clouds down to skyscraper level and with the start due at 1 pm the morning warm-up half-hour was at 8.30 am so everyone was resigned to a wet race and cars were set up for wet conditions, or at best a compromise between wet and dry, and brake ducts were taped over to try and get the discs up to a working temperature. It was still raining when the cars went out to the grid in preparation for the parade lap led by Senna in the leading McLaren-Honda, and as they set off the official sign reading WET RACE was displayed, indicating that the race would run its 70 laps come what may, and any tyre changes, if the condition improved, would be down to the individual teams.

It seemed to take longer than usual to get the back of the grid lined up correctly

at the end of the parade lap, but eventually the red light came on and before the green light shone Berger had let his McLaren roll forward from his number two position on the grid. Senna led away, followed by Berger, while Nannini made a super start and shot into third place, followed by Alesi who had got the jump on Prost, Piquet, Boutsen and Mansell, showing total disregard for his elders and betters(!). In the general pushing and shoving around the first hairpin bend just after the start Martini's Minardi got elbowed into a spin and stalled on the bend as the rest weaved their way by. The organisation seemed to have nothing in the way of large cranes or mechanical grabs or tow-lines to remove the car from the vulnerable position, while marshals made no progress on the wet grass. Eventually a course car was sent out from the pits to tow the Minardi out of harm's way while the race was still in progress. Not exactly 1990 standards of Formula One!

The rain had stopped almost as the race had started and the track began to dry very quickly on the racing line, although off-line was still very slippery for anyone who made a mistake. The stewards announced that Berger was to be penalised one minute for jumping the start and 'Radio McLaren' were soon on to their drivers to tell them the situation. Senna was leading Berger in a solid 1-2, with Nannini hanging on and leading the rest in the order Alesi, Piquet, Boutsen, Prost, Mansell, Patrese and Warwick with Capelli and Suzuki bringing up the rear. At the end of lap 10 Berger's McLaren was heading into the pits for a change on to 'dry' tyres and he was followed by Patrese on the same lap. Pit stops then came thick and fast as everyone changed on to 'slicks' and for three glorious laps Nannini enjoyed leading the race for Benetton and Ford (Cosworth), but then it was his turn to stop. By lap 17 everyone had been in and out and the race order on the track was Berger (McLaren), Senna (McLaren), Prost (Ferrari), Boutsen (Williams), Piquet (Benetton), Mansell (Ferrari) and Warwick (Lotus); missing from their rightful places were Nannini and Alesi, both having mis-

haps and delays unrelated to their tyre stops. The Benetton driver was halfway round his first lap on dry tyres when he hit a large animal (a beaver?) that had come up out of the St Lawrence river to see what all the noise was about, or maybe it was on his way back into the river for a bit of peace and quiet; either way it got neither and the Benetton got a deflated tyre and a bent nose and by the time Nannini got round to the pit for attention he was down to 21st position and somewhat excited, having lost a certain 2nd place. Alesi had brought his Tyrrell 019 in for a new nose as the 'droopy' front fins were pointing in the wrong direction, the little French charger having charged into the back of the Dallara of de Cesaris, so he rejoined in 11th place.

For anyone not paying attention or relying on television coverage to follow the race the situation could have become confused, for Berger was pressing on really hard, pulling away from Senna, to try and overcome his one minute handicap and the automatic Olivetti/Longines timing programme was ignoring the penalty, printing out the order on the track, not the corrected order. After the tyre stops and knowing the situation, Senna had let Berger go by, knowing that all he had to do was to keep his team-mate in sight and not let him get more than 60 seconds ahead. Berger had a clear run ahead of him and made the most of it, gradually passing the slower cars on time, and creeping up on those behind Senna, though none of them could actually see him. As Senna had nearly half a minute lead over the rest he had the whole situation well in hand, but behind him all manner of dramas were being enacted.

Prost was not happy with the feel of the brakes on his Ferrari and Boutsen was trying desperately to get by, while Piquet and Mansell were effectively in the Williams' shadow. As the Ferrari and Williams came up to lap Larini's Ligier Boutsen made a desperate move to dive down the inside of Prost under braking but he got on the slippery stuff, went sideways across the bows of the Ferrari and punted the innocent Larini's Ligier into the barriers. Prost avoided it all and Boutsen limped into retirement with the front of his car bent beyond repair.

Hardly had this happened than a rather angry Nannini chose to outbrake Nakajima's Tyrrell, got sideways, rode over some bumps which made the Benetton just airborne and it skimmed backwards across the gravel and grass totally out of control and thumped into the tyre wall at the end of the run-off area. Nannini scrambled out unhurt and five laps later Alesi did exactly the same thing in the same place, out-braking a slower car, and the Tyrrell followed an identical trajectory to the Benetton's and crashed backwards into it, finishing up on top of it, the rather chastened driver climbing out and being helped down to ground level.

Meanwhile the two McLarens were still way out in front on the track, with Berger

driving his brilliant best, moving steadily up through the field after his 1 minute penalty was taken into account. Senna was his normal self, leading the race at his own pace and had only the Ferrari/Benetton/Ferrari sandwich on the same lap as himself once he had lapped Warwick and Patrese, which he did on lap 34. Warwick felt no remorse over the situation, but Patrese was piqued, as his brakes were overheating and becoming erratic and he finally gave up the unequal struggle on lap 45. Berger was still ahead of Senna on the road, but his 1 minute penalty meant that he was on the same lap, but nearly a lap behind on time. More important was the fact that he was on the same lap as the Prost, Piquet, Mansell battle and only half a minute behind them, which spurred him on to even greater efforts, his pit keeping him abreast of the situation.

The battle for second place between Prost, Piquet and Mansell really enlivened the grey day, for although it was dry over the St Lawrence river rain was still falling over the centre of Montreal. Prost was still unhappy with the brakes on his Ferrari, or so he said after the race was over, and Mansell was just unhappy, but most people have stopped listening to his tales of woe for they never end.

Piquet on the other hand was really enjoying himself as he played the 'meat' in the Ferrari sandwich; this was 'vintage' Piquet, putting to rest all those who had

been saying he could no longer drive fast and aggressively. His out-braking manoeuvre at the major hairpin to snatch second place from Prost was brilliant on lap 49 and demoralized Prost, while a lap later Mansell did the same thing on his team-mate and Prost dropped from 2nd to 4th just like that.

In the closing stages Berger's time deficit to Prost began to get close to one minute, which meant the Frenchman's fourth place was in danger, even though he could not see Berger's McLaren, which made him get a hustle on, brake problems or no brakes problems. On lap 63, with seven to go, he made his fastest lap of the race in 1.23.078, on lap 67 he recorded 1.23.781 and on 69 he did 1.23.753 but it was to no avail and he could not fend off the unseen McLaren. The Austrian was going faster and faster all the time, with laps in the 1.22 bracket and his last lap of all was his fastest of all in the race, in a time of 1 min 22.077 secs to end 'the drive of the day'.

He was still half a lap ahead of Senna on the track, so naturally was given the chequered flag as he completed his 70 laps before anyone else, at which point Senna was leaving the far hairpin to start his last half a lap having led the race for all but three laps, when he relinquished the lead to Nannini during the tyre stops. Piquet, Mansell and Prost finished with six seconds covering them, but when Berger's

time was corrected by adding the 1 minute penalty he had beaten Prost by one second, even though the Ferrari driver had never seen him throughout the race! Confused? You are not alone.

So the final order was Senna (McLaren), Piquet (Benetton), Mansell (Ferrari), Berger (McLaren), Prost (Ferrari) all on the same lap. Warwick, Modena and Caffi were all two laps behind, Bernard, Capelli and Nakajima were three laps behind, followed by Suzuki and Grouillard. Three different makes of car in the first three places, three different engines, and two Brazilian drivers at the front with the lonely Brit on the winner's podium with them. Gerhard Berger was the unsung hero of the day for the sporting public, but not for the McLaren team or Honda, for his proper place should have been second to Senna and once again he had failed; heroics do not count for much in Woking and Tokyo. Piquet's fans, and there are still a lot of them, were cheering the swarthy Brazilian loudly and he was more than satisfied with his result, having really enjoyed himself all day.

A somewhat confusing race, but a good race nevertheless, and lots of lessons to be learned. As these words are being read the results of the next Grand Prix will be known, for even as this report is being written a vast armada of giant transporters are on their way to Mexico City for the next race, some 2000 miles away. DSJ



Gerhard Berger, victor on the road, ended up in fourth place after his jump start.

STARTING GRID



27 SENNA McLaren MP4/5B 1 min 20.399 secs	28 BERGER McLaren MP4/5B 1 min 21.465 secs
1 PROST Ferrari F1/90 1 min 20.826 secs	19 NANNINI Benetton B190 1 min 21.302 secs
20 PIQUET Benetton B190 1 min 21.568 secs	5 BOUTSEN Williams FW13B 1 min 21.599 secs
2 MANSELL Ferrari F1/90 1 min 21.641 secs	4 ALESI Tyrrell 019 1 min 21.748 secs
6 PATRESE Williams FW13B 1 min 22.018 secs	8 MODENA Brabham BT59 1 min 22.660 secs
11 WARWICK Lotus 102 1 min 22.673 secs	12 DONNELLY Lotus 102 1 min 22.703 secs
3 NAKAJIMA Tyrrell 019 1 min 23.605 secs	9 ALBORETO Arrows A11B 1 min 23.744 secs
14 GROUILLARD Osella FA1M 1 min 23.779 secs	23 MARTINI Minardi M190 1 min 23.795 secs
26 ALLIOT Ligier JS33B 1 min 23.899 secs	30 SUZUKI Lola L90 1 min 23.915 secs
21 PIRRO Dallara BMS 190 1 min 24.269 secs	25 LARINI Ligier JS33B 1 min 24.285 secs
35 FOITEK Onyx Monteverdi 1 min 24.397 secs	36 LEHTO Onyx Monteverdi 1 min 24.425 secs
29 BERNARD Lola L90 1 min 24.451 secs	16 CAPELLI Leyton House CG901A 1 min 24.554 secs
22 de CESARIS Dallara BMS 190 1 min 24.621 secs	10 CAFFI Arrows A11B 1 min 25.113 secs

LAP TIMES

No	Driver	Car	Tyres	Pre-qualifying	Friday Qualifying	Saturday Qualifying	Best Race Lap (on lap)
1	Alain Prost	Ferrari F1/90	G		1m 20.826s	1m 31.514s	1m 23.078s (63)
2	Nigel Mansell	Ferrari F1/90	G		1m 21.641s	1m 27.647s	1m 22.839s (63)
3	Satoru Nakajima	Tyrrell 019	P		1m 23.605s	no practice	1m 26.703s (51)
4	Jean Alesi	Tyrrell 019	P		1m 21.748s	no practice	1m 24.781s (19)
5	Thierry Boutsen	Williams FW13B	G		1m 21.599s	no time	1m 26.486s (19)
6	Riccardo Patrese	Williams FW13B	G		1m 22.018s	no time	1m 25.566s (26)
7	David Brabham	Brabham BT59	P		1m 26.771s	1m 36.453s	
8	Stefano Modena	Brabham BT59	P		1m 22.660s	1m 29.062s	1m 25.693s (63)
9	Michele Alboreto	Arrows A11B	G		1m 23.744s	no practice	1m 39.464s (10)
10	Alessandro Caffi	Arrows A11B	G		1m 25.113s	1m 39.209s	1m 24.770s (61)
11	Derek Warwick	Lotus 102	G		1m 22.673s	no practice	1m 24.948s (52)
12	Martin Donnelly	Lotus 102	G		1m 22.703s	1m 35.198s	1m 25.430s (49)
14	Olivier Grouillard	Osella FA1M	P		1m 28.589s	1m 30.872s	1m 28.589s
15	Mauricio Gugelmin	Leyton House CG901A	G		1m 25.712s	1m 45.435s	
16	Ivan Capelli	Leyton House CG901A	G		1m 24.554s	no time	1m 25.846s (61)
17	Gabriele Tarquini	AGS JH25	G	1m 29.855s			
18	Yannick Dalmas	AGS JH25	G	1m 30.460s			
19	Alessandro Nannini	Benetton B190	G		1m 21.302s	1m 30.575s	1m 25.545s (21)
20	Nelson Piquet	Benetton B190	G		1m 21.568s	1m 27.124s	1m 22.854s (58)
21	Emanuele Pirro	Dallara BMS 190	P		1m 24.269s	1m 38.775s	1m 40.699s (10)
22	Andrea de Cesaris	Dallara BMS 190	P		1m 24.621s	1m 36.629s	1m 26.158s (43)
23	Pierluigi Martini	Minardi M190	P		1m 23.795s	1m 40.047s	no time
24	Paolo Barilla	Minardi M190	P		1m 25.951s	1m 51.583s	
25	Nicola Larini	Ligier JS 33B	G		1m 24.285s	1m 30.091s	1m 34.545s (15)
26	Philippe Alliot	Ligier JS 33B	G		1m 23.899s	1m 31.797s	1m 27.373s (22)
27	Ayrton Senna	McLaren MP4/5B	G		1m 20.399s	1m 30.514s	1m 23.375s (63)
28	Gerhard Berger	McLaren MP4/5B	G		1m 20.465s	1m 33.240s	1m 22.077s (70)
29	Eric Bernard	Larrousse-Lola 90	G	1m 29.844s	1m 24.451s	1m 32.750s	1m 25.571s (50)
30	Aguri Suzuki	Larrousse-Lola 90	G	1m 29.372s	1m 23.915s	1m 32.777s	1m 24.678s (66)
31	Bertrand Gachot	Coloni-Subaru	G	1m 44.185s			
33	Roberto Moreno	EuroBrun 189B	P	1m 28.268s	1m 25.172s	1m 31.097s	
34	Claudio Langes	EuroBrun 189B	P	1m 47.118s			
35	Gregor Foitek	Onyx Monteverdi	G		1m 24.397s	1m 42.487s	1m 26.177s (46)
36	JJ Lehto	Onyx Monteverdi	G		1m 24.425s	1m 40.607s	1m 29.032s (25)
39	Bruno Giacomelli	Life RE	G	1m 50.253s			

RESULTS

Canadian Grand Prix, Montreal, June 10
70 laps of 4.390 km circuit (307.300 km; 190.947 miles)

Pos.	Driver	Nat.	Car/Engine	Time
1st	Ayrton Senna	(BRA)	McLaren MP4/5B-Honda V10	1hr 42m 56.400s
2nd	Nelson Piquet	(BRA)	Benetton B190-Cosworth V8 EXP	1hr 43m 06.897s
3rd	Nigel Mansell	(GB)	Ferrari F1/90-Ferrari V12	1hr 43m 09.785s
4th	Gerhard Berger	(AUT)	McLaren MP4/5B-Honda V10	1hr 43m 11.254s
5th	Alain Prost	(F)	Ferrari F1/90-Ferrari V12	1hr 43m 12.220s
6th	Derek Warwick	(GB)	Lotus 102-Lamborghini V12	2 laps behind
7th	Stefano Modena	(I)	Brabham BT59-Judd EV8	2 laps behind
8th	Alessandro Caffi	(I)	Arrows A11B-Cosworth V8 DFR	2 laps behind
9th	Eric Bernard	(F)	Lola L90-Lamborghini V12	3 laps behind
10th	Ivan Capelli	(I)	Leyton House CG901A-Judd EV8	3 laps behind
11th	Satoru Nakajima	(J)	Tyrrell 019-Cosworth V8 DFR	3 laps behind
12th	Aguri Suzuki	(J)	Lola L90-Lamborghini V12	4 laps behind
13th	Olivier Grouillard	(F)	Osella FA1M-Cosworth V8 DFR	5 laps behind
14th	Martin Donnelly	(GB)	Lotus 102-Lamborghini V12	retired on lap 58
15th	Gregor Foitek	(CH)	Onyx-Monteverdi-Cosworth V8 DFR	retired on lap 54
16th	Andrea de Cesaris	(I)	Dallara BMS 190-Cosworth V8 DFR	retired on lap 51
17th	JJ Lehto	(FIN)	Onyx-Monteverdi-Cosworth V8 DFR	retired on lap 47
18th	Riccardo Patrese	(I)	Williams FW13B-Renault V10	retired on lap 45
19th	Philippe Alliot	(F)	Ligier JS33B-Cosworth V8 DFR	retired on lap 35
20th	Jean Alesi	(F)	Tyrrell 019-Cosworth V8 DFR	retired on lap 27
21st	Alessandro Nannini	(I)	Benetton B190-Cosworth V8 EXP	retired on lap 22
22nd	Thierry Boutsen	(B)	Williams FW13B-Renault V10	retired on lap 20
23rd	Nicola Larini	(I)	Ligier JS33B-Cosworth V8 DFR	retired on lap 19
24th	Emanuele Pirro	(I)	Dallara BMS 190-Cosworth V8 DFR	retired on lap 12
25th	Michele Alboreto	(I)	Arrows A11B-Cosworth V8 DFR	retired on lap 12
26th	Pierluigi Martini	(I)	Minardi M190-Cosworth V8 DFR	retired on lap 1

N.B. G. Berger penalised 1 min for jumping the start

Fastest Lap: Gerhard Berger (McLaren MP4/5B) 1 min 22.077 secs on lap 70; 192.551 kph (119.645 mph)

Winner's Average Speed: 117.114 kph (111.296 mph). Conditions: Wet & Dry.

DNQ	Roberto Moreno	(BRA)	EuroBrun ER189B-Judd V8	1m 25.172s
DNQ	Mauricio Gugelmin	(BRA)	Leyton House CG901A-Judd V8	1m 25.712s
DNQ	Paola Barilla	(I)	Minardi M190-Cosworth V8 DFR	1m 25.951s
DNQ	David Brabham	(AUS)	Brabham BT59-Judd V8	1m 26.771s
DNPQ	Gabriele Tarquini	(I)	AGS JH25-Cosworth V8 DFR	1m 29.855s
DNPQ	Yannick Dalmas	(F)	AGS JH25-Cosworth V8 DFR	1m 30.460s
DNPQ	Bertrand Gachot	(B)	Coloni-Subaru Flat 12	1m 44.185s
DNPQ	Claudio Langes	(I)	EuroBrun ER189B-Judd V8	1m 47.118s
DNPQ	Bruno Giacomelli	(I)	Life 12 Cylinder	1m 50.253s

1990 WORLD CHAMPIONSHIP

DRIVERS	CONSTRUCTORS	
Ayrton Senna	31 McLaren-Honda	50
Gerhard Berger	19 Ferrari	21
Alain Prost	14 Williams-Renault	18
Jean Alesi	13 Benetton-Cosworth	16
Nelson Piquet	12 Tyrrell-Cosworth	14
Riccardo Patrese	9 Brabham-Judd	2
Thierry Boutsen	9 Arrows-DFR	2
Nigel Mansell	7 Larrousse-	
Alessandro Nannini	4 Lamborghini	1
Stefano Modena	2 Lotus-Lamborghini	1
Alessandro Caffi	2	
Satoru Nakajima	1	
Eric Bernard	1	
Derek Warwick	1	



If it leaks, raise the roof.

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Golf Convertible





Right from the start the Mercedes stormed off into the lead it was only to relinquish when the engine blew allowing the Brundle/Ferté Jaguar through to win.

Confidence Restored

It was like a dream come true for the entire Silk Cut Jaguar team as the two XJR-11s swept to victory at Silverstone on May 20th. It was 19 months since the last success, at Fuji in October 1988, and the first with the new turbocharged cars that were so troublesome in their first year. Martin Brundle and Alain Ferté took the flag a lap ahead of Jan Lammers and Andy Wallace, and so maintained Jaguar's perfect record of Group C finishes at Silverstone: four appearances, four victories.

What, though, of the mighty Mercedes team? A year after their last defeat at Dijon, almost to the day, the Schlessler/Baldi C11 retired from the lead with flames pouring from the exhaust pipes, the result of a camshaft breakage. Mass and Michael Schumacher, the 21-year old 'apprentice' didn't even start, victims of the FISA rule forbidding any work being carried out on the car outside the pits area.

Towards the end of the Saturday morning practice session Schumacher coasted past the pits with the V8 engine idling and pulled over where the pits wall ends, parking in the exit lane near Copse. Mechanics accompanied by team manager Max Welti ran to the Mercedes and found that the gear lever had been pulled clear of the composite chassis sill. A gear was found

and Schumacher set off again to complete the 'in' lap, but shortly afterwards the stewards disqualified the C11. Going further, they disqualified Schumacher personally for failing to fasten his seat belts.

Welti and Jochen Neerpasch made a strong appeal but the stewards, led by Alain Bertaut, were unyielding. Number 2 was taken off the computer leaving Jean-Louis Schlesler and Mauro Baldi to keep the star shiny, a task which didn't daunt them. The decision did, at any rate, deprive Mass of the risk of setting a hat-trick of first-lap incidents!

The Jaguar team went to Silverstone with high hopes, the XJR-11 having been revised by Ross Brawn with new uprights, a wider track and higher downforce bodywork. The modifications cured the brake deficiency and should have put the team onto level terms with the Mercedes. Sauber, though, had improved the Swiss chassis in the light of Monza experience and found another second per lap, probably, maintaining the advantage.

Brundle and Lammers went into the third round believing that pole position would be established at 1 min 13 sec, and near enough that's what they did. Unfortunately for them Schlessler and Mass were in the low twelves, the Frenchman lopping

all of three seconds off his own qualifying record set in May 1988. Neither was particularly happy, having been held up by traffic, and Schlessler was sure he could get down to 1 min 11.5 sec — the magic 150mph lap — if he got a clear run on Saturday afternoon. Brundle, though, said that 1 min 12.5 sec would be "supersonic" for a Jaguar. This now becomes academic as the Group C cars won't race again at Silverstone in its present form, more is the pity. The order on the monitor screens, 1-2-3-4, was familiar, but the removal of the Mass/Schumacher Mercedes promoted Brundle to the front row and increased Jaguar's chances of winning by about 50 per cent!

Mark Blundell was 'best of the rest' in his Nissan, fourth on the grid and stealing a place from Jonathan Palmer (Joest Racing Porsche) in the last minutes of Saturday's session. Bob Wollek was troubled by understeer, "just like Monza", and languished in eighth place, but even so the factory assisted 3.2-litre Porsches were a class above all the others.

Bernd Schneider, with Steven Andskar in the Kremer Racing Porsche 962C-K5, was the top runner in Porsche's 3-litre division, tenth on the grid at 1 min 16.529 sec. Such was the mechanical carnage at



First victory for the turbocharged Jaguar XJR-11 and the first for the team since October, 1988.

Monza three weeks before that there weren't enough 3-litre water-cooled engines to go around so ageing 2.8-litre air/water engines, short of 50 bhp, were allocated to the Los/Thuner Cougar, one of Tim Lee-Davey's Porsches and to the Almeras brothers who failed to qualify.

Geoff Lees, with John Watson in the yellow Taka Q sponsored Tom's Toyota 90C-V, did a fine job to claim sixth place on the grid at 1 min 14.960 sec, considering that the boost control is strictly out of bounds for the Norfolk based team. Johnny Dumfries, who needed to impress his Japanese employers, was joined by Hitoshi Ogawa for the weekend, and it was the earl's luck to be hit by a wayward engine cover which flew from Lammer's Jaguar after a minor collision on Friday.

The Spice Engineering team based at Silverstone qualified in 12th and 13th places but would come up strongly in the race, in which fuel economy was surprisingly important. Heavy braking is the enemy of economy and there's not much of that at the Northamptonshire track, but the Mercedes team is so fuel efficient, and has so stretched the opposition, that rivals have the choice of waving goodbye to the Silver Arrows or trying to keep them in sight, while in the red on the economy gauge. It's not an easy choice for ambitious young racing drivers, all of whom

look forward to next year's fuel-free formula.

If Peter Sauber hadn't recalled the defeat at Dijon 364 days before, no-one quite liked to mention it at the team dinner on Friday. There were no memories of it as Schlessler forged ahead from the start, challenged by Brundle at Copse, but as soon as the power and torque of the 5-litre V8 could be put to the road the silver car began to pull away.

Schlessler sliced 1.6 sec off the Group C lap record on his first flying lap, setting the new mark at 1 min 16.649 sec (139.5mph) and opening his advantage to 2.4 sec, but he then settled down to a nice rhythm in the 1-18 to 1-19 bracket. He kept off the kerbs and rumble strips, earlier and more gently than anyone else and seemed to have all the time in the world, even while taking 15 seconds off Brundle in the first 20 laps.

Analysis shows that nobody else, not even Brundle, broke the two-year old record of 1 min 18.24 sec, but in the new C11 Schlessler did so five times in the first half-hour. An interesting thought that emerges from the results is that the winning Jaguar's average speed for 480 kms was almost identical to that of the Brundle/Cheever XJR-9 (V12) in 1988, over 1000 kms. Accepting that the XJR-11 ran 60 laps without too much pressure,

enabling Ferté and Brundle to go easy on the throttle, the opposition really did have a major consumption problem throughout.

Jan Lammers was in trouble almost from the start with heavy fuel consumption and more understeer than he expected. The team had experimented with a different Motronic chip on Sunday morning, but six laps into the race the Dutchman realised that he'd received a gift-wrapped problem. First he let the two Nissans go by, then the two hard-charging Spices, and Lammers wasn't far off being lapped when he handed over to Andy Wallace.

A new chip, identical to the one in Brundle's car, was installed before Wallace joined the race. Lammers got too involved in this and had his right foot trapped when the car came down off its air jacks, bruising his toes.

Until Silverstone the Sauber Mercedes team had a perfect record of engine reliability in World Championship racing, so one failure can hardly be construed as a criticism. Flames jetted from both exhausts as Baldi approached Stowe, and Ferté went through into the lead even as the C11 came to a stop on the grass. The Italian played the dashboard like a Wurlitzer for several minutes under radio instructions from the pits, but baled out when the battery went flat. A camshaft drive breakage guaranteed some major derangements inside the V8, and up in the pits the collective sigh of relief from rival teams was enough to warp the flagpoles. Now the race would run at Ferté's speed, not Baldi's, a bonus of two seconds a lap. The Frenchman was not a pushover, though, and his lap times were little different from Brundle's. Both he and Wallace felt overshadowed in the races at Suzuka and Monza, and played major parts at Silverstone.

Ferté steadily increased his lead over Brancatelli and Acheson, keeping their Nissans in station in second and third places, extending a 20 second advantage at 40 laps to 47 seconds at 60 laps. Now Fermin Velez and Wayne Taylor were fourth and fifth in the works Spices with no consumption worries at all, and Wallace was holding sixth place so easily that he



The works Spices had mixed success. The Harvey/Taylor car (above left) retired but team-mates Giacomelli/Velez (above right) finished third.

stayed in the car all the way to the finish.

The second fuel stops were more than usually interesting. Brancatelli moved into the lead for a single lap when Ferté's Jaguar refuelled, then Acheson led for six laps in the other Nissan. John Watson, passed over by most teams even though he's younger than some at 44, made his point with a very strong and consistent drive in the Taka Q Toyota, holding seventh place when he stopped for fuel. The Tom's plan went wrong when the fuel system vapour locked, and Lees did so much cranking that the battery went flat. It was a full six minutes before the yellow Toyota rejoined the race, any chance of a points-scoring place having evaporated. While all this was going on the Ogawa/Dumfries Toyota was refuelled with too much enthusiasm and four litres over the allocation went into the tank, earning a speedy black flag disqualification.

Tim Harvey's Cosworth engine blew asunder at 70 laps, then Jonathan Palmer went slowly to the Joest pit with a broken driveshaft, forfeiting a likely points placing. Just ahead at the time was the Bob Wollek/Frank Jelinski Porsche which was classified fourth.

Ten laps, and 15 minutes from the flag, the two Nissans were astern of Brundle's Jaguar, Bailey 1 min 22 sec behind and Blundell just lapped. Wallace and Giacomelli occupied fourth and fifth positions, then Wollek led a convoy of nine Porsches which were clearly outclassed once again.

Then Bailey's Nissan swerved onto the grass while braking from 200 mph for Stowe and staggered through the corner with smoke pouring from the left wheel arch. It was tyre smoke, caused by a breakage and collapse of the rear suspension, something that has led to a deep investigation in the run-up to Le Mans. Bailey was out, and on the final run down to Stowe Blundell's tank ran dry. The Nissan coasted to Club with a dead engine, and was driven all the way to the line on the starter motor. It was a brave try, but the final lap took too long, 6½ minutes, and the car was disqualified.

Jaguar's victory was very popular indeed at Silverstone, and deservedly so. The scale of the team's achievement comes into perspective when we consider that the whole turbo programme was started two years ago, and Jan Lammers raced the prototype for the first time in IMSA trim at Lime Rock on Whit Monday last year. Just inside 12 months (or 10, if you start counting from the debut of the XJR-11 at Brands Hatch last July) Tom Walkinshaw Racing has developed a worthy race winner which blew the doors off the Porsches, Nissans and Toyotas, to use a vernacular, and they have been working on turbo-engined cars for a good many seasons.

Walkinshaw doesn't delude himself that it will be easy to beat the Mercedes on straight terms, but the team's pride and confidence has been fully restored. MLC

WORLD SPORTS-PROTOTYPE CHAMPIONSHIP Round 3, Silverstone 480 km, May 20

QUALIFYING TIMES

		1st Session	2nd Session
Schlesser/Baldi	Mercedes	1m 12.073s	1m 12.475s
Brundle/Ferté	Jaguar	1m 13.008s	1m 17.173s
Lammers/Wallace	Jaguar	1m 13.827s	1m 13.534s
Blundell/Brancatelli	Nissan	1m 15.742s	1m 14.682s
Palmer/Needell	Porsche	1m 14.809s	1m 15.172s
Lees/Watson	Toyota	1m 15.663s	1m 14.960s
Bailey/Acheson	Nissan	1m 15.313s	1m 15.856s
Wollek/Jelinski	Porsche	1m 15.808s	1m 15.350s
Ogawa/Dumfries	Toyota	1m 15.556s	1m 16.499s
Schneider/Andskar	Porsche	1m 16.599s	1m 16.529s
Larrauri/Huysman	Porsche	1m 17.004s	1m 17.713s
Taylor/Harvey	Spice	1m 17.013s	1m 17.537s
Velez/Giacomelli	Spice	1m 17.140s	1m 18.009s
Grohs/Oppermann	Porsche	1m 19.215s	1m 18.243s
Trollé/Fabre	Cougar	1m 19.101s	1m 18.451s
Winter/Dickens	Porsche	1m 21.156s	1m 18.462s
Lassig/Attenbach	Porsche	1m 19.368s	1m 18.796s
Pareja/Brun	Porsche	1m 19.544s	1m 18.829s
Sigala/Santal	Porsche	1m 19.887s	1m 18.961s
Stott/Toledano	Porsche	1m 19.342s	1m 22.503s
Weaver/Reuter	Porsche	1m 19.718s	1m 19.464s
Adams/Piper	Spice	1m 19.608s	1m 19.859s
Konrad/Toivonen	Porsche	1m 20.011s	1m 20.459s
Bell/Pescarolo	Porsche	1m 21.222s	1m 20.260s
Euser/Hytten	Spice	1m 20.289s	—
Elgh/Reid	Porsche	1m 20.395s	1m 20.912s
"Stingbrace"/Randaccio	Spice	1m 20.263s	1m 21.677s
Lavaggi/Lee-Davey	Porsche	2m 49.048s	1m 21.701s
Los/Thuner	Cougar	1m 22.147s	1m 21.739s
Nurminen/de Henning	Spice	1m 22.243s	1m 23.059s
Salamin/Taverna	Porsche	1m 24.242s	1m 23.113s
Wood/Barberio	Spice	1m 25.819s	1m 26.032s
Migault/Morin	ALD	1m 27.983s	1m 27.006s

DNQ

Almeras/Almeras	Porsche	1m 29.085s	1m 27.684s
Brand	Alba	1m 29.846s	58m 58.558s

DSQ

Mass/Schumacher	Mercedes	1m 12.453s	—
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RESULTS

1st	M. Brundle/A. Ferté	3.5t Jaguar XJR-11	2h 19m 39.467s
2nd	J. Lammers/A. Wallace	3.5t Jaguar XJR-11	2h 20m 00.383s
3rd	F. Velez/B. Giacomelli	3.5 Spice-Cosworth SE90C	2h 20m 51.90s
4th	B. Wollek/F. Jelinski	3.2t Porsche 962C	99 laps
5th	B. Schneider/S. Andskar	3.0t Porsche 962C	98 laps
6th	O. Larrauri/H. Huysman	3.0t Porsche 962C	97 laps
7th	J. Pareja/W. Brun	3.0t Porsche 962C	97 laps
8th	M. Sigala/B. Santal	3.0t Porsche 962C	96 laps
9th	E. Elgh/A. Reid	3.0t Porsche 962C	96 laps
10th	H. Grohs/J. Oppermann	3.0t Porsche 962C	96 laps
11th	J. Weaver/M. Reuter	3.0t Porsche 962C	96 laps
12th	G. Lees/J. Watson	3.6t Toyota 90CV	95 laps
13th	G. Lavaggi/T. Lee-Davey	3.0t Porsche 962C	95 laps
14th	F. Konrad/H. Toivonen	3.0t Porsche 962C	93 laps
15th	P. Fabre/M. Trollé	3.0t Cougar-Porsche C245	93 laps
16th	C. Los/B. Thuner	2.8t Cougar-Porsche C245	92 laps
17th	N. Adams/R. Piper	3.5 Spice-Cosworth SE89C	90 laps
18th	J. Lassig/O. Altenbach	3.0t Porsche 962C	88 laps
19th	"Stingbrace"/R. Randaccio	3.5 Spice-Cosworth SE89C	87 laps
20th	F. Migault/D. Morin	3.5 ALD-Cosworth C289	78 laps
NC	M. Blundell/G. Brancatelli	3.5t Nissan R90C	Out of fuel
NC	P. Stott/A. Toledano	2.8t Porsche 962C	Reserve pump
DNF	J. Bailey/K. Acheson	3.5t Nissan R90C	Rear suspension
DNF	H. Ogawa/J. Dumfries	3.6t Toyota 89CV	Disqualified
DNF	W. Taylor/T. Harvey	3.5 Spice-Cosworth SE90C	Engine
DNF	J. Palmer/T. Needell	3.2t Porsche 962C	Driveshaft
DNF	J-L Schlesser/M. Baldi	5.0t Mercedes C11	Engine
DNF	J. Nurminen/P. de Henning	3.5 Spice-Cosworth SE90C	Rotor arm
DNF	C. Euser/M. Hytten	3.5 Spice-Cosworth SE89C	Oil leak
DNF	D. Wood/P. Barberio	3.5 Spice-Cosworth SE87C	Electrics
DNF	S. Dickens/J. Winter	3.0t Porsche 962C	Gravel trap
DNF	H. Pescarolo/D. Bell	3.0t Porsche 962C	Rear suspension
DNS	A. Salamin/G. Taverna	3.0t Porsche 962C	Gearbox

Fastest lap: Schlesser 1m 16.649s; 224.504 kph (139.500 mph)

Simple Questions

FISA wields a hefty rule-book, accumulated throughout the 20th century by the look of it, and we could almost hear the rustle of pages being turned in the steward's office when Michael Schumacher's Mercedes C11 rolled to a stop near Copse, while qualifying for the BRDC's Silverstone 300-mile race.

At 21 years of age, driving in a World Championship race for the first time, he could hardly be expected to know the rule book intimately. In any case, he was passive when the Sauber team's mechanics found him a gear so that he could go round the complete lap, unfortunately without fastening his seat belts. A greater 'crime' if we must regard it as such, was committed by the team in working on the car at the side of the track. Only the driver may do so, with tools or parts carried in the car.

The steward's, led by Frenchman Alain Bertaut, had no choice but to exclude the Mercedes number 2, and Schumacher personally. The rule book says that exclusion shall follow these infringements, and there was no alternative. Nor was there any alternative when Chamberlain Engineering's Spice was excluded from the Suzuka race for being fuelled at the side of the track during untimed practice.

We question whether the rules are sound. Can it be right to exclude a car, the whole team if there's only one entry, from the entire meeting for such infringements? People aren't hung or transported these days for stealing sheep, and the act of disqualification seems extremely harsh for technical indiscretions in 1990.

Who is punished? The team, of course. The drivers, even if the mistake was none of their doing. The sponsors, who might have legally binding contracts on the teams to appear. The public, people who pay a lot of money for the pleasure of seeing the teams performing at the highest level!

Let the punishment fit the crime. We have said before (the last time, when M. Bertaut fined Eddie Cheever heavily for failing to sign-on at Jerez in 1986) that the rule book has become too big, too onerous and too binding on the stewards. It needs to be expurgated, to have all the 'dead' rules taken out and 'live' ones examined.

Any sensible person might believe that exclusion from a meeting is a fitting punishment for anyone caught cheating. If you run an oversize engine in order to gain unfair advantage, you deserve to be disqualified for a whole year. If you finish a race with a car that's too light, you deserve to be disqualified from the result. (as is the case). If you gain unfair advantage for *any* reason, the stewards need the powers to reprimand, fine or exclude.

Working on a car at the side of the track does not gain the team an unfair advantage. Nor does refuelling a car at the trackside during practice, nor does the

failure to do up seat belts. New punishment should be devised.

Teams work very hard to accumulate championship points, and prize these above money. No fine, however large, could hurt Mercedes but the docking of three World Championship points might have a very salutary effect, and would harm nobody's interests but their own. Should the team or driver not have any championship points, the first three to be earned might be forfeited.

Monetary fines might have some place in the scale as well, but many people entertain a feeling of repugnance as the likes of Ayrton Senna are fined umpteen thousand dollars. Would a leading F1 driver notice the difference to his bank balance? And where does the money go anyway? Here again, the forfeiture of points would be a very stiff punishment indeed, accepting that a stiff punishment is what's needed.

In America they do things a little differently. "Don't make a rule unless it's

"We question whether the rules are sound. Can it be right to exclude a car . . . from the entire meeting for such infringements?"

needed, and then not unless it can be enforced" is the general guideline. Stop-and-go penalties seem to be entirely appropriate for misdemeanours on the circuits, passing under yellow flags and so on, and indeed are applied when Group C cars are refuelled quicker than the statutory 60 litres per minute. They save all the arguments, protests and counter-protests because they are arbitrary, at the discretion of the stewards.

The steward may not always be right, but he's always the steward!

Until Mauro Baldi's Mercedes rolled to a stop at Stowe Corner on May 20, three years had elapsed since the last engine-related retirement for Peter Sauber's team in World Championship racing. It is a significant achievement that brings great credit to the team, and of course to Dr. Hermann Hiereth and his engineers at Untertürkheim.

The sheer reliability of the C8, C9 and C11 cars has been extremely impressive since the programme began in 1986. The first victory for the 5-litre Sauber Mercedes C8 came at the Nürburgring in August 1986, and the last engine failure occurred at Le Mans in June 1987.

Rival teams have cheered up sometimes on hearing that the transmissions might not be up to the job (the first events of 1988 put that rumour to rest) or that the latest Bosch Motronic 1.8 management system was hard to tame (the recent result

at Monza put that one away), but at Monza the Sauber team achieved its fifteenth victory, all but one established since March 1988.

No manufacturer can afford to be philanthropic where high budget motor racing is concerned. Mercedes goes racing to improve the product and enhance the reputation of its engineering. Results in the past three seasons speak for themselves.

Is progress really being made in Group C? We journalists have rather a lot of data and information made available these days at WS-PC races . . . so much, in fact, that at Monza I stood by the yellowed office behind the petrol pumps, right by the window where I once waited for results. As darkness fell, the window would open, a hand appear and a *results sheet* would be issued. Yes, Pedro's win is confirmed! Nowadays racks in air conditioned press rooms are filled with provisional, then official results within an hour of the race ending, and we take the accuracy of the Longines-Olivetti computer service for granted.

What a shock to realise, at Silverstone, that the official sheets were giving grossly inaccurate miles-per-hour information! On one sheet Schlesser's pole-winning speed was given at 92.180 mph, rather less than the true 148.357 mph. On others, Schlesser's new lap record was given as 131.039 mph. It should have been and was 139.50 mph, and since that will stand for all time as the Group C record we hope that Silverstone's history won't short-change him.

Still on the subject of progress, the winning Jaguar's average speed over 480 kms was 128.88 mph, and it's interesting to look back and see that in May 1988 Cheever and Brundle won the race, over 1000 kms, in a Jaguar XJR-9-V12 at 128.63 mph. So this year the turbo model went 440 yards further in each hour, never once breaking the previous Group C lap record.

The Silk Cup team would say that Ferté and Brundle weren't under much pressure once Baldi's Mercedes retired with 60% of the race still to run, and I would agree. Tabulated lap times show that they maintained their speed in the 1-20 to 1-21 bracket until long after the Mercedes had gone, and eased off very slightly only in the last three laps. In other words, they found it easier to maintain a speed similar to that of two years ago, and finished with more fuel in the tank.

Nice for Jaguar. But in that case why were Nissan, Toyota and Porsche on the rack where fuel consumption is concerned? Had these same cars been competing in the race two years ago with today's chassis, tyres, drivers, engine management systems and telemetry, they wouldn't have done any better against the V12 Jaguars than they did against the modern XJR-11.

I'm sure there is a simple answer, but so far no engineer I've talked to has provided it.

MLC



Karl Wendlinger and Jochen Mass put on a splendid performance to win the race in treacherous conditions while their team-mates in the number 1 car were delayed by a dud ignition coil.

Karl Wendlinger completed his initial apprenticeship to Mercedes' WS-PC team by sharing the laurels at Spa with tutor Jochen Mass. At the age of 21, the Austrian is the youngest winner of a World Championship race since Ricardo Rodriguez drove a Ferrari to victory in the Targa Florio in 1962, and Wendlinger certainly showed a fine blend of skill and maturity as he dealt with a distant challenge from the Jan Lammers/Andy Wallace Jaguar.

It was a special victory for Mass, now 43, being his 18th since the Group C formula started in 1982, and making up for his exclusion from Silverstone. No-one, not even mentor Jochen Neerpasch, could have imagined that Wendlinger would join Mass at the head of the World Championship table after four rounds. Even so, he'll have to make way for Heinz-Harald Frentzen and Michael Schumacher in future races, increasing the probability that Jean-Louis Schlesser and Mauro Baldi will forge ahead to a shared title in October. Baldi was the hot favourite to win the Belgian race. He was on pole position for the third year running, cracking the two-minute mark for the first time in a sports car, fended off a cursory challenge from Mass, and would have won for the third time but for a dud ignition coil which set the C11 back nearly three laps. The Italian settled for his third successive fastest lap, but only eighth position in the final results . . . and 'nul points' as they say in some circles.

Karl learns his lesson

Martin Brundle felt he'd been robbed when his Silk Cut Jaguar's wiring loom caught fire as he sped up the hill to Les Combes for the 47th time, well in the lead. "I could have led the World Championship this afternoon," said the aggrieved Englishman, who'd geared himself up for a solo drive after Alain Ferté reported sick on the morning of the race. Brundle had stopped at the right time for slicks on a drying track, pulling well clear of Mass' Mercedes, and had every right to feel robbed by the electrical problem . . . all the same, the early tyre change would have forced Brundle to make an extra refuelling stop, and the result might just have tipped towards Mercedes anyway.

Even within a space of nine months it was nice to get back to Spa-Francorchamps, one of the world's finest motor racing circuits containing one of the most exciting complexes, Eau Rouge. The World Championship teams returned to the downhill pits, in full view of the grandstand and with a grandstand view of Eau Rouge, and the sun shone on Friday. But were the teams happy? They were not!

Red uniformed security guards seemed to outnumber the personnel, and lacking a secure 'wire cage', the sloping paddock was hermetically sealed to keep out the public, and not a few important guests

such as sponsors. One important member of the FISA secretariat, even, was excluded from her office in the control tower, having inadvertently left her pass on a desk. The two highways were sealed off for three days, rather than the duration of the speed sessions, and one wondered who was paying for all this . . . not the spectators, presumably, since they too were outnumbered by the goons. Yes, another bone of contention, an underwhelming lack of promotion, although Formula 1 prices were being charged.

One driver queued for a packet of *frites* and found himself with a beer in his hand, since all the paddock franchises had to cover up their names and advertisements, and generally the atmosphere was thoroughly spoiled by FISA's greedy, dictatorial grasp of the WS-PC series. One major sponsor let it be known that his colours wouldn't grace the scene in 1991, and it seemed that a prison camp might have had happier days. But still, the racing was good.

Mauro Baldi, whose turn it was to qualify the number 1 Mercedes, wasted no time in getting down through the two-minute mark on Friday afternoon, finding a perfectly clear lap in recording 1 min 59.35 sec (130.07 mph). The Italian was happy enough with his performance but

felt, as he did at Monza, that the car might have performed better since the fuel allocation was at the low end of the specification. The sophisticated knock sensors reduce the boost and retard the ignition to allow for lower fuel qualities, and the engine's power is reduced accordingly.

Not until Saturday afternoon did Jochen Mass offer a real challenge at 2 min 00.685 sec, nearly two seconds quicker than Baldi's previous qualifying record. In the Silk Cut Jaguar camp Brundle and Lammers settled for 'mid-twos', and on Saturday afternoon Mark Blundell and Johnny Dumfries put their Japanese cars onto the third row, Blundell with the Nissan at 2 min 03.079 sec and Dumfries at 2 min 04.010 sec. It was nice to see Dumfries having a thoroughly creditable weekend in the Toyota after his recent troubles, although once again the Tom's entry was nowhere near right in the fuel consumption department and plummeted to 18th position with a long, tactical pit stop in the last few minutes. At Francorchamps it was Aguri Suzuki's turn to smash a Toyota ("thank goodness it was one of their drivers" breathed one member of the team), hitting the inside kerb at Le Raidillon and powering backwards into the armco on the right. The gearbox was torn from the engine but, remarkably, the carbon chassis seemed to be undamaged. Just as well, since it was Toyota's spare for Le Mans. There was no question of Suzuki and Geoff Lees starting the race, Suzuki nursing a sore neck and the 90C-V lacking a gearbox.

The works-assisted, 3.2-litre Joest Porsches were pushed back to the fourth row of the grid, Bob Wollek easing out Jonathan Palmer when the doctor's rear wing was found by the scrutineers to be 120mm too high, but the 3-litre 962Cs were really having to struggle a bit. The best of them was Richard Lloyd's GTi chassis Porsche in the hands of Steven Andskar, who did the time of 2 min 06.192 sec, and Manuel Reuter. Another Silverstone entry, the Spice-Cosworth of Fermin Velez and Tim Harvey, qualified just ahead but started behind, the team having practised two cars and got the organisers into a muddle.

Not to plan

The warm-up was an awful warning to all of Mercedes' rivals. All four drivers, Wendlinger included, had run comfortably in the 2-04 to 2-05 bracket during the non-qualifying sessions, on race compound tyres of course, and on Sunday morning both cars worked easily down to 2.05 while Brundle, third quickest, headed Jonathan Palmer and Julian Bailey in the 'eights'.

"It won't be like that in the race," promised Max Welti, Sauber's team manager, but he probably believes in Father Christmas as well. Despite a worsening drizzle which finally decided all the competitors to start on rain tyres (all that



As the pack stream down the hill the two Mercedes pull away in a ball of spray.

Goodyear had as an option) or intermediates, Baldi and Mass seemed to be in a different class as they powered away in one big ball of spray.

"I had too much speed and too little vision" admitted Lammers, the man to be feared in starts at Spa. The Mercedes drivers had worked out their tactics beforehand, leaving the Dutchman no chance to aim his Jaguar at in the approach to Eau Rouge, but his own team-mate Brundle left plenty of space for an escapade which Lammers had all on his own (a minor 'off' during the warm-up lap had not diminished Lammers' exuberance in the least).

A dry line began to show straight away and Lammers was the first notable to stop for slicks, on lap six, having been passed by Brundle and received an oil windscreen for his trouble. Brundle stopped two laps later and then started a superb charge up the field, closing on the Mercedes at a mighty rate.

On the way Brundle gave former team-mate Dumfries a hefty nudge ("it was a bit rude I suppose, but I had to go for it"), then made nine seconds in a single lap to get onto Mass' tail. In two swift passes the Jaguar took the lead on lap 17, leaving the Mercedes drivers demanding space in the pit lane for slick Goodyears. They'd delayed their decision too long, and the error might have been critical if Brundle had kept going to the end.

Brundle was up and away, 94 seconds ahead of Wendlinger on the 47th lap when the XJR-11 slowed, and pulled up on the hard shoulder with black smoke billowing from the engine bay. The young Austrian felt the weight lifted from his shoulders since he was now in the lead, 16 seconds ahead of Kenny Acheson's Nissan, then Harvey in the Spice and Reuter in the RLR Porsche.

Brancatelli's Nissan went down the list when the cockpit filled up with smoke. "I thought it was from the engine" the Italian explained after veering into the pits without warning and overshooting his own garage. "I couldn't see where to stop". The fault was quickly traced to the windscreen heater, which was isolated, but the car went down to 10th in the final order.

Drizzle floated across the Ardennes circuit from time to time causing drivers and managers alike some anxious moments, but there were only two accidents leading to retirement, neither of them serious. Derek Bell, celebrating the 20th anniversary of his sports car debut (also at Spa, in the ENB Ferrari 512S) had a very untypical spin in the Joest Porsche, ending with minor damage at the rear, which was the hard way of learning how to drive on Michelin tyres.

Andy Wallace was badly affected by an oily windscreen, just as Lammers had been earlier, and in the final stint the Dutchman realised that his legs were being bathed in petrol from a leaky tank. "I had to slow down. We decided to finish conservatively because we didn't know how much fuel we'd lost". Second place was a lot better than nothing, and keeps the Silk Cut team in contention for the World Championship.

Five makes were represented in the top five, a sign of the times. Mercedes, Jaguar and Nissan went the full 480 kilometres, the Spice and the Larrauri/Huysman Brun Motorsport Porsche managed 69 laps, along with the RLR Porsche and Wollek's Joest Porsche. Reuter had been running Lloyd's pink Porsche in fourth place, but yielded to Velez and Larrauri in the last two laps. It seemed to be a satisfactory result for an interesting race. MLC

Britain's soccer fans may not have created a good impression in Sardinia, but a vast army of 50,000 motor racing supporters who crossed the channel were well behaved and ecstatic with the 1-2 result achieved by the Silk Cut Jaguar team at Le Mans. They joined Tom Walkinshaw with fervour in singing the National Anthem and more than a few tears were shed . . . of happiness among those celebrating, of sheer frustration by the Brun Motorsport Porsche team, denied a heroic second place by a totally unexpected engine failure 14 minutes from the end.

The build-up for this year's race had all the ingredients of excitement and drama, and no-one was disappointed. The race took place despite the intervention of FISA president Jean-Marie Balestre during the winter, but he can be credited with arousing a still greater level of support for the 24-hours, and drawing the largest crowd in recent memory.

There were far more people at the track than last year when the figure was given as 220,000, and the number of spectators for the qualifying sessions on Wednesday and Thursday evenings possibly surpassed the numbers of spectators for the World Championship races held so far this year. As for the future, the ACO has declared itself anxious to rejoin the World Sportscar Championship in 1991 'but not at any price,' and has asked FISA for guarantees of World Championship status, and 50 car



The Jaguar of Lammers/Wallace/Konrad completed the Jaguar 1-2 victory when it inherited 2nd place close to the end of the race.

The Year of the Cat

entries, before starting the FF120 million modern pits complex which should be finished by next April. There's a long way to go yet before peace breaks out.

Never before had five manufacturers such as Jaguar, Porsche, Nissan, Toyota and Mazda entered for the 24-hour race, the 58th in the series, with any degree of confidence that they could win. There should have been a sixth of course, Mercedes, but the Stuttgart manufacturer

made a purely political decision not to support the event and may be regretting its decision. Had there been only one or two major entries the absence of the silver cars would have been of importance, but with five makes slugging out the contest the Mercedes were hardly mentioned throughout the weekend.

Jaguar, winners in 1988, were the favourites to win and their qualifying performance, with three cars in the top ten

Castrol





An heroic drive by the Brun Motorsport Repsol Porsche team ended in tears as their engine failed 14 minutes from the end.

and all four under the 3 min 40 sec mark, was solid. These were 7-litre V12 models developing 740bhp, very similar to the XJR-12s that finished first and second at Daytona back in February, and they had nothing like the high-boost, 1,100 horsepower Nissan engine which rocketed Mark Blundell to pole position.

Oscar Larrauri was a thorn in Nissan's side all weekend, and the Brun Motorsport crew surpassed itself in qualifying and in the race. Alwin Springer, boss of the Andial concern in America, supplied a special 3.2 litre engine for qualifying and, installed in a brand-new factory supplied car with high downforce 'sprint'

bodywork, equipped with Yokohama tyres, Larrauri rocked the Japanese team when he claimed a provisional pole at 3 min 33.06 sec. Blundell, Geoff Brabham and Masahiro Hasemi, in Nissans, were all scratching around the 3 min 33 sec. bracket when Larrauri went to the head of the queue, and that just wasn't good enough.

All the race posters in the region, the advertising and tickets had Nissan number 24 on them, so Blundell's engine was given maximum boost and away he went, with virtually a clear lap, to a time of 3 min 27.02 sec. It was, after all, only 13 seconds slower than last year's 'pole' established by Schlessler when he could

run his Mercedes down the Mulsanne Straight at 247mph, but other performances, and the eventual new lap record, show that the chicanes had really added 20 seconds to the lap times. In 1988 the posters featured Silk Cut Jaguars and last year, Mercedes, so Nissan were certainly hoping that this was a good omen. The chicanes, one to the right at the two-kilometre point on the straight and the other, a mirror image, two-kilometres further along, were installed in the name of safety. In fact they put a far greater strain on suspensions, brakes, transmissions and on the drivers themselves, which is not really a good thing, and when Jonathan Palmer had a dreadful accident on Wednesday evening we had to question whether the accident was more, or less severe because of the chicanes, or whether it would have happened at all if the straight had been left alone.

Without being sure of the reason, it seemed to Porsche's engineers that the rear suspension broke moments after Palmer changed into fifth gear midway between the chicanes, causing his Joest Porsche to turn sharp left into the armco and then launch into an end-over-end flight. A broken thumb and twisted ankle, painful as they were, seemed almost like a let-off for the British doctor. Bob Wollek moved into the third Joest Porsche with Stanley Dickens and 'John Winter', both former winners, and replaced the unlucky Will Hoy.

The Joest team had a very subdued

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LE MANS 24 HOUR RACE

weekend and never showed any real intention of winning. Derek Bell, perhaps with his last chance of winning the race for the sixth time, was partnered with Hans Stuck and Frank Jelinski, an excellent combination, and with a works Porsche powered by a 3.2 litre engine they should have been able to challenge the Jaguars as they did in 1988. However, the Joest 962Cs ran with the traditional long-tail bodywork, offering lower downforce, and with Michelin tyres which didn't have enough grip, and their performance was as though they alone ran on a wet road. It does put the performances of the Sauber Mercedes last year into perspective though; had the C9s run on Goodyear tyres their margins would have been greater still. Neither Toyota nor Mazda came anywhere near fulfilling their potential and the event immediately settled down as a three-make duel. Julian Bailey, who took the start in the pole position Nissan, soon atoned for his 24-minute race last year as he led the first three laps then sensibly yielded to Larrauri, who was bouncing his Porsche over the kerbs as he might in a sprint race. Hasemi held third place in the Japanese, Nismo team Nissan and Frank Jelinski was fourth on the opening lap, then slid gracefully down to 15th as his tyres went off and provided an accurate barometer of performance.

Larrauri and Blundell were the pacemakers after an hour, followed at half a minute by Martin Brundle and John Nielsen in Jaguars, Geoff Brabham's American prepared Nissan, then the Jaguars of Jan Lammers and Davy Jones. Kenny Acheson, second last year in a Mercedes, lasted not a single lap before the transmission pinion parted company with the crownwheel, so he was the first retirement (Martin Donnelly, scheduled to share the car, has now prepared for three 24-hour events without racing once).

At four-hours a pair of Jaguars topped the leader-board. Brundle/Alain Ferté/David Leslie ahead of Nielsen/Price Cobb, but Eliseo Salazar was kept out of number 3 and the Spaniard, Luis Perez Sala, didn't step into a Jaguar over the weekend. Tom Walkinshaw had a contingency plan which came in very handy, as it turned out.

The Mazdas, weighing 920kg in the IMSA class and developing 600bhp from their quad-rotor engines, should have been the dark horses of the race but their challenge never came. A host of minor mechanical problems put two cars out of the race and handicapped the third, and to the disappointment of many people the shrill cars never rose above 18th, and the only finisher was 20th.

Toyota had their problems too, suffering from fuel vapour locking in the warmth of Saturday afternoon, and then Aguri Suzuki suffered a violent accident at the Dunlop Curve as Gianfranco Brancatelli made an unwise overtaking attempt. Toyota's race budget was stretched still further as the 900-V went backwards into the armco, stopping from 170mph in 10



Nissan's huge effort saw Julian Bailey start from pole and his car remained competitive until his gearbox failed in the night.

metres, and Suzuki was removed to hospital suffering from concussion. He, too, was a lucky driver, and so was Fabio Magnani later on when he lost control of the Mussato Lancia, due to a burst tyre it was thought, went end over end at the Indianapolis curve and then flew into the treetops, starting a forest fire as he went. It stretched the imagination that the Italian wasn't hurt, and the Automobile Club de l'Ouest officials were relieved that they didn't have some fatalities to announce.

Geoff Brabham, Chip Robinson and Derek Daly, men who have the IMSA Championship by the throat, looked increasingly confident in the lead in the small hours of the morning. Brundle's Jaguar suddenly ran hot when the water pump drive belt slipped off, and couldn't be replaced easily as it's at the front of the V12. Meanwhile Michel Ferté had done some kerb-hopping in Davy Jones' car, damaging the radiator and supports, and some hours later that V12 suffered the consequence. Franz Konrad, the cheery Austrian guest-driving in the Jan Lammers/Andy Wallace Jaguar, unfortunately missed his braking point for the first chicane and rammed the tyre wall, damaging the XJR's nose and supports. That lost the crew four laps, still the margin at the end of the race.

Nielsen and Cobb, Jaguar's successful IMSA partners, moved into the lead at two o'clock in the morning and remained ahead, though challenged strongly by Brabham's Nissan during the night. Their engine overheated briefly, due to track debris blocking the radiator protecting gauze, but suffered no damage; the loss of fourth gear was much more of a worry, so Brundle was drafted into the lead car as a man who could be trusted to nurse the transmission, when his own car had retired.

The 'Three Bs', Blundell, Bailey and Brancatelli, went out in the night with a broken gearbox, and mid-morning on Sunday Geoff Brabham's Nissan succumbed to a serious leak from the fuel cell. Hasemi, Hoshino and Suzuki kept Nissan's flag flying, losing a little time when

the rear brake discs had to be changed, more when the rear shock absorbers broke, and eventually finishing with a jammed gearbox.

The last quarter of the race was a straight fight between the Jaguars of Nielsen/Cobb/Brundle and Lammers/Wallace/Konrad, sandwiching the Brun Motorsport Repsol Porsche of Larrauri/Walter Brun/Jesus Pareja. Larrauri himself became sick in the night, having crashed his Renault Europa Cup car heavily in a supporting race on Saturday morning, leaving Brun and Pareja to drive as they've never gone before. Their car was driven almost to its limit for 23 and a half hours, bounced energetically off kerbs all the while, and when the engine finally quit with four laps to go a wave of sympathy went round the track, Jaguar's personnel as sorry as anyone.

Third place was taken, then, by the superbly prepared and driven Alpha Team Porsche from Japan, crewed by Britons Tiff Needell, David Sears and Anthony Reid. They hadn't put a wheel wrong at any time, and thoroughly deserved to get such a fine result. The Alpha team was able to pass the Bell/Stuck/Jelinski Porsche which needed to have a new turbo wastegate fitted at lunchtime on Sunday, the last setback in a disappointing weekend. Also with the Joest Racing team, Henri Pescarolo completed his 24th Le Mans 24-hours in 14th place, sharing with Jacques Laffite and Jean-Louis Ricci.

The C2 class, now recognised only by the ACO, was happily won by the PC Automative team's Spice-Cosworth driven by Richard Piper, Olindo Tacobelli and Mike Youles.

Jaguar's victory, their seventh at Le Mans, made a fitting farewell gift to Sir John Egan, leaving the company after a ten-year tenure. It impressed Bill Hayden too, the incoming Ford-appointed chairman, who indicated that Jaguar might remain in sports car racing, and could commit itself to a huge investment in the 3 and a half litre formula, providing sponsorship could be secured to share the cost.

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QUALIFYING TIMES

Schlesser/Baldi	Mercedes	1m 59.350s
Mass/Wendlinger	Mercedes	2m 00.685s
Brundle/Ferté	Jaguar	2m 02.307s
Lammers/Wallace	Jaguar	2m 02.569s
Blundell/Brancatelli	Nissan	2m 03.079s
Dumfries/Watson	Toyota	2m 04.010s
Wollek/Jelinski	Porsche	2m 04.265s
Palmer/Bell	Porsche	2m 04.505s
Harvey/Velez	Spice	2m 05.499s
Bailey/Acheson	Nissan	2m 05.691s
Andskar/Reuter	Porsche	2m 06.192s
Larrauri/Huysman	Porsche	2m 06.365s
Schneider/Van der Merwe	Porsche	2m 06.459s
Grohs/Oppermann	Porsche	2m 07.501s
Fabre/Trollé	Cougar	2m 07.759s
Lassig/Attenbach	Porsche	2m 08.851s
Pareja/Brun	Porsche	2m 09.625s
Reid/Olofsson	Porsche	2m 10.085s
Konrad/Toivonen	Porsche	2m 10.368s
Winter/Dickens	Porsche	2m 10.432s
Ricci/Pescarolo	Porsche	2m 10.482s
Nurminen/Bovy	Spice	2m 11.413s
Sigala/Santal	Porsche	2m 11.603s
Adams/Hausmann	Spice	2m 12.928s
Lees/Suzuki	Toyota	2m 13.612s
Euser/Hytten	Spice	2m 14.507s
"Stingbrace"/Randaccio	Spice	2m 14.570s
Los/Thuner	Cougar	2m 14.750s
Almeras/Almeras	Porsche	2m 14.833s
Lavaggi/Lee-Davey	Porsche	2m 16.675s
Salamin/Taverna	Porsche	2m 17.540s
Migault/Morin	ALD	2m 20.472s
Brand/Mancini	Alba	2m 23.907s

RACE RESULTS

1st	J. Mass/K. Wendlinger	5.0t Mercedes C11	2h 42m 54.880s
2nd	J. Lammers/A. Wallace	3.5t Jaguar XJR-11	2h 44m 25.656s
3rd	J. Bailey/K. Acheson	3.5t Nissan R90C	2h 44m 51.164s
4th	T. Harvey/F. Velez	3.5 Spice-Cosworth SE90C	69 laps
5th	O. Larrauri/H. Huysman	3.0t Porsche 962	69 laps
6th	M. Reuter/S. Andskar	3.0t Porsche 962	69 laps
7th	B. Wollek/F. Jelinski	3.2t Porsche 962	69 laps
8th	J-L Schlesser/M. Baldi	5.0t Mercedes C11	68 laps
9th	B. Schneider/S van der Merwe	3.0t Porsche 962	68 laps
10th	M. Blundell/G. Brancatelli	3.5t Nissan R90C	67 laps
11th	J. Lassig/O. Attenbach	3.0t Porsche 962	67 laps
12th	A. Olofsson/A. Reid	3.0t Porsche 962	66 laps
13th	F. Konrad/H. Toivonen	3.0t Porsche 962	65 laps
14th	M. Sigala/B. Santal	3.0t Porsche 962	65 laps
15th	H. Pescarolo/J-L Ricci	3.0t Porsche 962	65 laps
16th	S. Dickens/J. Winter	3.0t Porsche 962	65 laps
17th	G. Lavaggi/T. Lee-Davey	3.0t Porsche 962	65 laps
18th	J. Dumfries/J. Watson	3.6t Toyota 89CV	63 laps
19th	C. Euser/M. Hytten	3.5 Spice-Cosworth SE89C	63 laps
20th	C. Los/B. Thuner	3.0t Cougar-Porsche C24S	62 laps
21st	A. Salamin/L. Taverna	3.0t Porsche 962	60 laps
22nd	J. Almeras/J-M Almeras	3.0t Porsche 962	58 laps
23rd	"Stingbrace"/R. Randaccio	3.5 Spice-Cosworth SE89C	58 laps
24th	J. Nurminen/Q. Bovy	3.5 Spice-Cosworth SE90C	56 laps
25th	F. Migault/D. Morin	3.5 ALD-Cosworth C289	56 laps
R	J. Pareja/W. Brun	3.0t Porsche 962	Engine
R	M. Brundle	3.5t Jaguar XJR-11	Wiring loom
R	N. Adams/H. Hausmann	3.5 Spice-Cosworth SE89C	Gear linkage
R	P. Fabre/M. Trollé	3.0t Cougar-Porsche C24S	Engine
R	J. Palmer/D. Bell	3.2t Porsche 962	Crash
R	H. Grohs/J. Oppermann	3.0t Porsche 962	Crash

Drivers' Championship: 1, Mass and Wendlinger 21; 3, Schlesser and Baldi 18; 5, Lammers and Wallace 15; 7, Brundle; 8, Velez 7; 9, Jelinski and Wollek 5.
Teams' Championship: 1, Mercedes 27; 2, Jaguar 19; 3, Spice and Nissan 8; 5, Joest 5; 6, Brun and Kremer 4; 8, Toyota 3; 9, RLR 1.

LE MANS 24 HOURS JUNE 16-17

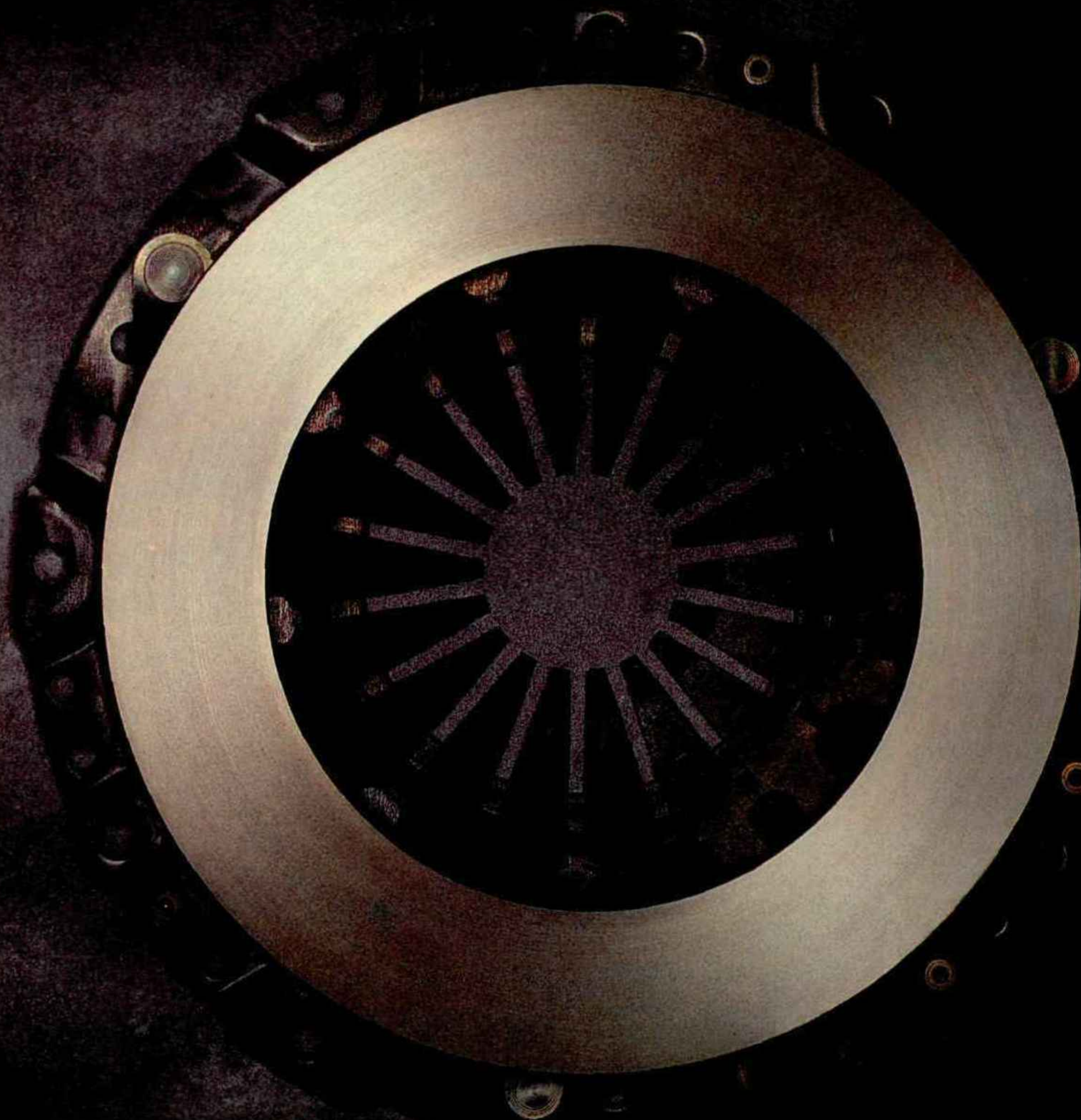
TOP 30 QUALIFYING TIMES

Bailey/Brundle/Brancatelli	Nissan	3m 27.02s
Larrauri/Pareja/Brun	Porsche	3m 33.06s
Hasemi/Hoshino/Suzuki	Nissan	3m 33.17s
Braham/Robinson/Daly	Nissan	3m 33.28s
Acheson/Donnelly/Grouillard	Nissan	3m 35.76s
Stuck/Bell/Jelinski	Porsche	3m 36.08s
Jones/Perez-Sala/Ferte M.	Jaguar	3m 36.10s
Brundle/Ferte A./Leslie	Jaguar	3m 36.55s
Nielsen/Cobb/Salazar	Jaguar	3m 37.00s
Lees/Sekiya/Ogaha	Toyota	3m 37.13s
Fouche/Andskar/Kasuya	Porsche	3m 38.28s
Takahashi/Van der Merwe/Okada	Porsche	3m 38.39s
Reuter/Weaver/Lehto	Porsche	3m 38.72s
Suzuki/Dumfries/Ravaglia	Toyota	3m 38.74s
Opperman/Grohs/Duez	Porsche	3m 39.38s
Raphanel/Nagasaka/Ratzenberger	Toyota	3m 39.76s
Lammers/Wallace/Konrad	Jaguar	3m 39.78s
Winter/Dickens/Wollek	Porsche	3m 40.01s
Gonin/Alliot/De Dryver	Porsche	3m 40.27s
Needell/Sears/Reid	Porsche	3m 41.32s
Watson/Giacomelli/Berg	Porsche	3m 42.73s
Gachot/Herbert/Weidler	Mazda	3m 43.04s
Johansson/Kennedy/Dieudonne	Mazda	3m 43.35s
Wada/Olofsson/Sala	Nissan	3m 43.40s
Earl/Rowe/Millen	Nissan	3m 44.28s
Fabre/Trolle/Robert	Cougar	3m 44.34s
Haywood/Taylor/Rydell	Porsche	3m 45.44s
Lassig/Yver/Altenbach	Porsche	3m 45.57s
Regout/Cudini/Los	Cougar	3m 45.66s
Ricci/Pescarolo/Laffite	Porsche	3m 45.77s

RACE RESULTS

1st	J. Nielsen/P. Cobb/M. Brundle	7.0 Jaguar	23h 55m 44.75s
2nd	J. Lammers/A. Wallace/F. Konrad	7.0 Jaguar	355 laps
3rd	T. Needell/D. Sears/A. Reid	3.0t Porsche	352 laps
4th	H. Stuck/D. Bell/F. Jelinski	3.2t Porsche	350 laps
5th	M. Hasemi/K. Hoshino/T. Suzuki	3.5t Nissan	348 laps
6th	G. Lees/M. Sekiya/H. Ogawa	3.6t Toyota	347 laps
7th	P. Fabre/M. Trollé/L. Robert	3.0t Cougar-Porsche	347 laps
8th	J. Winter/S. Dickens/B. Wollek	3.2t Porsche	346 laps
9th	J. Lassig/P. Yver/O. Altenbach	3.0t Porsche 962	341 laps
10th	H. Huysman/M. Sigala/B. Santal	3.0t Porsche	335 laps
11th	J. Watson/B. Giacomelli/A. Berg	3.0t Porsche	335 laps
12th	H. Haywood/W. Taylor/R. Rydell	3.0t Porsche	332 laps
13th	G. Fouche/S. Andskar/S. Kashya	3.0t Porsche	330 laps
14th	J-L. Ricci/H. Pescarolo/J. Laffite	3.0t Porsche	328 laps
15th	E. Elgh/T. Danielsson/T. Mezera	3.0t Porsche	326 laps
16th	P. Gonin/P. Alliot/B. de Dryver	3.0t Porsche	319 laps
17th	B. Earl/M. Roe/S. Millen	3.5t Nissan	311 laps
18th	T. Harvey/C. Hodgetts/F. Velez	3.5 Spice-Cosworth	308 laps
19th	M. Cohen Olivar/G. Lavaggi	3.0t Porsche	306 laps
20th	Y. Katayama/T. Yorino/Y. Tereda	4.7 Mazda	304 laps
21st	R. Piper/O. Lacobelli/M. Youles	3.3 Spice-Cosworth	304 laps
22nd	H. Regout/A. Cudini/C. Los	3.0t Cougar-Porsche	300 laps
23rd	J-P. Grand/M. Maisonneuve/ X. Lapevre	3.3 Spice-Cosworth	291 laps
24th	K. Takahashi/S. Van der Merwe/ H. Okada	3.0t Porsche	279 laps
25th	J. Shead/R. Stirling/R. Hyett	3.3 Spice-Cosworth	274 laps
26th	N. Iketani/T. Lee Davey	3.0t Porsche	260 laps
27th	D. Wood/R. Jones/ S. Hynes	3.3 Spice-Cosworth	259 laps
28th	A. Fenwick/C. Simmis/A. Postan	3.3 Tiga	254 laps

Fastest Lap: S. Millen 3m 40.03 sec 222.515 kph (138.26 mph)
Winners Average Speed: 204.032 kph (126.78 mph)



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For 2 hours 41 minutes and 18,248 seconds the 74th running of the Indianapolis 500 gave over 400,000 spectators the most glittering display of sustained speed that I have witnessed. Even amongst hardened Indy onlookers the 185.984 mph pace of Arie "Dutch Boy" Luyendyk was something special. For a European watching his first "500," and the first Common Market citizen beating the Americans since Graham Hill won in 1966, it was a truly memorable racing day. A feast of speed put truly into perspective when you recall Monaco ran the same weekend at an average 100 mph less (for pedants, Senna's average was 85.75 mph). For Europeans it may also come as something of a surprise to find that Monaco is the younger event, first held in 1929, whilst the Indianapolis Motor Speedway has hosted a motor race since 1911.

That inaugural event took driver and riding mechanic Harroun/Patschke 6 hours 42 minutes for an average 74.5 mph in their Marmon and netted them a worthwhile 1911 reward of \$14,000, figures to bear in mind when you learn that the 1990 victor netted \$1.1 million directly at the Monday evening giant prizegiving.

Arie Luyendyk, who came across as a thoroughly modest and straightforward driver beneath those flowing locks, can expect "between \$3 and \$4 million when all advertising endorsements and bonus monies are paid," said one expert. Not bad for a man who had never won either a USAC or CART sanctioned major event in 75 outings, but who was an IMSA sports car victor for Nissan in 1989 and last won a single-seater event in Formula Super Vee, circa 1984.

Speed and money are the factors that make glamorous headlines and draw the world's largest single day sports crowd. This year's event had an abundance of both, fortunately without injury in the hideous high speed crashes that drivers also know are an inevitable part of the Indianapolis qualification and racing process. This year pole position went to 1989 PPG Indy Car Champion and 1989 Indianapolis 500 victor Emerson Fittipaldi, who you may remember better as a double World Champion in Lotus (1972) and McLaren (1974) products.

The swiftest speed? The man they call "Emmo" in the USA after six years of the best paid comeback in motor racing history averaged 225.301 mph. This for a quartet of laps around the 2.5 mile lap of a track that contains four ¼ mile corners banked at fractionally over 9 degrees apiece. Now 225 mph sounded pretty nippy to me as a pole position lap, but the Penske team who run Fittipaldi these days with manager Teddy Mayer, expressed mild disappointment with their performance, feeling that high humidity sapped the performance of the Ilmor Chevrolet V8 from Brixworth, Northants.

Marlboro Penske had to wait for subsequent qualifiers in a second weekend to see if they could retain pole, but a combin-



Team owner Doug Shierson and Arie Luyendyk celebrate the unknown Dutchman's Indy 500 win.

The Speed Show

ation of extraordinary rain, (they registered over 7 inches during the qualifying period of May) and the fact that nobody else could summon any more speed from the only engine to have amongst customer choices, (all but the Fabi Porsche were Chevrolet engines in the top ten for 1990 qualifying) kept them the premier spot. Fittipaldi and Penske had in mind a 227/8 mph average in a year when the CART (Championship Auto Racing Teams inc) regulatory board had planned to slow things down a little via aerodynamic restrictions. In fact the average speed registered for the 33 car grid was 217.437 mph, a new record that progressed nearly 1 mph over the 1989 figure.

But the statistics of speed do not tell you what it is like to drive or witness such velocities. Eddy Cheever, possibly one of the most experienced "Rookies" Indianapolis will ever see, allowed me an insight gained from the cockpit of his 1989

Penske PC18-Chevrolet. Relaxed in the cooler air of the purpose-built concrete garage, one of many that replaced the original wooden stabling only five years ago, Cheever said flatly, "the first time you go out in one of these things it's like flying low in an F16 jet plane . . . but you soon get used to it. I'm almost embarrassed to say I do enjoy it, it's a lot of fun. At least it is when the car is going right, otherwise it's the most hair-raising driving I know."

"These cars are fantastically sensitive to minor changes; just a ¼ degree on a geometry set-up can throw you clean out of the ball park. Then there's the wind. We've had a lot of that in the past month and it makes driving round here spooky."

Eddie had tried all sorts of tricks from a varied driving career to settle quickly into his new American career including left foot braking his way around Indianapolis to record, "a 216 mph lap, but the brakes were smoking like hell when I came in!"

The objective is to balance the car so well — using specialist aids like tyre “stagger” (unequal circumferences side to side) — that it runs all the corners flat out. It is left to nearly 4g (Porsche report 3.85) cornering force and friction to scrub straightline speed from “over 240 mph” to record routine 220 mph quick laps amongst racing front runners. The elite will be running their Ilmor Chevrolets to 12,000 rpm and more for the best part of 3 hours.

In the CART Media Guide Bobby Rahal, who fought out the 1990 event with Luyendyk in an attempt to repeat his 1986 Indy win, summarised many of the feelings also expressed by Cheever and other drivers who come from road racing. “The first time I drove on a superspeedway I couldn’t believe it. Nothing, and I mean nothing, I’d done in road racing prepared me for the intensity and sheer speed of the experience. I’d driven at Le Mans at those speeds, but that was going down the straight, and no way is it anything like what those guys were up to. It takes time for any driver to build up to that kind of speed and to that level of concentration.

“On a road course if you make a mistake you can get into serious trouble, but usually there are some options and some room. And usually you can drive your way out of it. On the oval the consequences are immediate and usually catastrophic,” recalled Rahal. Cheever added, “The driving standard amongst the first five in Indy



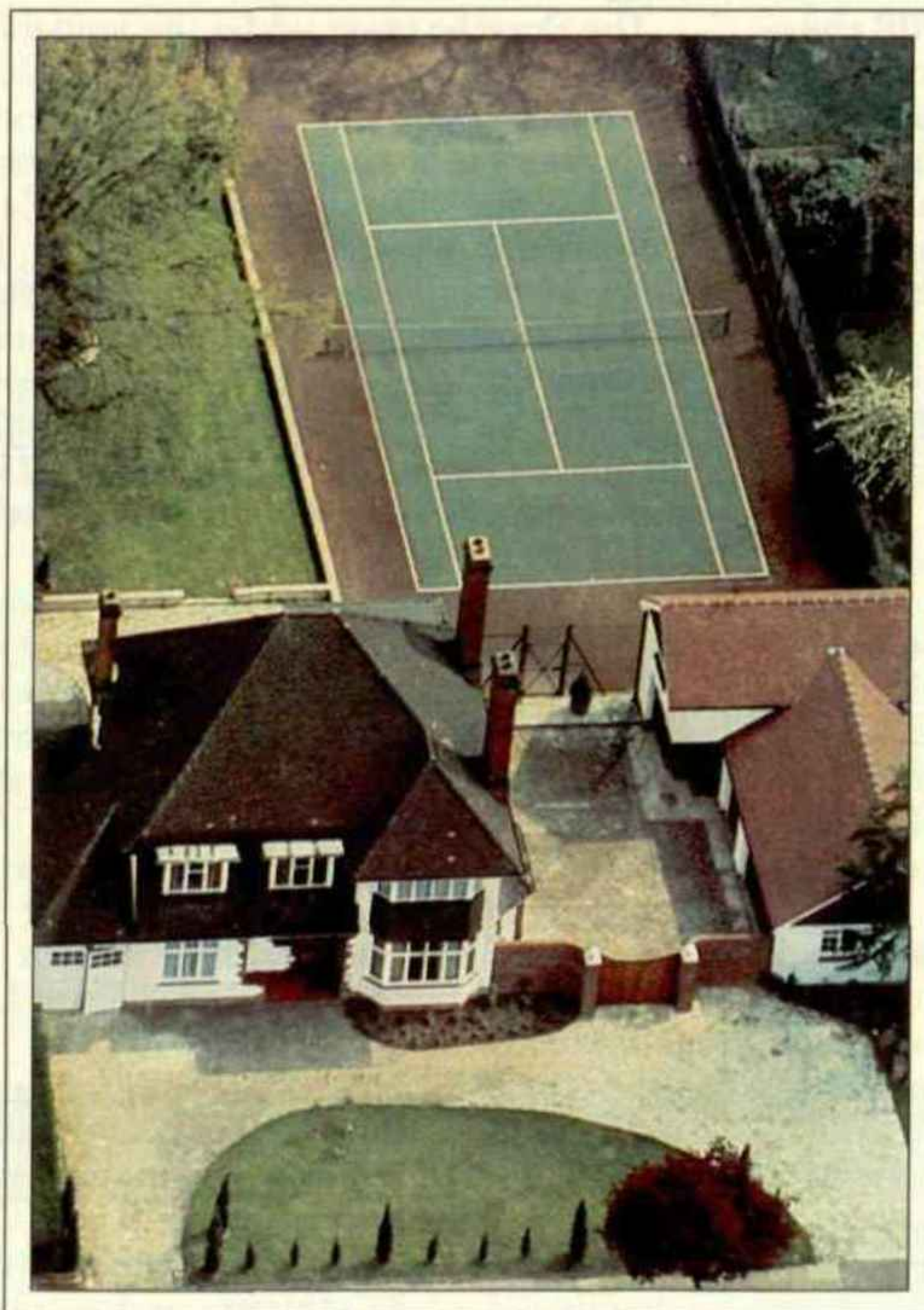
Unlike Formula 1, refuelling is an essential element of the Indianapolis 500.

cars is very high,” but he noted, “There is a wider gap in ability from that point to the back of the grid than there is in Formula 1, where the whole grid is of a very high standard.”

Turning to the cars themselves Eddie pointed out, “The designers have to be careful not just to make the car for the ovals,” for these form less of the current 16 race/\$20 million PPG schedule than you

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The Porsche team is finding the competition in America far tougher than they ever imagined it would be.

might expect. The former F1 pilot felt the Indy cars were, "a little cumbersome on road courses. There they are definitely not so quick or nimble as an F1, which is understandable when you think they weigh at least 1550 lbs. Sure the engine has 800 bhp, but it is a turbo engine and needs time to build up that power on a road course."

Eddie Cheever added a chilling dimension when he stated, "you are dog meat if you hesitate," whilst recalling how he managed to avoid Jim Crawford's accident and consequent aerobatics in qualification. I am glad to say Crawford was not injured on this occasion, but last year's injuries demanded eight operations for the quiet Scot who is extremely popular in his adopted American homeland. The former Lotus GP driver was back to qualify 30th fastest at 212.2 mph in last year's outclassed Lola-Buick V6; the sole Briton finished 15th, the last classified runner, unable to lap much beyond 200 mph, never mind the Fittipaldi/Luyendyk fastest race lap of 40.386 seconds, 222.574 mph.

My chance to watch Dutchman Luyendyk overturn the American racing establishment and win his first race in the PPG (Pittsburgh Plate Glass, not "Penske, Patrick & God" as some spectators would have it!) Indy Car World Series came unexpectedly from Porsche. As you may know the Weissach engineers have been challenging for a place amongst the regular front runners in the USA since 1988, winning their first event (Teo Fabi at Mid Ohio) in 1989 and finishing fourth in the 1989 PPG points. For 1990 former Toleman, Brabham and Benetton Grand Prix driver Fabi was joined in the American series by John Andretti; this member of the Andretti clan the articulate son of Mario's twin brother, Aldo. Unlike their World sports car approach of creating a complete car, Porsche have reverted to the

engine supplier role that earned World Championship honours with McLaren in their TAG era. This reliance upon outside equipment hovered uneasily over their 1990 Indianapolis preparations.

Originally Porsche and March created the first all composite materials chassis for the Indy Car formula but some inter season personnel changes let the secret out of the bag and the opposition cried foul, although the regulations at that point did not specifically ban such a creation. March had to create a last minute hybrid of carbonfibre heart and aluminium sandwich cladding that weighed around 15 lbs more than intended. The March 90P chassis was not available to John Andretti until the month long process of qualifying at Indianapolis had commenced. That hurried 1990 chassis switch also created considerable overtime at Weissach as the engineers (managed at the circuits by the affable Dr Esch) prepared some interim engines for the '89 chassis to appear in earlier championship rounds with 1990 power unit modifications and pure 1990 units for the 1990 chassis.

The installation differences are significant, for on the 1990 chassis and engine layout the single turbocharger is placed ahead of the 90 degree V8 which means the plumbing of forward facing exhausts is unique to the newer car. The Porsche V8 engine belongs to the majority of current purpose-built racing units now seen in the premier American racing series.

The home grown outsider is the stock block Buick V6, as used by expatriate Jim Crawford and ninth placed Kevin Cogan. Instead of measuring 161.5 cu inches/2647cc, the exceptionally short Buick "3300" is allowed up to 209 cu in/3424cc. For this USAC sanctioned event within the CART calendar roughly 10% extra boost is allowed beyond the mandatory 1.52 bar/21.6 psi of the pure racing units, lifting the quoted power from 680 bhp at 9000

rpm to 800 bhp. Not bad for a pushrod six having 2 valves per cylinder.

The aluminium V8 racing units from Porsche, Ilmor Chevrolet, Cosworth (DFS, developed from the now outmoded DFX and DFV family) and Alfa Romeo rev much higher, but do not claim as much racing horsepower as the Buick. Porsche is at least competitive with Chevrolet; the Germans quote 735 bhp at 12,000 rpm.

Vice President Ian Bisco of Cosworth Engineering, Torrance, California, told us that we can expect Cosworth to be testing a brand new narrow angle V8 by the end of the 1990 season. Paying tribute to the extraordinarily long and successful life of the DFX/DFV family Mr Bisco remembered, "It is important to recall that the DFX was itself a conversion that owes much in size to the 3.9 litre sports racing Cosworth V8s; when it has to race at 2.7 litres, there is obviously room for a more compact design. Furthermore, the DFX started off with a 7:1 compression and was allowed up to 80 inches of mercury in boost; now it lives on in a world where the boost has effectively been halved, to 45 inches of mercury, and the compression is way up at 11:1."

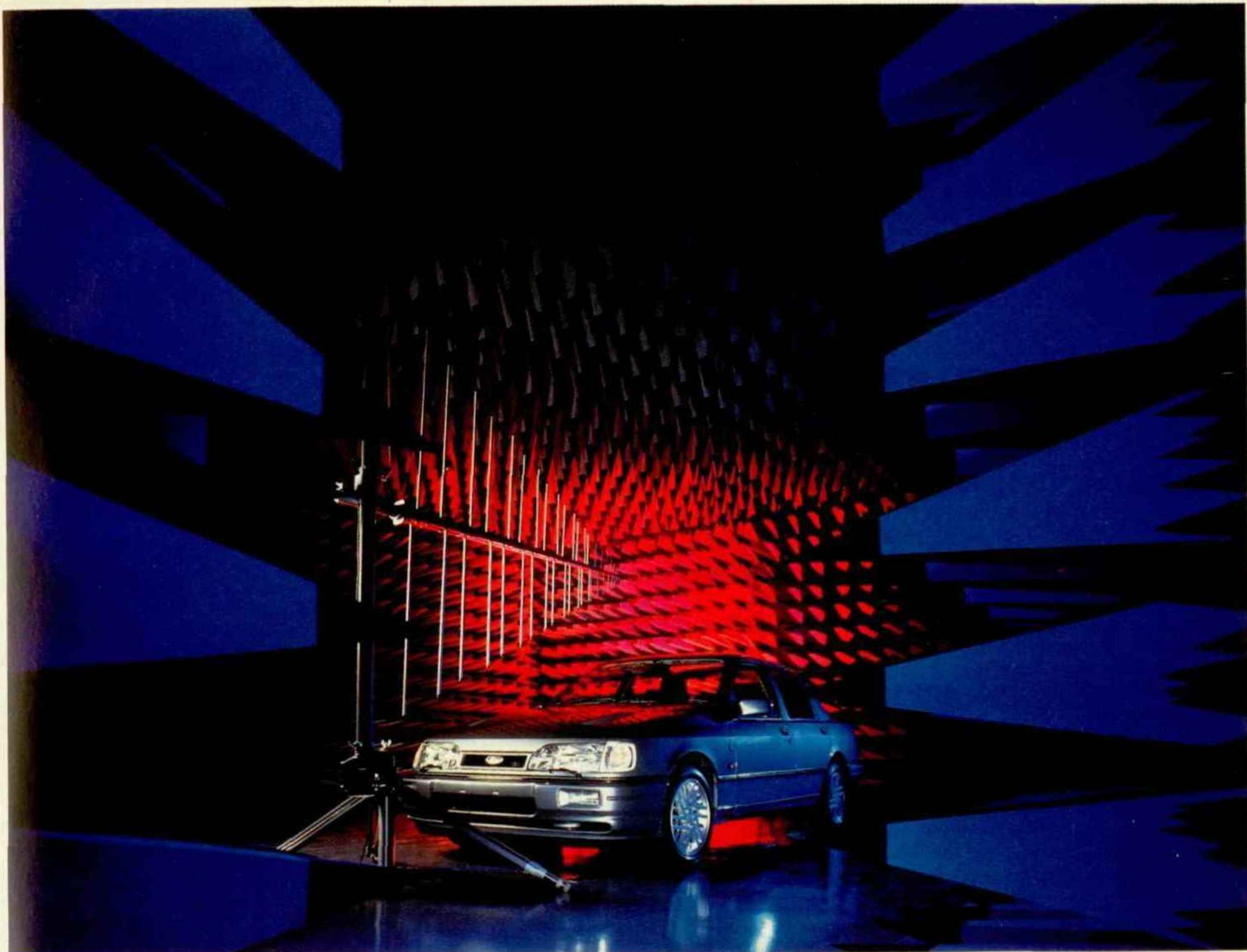
Porsche quote a 12:1 cr for their 2649.2cc (88.2mm x 54.2mm) eight and the equivalent of 632 lb ft of torque at 9500 rpm. Ilmor Chevrolet do not report output statistics, but do admit to an 11:1 cr for a unit that is within .2mm fractions of the same bore stroke dimensions as the Porsche.

All run 100% methanol fuels and this helps them live under a ban on charged intercooling with mechanical reliability. Fuel consumption equates to about 2 US mpg, 1.8 on shorter ovals.

The Porsche team under the leadership of former Porsche 917 project engineer Helmut Flegl found it hard to smother their reservations over the effectiveness of the Gordon Coppuck-designed March Engineering chassis for this season. For English speaking press conferences there was plenty of talk about potential, but our German colleagues on the Indianapolis trip and an interview with Herr Flegl in *Rallye Racing* put the blame for poor 1990 performances squarely on the late arrival of the needle nosed March.

It is relevant to note that Alfa Romeo, who shared the 90 degree, 32 valve and quadruple camshaft V8 design parameters with Porsche, Cosworth and Chevrolet blamed their March 90A chassis for their poor performance at Indianapolis. Alfa Corse announced that the Patrick Racing team would be taking delivery of the dominant Lola chassis: three of four top finishers, including the winner, were Lola mounted.

For the 1990 Indianapolis the field used almost enough British chassis and engine equipment to right the balance of payments deficit single-handed. Lola Cars at Huntingdon provided the majority of chassis (21 of 33 starters) and recorded not just a 1-2 victory for Luyendyk some ten seconds ahead of Bobby Rahal, but



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also all but four of the top ten chassis. After their Eighties success March did not get a finisher with Porsche and the best placed Alfa Romeo was 13th, a severe come down for the 1989 winning team: Patrick Racing.

Penskies also come from Britain (the designer at their Poole, Dorset, base is Nigel Bennett) and they took those other four top ten places and accounted for eight chassis in all.

On the engines' front it was the same "Buy British" story; Ilmor Chevrolets occupied the first six places; a Cosworth managed seventh and the only unit not Made in Britain was the ninth placed Buick V6 in the Lola of Kevin Cogan.

What happened to the Porsches? I think that must be a question that is occupying the thoughts of those in Porsche high places at present. After the winning promise of late season 1989, it was harsh that the change in chassis engineering plans appears to have put them back in the situation of trying to get back in amongst the true front runners. As noted, Teo Fabi was tenth fastest in qualifying — his lowly grid position a result of Indianapolis qualifying procedure and the loss of an engine to faulty lubrication plumbing. John Andretti was eleventh quickest and the best consistent placing I saw was seventh, a position behind the legendary AJ Foyt and his Lola-Chevrolet.

John Andretti certainly drove a fighting race, frequently in that seventh spot through the multiple pit stops that characterise the event. John covered 135 laps of 200, knocking the car out of the running with closer and closer encounters with the walls that terminated with the inevitable final brush "as the car got looser and looser. All my fault," he said with the candour that characterises the formula.

Teo Fabi's precise problems were being analysed by the team under the direction of expat Scotsman Derek Walker (for 14 years the general manager at Penske) as we left the circuit. Mr Walker felt, "There was just no drive from the transmission, but the precise cause has yet to be identified. It was all a bit of a shame today, we should have been right amongst them at the end. It's the end of a long month for us," opined Mr Walker.

Indeed it was, John Andretti quipped at the prize-giving: "Our team was usually left to turn the Speedway lights out!" Derek Walker concluded, "this event is really two in one; the first task is to be the fastest sprint car over 4 laps, and the second is to get to stay in the lead bunch, never dropping a lap, to the close of 500 tough miles. We should have been there," he said with quiet puzzlement.

So should others, for only three cars completed the 500 miles on the same lap: Luyendyk, Rahal and Emerson Fittipaldi. The Brazilian really looked likely to repeat his 1989 win with more laps in front than anybody, until his rear Goodyears started blistering, a not uncommon problem, but one that did not effect the leader in either qualification or a hard race.



Former double World Champion and last year's winner, Emerson Fittipaldi, is still a force to be reckoned with.

There was general criticism that this year's race was a one-sided affair which allowed nobody a look-in unless they had a Chevrolet branded V8, a facility that is either not offered, or cannot be afforded by all. I expect they were saying the same about the Cosworth a few years back, so for me the memories were all extremely positive.

A number of the European visitors (there were two Britons amongst the predominantly German Porsche party) belonged to the "Been There, seen That, it's Boring" school of professional observer. One German journalist went so far as to say, "I hope there is a crash soon, nothing is happening."

I looked out to the speed bowl from the first turn location of this cynical comment. Fittipaldi swooped his white and red Penske down below the inside warning line before ascending in a graceful arc, skimming the wall at 220-230 mph. A shimmering testament to "Man and Machine in perfect harmony" if ever there was one. True, there was never a quiver from the apparently perfect Penske chassis, but the noise of that 12,000 rpm V8, the colour of a packed speedway, and the clamour of more than 400,000 gathered for an unmatched spectacle were a fitting backdrop for the majesty of Fittipaldi's performance.

The sheer speed of Fittipaldi, Rahal, Luyendyk, plus the father and son combination of Mario and Michael Andretti, are emblazoned across my mind. That dominant Fittipaldi image and the ducking and diving as a squad of front runners peeled off into turn 2 through the back markers (lapping started within eight tours!) are recorded with all the clarity of the best in racing and rallying reportage memories in the past 25 years.

So I did not find the 74th running of the Indianapolis 500 remotely boring, but not all my memories will be of the fastest Indy there has been. Courtesy of Porsche, and more particularly the unremitting hard work of Bob Carlson, PR manager of Porsche Cars North America Inc, I saw a lot more than the fastest race in Indianapolis history (and the quickest race average ever). We also toured the track in a bus in the complete contrast of rain and a

30 mph pace and I visited the Hall of Fame Museum, which is also on the enormous Speedway facility (it also houses a nine hole golf course). The museum was so excellent that I will try and persuade our editorial people to let me have some more space to describe that on another occasion. Meanwhile I will say that it houses a lot more than Speedway memorabilia and machinery: there is a superb collection of Caracciola's trophies, a Le Mans corner with the Jochen Rindt/Masten Gregory winning Ferrari 250 LM and a fascinating display of engines; my favourite for eye and historical appeal was the green and chrome 1920 Duesenberg inline 8-cylinder. Equipped with three valves per cylinder it developed 125 bhp at 4200 rpm. The comparatively tiny Ilmor Chevrolet was contrastingly credited with 720 bhp at 11,600 rpm in the 1987 display trim.

Then there were all the parades and prize-giving ceremonies — one a fascinating amalgamation of racing car fan clubs, an idea I have not encountered in Europe. Of the pre-race pomp and show biz I liked the Sheriff's motorcycling men and their banked "look Mum, no hands," display over the endless rendition of Back Home in Indiana. When Mary Hulman asked, "Gentleman, start your engines," it was modestly spoken and an appropriate peak to the pre-race activities that fill much of the time from the 5 am opening of the gates to an 11 am start.

PR Bob Carlson also ensured we understood more about USAC and its traditions by taking us to both a Midget racing night oval meeting, and the ultimate competition for the skilled and brave: racing single-seaters on dirt. Offering nearly 700 "proper" Chevrolet V8 horsepower, the best lap speeds were over 108 mph. The dirt racers on full ear-torturing cry made even the Group B rallying supercars look tame, but the modest and friendly *afficionados* of dirt cars allowed that they thought "racing through trees and past mountains, why that is a pretty entertaining idea!"

I found the complete trip entertaining and hope I have managed to transfer some of that feeling into print. Treated as "the trip of a lifetime" it was an experience I would not have missed. JW



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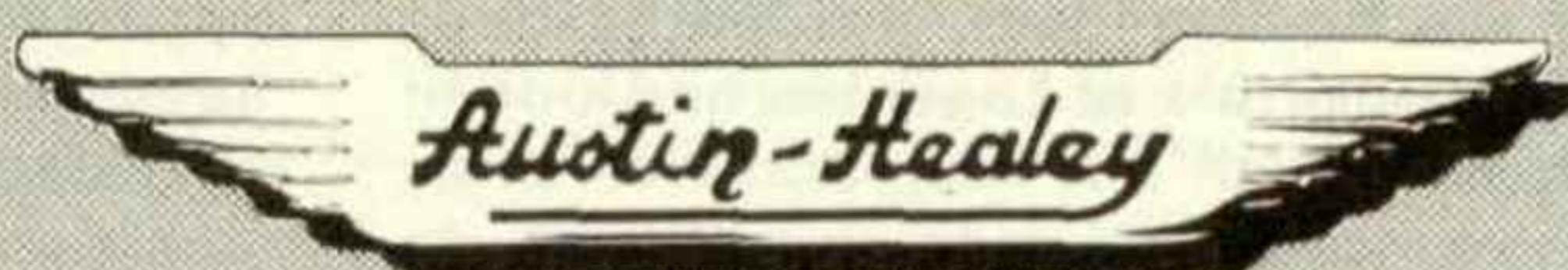
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As a general rule, smooth and relatively short rallies produce low penalty differences, whilst those of rougher, longer ones are usually much higher. Seconds, certainly no more than minutes, normally separate the first ten on the Tour of Corsica, for instance, whilst on the Safari Rally this year the gap between the first and tenth (last) finishers was not far short of a complete day!

The Acropolis Rally comes somewhere between. It has a tradition of being rough, long, hot and arduous and is one of the last remaining events in Europe which can claim to be anything approaching an endurance rally. Nightly rest stops have removed the need for stamina and the time allowances for road sections are rather more generous than they have been in the past, but the rally is still based on rough, dusty special stages joined by road sections which are as tight as any you will find in Europe. Indeed, service time this year was very short in places and mechanics had to work at top speed, joined as often as possible by colleagues being flown around by helicopter.

One would not therefore expect to find the competition being so closely matched that a mere handful of seconds separated the leaders even up to the last of forty-six special stages. Yet that is what happened on the Acropolis Rally in early June. Throughout the event no probable winner emerged, and even until the last special stage the outcome remained in the balance, two crews having fought hard at 100% all the way to the end.

Since he emerged as the best driver Spain has ever produced, Carlos Sainz has made a remarkable impression in World Championship circles. He cannot be called a tarmac specialist, nor an expert only on dirt roads, for he is masterly on both. He became noticed from the moment he began entering World Championship events and has notched up such a succession of near misses that it could not be long before he scored the victory which he has richly deserved for so long.

That victory came on the Acropolis Rally, and not by default, as many other victories have been gained. Driving a Toyota Celica GT4 with his regular partner Luis Moya, he kept the Lancias at bay and won the rally by the margin of 46 seconds from his former team-mates Juha Kankkunen and Juha Piironen, now driving for Lancia again.

He has been second on numerous occasions, twice this year, and certainly he richly deserved this victory. He has driven well enough to win on several occasions, although the publicity writer who described him as the moral victor of the 1989 RAC Rally, after his retirement whilst in the lead due to prop shaft failure two stages from the end, showed a lamentable lack of appreciation of the sport. Mechanical reliability is as important as driving skill, and component failure as much part of the game as throwing a car off the road.

In Greece there was neither a mistake by Sainz or Moya, nor a serious component

Heat and Dust

failure in their Toyota, and they were able to demonstrate that Lancia Delta Integrales are no longer invincible. Indeed, Juha Kankkunen said afterwards that he tried his absolute best to shorten the gap and get ahead of his Spanish rival but found it quite impossible. He did get very close at times, but Sainz then simply pushed a bit harder and made sure that his narrow lead remained.

Although the actual start and finish were in Athens itself, the rally was based at Lagonissi, a bungalow complex some 25 miles along the coast south-east of Athens, and ran for four days, divided by three night stops, two at Lagonissi and one at Delphi.

Even when the rally was based in Athens, many years ago, competitors generally avoided staying in the smoky, traffic-ridden city, preferring the coastal outer suburb of Glyfada. Eventually, the organisers moved their headquarters out to Glyfada, but in recent years it has gone further afield to Lagonissi. However, competitors and teams all have their own preferences and this year they used hotels strung out along almost 30 miles of coastline and, during the recesses of the rally, teams' helicopters were active making shuttle trips between various hotels along the coast.

The whole lot was contained within a relatively small part of Southern Greece, unlike the Acropolis of years past when it used to go as far northwards as Thessaloniki and crossed the great cleft of the Corinth Canal for a final night in the south-westerly land mass of the Peloponnisos. This shrinkage of distance and area covered is by no means peculiar to the Acropolis Rally, for several others have been obliged to do likewise. Rally characters have thus changed somewhat, but communications and service planning have been made less difficult.

We can recall various political actions causing problems for the organisers and competitors of this particular rally, and this year was no different. First of all a strike at the airport disrupted flights for one day just before the finish, but more important was a strike of fuel station staff lasting several days during the rally. Some garages remained open, but these were rare, and several people (not competitors) found themselves back in Lagonissi without enough fuel to go out again. For works teams this was not really a problem, for each one now includes a fuel tanker in its service fleet, largely because present day engines demand fuel of aviation quality and would quickly object to the much lower octanes available at most pumps.

Lancia's official Martini-backed line-up consisted of Massimo Biasion, Juha Kankkunen and Didier Auriol, but there was another entered by the Jolly Club for Alessandro Fiorio, another by Top Run for Jorge Recalde and another by ART of

Modena for Michele Rayneri. Other Lancias were driven by Gustavo Trelles (Uruguay) and Ernesto Soto (Argentina). One of Greece's leading drivers, Giannis Vardinogianis who uses the pseudonym "Jigger", also drove a Lancia.

Toyota brought just two Celica GT4s for Carlos Sainz and Mikael Ericsson, but their service back-up was just as extensive as that of Lancia, with considerable use of helicopters for service. A similar car was in the hands of Mohammed Bin Sulayem from the Middle East.

Although Subaru Legacies have appeared in the Safari, these were from Japan and were not the 6-speed models prepared at the Banbury workshop of Prodrive. The Acropolis Rally marked the first appearance of a Prodrive Subaru, just one being entered for Markku AlÅn, but with support on the same level as that of the other major teams. A 5-speed Subaru Legacy was driven by Ian Duncan of Kenya, partnered by Yvonne Mehta.

Another new arrival in the World Rally Championship was the 4wd Volkswagen Rallye Golf G60, with supercharged engine. Driven by Erwin Weber, the car is undertaking a series of "test" rallies this year, prior to a full commitment to the World Championship in 1991.

There were two Mitsubishi Galant VR4s from Ralliart in Essex for Ari Vatanen and Kenneth Eriksson, whilst representing Renault was Alan Oreille at the wheel of a Gp N R5 GT Turbo prepared by Simon Racing.

There were no official Audis, of course, but as usual on such demanding events as the Acropolis Rudi Stohl, the rallying adventurer from Austria, put in an appearance, along with Pascal Gaban from Belgium and Paola de Martini from Italy.

No less than five cars called Lada Samara Vaz 21083 models came from the Soviet Union factory for drivers Altasov, Shtikov, Shkolny, Nikityuk and Artemenko, whilst there were two works Skoda Favorit 136s driven by Krecek and Sibera. Two works Wartburgs with 1.3 litre engines were entered for Krfgel and Voigt, but they did not show up. Two Romanian Dacias were driven by Ludovic and Stefan.

The weather in the few days before the rally had not been particularly good, rain and high winds having caused headaches for tyre men whose main stocks had been for dry, rocky roads. However, it cleared up before the start, after which dust became the customary problem.

The first day consisted of seven short stages contained within a 175 mile route. One of those stages, the only one of the whole event on tarmac, was cancelled because it had attracted not only too many spectators but a group of protesting environmentalists. It's a pity that this trouble was not spotted soon enough for the stage to be by-passed (which would

have been simple) because when the cars went through the stage as a road section their low speeds angered the crowd who had turned up to watch exciting driving. They filled the road, waving their fists, often causing cars to stop. Ari Vatanen was one who had to come to a halt, whereupon a spectator jumped on to his bonnet and promptly smashed his windscreen by kicking it.

On the dirt roads, rocky outcrops were abundant and punctures prevalent, although again Michelin showed that their foam-filled ATS tyres (it means Temporary Flexible Support) were well worth their extra weight on surfaces which were puncture-provoking. The works Lancias, Mitsubishi and Subaru had such tyres available, and it really cannot be much longer before Pirelli has a similar system. Eriksson, for instance, had two punctures on the first day but was able to continue because the expanding foam prevented complete deflation. Team-mate Vatanen was not so lucky, because he hit something solid and broke a wheel.

Sainz, whose bonnet loosened on the third stage, needed a replacement front differential and finished the day in second place, four seconds behind his fellow Toyota driver Ericsson. AlÅn damaged his front suspension on the rough second stage, whilst Kankkunen needed new power steering parts.

Two stages into the second day, after a generous night stop, Sainz moved ahead of Ericsson who had trouble with his power steering and, apart from losing the lead briefly to Kankkunen by just one second in the third leg, he held it all the way to the end.

The Volkswagen team were unlucky to lose their one car in the second leg when Weber, who earlier found his front wheel alignment out of true, stopped with a broken suspension. Like Mitsubishi, the team had no helicopter, and Weber was unable to struggle onwards to reach his next service point. Another to drop out was Recalde who rolled his Lancia, fortunately without injury to himself or his co-driver. In past years there have been fearful excursions in the Acropolis Rally when cars have rolled all the way down steep mountainsides.

Vatanen continued to knock his Mitsubishi about, coming off one stage with three wheels damaged, whilst AlÅn needed both his gearbox and his turbocharger intercooler changed.

At the end of the second day, early leader Ericsson had dropped to seventh place, but Sainz remained doggedly in front, albeit just two seconds ahead of Kankkunen. A very close fight between these two was emerging, and again it was brought home to everyone that the sport has become far more exciting and entertaining since cars have appeared which can challenge the Lancias.

Early in the third leg the rot began to set in for Mitsubishi. After running with a high oil temperature and low turbocharger pressure, Eriksson's engine finally cried enough and he stopped on the fourth

stage of the day. Later, Vatanen also had trouble with his turbocharger, which had to be changed, and broke yet another wheel! But it was a rather more violent crash which finally stopped the car later, frontal damage being so severe that there was no hope of continuing. However, neither he nor co-driver Berglund was hurt in the incident.

AlÅn collected two punctures, one of which also caused a wheel and damper to be destroyed. Later, his intercooler pump was also found to be damaged, and it was thought that this was caused by pieces being thrown up from the tyre and other broken parts. The pump was changed, and later the rear differential.

Among the Lancia drivers only Kankkunen was challenging the leader. Auriol had lost time when he found himself with only one gear and had to resort to pushing the car to get it to a service point. Helicopters are not allowed to provide service actually on special stages, whilst another point to consider is the rocky, undulating terrain of the countryside, not exactly rich in suitable landing sites. A couple of years ago, one service helicopter landed (lightly!) on the flat roof of a house after a mechanic on the ground had responded to a radio request and obtained the owner's permission. There was simply nowhere else to go, and we gather that the owner of the house is very proud of the photograph which now adorns his wall!

Alas, Auriol's action was to no avail. His Lancia's crankcase cracked and this could not be replaced in the time available. Team-mate Fiorio needed a new gearbox, whilst Italian girl Paola de Martini stopped when her Audi's oil pump failed. Leader Sainz needed a new steering unit, which was fitted for him by mechanics brought by one of the team's helicopters. During that third leg, Kankkunen had actually got ahead of Sainz by one second after the twentieth special stage, but Sainz immediately recovered, and finished the third day, after SS.35, 43 seconds in the lead.

The final day, consisting of the return journey from Delfi to Athens via thirteen special stages, began with considerable tension in both Toyota and Lancia camps. Would Sainz be able to hold his lead? Would the mechanical gremlin strike again to prevent his victory? Would Kankkunen achieve a sudden burst of performance, as Auriol did under strange circumstances during the final half-night of the Monte Carlo Rally?

The answer to the first question was very much in the affirmative; to the others, negative. The extent of Sainz's lead did vary to some extent, but the Spaniard never allowed it to drop to a threatening level. Of course, a puncture would have devoured it in one go and given Kankkunen victory, but it says much for Sainz's polished style that even at his high pace he always drove with car sympathy in mind, not once collecting a puncture during the entire event - and his Pirelli tyres were not reassuringly fitted with an expanding foam system.

The final leg saw the departure of Subaru's lone Legacy when AlÅn's engine spluttered noisily and died. We were told that a rocker had broken, which we found rather strange for a flat-four, 16-valve engine fitted with four "overhead" camshafts. But it seems that the engine does have parts which are called rockers, a kind of cross between a conventional rocker (as in push-rod engines) and a cam follower.

It was a shame the car did not finish, but it was its first appearance after all, and no amount of testing can authentically reproduce the hurly-burly of actual competition. It was always an old saying in workshops that when competition numbers were put on a car, its wheels were in danger of falling off!

By way of compensation, Ian Duncan and Yvonne Mehta from Kenya took their 5-speed Subaru Legacy to eighth place, winning the Group N category by some six and a half minutes from Gustavo Trelles and Daniel Muzio in their Lancia. Highest placed Greek driver was Giannis Vardinogianis in a Lancia. Indeed, although Lancia did not win, the make did fill six of the leading ten places, thereby keeping other makes out of the points-scoring positions. It helps nowadays not only to win, but to increase the population of one's make of car.

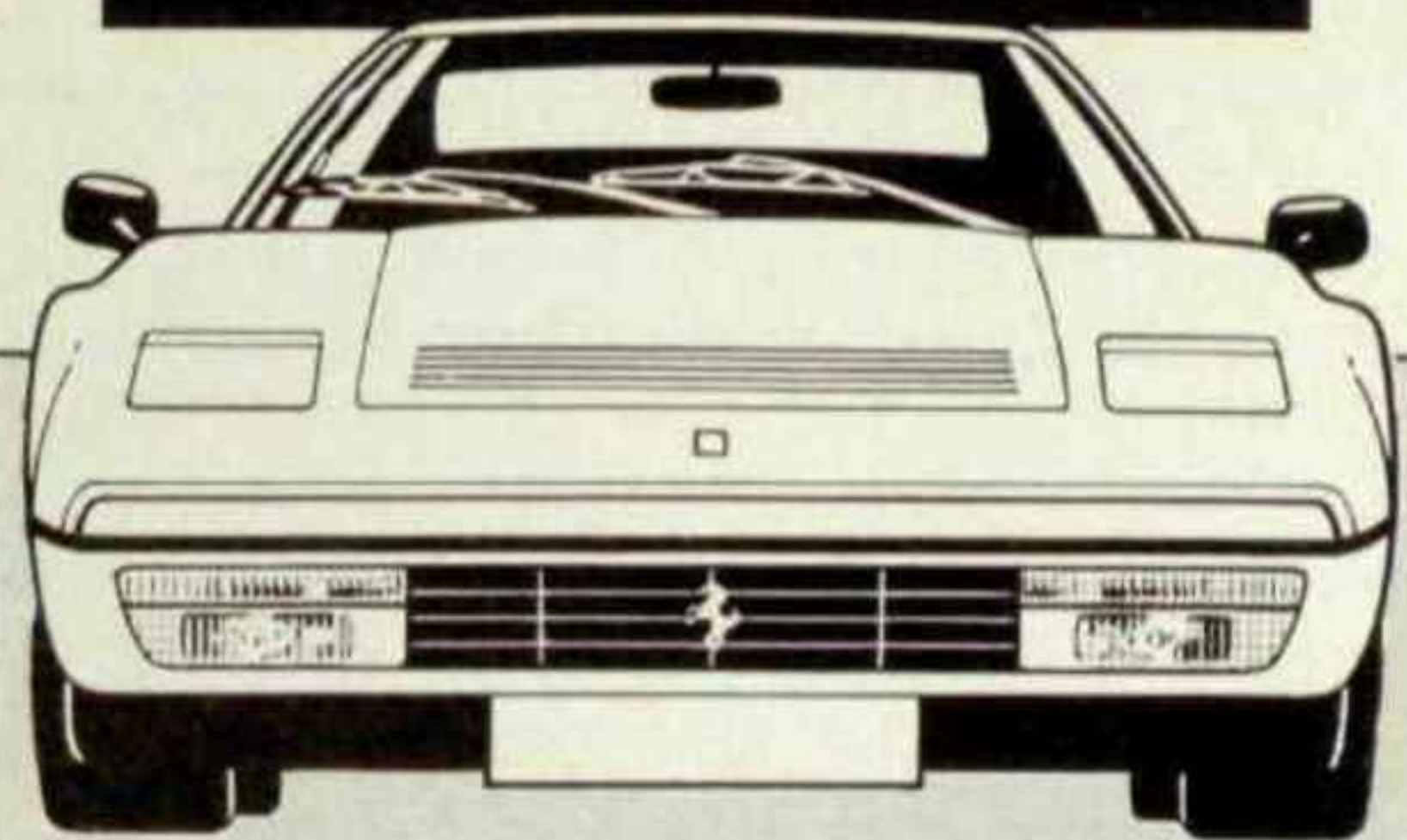
Carlos Sainz now leads the World Rally Championship, having scored 60 points to Auriol's 55, but there's still a long way to go and the series is still wide open. Among the makes, Lancia leads Toyota by 20 points, the former having scored three firsts and two seconds, and the latter two firsts and two seconds. Again, anything can happen in the months to come, but it does not seem that anyone will emerge as a challenger to the two leading makes. Next round of the series is the New Zealand Rally, which will take place at the beginning of July. GP

ACROPOLIS RALLY RESULTS

1st	Carlos Sainz (E)/Luis Moya (E)	Toyota Celica	GpA	7h 34m 44s
2nd	Juha Kankkunen (SF)/Juha Piironen (SF)	Lancia Delta Integrale	GpA	7h 35m 30s
3rd	Massimo Biasion (I)/Tiziano Siviero (I)	Lancia Delta Integrale	GpA	7h 37m 42s
4th	Mikael Ericsson (S)/Claes Billstam (S)	Toyota Celica GT4	GpA	7h 49m 40s
5th	Alessandro Fiorio (I)/Luigi Pirolo (I)	Lancia Delta Integrale	GpA	(10m) 8h 02m 07s
6th	Michele Rayneri (I)/Luigi Roggia (I)	Lancia Delta Integrale	GpA	8h 22m 08s
7th	Giannis Vardinogianis (GR)/Costas Stefanis (GR)	Lancia Delta Integrale	GpA	(30s) 8h 36m 57s
8th	Ian Duncan (EAK)/Yvonne Mehta (EAK)	Subaru Legacy	GpN	(1m) 8h 52m 39s
9th	Gustavo Trelles (U)/Daniel Muzio (U)	Lancia Delta Integrale	GpN	8h 59m 10s
10th	Pavlos Moschoutis (GR)/Ethemis Salsalos (GR)	Nissan Silvia 200SX	GpA	(4m) 9h 02m 05s

Figures in brackets indicate road penalties
97 starters; 34 finishers

Ferrari



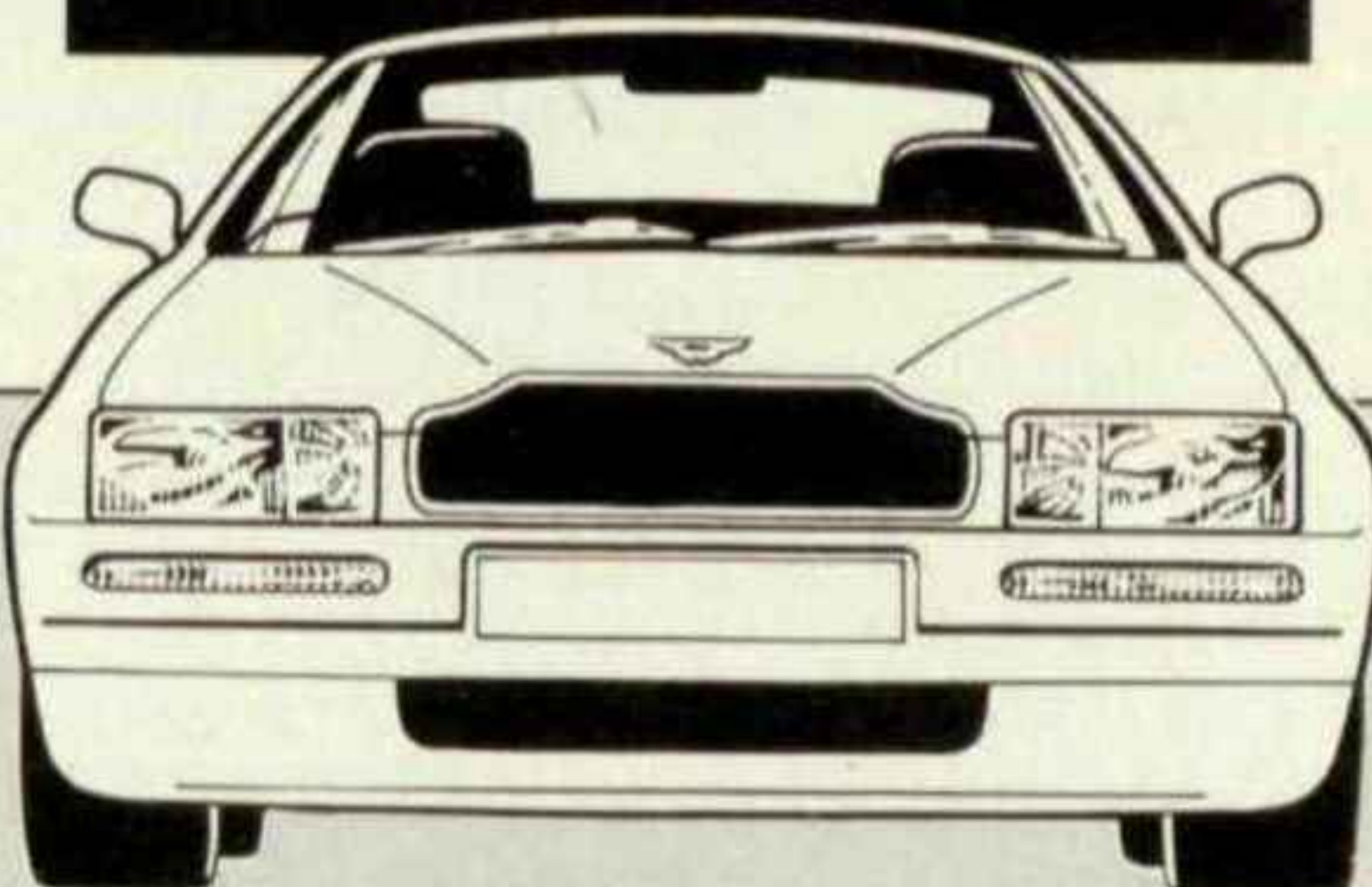
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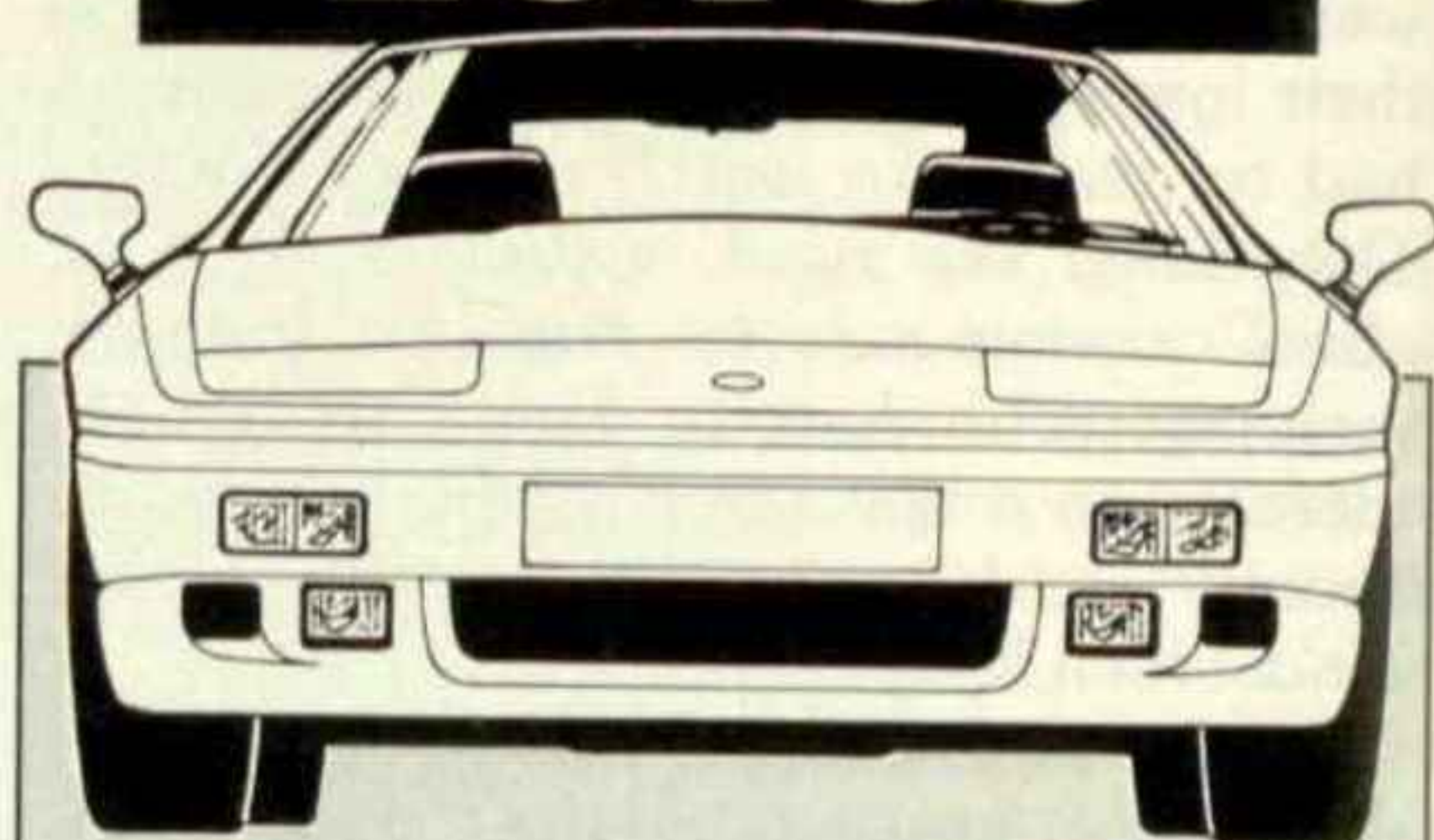


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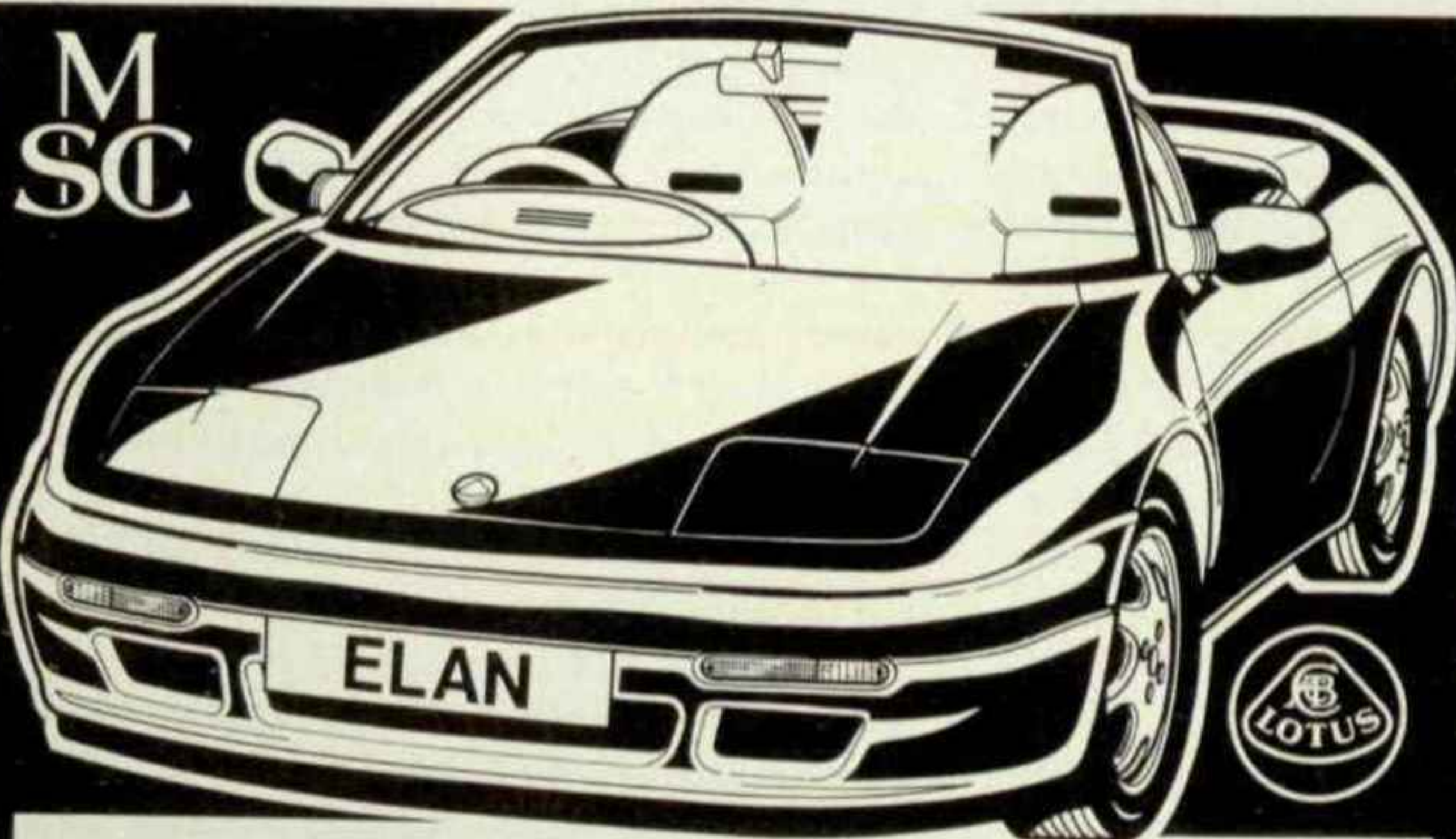
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The revised 33 retains its distinctive lines which compare favourably to many of its rivals.

A Saving Grace

Legs nicely stretched out, with knees slightly bent. Back reclined, and shoulders square against the back of the seat. Steering wheel within easy reach, arms comfortable and elbows bent at 110 degrees. Comfortable? Yes, very. Ah! Let's try again. Foot pedals closer and angled slightly to the left. Knees tucked up underneath the steering wheel, back upright, shoulders bent forward, and arms outstretched with elbows at 180 degrees. The top of the steering wheel just within reach. Ouch! That's more like it.

There is in motorcycling parlance a condition known as MV back. It is much the same as Ducati back and Laverda back, and basically means that after an hour and a half in the saddle you have a pain running from your lower spine to your shoulder blades. But you don't really care because the engine sounds so damn good. The new Alfa 33 seemed to me to provide the four-wheeled equivalent. If the driving position was its Achilles Heel, then the engine was much more than its saving grace.

It was a particular shame because the seat was so comfortable before I tried to reach the controls. Fortunately I had by then turned the engine on; the urgent rasp of the 16-valve boxer engine and a serpentine Scottish B road had already cast their spell, and I all but forgot about my back . . . for the next 80 miles at least. I also forgot about the gearstick, even though for the first few miles it did occur to me that I could be changing gear with a packet of partly cooked spaghetti.

It was the ratios that worked their charm in this respect; they were perfectly spaced, keeping you right up in the power band.

They also allowed you to change down for a high-speed corner without bringing a Banshee howl from the engine and sending the tacho needle spinning into the red. The excellent change from fifth to fourth, so awkward on many cars, also encouraged a great deal of gear changing at high speed, although the change from third to second was not nearly so easy. Fortunately the handling meant that second gear was necessary only on particularly sharp corners or for unusual pessimists, and so the problem did not arise that frequently. The clutch was perfectly weighted, and up and down changes could be made with relaxing smoothness; there was none of the dive and squat induced by first to second gearchanges on several of the car's competitors.

The new 33 has a revised chassis and suspension, and the modifications certainly work, for I could detect nothing of the understeer that blighted our first road impressions of the 33 in 1983: "Near its limit it ploughs out and understeers through corners like many a mundane front-drive family saloon".

The independent MacPherson strut front suspension has new mounting blocks and bearings, as well as an anti-roll bar, while the rear strut mounting positions have also been improved. The handling was taut and precise, and given that our test of the car was conducted almost entirely on wet Scottish mountain roads, and that the 33 did not once get out of line, one can only speak highly of it in this respect.

The Alfa now features 'low-pressure speed-sensitive' power-steering, the immediate effect of which is to almost

eliminate torque steer. It can still be felt on tight corners, accelerating hard in second gear, but that is hardly surprising, and no real problem. For hard driving in general there is no torque steer to speak of. My own feeling was that the steering is now a shade too light for such a sporting car, but that is only a matter of personal preference.

The new 33 will be immediately available with two types of engine: 1.7-litre eight valve, and 1.7-litre sixteen valve units (a 1.5-litre eight valve unit will follow in September). The eight valve unit produces 110 bhp 5,800 rpm and 112 lb ft torque at 4500 rpm. The sixteen valve engine produces 137 bhp at 6500 rpm and 118.6 lb ft torque at 4600 rpm. Both engines sound wonderful, and are the absolute high point of the car. The majority of our test was conducted with the sixteen valve engine which would rev with astonishing enthusiasm all the way to its red line at 6500 rpm. The staccato bark of the exhaust encouraged you to use all the revs in each gear. I'm not sure what the 20-70 mph or 40-90 mph acceleration figures are, but one or two caravan drivers on the Ballater to Pitlochry road (and probably still on it) will testify that they are quite impressive. Once one had got the feel for the car it was an absolute pleasure to brake hard, change down through fourth to third, set the car up at 5000 rpm and power through a corner changing between 6000 to 6500 rpm on the short stretch of straight road before the next bend. The ventilated front discs and rear drums were certainly up to the test of such treatment, although the major criticism would be that there is too much travel to the brake pedal. It disappears well beyond the throttle when braking with any sort of enthusiasm, and causes one to rely too heavily on the syncromesh for changing down.

The internal layout of the car is good (bar the seating position) although some of the dashboard controls are rather out of reach. The speedometer and rev counter are well placed, and easy to read, with a temperature and fuel gauge and a row of 'idiot' lights in between. The stalk controls had the right feel to them, and the overall build quality seemed high. The mirror adjustment, a loose carpet, and a speedo that read an optimistic 20 mph at a standstill, cast the odd shadow of doubt however.

Visually the 33 is distinctively Alfa Romeo, and rather more stylish than the majority of hot hatchbacks on the market, but that doesn't say an awful lot, and it is pedestrian compared to the striking 164.

On the whole it is a very competitively priced machine given its performance, and handling capabilities. It also has a certain charisma that you will not find in many of its teutonic and oriental counterparts. The engine alone would be enough to tempt me if my fairy Godmother gave me the £11,970 necessary to buy one of these 16 valve wonders. But she'd also need to make me five inches shorter and stretch my arms . . .

CSR-W

It had to happen. One takes it for granted from the likes of Ferrari and Porsche, from whom the F40 and 959 limited edition cars are snapped up by willing enthusiasts/investors, and one was not surprised when Jaguar announced the XJ220 which traded on the latest Jaguar triumphs on the race tracks and its link with Tom Walkinshaw Racing. Alfa Romeo is now the latest marque to jump on the bandwagon and produce a supercar, although at a cut price compared to the above mentioned rivals.

All supercars turn heads, usually because of their grace and beauty combined with their rarity value. The SZ certainly turns heads, but it has to be said that grace and beauty are not the words one strives for on first sighting of this machine. In fact "strewth", or words to that effect, are the more apparent.

When one learns that the coachbuilder Zagato has been involved in the project, there can be perhaps an understandable shrug of the shoulders when one considers some of the other creations this coachbuilder has been involved in. One learns, however, that Alfa Romeo can take all the credit itself for this design since the only acknowledged involvement of Zagato is the assembly of the car, at the rate of three a day, at its plant in Arese near Milan.

The machine does not have a line, so to speak, but is a series of architectural themes which have all found their way onto the one car. It is as if Luigi was given responsibility for the design from the windscreen forward, Paolo, the bachelor, the rear quarters and Michele, who obviously had a fetish about the tank-sided T32 Bugatti, the mid-riff.

Built around the floorpan of a 75, the car shows none of the characteristics of Alfa's mid-range saloon. Shorter than both the Spider and the 33, it is very compact at only 4060mm (157.3 ins) long, although at 1730mm (67.0 ins) it is wider than those models.

In construction it is vastly different to any other production Alfa Romeo, for the body panels have been moulded from ICI methacrylic resin apart from the aluminium roof and the carbonfibre rear wing. While this construction is done in the name of weight saving, it is also very strong and is capable of withstanding minor knocks. It also looks good.

Underneath, Alfa's familiar all-alloy V6 engine, as found in the 164 and the 75 3.0 V6, is located in the front — this is not a mid-engined supercar. Despite the addition of a three-way catalytic convertor with Lambda probe, the power of the unit has been increased from 192 bhp to 210 bhp at 6200 rpm through changes made to the engine management system. Claimed top speed is 153 mph and 0-60 mph is reached in just under 7 seconds. More than any figures in black and white, it is the spine-tingling sound of that V6 engine as it bursts into life and then again as it is pushed over 4000 rpm, by which time it is singing, that is almost the sole reason for wanting the SZ.



Beauty and the Beast!

The Spaghetti Zapper

While the floorpan started life as the 75, it is more akin to a Group A version of that model. Banished is the torsion bar suspension set-up, replaced by coil-sprung Koni dampers while ball rose joints replace the more compliant rubber bushes throughout the suspension. A limited slip differential is also standard equipment.

Alfa Romeo has tried to dispense with the electronic gadgetry which marks out today's executive and supercars and has tried instead to appeal to the driver instincts. To those used to Italian electrics, this is definitely a positive move. Some concessions to modernity are made,

though, for standard equipment includes electric side windows, door mirrors, central door locking, power steering and air conditioning, but there are few other modern addenda. You will not find digitised information blinking away at you, but instead the traditional dials and knobs familiar from the 75 and 33.

Two extra switches, which are unique to this car and found on the central console between the seats, raise and lower the suspension by up to 6mm. While this does not seem a great deal, it is enough to make the already low car hit the deck on anything but a billiard table on its lower



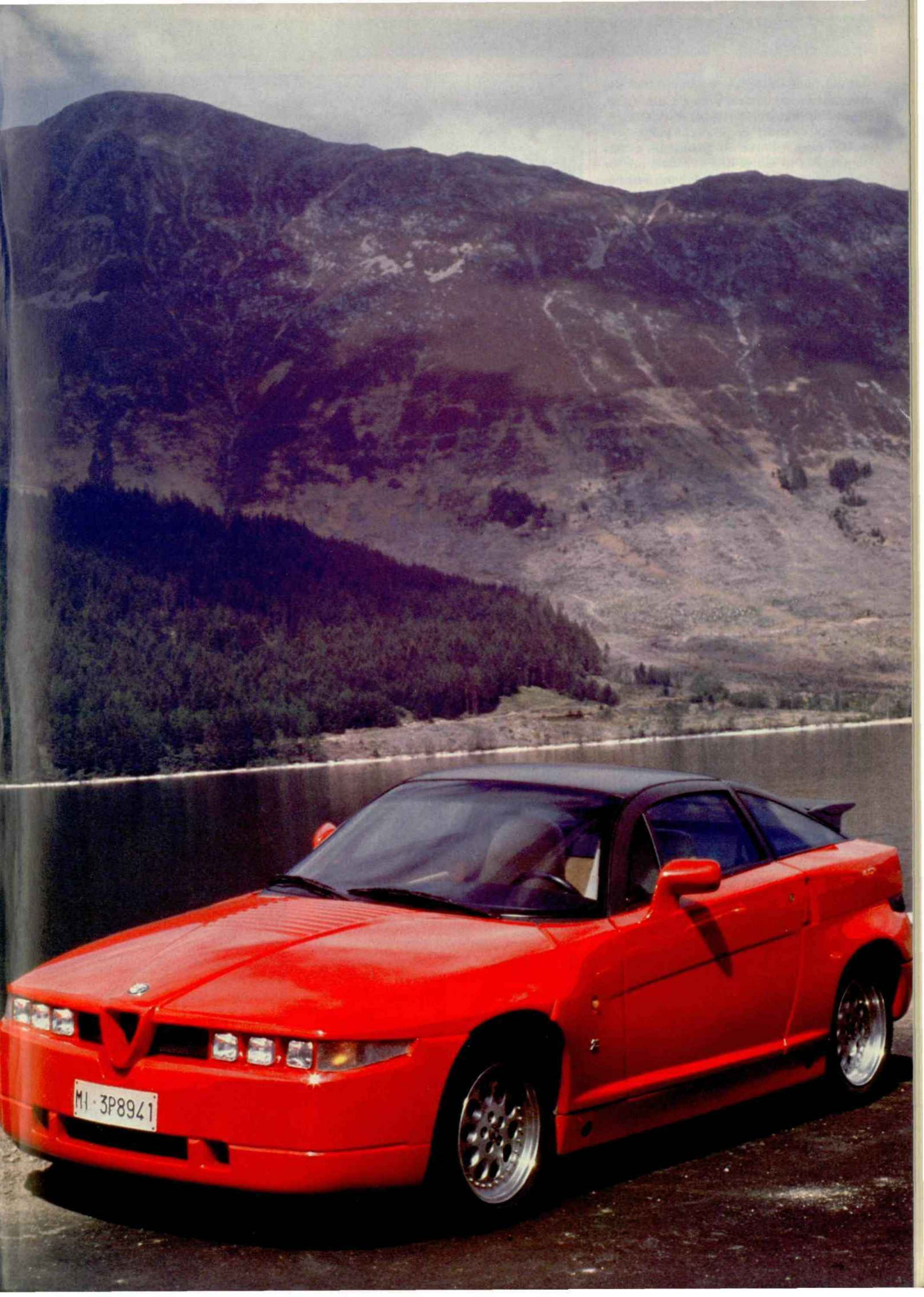
The brutal front end.



The V6 engine from the 164.



Even a toothbrush is too big!



setting, and improve traction and the overall aerodynamics. With a Cd of 0.30, these are pretty respectable anyway considering the short length of the car.

On the short run in Scotland, it was impossible to tell of any aerodynamic or ground effect advantages with the suspension set low, but it would take a very experienced driver to tell the difference up to fairly mad speeds. Beyond that, though, and the car needs to sit down on its haunches to take any slop out of the suspension.

Despite impressions to the contrary from the outside, visibility from the driving seat is excellent. All round vision is clear which not even the rear aerofoil spoils. What is also more apparent from the interior is the graceful swan-neck A-pillars.

Shod with low profile Pirelli P Zero 205/55 ZR16s on the front and 225/50 ZR16s on the rear, the grip is tremendous. Never once on the run down from Inverness to Fort William via a circuitous route into the Highlands did the car betray any oversteering or understeering tendencies, but simply stuck to the designated line. Admittedly the roads were dry, but if the press officer is to be believed, the traction is just as competent and trustworthy in the wet.

The tyres themselves have been especially developed for the SZ and are made up of three different compounds, the softest being on the edge for better grip on hard cornering, and they have an unusual tread pattern. But at £450 a tyre, *trade*, they are not cheap.

There is a tendency for the car to thump a little on uneven road surfaces, but the suspension system copes manfully, although it must be borne in mind that its first priority is to keep the car off the marbles. What mars the enjoyment more, though, is the horrible gear change. Similar to that found in the 33, the gear lever needs a certain amount of concentration to ensure that it slots into the right ratio — it was all too easy for fourth gear to be selected rather than second and, to a lesser extent, fifth instead of third.

The car we drove was one of the pre-production models of which there are only three in existence — the show car and a *muletta* being the other two, although if one were to believe rumours, the first batch were sent back to the factory by the top management with the note "try again".

When the car starts coming through in September, they will be the first of 1000 examples being made with 100 coming to Britain. On announcement of this limited edition model in June 1989, Alfa Romeo GB received 281 orders for the 100 allocation all with the £5000 deposit required, so whether we are rude about the car bears no relevance to the situation.

In fact at £40,000 the car is not horrendously expensive. It is entirely machismo without compromise, and a model which is bound to raise the profile of the Alfa Romeo marque a few notches higher. Good luck to them. **WPK**



Even with the hood up the car retains its neat lines.

Return of a Classic?

To celebrate the official return of the Spider to these shores, Alfa Romeo invited MOTOR SPORT to Scotland to drive their new baby. So what, you may say, Alfa Romeo Spiders are hardly new and it is not that unusual to see them about.

This new model, though, sees the old model successfully shaped to take the car into the last decade of the millenium without losing any of its former flair, and in fact looking a great deal prettier than the recent Kamm-tailed version with heavy American rear bumpers one usually

sees. Its importation into Britain is also a direct response to the Mazda MX-5, and it is against that car it has to be measured.

While Peter Kinnaird, the Managing Director of Alfa Romeo (GB) Limited, is quite right when he states: "Unlike a number of soft top cars recently launched here, the Spider sports a heritage to be proud of . . ." that heritage can be as much of a liability as an asset. How many times have you heard the phrase: "Everything about my Alfa is terrific until it goes wrong, but the problem is that it does so too often."



The Pininfarina logo is still proudly worn.



The revised lamp cluster.



The altogether tidier rear end.



The spacious boot with Alfa Romeo imprint.



The basic shape may be over 20 years old, but it still remains undated.

It is this questionable quality control which has been the bane of Alfa Romeo throughout the marque's life, but almost all the models that emanate from Milan have soul, which is more than can be said of the products of other manufacturers, particularly the Japanese.

In the MX-5, though, it has a tough nut to crack. To the Italian's advantage, it has that lovely "classic" twin-cam engine. This 84 x 88.5mm, 1962cc engine, now fitted with three-way catalytic convertor with Lambda sensor and Bosch Motronic ML4.1 digital engine management system which regulates low rev response and broadens the torque curve, puts out 120 bhp at 5800 rpm and has a torque peak of 116 lb ft at 4200 rpm. Top speed is quoted at 119 mph and 0-60 mph is reached in a fairly leisurely 9.2 seconds. (The vital statistics of the MX-5, for those interested: 1588cc, 114 bhp at 6500 rpm, 100 lb ft at 5500 rpm, 121 mph max speed and 0-62 mph in 8.75 seconds). Architecturally — the Alfa; performance — Mazda.

The Spider is a comfortable car, the new seats are now mounted further back for

greater legroom while they remain supportive. The ergonomics are still not up to scratch, two dials on the main console are virtually hidden from view while the push buttons on the centre console could be better located.

The gear lever remains at an odd angle sticking out horizontally from below the fascia when in neutral rather than vertically as is conventional. The biggest handicap for British drivers, though, is the fact that the car only comes in left-hand drive, although Bell & Colvill Limited of West Horsley do convert this new model to right-hand drive alongside the 1600 and 2000i.

The hood is easy to erect, but the clips locating it to the windscreen were the devil's own to push home on the test car. This reflects poorly in light of the Mazda operation.

A hard-top with rear screen heating comes as part of the standard equipment as does the power steering, electrically operated windows and door mirrors and a stereo radio-cassette player.

Externally the Spider looks far more

refined with the rear end tidied up. Gone is the large black bumper and Kamm tail replaced by a re-shaped colour coded bumper and larger, horizontal light clusters. At the front the familiar Alfa Romeo radiator grille has been blended into the colour coded bumper. These changes, together with the Alfa Romeo Tipo 33-style alloy wheels and Pininfarina's banishment of a rear spoiler, have greatly improved the look of the car.

On the road, the power steering, which comes as standard, is pleasantly weighted while the steering is more responsive thanks to the improved ratio.

Despite the unusual location of the gear lever, the five-speed box is user-friendly and anything less than a slick change has to be the fault of the driver rather than the car.

The suspension is fairly conventional with a coil-sprung live rear axle with trailing links and anti-roll bar and unequal length transverse control arms, lower wishbones, coil springs and damper and an anti-roll bar at the front. The limited slip differential is standard and the brakes, discs all round, are servo-assisted.

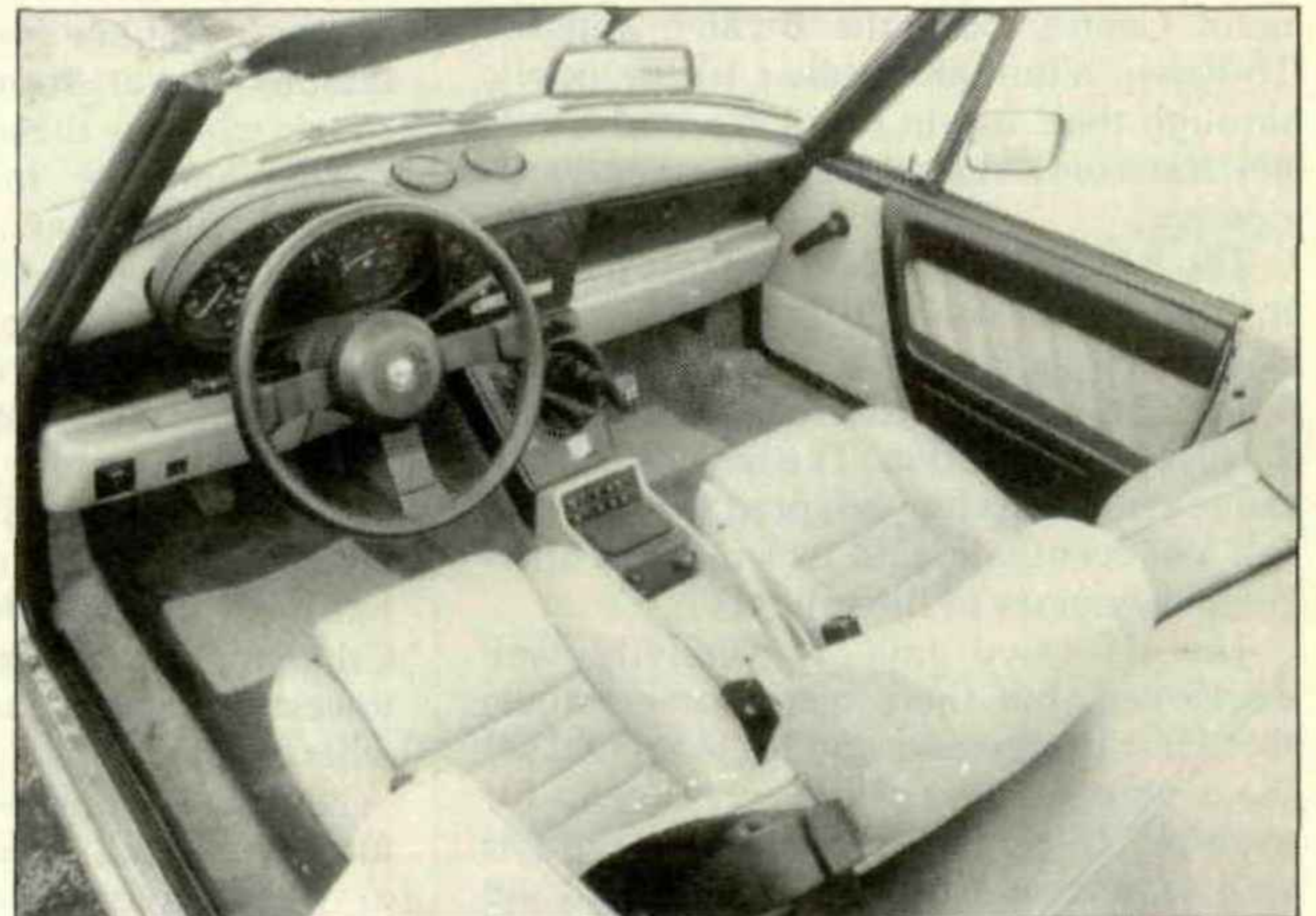
Priced at around £16,000, the Spider is nearly £2000 more than the MX-5. The Italian unquestionably has more class, but it lacks the peppiness of the Japanese motor. There is also still a question mark hanging over it with regard to quality control — where else does the driving mirror come away in your hand as you adjust it?

This last point, though, is unlikely to deter potential customers from choosing the car. The fact that it is only available in left-hand drive is more likely to be the determining factor. The trouble is that of the 8000 being made a year, the bulk go to the USA with the rest of the world, principally Europe, taking the crumbs. Of that, the British market is too small to warrant not just the cost of the conversion to right-hand drive but also the cost of the bureaucratic red tape needed to make it legal for Type Approval. Whilst it will undoubtedly give Mazda and its ilk a good run for their money in Europe, it has unfortunately more or less vacated the field in Britain.

WPK



The ageless twin-cam engine with three-way catalytic convertor.



The peculiarly positioned gear lever of the Spider is still retained.

Calibra, General Motors' answer to the Ford . . . well, in fact, it's not in response to anything from that other American multinational at all because after the demise of the Capri, hated by some but loved by so many others, Ford has not had a sporting three-door coupé in the same mould. Whilst the Escort RS Turbo and the hotter versions of the Fiesta can claim to do the same job, the fact they have junior brethren running around in unsporting, cooking five-door guise diminishes that aspect.

Under the direction of Wayne Cherry, the Opel/Vauxhall designers have been very clever with their new product. Whilst the Calibra is recognisably a GM product, it is distinctive enough from any other of that company's models to win over new buyers as well as ensure the loyal buyer will have an even broader range from which to choose.

Well, what makes the Calibra so distinctive?

While it may be a sporting coupe in the Capri/Manta sense, it is world's apart from those two models which can trace their roots back to the Sixties which could even be detected in the latest versions produced during the mid-Eighties. The Calibra, though, represents the thinking of the Eighties and is thus two decades ahead.

On its introduction the Calibra, a model name common to both Opel and Vauxhall, will be available in only four guises but with the same trim level. In 8-valve form, the 2-litre car will be available as both automatic and manual, with women drivers very much targetted by the manufacturer. In 16-valve form it will be available in either two-wheel or four-wheel drive configuration, the latter safe after the horrendous problems they had with the viscous coupling in the early versions of the 4x4 Cavalier. The launch date for the model will be November.

As goes without saying these days, both versions of the engine have catalytic converters although the respective top speeds of 127 mph and 139 mph will be fast enough for most people.

As we were told by Karl-Heinz Breitwieser, the head of engine development and testing at Opel's Technical Development Centre, both the 8-valve and the 16-valve, although familiar to the public through their use in the Astra and Cavalier, have been the subject of further development.

The 8-valve engine has had less done to it than the 16-valve. It is already a fully developed powerplant with one of the highest burn rates that can be found in 2-valve configuration. The new Bosch 1.5 management system adapted for the Calibra will eventually find its way onto other 8-valve engines in the range.

The 16-valve unit is similarly well developed, but there were some targets that Herr Breitwieser and his team had set themselves. They were very keen, for example, to get the exhaust sound right as well as improve the driveability and yet still maintain a creditable fuel consump-



The General's Revenge?

tion. They wanted to quieten the noise compared to the Astra's and Cavalier's, but they still wanted a pronounced sound.

The torque characteristics were important. While they wanted to have the same torque characteristics of an 8-valve at the lower end, they did not wish it to be at the expense of reduced power. They were already travelling down this road with the 16-valve unit which went into the Astra as it used a new camshaft developed to gain some power without losing low end torque, but now that has been taken a stage further on the Calibra by revising the inlet and exhaust ports, the engine management system and the transmission ratio, so that the car can now accelerate to 60 mph with the need for only one gearchange.

Another engine modification has been the ventilation of the crankcase to help the engine at higher speeds, developed from lessons learnt from the Vauxhall-Opel racers who use these 2-litre engines.

The body is most striking, Wayne Cherry having been able to take advantage of new lighting technology which sees the headlamps only 700mm high, but as effective, if not more so, than larger ones found on most other cars. With the incorporation of the fog lamps, side lights and indicators into a wrap-round lamp cluster, the whole frontal aspect of the car has been greatly reduced, thus helping the Cd factor read a very creditable 0.26, the lowest of any production four-seater anywhere.

Narrow air intakes above and below the front bumper, a steeply curved windscreen at 64 degrees, semi-flush glass which covers the centre pillars, aerodynamic sill

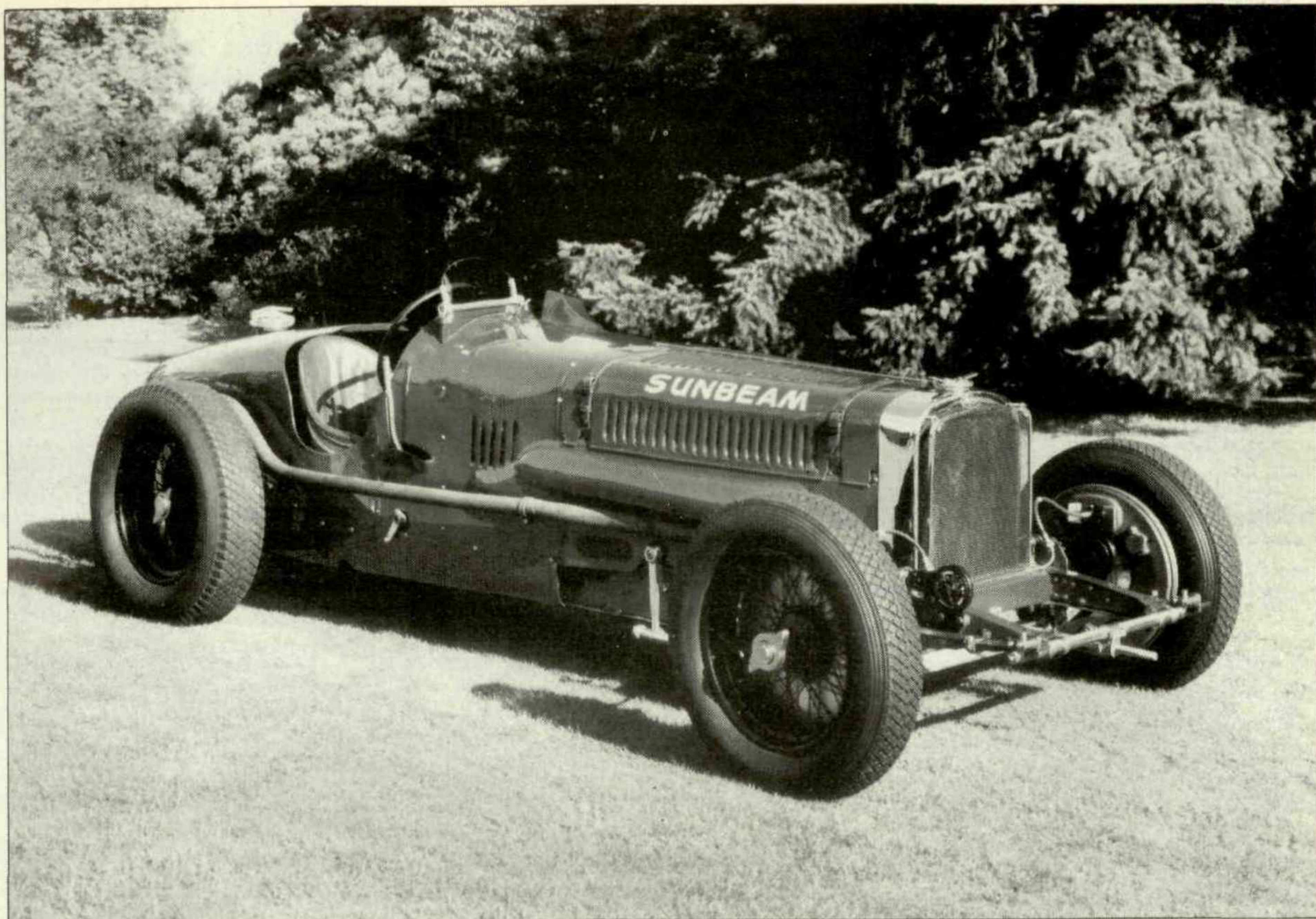
mouldings and the distinctive wedge shape all have their parts to play. Discreet black spoilers underneath the front bumper moulding divert the air away from the wheels and tyres to decrease turbulence and are matched by matt black lower sill extensions. These aerodynamic aids can be found on all the models.

At the rear the tailgate is spoiler-shaped while the colour-coded moulded wrap-round bumper is fitted with an integral lower spoiler. The rear turn indicators and lamps have smoked lenses for aesthetic purposes and a neat touch is the incorporation of the rear window washer nozzle in the roof-mounted aerial.

On a test drive that took us up to the Col du Turini, part of the Monte route, the car proved very stable, despite the sharp left and right handers it was constantly thrown into. The engine noise was not particularly noteworthy, but the smell of petrol which accompanied the car was.

Where the car did disappoint, though, was the interior. Recognisably Cavalier, it was not up to par with the rest of the car. It simply failed to exude the quality one felt a car of that ilk should have. If Vauxhall is serious about attracting new buyers, the interior should be looked at again. Everything was competently placed, no complaint with the ergonomics, but simply the quality was not as good as, for example, the Audi Coupé. A shame.

With the base model carrying a price tag of £14,750, £17,250 for the 16-valve and £18,890 for the all-wheel drive version, it is not cheap, but so distinctive is the shape, I am certain that Vauxhall will sell their allocation. WPK



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**Tiger, Tiger,
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Does the 850i, the latest in a long line of BMW coupés, live up to its predecessors?

The British are famous for their patient and (usually) orderly queues, but I wonder if those within the queues for sporting/luxury coupés from West Germany seriously ask themselves about the years that may be spent awaiting RHD delivery of machines such as the Mercedes SL, or the BMW 850i. We have been privileged to drive both these rival machines in the last six months, and would summarise their characters by saying the Mercedes SL is a logical and beautifully crafted development of traditional SL appeal in a Nineties context. Meanwhile the BMW 850i fails to heed its sporting heritage and lies uneasily in the role of luxury coupé.

Aside from the weight and girth, the 850i's vital statistics sound promising. There is a new six-speed gearbox, which has five comparatively close ratios plus an overdriven top gear that allows 100 mph at just 3350 of 5800 available rpm. The 15.6 foot display of flush curves in glass and metal allows an exceptional 0.29cd aerodynamic drag factor, even wearing the standard 235 ZR 16 rubber on 7.5 inch broad alloy wheels.

The body, with drawings dating back to 1984, has some attractive aspects. The styling must be a matter of personal taste,

Worth the wait?

but we must say that there is not the composed elegance and clarity of vision seen in so many previous BMW's. Pop up headlamps appearing in a design that also has the rather cliché wheel arch blisters (Audi quattro, 1900, Lancia Delta Integrale, 1986 Vauxhall Nova and so on). A lot of BMW 6-series and earlier coupé drivers will not recognise this heavy two-seater machine of nearly 4000 lb kerb weight as a natural descendant to the cars which traditionally earned BMW European Touring Car Championship titles. The token "+2" element is also a poor joke in such a plump occupant of 188.2 inches length and 73 inches width of valuable road space. Only the low roofline and elegantly sculpted side glass properly combine today with tradition.

BMW is particularly proud of the extensive electronics including use of the interesting multiplexing system to cut wiring complexity in areas such as the sunroof or doors, and electronic traction control devices abound within the five arm IRS

layout. "Elastokinematics" and the use of a subframe in support of those linkages allows the car to accumulate violent changes of power, cornering angle and speed with amazing grace. Both suspension and traction control devices (including the use of the ABS rear brake action as well as reductions in engine power delivery) serve the purpose of taming the effects of 300 bhp delivered suddenly from prow to stern. A Porsche or Audi engineer might well wonder why BMW did not start with a more promising traction formula in the first place? For this BMW coupé is completely unlike its predecessors in that it does not share the floorpan of an existing saloon, thus creating opportunities for basic engineering solutions to handling and traction problems.

BMW will forcefully assert that its new low drag body, six-speed gearbox, and unique rear suspension (production is too expensively slow for it to spread to other models immediately) are sufficient

advances to earn respect for the 850i in a technically aware society.

The 4988cc V12 of 60 degrees (84mm x 75mm) had been thoroughly proven in the 750i. One might have wished for more than the usual 300 bhp at 5200 rpm or 332lb ft of torque at a comparatively elevated (for 5-litres) 4100 rpm peak. Since BMW govern maximum speed to 156 mph — as they also do for the M5 and the 750i — the engineers would not admit the logic of increasing power merely to cut acceleration times of a bulky car beneath 6.8 manual seconds to 60 mph, or 7.4 sec in the four-speed ZF automatic. Neither would engineers on the launch admit that they had worked on 4 valve per cylinder versions of the V12 (probably with dry sump lubrication to avoid upsetting the low bonnet line), or that a V8 was anything other than journalistic imagination. What is far more likely is a return to world class motorsport using a purpose-built racing V12.

Driving out from the company's Technical Centre at FIZ in Munich, the manual six speeds and graduated weight of the clutch demanded traffic concentration, but soon became routine. Despite the rapidity with which changes can be made, the sixth gear option on a 5-litre V12 did not strike us as an obvious priority as the 12 has more than a wide enough power band to cope with top gear down to a smooth 800 rpm pull away. The British speed limit is dismissed at a contemptuous 2345 rpm in sixth. The automatic, which offers the usual Sport and Economy operating alternatives, struck us as entirely more relaxing for the likely clientele in Britain and the USA, but in Germany they think up to 60% of customers will opt for the sextet.

Do not expect much practical mpg bonus with a manual gearbox; we got our best computed figure of 17 mpg from an automatic and figures ranging from 8.7 to 14.4 mpg assessed in three manual models. The official Urban figure is the same 14.3 mpg for either gearbox, which is served by 2.93:1 (manual) and 3.15:1 final drives.

The quadruple rectangular exhausts of the V12 and its demeanour are of more sporting character than the Jaguar 5.3-litre dozen. Insulation from noise and occasional driveline snatches, or road vibrations picked up by giant F700 covers, is inferior to Jaguar civilisation. Driven harder, over a country road on M-technic suspension, there was excitement and exhilaration to be had from the big BMW. However, you had to allow plenty of retardation space for the 12.75 inch ventilated discs to overcome the astonishing speeds indicated on a fussier black and white instrumentation layout than we are used to from Munich. The ball and nut power steering (Servotronic) and rear suspension will provide an accurate line, but not the flow of information and agility that makes driving a pleasure rather than an operational routine.

The 850i is not a bad car, but an autumn 1990 delivery cost estimated to be



The interior is comfortable and well laid out.

'£60,000-£65,000' there were more disappointments than expected and very little sheer Joy of Driving that BMW has made a speciality of the marque in less complex cars. Standard British equipment is naturally more extensive than on the £50,000 home market 850i. Items such as outstanding electronic ABS braking, 18 button (allegedly simpler!) computer and electric adjustment of seats, mirrors and steering wheel with memory of three positions can be expected. Also included is effective air conditioning, cruise control, CD player and in-car entertainment. Options primarily extend to Buffalo hide to replace the standard leather, sportier 'turbine' alloy wheels and (in my view, vital) M-technic suspension.

BMW will offer four (three in England) separate suspension spring and damper ratings, including an electronically controlled system (EDC) that provides both Sport and Comfort settings. In action, only one layout, which also demanded a thickening of anti-roll bars, could be recommended to our readers. Anything softer than the M-Technic option allows excessive squirming and front end floating, not just over crests and through long motorway corners, but in straightline running on breezy *autobahns*. Ride quality is excellent, even using the hardest M-Technic layout, partially attributable to the 105.7 inch wheelbase.

The BMW 850i is definitely one of those cars you should drive before blindly prof-

fering £5000 of your money to swell a dealer's bank account without earning a penny of interest when you, at one year waiting time of the two years quoted, are asked to offer such a refundable deposit. That is not the end of your 850i cash involvement, for three weeks before delivery they will ask for another £5000 and you now have no right to a refund on the £10,000 that you have invested. Terms may vary according to locality, but the factory quote of three years waiting and the British estimate of two years are consistent.

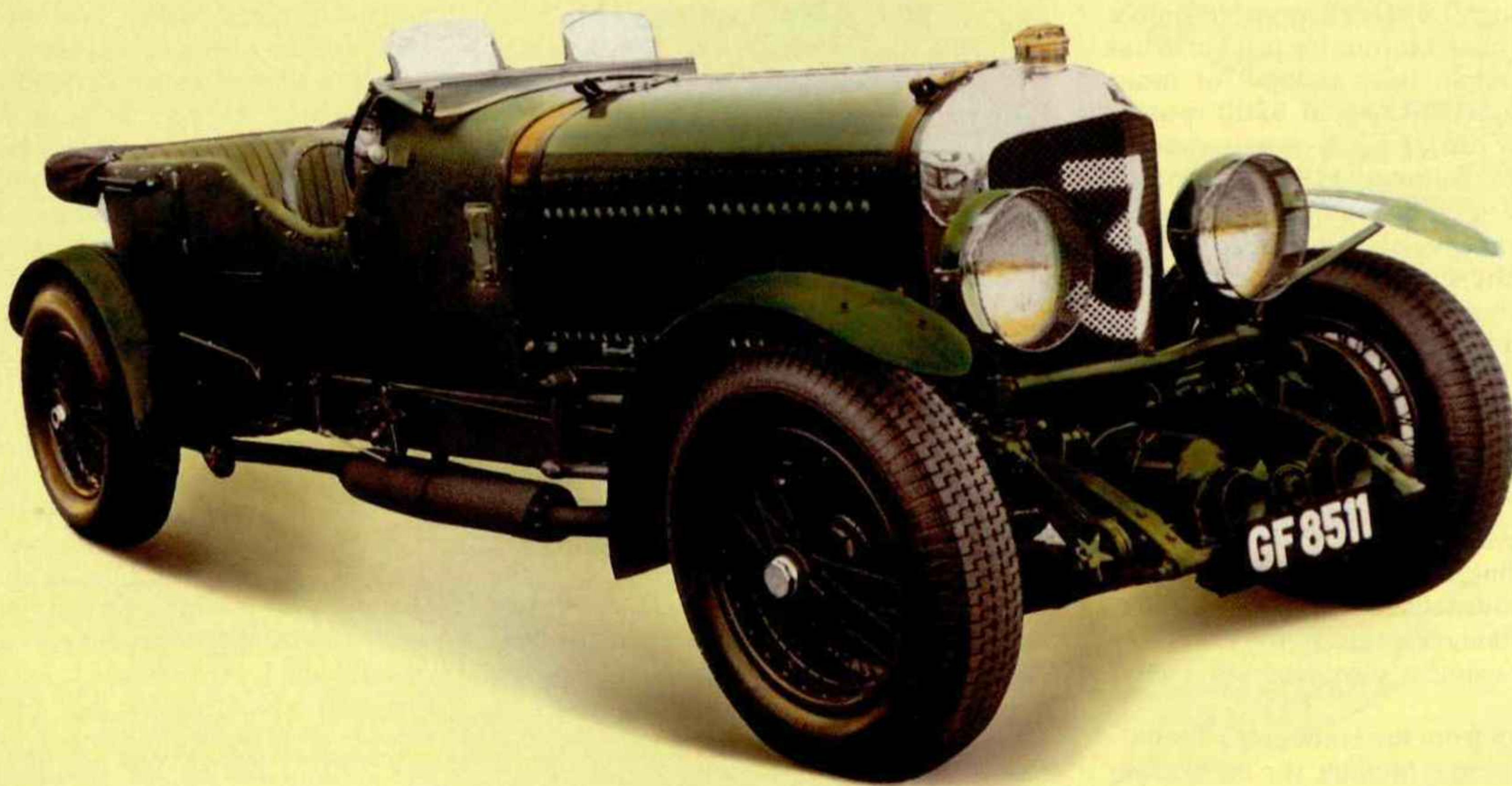
For twenty years I have enjoyed driving BMW coupés and even had the honour of competing with one (3.0 CSi) at the long track Spa 24 hours. So I approached the 850i with considerable goodwill that the 6-series had done nothing to diminish. It gives me no pleasure to say that BMW's world class engineers were apparently mismanaged, producing a complex dinosaur which history may judge as an echo of their insensitive past *faux pas*, like the 2002 turbo in the middle of a fuel crisis. BMW carefully call an 850i unique, I would say it falls unhappily between the sporting role of Porsche and the ultimate refinement of Jaguar or Benz. JW



Ride quality is excellent, but the M-Technic suspension is essential.



Seen from the rear, the 850i displays none of the design faults seen on other parts of the car.



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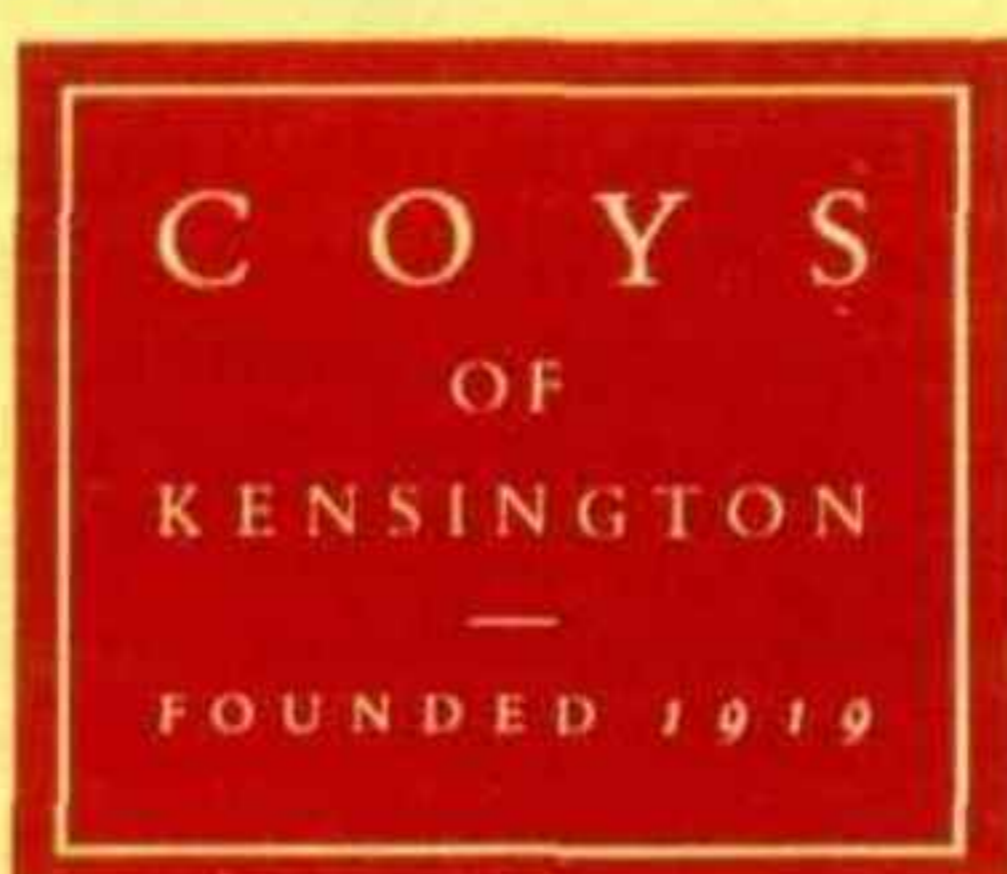
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The V8 keeps ahead of a normal 'B' during practice. Superior in a straight line, the bigger engined car was more of a handful in the twisty sections.

While the rest of the world was following the fortunes of the Grand Prix stars at Monaco, and others were watching a Dutchman win at the Brickyard in middle America, and yet others were enjoying the VSCC meeting at Donington, over 6000 MGs from around the world had gathered at Silverstone to celebrate the Diamond Jubilee of the MG Car Club.

Spread over the last weekend in May, the International Weekend was a mixture of racing and concours, socialising and bargaining at the many MG parts stands. While the Sunday was more family orientated, the Saturday was devoted to the more serious business of racing.

While the meeting was mandatory for all lovers of the marque, there was an ulterior motive for MOTOR SPORT's presence inasmuch that Robert Shaerf of LV Engineering had enticed us there with the mouth-watering prospect of driving his V8-engined MGB GT in one of the events.

It was in the October 1989 issue that we first reported on this car. For readers unacquainted with the story, this was a standard MGB GT V8 which Shaerf had bought to go club racing. Having a business in West Hampstead which specialises in MGs, it was a natural choice, but less so the V8. The reason for that boiled down to romance over everything else for while the 3½-litre unit has plenty of grunt, it is not the ideal choice as a racer due to its questionable brakes, on the track, and its handling.

The aspect that made this car stand out from the rest of the field was the fact that with the backing of British Benzole, it was running on unleaded fuel. This is a move much lauded by Will Corry, chairman of the MG Car Club, who is himself converting his TF to run on unleaded.

During 1989 Robert Shaerf had clocked

'B' Green

up 1400 miles on the road to and from the circuits and a further 220 miles on the track while practising and racing. While there had been no apparent power loss running on this fuel, there were a few questions which needed answering by the end of the season particularly as there was a divergence of opinion between Austin Rover, who were adamant that the engine would not take it, while informed opinion from the Leyland Daf truck division gave contrary advice.

When both the gearbox and engine were stripped after the final race, they were found to be in very good condition especially taking into account that both had gone through three seasons of racing. The crankshaft only needed to be polished and the bores honed. The camshafts, followers, timing gear and oil pumps showed no signs of wear but were all replaced as a matter of course. The pistons, with the exception of one which was found to be a little tight, were in perfect condition showing no effects from the unleaded fuel and were retained for the 1990 season. A new set of rings, however, were fitted.

If there were going to be any problems arising from running on unleaded petrol, it would show in the cylinder heads. When they were dismantled they were also found to be in very good condition. The only thing discovered was a slight carbonising of the exhaust valve seats which would have occurred even with leaded fuel.

The heads, in fact, were replaced by secondhand castings (the budget doesn't quite run to new castings), but the regulations require pre-'85 heads anyway. They were sent to tuning specialist Peter Bur-

gess in Derbyshire and were built to championship specification within the limitations of gas flowing, opening up the ports and polishing not being allowed.

The rebuild with the new heads and camshafts, though, has seen an increase in power by around 20 per cent so that it now has a recorded figure of 190 bhp at the wheels. This enables the 19½ cwt car to reach an indicated 125 mph.

After nine years, the V8s have been allowed a concession by the Wilky championship regulations which is particularly pertinent as it pertains to the Achilles Heel of the car — the braking system. Four cooling slots per side per disc are now allowed enabling the pads to remain cleaner as well as giving them a longer life.

In a packed programme of 11 races which saw a variety models ranging from K1s, NAs and PAs to the monstrous Group B 6R4s, the British Benzole bedecked V8 was entered in the first event.

Re-acquaintance with the car commenced in the first practice session. As it accelerated down the pit road, the smell, the feel and the noise really started the adrenalin pumping. The thoughts that this was nothing more than a club racer which had been partially stripped down and which had a rollbar installed were replaced by the fantasy that this was an altogether meaner machine.

This is not to decry the V8, though, for a quick glance at the speedometer on one occasion told the story that 120 mph was being easily attained and that there were few other cars on the circuit which could keep pace in that session.

Cornering was more tricky. Thoughts were kept in mind about the braking problems so the Yokohamas were never made to work hard at all. It was more a question of tiptoeing around the corner and then pushing hard on the accelerator and let-

ting the engine do all the work. In fact, if one wanted to be lazy, changing gear was almost unnecessary. Approach the corner, brake, steer through it and then let the V8 burble its way up the rev range. That, however, was the easy way, but with the gearchange on Shaerf's car being particularly slick, it was as much fun to play with the gear lever to the extent that Becketts was taken in second.

Although 20 minutes was too short a time to get to know it properly, it was all there was before the chequered flag came out to end the session. At least there were not any incidents unlike other sessions which saw cars flying off the circuit in all manner of accidents, fortunately none too seriously.

As the time for the race drew near, Robert Shaerf checked the car, checked the pressure in the tyres and sent me on my way.

Dropping the clutch at 4500 rpm, the V8 gave chase to a BMW and an Aston Martin DB4. Thanks to the light weight and the grip of the tyres of the V8, the Bavarian machine was only able to draw away slightly as we went into Copse Corner for the first time. The DB4, though, was quickly disappearing into the distance.

After one lap, the German car began to ease away and slipped out of reach, but the MG ran faultlessly, running cleanly to the red line at 6000 rpm while the brakes remained sharp. After Copse Corner, Maggotts Curve could be taken in fourth at full throttle although a nasty bump just past the apex would unsettle the car. It was then down to third and then to second for Becketts before the long haul down Club Straight reaching maximum revs in fourth just before the bridge, snatching overdrive and then heavily braking for the new, deceptively sharp Brooklands Bend and the entry into the right, left, right complex, all taken in third with a dab of left foot



Roy McCarthy in his original V8 is chased by reigning Wilky champion Peter Hall in the 'B'.

braking to set the car up correctly on the approach to the right handers. It was then up to maximum revs in third, fourth snatched on the flat out Woodcote Corner and tugging at the steering wheel to stop it running wide on the exit as we shot past the grandstands. All the while the car was perfectly mannered displaying only a slight tendency to understeer while the brakes remained trustworthy for the duration of the event.

The third place finish, behind the Aston Martin and the BMW, was more a tribute to the car than to the driver, the machine being a forgiving beast, its handling far

better than remembered. The best lap of 1 min 30.53 secs was hardly quick enough to set the world alight, but at least we knew we were in the ball park when the only other V8, the fourth placed car, recorded a best lap of 1 min 30.34 secs.

While the major league players were showing their worth in other parts of the world, this little MGB was helping to extend the frontiers of knowledge just a little in a low key, but effective, operation.

MOTOR SPORT would like to extend its thanks to Robert Shaerf of LV Engineering and Terry Burton of British Benzole for making this track test possible. WPK



Karl Barras shows great zest in locking up a wheel in his Austin Healey Sprite.

This important and pleasant assembly came to Britain again this year. It started in N.Wales, had some 80 entries, from America, Germany, Italy, Holland, France, Sweden and Canada, and took in such touring attractions as Snowdon (the ascent by steam-powered rack railway curtailed by mist), Portmeirion, Ruthin Castle, etc, before going via the Horseshoe Pass, South to the MMM, Cheltenham and the BOC's hill at Prescott.

The line-up at the MMM, where the Sunbeam 'Tiger' was in pristine condition after its recent 157 mph run, was very impressive. Alan McNab came in well ahead of the others in his ex-Posner T44 with T38 chassis and gearbox, pleased with a successful run as the car had been finished only two weeks beforehand. Next in was Rune Muller's nice T40 two-door saloon (he told me he also has other cars including the only complete surviving air-cooled SARA). Next came a 1939 T57 Gangloff drophead coupé, followed by

Bugatti Rally

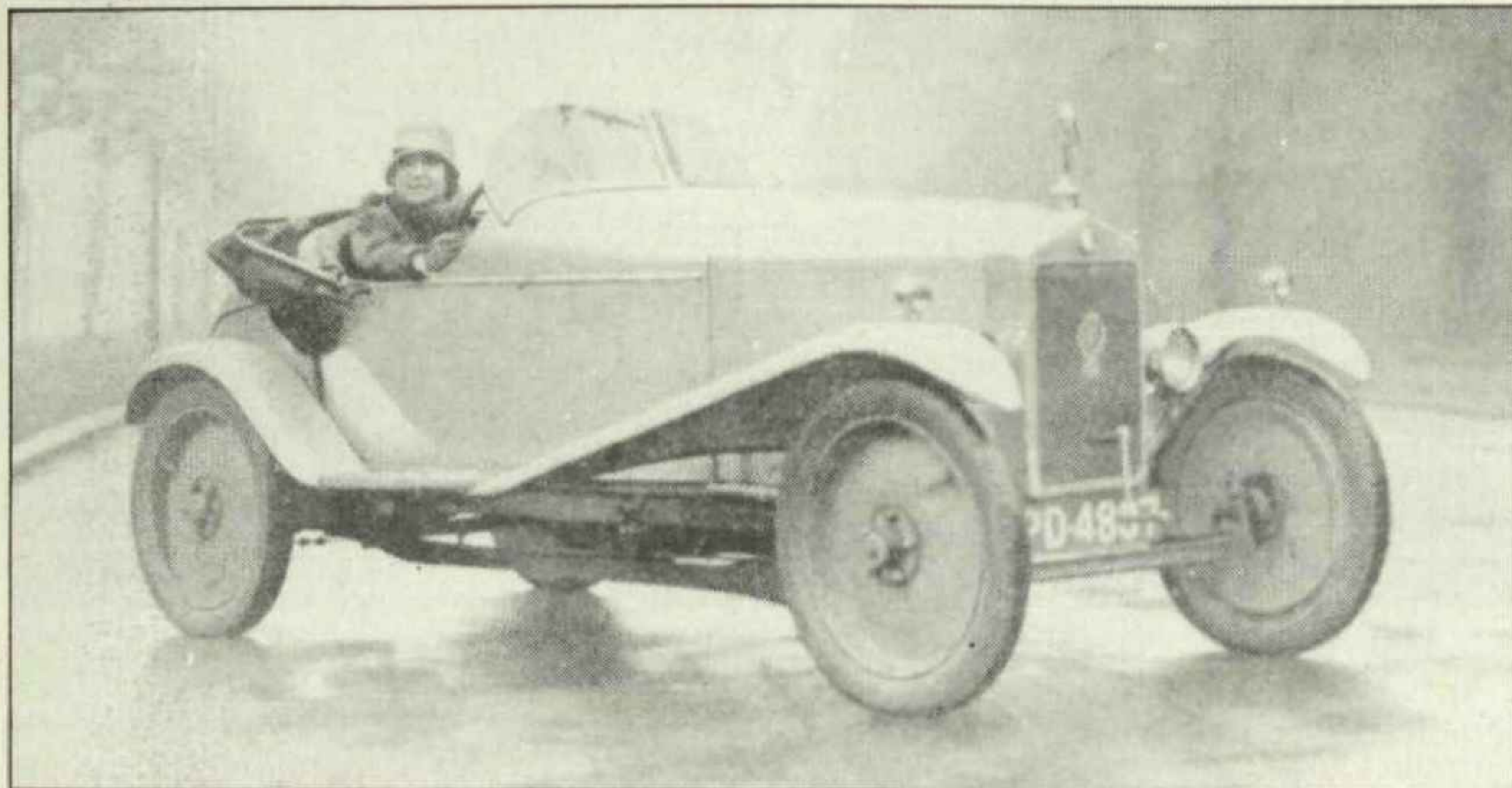
three Brescias, of which Richard Day's was delightfully spartan sans windscreen, having been finished only three weeks prior to the Rally.

The GP cars naturally caused the most



Just some of the marvellous Bugattis present.

attention, one with masses of luggage strapped on the near-side, and both occupants of Bart Rosman's yellow T37 in black flying helmets. Gerrit Blokhuis was taking no chances in traffic, having an external electric fan before the radiator of his T44, and clearly the driver of a Grand Prix Bugatti from Milan, wearing a crash-hat, meant business. Bernard Kain now has the correct blown T43 engine in his well known T43A, replacing its former T44 engine, a job that had waited nearly 50 years, and John Wilson was tightening up a loose lamp on his most impressive black and yellow elephant mascot T46 sports saloon. Drawn up neatly on the smooth turf of one of the Museum lawns the Bugattis made a grand sight, the only 'other make' a six-cylinder Riley Lynx tourer with single SU carburettor. After lunch at the Museum (well worth a visit whether or not you are in a Bugatti), the long cavalcade moved off in heavy rain, to take part in a goodbye 'Conga' up Prescott on the Sunday. WB



Lady driver of a 12/40 hp Super Sports ABC.

Forgotten Makes: No. 92: The ABC

Not exactly forgotten perhaps — certainly not by me, because my first (£5) car was an ABC, even if, with its oil-pump inoperative, it only lasted three days before a rod came out, causing the errant big-end rollers to escape and run smoking down the hill towards High Wycombe — but not very well remembered. The Georgano Encyclopaedia is unkind to the ABC, saying its engine, built down to a cost, was noisy, hard to start, inefficiently lubricated and liable to breakdowns. This is only partially true. Many owners got good results and many ABCs did quite well in trials and speed events, in the 1920s, in the hands of presumably satisfied owners.

The car was designed by the somewhat-eccentric engineer Granville Bradshaw who was already famous, or notorious, for his war-time aero-engines, such as the 170 hp and 200 hp seven-cylinder air-cooled radial 'Wasp' and 295 hp nine-cylinder 'Dragonfly' of the war years. The latter was a disaster, suffering severe torsional vibration that could break its crankshaft, and equally severe overheating. However, Bradshaw's small two-cylinder horizontally-opposed pre- and post-war aeroplane engines were more successful and it was on these and on the interesting ABC motorcycle with its ohv transverse engine, car-type suspension, four-speed gearbox and shaft-drive, that the ABC car was based. Incidentally, the initials stood for All-British Engine Company.

The ABC car was made at Hershams Road, Walton-on-Thames. It had its public debut at the first post-Armistice London Motor Show, at Olympia in 1919. At that time there was little prejudice over air-cooling, although it formed the subject of long pro-and-con articles in the weekly motoring papers. The war had shown people that this form of cooling was effective for powerful aero-engines, motorcyclists transferring to four wheels were

accustomed to it, and it was sometimes preferred at a time when anti-freeze was virtually unknown and hoses, water-pumps, even radiators of liquid-cooled engines, were apt to leak.

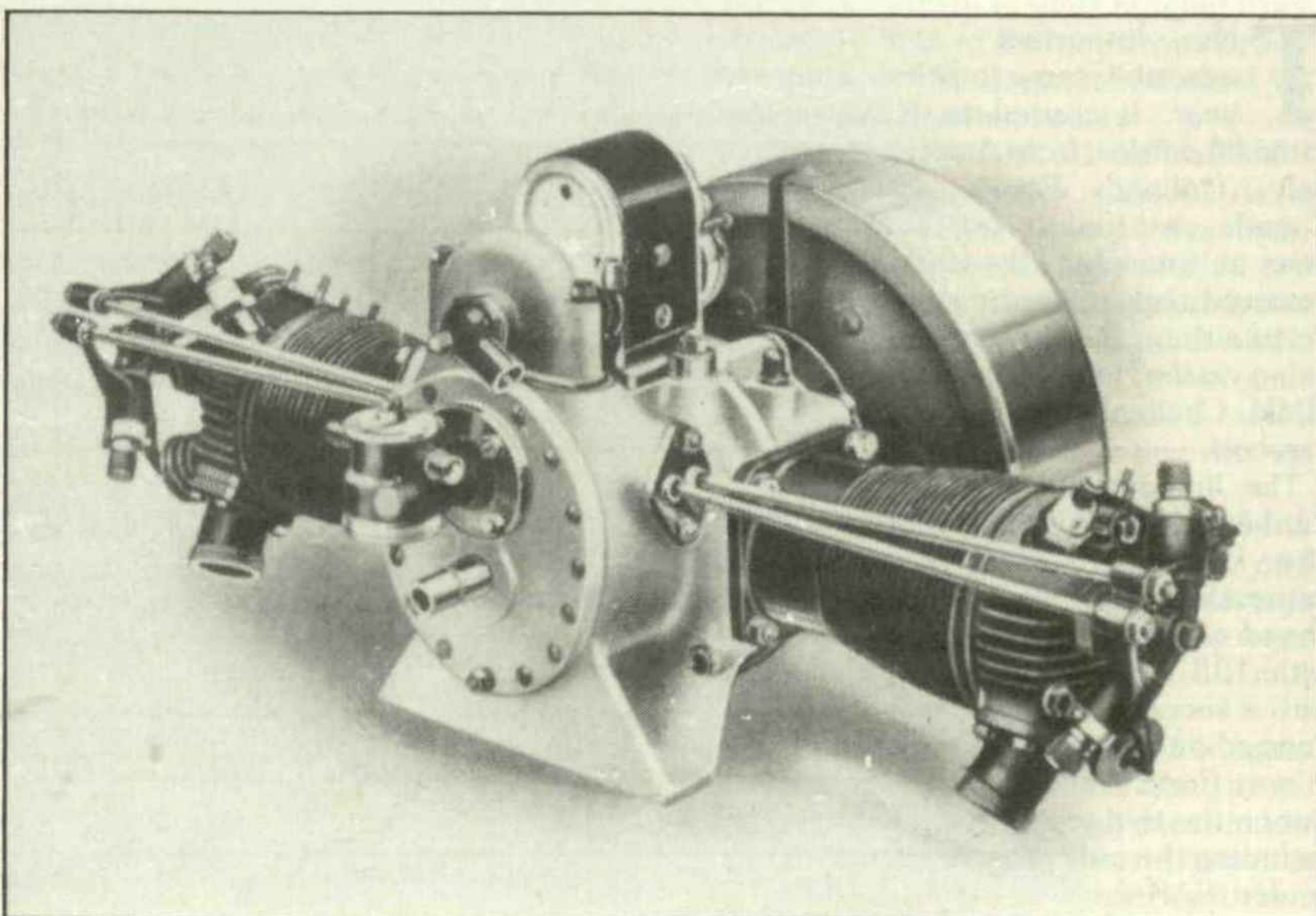
Moreover, Granville Bradshaw was ingenious. Although his ABC engine was air-cooled, his car was far removed from the cyclecar concept. It had a dummy honeycomb radiator to disguise the simple method of cooling the two cylinders of its 1200cc flat-twin engine, and the wheel-base measuring 8' 6", was about the same as that of well-established larger engined light cars and helped to give the ABC good handling qualities, although its worm-and-nut steering formed merely a compact extension of the steering-column and the springing was by a quarter-elliptic springs front and back.

The engine had futuristic 'square' dimensions, of 92 x 92 mm (1223cc). Cooling was augmented by a simple fan with six metal blades, driven off the nose of the crankshaft, the starting-handle plugging into an extension of its boss. Later a safer two-bladed wooden fan was fitted.

This flat-twin ABC engine had roller-bearing big-ends and its aviation ancestry was evident in the steel cylinders, push-rod actuated overhead valves, and aluminium pistons. It was set well back in the chassis, which had a neat subframe, good attachments for the road springs and a long bonnet in which the air-scoops for the cylinders were not too apparent. Ignition was by a magneto atop the engine crankcase. Granville Bradshaw's ingenuity showed up again in his provision of a four-speed gearbox, at a time when all too many small cars struggled along on three forward speeds, and in what looked like a truly massive back-axle, at a period when the durability of this component was often distrusted. In fact, the big tapering axletubes were formed of wafer-thin steel, which did make for a light axle.

Another unusual feature was the vertical gate for the central gear lever (I recall that when going from third into top gear this gave a pleasantly seductive feel to the palm of one's hand!), although I am not sure that this wasn't a feature of a proprietary gearbox, which may have been used. It certainly saved space in the cockpit, and apparently the Vinot car helped pioneer this non-transverse gear shift

Another less practical feature was the provision of a big petrol tank in-line with the side-members, and immediately above the engine. It was replenished via the cap of the dummy radiator and in spite of 'petrol-only' marks, there was the very likely and dire possibility that an ABC owner would be too late to stop the good intentions of a garage-hand with a watercan!



The ABC car engine in its early form.



An ABC with the bonnet up, showing the seven gallon petrol tank that had to be filled through the radiator cap!

At the time of its 1919 announcement the ABC was priced at an estimated £195, for a two-seater with Sankey steel artillery wheels shod with 710 x 90 tyres. This was hopelessly optimistic and by 1921 the prices, even after a recent reduction, were 330 gns. for the sporting model and 365 gns. for the standard two-seater. A chassis was available for 295 gns.

A representative from *The Light Car & Cyclecar* (that jolly 4d. weekly with the full photographic front cover) had been to the ABC factory and was impressed by the thorough inspection made of every machined part. But at this time of moulders' strikes and other labour troubles, not all the castings, stampings and forgings supplied by Harper Bean of Tipton were immune from trouble. The ohv gear was apparently suspect, too, the rocker-arm movement so big that the fulcrum-pins wore quickly, and tappet clearance suffered; rumour has it that if you saw a shop-window shatter, the cause was not from terrorists (unlikely in the U.K. of the 1920s anyway) more likely it was due to a push-rod having been catapulted from an accelerating ABC

Be that as it may, the claim that the ABC engine was force-lubricated was suspect when a small motorcycle type pump was found optimistically fulfilling this ideal. Nevertheless a large number of people bought these cars, a tribute perhaps to the work of HH Vaughan-Knight who had been appointed Sales Manager. He drove an ABC in the MCC Exeter, Lands End and Edinburgh trials, and was followed by many others, including SCH Davis, who was to have his share of seizures and similar troubles. Deliveries of ABCs did not begin until well into 1920, however, a production rate of 40-a-week being aimed for by the end of that year.

By 1922 some of the early shortcomings had been eliminated. The inlet pipe had been shortened, the carburettor was more accessible, a larger oil pump had been installed, with a lever to control its output, copper gaskets replaced reliance on

aluminium flanges to seal heads to cylinders, the inlet pipe hot-spot was rendered quieter by altering the exhaust off-take that surrounded it, and two exhaust pipes now led to a rear-mounted silencer. The costly roller-bearings for the torque-tube fork were replaced with plain bearings, the brake gear altered, and changes made to the back axle.

The standard two-seater with dickey now cost £383 5/-. The carpetless, doorless, sports model on 710 x 80 tyres £346 10/-. Disc wheels were now standard and the differential had bevel, not spur, pinions. The engine size was down to 1198cc. The prices were competitive, although a similar-capacity four-cylinder Calthorpe cost £28 less and those who didn't mind chains with their two cylinders could get a GN for £225.

It was as a poor person's sporting car that ABC Motors could hope to find buyers, when for instance, a Brescia Bugatti sold at £750, because the family men could buy a Morris Cowley for £376. Eric Gordon England began to champion the ABC at this time, racing one at Brooklands before devoting his attention solely to the Austin 7. In 1921 that car-keen monarch, King Alfonso of Spain, went to the ABC works on his way to watch racing at Brooklands, a visit arranged by Gordon Watney, the London ABC agents; the royal carriage seems to have been a Crossley.

Gordon England also made special bodies for the ABC and his racing version with airship-nosed body lapped Brooklands at 75.80 mph, suggesting a top speed of well over 80 mph. It was 14th in the 1921 JCC 200 Mile Race, sixth in the 1922 race and fourth in the 1100cc class in the 1923 race, but by then it had a Bristol Cherub aero-engine — not, be it noted, an ABC Scorpion aero-engine!

Although ABC Motors soon ceased to take a stand at Olympia, their cars proved popular on account of good performance for a low price. Unfortunately the demand

resulted in careless inspection so that faults were all too rife with the racing-type engine. In 1924 that changed after further improvements had been made. The chassis was thought to be alright but the engine was virtually re-designed. The crankshaft had originally been too small for the roller big-ends, the steel cylinders too thin and the valve-gear called for too frequent adjustment. So thicker cast-iron cylinders and a larger hardened crankshaft with larger, double-row big-end rollers, were now used and the valve-gear was enclosed, positively-oiled, and given enlarged rocker surfaces. To overcome the hard-to-start complaint, the magneto was provided with an impulse-starter. The lubrication shortcomings were eradicated by a dry-sump tank below the engine, and more power was obtained by increasing the engine-size to 1326cc, the cylinder bore enlarged to 96mm.

The improved ABC was ready towards the end of 1924. As a privileged motoring writer, Sammy Davis, who had been running the fourth car to leave the Hershaw factory, known as "Grandfather", now with 48,000 miles to its credit, did some of the testing, having had the new crank and cylinders on his car since 1922 As if to endorse their value, a new 12/40 hp Super Sports ABC with single-door, pointed tail body was introduced, at £275. On a 4.5 to 1 axle ratio it could do well over 60 mph, yet climb Reigate Hill in top gear. The older, smaller-engined ABC was now called the 12/27 model and its price was down to £225 by 1925. SCH Davis had a Super Sports for test early in 1925 but it was apparently too new to be extended on Brooklands. The new engine still had a vibration period at 35 mph, but it was better balanced in feel to early engines which had seemed to want to whip themselves out of the chassis!

The 12/40 ABC did 10 to 30 mph in six seconds in third, in nine seconds in top gear. The gear ratios were 13.75, 9.5, 6.5 and 4.5 to 1, the unladen weight 12½ cwt.

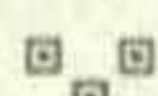
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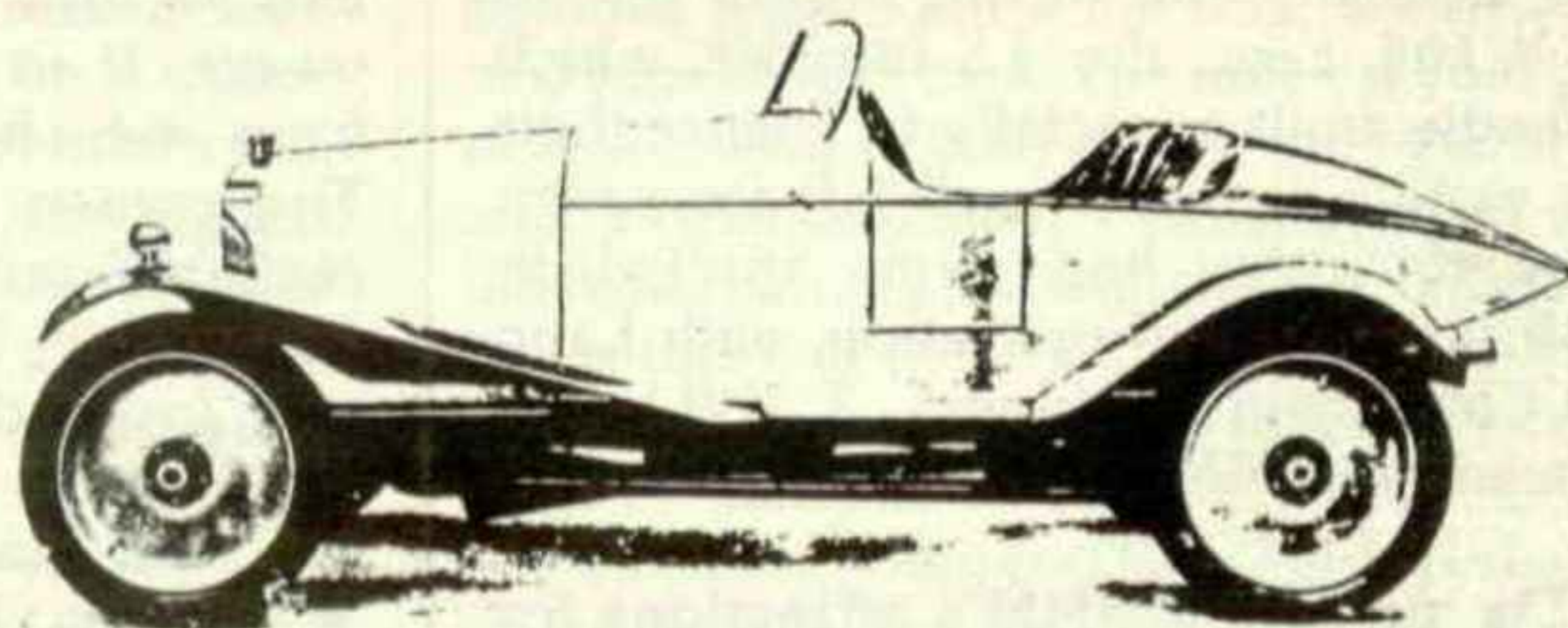
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By 1925 Ward & Co of Richmond were ABC agents. The guaranteed 75 mph is interesting.

Twin Zenith carburettors were now fitted on separate short inlet pipes, as on the 1923 Sports models, partially to cure the former flat-spot and a tendency of ABCs to catch fire. A refinement was the speedometer drive taken from the gearbox.

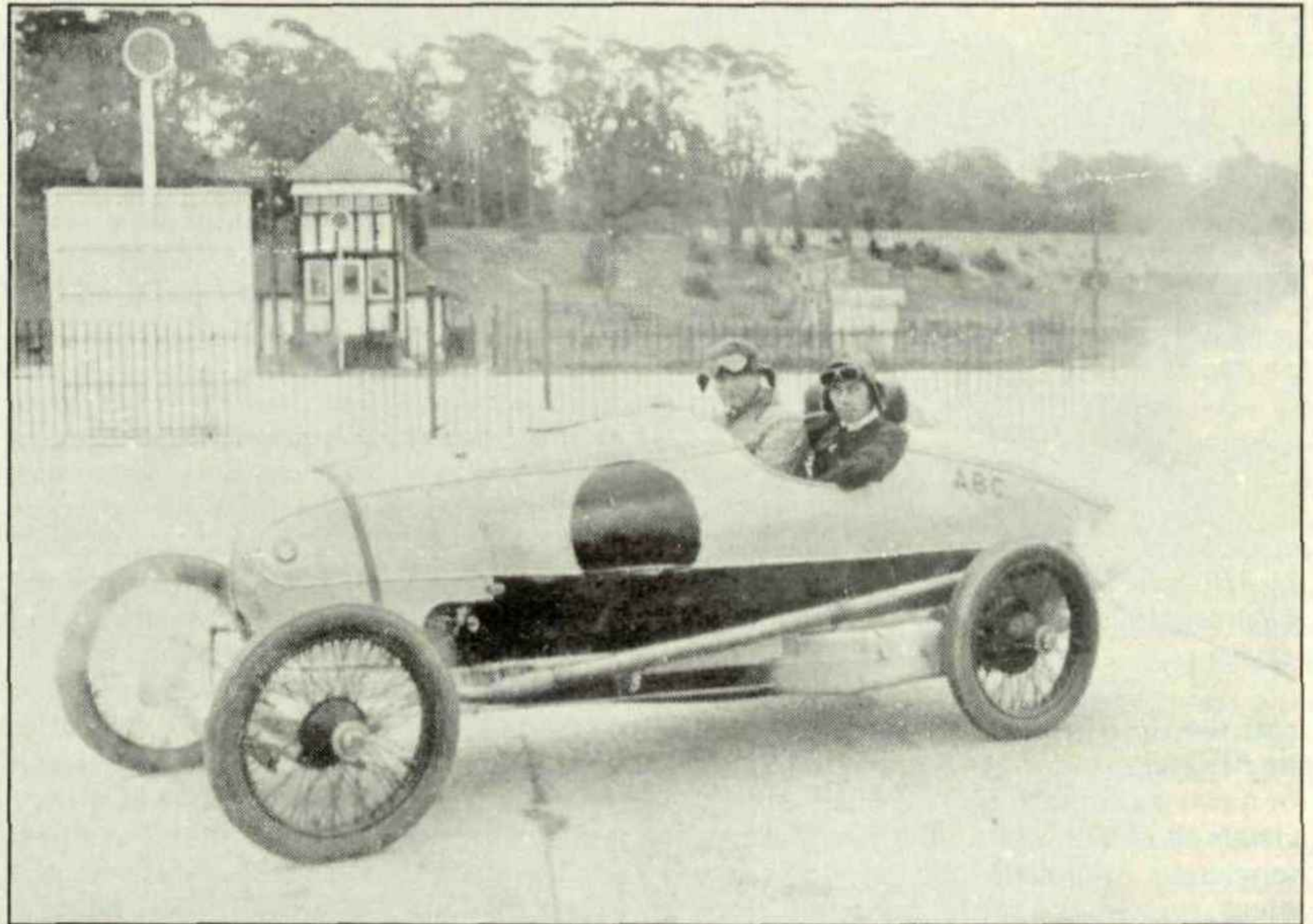
MOTOR SPORT had its go in a Super Sports ABC by 1926 and wrote of speeds in the gears of 30, 40, 50 and 60 mph without fuss. 0-55 mph occupied 14.2 seconds. We found the vertical-gate gear-change very quick, aided by the light plate clutch, the springing 'quite good', and the Sports body to give 'ample comfort'. The noise factor was wrapped up by saying, "In the matter of silence, the ABC does not compare very favourably with some of the more quiet (sic!) four-cylinder light cars, but one must remember that it is a special type and its performance is so attractive that one is willing to sacrifice a little in the way of silence." Ah! Even Davis had admitted that the new engine was noisy.

This was against Granville Bradshaw's unusual little car in the 1920s, and it was soon out of production, the end coming in 1927. The smaller but faster Brooklands Super Sports A7 was available from Gordon England for ten pounds less and small French sports cars for less again. Remember the ABC, though, as a sporting car of its time; of the dozen that started in

the 1923 Land's End trial, five gained gold medals. EM Magee had also taken a gold medal in the 1922 Scottish Six Days trial, and Donald Healey commenced his great

competition career with one of these cars.

As for the Sales Manager, he seems to have gone over to the Windsor, another forgotten make! WB



EC Gordon England's ABC which he ran in long and short distance races at Brooklands.

VETERAN TO CLASSIC MISCELLANY

The Meadows-engined Bayliss Thomas which WJ Hayward modified for trials work and which his family gave to the National Motor Museum is now back at Beaulieu, being tidied up for exhibition there.

The Daimler-Benz Museum sends three of its top exhibits over to Great Britain every year, so that these can be circulated between the Mercedes-Benz headquarters in Milton Keynes, the London showrooms and the National Motor Museum at Beaulieu. Thus until the end of this month one of the W165 cars, the 1½-litre V8 which Mercedes built especially to ensure their fifth victory in the Tripoli GP for which voiturette rules had been applied in 1939, a successful operation, with Lang and Caracciola finishing 1, 2, will be on show at the NMM.

One of the NMM's attractions for the inexperienced old car persons who visited Beaulieu was a "learner-drive" in a vintage car, originally a 1919 Chevrolet, a 1923 Calcott or a 1925 Morris being subjected to what can only have been brutal treatment. We understand that this pleasure is to be restored, using a 1928 Austin 12/4, as the rugged car to withstand such abuse, although with a more difficult gear-change than on the other cars, surely?

The Vintage Austin Register may regret that the car is not to be used for rallies, etc., but can perhaps take heart in the knowledge that it was a homemade van which is to be turned into a tourer, to embrace a "Gumdrop" theme.

In Palmerston, Otago, last year a 1911 Stafford two-seater took part in a festival procession, thought to be the only one of its kind in New Zealand. The car was imported from England hoteliers in Dunedin but after a fatal accident to one of the family it was sold and is now in the hands of its third owner. It is in original condition apart from one wheel which had to be rebuilt. The owner says that this Stafford is really a Spurber, made in the N. German Automobile Works at Hamelin — historians, forward . . .

Last May we queried whether anything remains of the race track built outside Derby in the 1920s. Barbara Farquhar, wife of Nev who is well known for his racing Rileys in VSCC circles, tells us that, indeed, it still exists, as a cycletrack on the Dudley ring-road, less than a mile west of the A6 junction. It is now used for field and track events, and the highest part of the steep bankings has been terraced for seating. In spite of contemporary press reports that a motor race track was being built, it

seems far more likely that this third-of-a-mile 70 mph oval was intended only for motorcycle-paced bicycle racing. How does Barbara know? Well, she raced there herself, in girls' cycle events from about 1942 onwards, and says the Derby track still has races, although overshadowed by Leicester's Saffron Lane track. Perhaps the Wild Brothers of Derby being Champion racing riders in 1922 prompted the construction of this local course.

The Brooklands Society has suffered the resignation of its recently elected President, Ian Connell, over a disagreement, its Secretary, Peter Dench, has resigned due to pressure of work and its Chairman, Brian Dinsley, on account of ill-health. The acting membership secretary is Brian Reynolds, 38 Windmill Way, Reigate, Surrey RH2 0JA.

In spite of these setbacks, there is still to be a reunion on July 1 (admission by ticket only), the theme being the 60th anniversary of Mountain racing at the Track. There will also be an assembly of Frazer Nashes and Porsches.

In last month's issue, the A7 driver captioned in the top picture of p 606 should have been Dodson, not Dobson and in the bottom picture p 607 Rose's Maserati is leading, *not* following, Staniland's Alfa Romeo.



The ebullient Duncan Hamilton who went from flying Spitfires in the war to racing C- and D-type Jaguars in the Fifties.

“Play Up and Play the Game!”

Thirty seven years ago Jaguar won Le Mans for the second time. At the wheel was one of motor racing's most colourful characters Duncan Hamilton. He and Tony Rolt drove their legendary C-type to the finish in record time; they had led for most of the race, had set the distance record in the twenty second hour and were the first to win at an average of over 100 mph.

The winning car, Jaguar X120C now registered LSF 420, one of the most famous and historically significant Jaguars in existence, is now owned by Adrian Hamilton, Duncan's son. Last month we pictured it thundering along the shoreline of Loch Leven on the Ecurie Ecosse Historic Motor Tour, and more recently we were fortunate enough to be invited down to Hampshire to see the car, now beautifully restored, and chat to Duncan about his famous win in 1953. Duncan gave us a rare and amusing insight into racing in general, and more particularly racing for Jaguar before the days of high profile commercialism and when even on the circuit one might occasionally say “After you, Charlie!”.

“In practice we had gone very well, and I

had ended up the fastest of the team. Of course that had Stirling hopping about because I was quite a bit faster than him, and he said it was all down to the car. He asked Lyons if he could drive my car. ‘No, not likely’ I replied ‘but I’ll drive Stirling’s car, and see how I put it round’. So off I went and poked Stirling’s car round the track, and equalled the lap record with that, which kept Stirling quiet for a while.

“Really we had a fairly uneventful race, not even a gauge went wrong. The biggest drama was when I hit a pigeon travelling at about 140 mph. It hit the windscreen which broke clean in half and smashed onto my nose. So I ended up doing most of the race with a fractured nose.

“We started the race a few places back, but we were in no hurry. I’ve done ten or so Le Mans, and I’m usually on the leader board after the first few hours. Of course the cars don’t always finish, but in ‘53 it was the car that was the main thing; the steering was right, the brakes were right, the balance was right, and the weather and the course suited the car.

“Of course one always had the problem of the French and all their little Panhards and what have you that they put in. The

differential of speed was massive and made it rather like racing through Piccadilly Circus in a traffic jam. I nearly killed myself in ‘58 when someone messed it up, went sideways across the road, and then stopped. I was doing 180 or so, and when I touched the bank I shot clean over the trees, went end over end and landed in a stream, which broke my fall, although I was very much unconscious by then. It was a good old accident, but in ‘53 we had no dramas at all.

“However, in the night the fog came down, and it became quite tiring. We were driving for nearly four hours at a time, although I was used to that after flying ‘planes in the war. In the fog I dropped two seconds a lap. I knew the way, but we had to dodge slower cars. The only car that got near me, and I could tell by the beat of it, was a twelve-cylinder Ferrari. I could see the lights coming through the fog, although it was dawn at about 6.30 am. It was Tom Cole, and I waved him by. He was the only chap to pass me in the entire race, but I knew he was going too fast. My speed was about right for the fog, but no faster. Sadly he didn’t complete a lap at that speed. He was disorientated by the fog and he went through a hut at White House, was thrown out of the car and killed.

“We weren’t strapped in then. It was just as well I wasn’t strapped in when I came out of both a C- and D-Type. I came out at over a hundred in the Portuguese Grand Prix. I was leading when the Ferrari behind me touched my car. I went straight into a pylon, chopped it down, and out I flew. I

broke my neck and jaw and all that sort of thing and finished up on a slab with a big chunk out of me, and nuns nursing me. They were all busy trying to put the lights on — well of course I couldn't talk because I had broken my jaw, and I couldn't speak Portugese anyway — but I'd knocked the pylon down outside and so there were no lights. All I could say was 'waarhter', which I wanted to wash the blood out of my mouth and so forth. Then this old boy was brought in, and he said to me, 'What is it that you want?' in perfect English. 'Waarhter' I said. He then had a long chat, in Portugese, with the nuns and the surgeons, and then came back to me and said, 'The water is bad here, you can't drink it, but you can have some port'. So there I was lying on this thing with a bust leg, arm, chin and neck and a nun pouring a bottle of port down my throat!"

The question of the relative lack of safety in motor racing in the Fifties rather naturally brought us round to this season's hoary chestnut — the Mulsanne Straight. What did Duncan think about the chicanes that had been added to allow this year's race to go ahead?

"Tony Rolt always wanted chicanes on the Mulsanne, myself and Mike Hawthorne preferred the straight, because there was a slight bend to it, and to do that bend at full chat in a C- or D-type required a considerable amount of courage. We used to make up a lot of time there. Not cheating oneself one used to keep the thing there thinking 'go on yer bugger keep it there' — in the rain mark you — 'keep it there', and she starts to slide, a bit of left lock control, and you gradually ease off, just to make the heart feel a little better. But you don't get any slower, not even an 1/8th of a mile an hour. So Mike and myself confessed to each other over a glass of beer that that is what we both did, and that was how we made up time.

"I'm not sure how fast we were going. If



Duncan Hamilton and Tony Rolt won the 1953 Le Mans at a record speed of over 100 mph. Note the broken windscreen, shattered by an unfortunate pigeon at 140 mph.

ever I had a speedo in a Le Mans car I had it taken out and another rev counter put in. I reckon I lost the Dutch Grand Prix, when on the second lap my rev counter drive sheared, and I drove the whole race and finished fourth without a rev counter, and without putting a rod out.

"But really I think the chicanes are going to heat the tyres, not cool them, and with the acceleration nowadays the cars are going to be straight up to top speed in between the chicanes.

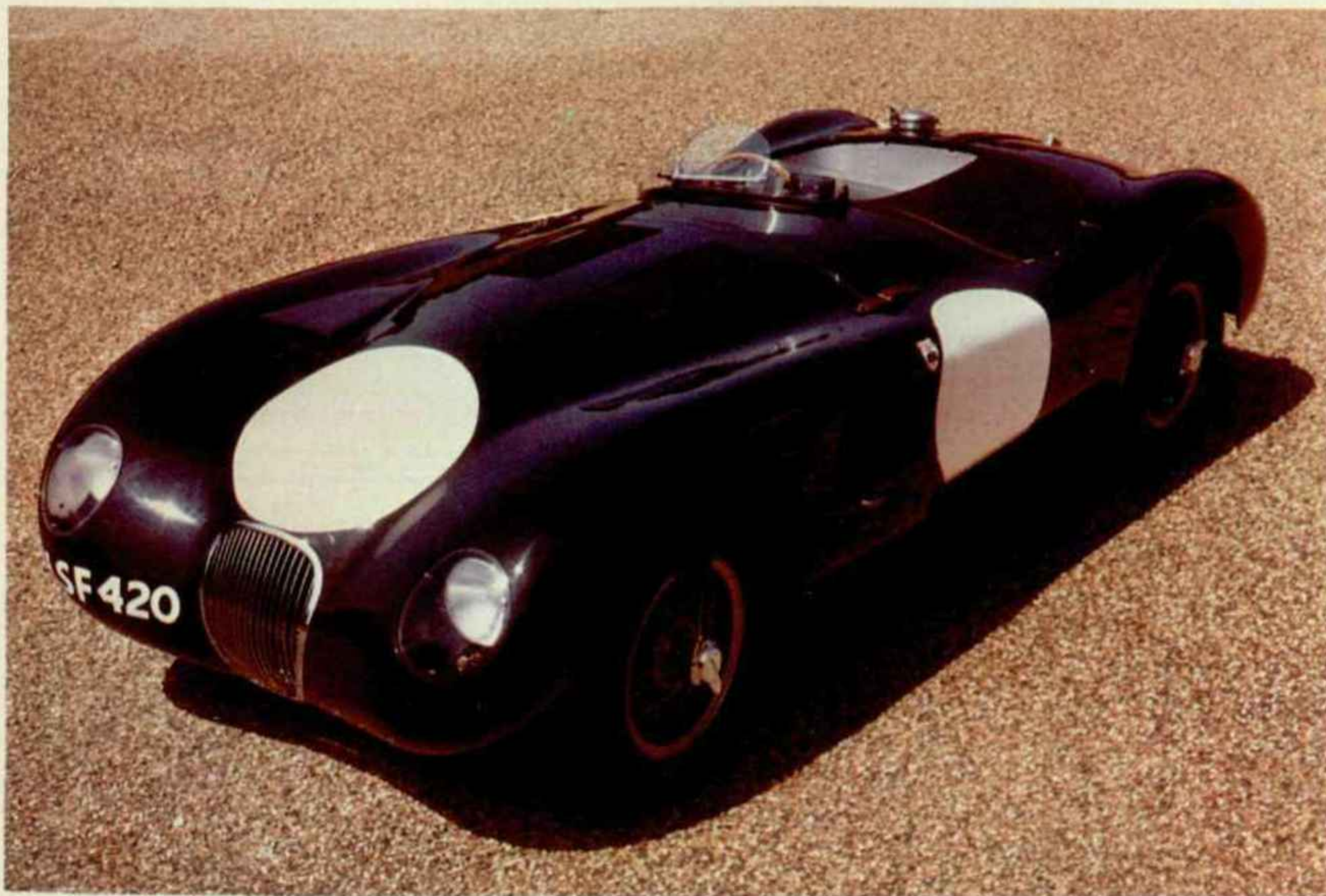
"I always used to relax on the Mulsanne. I would wave my feet around, because you do tend to get cramp in them, and I would drive one handed once I was past the kink, in order to stretch my arms for a bit. I'd

stretch one, then the other, and then the neck. One really needed it, because those cars had a lot of vibration at 6000 rpm hour after hour. After your stint it was straight into the masseurs for a heavy massage around the neck and shoulders.

"Racing then was nothing like it is today. The rather small Jaguar team was a very happy set-up. My wife used to run the stop watches. She was very hot with them, and knew exactly what was going on lap after lap. Out would go the old 'As you are' board, or 'put your foot down' or 'Ease up'. We didn't have caravans at the back of the pits in those days. At least we didn't in 1953, but by 1954 I had one made. It was a vast thing that could sleep eight. In 1953 we had little boy scout tents out the back, and we used to rest in those with the rain running down our necks. I used to take a large chateau near Le Mans. All my friends used to come down, and Tony and myself used to go back and forth from the circuit like two chaps who had just fought and survived a war would. We were not teetotalers by any means, far from it. I always used to have a glass of coffee and a brandy and off I went. I'd been flying Spitfires since 1940 and you couldn't do that on a dry stomach. Every time you took off could be your last, and sometimes you had to do that eight times a day.

"The camaraderie within the team was terrific. Although Lofty fired me in '56 he asked me back, so I said 'I'm not coming, I'm being paid a fortune'. We used to call him teacher because he was always telling us what to do. In the end I sent him a mortar board, a cape, and a cane for Christmas, with a note saying 'with best wishes to Teacher from Duncan'. He sent me back three little cricket stumps and a little bat with a note saying 'learn to play Cricket'."

CSR-W



The legendary C-type Jaguar, now beautifully restored, with which Duncan Hamilton and Tony Rolt won Le Mans in 1953.

MOTORSPORT

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PRESENT

THE 1990 BRITISH GRAND PRIX PREVIEW.



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Benetton Ford Team



World Rally Championship
GM-Eurosport



British Touring Car Championship
BMW Finance racing with Mobil 1



British Touring Car Championship
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Saloon Car Championship
Saab racing with Mobil 1



Mobil Honda Challenge
Racing on Super Plus Unleaded



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For those coming by rail the two main railway stations nearest to Silverstone Circuit are Northampton and Milton Keynes and a special bus service will be available from Northampton's Greyfriars Bus Station to Silverstone.

For the second year running, special trains will operate from London-Euston to Milton Keynes via Watford Junction on all three days. In addition to this, another special train will be in operation from Birmingham-New Street to Northampton via Coventry on Saturday and Sunday only. Details of times and costs can be obtained from the Silverstone Booking Office (0327 857273).

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FRIDAY — Gates open approximately 6.00am

Admission price Adult £12.00 Centre Transfer £8.00

Child (15 and under) £3.00 Centre Transfer £2.00

Grandstands FREE

Infant 2 and under FREE

SATURDAY — Gates open approximately 6.00am

Admission price Adult £17.00 Centre Transfer £8.00

Child (15 and under) £3.00 Centre Transfer £2.50

Grandstands Adult £12.00 Child FREE

Infant 2 and under FREE

SUNDAY — Gates open approximately 5.00am

Admission price £38.00 Centre Transfer £12.00

Child (15 and under) £5.00 Centre Transfer £12.00

Infant 2 and under FREE

Camping Facilities

There are campsites adjacent to the Circuit and they will be open from Wednesday July 11. Camping space cannot be booked in advance. The cost per unit will be Wednesday, Thursday, Friday and Saturday £10. Thursday, Friday, Saturday £9.00 Friday, Saturday £8.00 Sunday FREE

1990 FOSTER'S BRITISH GRAND PRIX PROVISIONAL TIMETABLE

THURSDAY, 12TH JULY

06.00	Gates Open
08.00-09.00	Timed pre-qualifying for Formula 1 cars
09.30	Circuit inspection lap
10.00-11.30	Untimed practice for Formula 1 cars
11.40-12.55	Track demonstrations and air displays 11.40 Bobby Orr Stunt Driving Display
11.45-12.15	Pit road walkabout for holders of Reserved Centre Passes 12.00 JCB GT Demonstration
12.30	12.15 Brittany Ferries Air Display Team Circuit inspection lap 12.35 Lynx & Sea King Helicopter Fly-Past 12.45 Sea Harrier Jump Jet Demonstration
13.00-14.00	First qualifying for Formula 1 cars
14.25-14.55	First qualifying for Formula 3 cars
15.10-15.40	First qualifying for Peugeot cars
15.55-16.25	First qualifying for GM Lotus cars
16.40-17.10	Qualifying for Metro cars
17.25-17.55	First qualifying for Touring cars
18.10-18.40	Second qualifying for Formula 3 cars

SATURDAY, 14TH JULY

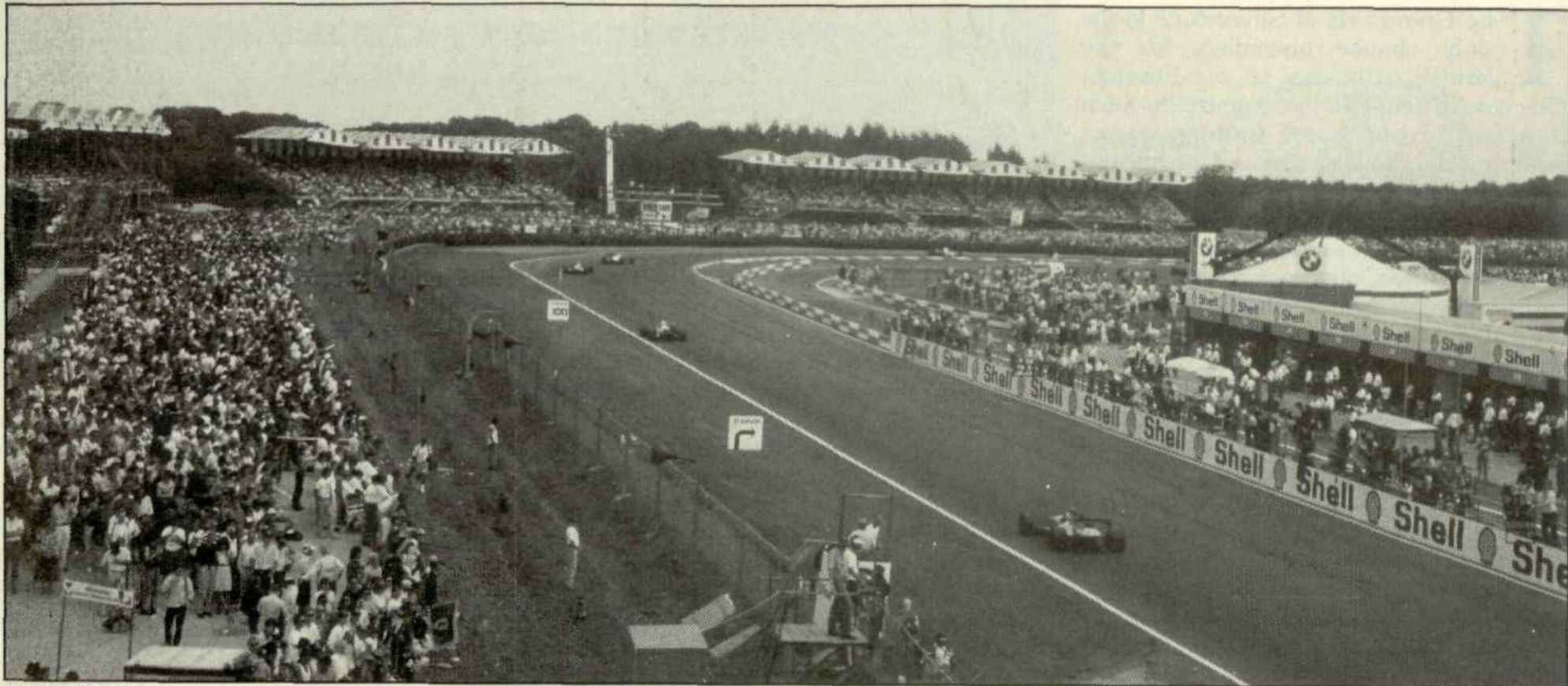
06.00	Gates open
08.00-09.30	Pit road walkabout for holders of Reserved Centre Passes
09.30	Circuit inspection lap
10.00-11.30	Untimed practice for Formula 1 cars
11.40-12.55	Track demonstrations and air displays 11.40 Bobby Orr Stunt Driving Display 12.00 JCB GT Demonstration 12.15 Brittany Ferries Air Display Team
12.30	Circuit inspection lap 12.35 Historic Airplane Fly-Past 12.45 Sea Harrier Jump Jet Demonstration
13.00-14.00	Second qualifying for Formula 1 cars
14.25	BRITISH FORMULA 3 CHAMPIONSHIP RACE 15 laps
15.25	METRO CHALLENGE RACE 10 laps
16.10-16.40	Second qualifying for GM Lotus cars
16.55-17.25	Second qualifying for Peugeot cars
17.40-18.10	Second qualifying for Touring cars

SUNDAY, 15TH JULY

05.00	Gates open
09.00	Circuit inspection lap
09.30-10.00	Untimed warm-up for Formula 1 cars
10.20	GM LOTUS EUROSERIES RACE 16 laps
11.25	COUPE DE FRANCE 309 PEUGEOT ESSO RACE 12 laps
12.00-13.25	Track demonstrations and air displays 12.00 John Watson Performance Driving Centre Parade 12.15 Bobby Orr Stunt Driving Display 12.30 Historic Festival Car Parade 12.45 JCB GT Demonstration 12.55 Chinook Helicopter Display
13.00	Circuit inspection lap 13.05 Flight of the Red Arrows
13.30	Warm-up lap for Formula 1 cars
14.00	FOSTER'S BRITISH GRAND PRIX 64 laps + 1 formation lap
16.00	ESSO BRITISH TOURING CAR CHAMPIONSHIP RACE 15 laps

Late Night Petrol

West A43, 3 miles	Pimlico, nr Syresham	22.00
West A43, 7 miles	Burwell Hill Garage, Brackley	21.00 plus night pump
East/North A5, 5 miles	Towcester Service Station	23.00
East/North A5, 4 miles	Baldwin & Phillips, Watling Street East, Towcester	22.30
East/South A5, 4 miles	White Bear, Towcester	22.00
South A422, 4 miles	Baldwin & Phillips, Stratford Road, Buckingham	22.00
East/West A43, 4 miles	Mobil Garages, Towcester	All night



While 26 drivers race, over 100,000 spectators watch them on the Sunday, creating enormous logistical problems for the circuit and the emergency services.

Background to a Grand Prix

We may groan as the seasonal goods are displayed in shops at an ever earlier time of the year, but for many, thoughts of Christmas begin as early as the preceding January. For the organisers of Grands Prix, however, the planning takes even longer.

The days are long gone when an airfield, straw bales, makeshift stands and three dozen people to help were all that were needed to stage a race. Nowadays it requires a complex structure whose mechanism demands precision timing to ensure that all the cogs are in the right place at the right time.

As managing director of Silverstone Circuits Limited, it is the responsibility of Hamish Brown and the Board of Directors to ensure the smooth running of the event. Although the circuit has staged 25 Grands Prix before, the race is not there by right. Even though there may still be another seven years before the current contract to stage the race expires, his organisation still has to meet the requirements of the RAC MSA, the governing body of motorsport in Britain, who act as the organisers and of FISA, the international governing body, who have their own special requirements.

Brown is well aware that nothing can be taken for granted and runs a slick team of 80 full-time staff which is swelled to 2,000 for this special weekend. In recognition of the fact that the competition for people's leisure time is fierce, Brown and his team frequently travel to venues all over the world, and not necessarily sporting ones, to search for ideas that can be put into effect at the circuit.

Encouraging spectators to come is one thing, but organising the event is quite another, for it demands huge resources

and long and careful planning. 'Even before the chequered flag has dropped on our Grand Prix race, the preparations and long term planning will already have been started for next year — planning that will have involved a huge variety of people.'

Involved with the running of the race itself are various race officials such as the scrutineers who have to ensure that all the cars that appear on the track are safe and conform to the strict regulations, the clerk of the course, who has full control of the course from the beginning of practice to the end of the meeting, judges, observers, doctors and ambulancemen, fire engines and tenders, and the marshals who play a variety of very important roles.

Since many of these people attend races week in and week out, they all know their roles intimately and are the easier part of the equation. Dr David Cranston, the chief medical officer, heads a team of 35 doctors and surgeons based at the special Medical Centre in the centre of the circuit. There is a complete spread of medical disciplines, even gynaecologists, to cater for every emergency. A temporary medical centre situated at the main entrance to the circuit caters for the general public.

The permanent medical centre in the middle of the track has every facility needed for minor operations and life support. There is also closed circuit television from race control enabling them to monitor the race as it is going on. If there is an accident, the point will be freeze-d on screen so those at the medical centre can actually see what is happening. There is radio control with all the St Johns ambulances at the circuit as well as direct radio control through to the county ambulance service and to the ambulance headquarters at Northampton and Oxford.

Doctors are situated at every danger point around the circuit as well as in high-speed support vehicles. Two helicopters are on constant stand-by with the facility to call on another couple in a major emergency. Dr. Cranston, though, prefers the use of ambulance with police escort for a less traumatic journey, but if the traffic prevents such a rapid evacuation, then the choppers will be called into use.

All the major hospitals in the area are on standby, the job of the Silverstone medics to stabilise and then despatch the patient to the hospital with the appropriate specialist facilities. Such is the efficiency of the medical service that even a disaster of major proportions, such as a grandstand collapsing, could effectively be dealt with. Six Land Rover fire tenders, a fully equipped fire engine, two incident vehicles, two emergency intervention vehicles and specially prepared Jaguars which follow the pack for the first lap for immediate help should there be an accident are also part of the fleet necessary to hold any serious race meeting.

Even before the 100,000 race day spectators arrive, there is a mountain of work to be done. Extra staff have to be employed in the office to cope with advance bookings, while the circuit facilities are repainted, the advertising hordings correctly positioned, the grass cut and even all the windows cleaned in the weeks prior to this weekend.

For some Grand Prix week demands long hours and little sleep. Pete Skermer, for instance, will not have left the circuit since the preceding Tuesday since he is the sole supplier of petrol at the circuit.

With one storage tank holding 6000 gallons and the two others 1000 each, he has his own logistical problems. Although



Grandstands from all over the country are brought in for the weekend.

he does not supply the Grand Prix teams, there are still the cars from the support races to take into account and they demand pure 99 octane petrol. Since '4 star' is in fact a term encompassing a broad band of petrol, the chances are that fuel obtained from the standard garage forecourt would seriously damage the highly tuned engines. So Skermer brings in his fuel from Shellhaven, where the petrol is specially prepared, instead of from a local depot even though it does entail a three hour tanker journey. It means careful juggling of the tanker schedules to ensure he does not run dry during the meeting.

In the week of the Grand Prix, several security companies will have taken over external security and another 400 extra staff employed to man the ticket booths, be gate controllers and toilet attendants. The relocation of the ticket booths from the outer fencing to a new inner perimeter has considerably aided the traffic flow into the circuit and eased the congestion which used to build up on race day and clog up the roads for miles around.

With something like 60,000-70,000 cars converging on the circuit during the course of the week and 40,000 on the Sunday alone, and all wanting to leave it at the same time as well, co-operation with the police is essential. There are initial debriefings after each major meeting, but the planning proper for this weekend began last January.

As the circuit straddles two counties, both the Northants and Thames Valley Constabularies are involved with the former police force drawing up the plans. Temporary one-way systems are put into effect on country roads all the way round the circuit while traffic up to 50 miles away is closely monitored. The basic problem, though, is that the A43, the one main road near the circuit, is a favourite route for holiday-makers going to the South West. Since the race falls bang in the middle of

the holiday season, congestion is bound to build up although the police try to alleviate it with diversion signs.

Around 230 policemen and women are on duty around the circuit, backed up by the Thames Valley helicopter. Silverstone's own helicopter, which is in the air for an overview of the car parking situation, also relays back information to the police control room located within the circuit.

150 car park attendants are on hand to direct the traffic as it streams in but following lessons learnt from two years ago, when the weather was so inclement and turned the car parks into sticky quagmires, five more kilometres of internal road have been laid to improve access and egress.

Many of the visitors to the Grand Prix will be guests, and it is the corporate entertainment side, as with most sports events, which is one of the greatest growth areas of the whole business of Grand Prix racing. Some companies, such as MOTOR SPORT, have a permanent box at the ground for entertainment, but others hire temporary hospitality units. Altogether there are over 100 marquees and over 50 permanent hospitality suites.

Eating and drinking are one of the most important aspects of any entertaining and the provision of meals is a major task. Providing food at both Henley and Wimbledon, Gilmour and Pether, who have the catering concessions at the circuit, are used to the high standards demanded from corporate clients, but the Grand Prix, which provides their biggest one-day catering event in the country, presents its own problems in that all the meals are required at the same time in the strict timetable on race day and therefore needs the use of 40 refrigerated vehicles.

A staff of 1700 serve a veritable mountain of food, 2167lb of salmon, 878lb of smoked salmon, 1600lb of beef wellington, 443 strip loins and 3140lb of strawberries making up 12,000 meals, while 2340 bottles of champagne, 12,336 bottles of wine, 1341 bottles of spirit and 20,640 cans of beer will be consumed. Needless to say the toilets have to be fully functional for the weekend.

Entertaining the guests is only half the story for they have to be taken to and from the circuit. Some companies charter buses, but flying is increasingly found to be the solution. It is today that the old wartime aerodrome at Silverstone will thus become the second busiest airport in the world with 40 aircraft and 125 helicopters making 3000 scheduled landings and take-offs, otherwise known as air movements, during the day. To the casual onlooker it looks little more than a mass of whirling blades landing and taking off in cavalier fashion, but the whole thing is rigidly controlled.

Such air traffic movements take at least eight months of scrupulous planning with the Civil Aviation Authority. After an initial meeting in November to discuss the previous Grand Prix, there will have been a number of meetings earlier this year until April when all the details will have been finalised for this weekend.

Based at the Air Traffic Control Centre in the middle of the circuit five air traffic controllers and support staff work together under the direction of George Smith. One section looks after the northern helipad, which has 16 landing spots, and caters for aircraft up to the size



The hospitality units are an ever increasing factor on the Grand Prix scene.

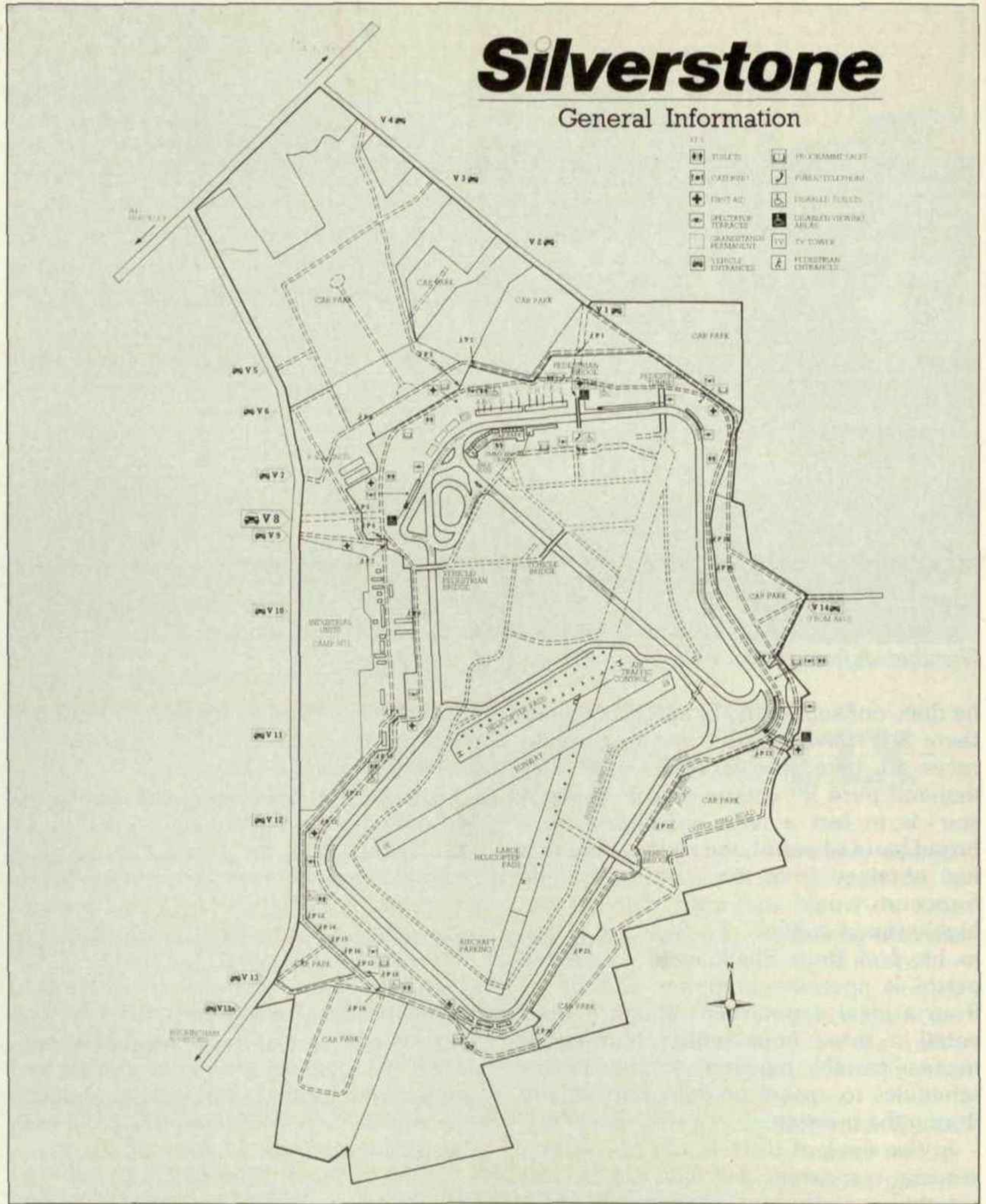
of twin-engined Squirrels while the southern helipad, with nine landing spots, is for bigger units such as the giant Chinook helicopters first used in 1988.

Each aircraft is given a slot time and they have to fly into one of two hold patterns depending on the helipad. Approximately 25 helicopters fly into the southern one with 25 movements every 15 minutes at its peak, while approximately 100 choppers use the northern one which will receive an astonishing 70 movements in a 15 minute peak period.

The increased number of spectators means a greater number of seats are required to watch the race. Although there are raised banks, grandstands are gradually creeping around the circuit. In the past it was not worth Silverstone's while to erect them permanently as they are only filled to capacity on this one weekend, so in addition to the 14,000 permanent seats, another 7000 temporary ones are erected. Building them, however, will not have begun until a couple of weeks before the event as the stands, like many of the marquees, are in constant use and will have come in from Ascot, Wimbledon and the Royal Show.

Even the media itself is a mini-industry. By the preceding Wednesday, the BBC cameras will have begun to arrive and be installed in position while the various control units and director's box are put into place on the Thursday. The three dozen or so television and radio commentators will have arrived by Friday. Most of the 200 specialist Grand Prix pressmen are joined by at least another 1000 more colleagues who are reporting this, their home event. Many will require telephones, fax machines, telex facilities, but such is the number that they have to be stationed in two press facilities, one being the new Jimmy Brown Centre above the pits complex which can seat 250 people and another in a marquee in the paddock.

Meanwhile the competitors themselves will have been arriving all week. Although many of the Grand Prix teams are based in Britain, it will have been a long haul for their truckers since the preceding Sunday they would all have been in the south of



France for the French Grand Prix. A midnight dash across France on Sunday night, back to base on Monday, before moving on again to Silverstone on Thursday. For them, it is just another country, just another round of the 16 race series, and yet each circuit will have gone through the same elaborate process so as to allow 26

of the world's top drivers to race for up to two hours.

Spare a thought, though, for the cleaners. By the time the last spectator has gone, the track silent and the car park empty, between 50 and 60 tons of compacted rubbish will still remain to be collected. **WPK**



Silverstone becomes the world's second busiest airport with over 3000 movements over the weekend.



The Grand Prix appeals to young and old alike.

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sharpest 35mm colour negatives in the world. It's the result of coating the film with much thinner, flatter particles of silver halide than usual. So that when the shutter opens and the film is exposed,

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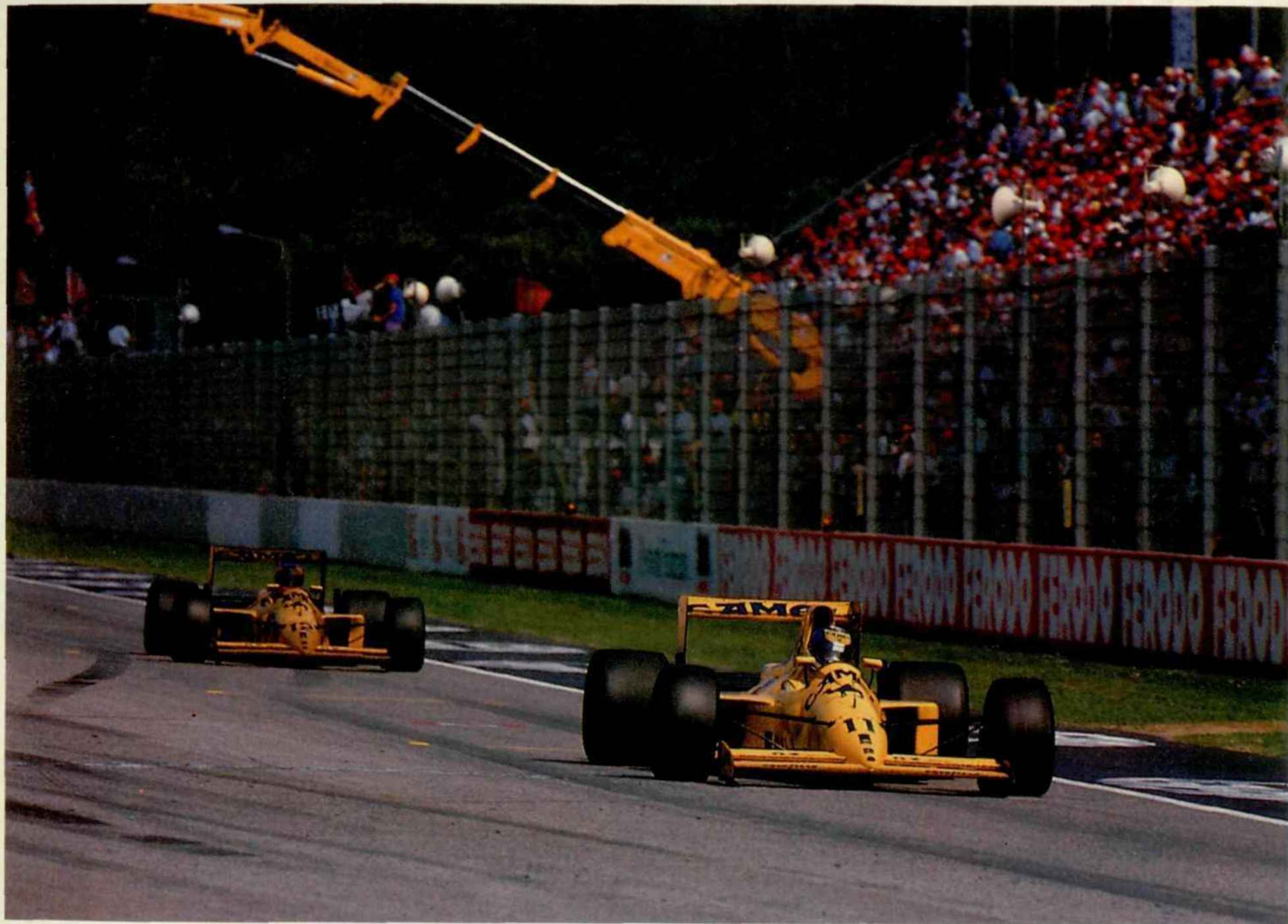
more detail is captured. Which means superb colour reproduction, less graininess and sharper detail. Ektar film is



available in 25, 125 and 1000 speed versions. Whichever you choose, you'll find its biggest positive is its negative.



Kodak and Ektar are trade marks.



A better performance at Imola showed the team had recovered from the setback of the first two races.

It has been a very long time since a Lotus was expected in the winner's circle. Not since the heyday of the 79, the Andretti/Peterson and Colin Chapman regime has the marque made any impact on the championship. It is true that there was the odd success with Elio de Angelis, but the expected renaissance with the arrival of Ayrton Senna and Honda engines never materialised, opportunities were thrown away and the team nosedived in a severe decline of competitiveness and morale.

Having proved uncompetitive even with the Renault and Honda engine, the introduction of the 3½-litre formula saw the team leave the top table, onto which it had been holding by its fingertips, and join the rest of the makeweights in the Grand Prix field. By this time, one didn't even bother to look for a Lotus to finish in the top six and their progress in a race was pretty insignificant.

Things had to change. There was no point in this proud team continuing if it was going to make up the numbers in the way that the AGSs, EuroBrunos and Osellas do. The result was a new 'package' which comprised, amongst other things, the arrival of the V12 Lamborghini engine and the replacement of Nelson Piquet and Satoru Nakajima by two British drivers, Derek Warwick and Martin Donnelly.

The Rum Bunch

For the evergreen Warwick, it was a chance to join the team he could, and should, have joined four years previously. Unfortunately it was under the spell of Senna at that time whose veto was just the brick wall Warwick was not expecting to run into. The result was that the popular Englishman spent four comparatively wasted years in the wilderness.

For Martin Donnelly, though, it is the first step into Formula One, a drive he gained on account of his stirring drives in Formula 3000 last season as team-mate to Jean Alesi driving for the Camel-sponsored Eddie Jordan team. Ten years and 100 Grands Prix may separate Warwick and the fledgling Ulsterman, but at this stage of their careers, the respect is mutual.

"He's what I would call 'unspoilt'," says Derek, "Someone who is approachable and hasn't become the superstar that so many young drivers change into overnight. He also keeps me on my toes." A phrase also used by Donnelly to describe his team-mate.

While joining the team was a logical and positive step for Donnelly, although the

number two drive in the team has been notorious in its waste of good drivers, it was not so for Warwick.

Although he was in the second division Arrows team, at least he was able to lead a Grand Prix, albeit very briefly in Canada last year, whereas the Lotus prospects looked in a state of terminal decline.

"To join Team Lotus this year was for me the right time and the right opportunity. They had had it so bad for so long, I felt it was a great opportunity for me to try and drag them back into becoming a top three or four team. That, however, is not easy because our package is not particularly strong. As a team, though, it is probably the finest I have driven for," he adds tactfully.

"We do not manufacture enough for a top team, and that is a weak area, but we do have one of the best designers in Formula One and undoubtedly we do have the best race team which is down to Rupert Mainwaring, Steve Hallam and Richard Taylor, the chief mechanic. I have often heard them being called 'the Rum Bunch', and they are. They take the mickey out of you mercilessly and there's

no airs and graces."

After the disaster of the first two races, were there second thoughts? "Not really. The car came very late. We had a few problems with the engine, a few problems with Bosch and we made a few problems ourselves. It wasn't any one thing, it was a catalogue of bits and pieces which gave us a bad time."

Donnelly, though, ascribes the poor start to "a large part of that was the fact that we never put any testing miles on the clock. There was also slight panic at the thought of a big old thirsty V12 lump propelling the car with the result that the monocoque was compromised to reduce weight. Since then, though, we have become more competitive and as the season goes on, we should do even better."

"At the beginning of the year, my initial aim was to keep pace with Derek and try and bag a few points on the way which I think will become more difficult as the Ferraris and Renaults become more reliable."

Derek has revised his opinion of the engine as the season has progressed, "I wasn't too impressed with the Lamborghini engine at the start because everything was going wrong, but we are now starting to get a raceable engine; it is fundamentally very good and very sound."

"As far as driving is concerned, it is very easy because the power band is very flat and wide, ideal for somewhere like Monaco, but there is still work to be done on it for I think we are probably 30-40 bhp down on the Honda which needs to be rectified. The trouble is that we are lacking finance. We are well below the budgets of Ferrari and Renault. What we really need is commitment from Chrysler. I think it's time they realised that we've got something which is pretty good and ripe for further development."

"At the start of this year, I seriously thought we could run in the top six and get lucky and maybe get on the rostrum. I think that with luck we can still do that now. We are just tagging up behind the Benettons and that is our next challenge. The Renault, the Honda and the Ferrari are a little bit in front of us, and so we are relying on breakdowns to get the points."

It is the power circuits, though, that Donnelly is looking forward to, "At tracks like Silverstone and Hockenheim we should start to see the advantages of the V12 because it is at the top end that it really comes to life. I would like to think that I should be guaranteed some points at Silverstone this year."

"Silverstone has been a circuit which has been very lucky for me," asserts Warwick, "But it's a circuit I have not often looked forward to as being a power circuit I have never been in a situation to have that power. With the Lamborghini, though, that has now changed and I'm now in a division one car and should run competitively at Silverstone. The only problem with a circuit like that is that the driver makes very little contribution to the overall speed whereas somewhere like



Derek Warwick relishes the extra torque available from the V12 engine.



Martin Donnelly has proved a useful team-mate to Warwick and is looking for some points finishes.

Canada the driver can make up certain deficiencies of the car."

Warwick has now gone almost 120 Grands Prix without a win, "119 Grands Prix and no wins is not a record I'm particularly proud of. The way things are at the moment, they are not going to change much this year, but we are all working on plans to have a more competitive package in 1991. Pressure is what you put on yourself. If you are in a Lotus

and wish you were driving a McLaren, then you put yourself under unnecessary pressure. We do have, however, one of the biggest sponsors in Formula One looking for some light at the end of the tunnel and there is a racing team which has umpteen Grands Prix, World Championships and a lot of history and tradition behind it which bring their own pressure, but at the end of the day, history is history, the future's ahead." WPK

Many a 'find' has been reported in MOTOR SPORT over the years, some hidden away in an old barn. This shed, though, is something different; eighteen immaculate Lotus racing cars, all but one Grand Prix machinery, and rarely seen by outside eyes.

Outside, the long, seemingly innocuous building bears no livery, no sign of its content. The only clue is the location, for it is sited in the grounds of East Carleton Manor, the private estate of Hazel Chapman, widow of Lotus founder, Colin. Only a few miles away is Ketteringham Hall where the current, all yellow Lotus-Lamborghini 102s are prepared.

The colour in the 7 to 8000 sq ft barn is, though, predominantly black and gold, which perhaps comes as a disappointment when you have been told that it is full of historic Lotus Grand Prix cars. The feeling is temporarily heightened when your guide speaks of black and gold as the colour the enthusiast normally associates with Lotus.

Sitting, as it were on pole position, at the head of the two-by-two 'grid' is the sole car in the true Team Lotus livery of green and yellow. Unfortunately, this is no 18, 25 or 99; it is not even a Grand Prix car. This is a type 32, the chassis designed for Formula 2. There is, though, something special about this particular single-seater.

The 2.5-litre Climax FPF four-cylinder engine hiding under the bulbous cover would indicate that this is the 32B with which Jim Clark took five races and the 1965 Tasman title. The car, which had its rear legs replaced by a tubular subframe to support the FPF, was subsequently raced 'Down Under' by Jim Palmer, Mel McEwin and John Roxburgh.

The shed's two alcoves indicate that all has not been black and gold, but the rest of the 'grid' is pure John Player Special. The cars are, more or less, lined up in date order with one of the two Lotus 72s adjacent to the 32B. Identification is confusing for the chassis number plates appear to read 72-9 and 72-15. The former you can accept. The latter, history would suggest, is more likely to be 72-5, for 9 was the last of the breed. Its style of air box would also indicate that the car was raced late in the model's career.

The pair, 72-5 and 72-9, were the last of the model to be raced, although 72-5 was a virtually new car, built to take over the identity of that written off by Emerson Fittipaldi in practice for the 1973 Dutch Grand Prix at Zandvoort.

Ronnie Peterson and Brian Henton drove them in the 1975 United States Grand Prix at Watkins Glen, the swansong for a long lived, and initially striking car. The one built for Ronnie Peterson to use during 1975, 72-9, never saw victory. However, the 'new' 72-5 did come first in the previous year's Race of Champions, Jackie Ickx driving.

If the shape of the 72 had served to surprise when it first came out in 1970 then so did the configuration of the 78. As with the 25 monocoque — what a shame the collection was not started earlier —



Black and gold predominate in this private collection of Lotus Grand Prix cars.

Hidden Treasure

Chapman had re-written the rules, this time with the introduction of the 'wing car'. It was another example of the search for 'the unfair advantage'. Airflow, encouraged to pass under the car, produced downforce by sucking it into the ground. An inverted aerofoil section is to be found in the airstream, below water radiators which are mounted in wide side pods. Those infamous bristle 'skirts' are attached to the pods, the whole helping to 'suck' the car to the ground.

Achieving much the same effect is the underside of the 79, which forms a venturi with the ground. The slim, 'ground effect' 79 was to be the last championship winning car from Lotus with Mario Andretti taking the 1978 title.

Both 78 and 79 have their rightful place in the collection. Less notable is the example of the stopgap 87 which raced during 1981. Placed sideways, and spoiling the 'grid' formation is the controversial car the type 87 was built to shadow, the 88. As Doug Nye recounts in his mine of information, *Theme Lotus*, Nigel Mansell was to describe this unraced innovation as 'a very clever idea, but so complicated'.

The 88 featured a twin chassis, in effect two suspension systems, one for the driver and mechanical parts, the other for the aerodynamic parts. The scrutineers at Long Beach decided the machine was illegal. A subsequent Court of Appeal cleared it, and the 88 then passed through scrutineering for the Brazilian Grand Prix. Six teams protested and the car was black flagged when it came out for the second practice session! It did not even get past the scrutineers at Buenos Aires.

The final phase in the saga occurred at the British Grand Prix. The car reappeared in mildly modified 88B form, satisfying the RACMSA. Then, as now, FISA President, Jean-Marie Balestre was around to have a say in the proceedings. He did not think the car was legal, and implied that if the RACMSA did not change its mind he would strip the Silverstone race of its World Championship status.

The two Lotus drivers, Elio de Angelis and Nigel Mansell, having already qualified the 88Bs, now had little time to scramble their 87s onto the grid. With heroic effort, the Italian just managed it while the 'local' man failed. The 88 was



The Gold Leaf-liveried type 49 used by Graham Hill to win the 1968 World Championship.



The oldest car in the collection, a 32B (left), sits alongside Peterson's 72.



The Honda-powered 100T as raced in 1988 by Nelson Piquet.

only fit to reside in a shed

The example at East Carleton sits glittering with the silver and green hue of the troubled sponsor, Essex, on its flanks. Above this resides the legend 'John Player Special'. Surely that ought to read 'Courage', for it was the brewery's name that was seen in practice for the 1981 British event.

Later, Renault-powered models line-up around the 88, one type 98 suffering from schizophrenia. The name of Ayrton Senna on one side, and Johnny Dumfries on the other, recalling the fact that Derek Warwick could have driven for Lotus as early as 1986 had the Brazilian so willed.

One of the two alcoves reminds us that the Lotus hue is now yellow with a Honda-

powered car. There are other yellow cars a country lane away, so you pause at the other alcove. There is the second oldest car in the collection, a Gold Leaf liveried Lotus 49 of the type that Jim Clark used to give the Cosworth DFV its first win, and with which Graham Hill won the 1968 World Championship.

A glance at the chassis plate reveals this to be R10. Originally a Tasman car for Jochen Rindt, R10 had been reconstructed from R2, the famous 1967 Dutch Grand Prix winning machine. In its new guise it again won the first time out, this time in true Lotus 49 fashion at the 1969 Monaco Grand Prix. It was Graham Hill's fifth win at Monte Carlo in seven years. The Englishman drove it in a further six

Grands Prix without success. It still, though, had its mark to make history.

Having been driven early in 1970 by John Miles and Alex Soler-Roig, as well as Hill (the car on loan to Rob Walker at Monaco), R10 was entrusted to a young Brazilian, Emerson Fittipaldi made his debut at the British Grand Prix alongside the 72s of Rindt and Miles, finishing a creditable eighth. He also used the last 49 to be entered by the factory in Germany and Austria, coming fourth at Hockenheim.

Now it has found its way to a shed; a shed with whitewashed walls, bare of adornment, but simply full — the visitor has to be careful when stepping over the almost overlapping front wings — of remarkable racing cars. IRW

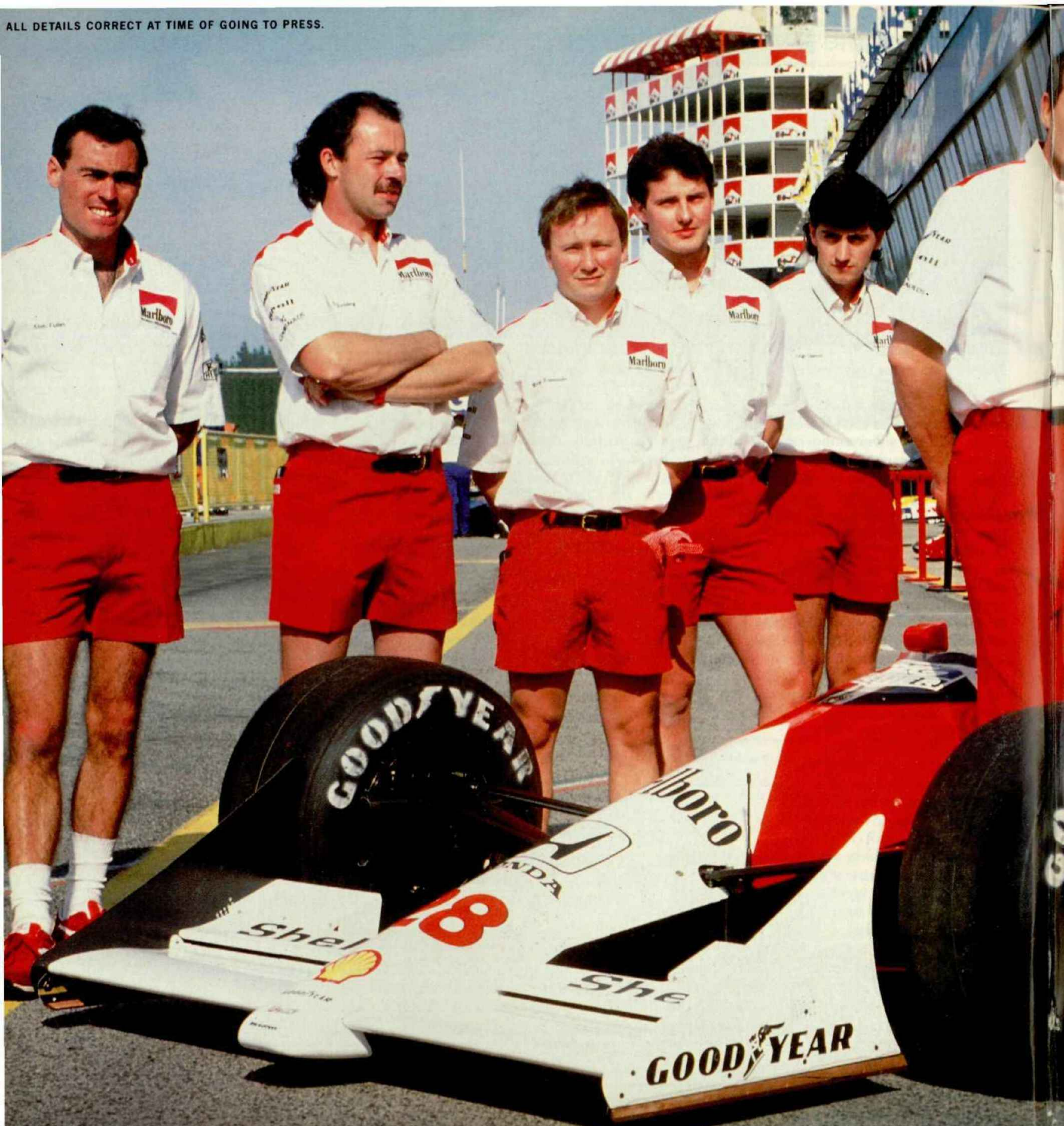
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GOODYEAR

While 26 drivers will line up at the start of the race, there will be 10 who will have forfeited their place on the grid.

A glance through the statistics of the drivers and teams, brought up to date after the Monaco Grand Prix, shows who these 10 unfortunates are likely to be.

The statistics also show that Ferrari is but just two victories away from its century, but that McLaren, the second most successful team, has still some way to go with 82 wins. A decade ago, Team Lotus looked set to overhaul the Italian team's total, but have since languished and have now been relegated to third place with 79 wins.

Alain Prost has amassed the most points, but Ayrton Senna is closing the gap, albeit with a great deficit still to catch up. Derek Warwick has the unfortunate statistic of 119 Grand Prix starts without a victory while Senna's 22 wins in 98 races (22.4%) is only bettered by Prost's 40 wins in 157 (25.4%).

Whether one of the four Brazilians present will carry the honours of the British Grand Prix remains to be seen, but with Nigel Mansell's record in his home event, as well as Alain Prost's, the Ferrari's still remain a factor to be counted.

WPK



FERRARI

1. **ALAIN PROST**. Born 24.2.55. French. GPs: 157. Wins: 40. Pole Positions: 20. Fastest Laps: 32. Points: 604.5. World Champion: 1985, 1986, 1989.

2. **NIGEL MANSELL**. Born 8.8.54. British. GPs: 137. Wins: 15. Pole Positions: 12. Fastest Laps: 13. Points: 255.

Ferrari SpA. Chassis: Ferrari 641. Engine: V12. Tyres: Goodyear. Wins: 98. Pole Positions: 107. Fastest Laps: 111. Points: 1580. World Championships: Drivers 9, Constructors 8.



TYRRELL

3. **SATORU NAKAJIMA**. Born 23.2.53. Japanese. GPs: 47. Best Finish: 4th. Fastest Laps: 1. Points: 12.

4. **JEAN ALESI**. Born: 11.6.64. French. GPs: 12. Best Finish: 2nd. Points: 21.

Tyrrell Racing Organisation: Chassis: Tyrrell 019. Engine: Cosworth DFR V8. Tyres: Pirelli. Wins: 23. Pole Positions: 14. Fastest Laps: 19. Points: 574. World Championships: Drivers 2, Constructors 1.

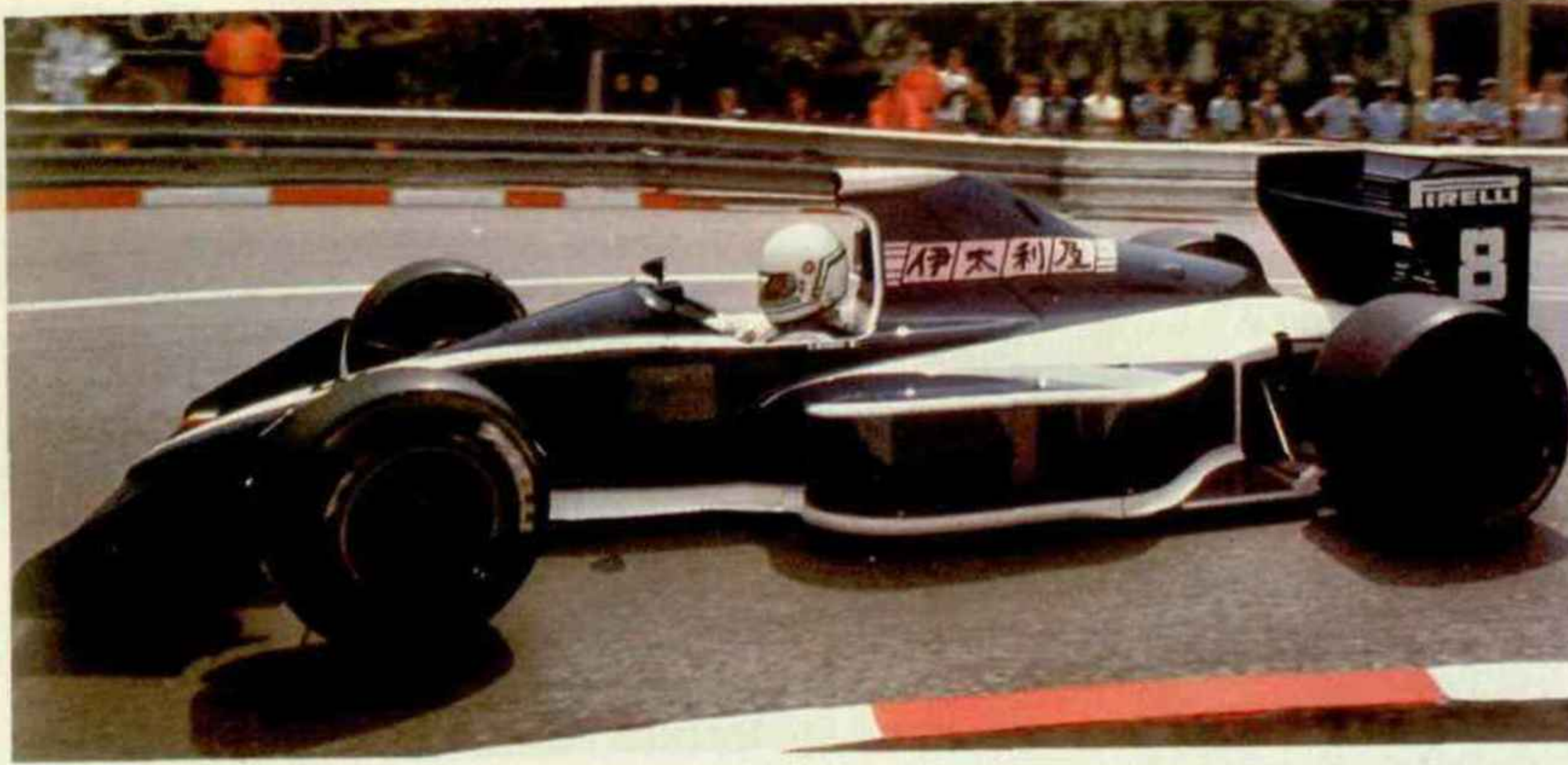


WILLIAMS

5. **THIERRY BOUTSEN**. Born 13.7.57. Belgian. GPs: 109. Wins: 2. Points: 105.

6. **RICCARDO PATRESE**. Born: 17.4.54. Italian. GPs: 196. Wins: 3. Pole Positions: 3. Fastest Laps: 5. Points: 138.

Williams GP Engineering: Chassis: Williams FW13B. Engine: Renault V10. Tyres: Goodyear. Wins: 43. Pole Positions: 30. Fastest Laps: 41. Points: 898.5. World Championships: Drivers 3, Constructors 4.



BRABHAM

7. **DAVID BRABHAM.** Australian. GPs: 1. DNF.
 8. **STEFANO MODENA.** Born 12.5.63. Italian. GPs: 30. Best Finish: 3rd. Points: 6.
 Motor Racing Developments. Chassis: Brabham BT59. Engine: Judd V8. Tyres: Pirelli. Wins: 35. Pole Positions: 39. Fastest Laps: 41. Points: 861. World Championships: Drivers 4, Constructors 2.



ARROWS

9. **MICHELE ALBORETO.** Born: 23.12.56. Italian. GPs: 133. Wins: 5. Pole Positions: 2. Fastest Laps: 4. Points: 179.5.
 10. **ALESSANDRO CAFFI.** Born: 18.3.64. Italian. GPs: 45. Best Finish: 4th. Points: 6.
 Footwork Arrows: Chassis: Arrows A11B. Engine: Cosworth DFR V8. Tyres: Goodyear. Pole Positions: 1. Points: 116.



LOTUS

11. **DEREK WARWICK.** Born: 27.8.54. British. GPs: 119. Best Finish: 2nd. Fastest Laps: 2. Points: 62.
 12. **MARTIN DONNELLY.** Born: 26.3.64. British. GPs: 5. Best Finish: 8th.
 Camel Team Lotus: Chassis: Lotus 102. Engine: Lamborghini V12. Tyres: Goodyear. Wins: 79. Pole Positions: 107. Fastest Laps: 70. Points: 1337. World Championships: Drivers 6, Constructors 7.



OSELLA

14. **OLIVIER GROUILLARD:** Born: 2.9.58. French. GPs: 15. Best Finish: 6th. Points: 1.
 Osella SpA. Chassis: Osella FA1M. Engine: Cosworth DFR V8. Tyres: Pirelli. Points: 5.



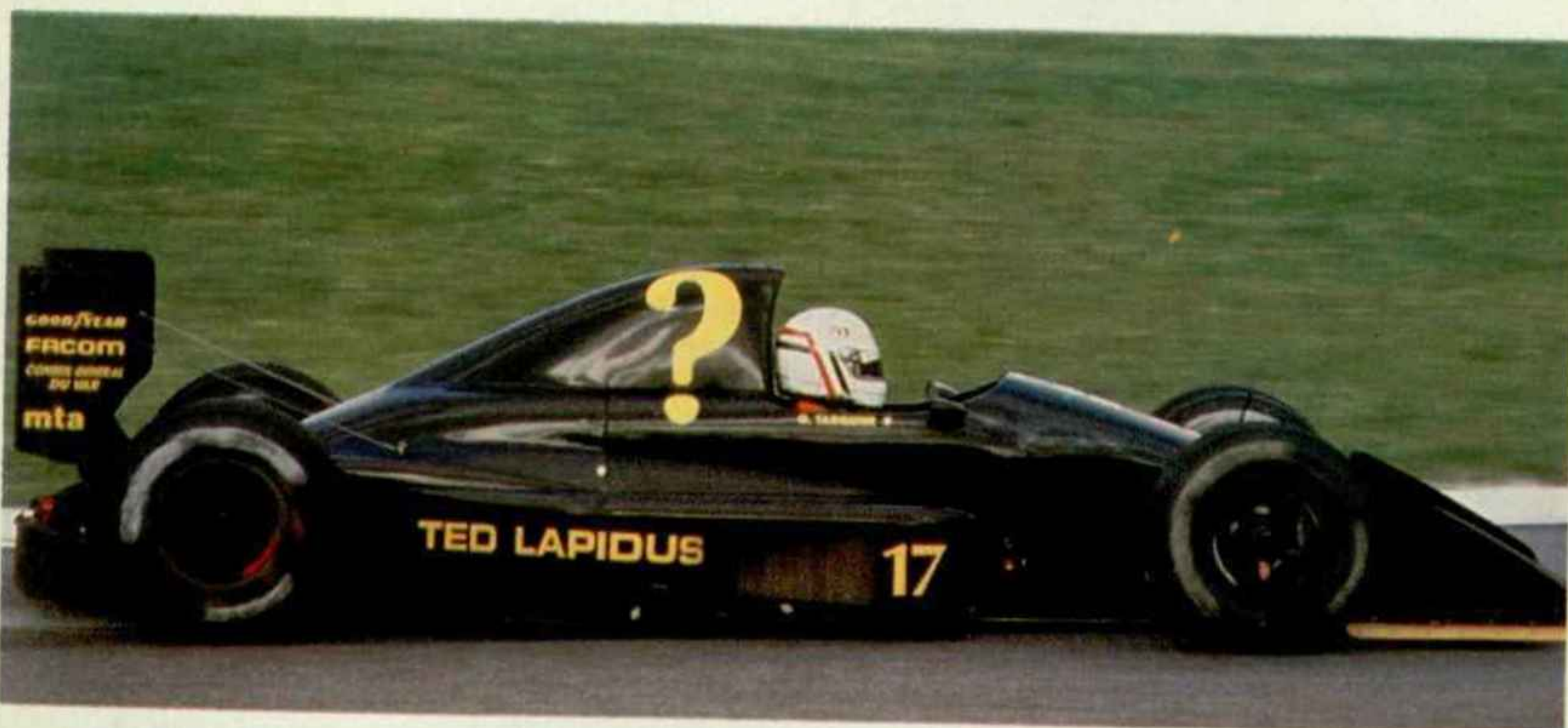


LEYTON HOUSE

15. MAURICIO GUGELMIN. Born: 20.4.63. Brazilian. GPs: 33. Best Finish: 3rd. Fastest Laps: 1. Points: 9.

16. IVAN CAPELLI. Born: 24.5.63. Italian. GPs: 53. Best Finish: 2nd. Points: 19.

Leyton House Racing: Chassis: Leyton House CG901. Engine: Judd V8. Tyres: Goodyear. Points: 0.



AGS

17. GABRIELE TARQUINI. Born: 2.3.62. Italian. GPs: 15. Best Finish: 6th. Points: 1.

18. YANNICK DALMAS. Born: 28.7.61. French. GPs: 17. Best Finish: 5th. Points: 0 (ineligible for points with 5th place in 1987 Australian GP).

Equipe AGS: Chassis: AGS JH25. Engine: Cosworth DFR V8. Tyres: Goodyear. Points: 2.



BENETTON

19. ALESSANDRO NANNINI. Born: 7.7.59. Italian. GPs: 66. Wins: 1. Fastest Laps: 2. Points: 48.

20. NELSON PIQUET. Born: 17.8.52. Brazilian. GPs: 176. Wins: 20. Pole Positions: 24. Fastest Laps: 23. Points: 419. World Champion: 1981, 1983, 1987.

Benetton Formula: Chassis: Benetton B190. Engine: Cosworth EXP V8. Tyres: Goodyear. Wins: 2. Pole Positions: 3. Fastest Laps: 8. Points: 135.



DALLARA

21. EMANUELE PIRRO. Born: 12.6.62. Italian. GPs: 11. Best Finish: 5th. Points: 2.

22. ANDREA de CESARIS. Born: 31.5.59. Italian. GPs: 139. Best Finish: 2nd. Pole Positions: 1. Fastest Laps: 1. Points: 38.

Scuderia Italia: Chassis: Dallara BMS 190. Engine: Cosworth DFR V8. Tyres: Pirelli. Points: 8.



MINARDI

23. **PIERLUIGI MARTINI**. Born: 23.4.61. Italian. GPs: 42. Best Finish: 5th. Points: 6.

24. **PAOLO BARILLA**. Born: 20.4.61. Italian. GPs: 5. Best Finish: 11th.

SCM Minardi: Chassis: Minardi M190. Engine: Cosworth DFR V8. Tyres: Pirelli. Points: 7.



LIGIER

25. **NICOLA LARINI**. Born: 19.3.64. Italian. GPs: 23. Best Finish: 9th.

26. **PHILIPPE ALLIOT**. Born: 27.7.54. French. GPs: 82. Best Finish: 6th. Points: 5.

Ligier Gitanes: Chassis: Ligier JS33B. Engine: Cosworth DFR V8. Tyres: Goodyear. Wins: 8. Pole Positions: 9. Fastest Laps: 11. Points: 307.



MCLAREN

27. **AYRTON SENNA**. Born: 21.3.60. Brazilian. GPs: 98. Wins: 22. Pole Positions: 45. Fastest Laps: 14. Points: 339. World Champion: 1988.

28. **GERHARD BERGER**. Born: 27.8.59. Austrian. GPs: 87. Wins: 5. Pole Positions: 5. Fastest Laps: 11. Points: 134.

Honda Marlboro McLaren: Chassis: McLaren MP4/5B. Engine: Honda V10. Tyres: Goodyear. Wins: 82. Pole Positions: 59. Fastest Laps: 59. Points: 1468.5. World Championships: Drivers 7, Constructors 5.



LAROUSSE

29. **ERIC BERNARD**. Born: 24.8.64. French. GPs: 6. Best Finish: 6th. Points: 1.

30. **AGURI SUZUKI**. Born: 8.9.60. Japanese. GPs: 5. Best Finish: 16th.

ESPO Larousse: Chassis: Lola 90. Engine: Lamborghini V12. Tyres: Goodyear. Points: 5.

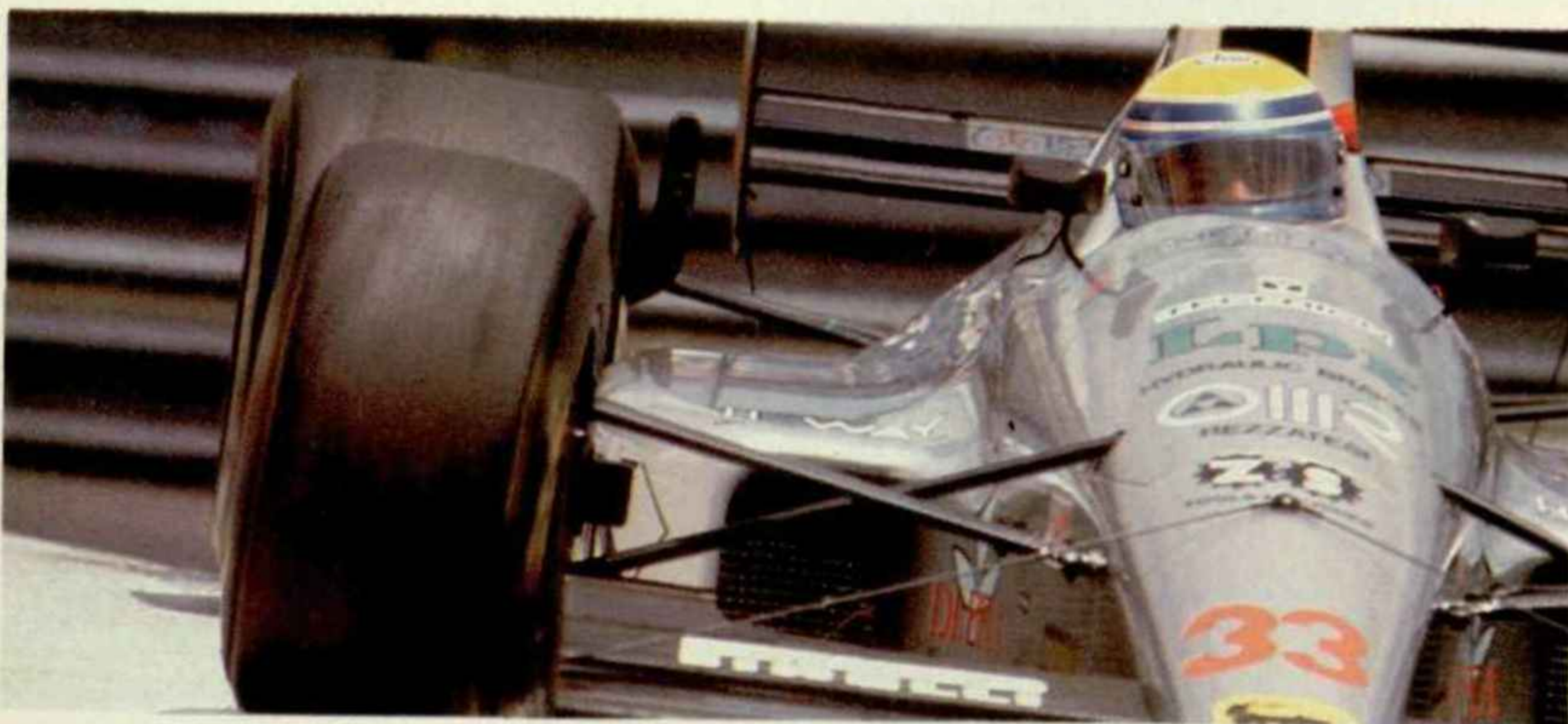




SUBARU COLONI

31. BERTRAND GACHOT. Born: 22.12.62. Belgian. GPs: 5. Best Finish: 12th.

Subaru Coloni Racing SRL. Chassis: Coloni C3B. Engine: Subaru Flat 12. Tyres: Goodyear. Points: 0.



EUROBRUN

33. ROBERTO MORENO. Born: 11.2.59. Brazilian. GPs: 8. Best Finish: 6th. Points: 1.

34. CLAUDIO LANGES. Born: 20.7.60. Italian. GPs: 0. EuroBrun Racing AG. Chassis: EuroBrun ER189. Engine: Judd V8. Tyres: Pirelli. Points: 0.



ONYX

35. GREGOR FOITEK. Born: 27.3.65. Swiss. GPs: 4. Best Finish: —

36. JJ LEHTO. Born: 31.1.66. Finnish. GPs: 4. Best Finish: 12th.

Moneytron Onyx. Chassis: Onyx ORE 1B. Engine: Cosworth DFR V8. Tyres: Goodyear. Points: 6.



LIFE

39. BRUNO GIACOMELLI. Born: 10.9.52. Italian. GPs: 69. Best Finish: 3rd. Pole Positions: 1. Points: 14.

Life Racing Engines SRL. Chassis: Life L190. Engine: Life 12 cyl. Tyres: Goodyear. Points: 0.

Capelli's Comment

The Leyton House team has rather been in the doldrums this season, a factor which has seen its two drivers, Ivan Capelli and Mauricio Gugelmin, drift from the front half of the grid in 1988 to scrambling for qualifying in 1990. In fact at the time of going to press, after the Canadian Grand Prix, the team had yet to score any points and on a couple of occasions both drivers had even failed to qualify, the low point being in Brazil where neither made it to the grid. The arrival of the Ilmor engine for the team's exclusive use cannot come quick enough.

Whether Canada marked a turning point is difficult to say. Only Capelli managed to qualify, and that at the back of the grid, but at least he was able to chalk up his first finish of the season.

I definitely had a feeling of great satisfaction at the end of the Canadian Grand Prix. It was the first time for a while that I had seen the chequered flag at the end of a race which is a step in the right direction for the Leyton House team.

I had forgotten how tiring a Grand Prix can be, though, or at least a Grand Prix on a track like Montreal which, even at the best of times, is tough on the driver. And this was not the best of times for me or anyone else.

We all had one of those difficult situations where the track was neither wet nor dry. There had been a shower before

the start but it was soon pretty obvious that the fat tyres on our cars would quickly dry the racing line out. I came in to change to 'slick' dry weather tyres after 13 laps.

That was an improvement — so long as you stayed on the racing line. Elsewhere, the water was still lying on the ground and if you got onto that with smooth tyres, it was like walking on ice with leather soles. Very difficult, but I have to admit I would prefer that to constant rain because the water does not drain away on the surface at Montreal; it really is a dangerous situation for the drivers as the cars are already



AUTOGLASS

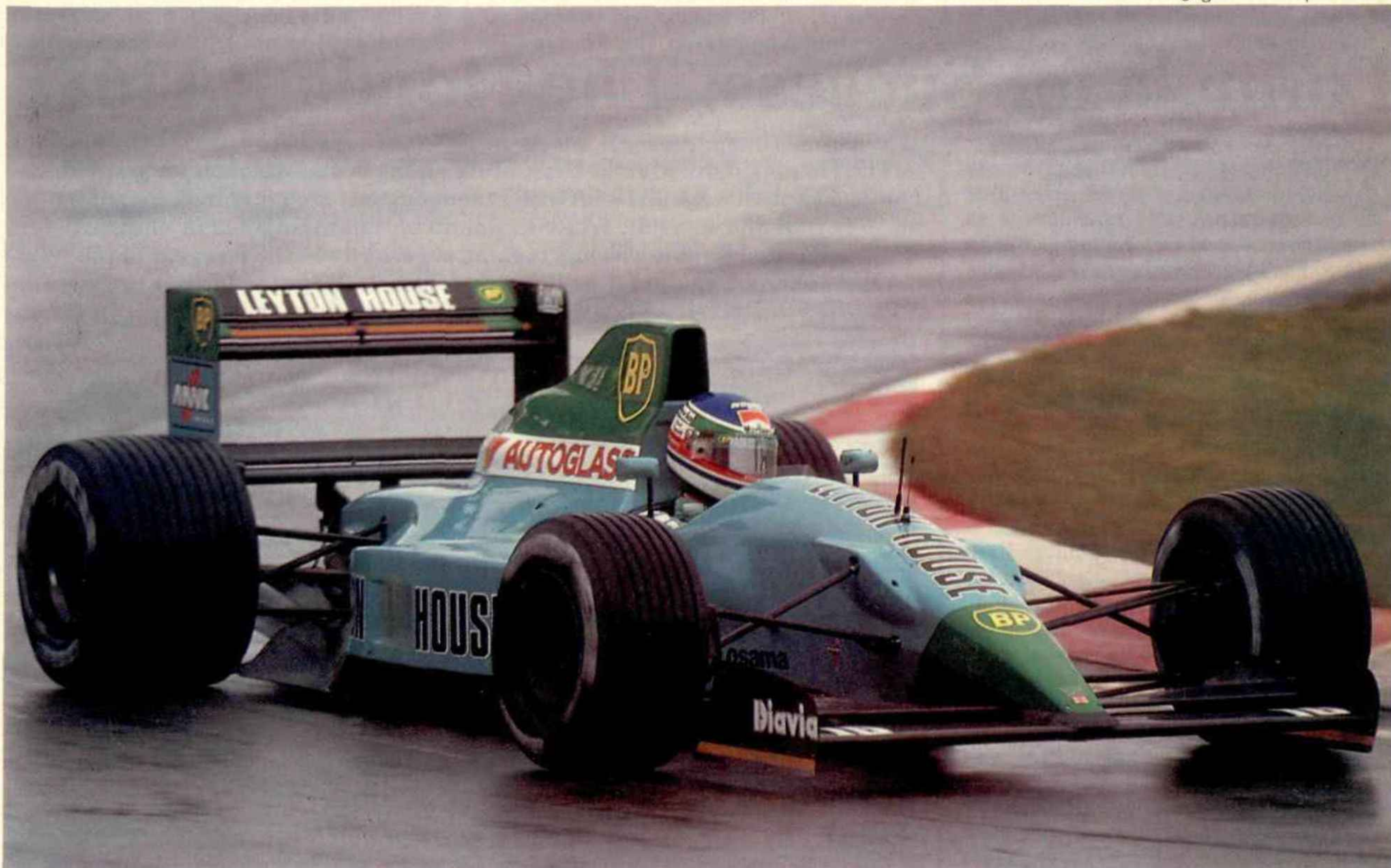
unstable because of the many bumps on this circuit.

Apart from that, though, it is an enjoyable track from a driver's point of view and it is also a pleasant place to be. The circuit is situated on a man-made island in the middle of the St Lawrence seaway. It was built originally for Expo '67 and then they made a lake on it for the rowing competitions at the 1976 Olympics. After that they couldn't think what to do with the island — so they built the race track! It's a very pleasant situation and the paddock is right beside the rowing lake.

Each year the mechanics have a race across the lake in home-made boats. It's a fun event with each team supposedly building their craft out of bits on hand in their pit. One year the Lotus team converted a portable toilet and rowed across in that!

Last year Leyton House were disqualified for using an engine in their boat — I thought it showed some good initiative — so imagine our surprise when Ferrari won this year with a boat they had specially made back at their factory in Italy! And it had an engine as well!! Not quite the spirit of the event, but still the fun is taking part. For me the real fun in Canada came as I took the chequered flag though.

Ivan Capelli



Ivan Capelli was finally able to bring the Leyton House to a finish in Canada, albeit in tenth place.



The McLaren-Hondas stole the show in 1988 winning all but one Grand Prix.

Formula for Success: The Honda RA168E

The general principle that insecurity breeds secrecy and conversely that confidence fosters openness is as applicable to Grand Prix racing as it is to politics. For over twenty years Honda has been racing, however, during all this time the company has released little detailed information on its racing cars or engines. For the period 1964-8, a desire for secrecy is understandable since the company's record was anything but glorious. Honda built its first Grand Prix car in 1964, but this machine, the R270/1, won only one event in two seasons of racing. The car's 1.5-litre engine, designated the RA272, produced adequate power — allegedly it developed 5% more horsepower than the competing BRM or Coventry Climax engines — but any horsepower advantage was more than offset by its weight which was at least 20% greater than its competitors. This lack of success may be excused on the grounds that this was Honda's first effort and the company's engineers were just learning.

Honda's next effort, however, the 3-litre R273V-12, was by some standards even less successful than its predecessor. It also won only one race, the 1967 Italian Grand

The Honda domination in Grand Prix racing is almost taken for granted. It is a yardstick against which all others engines are measured, including Ferrari and Renault. While its dominance has remained in normally aspirated form it was its crushing superiority in the last year of the turbocharged era that it really made its mark. To put today's engine into perspective, David Hebb analyses that turbocharged unit.



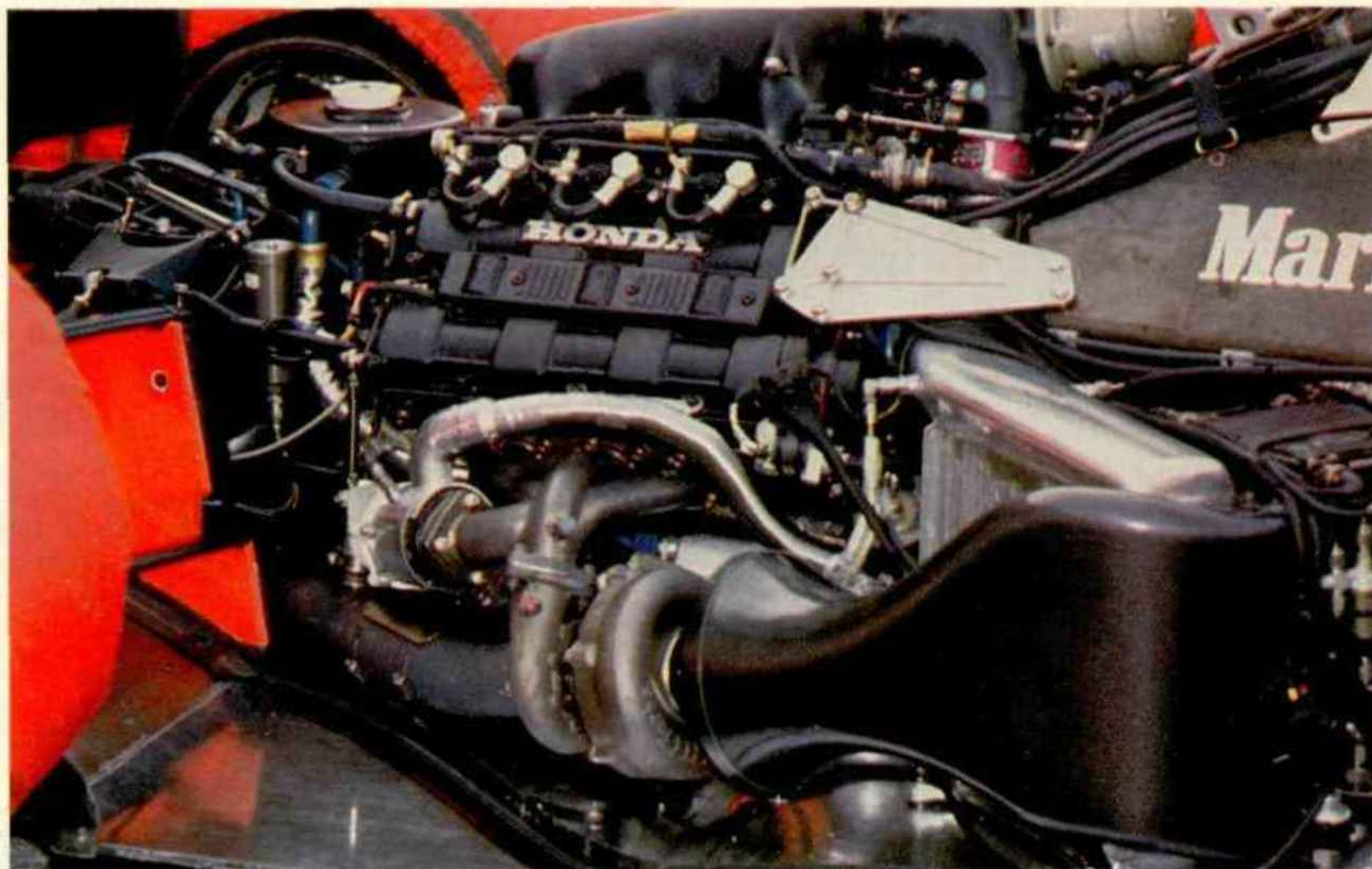
The V12 Honda engine campaigned in 1967 was too large and heavy to be competitive.

Prix, but even this was achieved only after abandoning the Honda-built chassis for one developed by Lola engineers. Again Honda produced a V12 engine that had sufficient power, though this time its horsepower advantage over rivals such as Eagle-Weslake and Cosworth DFV was 2% at most and again the Japanese motor was considerably larger and heavier, weighing over 100 pounds more than the DFV.

In an attempt to build a more compact and lighter powerplant, Honda next built an air-cooled V8, the RA302. It proved to be more of an embarrassment to Honda weighing as much as the DFV but producing 10% less power. Not surprisingly, it was quietly dropped shortly before the firm withdrew from racing at the end of 1968.

There followed a gap of over fifteen years during which Honda's engineers concentrated on road cars before the Japanese company re-entered Grand Prix racing in 1985 with a 1.5-litre supercharged V6 engine. Although Honda's return began inauspiciously, progress was rapid and relentless, and soon, success was at hand. By 1988 the Honda engine was unquestionably the best, and consequently, Honda-powered cars won every race but one. With this record of success behind them, Honda's R&D engineers, Otobe, Miyano, Kawamoto, Aoki, and Ogawa felt confident enough to reveal to the world details about their engine and how they achieved such unparalleled success.

That Honda's winning engine, the RA 168E, has a familiar look about it is not surprising since this engine has a long history which can be traced back to the RA263, a naturally aspirated 2-litre V6 that was used at the very beginning of the 1980s to power Formula 2 cars. The most notable feature of that engine was its wide bore and short stroke. According to Kawamoto, the chief engineer responsible for this engine, his team began by looking at the competition, especially the four-



The induction system relied on two IHI turbochargers which incorporated ceramic turbine wheels to reduce inertia.

cylinder BMW engine, which "had a 92mm bore, so we decided to do the same but with six cylinders, so theoretically we could get one and a half times the power". The extreme over-square nature of the RA263 was carried over to Honda's first 1.5-litre turbo-supercharged engines, the RA165E, RA166E, and RA167E. However, when severe boost and fuel restrictions came into effect in 1988, Honda was forced to alter radically its turbocharged Grand Prix engine. Above all else, this re-design effort was dominated by a need to improve fuel consumption. To achieve this aim, Honda developed a more compact combustion chamber and raised the higher compression ratio substantially. Instead of using a 7.2:1 compression ratio, as on the RA167E, the new engine was designed to run at 9.4:1. This was accomplished by reducing the bore to 79mm and increasing the stroke to 50.8mm, leaving the new engine, still over-square but less

so than its predecessors or the competing TAG-Porsche, Renault, Ferrari, or Motori Moderni engines.

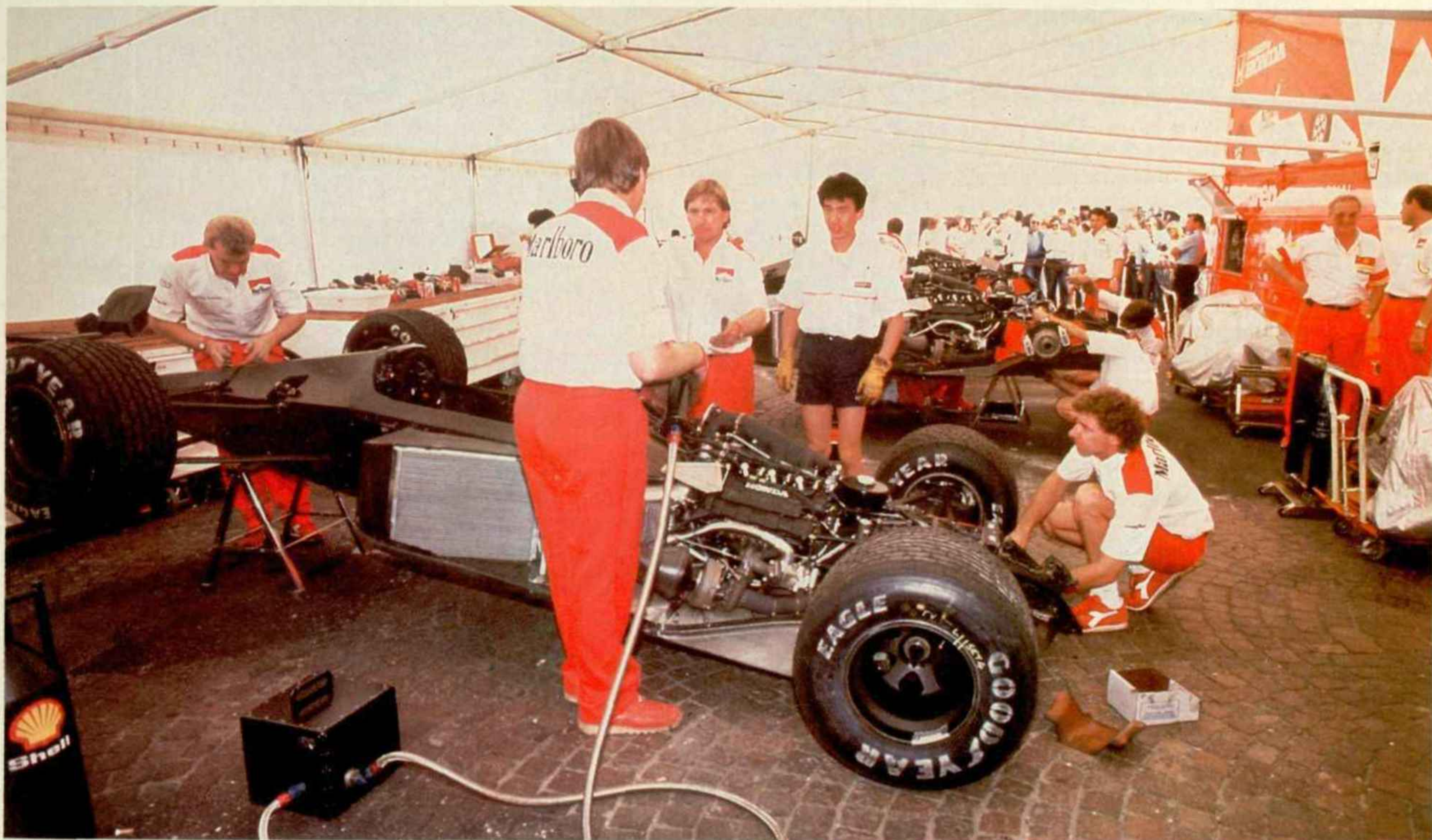
More than anything else, the highly conservative nature of Honda's design stands out. The RA168E displays no devilishly ingenious features, nor any parts fashioned from 'unobtainium' or exotic materials, as had been rumoured. In fact, the block is made from plain old cast iron. The attractive stiffness and ductile characteristics of this material appealed to the Honda team, and, though it is heavier than aluminium alloy, for example, the use of thinwall casting methods reduced wall thickness to a range of 2-3.5mm so that in the end the weight of the block was not very great.

Unlike the block, the cylinder heads were made of aluminium alloy (Al-Si6Cu4), while a few parts, such as cam covers and crankcase sump, were cast from a magnesium alloy. Complete with all accessories, the Honda engine weighs no more than 146 kgs, or about the same as a 3-litre Cosworth DFV.

In valve design Honda also took a conservative approach. Indeed, in this area this engine is less innovative than any earlier Honda Grand Prix engine; every one of its main features can be found on its first Grand Prix unit or those deployed soon thereafter. Moreover, valve design differs little from that used on rival engines. There are no desmodromic actions, no torsion bars nor pneumatic springs; four valves per cylinder are used with each valve being closed in the familiar manner by a pair of concentric springs. The cams act upon finger followers, a mechanism that Honda used on the RA302E in 1968 and seems to prefer to the more common inverted bucket type tappets used in most racing engines. Finger followers can reduce inertia loadings and thereby allow an engine to rev higher. This mechanism certainly works on the RA168E for the engine would run



Honda's dominant turbocharged engine could trace its roots back to the 2-litre Formula 2 unit used at the beginning of the Eighties.



The Honda technicians and McLaren mechanics have created a formidable partnership in Grand Prix racing.

safely at 13,500 rpm. However, normally finger followers are more bulky than bucket type, but Honda has largely overcome this disadvantage by placing the follower pivots between the intake and exhaust valves. As a consequence, the cylinder heads of the Honda engine are no wider than its competitors. The cylinder heads are relatively tall affairs, however, partly because very long valve stems are used to obtain narrow angle inlet tracts but also because the finger followers are not flat, as is often the case, but 'T' shaped with the flat surface supported by a deep beam to supply extra rigidity.

Combustion chamber design is also conservative with compactness, (and hence good burning) and fuel economy is its a primary objective. Following the fashion set by Ferrari twenty years ago, the valves are rather small and arranged at an included angle of 32 degrees, the same angle that was first used on the Cosworth DFV two decades ago. Except for slight indentations to permit valve clearance, the pistons are flat and therefore light; the absence of a high crown also reduces surface area available to absorb heat and thereby permits a higher compression ratio to be used. From the point of view of valve gear and combustion chamber design then, the cylinder head of this engine is quite unremarkable. However, on closer examination, it becomes clear that considerable thought went into the design. Cooling, in particular, has received very careful attention since the presence of hot-spots would hinder progressive combustion and, ultimately, fuel economy.

Two water pumps are used on the RA 168E, each of which supplies coolant to its own side of the cylinder block. Moreover, water galleries are located on the outside walls of the cylinder block where they will absorb less heat. In the cylinder heads the opposite is true: the water galleries are on the inner walls, i.e., the intake or cooler side of the head. Thus, the coolant flows laterally from cool to hot to cool, thereby encouraging uniform thermal conditions around all cylinders and combustion chambers.

The induction system relies on two IHI (Ishikawajima-Harima Heavy Industries Co.) turbo-superchargers. Though working on the same principle as those found on road cars, these compressors, designated RXD6D by the factory, are very special racing appliances. They employ ceramic turbine wheels to reduce inertia, and hence 'turbo lag'. Secondly, this silicon-carbide material is able to run safely at higher temperatures than conventional metal turbines. Ceramics are also used for the bearings that support the turbine and compressor not only because of the attractive high-temperature properties of this material, they are also a means for reducing friction and lubrication problems.

Naturally fuel injection is used. Though similar to the standard Bosch/Bendix indirect injection systems, that used by Honda was developed in-house and employs two injectors per cylinder, the second being needed to ensure that sufficient fuel is available in all operating regimes. Although meeting the fuel requirements set down by the CSI, i.e. petrol with a

maximum of 102 octane, the fuel in the Honda RA168E is far removed from pump petrol. Produced by Elf France, this unleaded brew consisted of up to 84% Toluene, a heavy, slow-burning hydrocarbon that resists premature detonation, a real danger in the high-temperature, high-pressure conditions found in combustion chambers like those of the RA168E. The extent of Honda's concern over fuel and fuel efficiency is evident in the engine's provision to pre-heat the fuel, a procedure that was found after exhaustive tests to improve fuel economy quite dramatically by promoting better vaporization.

Four separate scavenging pumps are used in order to ensure that oil is collected and removed from the base chamber where its presence would otherwise cause pumping losses and thereby reduce power and waste fuel. With a pump at each corner of the dry-sump, oil will be evacuated no matter the direction of the centrifugal force imputed to the lubricant by the high-G manoeuvres of the car.

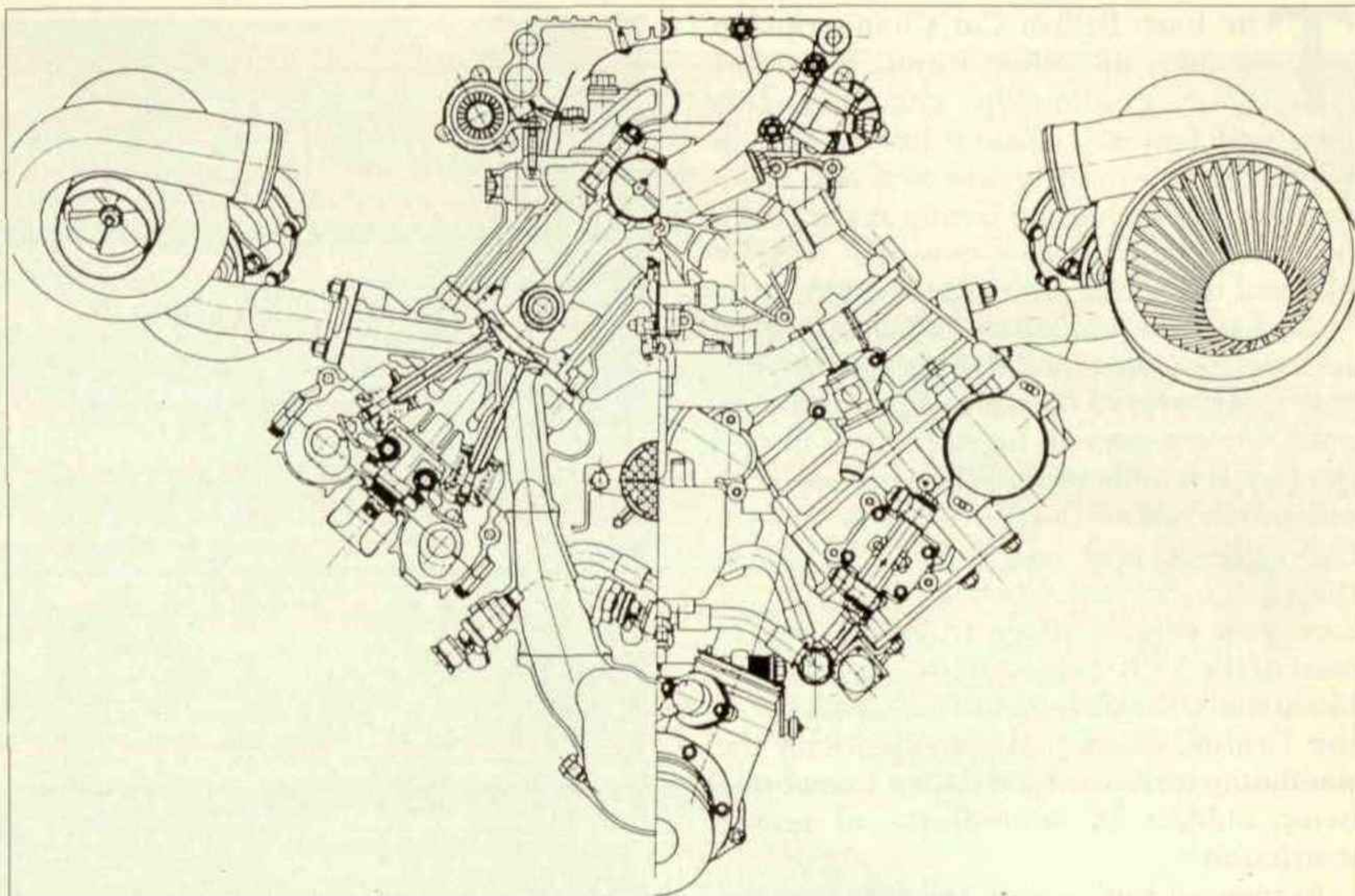
The accumulation of this attention to detail during the design process has resulted in an engine that was proven to be not only powerful and economical but reliable as well. Performance figures for the Honda engine go a long way in explaining the basis for McLaren's string of victories in 1988. By the end of the season the RA168E was producing 685 (metric) bhp @12,500. This is equivalent to 457 hp/litre. Turbocharged engines in road cars are exceptional if they achieve 100 hp/litre. However, even this performance pales in comparison to the specific output achieved the previous year when

restrictions were few. In 1987 the RA167E engine developed no less than 1,010 hp. @ 12,000 rpm in race trim (677hp/litre) and produced a torque peak of 490 ft. lbs. @ 9800 rpm.

Although the absolute output of the RA167E is certainly impressive, it is relatively less potent than the 1988 engine. The regulations in effect in 1987 permitted the RA167E to use a boost pressure of 4 bar (rather than only 2.5 bar as permitted the following year), and 195 litres of fuel (rather than 150 litres) that were allowed in 1988. Leaving aside the smaller amount of fuel available in 1988, the reduction in boost pressure alone would suggest that the RA168E should produce no more than 630 hp., rather than the 685 hp which the Honda's engineers actually achieved.

Torque figures for the RA168E are also impressive with a maximum of 313 ft lb @ 10,000 rpm, but the really astonishing aspect of the torque curve is not its peak figure but the incredible flatness and spread of power. Over 295 ft lb were available all the way from 8000 to 12,000 rpm. Driving a car with such a broad torque curve is less fatiguing because gear changing is less frequent and exacting: as a consequence, the driver can devote more time to steering, braking and overtaking slower cars during a race.

As explained above, fuel efficiency was one of Honda's main objectives in developing the RA168E, and the abstemiousness of this engine is noteworthy. Specific fuel consumption (SFC) figures were as low as 272g/kw-h. (200g/hp-h.) indicating a degree of thermal efficiency of over 30%, a very respectable figure for a



Line drawing of the RA168E — an unremarkable but effective design.

road car, let alone an all-out racing engine. Moreover, the SFC curves for the RA168E show that the trough was quite extensive with less than 280g/kw-h being consumed all the way from 10,500 to 12,500 rpm.

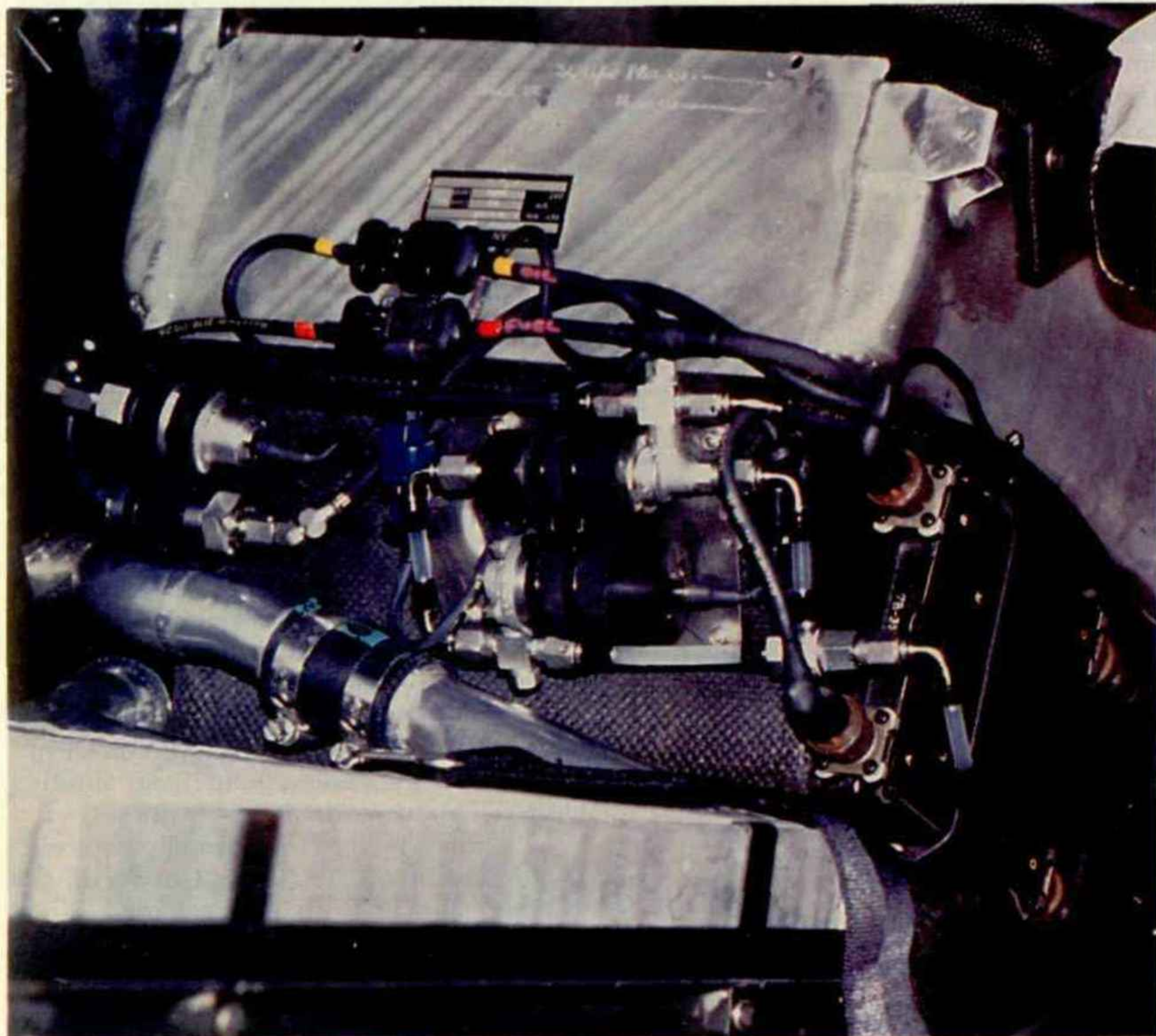
That fuel consumption should remain low at maximum power was one of Honda's chief aims because the R&D engineers had calculated that their engine would be run at (or near) maximum power for much of a race. For example, at Imola in 1988, the RA168E in Alain Prost's McLaren was operated at maximum

power (approximately 90-100% throttle opening) for 63.6% of the race. Conversely, to use the Imola example again, when the engine was run at or near closed throttle (19.8% of the time) fuel consumption shot up to 340g/kg-h.

Anyone watching the 1988 Grand Prix season could observe the Honda's combination of power and fuel efficiency at work, especially in the McLaren cars. The McLaren-Honda team cars did not run out of fuel nor were their drivers forced to back off the throttle or reduce boost in order to finish a race. Honda-engined cars had more power and could use that power throughout the race. Moreover, the power and efficiency of the Honda engine did not come accidentally nor was it achieved by some trick feature, rather, as their engineers have now revealed, it was the culmination of a design effort that began with a clear identification of objectives, concentration on those objectives through all phases of the design process, and painstaking devotion to detail in development. More than anything it was this focusing of all engineering effort that brought success to Honda. With this experience in mind, it is therefore not surprising that Honda engines have again dominated this year's Grand Prix racing.

Although it has taken many years, the Honda R&D team have acquired, perhaps like only Mercedes-Benz in the past, those indefinable design and development skills needed to produce race-winning engines at will. That they are now prepared to discuss their work is evidence, if any were needed, that they are almost disdainfully confident of that ability. The dominance of the naturally-aspirated 3.5-litre RA109E in 1989 and again this year is but another demonstration of Honda's engineering ability and one, hopefully, about which we will learn in detail soon when the R&D team next explain how they went about designing and developing their latest world-beating engine.

DDH



The ancillary equipment of the engine is an important part of the overall whole.

The Esso British Car Championship is like all other forms of motor sport, continually changing. This year will almost certainly be the last in which the enormously powerful and spectacular, turbocharged Group A cars such as the Ford Sierra Cosworth will be allowed to race in unrestricted form.

Cars such as my Labbatt's Sierra RS500 now develop around 560 bhp, giving a top speed of over 170 mph, while running costs for a team can be as high as over a quarter of a million pounds per year. In an attempt to reduce the spiralling increase in both speeds and costs, the RAC introduced the current Class B category for cars with engines of up to 2-litres at the start of the 1990 season. Next year it looks likely that this will become the mainstay of the Touring Car Championship, with the remaining turbocharged Sierra Cosworths being subject to some form of power restriction.

In view of this — and the fact that the British Grand Prix meeting at Silverstone is the most important race on the BTCC calendar — I jumped at the chance to compare one of the new 2-litre challengers with my regular turbo-car in a recent test session at the Northamptonshire track.

The Rouse Sport Sierra Sapphire 2-litre and my own Labbatt's Sierra Cosworth both share a common heritage. They are both based on Ford Sierra bodyshells and both prepared at the Coventry workshops of Andy Rouse, one of the world's leading touring car engineers and no mean driver too, as our battles on the race track continually prove!

In terms of the bodywork, suspension and brakes, both cars comply fairly closely to the International Group A regulations, to which the turbocharged Sierra Cosworth is built. Basically this ensures that you utilise an unmodified bodyshell from a homologated model (in our case the Ford Sierra Cosworth RS500), which is stripped of all wax and sound proofing before the installation of a built-in, computer designed, roll cage. In addition to offering enhanced driver safety, this also makes the bodyshell more rigid under the



Tim Harvey's normal mount, the 560 bhp turbocharged Sierra Cosworth.

Common Heritage

stresses fed back during cornering by the ultra-stiff competition suspension. Spring rates of over 1000 lbs per inch are not uncommon on Sierra Cosworth racers.

The unmodified wheel arches impose a physical restriction on the size of wheels and tyres which we can utilise. As you can imagine therefore, feeding over 500 bhp through 10-inch wide rear tyres is an acquired art! The turbocharged cars are dramatically overpowered and even in the dry will spin their rear wheels in top gear. This year we are helping to develop radially racing tyres for Dunlop, in preference to the more generally used crossplies and as the season progresses we're reaping more and more benefit from the develop-

ment programme.

Both cars take advantage of relaxed rules covering brakes, utilising 13" diameter ventilated discs, which have awesome stopping power, but there the similarity between the two cars ends.

Opening the bonnet on the Sierra Cosworth reveals an evolution of the 2-litre, 16 valve, turbocharged Ford Cosworth engine, which with the benefit of a Zytex computer-mapped engine management and fuel injection system, more than doubles its normal power output from around 225 to 560 horsepower at 7500 rpm and feeds it to the track through a Getrag 5-speed box and a viscous coupling, limited slip differential.

The Rouse Sport Sierra 2-litre though, is a very different animal. Opening the bonnet here reveals the familiar cam covers of the Ford Escort engine, but in place of the turbocharger and all its attendant pipework, there are four fuel injection trumpets to feed the normally aspirated engine, developing around 280 bhp at a compulsory 8500 rpm limit. Class B of the Touring Championship basically specifies that any homologated car of over 4.2 metres in length can carry a race-tuned 2-litre engine from another model in the manufacturer's range. In this case, the engine is a normally aspirated conversion of the Sierra Cosworth, but other cars in the class include 2.3-litre BMW M3s, 'sleeved down' to the capacity limit and even a Mitsubishi Starion fitted with a non-turbocharged unit from the Galant VR-4 rally car.

The two cars demand a very different



The normally aspirated 2-litre Sapphire which has been 'sleeved down' for the championship.

driving style, as I discovered when I climbed out of the Labatt's car into the Sapphire, after a briefing from the car's regular driver Ray Belm. Formerly a mainstay of the Spice Group C team, Ray has been developing this car in the opening rounds of the BTCC and although the team are the first to admit that there have been some early race teething troubles, the potential for the future looks good.

It really is quite a culture shock to climb from the Cosworth into the 2-litre car. The first surprise is the totally different nature of the power delivery. The huge power output of the turbo car is spread over quite a wide rev range, with the power coming in smoothly from as low as 4500 rpm and then building rapidly as the boost rises. In comparison, no matter what the throttle position, below 7500 rpm it has no effect on the normally aspirated Sapphire's performance! The entire powerband is concentrated in the final 1000 rpm below the 8500 limit, you need to be busy, busy, busy on the closely stacked six-speed gearbox all the time, simply to keep the engine 'on the boil'. At least the gear-change is good, with that distinctive clunk as you go from gear to gear, that is the hallmark of a X-Trac box.

The other thing which is immediately noticeable about the 2-litre car is that it handles much better than the Cosworth. This is partly because it is 10% lighter, but principally because the turbo-car is set up



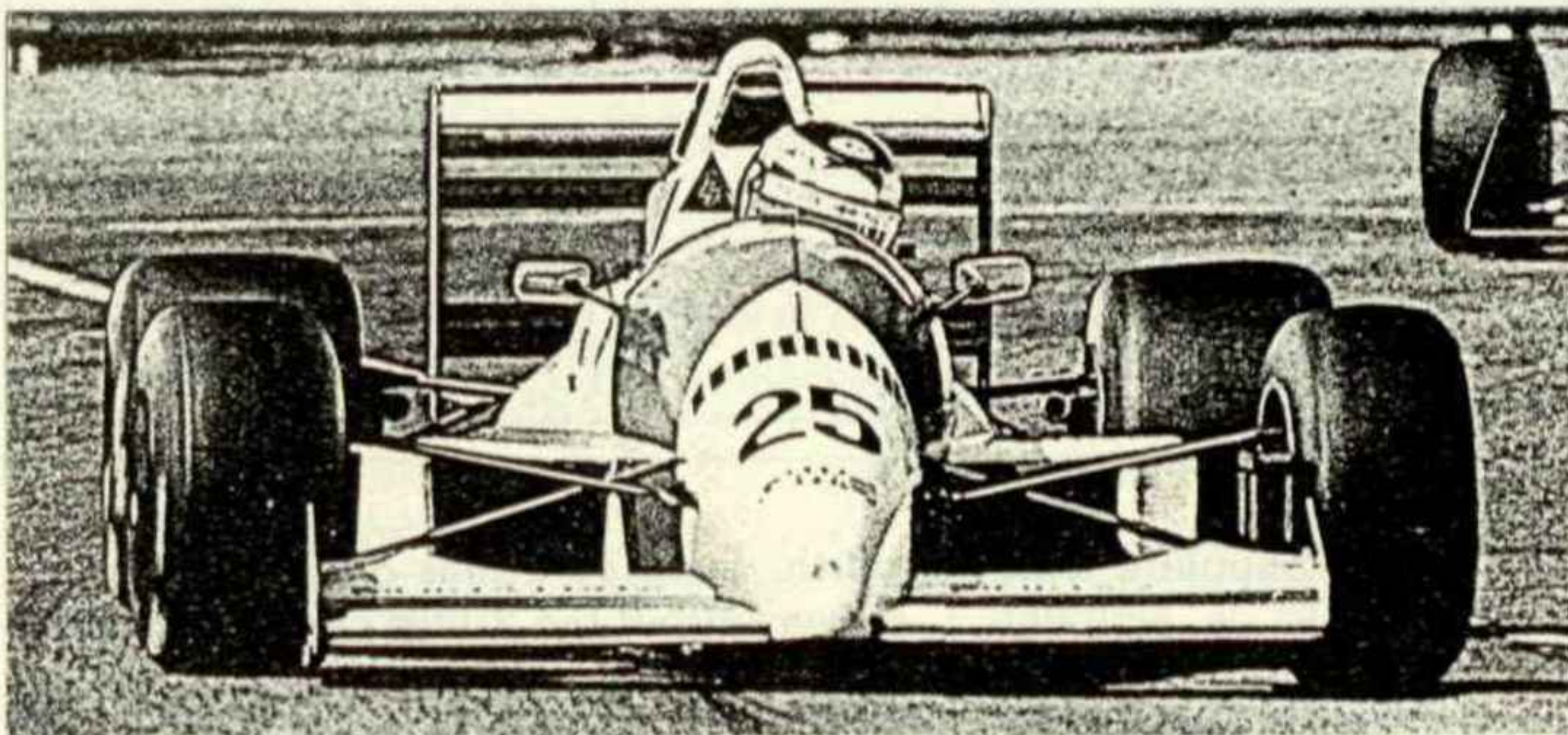
Work on the turbocharged car which is vastly different to the 2-litre version.

much more stiffly to handle the awesome power output and the braking and acceleration loads are greater.

Although the two-litre car is less powerful, it feels as if it has a more sensitive

chassis and this along with sharper throttle response, lends itself to a different cornering technique to the Sierra RS500.

In the Labatt's car for example, the first corner on a flying lap, Copse Corner is



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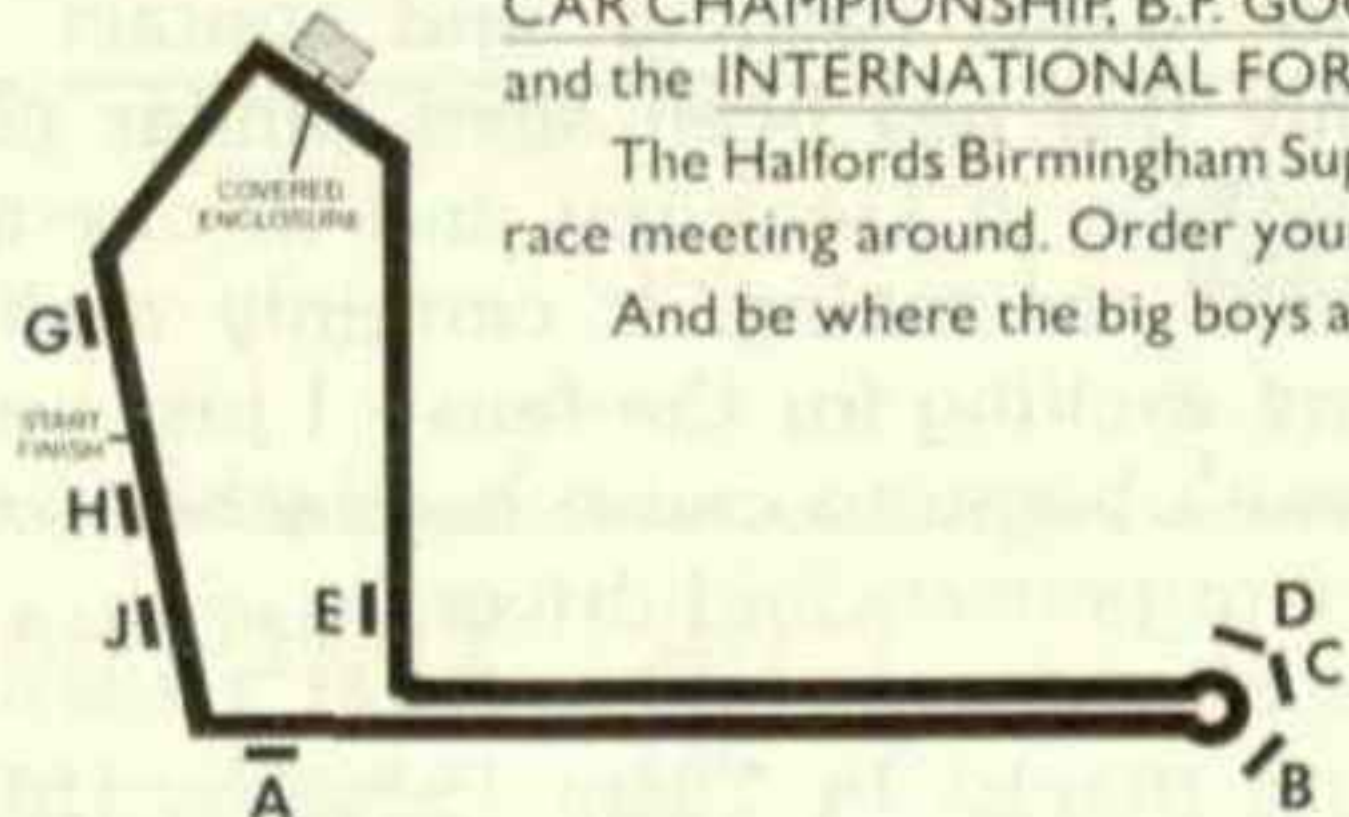
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NOTES 1) Postal bookings taken up to and including 13th August 1990. 2) Telephone enquiries/bookings on 021-235 2026. 3) The organisers/promoters take no responsibility for lost tickets. 4) The organisers/promoters reserve the right to cancel or alter the programme without notice.





Teamwork plays an important part in any championship, including the British Touring Championship.

reached at around 150mph in top gear and after braking to enter the corner in third, accurate timing is absolutely vital to exit the corner quickly and tidily. You get on the throttle very early in the turbo car, much sooner than in the 2-litre, because there is a noticeable delay as the boost builds up. However, you don't want to be on the power too soon; the consequences of getting your timing wrong with 560 bhp doesn't bear thinking about!

A different technique is necessary too, after taking the flat out, 150mph kink at Maggots and then breaking hard for the second gear right hander at Becketts. You normally aim to hold the turbocharged Sierra Cosworth in the middle of the track so that you can immediately take the right line for the entrance to Chapel Curve. In the two-litre Sapphire, you let the car run out across the full width of the track — allowing the less powerful car to carry as much speed onto the straight as possible.

Through Chapel and onto Hangar Straight, where you hit 170mph in the Cosworth on the way into the fourth gear

Stowe Corner. The 2-litre Sapphire with its better balanced chassis, is actually quicker through the curve than the Cosworth, but its very exciting indeed in the turbo-car as you attempt to control the wheelspin at over 120mph!

From Club, you take the long, left hand, Abbey Curve up to the Bridge Corner complex. It is just possible to take this flat out in the Labatt's car, but if the chassis is understeering at all, you will simply run out of road, I normally prefer to lift off at the entrance to the corner, in contrast the Sapphire goes through flat-out with ease, but of course it is travelling around 30mph slower.

The final corners, Bridge and Woodcote are the slowest part of the Silverstone circuit — taken at 50-60mph. The biggest problem with both cars is preventing huge power oversteer at the exit and again, the lighter 2-litre car is much later onto the brakes and with its more forgiving chassis, a lot quicker through it.

While I personally enjoy the challenge and spectacle of racing the Sierra Cos-

worth, I am sure that despite the lower power output the 2-litre car will continue to offer both the sight and sound of exciting Touring Car Racing. Although you are not conscious of it as a driver, the muted tones of the turbo cars are replaced by the more aggressive howl of a normally aspirated four running hard on the rev limiter which also adds to the atmosphere for a spectator.

My only concern about the 2-litre class is that it is a lot more difficult to overtake. The shorter braking areas will lead to drivers attempting higher risk overtaking manoeuvres and I suspect, but hope not, more 'panel bashing' and contact. Certainly this has been seen similar championships in Germany and in one-make saloon car racing. It certainly makes it more exciting for the fans - I just hope it doesn't begin to cause headaches for the race organisers and drivers.

Tim Harvey
(With thanks to Team Labatt's, Bristow Motorsport, Andy Rouse Engineering and Ray Bellm).

Silverstone'90



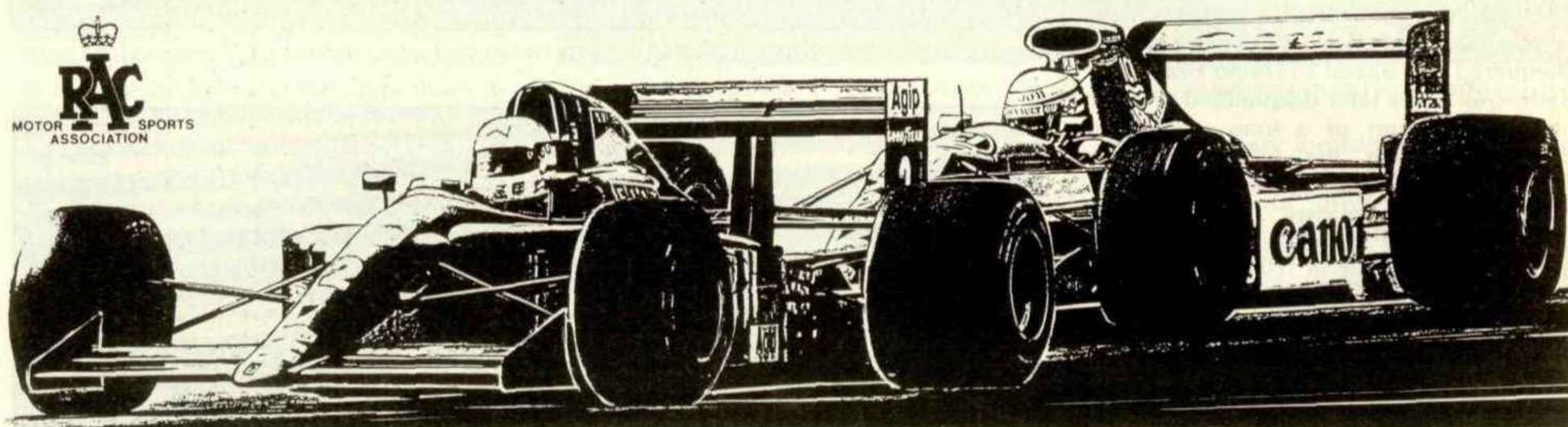
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Saturday 14th July

The world's best in Formula 1 are out in practice from 10.00 with track and air displays to follow
13.00 Formula 1 Qualifying
14.25 BRITISH FORMULA 3 Championship Race
15.25 METRO Challenge Race
16.55 Peugeot Qualifying
17.40 Touring Cars qualifying



Sunday 15th July

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10.20 GM LOTUS Euroseries Race
11.25 COUPE DE FRANCE 309 Peugeot Esso Race
Parades and track and air displays
13.30 Grand Prix warm-up lap
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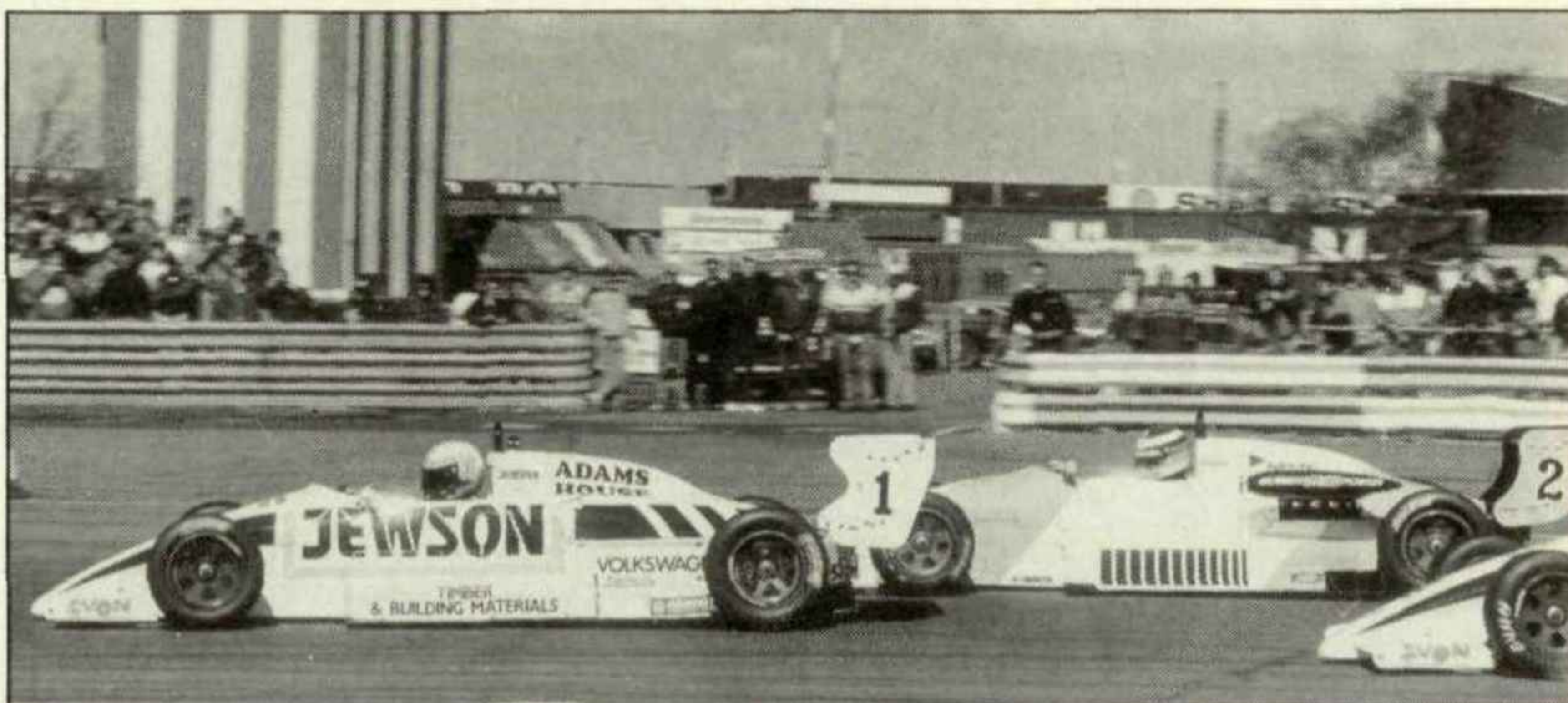
Ask any driver in the British Formula Three Championship which is the race to win — and the Grand Prix support race is the one. The thought of scoring a good result in front of — or even impressing — one of the Formula One team managers is the stuff young drivers' dreams are made of, even if in today's hard-bitten commercial environment, career progress would be better made by impressing one of the 'talent scouts' in Formula 3000.

Still, the traditional race on Saturday before the Grand Prix has in recent years provided some excellent action. Two years ago, Philippe Favre's retirement with a suspension failure allowed Damon Hill to take the victory honours in a well judged race, ahead of Gary Brabham and the Finn JJ Lehto, who battled just inches apart for the entire duration. Last year, Allan McNish received the trophies from compatriot Jackie Stewart after taking the chequered flag ahead of David Brabham. Sadly both were later disqualified in what became the start of a long and bitter controversy over the legality of the Honda-Mugen and Spiess-Volkswagen engines fitted to the cars. This result was that the 1989 championship wasn't decided until early in 1990, while the Silverstone victory was handed to a rather embarrassed Derek Higgins; McNish's team-mate who it could be assumed had a similar Mugen engine in his car too!

Still it is the action on the track that matters and last year's race was superb, with Brabham driving around the outside of McNish on the first corner to take the lead, only to be demoted as McNish fought back at Woodcote two laps later. This year too, it looks as if we might be in for another treat, as a number of drivers shape up to challenge the two Finns who have dominated Formula Three in the early part of the 1990 season.

Mika Hakkinen and Mika Salo, between them won seven of the opening eight races

Young Lions



Steve Robertson is the only driver to date to have broken the Finnish domination of this year's F3 series.



Jonathan McGall is beginning to find form after a mid-season switch from Reynard to Ralt.



Paul Stewart has been similarly afflicted by a pre-season choice of wrong chassis.

in the championship. Hakkinen took first blood at Donington in April in his West Surrey Racing Ralt-Mugen, but glued to his gearbox was the Alan Docking prepared example of Salo. The following race at Silverstone saw the order reversed as Salo took victory, but it wasn't Hakkinen in second place. Squeezing the Finn down to third was Steve Robertson, driving a Volkswagen-powered Jewson Ralt. Thus the championship went on, with either of the two claiming the first place, usually followed by the other, both managing to hold off the challenges of Robertson and the other front runners.

On the Formula Three championship's last visit to Silverstone in June everything changed, however, for it was the Camel sponsored car of Paul Stewart which led into Copse for the first time, while the Marlboro bedecked car of Hakkinen made an uncharacteristic jumped start to incur a one minute penalty which dropped him out of contention. Stewart's lead was to prove to be short-lived, however, as his car

began to oversteer and so it was Robertson, the 24 year-old Essex driver who took the chequered flag to score the first non-Scandinavian victory of the year. Behind him Salo took second place after a wheel-banging battle with Hakkinen, who either was unaware of his penalty or was simply unwilling to give up! The battle came to an end at Bridge Corner, when the two Mikas made firm contact and Hakkinen pirouetted rapidly into the tyre wall.

So who is likely to be a winner at the Grand Prix meeting? It has to be said that the two high flyers from Helsinki must be favourites. They both have the equipment; their Mugen-Honda powered Ralt chassis are generally accepted as the cars to beat and they both have the ability; Hakkinen had the crowd on its feet at Thruxton earlier this year when he charged through from the back of the field to take second in a stunning drive, while Salo is rumoured to have lapped Silverstone more times in testing than many of the other Formula Three contenders put together!

However, for the Finns, competition at the Grand Prix meeting is going to be tough. Steve Robertson, the only driver to beat them in the early part of the season, is expected to maintain his form in the Jewson car, provided that his Volkswagen engine can match the power of the Japanese Mugens. Also likely to score well is the Paul Stewart Racing team.

Drivers Derek Higgins and Paul Stewart initially suffered when the team's decision to run the Reynard chassis in preference to the more generally used Ralt backfired and the car simply didn't perform. The



Hakkinen leading Salo, a typical situation with the Finnish stranglehold on this year's series.

team persevered with the Reynard in the early races, but when it was obvious no improvement in performance was forthcoming they too switched to the Ralt chassis. They then found that with the hectic race-a-week Formula Three championship schedule they literally had no free time in which to fine-tune the chassis and, equally important, build up test miles and let the drivers become used to their new cars.

"The Ralt and the Reynard are totally different cars to drive," said Higgins. "The Reynard was very nervous and you had to drive it much more precisely than the Ralt,

which is a more forgiving chassis. In fact one of my problems is that I'm having to force myself to drive the Ralt more aggressively — its something you would normally do in winter testing, but we're having to do it from race to race!"

Paul Stewart's performance on his last outing at Silverstone, when he qualified fourth and led the race, showed the team's true potential, as did the performance of Jonathan McGall in the Swallow Racing Ralt. He, too, is finding form after a mid-season switch from the beleaguered Reynard marque and could well be among those on the victory rostrum. SS



Mika Salo has brought the Alan Docking team into winning ways once again and looks joint favourite to win the British Grand Prix support race.

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VETERAN TO CLASSIC

The Stanley Mann equipe which specialises in banked track record-breaking with vintage Bentleys has broken some more significant records. At Millbrook on May 28th the Bentley-Jackson, restored since its Brooklands days by Vaughan Davis and John Guppy and given front brakes and a new body, set itself the tough task of bettering the UK Class B (5000cc to 8000cc) 500-mile record, set by the late J.G. Parry Thomas at Brooklands in 1926, with his straight-eight 7.2-litre Leyland-Thomas, the year before 'Babs' killed him at Pendine. The speed to beat was 110.04 mph.

It was a difficult record to take with a virtually new car, more so with a pre-war one, 64 years later But the old Bentley-Jackson rose to the occasion. On this warm day it never faltered. The new UK records, subject to confirmation, are 200 miles at 113.427 mph, three hours at 113.597 mph, and the sought-after 500 miles at 112.793 mph. Four drivers took turns at the wheel, Davis, his friend Phil Greenwood, Guppy, and Stanley Mann who has assisted with the Bentley-Jackson rebuild. Modern refuelling was used, ten gallons going into a new smaller-capacity tank in 1m 33s. Some eleven minutes were lost in all, with this and the driver-change pit-stops.

The 1937 6½-litre engine, running on pump petrol, gave no trouble and the smaller fuel tank stood up to the job in hand, whereas previously a larger one was apt to rupture, just as so many fuel tanks did at Brooklands in the 500 Mile Races and on long duration record bids. The best lap was at just over 119 mph and afterwards the Bentley-Jackson was driven home. Congrats all round! The oil used was Castrol, the tyres Dunlop. A most creditable performance!

Let us, however, spare a thought for Parry Thomas, at this time when ancient



From left to right: John Guppy, Stanley Mann, Philip Greenwood and Vaughan Davis and the record-breaking car.

New Bentley Records

Brooklands' records are going off the record-book forever. He went out after his racing season was over, in October 1926, his target an eight-hour run. In those days tyres were the problem on a heavy car and the co-driver, George Duller, also failed to turn up. Three tyres failed, and the wrong type of pump caused the two scheduled refuelling stops to occupy nearly 1.30s, instead of half that time. After six hours the Welsh designer-driver, having started at 8.30am, called it a day, tired and dazed, although he was a strong man. Paul Dutoit offered to continue but was not acquainted with the big car and Thomas stopped him after he had done a few laps at about 100 mph. Parry Thomas had taken three World

Records, that day however; "That's not bad", he said as he walked away. By 1935 Ab Jenkins with his 7.1-litre Duesenberg Special had broken Thomas' three World figures, at Utah, and two years later he raised these again, to over 170 mph, with his 25.3-litre Mormon Meteor, also at Utah. It is Thomas' three hour and 500-mile records which remained British Class-B figures and Cyril Paul's 200-mile British Record of 1930 with a 6-litre Delage, which the Bentley-Jackson has broken, by margins of 2.32, 2.75 and 13.77 mph respectively, subject to official confirmation. Incidentally, the Bentley-Jackson was the last car to gain a 130 mph BARC badge, in 1939, driven by G.P. Harvey Noble. WB.

A Choice of Rubber!

The tyre trade is one of significant proportions, as is obvious when the quantity required to supply car makers' demands and for the replacement market is realised. If the choice of make is far less than in the vintage years, the publicity pressure has increased rather than diminished. Pirelli are back in F1 Grand Prix racing, in which field Goodyear had a monopoly, and proudly announce that Pirelli tyres are now fitted as original equipment to 340 different makes and models of cars made in Europe and Japan. The most popular Pirelli is now the P600, which dislodged the P6 which was a top-seller until it was replaced by the P600 over a year ago.

Pirelli also state that the demand for their low and ultra-low-profile radial-ply tyres has increased by 28% of all car models using these tyres as standard equipment, since 1989. New orders

include a mix of P2000 and P4000 radials for the revised Alfa Romeo 33 range, the Rover 214 and 216 and the Lancia Dedra, while the Mazda RX-7, the first Japanese car to adopt Pirelli's road-going 'F1' tyres as original equipment, uses the P Zero and three Toyota models the P600.

Another tyre item is that World Sports-Car Champion Derek Bell had BF Goodrich tyres on his Porsche 962C at Silverstone for the first time since he used this make of tyre to win, with Andretti and Wollek, last year's Daytona 24-hour race. In case there is any confusion over Goodrich and Goodyear tyres, let it be said that in the days when there was an enormous choice of rubber available, say 70 years ago, both makes were well known in Great Britain, along with such tyres as Ajax, ARM, Avon — which remains an excellent choice for those who like to buy British — Bedlam, Bergougnan, Clincher, Dominion,

Collier, Dunlop — still, of course, a factor to be reckoned with — Firestone, which for so many years had the Indianapolis 500 Mile Race monopoly, Gofa, Grimston, Henley, Hutchinson, Jeff, Kempshall, Keystone, Macintosh, Michelin, for so long the choice of discerning motorists and on which many prefer to motor in the 1990s, Midlands, Miller, Moseley, Palmer, whose cord tyres were favoured by many racing drivers in the early days at Brooklands, Partridge, Pirelli, Rapson, that unique double-tread tyre invented by Lionel Rapson and used in racing by Sunbeam, Parry Thomas, etc., Ripley, ROM, which in 1914 claimed to have helped a Warren Lambert to climb the notorious 1-in-2.5 Naileworth Ladder on its "Combination Non-Skid" tyres, Shrewsbury, Spencer-Moulton, Stepney, made by the get-you-home bolt-on spare wheel people, Victor and Wood-Milne. Choice indeed! WB

Competition Car Controls

by Ian Bamsey and Alan Lis. 238 pp. 10" x 7". Foulis & Co., Sparkford, Yeovil, Somerset, BA22 7JL £19.95

Ian Bamsey, one-time Editor of *Motoring News*, has built up a great reputation for his knowledge of modern motor racing techniques since joining Racecar Engineering and the result has, among other things, been a number of erudite and useful books on racing engines and kindred subjects. Now, with Alan Lis, a researcher and photographer also for Racecar Engineering, he has turned his attention, and that of his readers, to the many and complex aspects of safety as they involve today's high-tech. motor racing.

In this Kimberley Motor Racing book every part of the safety operation as it concerns F1 racing is covered, commencing with Lis's inside story of the Berger fire at Imola, as recounted to him by that courageous driver. The racing car's controls, the driver's elaborate equipment, radio, overalls, intercom, track-side signals, the lot in fact, and the text and 120 very clear pictures tell the whole story, not only of how to be as safe as possible in a racing car but how it is controlled and driven. F1 drivers know it already, and would not have time to read about it — I shall be corrected if I am wrong! — but for the rest of us, an informative book with a fresh angle on racing. WB

The Complete History of Grand Prix Motor Racing

by Adriano Cimarosti. 432 pp. 11½" x 9". MRP, Unit 6, The Pilton Estate, 46, Pitlake, Croydon, CRO 3RY £29.95

What an ambitious idea! The full history of GP racing from 1894 to 1989 in one volume. The dustjacket claims that Cimarosti covers not only all those races but also the drivers and the race tracks. Moreover the book is interspersed with little technical drawings of mechanical details and masses of drivers' signatures, even those in Japanese, in addition to the expected results tables, circuit maps, racing car specifications and an enormous number of drawings of racing cars through the years, and their engines, etc. Formidable indeed! No wonder Motor Racing Publications were keen to do an English translation by David Bateman, edited by David McKinney, of this Camel production. There have been complete motor racing histories previously, such as the pioneering work of Gerald Rose, up to 1908, the *Grand Prix Car* volumes by Laurence Pomeroy, George Monkhouse's *GP Racing*, William Court's analytical coverage and my own contribution by Macdonald (over which, regrettably, legal action is involved) etc. but nothing quite so all-embracing, perhaps, as Cimarosti's, which might be termed the popular presentation of this enormous subject.

I am always a little worried about the accuracy of such reference works but am happy in this case to take John Blunsden's word that he has known "Cima" for 30 years and endorses his profound knowledge of his subject, which Fangio, in the book's Foreword, also refers to convincingly. I am always glad that history as well as the current motor sporting scene holds the interest of enthusiasts, and while the whole story of GP racing cannot be told even in these 432 big pages, here is all that mostly matters, for those students who seek it. There is also the reasonable price asked for all this intense information, apart from which, the really great wealth of excellent photographic reproductions, 386 in all — even if inevitably most historians will recognise many of them — and all those innumerable very clear drawings of historic cars from 1902 Paris-Vienna Renault to Type 101 Lotus-Judd, make this book rather unique.

There are also 48 good full page colour-plates. I notice one of a front cover of *Speed*, a magazine MOTOR SPORT absorbed, and that LAT has contributed to this photographic treat. If you buy this book it will save you money on many others! WB

Grand Prix Reflections — from The 2½-litre Formula Era, 1954-1960.

by Anthony Pritchard. 224 pp. 9¾" x 7½". Patrick Stephens Ltd. Denington Estate, Wellingborough, Northants, NN8 2RQ. £20.00.

Here is another history book, by an author better known in this country, and covering a specific period, as the subtitle indicates. The pictures are in abundance, many of them published for the first time we are assured, and all very well produced. This period of motor racing was supported by the important manufacturers, like Mercedes-Benz, Maserati, Ferrari, Lancia, with HWM, Connaught, Cooper, BRM and others in the running. It is quite recent history for many of us and Anthony Pritchard recalls it all — the cars, the races, the drivers, the less successful and the also-rans, together with the technical developments and designs from this active period of racing. It can be difficult for those writing motor racing history to check facts and one cannot always know whether or not always accurate reports have had to be relied on, but the status of this author and his enthusiasm for the races he writes about are a good guarantee of accuracy.

Sir Jack Brabham has written the Foreword; he was racing rear-engined Coopers and gained his second Drivers' World Championship during the 1954-60 period. There is a full record of F1 results and specifications of the leading racing cars for the years covered. Excellent reading and photo-browsing for those who liked the 2½-litre GP formula. WB

The Crowood Press, Gipsy Lane, Swindon, Wilts., SN2 6DQ have published two new books in their "Auto-classics" series, namely, *Ferrari Dino* by Anthony Curtis and *MGB* by Brian Laban. These different but very famous cars have been covered in so many books and magazine articles that to see additional coverage rather weakens enthusiasm. The factor which makes these books viable is the high quality and excellent spread of very good colour plates. The cost of these books is £15.95 each. WB.

Jim Boulton has brought out a new, enlarged edition of his fascinating and useful soft cover work on *Powered Vehicles Made in the Black Country*, in conjunction with Harold Parsons. It is a book that holds the attention of those who may not need it directly as a reference work. Large pages numbering 112 make it possible to use a good number of well-produced pictures. The makes covered run from the obvious ones such as Sunbeam, Star, Bean and Clyno, etc. to the more obscure makes, the fascination and usefulness being enhanced because commercial and public service vehicles and motorcycles are included. Even the odd flying machine, in fact Old advertisements bring the text to life and some racing cars like the F2 Turner and record cars such as the Silver Bullet and GET Eyston's 2350hp Thunderbolt bring in our aspect of this pleasing book, while there is a picture of an uncaptioned Brooklands Star on the back cover.

Copies can be obtained for £6.60 post-free, from J. Boulton, 11a, Ounsdale Road, Wombourne, Wolverhampton, WV5 9JE. WB

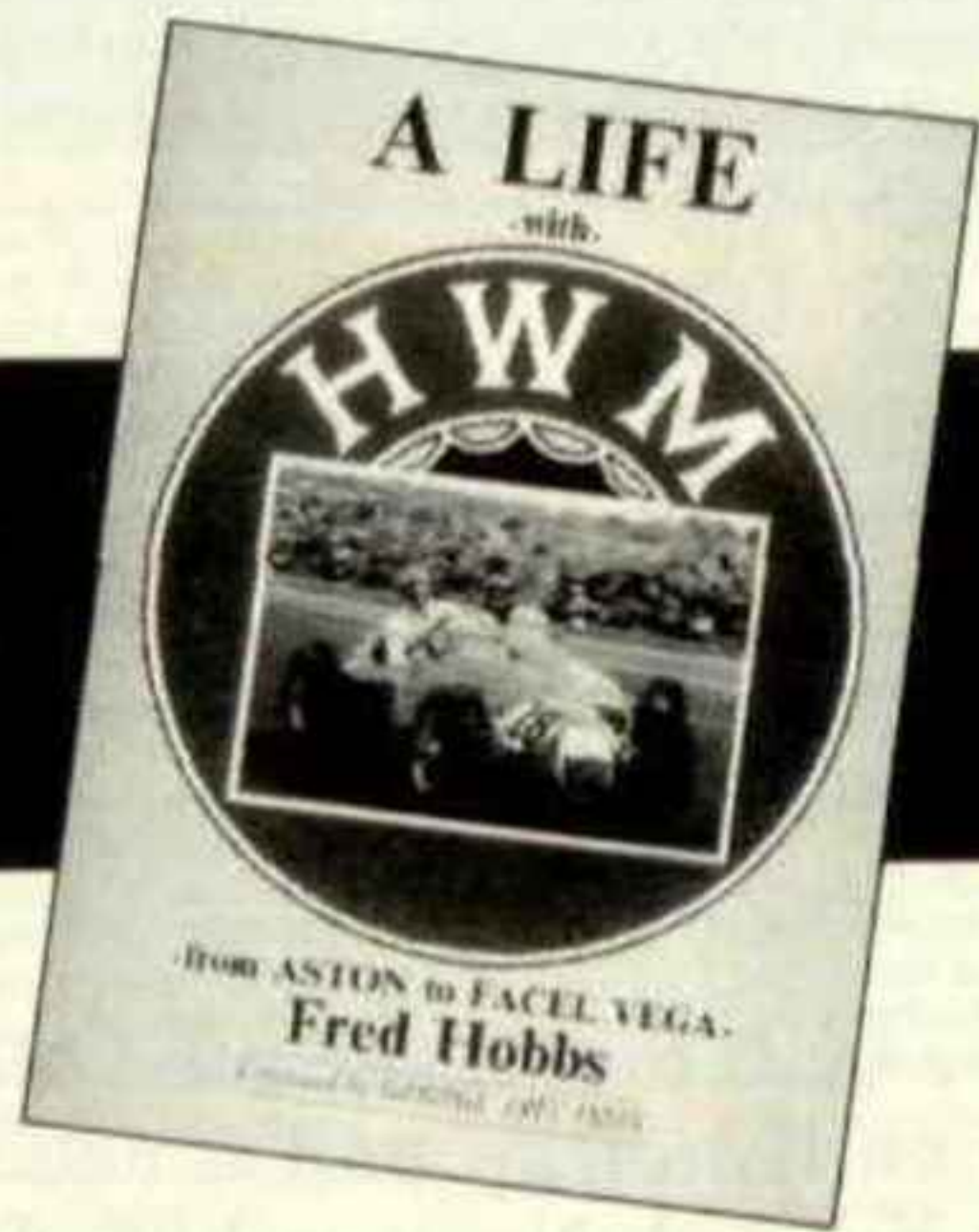
Jowett Sport, the magazine size coverage of Jowett Javelin and Jupiter cars in the 1989 Pirelli Classic Marathon and other competition events, not overlooking some events in which pre-war flat-twin models did well, can be obtained from the Jowett CC, c/o Mike Smailes, for £3.00 plus postage. It is edited by Nick Coppin and Geoff McAuley. WB.

Bookmarque Publishing, 26, Cotswold Close, Minster Lovell, Oxon, OX8 5SX have come up, for £17.95, with a landscape format book which they say, and I will take their word for it, is the first ever devoted to the G4 version of the Ginetta, which has reached its 30th anniversary.

Only 1400 copies of Trevor Pyman's book have been printed but 500 numbered and signed copies in a slipcase are available at £24.95 post-free. The book runs to 168 pages packed with good pictures, including an index, and the author has owned Ginettas since he was 18, and now has a small collection, including a 1958 G2. He is also Registrar of the Ginetta OC, a position he has held for ten years. So this seems a worthwhile study of a likeable car. WB

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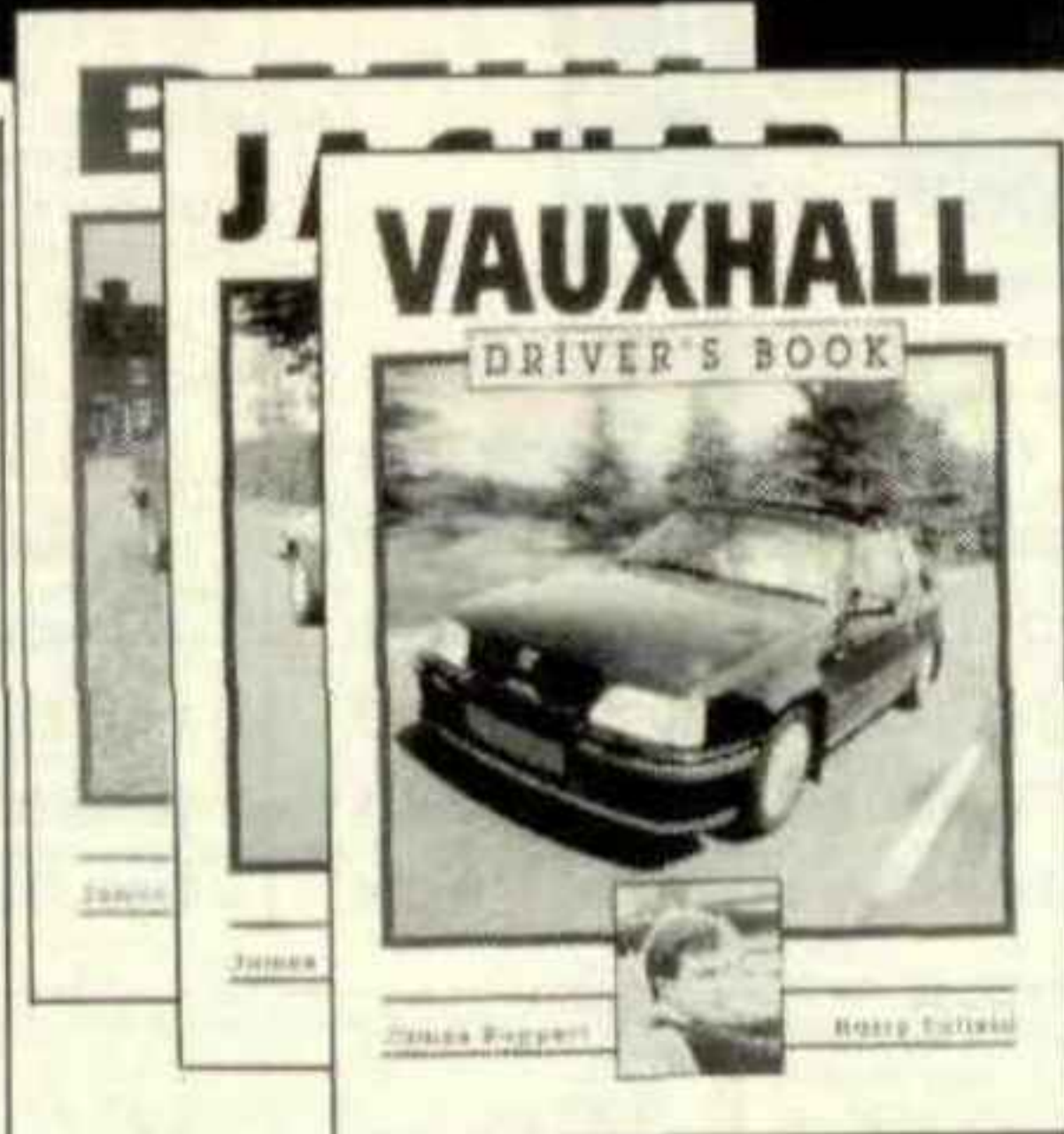


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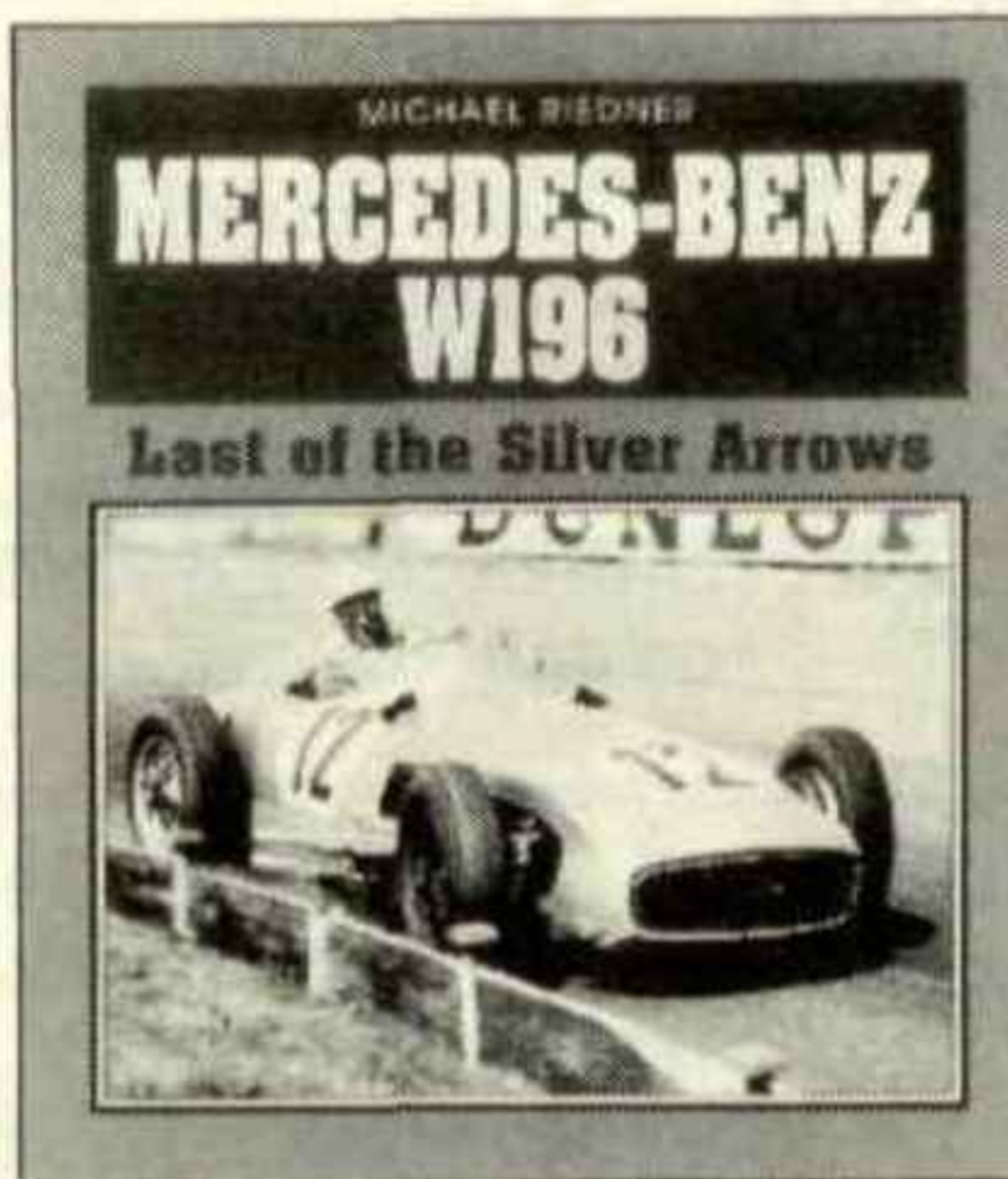
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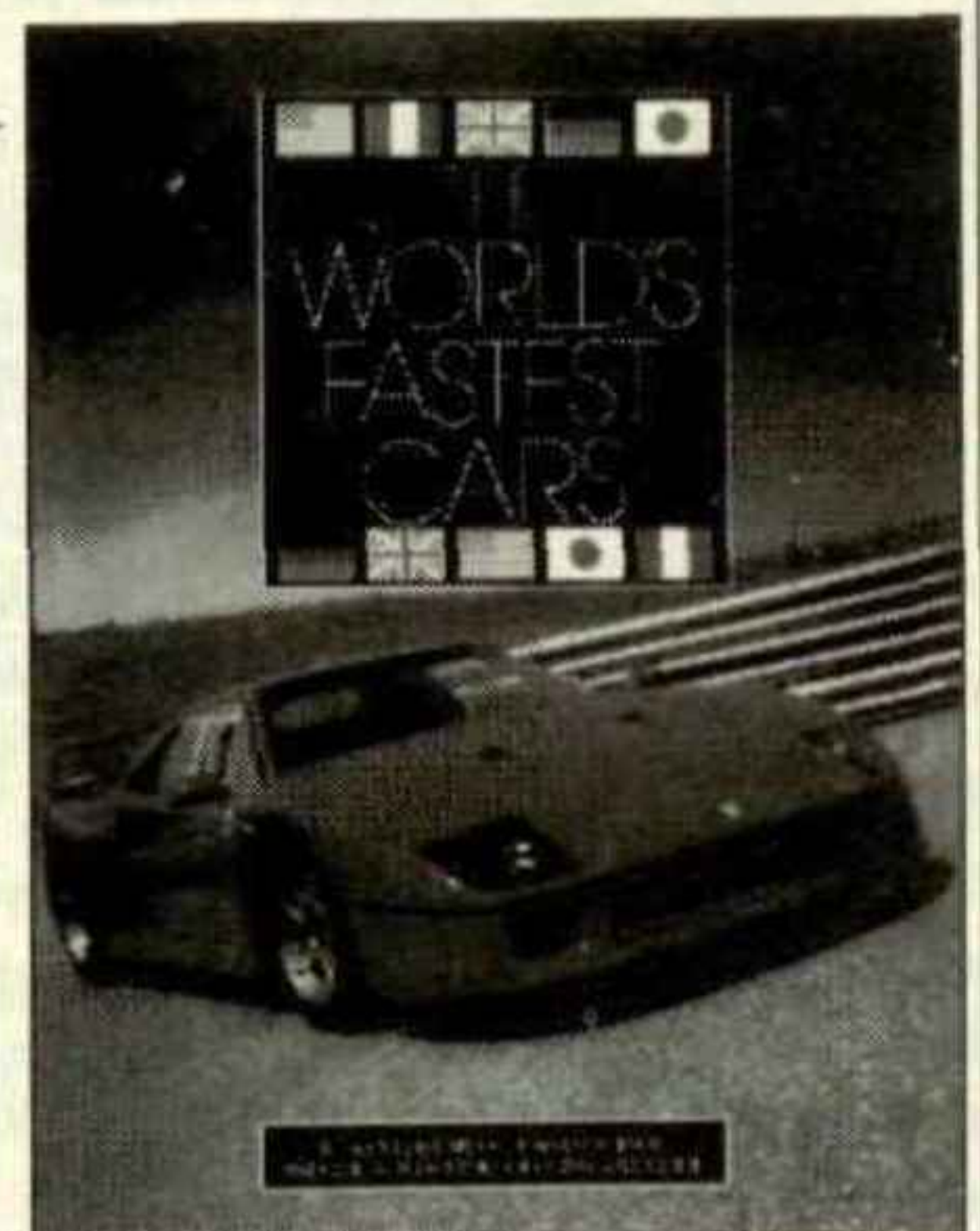
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Ian Bamsey of Racecar Engineering has become a very industrious author in the wake of Graham Robson and a few others. Two of his newest books, from the House of Foulis at Yeovil, are *Auto Union V16 Supercharged — A Technical Appraisal* and *Lotus 25 Climax FWMV*. Both run to 96 pages, both cost £12.95. The Auto Union book may not tell us much that is new, the information having been culled from contemporary reports written long before the author was born. But it does put the creation and development of this fabulous racing car between two covers, with Bamsey's expert appraisal of it, based on, and I quote, "much original insight". The race-placings and record-achievements of the V16 Auto Unions are given in a separate 'diary' on grey paper. The 50 pictures are magnificent. A pity the 10" x 7 3/4" pages mean bi-secting some of them.



Back in 1970 DSJ did a little book for Lionel Leventhal about the 1937 W125 Mercedes-Benz racing cars. If you have both books they together make a fine reappraisal of those exciting rivals in that intensely exciting pre-war Grand Prix



period.

The Lotus 25 book is a companion Bamsey volume, about a much later racing car, this one with eleven colour plates — magnificent pictures again, with the bi-secting proviso. **WB**

A fund-raising at **Stoke Mandeville Hospital** on July 21/22 will have over 100 historic vehicles present, as well as steam engines, models and an autojumble on the Sunday.

Those interested in participating in the **19th Targa Rusticana Welsh night rally** for classic and historic cars, scheduled for October 13/14, should hasten to send in their entries, with a £10 deposit, to Don Pither, Droys Court, Witcombe, Gloucester, GL3 4TN, as the list already has 95 runners.

Among the unusual things in which old cars are now encouraged to take part, one of the oddest is an **Agatha Christie Run**, for up to 200 1920-1969 cars, together with film and TV actors, associated with the Agatha Christie mystery plays! The organisers are none other than the RACMSA, headed by Neil Eason-Gibson. The date is September 15th, the entry fee £75, and the starting points Bath, the NMM and Wilton House, Salisbury. The finish is at Torquay, presumably because that is where the famous thriller-writer was discovered after her mysterious disappearance, when she abandoned her bullnose Morris at Newlands Corner. No doubt most of the cars which have figured in her dramas will enter and let it not be forgotten that, if the dating does not rule them out, a Model-T Ford and a Benz might represent Sherlock Holmes and Watson But what an odd facet of the vintage and historic car movement this is

In the **VSCC Buxton Rally** on May 5th, 64 competitors, divided into three classes, took the following awards: Best Novice: J. Thring (Lagonda). Northern Weekend Jug: J. Potter (Lea-Francis). 1st. Class: J. Potter, P. Glover (Alvis), D. Marsh (Bugatti), J. John (Lagonda). 2nd. Class: G. Toms (Fiat), F. Hyland (Alvis), A. Armitage (Vaux-

hall), A. Jones (Vauxhall), J. McEwen (Riley), R. Hutchings (BMW), G. Cole (Lagonda). 3rd Class: C. Gledhill (A7), L. Eccles (Alvis), M. Baxter (Ford), J. Newby (Alvis), R. Britcher (Alvis), G. Tomlin (Alvis), D. Hill (AC), "New" cars in this event were a 1924 Rolls-Royce and a 1929 Chevrolet, and the recorded retirements were a Lea-Francis, an AC, an Alvis and a 6 1/2-litre Bentley.

The **VSCC** had two innovations at its race meetings this year. The first was the 10-lap Scratch Race for Ulster A7s, at Silverstone in June, reported on elsewhere, and the other is to be a race entirely for Edwardians, at Oulton Park on July 8th.

A week after the Buxton trial the energetic VSCC held its popular **Wiscombe** speed hillclimb. The class winners were R. Nice's A7, E. Dunn's Riley, G. Spollon's Riley, and A. Sparrowhawk's Alvis in the sports car section, with R. Adnams (1912 Talbot) winning the Edwardian class on handicap and Roger Collings' 1903 Mercedes making fastest veteran car time after failing on its first run. The racing car classes were won by B. Gray (Hardy Special) D. Ricketts (ERA R1B), B. Spollon (ERA R9C) and R. Pilkington's Talbot-Lago. FTD was made by President Bruce Spollon, in 46.33 secs. The quickest vintage car was J. Giles' AC/GN, in 48.31 secs, the best sports car Sparrowhawk's 4.3 Alvis, in 52.87 secs.

At **Curborough** on May 6th Bruce Spollon made FTD at the speed trials over this twisty course, his 2-litre ERA clocking 37.04 sec. The class winners were T. McGrath (A7), H. Conway (Bugatti), G. Gunn (MG), J. Giles (AC/FN), Miss Gray (Hardy Special), D. Caroline (Morgan) and Spollon. In the Edwardian and Veteran class Walker's 1908 GP Panhard beat Collings' 1903

Mercedes by 0.6 of a sec., the Mercedes winning on handicap and it was nice to see both Kenneth Neve and his daughter driving the 1914 TT Humber. The Team Award was won by the Talbot team of Rathbone (AV105), Ward (BA110) and King (105).

Belgium is to have its first Historic Car Rally from August 3-5th. A round of the International Championship, the entry fee is approximately £660 and the UK rep. is M. Jubb, 38, Longfield Road, Bristol, BS7 9AG.

Weather permitting, on July 29th a rather unusual happening will hopefully take place at the **Shuttleworth Trust's Old Warden** aerodrome, Biggleswade, when scale models of some of those light aeroplanes with up to 750cc engines built for the 1923 Lympne Light Aeroplane Trials will be flown. One has thought in the past that tiny engines make the wrong noises in models of large aeroplanes but might be quite realistic in those of the one-time "Cyclecars-of-the-air" and their low wing-loading should also make for more realistic flying. Incidentally, a vintage Henderson air-cooled, in-line motorcycle engine with a propellor boss has been found in a hangar; one wonders for what aeroplane it was intended, remembering a certain little biplane with a Rover 8 car engine that never managed to get off the ground!

The Citroën Traction Club of GB, which has a world interest in pre-1957 Citroëns, has a tour of the Chateaux of the Loire in conjunction with the Traction Club of Ille et Vilaine, on July 13/16 and its own tour of the Cotswolds on August 10/13, to which older Citroëns are invited. Details from: Mike Wheals, Silk Mill Cottage, 26 Winchester Street, Whitchurch, Hants., RG28 7AL. **WB**

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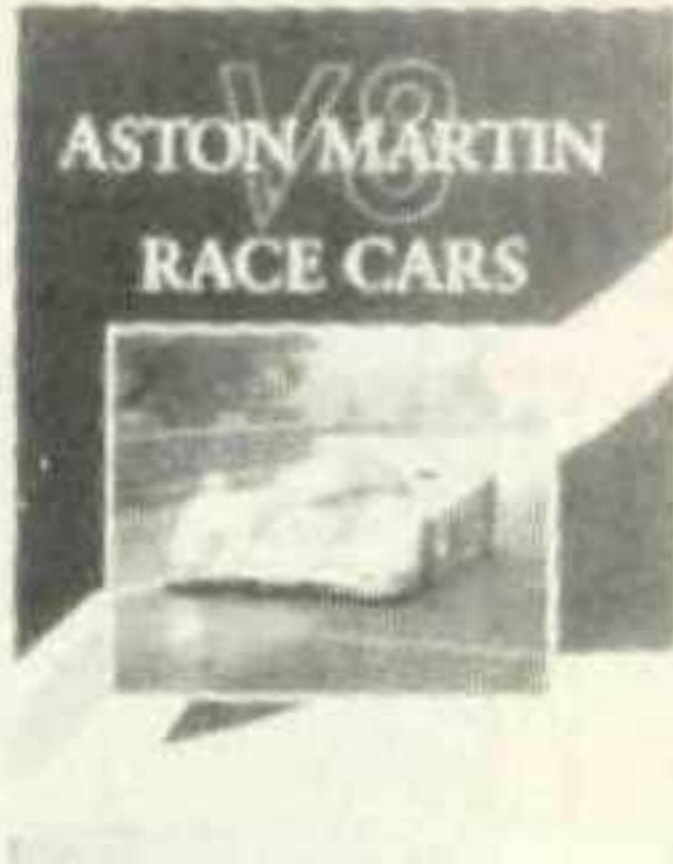
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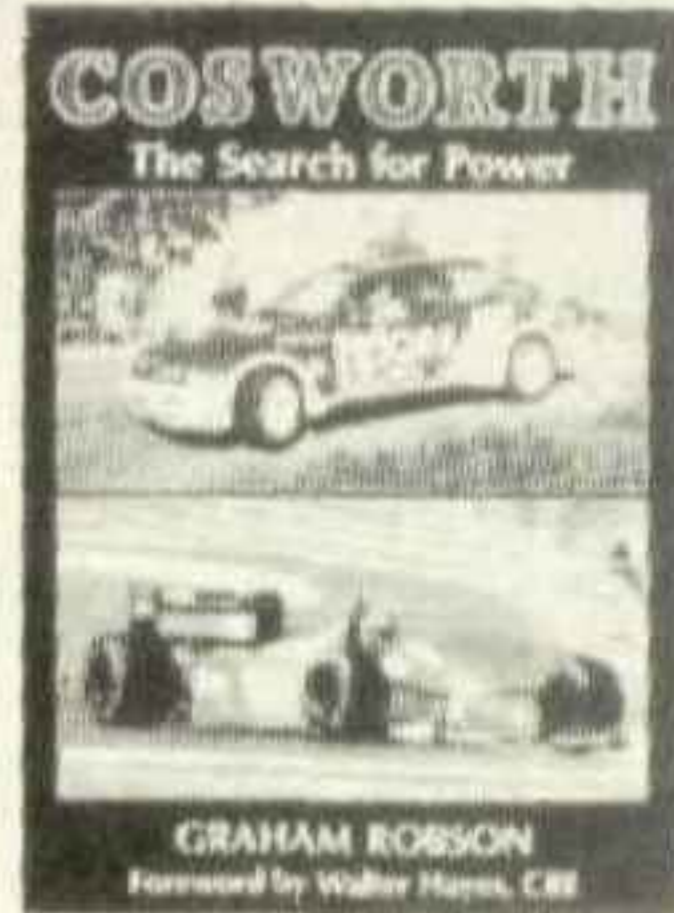
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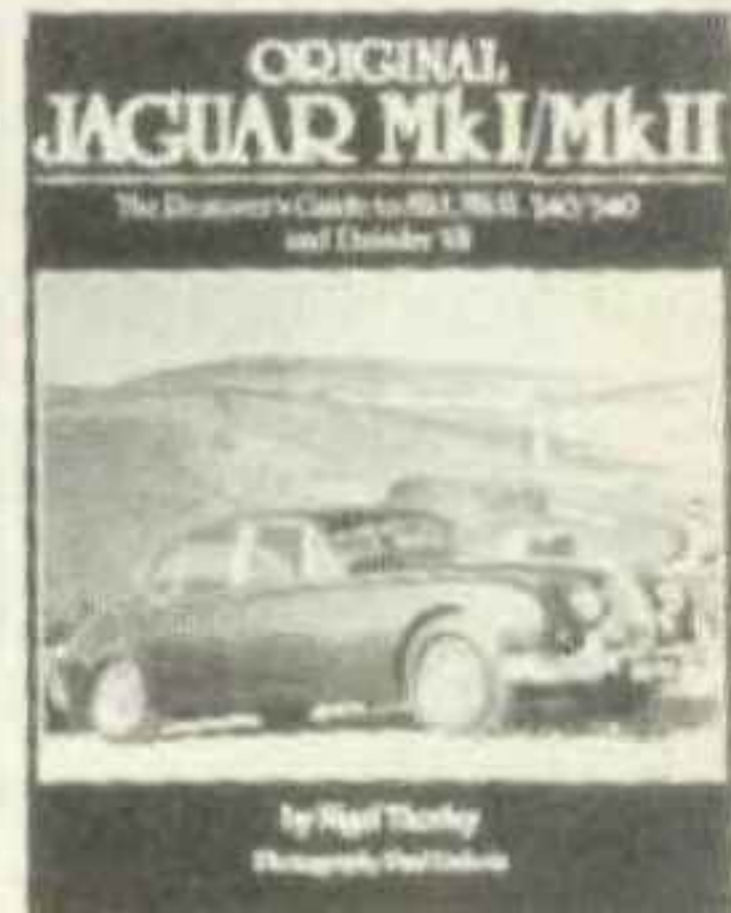
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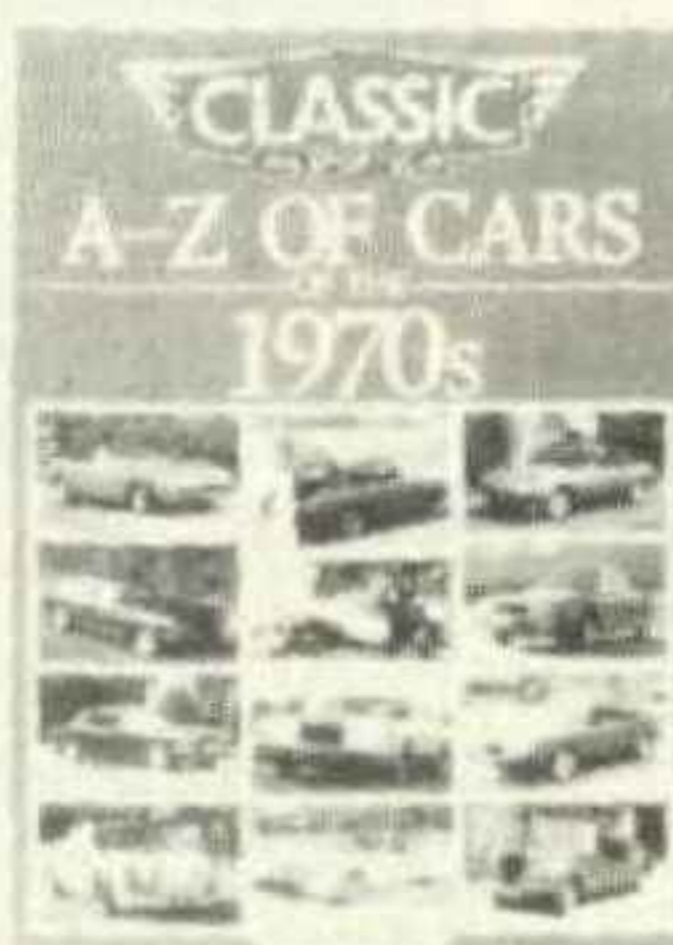
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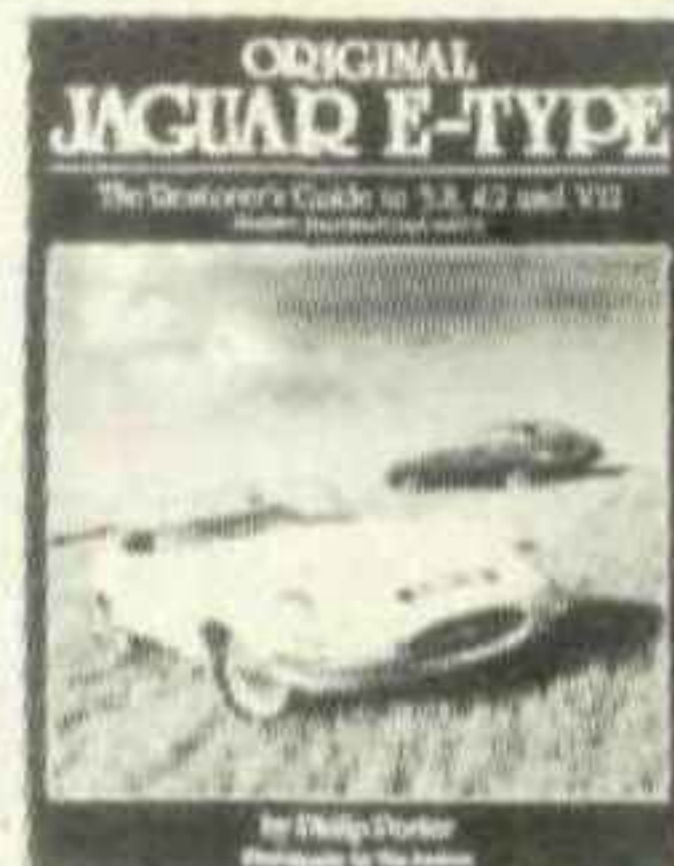
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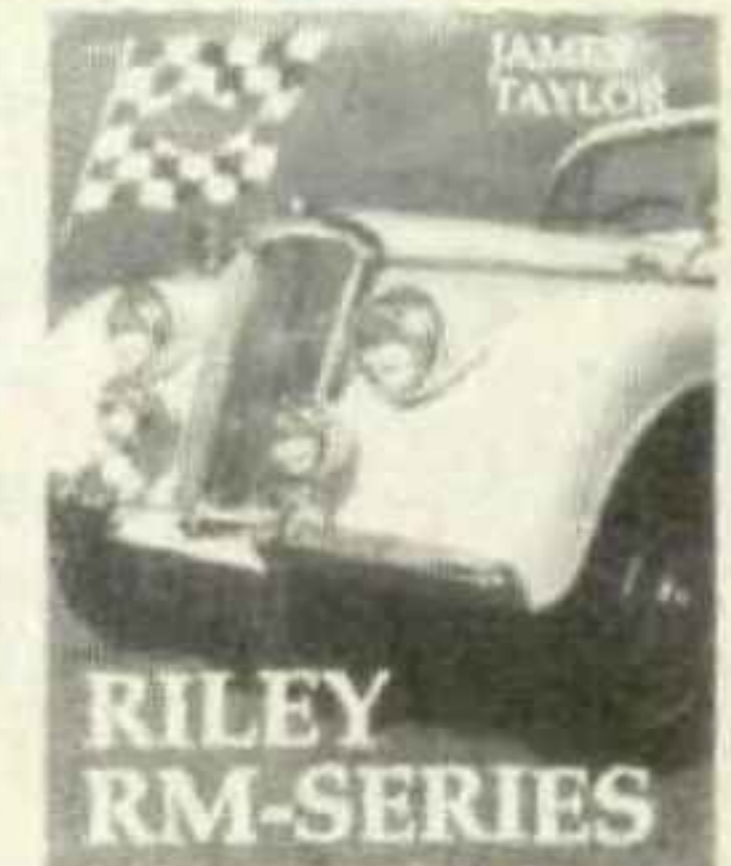
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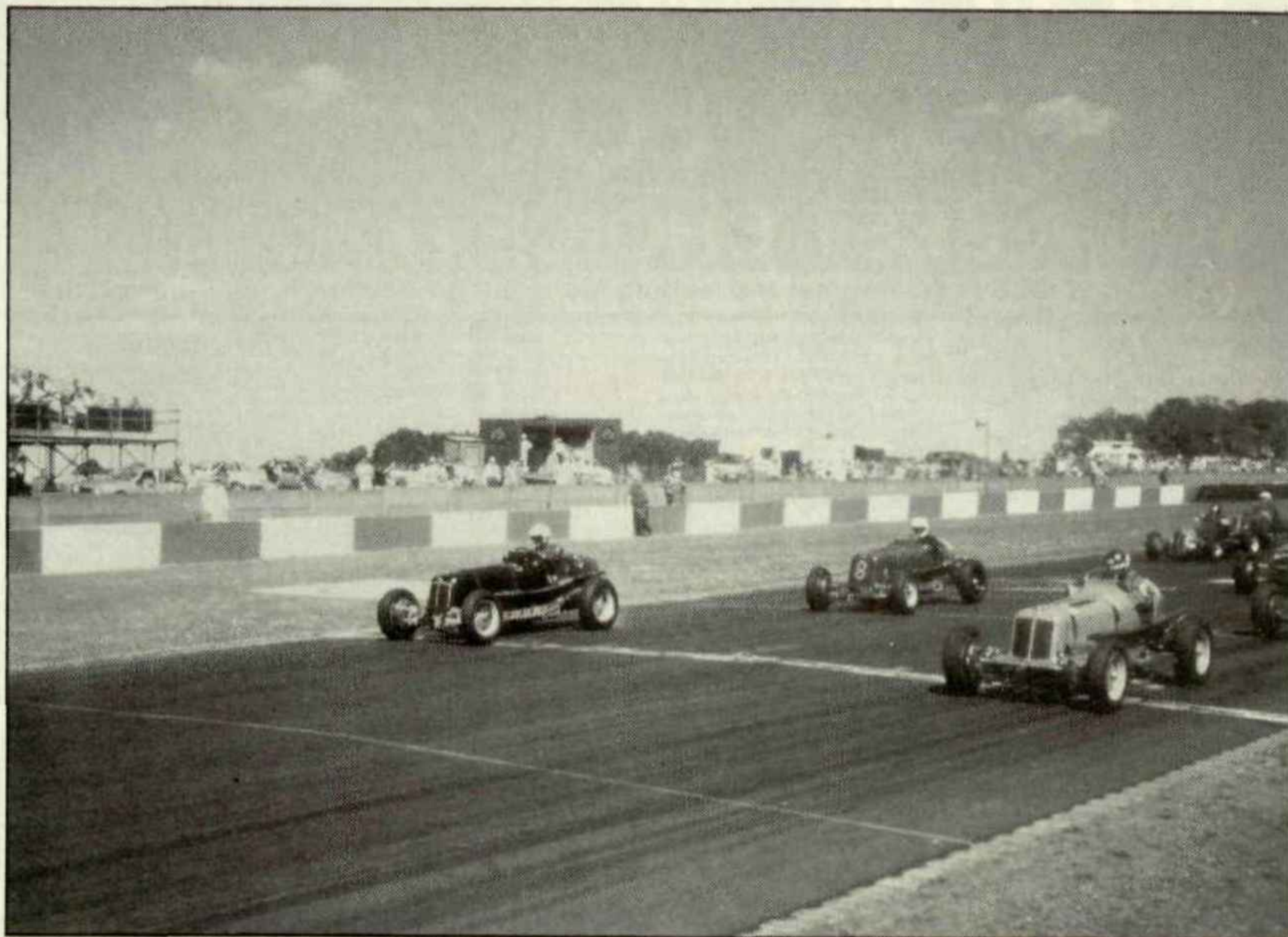
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It used to be almost possible to base one's calendar on the VSCC fixture-list. But more events have been added and there is a notable change this year, with not one, but two, Donington Park race meetings. The next one is on October 6th. The first was held in pleasant 'global warming' weather, on May 26th. I was asked by a lady journalist what 'new' cars would be running. I had to tell her, virtually none, any recently discovered historic cars being in dealers' showrooms or the auction rooms. Another VSCC innovation was a (BBC) on-board camera on a vintage Bentley, but I suppose what is good enough for Ayrton Senna At Brooklands the occasional fresh entry was welcome, to the extent that when the Bimotore-Alfa Romeo was a non-starter a notice to the effect was posted at the gate, to prevent anyone asking for the entrance fee to be returned! Alas, Margulies' interesting ex-Francesco Matrullo 1100cc Maserati, billed in the VSCC programme, was similarly a non-runner, Dan having hurt his back, although I do not know why Michael Lavers, billed as the second driver, didn't deputise.

The John Holland Trophy Scratch Race, over 10-laps for vintage racing cars, was predicted a win for Tim Llewellyn's famous 3/8.4-litre Bentley — the one with the camera. It led away and gained a little on Ivan Dutton's 35B Bugatti round Redgate. But the Bugatti was going well and after four laps was leading, with the Bentley dropping back. Surely filming did not have any influence? The Bugatti lapped 1.9 seconds more quickly, winning by 3.3 seconds. Boswell's Hispano Suiza aero-engined Bequet Delage was third, but although re-valved, seemed handicapped on the fine Donington Park circuit by its two-speed transmission — we hear a Bentley box is contemplated. However, this 12-litre V8 beat the 35B Bugattis of Horton, who had oil spillage problems beforehand, and Cardy, after Caroline's Morgan had shed its n/s front wheel when in fourth place, stopping safely on two. Majzub's 35B was among the non-appearers.

In the old days the Shuttleworth Trophy race was combined with the Nuffield Trophy race at the VSCC Donington Meeting, appropriately because both were run there before the war. Now the latter race will be held at the second Donington Meeting. The Shuttleworth, 10 laps from scratch for pre-war racing cars, was, as expected, won in fine style by Anthony Mayman in ERA R4D. After a brief consultation with his assistant on the start-line, he drove impeccably, lapping at 79.98 mph, and winning at 77.52 mph, well clear of President Spollon's ERA R8C, which had a fierce dual with Chris Mayman in the 1½-litre ERA AJM-1. They crossed the finish line with a mere 0.4 seconds between them, whereas 'The Master' had a 36.4 seconds lead over Spollon. It may be monotonous to win your every race but Anthony Mayman, who remains the top VSCC driver, has his



Start of The Shuttleworth Trophy race was won in fine style by Mayman's ERA.

Personal Records

personal records, race average or lap speeds, to beat Sir John Venables Llewellyn kept his ERA R4A ahead of Jaye's Alta and next home was Paul Grist in the 2.6 Monza Alfa Romeo which Dick Wilkins raced at Donington before the war. Unfortunately Jeffrey Patterson's actual Shuttleworth 1935 Donington GP-winning 2.9 *monoposto* Alfa Romeo, to its credit on 19" tyres, was a non-starter. As was Marr's V8R1 Maserati. Ludovic Lindsay (ERA R5B) retired with low oil-pressure, and Mark Gillies' Riley, Robinson's Riley, Stephens' ERA R12B and Bscher's 4CL Maserati also dropped out, the last two on the first lap. The venerable Brooklands Alvis of Richard Dunham sounded very 'flat', but it finished.

The other important race of the afternoon was the Coy's sponsored 12-lap Allcomers scratch race. It was Anthony Mayman who again had it all buttoned up, his ex-Innes Ireland/Bruce Halford 1959 Lotus 16 sounding as crisp as had R4D, and which was as impeccably driven, overtaking slower cars on whichever side was expedient. After Lindsay's 250F Maserati had passed Harper's BRM, the P25 built up from parts by Tom Wheatcroft for his racing car collection, it became a processional race. One commentator hoped that Lindsay was closing on Mayman. But no-one catches Anthony! He took the chequered flag with 2.5 sec. in hand, at an average speed of 81.87 mph and lapped at 84.59 mph, to his best lap of 85.72 mph last year. This substantially consolidated his lead in the VSCC Challenge, as had R4D in our Brooklands Trophy. The BRM was 47.1 sec behind the Maserati and Beasley's Mk 2 Cooper-Bristol dropped further and further back,

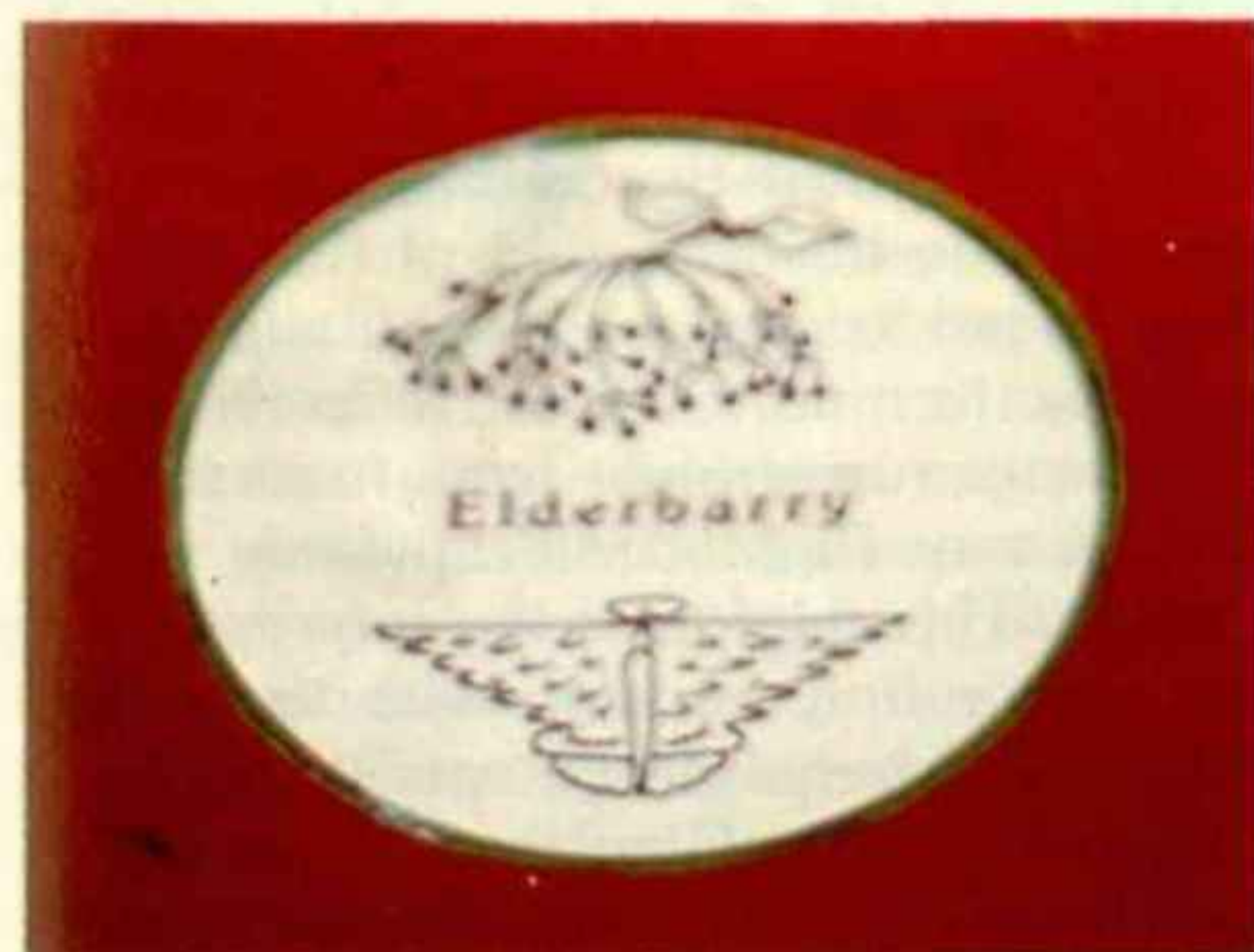
without losing fourth place. Merrick's Dino Ferrari had started badly and finished behind ERA R4A. Bscher enlivened his race by driving the Maserati along the pit-lane on three consecutive laps. Dutton's Bugatti was content to rest on its former laurels, not reappearing again, and Ure's ERA R9B and Ellison's Riley lasted for only a lap.

Of the shorter supporting races, the first 5-lap scratch event was won by Grist's Monza Alfa Romeo (69.46 mph) from Sparrowhawk's 4.3 Alvis now with Bentley gearbox, the next by Withington's Derby Bentley Special (64.92 mph) after it and the second place Triumph had both lapped at 86.10 mph, the third of these races by Burrough's Cooper-Bristol, (74.56 mph). The Le Mans Singer of Simon Bird got a long piece about itself in the programme, having survived Sammy Davis' spectacular crash with it in the 1935 TT when the steering on three of the four Singers failed. But in its 5-lap Handicap engagement it was last but one, nor did Hancock's Balilla Fiat turn up to challenge it as had happened with one of these Italian cars in Ulster. The winner was, in fact, Brewster's racing A7 Chummy, at 58.56 mph. The previous Handicap race had been won by Drewitt's Riley, at 65.55 mph, followed home to a Riley 1, 2, 3 by Watney's White Riley and Payne's Riley. Lockhart's exceedingly aged Rover did quickest lap, at 74.17 mph. The first Handicap saw Fox win in his Delahaye, at 66.95 mph.

The John Goddard Trophy race, 5 laps from scratch, was a scratch between Jaye's ex-Beadle 2-litre Alta, which won at 73.46 mph, lapping at 75.77 mph, Grist's Alfa Romeo, and Boswell's Bequet Delage, which were the runners-up. WB

The second VSCC Silverstone Meeting incorporated the Boulogne Trophy and the two Hawthorn Trophy races. Ivan Dutton's 35B Bugatti won the Boulogne by 7.7 sec., at 75.8 mph, after a battle with Llewellyn's 8.4-litre Bentley, Majzub's 35B third and Morley's giant Bentley-Napier in fourth place, ahead of two more Bugattis. Brooklands corner on the new Club circuit was slippery, slides and spins, of which Alex Boswell had two in the Bequet Delage, being greeted with ribald laughter by the new-breed of spectators.

Coy's Hawthorn Trophy contest was the expected walk-over for Anthony Mayman, ERA R4D ahead by 13.7 sec., at 81.19mph, its best lap of 83.87 being 1.10 mph faster than at the April Meeting. For four laps Jaye's Alta was in third place behind Lindsay's ERA R5B but a fuel pipe apparently broke and squirted petrol into the cockpit, which Paul hastily vacated. Older onlookers might have seen it as Raymond Mays leading 'Bira', Beadle and Earl Howe...! It ended an ERA benefit, Spollon in R8C third, Sir J. Venables-Llewellyn's R4A 4th., especially as only Jolley's Giron-Alvis, driven with spirit,



An Austin 7 decal.

was ahead of Bill Morris in GP2, in 6th place, followed by Stephens' 1½-litre R12C and Danaher in ERA AJM 1. Next home were Margulies' 4CL Maserati and his ex-Cormack Alta driven by Bond.

After this Mike Sparken gave us a fine demonstration in his Tipo 158/159 Alfa Romeo, as good a way as any of celebrating his 60th birthday! He, too, spun at 'Brooklands' on his first lap, to be greeted with sarcastic applause from the spectators. In the second Brooks Hawthorn Trophy race Mayman began to run away from the rest in the Lotus 16 but on lap 8 of the 12-laps he stopped, with 'a wire adrift.' That let Lindsay in the 'kit-bits' 250 F Maserati win, at 81.84 mph, from Ricketts driving the Mayman 250F and Drake's 2.2-litre Lotus 16. Two Cooper-Bristols were 4th and 5th followed by Margulies' 4CL. Mayman lapped at 86.08 mph, 0.33 mph slower than he had in April, Lindsay at 83.77 mph. Harper's P25 BRM, after running third, retired with a lap to go.

An innovation was a race for Ulster-type A7s but some of the 'Ulsteroids' bore little resemblance to Ulsters. Indeed, only four runners had standard cars. However, there were 44 entries, of which seven had to be reserved, 30 started and only six



Mark Sparken about to demonstrate his immaculate Tipo 158/159 Alfa Romeo to the VSCC onlookers.



Barry Clarke in his 1937 Austin Ulster, which contrary to expectations did not win the Ulster race.

retired. All wore little raspberry decals - I wonder why? Sweeter maybe than mulberries? After Robinson's twin-SU Special had spun and stalled Spence's low-hung 1930/31 Seven won at 62.83 mph (best lap at a furious 64.13) from Eyre's single-carburettor 1929 Ulster. A five-lap Handicap would have surely been more appropriate? Of the supporting events, Chris Mann's Monza Alfa Romeo won the Phillips Trophy race (70.58 mph) from the duelling 4.3 Alvises of Sparrowhawk and Spiers. Thompson's Lagonda Rapier won the first 5-lap Handicap (67.38 mph)

Keeling's super-charged PB MG the second (65.21 mph), Ellison's 1750cc Riley the third (64.04 mph), Keeling also won the first 5-lap Scratch race (66.99 mph) and Anthony Mayman the second, driving Lindsay's ERA 5B 'Remus' (77.11 mph) — but how much better had he been put in a Handicap race and made to work for it from the scratch mark! The leaders in the Motor Sport Brooklands Memorial Trophy contest are: Mayman, 90pts., Drewitt/Llewellyn, 44pts. each, Thompson 36 pts. Next Round, Oulton Park, July 7/8th. WB

VSCC Colerne Speed Trials

Always a popular event, at which the terminal velocity of the competing cars is established, on June 9, Ivan Dutton (1929 Bugatti) won the Colerne Trophy, with FTD in 24.91 seconds. Fastest lady Miss Burrell (Bentley-Royce) with a time of 28.92 sec., and the quickest saloon car was Mrs. Daniels's 1916 40/40 hp Rolls-Royce, in 52.45 sec. The class winners were: Mrs. Hogg (Aston Martin), R. Spiers (Alvis), R. Drewitt (Riley), S. Mann (Bentley), J. Gallis (GN-Ariel), M. Sayers (Riley), Dutton of course, K. Payne (Cooper-Bristol), and C. Collings (1903 Mercedes). The vintage sub-divisions were

won by P. Selwyn-Smith (Frazer Nash), H. Conway (Bugatti), C. Delaney (Lea-Francis), Mann (Bentley aforesaid), A. Hall (A7) and D. Caroline (Morgan three-wheeler), with Dutton upholding vintage honour with the Bugatti. There were the usual frolics with 'penny-farthing' bicycles and a class for girder-fork pre-1960 motorcycles which Caroline won. The course-record still stands to the credit of Felton's Alfa Romeo (22.97 sec.) and the vintage-car course record to the late Bob Roberts in the Sunbeam Tiger 23.22 sec, these not having been bettered this year. WB



The superbly proportioned and typically Italian lines of the Gordon-Keeble make it one of the most distinctive and beautiful high quality saloons of the Sixties.

Style Council

America is a country where big is best. It couldn't be any other way in a land where it used to take weeks to travel from coast to coast, where thousands of miles still separate the main areas of population, and where you have the Mississippi, the Grand Canyon, the Rockies and the Plains of Virginia. People get used to a large scale view of things; they get expansive: politically, philosophically, and artistically. When they decide to build something you can be pretty sure it will be the biggest, widest and tallest whatever it is that there is. When they decide to build an engine it isn't a highly stressed, highly tuned 1500cc screamer, it's a big, powerful V8.

Spellbound by the beauty of the Italian landscape one develops an eye for the sensuous. But that beauty is not unbridled like the beauty of Africa; it has intricacy, rhythm and proportion. It can be seized by the intellect, manipulated with the hands and is echoed in the paintings of Raphael, the sculpture of Michelangelo, the architecture of Palladio. When the Italians design a car it has that same rhythm and proportion.

The English landscape is neither expansive, nor intricate. The weather is neither good nor bad; we have a moderate climate. Just when the cold and rain are getting too much to bear, out comes the sun. Just when everyone is getting rationed on watering their gardens, when tempers are getting a little too frayed, along comes a refreshing shower. Extreme comment is cut short, speculations are guarded, everything exists beneath an all

pervasive veil of moderation. English art is moderation at its very best, and so is a good English car. It has class, but is not flashy. It is well made, comfortable and restrained. Fast — yes, but not breathless. Distinctive — yes, but not demonstrative. People should have to say, "what was that?", because the badge was rather too small to read.

If all three came together and combined to build a motor car, what would you have? A powerful, beautiful and refined machine. In other words a Gordon-Keeble.

It is not only in Gordon-Keebles that the best of both sides of the Atlantic have combined to produce a superb motor car, and I hope to look at some of those other machines in subsequent articles, but the Gordon-Keeble seemed as good a place as any to start.

You don't even have to drive the Gordon-Keeble to know that it is a special car: the looks alone are enough to move all but the most Phillistine. It starts with the aggressive slant of the twin headlamps, and the snarl of the radiator intake. This end of the car means business, and yet is defiantly flat, portraying exactly the sort of performer that it is. The slope of the lights allows a slightly lowered front, but that is the only concession you will find, for this car is not about to charm its way through the air, it's going to punch it out of the way. In plan view the front of the car stretches forward at the intake reinforcing the impression of eager performance.

The pseudo air intake on top of the bonnet is a typical Sixties folly, but it adds

rigidity to the fibreglass, and certainly looks the part. Moreover it is understated enough to arouse the curiosity.

Once the business end of the car has announced its general intent it allows you a look at its more civilised, refined nature. The wings run straight from front to rear with a very slight curve upwards in the middle. This reinforces the impression of the very roomy cockpit, with its narrow pillars and large glazed areas. The car's designer Giorgio Giugiaro has spoken of how he consciously emphasised the roominess of the car and lengthened the roofline to allow comfortable rear passenger seating. Nevertheless there is a sporting slope to the rear windscreen as it runs down to the very well proportioned and nicely shaped boot. The curve of the tail underneath the bumper and back under the car adds a very satisfactory finishing touch. The twin fuel filler caps, and twin exhausts emphasise the sporty nature of the machine underneath the by now very graceful surface.

It all adds up to a very good looking motor car. Very satisfactory and particularly subtle for if any of the lines or proportions were changed in any great deal, the car would certainly suffer, and that precision is the mark of all great art.

But so much for the appearance, does it really go? One can very easily run out of superlatives to describe acceleration. Wringing the neck of a highly tuned two-stroke 350cc motorbike will produce the same sort of figures as your average Ferrari, or jumping off a cliff, but the three experiences are certainly different. It is not sufficient to simply say that the Gordon-Keeble is quick, for it is the nature of that speed that is important, and although it would still disgrace many an upstart hatchback, figures that startled the press in 1964 raise no eyebrows in 1990. Of

course this all reinforces the fact that 0-60 mph times are as meaningless a figure as any mankind has invented, not least because only the most self-disrespecting lobotomy cases habitually drive like that in the first place. The Gordon-Keeble is certainly fast, but more importantly it is relentless. The torque curve of the 5.3-litre 300 bhp Chevrolet Corvette engine should not really be called a curve at all, for it is virtually flat. Maximum torque is 360 lb ft at 3000 rpm, but it is above 300 lb ft from 900 rpm to over 5000 rpm. There are no flat spots, or troughs, and there is no peaking out; the acceleration goes on and on and on. Consequently you really can drive to suit your mood. You can wind it up to 5000 rpm in each gear, (which will be fairly close to sixty in first) and climb with staggering ferocity up to the top speed of approximately 140 mph. Equally you can get it rolling in bottom gear, and then ease it into third or fourth and effortlessly surge your way up to the top end of the speedometer. Even this would be at a pace that would make many a self-respecting sports car a little breathless. However you drive it the speed is surprising, because it is achieved almost entirely without drama. The conversational burble of the V8 might get slightly more urgent, might even turn to a roar, but it is never intrusive, nor does the engine ever sound as though it is having to work at all hard. There is most noticeably a continuous surge, and you are pinned, rather gently, to the back of your seat. At the end of a short stretch of dual carriageway you might think that you are touching 80 mph; you glance down at the speedometer — 95 mph. That is how it is surprising.

Fortunately it has handling to match, or at least this car did. I was driving Ernie Knott's rather well known car 9 MOR. Ernie explained to me that he bought this car in 1969, several years after first seeing a Gordon-Keeble at a 1964 Silverstone



meeting. During his first few months of acquaintance with the machine he very nearly broke his neck on several occasions. It had a lot more power than the S-type Jaguar he had previously owned, and some rather wayward cornering tendencies which Ernie resolved to put right. "It was quite hairy, not least because it was on original Turbospeed crossply tyres, but there was also a bump steer problem. The angle of the front wheels changed as the car went up and down on its suspension."

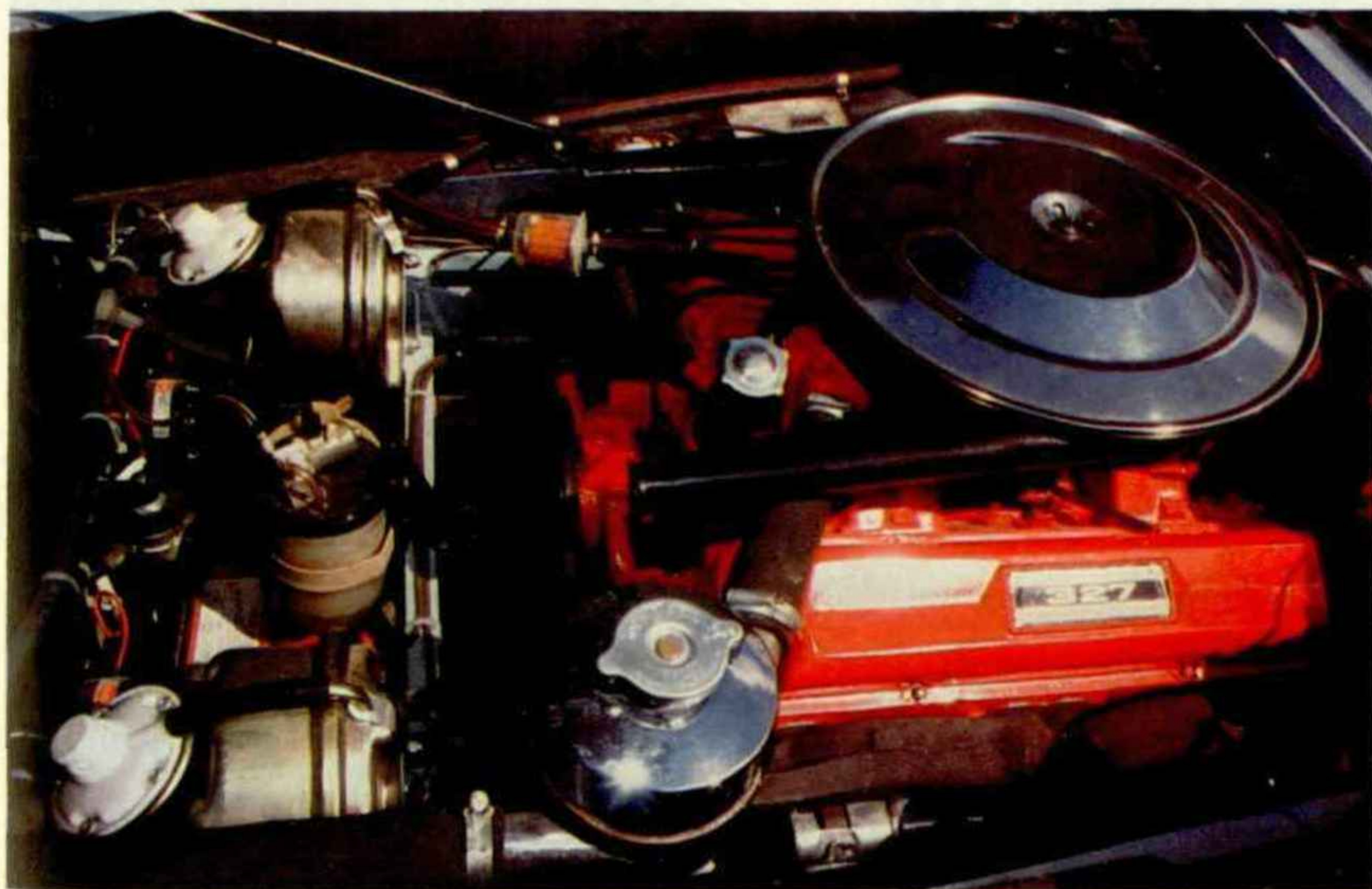
The first change that Ernie made was to fit Dunlop SP radials in place of the crossply tyres. This immediately made the car more predictable, but there remained the problem of the bump steer. So he set about an examination of the geometry of the front suspension, and through a process of trial and error, (he insists that he is no mathematician) by shortening and lengthening outer and centre track rods, and by altering the height of the steering arm, the main problem was pinned down

to the centre track rod. An adjustable centre rod was made up, and with the car on stands, readings were taken for every half inch of suspension travel. The centre track rod was altered until the wheels stayed very nearly parallel as the car rose and fell on its suspension. With the modified track arm fitted, and the car up and running on radial tyres, Ernie discovered to his delight that the handling had been transformed. Beforehand one went round corners in stages, a bit at a time, constantly adjusting and re-adjusting the steering. (Even *The Motor* commented in 1966: "On a really bad surface the steering will swing to and fro by as much as a third of a turn, as the front wheels move up and down on almost equal length wishbones relaying as much feel from gyroscopic effects as from the road surface.") Now corners could be taken in one clean and even sweep. In all the centre track rod had been altered by a total of four inches.

So much for the bump steer. Ernie was not content to rest on his laurels, nor leave the car as it was. He was still dissatisfied with the steering which had a snatch to it when the front wheels hit a bump, and also rather too much play to inspire absolute confidence. The reasons for this were that there was a certain amount of play inherent in the design of the Rover 2000 steering box, and that there were some six joints making up the steering linkage. Ernie set about trying to find a rack and pinion unit of suitable length, and he measured up the units of various makes of car as they came into the workshop. It was on a Cortina that he found a rack of a suitable length, and so he fitted one to his own car. The effects were once again immediately apparent; the steering was made much lighter and more precise, and when he also added power assistance, via a steering pump on the engine, all traces of snatch were done away with.

Essentially Ernie was using his car as a guinea-pig; once he had hit upon a modification that did genuinely transform the characteristics of the car, he offered it to his customers as a tried and tested improvement. Consequently a considerable number of cars of the original 99 have now been converted to the indisputably superior suspension geometry of Ernie's car. Many also have rack and pinion and six have the power-assisted unit.

The transmission was the next item to undergo the spotlight of attention. The standard gearbox was a Warner T10 General Motors manual four-speed unit. It was good and robust but its one failing was that it had a very high first gear. This was rather good for providing neck-breaking acceleration all the way up to 60 mph, but not so good for running about in slow moving traffic since one had to slip the rather heavy clutch continually and soon ended up with a disproportionately muscular left leg. What was needed was a unit with a lower first gear but also with a fifth gear for motorway cruising. The series III XJ6 Jaguar provided just such a gearbox



The rather inelegant Chevrolet engine certainly delivered the goods: 300 bhp and a torque curve like table mountain.



A witty if not entirely appropriate emblem.

and could be easily adapted to fit the General Motors bell housing. It allowed much easier low speed running, but also 30 mph per 1000 rpm in fifth, leaving the engine very underworked at cruising speeds. Ernie's car now has automatic transmission, although this is a much more recent addition. He had previously converted one other customer's car to automatic and after a few rides in it came to the conclusion that it really was the bee's knees. The General Motors 350 Turbo-Hydramatic gearbox bolted straight onto the back of the engine, and has made the Gordon-Keeble an extraordinarily easy car to drive.

It certainly seemed so as we drove out onto the Brackley bypass. The steering was good. It was rock steady, light and precise and with very little movement from lock to lock. One's immediate impression of the car as a whole was that it would provide effortless motoring at the sort of speed you would have to try very hard to coax out of some quite high performance

contemporary cars. Not bad for a machine that is 26 years old, albeit with some considerable development work. The automatic gearbox did enhance the effortlessness of the machine, although my personal choice would be to stick to the manual, perhaps with the Jaguar 'box. Even in manual form the power of the engine was such that you could all but forget about changing gear if the mood so took you, or you could row it along like a racer. Certainly the handling with the revised suspension and 205 x 15 radials would allow you to do just that. There was no really significant body roll in hard cornering, and the taught spaceframe chassis told you exactly what the car was up to. The ride was reassuringly firm, for you certainly knew if the road was bumpy, but this only added to the feeling of control one had over the car, and the ride would never get uncomfortably rough.

The brakes were also particularly good. As all round Girling disc brakes they were good to start with, but also they have undergone a certain amount of modification, and are now Lockheed three pot brake calipers at the front. This, Ernie tells me, gives an even more powerful and progressive braking system than that which greeted the road testers of the Sixties. They were certainly hard to fault in practice.

Gordon-Keebles were, and still are thanks to a considerable amount of continued development, high quality machines. Of course they had their faults, most cars do, and it is important to see around the rose tinted spectacles of classic car appreciation and realise those failings. But Ernie Knott has done much to iron out those of the Gordon-Keeble. If anything the main failing of the machine was that it was too cheap, probably by as much as £1000. The asking price when it came out

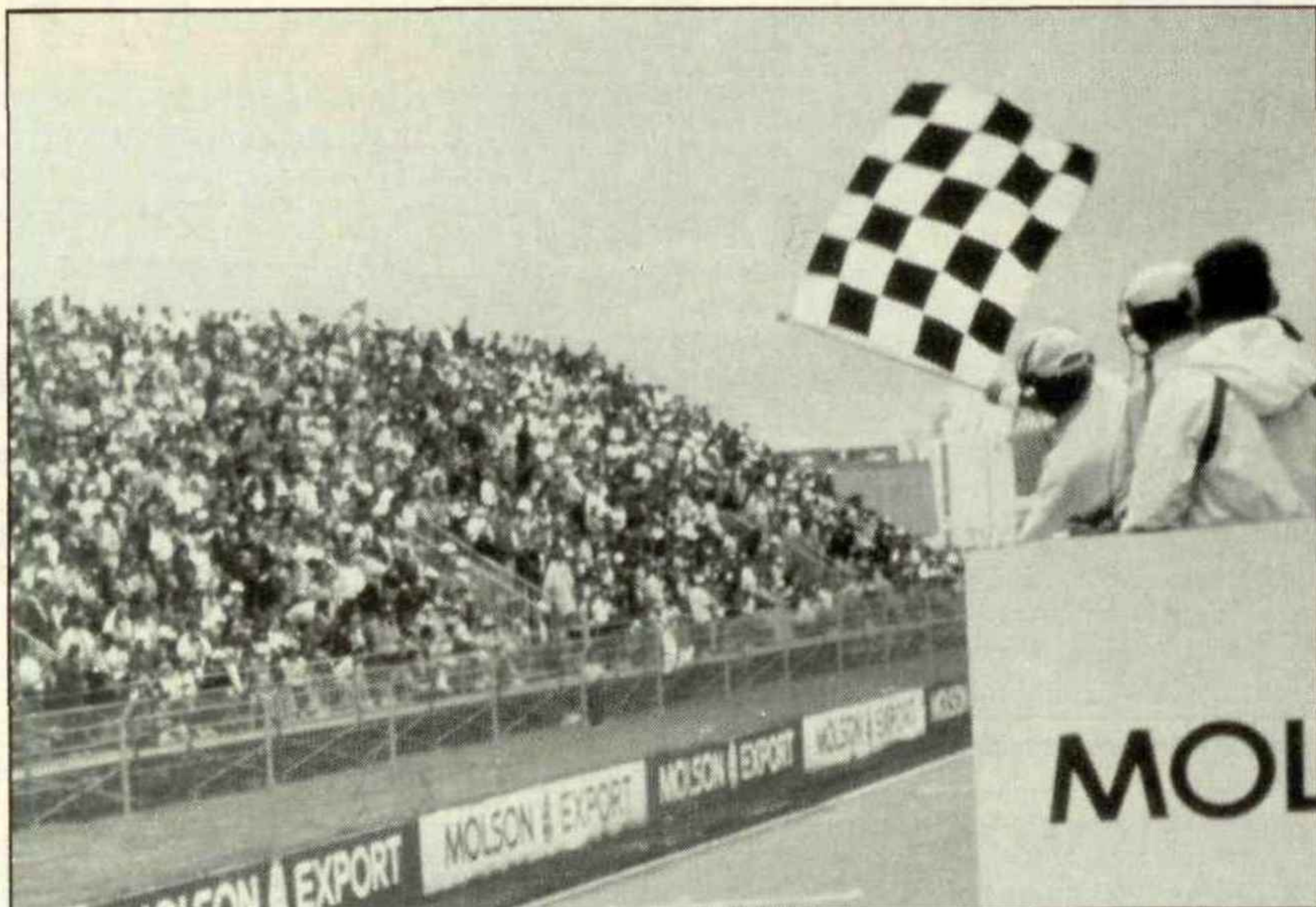


The aircraft-like central console has a functional beauty.

was £2,798 compared to £3,392 of the Jensen CV8, or even £5,609 of the 250 GT Ferrari. Selling the car that cheaply meant that the company did not last very long. At the end of its fraught history only 99 cars had been made. The penny-pinching made necessary by keeping the price so low manifested itself in one or two sloppy details, especially in the interior, but generally the standard of workmanship was disproportionately high. Much of the bright work was chrome plated brass, and there was not a self tapping screw to be seen, only bolts and lock nuts. Certainly Gordon-Keeble itself had an image of the car that called for this quality of work even if it wasn't always lived up to. The drivers handbook contained one or two gem-like phrases: one described the location of the towing hook saying, "you might get bogged down at a point to point meeting." But best of all it suggests that owners treat their cars gently and with moderation "as they would the contents of their cellars." CSR-W



Ernie Knott's much developed Gordon-Keeble 9 MOR.



The chequered flag is taken for granted, but what is its foundation?

Chequered Flag

Eoin Young rang the other day to question why the finish of a motor race is marked by the display of a chequered flag. An interesting point, but one about which Ian Bamsey says nothing in his new book on race safety and about which the experts appear to have no answer or divided opinions.

Flag signals, or those conveyed by coloured lights, are an absolutely vital part of motor racing and have long been

properly established. In the past those specified today were different. At Brooklands, for example, the indestructible Mr. AV Ebblewhite, to whom thanks for his almost endless task of handicapping and starting races and other competitions can never be too great, for some years used a red flag to get drivers away, before changing to a Union flag. Quite a small flag. I have measured one of Ebby's Union Jacks in my possession — a tatty memento of

Brooklands — and it comes out to 7" wide by 13½" long, whereas the FIA rules now state that all race signal flags shall measure a minimum of 30" x 24".

Later it became the done thing, as universal today, to start a race with the national flag of the country in which that race was being run. I am not sure when this first became the norm but probably for races with an international field. To this national flag we have flags of blue, white, yellow, yellow with red stripes, green, red, black and black and white, either stationary or waved, to convey vital messages to drivers. It seems logical to have a red flag to indicate an immediate stop to a race, a black flag for an individual car to pull in. Moreover, with these and the rest of the above colours usurped, and because the flag's colour must be easy to see from a speeding car, there is little choice left over what to use to signal the end of a race.

So for many years the official end of contest flag has been a black and white multi-chequered one. When Eoin asked why, I suggested that it was because this pattern was easy to see and was about the only such flag left after the other primary colours had been used up. It would have been important not only for the winner and finishers in a race to see quickly the finish flag but the spectators also.

But when was a chequered flag first used for this purpose and what preceded it? A nice one for industrious historians! It is interesting that the FIA rules say that if this flag is inadvertently displayed before the full race distance or duration, the race will finish then, but if the signal is inadvertently delayed, the race will still finish at the specified distance or time. **WB**

Another Pig

After I had written "Pig in the Middle" last May I remembered that there was a *fourth* Mercedes racing car transporter I could have mentioned. In 1924 Mercedes entered four of its new Porsche-designed 2-litre straight-eight supercharged cars for the Italian GP at Monza, the drivers being Christian Werner, Count Giulio Masetti, Alfred Neubauer and Count Louis Zborowski. For the first time the celebrated German company had decided not to drive the cars on the road to the race.

In 1921 Max Sailer had driven a modified 28/95hp Mercedes from Stuttgart to Sicily for the Targa Florio, overcoming the considerable hazards of the post-war unpopularity of German travellers, undurable black market tyres, sparse petrol supplies, and the very poor war-torn roads. With extra tyres and spares stacked on the car, he not only arrived but finished second to Count Masetti's Fiat, over roads almost as awful as

those he had encountered on his epic journey. However, that was not the reason why Mercedes chose to transport its 1924 racing cars in trucks, over the Alps to Italy, for the Italian GP.

These 2-litre eight-cylinder Mercedes were difficult cars to drive, as Sir Henry Birkin Bt and Raymond Mays discovered when they tried one in England some years later. In the Grand Prix Zborowski was killed and at the German GP at Avus in 1926 Rosenberger lost control of his, crashing into a timing hut and killing three of the inmates. Not only that, but the blown straight-eight engines were notably difficult to start, requiring injections of ether from cold, and they ran at very high revs. In other words, real racing cars, hardly suited to a road journey.

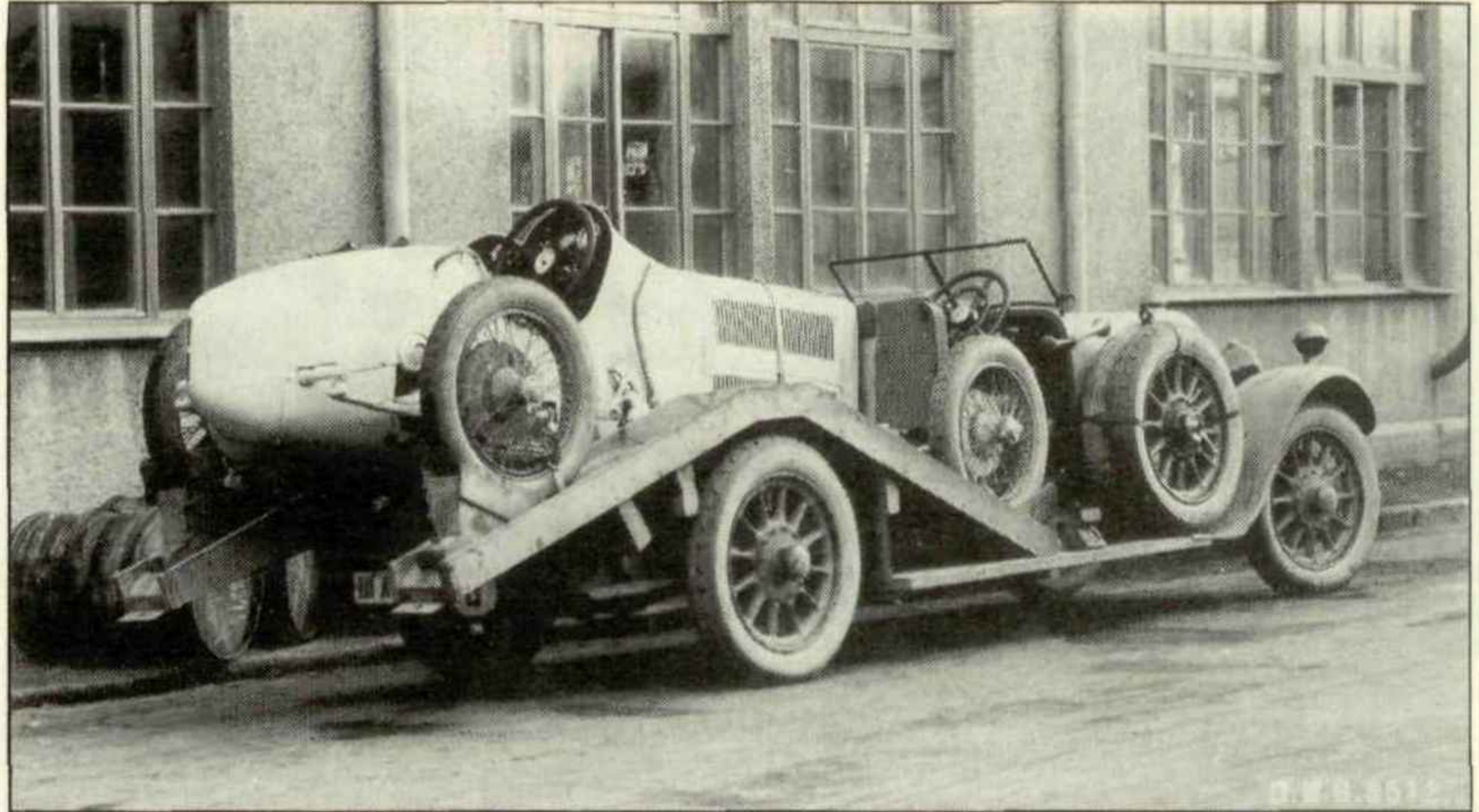
So they were put in trucks for the long haul and Mercedes historian Karl Ludvigsen has recorded how Ferdinand Porsche paced up and down before the Monza pits in September 1924, waiting impatiently

for the first of his team of new cars to arrive for the first day's practice. One of them, presumably in the forefront of the trio of trucks, was on a new, fast racing car transporter devised by Neubauer and Werner. It was a vee-radiator Mercedes chassis, which I think would have been known in this country as the aforesaid 28/95hp model, equipped with normal running boards and mudguards, on the back of which perched one of the valuable new racing Mercedes.

Indeed, it was a close perch. Two channel-section girders humped up over the artillery back wheels of the sports Mercedes, up which the racing car had to be manoeuvred, until its long front dumb-irons were down beneath the bench seat of the transporter, the racer's front wheels cupping this seat. For the practice session in question, this ingenious transporter, on which the driver seems to have had no protection apart from the windscreen, arrived late in the day, having been delayed by much tyre trouble. The mechanics then had to lever the precious racing car up and off the girders that held it. The other cars arrived later, but all to no avail. Alfa Romeo P2s finished 1, 2, 3, 4 led by Antonio Ascari. Masetti's Mercedes broke

a fuel line and after Zborowski's fatal accident Sailer flagged off his other two cars, Werner's, and Neubauer's then being driven by Merz.

That was the only major non-German international race in which these tricky Mercedes took part, although Rudi Carraciola and a few other drivers managed to tame them, with good results. Whether it had been intended to build further ungainly 28/95hp transporters to carry the rest of the 1924 team cars is not known; it is more likely that Neubauer saw one as enough, for rapid transport of the leading practice car, etc. It even seems possible that, after the Monza race, the carrying girders were removed from the old chassis to enable it to resume other duties. It was, however, the first Mercedes-devised racing car transporter until the 300SL-engined one was made, 31 years later. WB



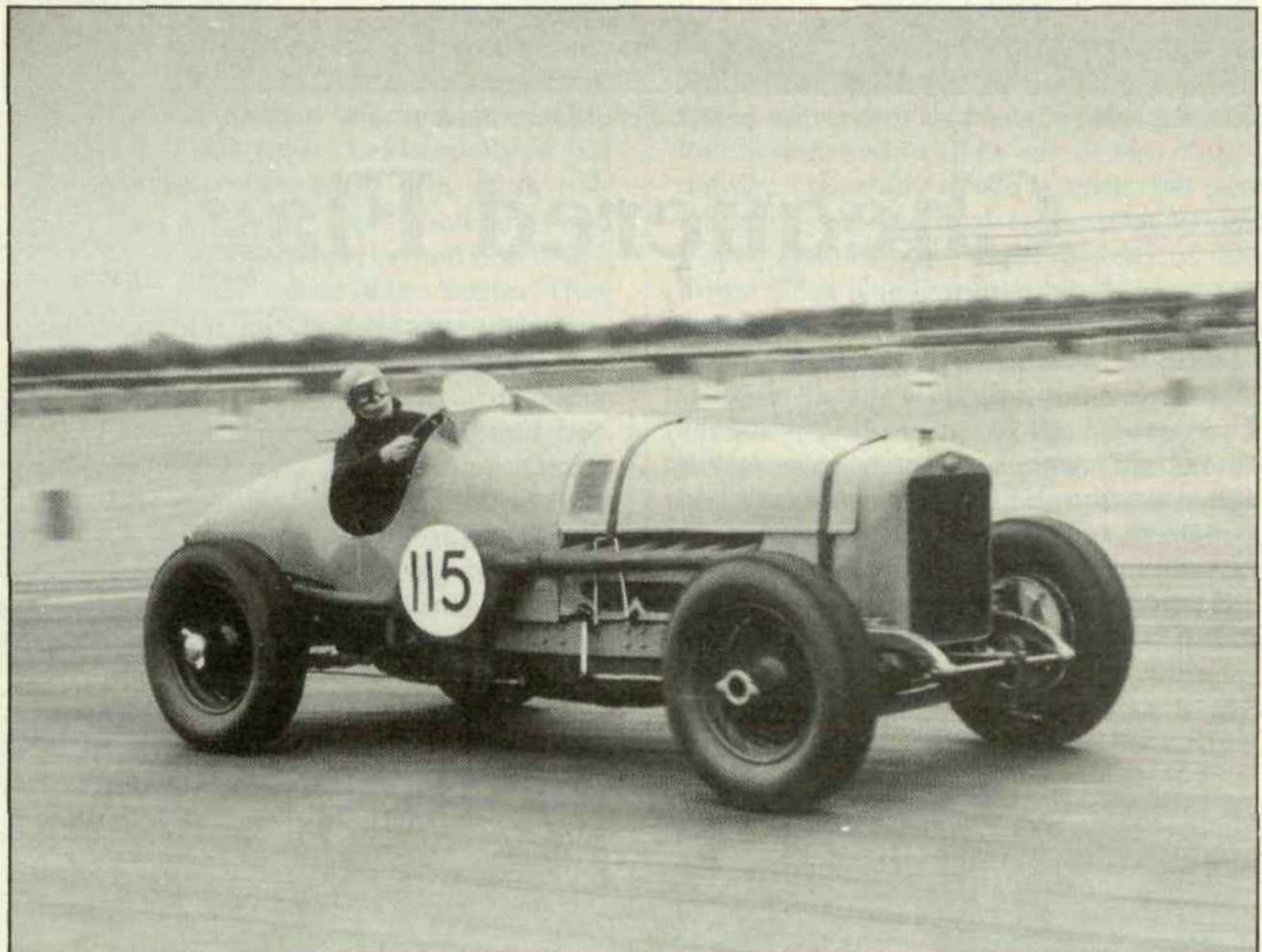
The 1924 transporter with 8 cyl car in position.

Watching Johnty Williamson driving the venerable 1923 10½-litre V12 Delage in the Itala Trophy scratch race at this year's first VSCC Silverstone Meeting, when it took the Lanchester Trophy, finishing ahead of 17 other cars all younger than itself, made me realise what a privilege it is to see such historic cars in action. All too many have become static pawns in the auction rooms.

The history of this famous Delage has been told previously in MOTOR SPORT. How it was built to establish hillclimb records, which it did, Louis Delage obviously not afraid to use a big car for the job — there is no substitute for litres . . . ! How it put the LSR to 143.31 mph in 1924, driven by René Thomas on the narrow Arpajon road near Paris. How it came to Brooklands, and was an outstanding performer in the hands of drivers such as John Cobb, Oliver Bertram and Mrs K Petre, lifting the Class A lap record to 133.88 mph by 1932 and the Ladies' lap record to 134.75 mph by 1935.

That great believer in large Edwardian motor cars, Cecil Clutton, laid down the old Delage when it came on the market in 1940, for use after the war, buying it from Street & Duller for £30.00, with a truck load of spares. He ran it in post-war VSCC events until it caught fire coming down to Woodcote Corner in a race at Silverstone, considerably damaging itself, and Clutton, after he had been thrown off it as it hit the bank. Jack Williamson was so kind to Sam while he was in hospital that he gave him the Delage, and after Hoffman and Burton had repaired the accident damage, he, and more recently his son Johnty, continued to run it quite frequently in VSCC races and sprints, as they still do. Nor did Clutton lose touch with it, being invited to drive it again on one or two occasions.

The old Delage looks original and is very original. It is very satisfactory to know that little about it has been changed. This applied during its resuscitation for Clutton after the war and the later repairs, although the twelve separate cylinders



Cecil Clutton driving the old 10½-litre V12 Delage. He used to drive it to meetings attaining over 130 mph more than once between Oxford and Bicester.

Happy Ending

having succumbed to *anno domini*, had to be replaced by *monobloc* banks of six. As a hillclimb car, which implies twisting courses, the Delage has always had four-wheel brakes. It was indeed fortunate that Clutton decided to buy the car because after old racing cars were banned from Brooklands a Mr J Eisner apparently became interested in it and around 1938/39 proposed to turn it into a road car to rival the capabilities of Forrest Lycett's formidable 8-litre Bentley and the sole remaining Leyland Eight of Sir Lionel Phillips, Bt.

What this gentleman proposed to do,

with the help of Giulio Ramponi of High Speed Motors, was to use a new chassis incorporating independent suspension front and back and better brakes. The output was to be increased by using twin Powerplus superchargers, and a road two-seater body fitted. A top speed of 170 mph was forecast and the conversion was expected to occupy six to nine months. Fortunately nothing more was heard of these plans so the story had a happy ending indeed and is a continuing one. But does anyone know if Mr. Eisner satisfied his urge to own a superfast vintage-based road car, and if so how? WB

Abandoned projects

Sir,
In your article arising out of Bexhill (Letter to Readers, April) I was particularly interested in references to plans for tracks which did not come to fruition. As a postscript I have in my album three photographs taken in early 1932 at Drakelow Park — the house with my car, deer in the park and a long vista down to the River Trent — the page enigmatically inscribed "Project abandoned in favour of Gopsall." So that is two more which bore no fruit!

**GAD Smith,
Burford, Oxon.**

Jaguar Politics

Sir,
Sir John Egan, who recently announced his decision to resign from the Jaguar board, re-activated that honorable British company using difficult and advanced procedures, and supervised the selling and making and designing of a handsome car, now built to respectable standards.

I don't expect that we will be allowed to know about the influences at work between, for example, Mercedes-Benz/GM/Ford/DTI/Jaguar. But at the time he told us possibly that the DTI had not consulted him or his board about a financial injection of any sort. It had taken him by surprise.

In my view as an outsider without financial interest, but who is fond of Jaguars (although the worst car I ever had was a 2½-litre saloon device) the Jaguar should never have considered any kind of collaboration with any other car-maker (because it might lead to confusion in terms of marketing, finance and perhaps production). Jaguar said at the time (last autumn) that they did not need sales or spares networks.

If, for some reason, another car-maker's money seemed irresistible, Jaguar should not have accepted from Ford, a producer with a very different reputation and history from Jaguar's.

I reckon that this sad piece of business is all part of the pervasive and nasty standardisation and degradation which now shows itself in too many fields of life.

**Nicolas P Johnson
London, NW3**

Donington Gripes

Sir,
On the Championship Raceday at Donington on the 25th March there were six races on the programme of which only two had capacity grids while a couple had less than ten competitors. My complaint, though, is not with the racing but with the prices demanded.

On entry to the circuit I paid £8 for a trackside enclosure plus £2 for infield viewing and a further £3 for a paddock transfer. To rub salt into the wound, there

was an advertisement for the Silverstone Race Day on April 8th where the prices were cheaper than those at Donington. I for one thought I would never see the day when Donington's prices would become more expensive than Silverstone's.

On looking through the 1990 Donington fixtures diary, I find that the price for an advanced ticket for the WSPC race on September 2nd has increased from £11 to £15.

In these times of poll tax and high interest rates, I would like to know how Two Four Sports Limited can justify these staggering prices. If they continue to increase at this alarming rate, I will be forced to become an armchair spectator.

**N. Sigley,
Stone, Staffs.**

Unhappy Customer

Sir,
Your readers should be aware that there is in existence a certain "Rally School" whose address and telephone number is in the Silverstone area and who advertises rally courses.

One of these courses was bought as a present for me and, according to the correspondence, all I had to do was to telephone and confirm the reservation. I did so and was informed that a confirmation would be forthcoming. None did so. On the appointed date, I set out (very early!) to Silverstone and was directed to the John Watson Rally School. I waited until 9.15am and nobody arrived. I then returned to the reception and found it was not the "Rally School" I was booked with. I was then mis-directed around the countryside but no "Rally School" could I find.

Finally, at 9.45, I called the telephone number on the voucher I possessed and was informed that the courses were held at Bruntingthorpe and that I should now get back in my car and drive there ("a mere 45 minutes" the man said). I declined and asked for another booking and was refused both that or a refund.

So, beware! DO check out the address, (if possible) and be prepared for a flat refusal to either re-book or repay.

**John Starkey
Meriden, Coventry**

An Odd Ball

Sir
I have recently acquired an 'odd ball' in the shape of a Goliath 900-E Saloon of 1956.

This German car was built under licence in Australia and bought to this country in 1959. Goliath was of course part of the Borgward concern and the demise of the latter resulted in the failure of the firm.

I have been in touch with the Borgward Club but they do not appear to know of any other survivors. I am hopeful that through your reader's I may find other owners to exchange notes.

I am also anxious to contact anyone who is conversant with the Boch Petrol Injection with which this two cylinder, two stroke car is fitted.

**ED Longworth
Headley, Hants.**

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Sir
Thought I would tell you that I have a Sierra Estate 4 x 4 which has now exceeded 30,000 miles. In that time nothing, nothing at all has gone wrong, it is the best Ford I've ever owned.

One other thing I would like to say is why do the racing people put up with that buffoon Balestre, why don't they get together and throw him out?

**CH Carley,
Maidstone, Kent**

An April Fool?

Sir
Having just spent six very pleasant weeks touring the UK, I wish, through the pages of MOTOR SPORT, to thank the many kind and warm-hearted people who made my visit such a memorable occasion. I also seek the assistance of the readers to help solve a puzzle, a puzzle which has aroused intense curiosity!

On Sunday, April 1st, whilst sightseeing in the Midlands area, I spotted a beautiful metallic green car. This car had a black vinyl top and was about 25 years old; it was parked near to the Black Country Museum. In the rear screen was a large printed notice, extolling in great detail, the virtues of this "unique experimental automobile", a "genuine Green Machine," as the owner described it. Because of the date I thought the claims made were part of an elaborate hoax and out of curiosity, I took a photograph of the notice. Since then, however, I have examined the developed shots, and am now convinced that the owner of this car has been independently carrying out thought-provoking and in-depth research for at least the past 11 years; particularly in the field of ozone and environment friendly fuels. Because of my professional involvement in automobile research and development I am keen to find out more about this car, about its owner, and particularly the enigmatic owner and the message it conveyed.

So who is the mystery man? How does he define his "Minat Projects"? Since 1979 he claims to have used a fuel that is "considerably cleaner and far more cost effective than modern diesel or lead-free petrol engines," "exceptionally low HC, CO and evaporative emissions and F2/R2 ratio." What is the latter? But perhaps the most intriguing question of all — what is meant by his statement: "The stefotes syndrome is not progress"?

**Dr Brady Jerome,
Detroit, Michigan, USA**

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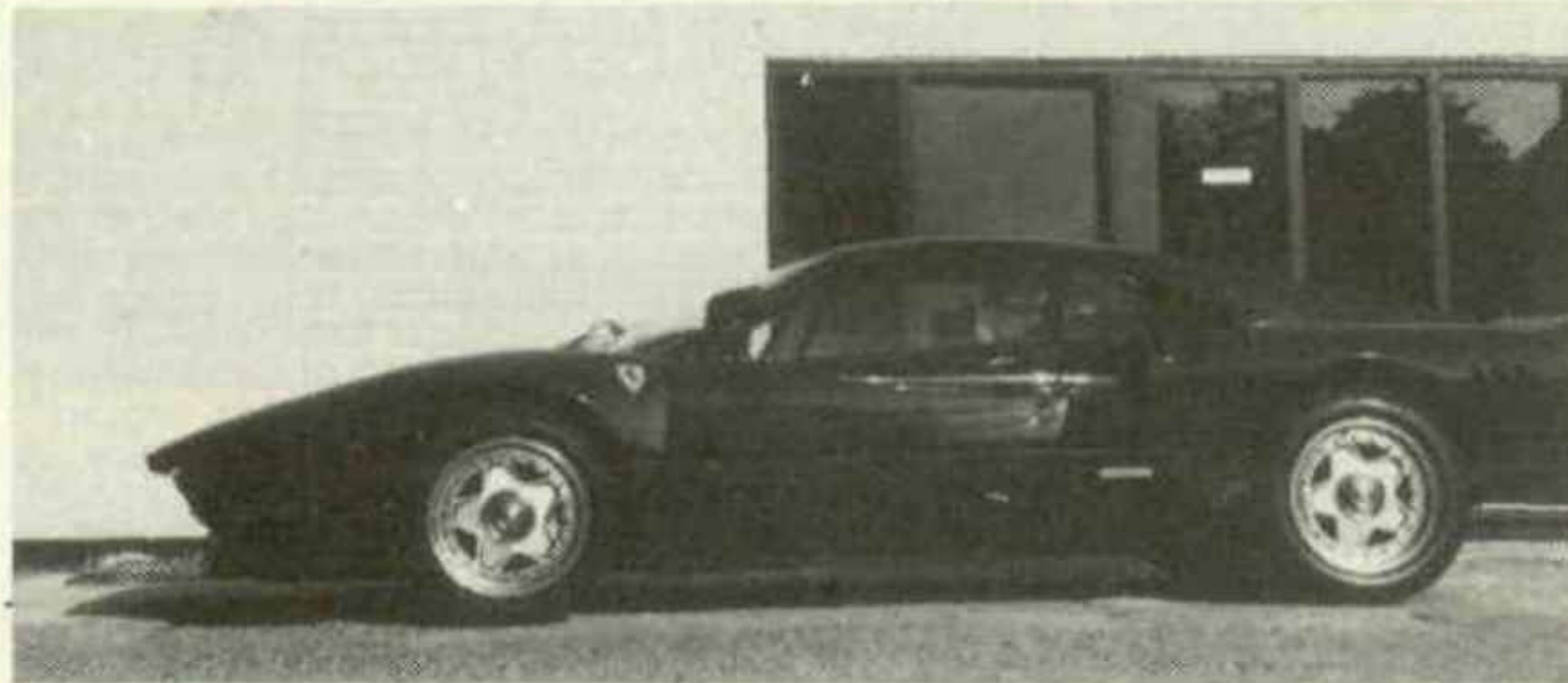
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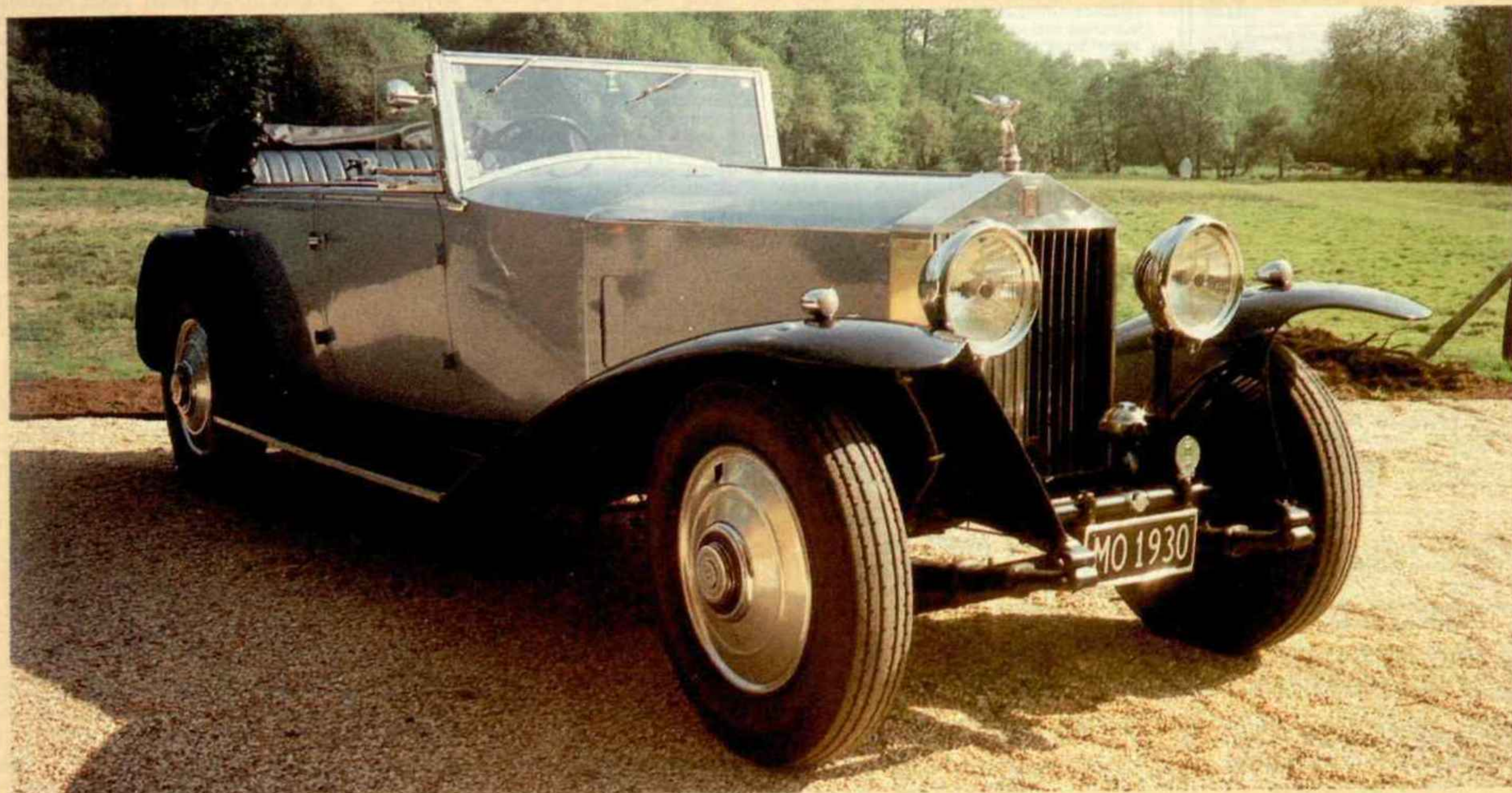
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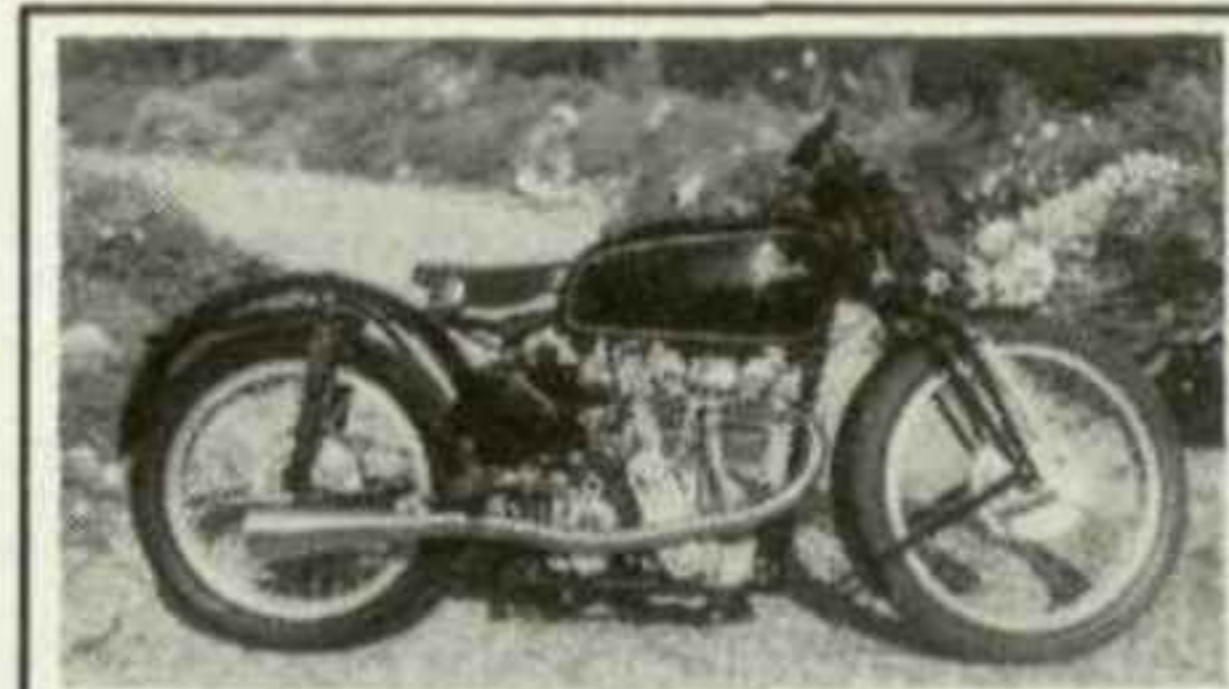
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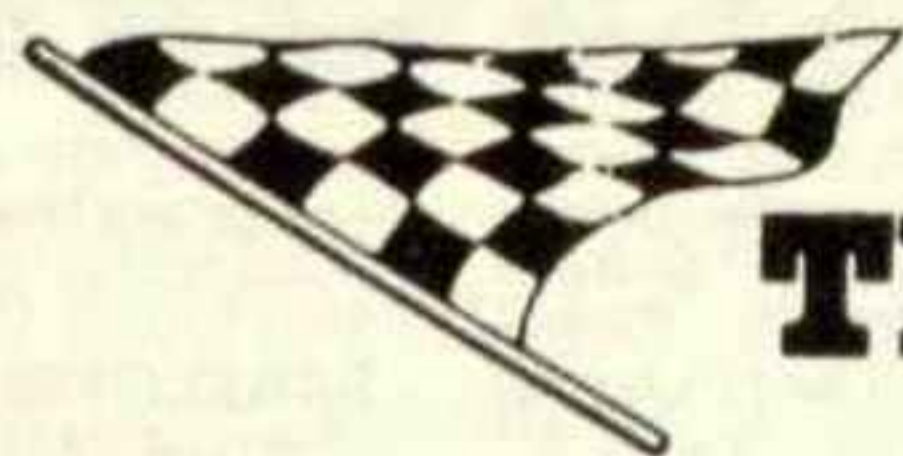
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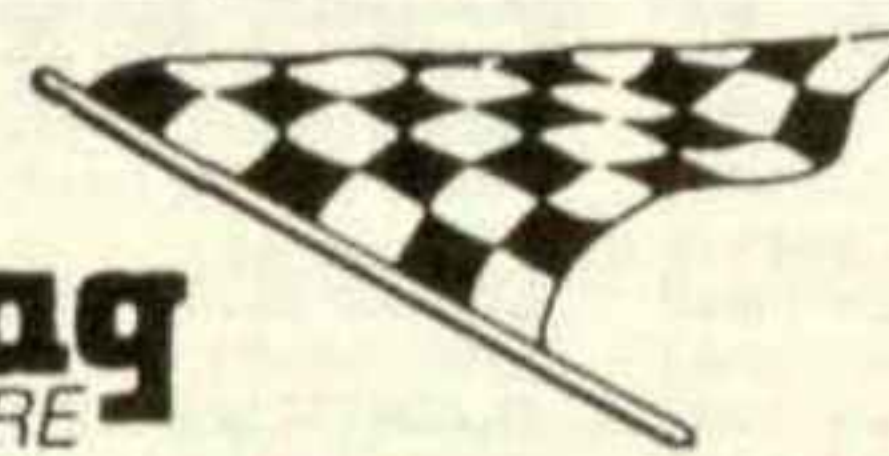
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89(F) TVR 400SE. Italian red, biscuit 1/2 hide, P.A.S., Wilton carpets, 5,000m	£24,995
89(G) TVR 350i. Mulberry red with caramel 1/2 hide, P.A.S., 9,000m, 1 owner	£19,995
89(G) TVR 350i. Metallic dark blue with 1/2 hide trim, P.A.S., 11,000m, 1 owner	£19,695
89(F) TVR 350i. Met. claret with full grey hide, P.A.S., Oz wheels, 10,000m	£19,295
87(D) TVR 350i. Mist blue metallic, grey 1/2 hide, 26,000m	£14,995
87(D) TVR 350i. Mist blue metallic, magnolia 1/2 hide, P.A.S., Zender boot, spoiler, 40,000m	£14,495
86(D) TVR 350i. Champagne metallic with doeskin 1/2 hide, 31,000m	£13,995

USED TVR S

89(F) TVR S 2.9i. Nimbus grey with magnolia trim, 7,000m, 1 owner	£15,695
88(F) TVR S 2.9i. Mica blue with grey trim, alloy wheels, e/windows, 13,000m	£15,295
88(E) TVR S 2.8. B.R.G. with full tan hide, alloy wheels, electric windows, 10,000m	£13,995
88(E) TVR S 2.8. Italian red with grey 1/2 hide trim, 12,000m	£13,695
88(E) TVR S 2.8i. Met black, grey 1/2 hide, 19,000m	£13,495
88(E) TVR S 2.8i. Italian red, black & red trim, 15,000m	£13,295

PANTHER

87(E) KALLISTA 2.8 Auto (Brooklands Ltd. Ed). White with full red hide, alloy wheels, S/S running boards, chrome headlight guards, boot rack, 10,000m	£13,495
87(E) KALLISTA 2.8 Inj (Brooklands Ltd. Ed). Bright red with full grey hide piped red trim, chrome mesh grille, S/S running boards, alloy wheels, 14,000m	£12,995

CONVERTIBLES

87(D) PORSCHE 911 SPORT CARRERA Convertible. Alpine white with Porsche logo cloth seats, electric seats, power hood, 34,000m	£35,995
81(X) TRIUMPH TR8 (Factory built car). Midas with matching cloth trim and hood, alloy wheels, PAS, 39,000m	£13,995
66(D) CORVETTE STINGRAY 427 cu.in. Nissau blue, loads of chrome, 2,000m since complete rebuild	£29,995

SALOONS

88(F) FERRARI 328 GTS. Rosso Corsa with black hide, rear roof spoiler, 22,000km (LHD)	P.O.A.
86(D) PORSCHE 928 S2. Ruby red metallic, full magnolia hide, sunroof, A.B.S., a/con, alloys, wide track, 40,000m	£27,995
89(F) LOTUS ESPRIT TURBO. Pacific blue, full two-tone hide, sunroof, a/con, 10,000m	£27,995
87(E) SIERRA COSWORTH RS500. Black with grey recaro trim, P.A.S., A.B.S., 12,000m	£25,995
87(E) FORD SIERRA RS500 COSWORTH. Moonstone blue with Raven trim, P.A.S., A.B.S., alloys, 16,000m	£25,995
90(G) TOYOTA CELICA GT FOUR. Bright red, a/con, P.A.S., sunroof, alloys, delivery mileage	£21,495
89(G) TOYOTA CELICA GT FOUR. Red with black trim, a/con, sunroof, A.B.S., 3,000m	£16,995

89(G) TOYOTA MR2. White with grey cloth trim, sunroof, alloys, e/windows, 7,000m	£11,995
89(F) TOYOTA MR2. White, grey trim, sunroof, alloys, e/windows, 22,000m	£11,295
88(F) TOYOTA MR2 'T' BAR. Mica blue with black hide, 25,000m	£11,495
87(E) TOYOTA MR2 'T' BAR. White with blue trim, alloys, c/locking, e/windows, 22,000m	£10,695
87(D) TOYOTA MR 2 'T' BAR. Red with black trim, alloys, c/locking, e/windows, 21,000m	£9,995
89(F) ESCORT RS TURBO. Black with raven cloth trim, alloys, sunroof, A.B.S., 10,000m	£10,695
89(F) VW GOLF GTI 16v. White with black cloth trim, sunroof, alloys, electric windows, 12,000m	£10,695
89(F) ESCORT RS TURBO. Mercury grey with Raven cloth trim, A.B.S., heated screen, sunroof, 13,000m	£10,195
88(F) ESCORT RS TURBO. Radiant red with raven cloth trim, alloys, sunroof, A.B.S., 18,000m	£8,995
88(F) PEUGEOT 205 GTI 1.9. Graphite metallic, grey hide, sunroof, alloys, e/windows, 11,000m	£8,695
88(F) PEUGEOT 205 GTI 1.9. Black with black hide, sunroof, electric windows, 7,000m	£8,995
88(E) PEUGEOT 205 GTI 1.9. Cherry red with grey hide seats, sunroof, e/windows, c/locking, 24,000m	£7,995
87(D) PEUGEOT 205 GTI 1.9. Cherry red with grey hide seats, sunroof, e/windows, c/locking, 32,000m	£6,995
88(E) MG MAESTRO 2.0 EFI. Black with grey velour trim, alloy wheels, c/locking, 14,000m	£5,995
86(C) FIESTA XR2. Black with blue cloth, sunroof, alloys, tints, 27,000m	£4,695

P/EX TO CLEAR

88(E) MONTEGO 1.6HL Estate. 23,000m	£5,995
87(E) MG MONTEGO TURBO. Silver, grey cloth	£5,995

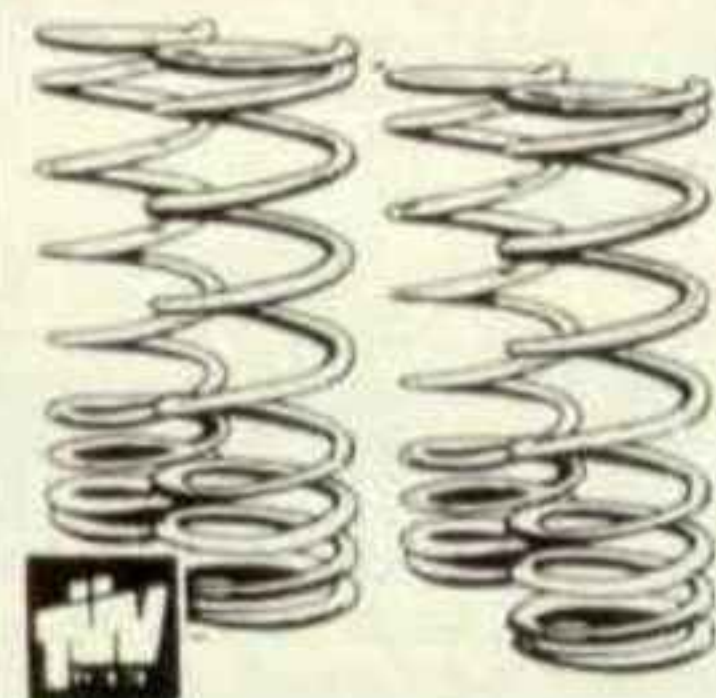
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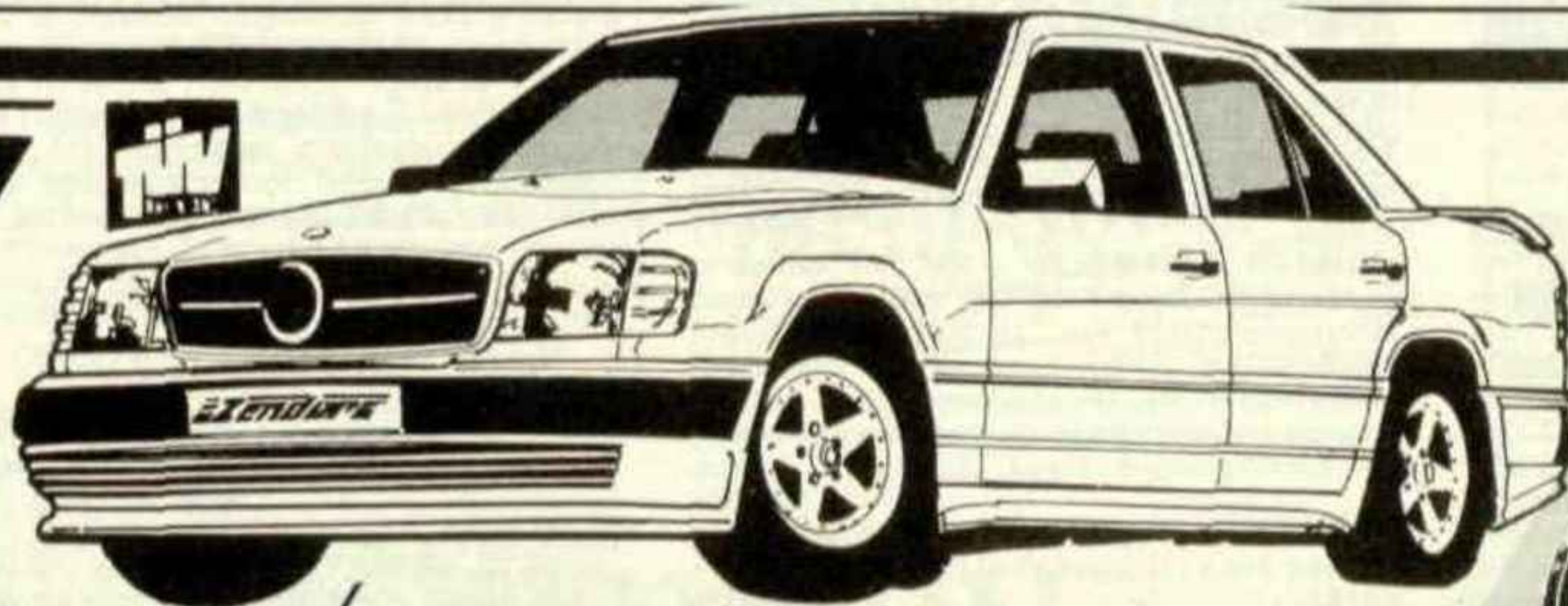
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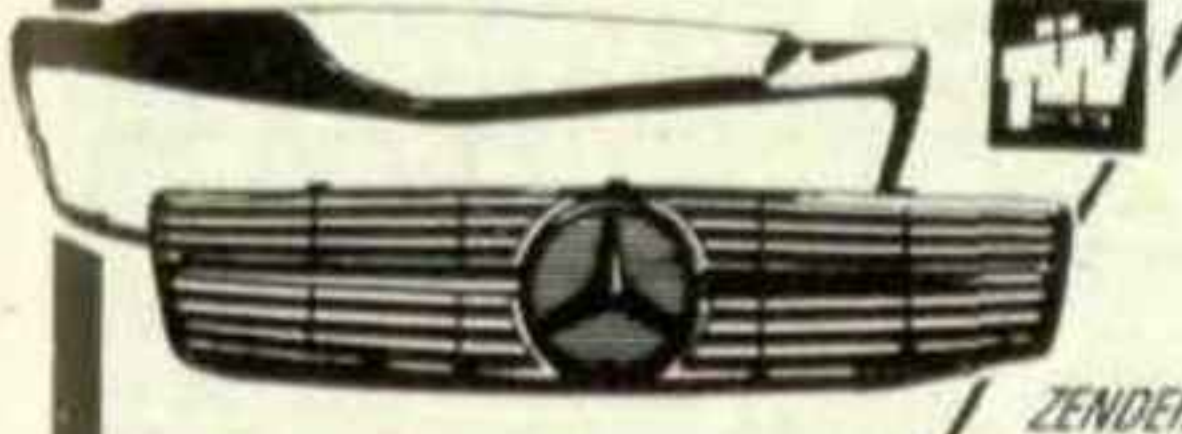
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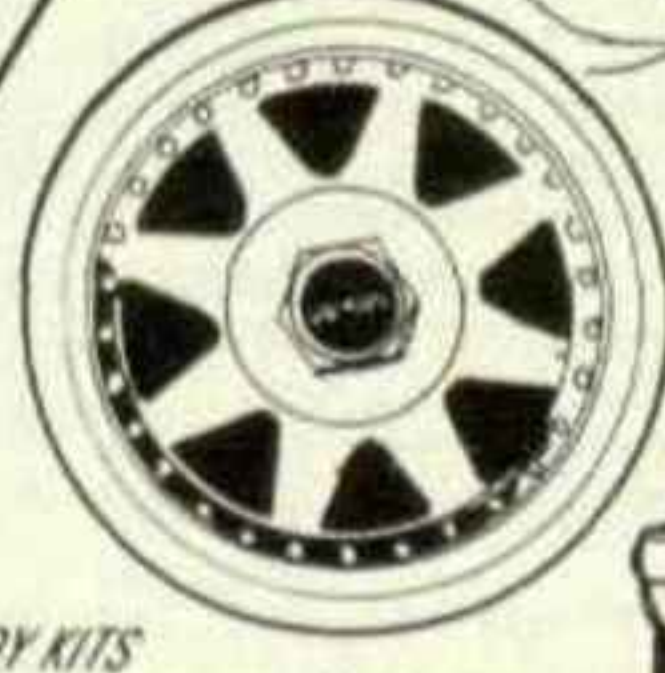
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JAGUAR E-TYPE ROADSTER 4.2 Series II, 1970, finished in gleaming black (bare metal repaint), retrimmed in black leather, new mohair hood, new chrome including wire wheels, complete mechanical overhaul by specialist, professionally converted to right hand drive, breathtaking condition, genuine reason for sale, £31,500. View London. Apply Box No.7283.

A.C. 3000 ME TURBO, 1979, silver, low mileage, excellent condition, engine balanced, gas flowed heads, free flow manifold, £24,900. Telephone 03526 61767 (day), 051 648 2071 (evenings). (033397)

MGA PA, PB, TA, TB wanted in reasonable order. Telephone work (061) 491 1889 or home (0477) 35522. (CC082920)

MG PA, 1934, T&T, original engine, new exhaust, brake cables, £15,000. Tel: (0702) 203113 (73387)

R/R BENTLEY 4 1/2 BLOCK, Bentley 3 1/2 head, offers. (0702) 203113. (73387)

LANCIA 2000 HPE 1E, 1983, black, automatic, 34,000 miles from new, lovely condition, £1,695 o.n.o. Tel: (0932) 786819 daytime or (0932) 853085 evenings (private sale). (PF)

RAILTON FAIRMIRE II Straight-8 3-position DHC, recent ground up concours restoration and quite outstanding, £30,000. (0422) 378221/378510. (964113)

3 1/2 LITRE DROPHED DHC BENTLEY Park Ward, older restoration but very original and attractive, £50,000. Halifax 378510. (964113)

TVR TUSCAN, 1969, full V8 specification, 81,000 miles, new tyres, radiator, competition harnesses, without engine/gearbox, £9,000. Tel: 081 852 8904. (964114)

1934 3 1/2 BENTLEY Park Ward Sports Saloon, re-sleeved engine, owned for over 20 years, ill-health forces sale, MoT, £18,000. 0970 625276. (964112)

TR8 CONVERTIBLE, 1980, registration VSU 945, conversion from TR7 with exact part, Holley, LSD etc., £6,250. (E-Type forces sale). 081-785 7207 (H), 09323 40666 (W). (964111)

PORSCHE 911 CARRERA 3.0, 1976, guards red, original RHD, chrome trim, good body, strong motor, fast and lovely example of this scarce model, £18,000 o.n.o. Austin Healey 3000 Roadgoing Racer, 1959, 100/6 with 3000 motor, triple SUs, fully prepared and raced in Healey Series, eligible FIA races, Coppa, Marathon etc., beautiful machine with long and well known history with original well-known number plate, POA. Audi 100cc Avant Auto Estate, 1984, 76,000 careful miles mostly by ex-wife, virtually unmarked silver with grey interior, FSH, bargain motoring at £3,200 o.n.o. Tel: 0379 852658 (Diss area). (964167)

WANTED — **ASTON MARTIN** for restoration by AMOC member. (0932) 786819 daytime or (0932) 853085 evenings (Private sale). (PF)

TR3A OR 4A, must be UK and good. 061 962 5126. (232737)

LOTUS ELAN S4/SPRINT DHC, would consider rebuild. 0565 872143. (232737)

BUGATTI WANTED. Göran Möllberg, Box 268, Karlstad, Sweden. (30353)

MG PA, PB, TA, TB, in reasonable order. Telephone (W) 061 491 1889, (H) 0477 35522. (CC076860)

MOTOR RACING ART, memorabilia, ex-works parts wanted. Europe's leading specialists pay top prices for original art, posters, autographs, photographs, documented damaged GP, Sports engines, parts etc. Details to: Thackwell Motorsports Group, P.O. Box 22, Twyford, Berkshire RG10 9AA. (963633)

LAGONDA, 2 or 3 litre tourer with factory fitted body, good home offered by enthusiastic club member. 0322 78285. (963806)

WANTED — MASERATI, complete cars or spares, anything considered, club member. (0932) 853085 evenings. (PF)

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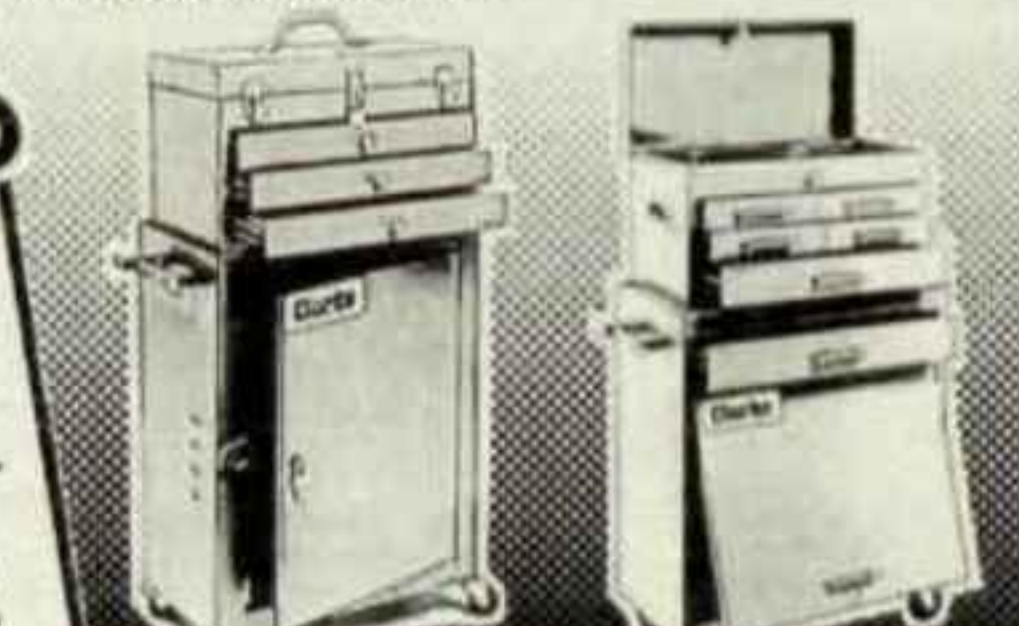
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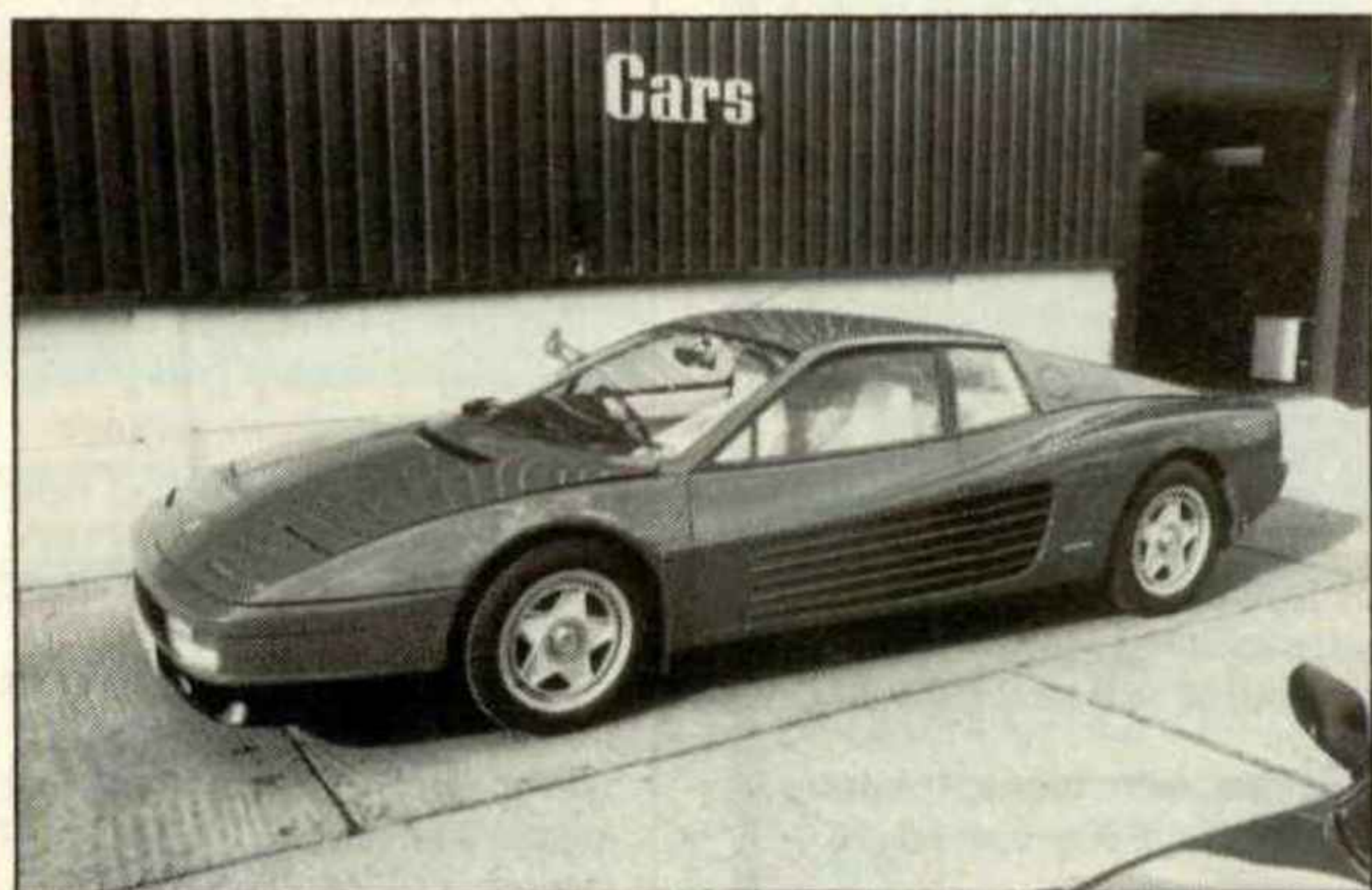
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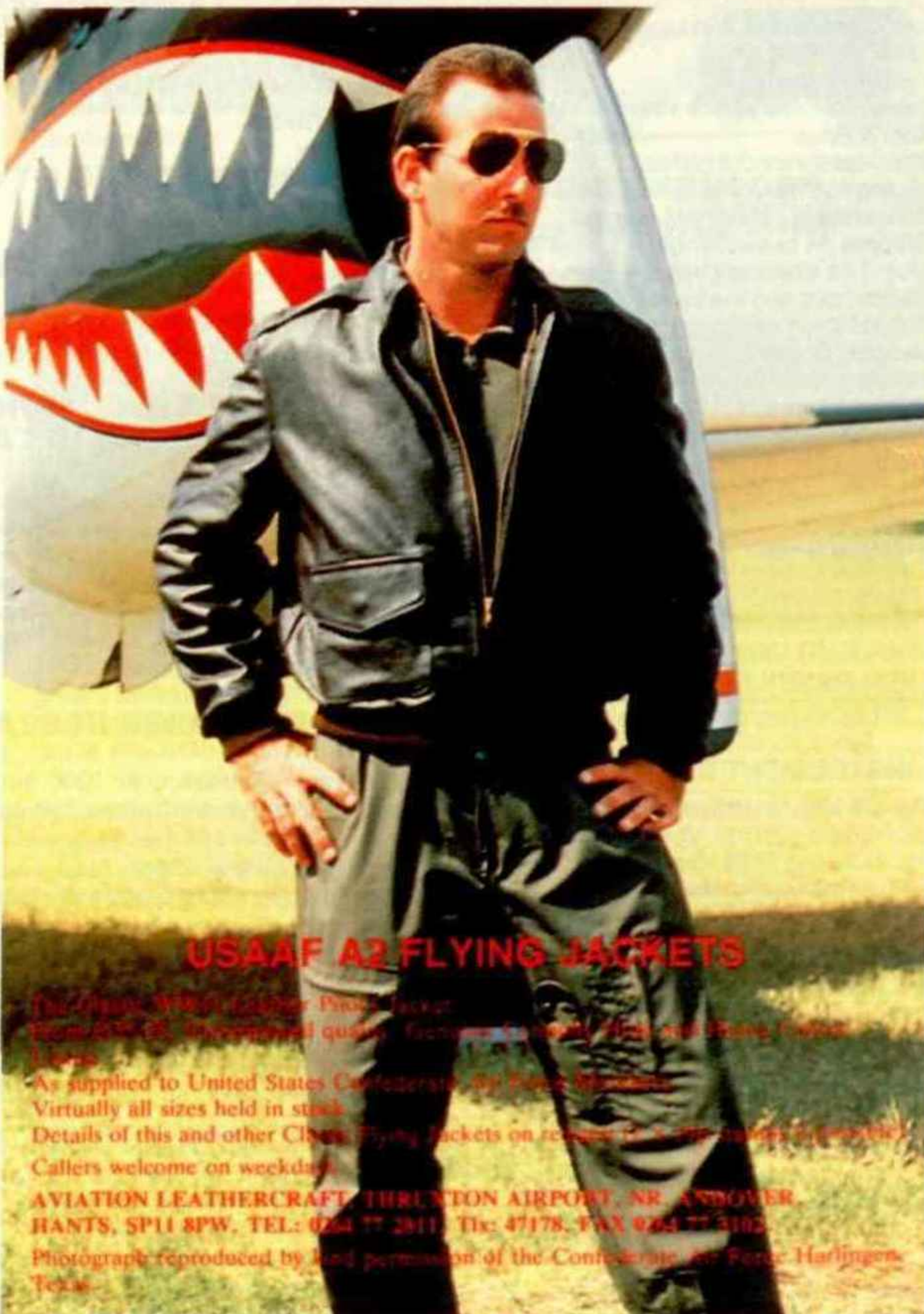
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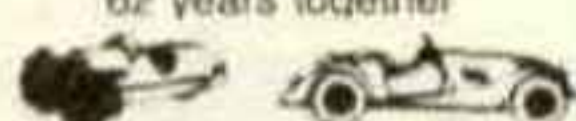


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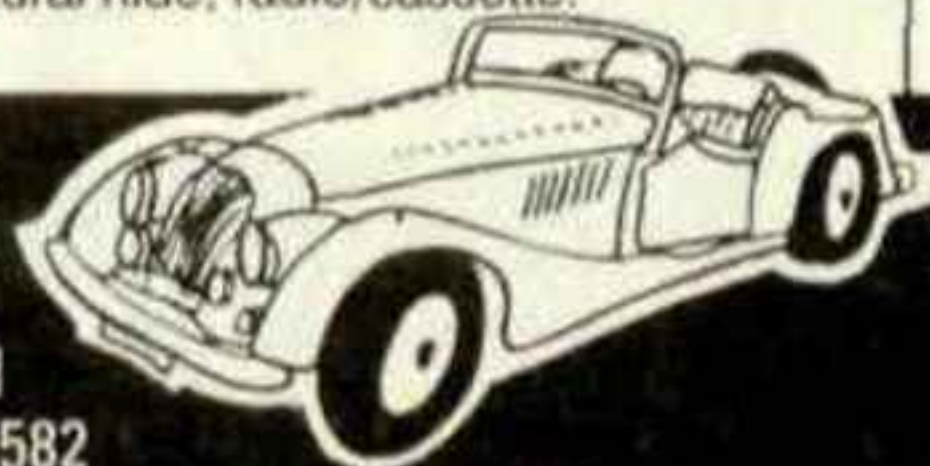
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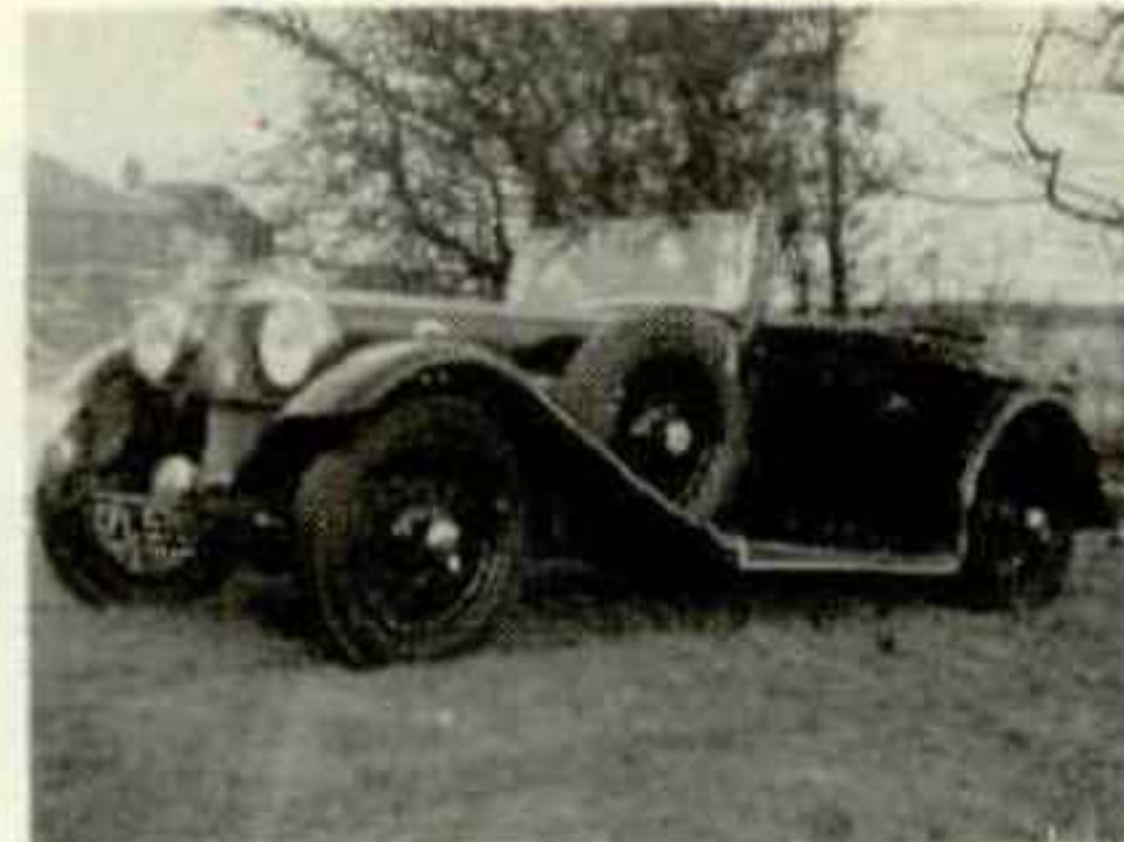
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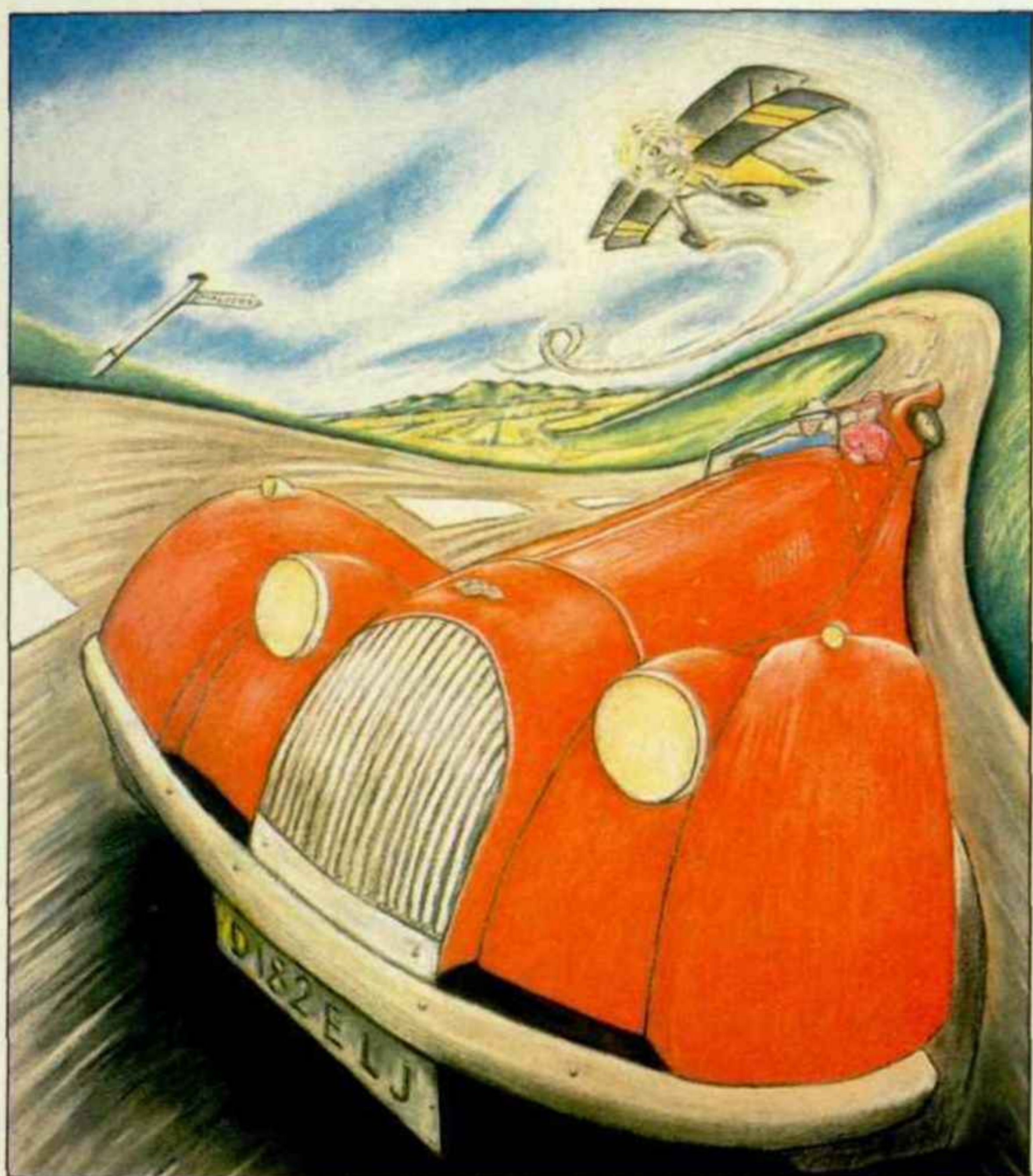
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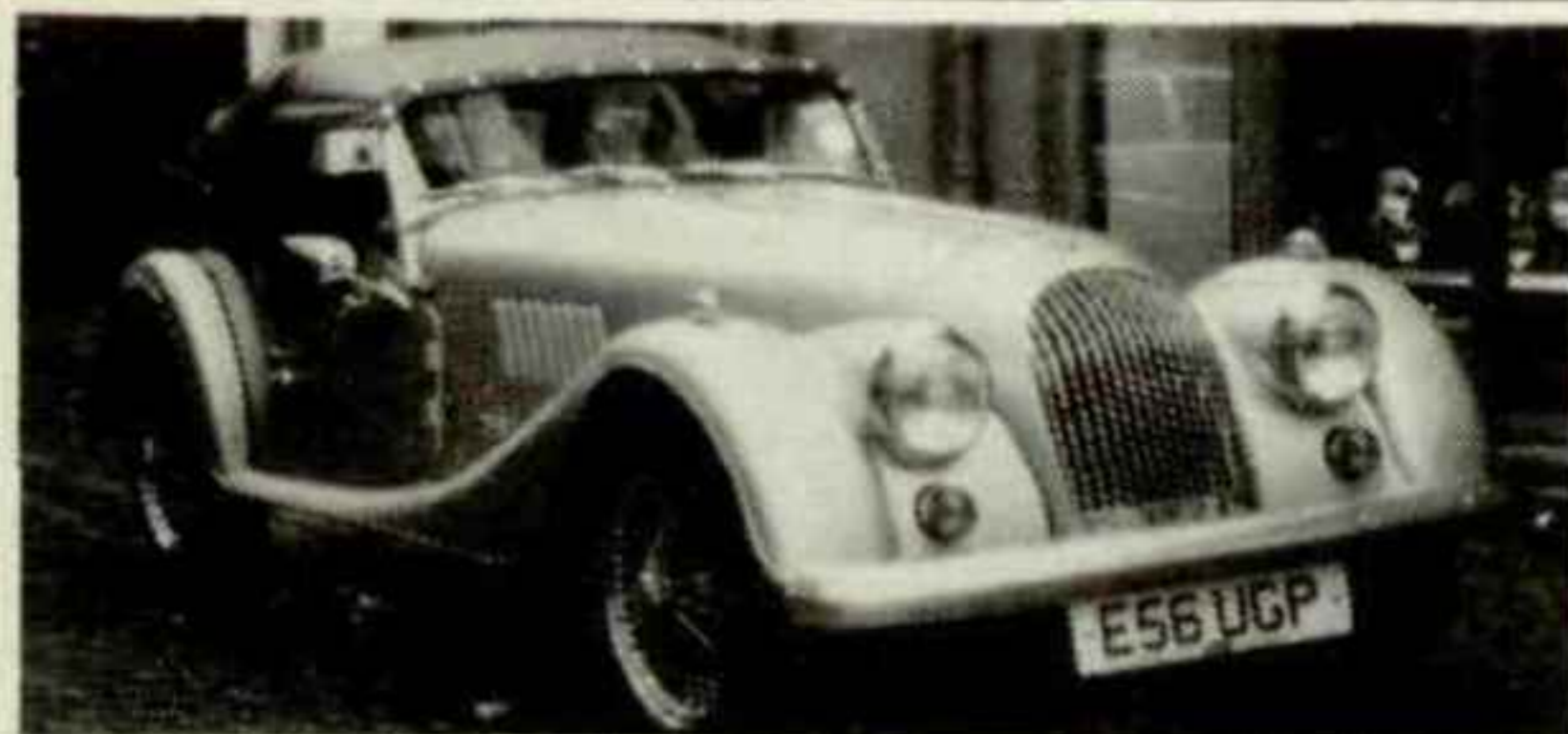
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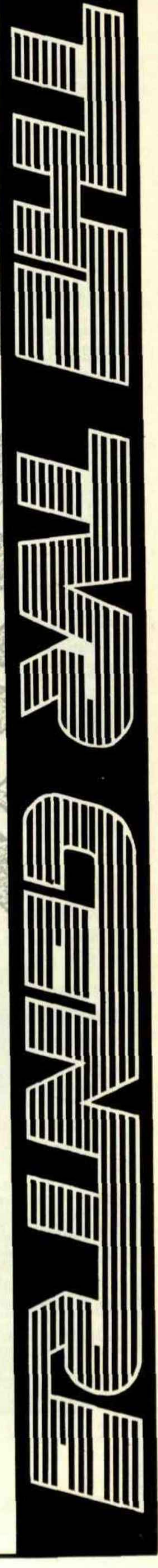
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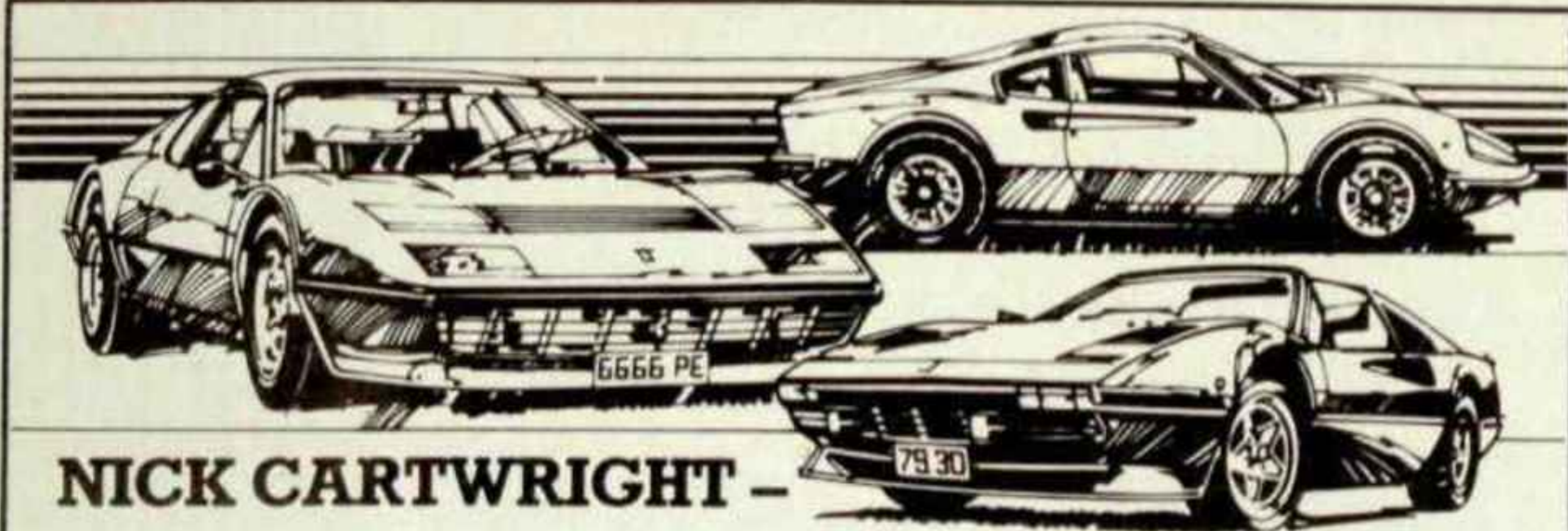
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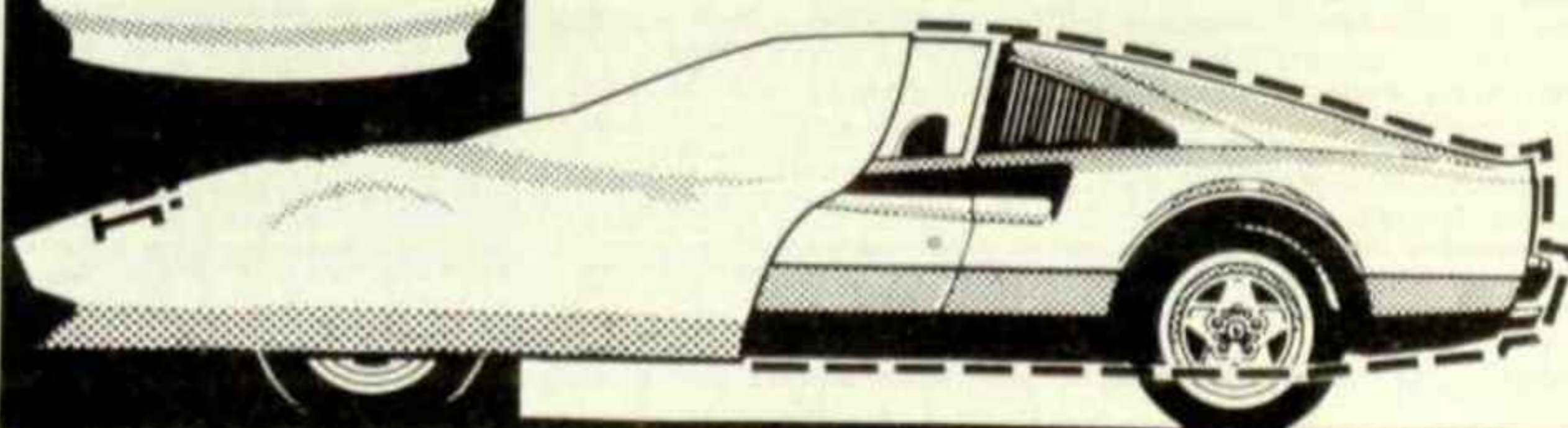
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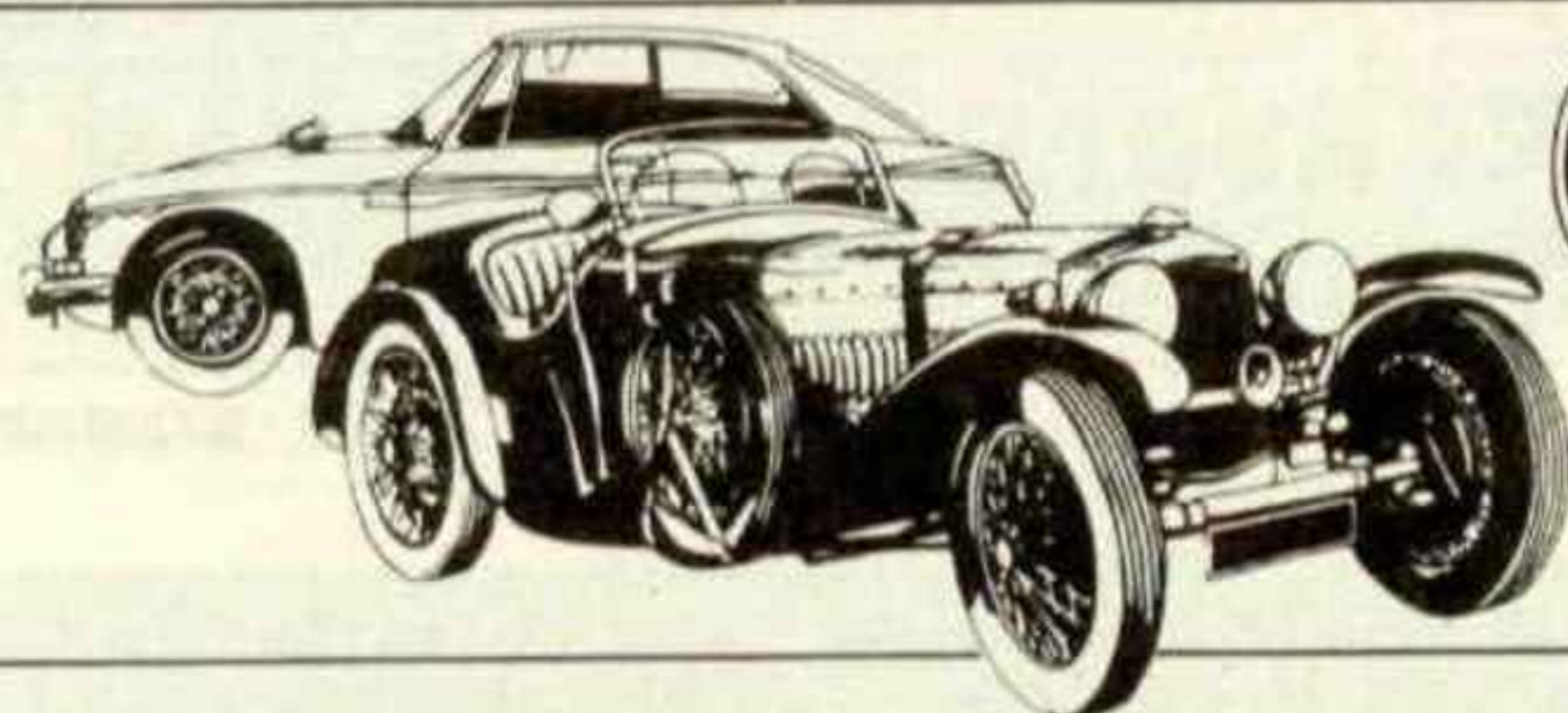
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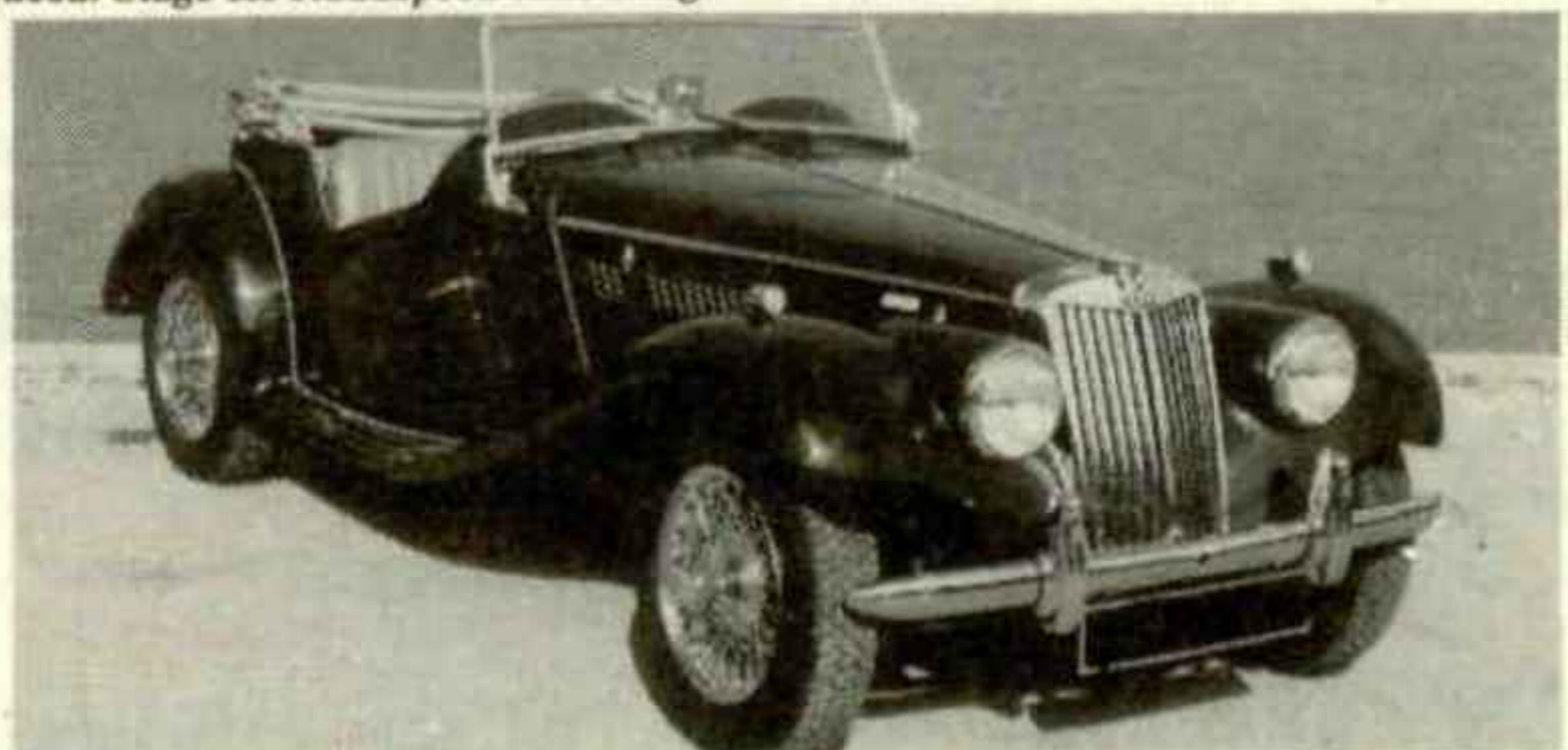
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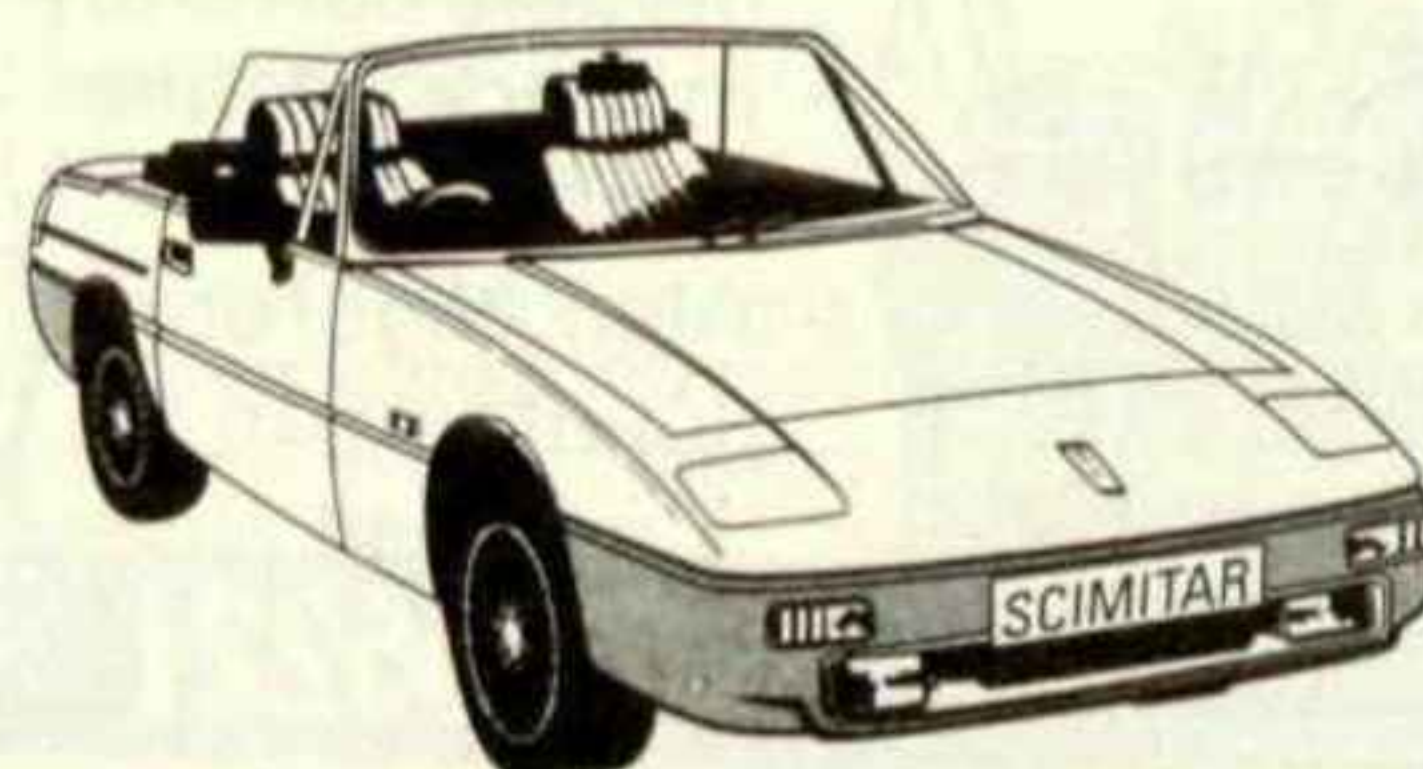
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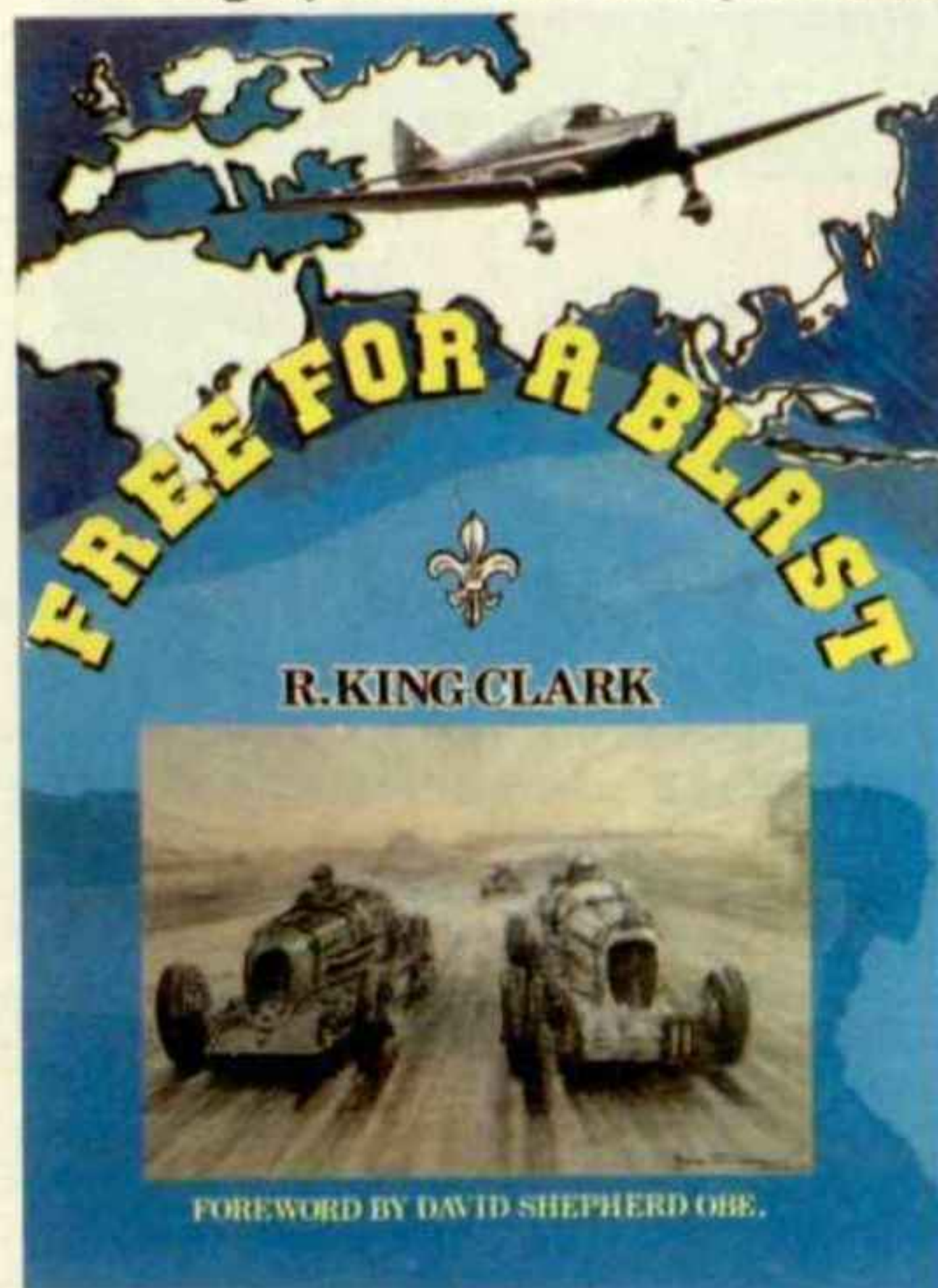
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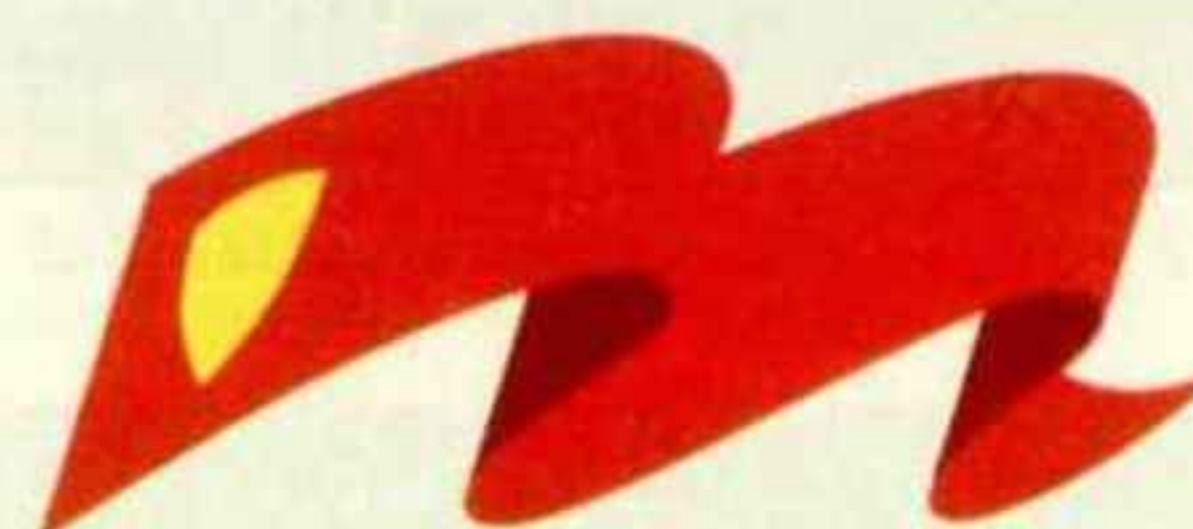
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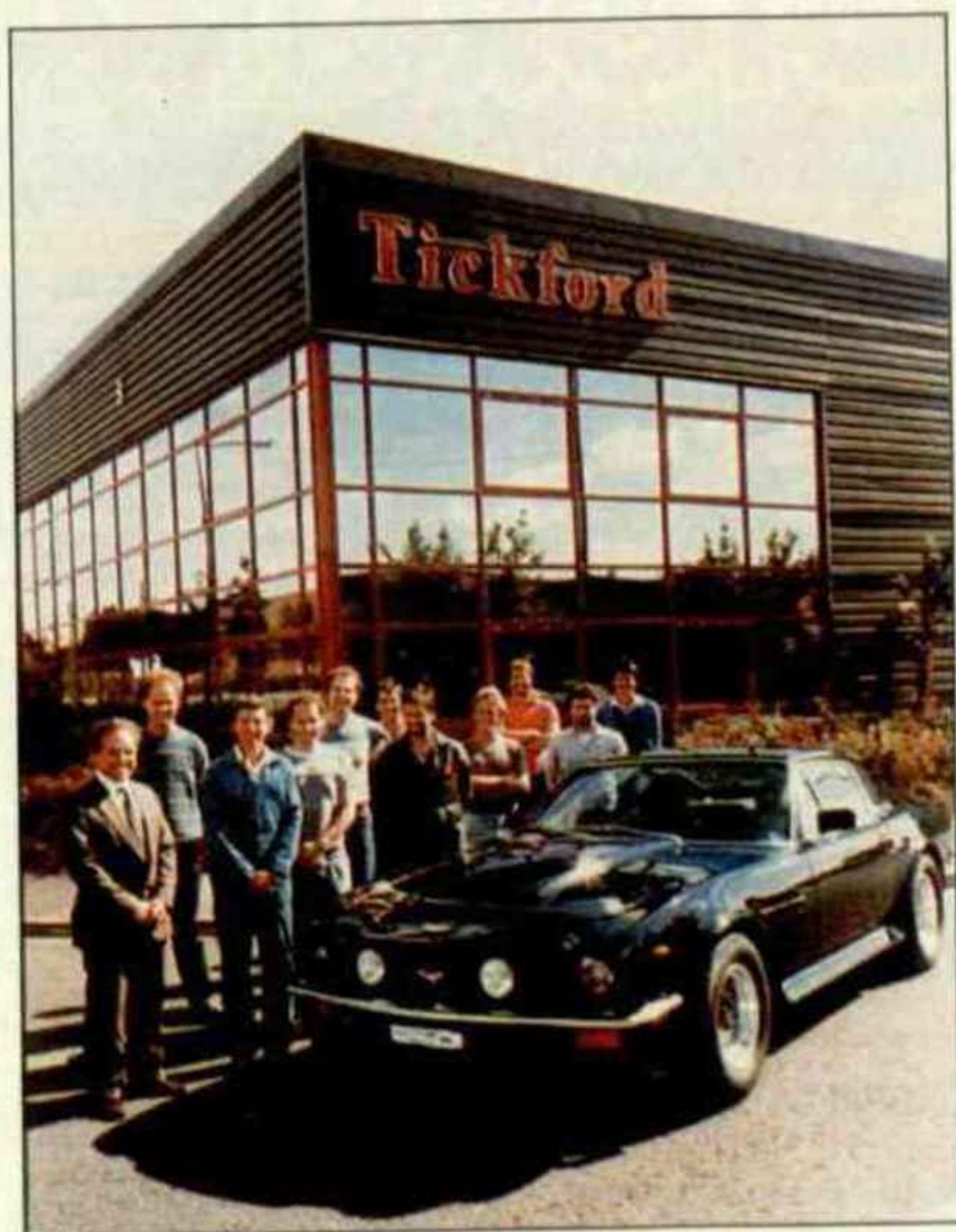
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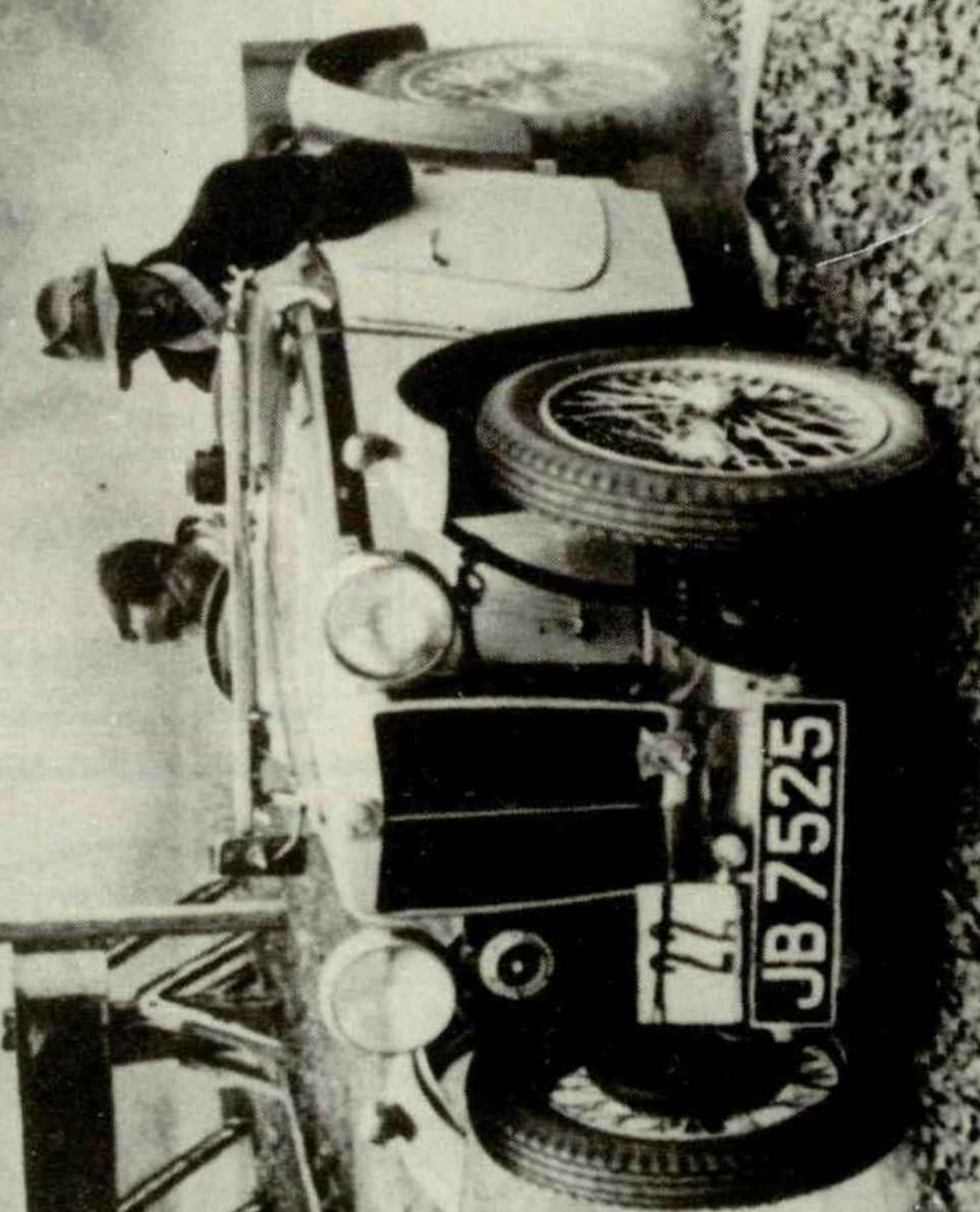
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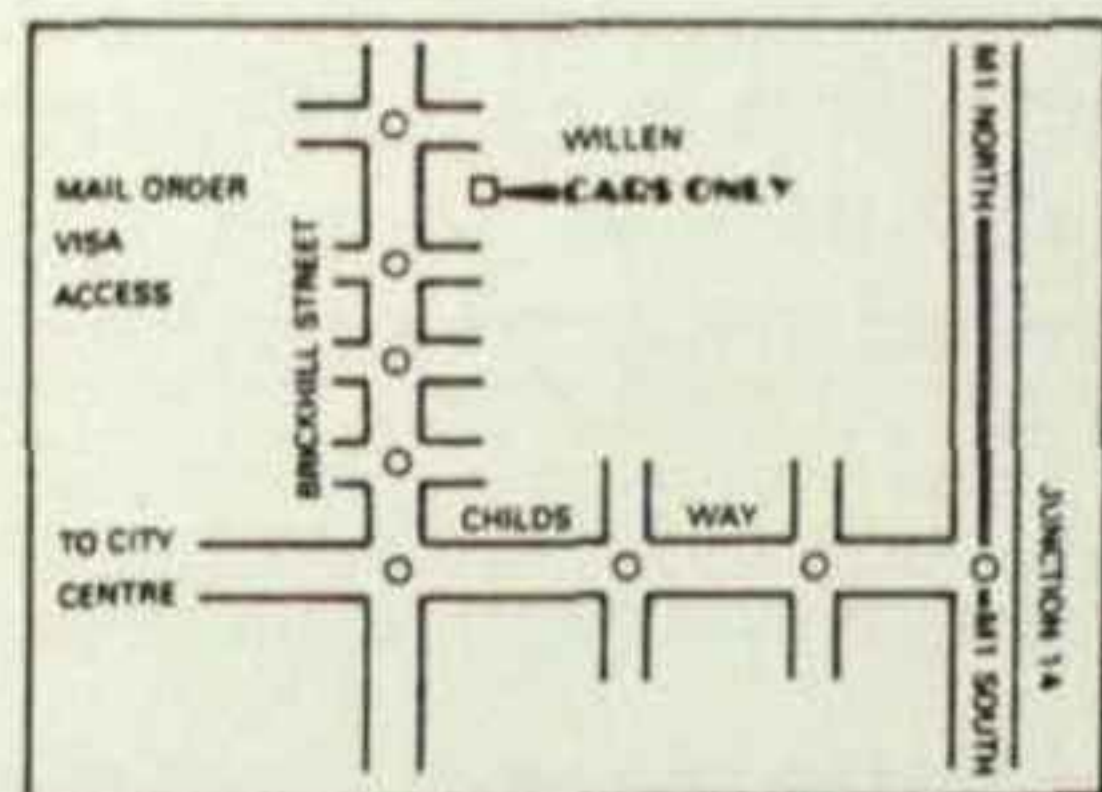
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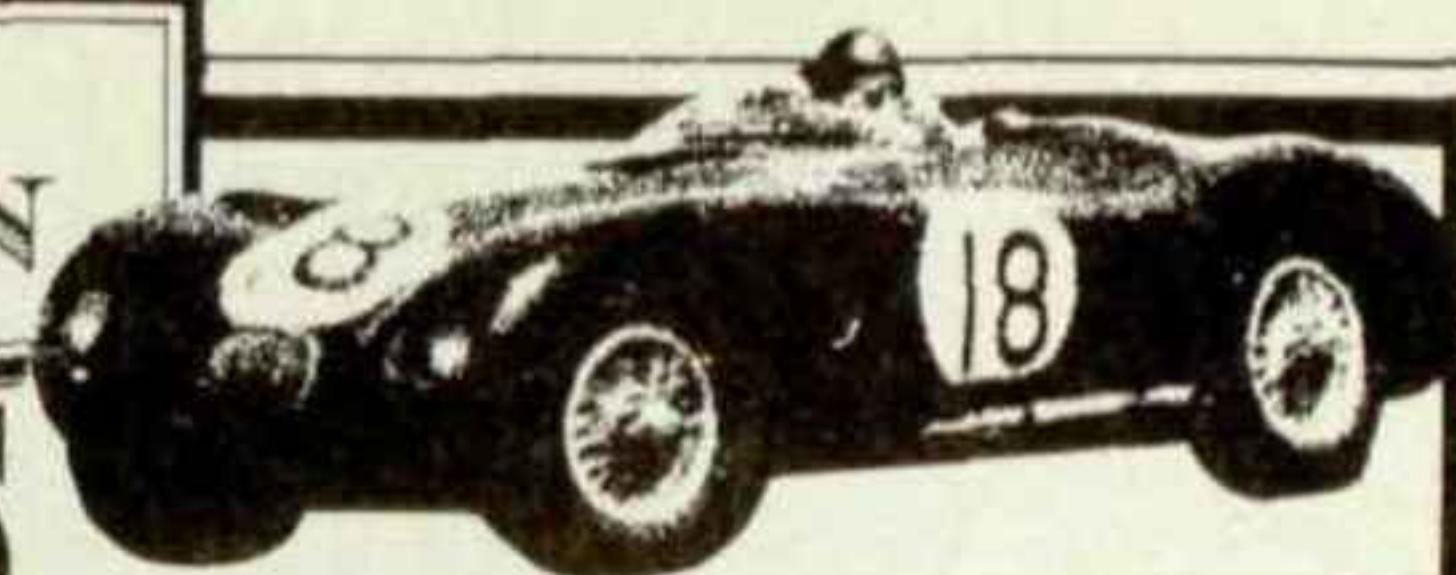
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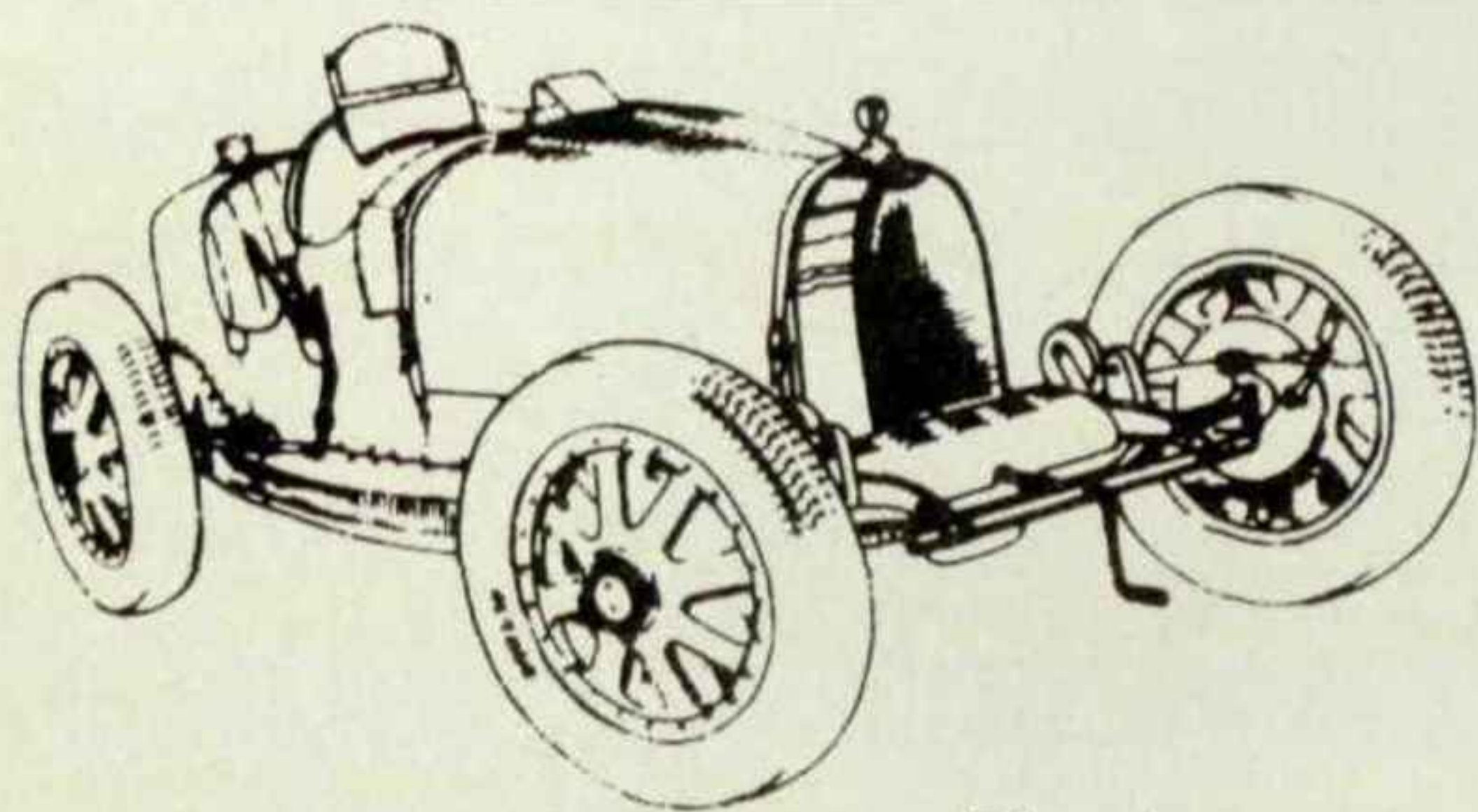
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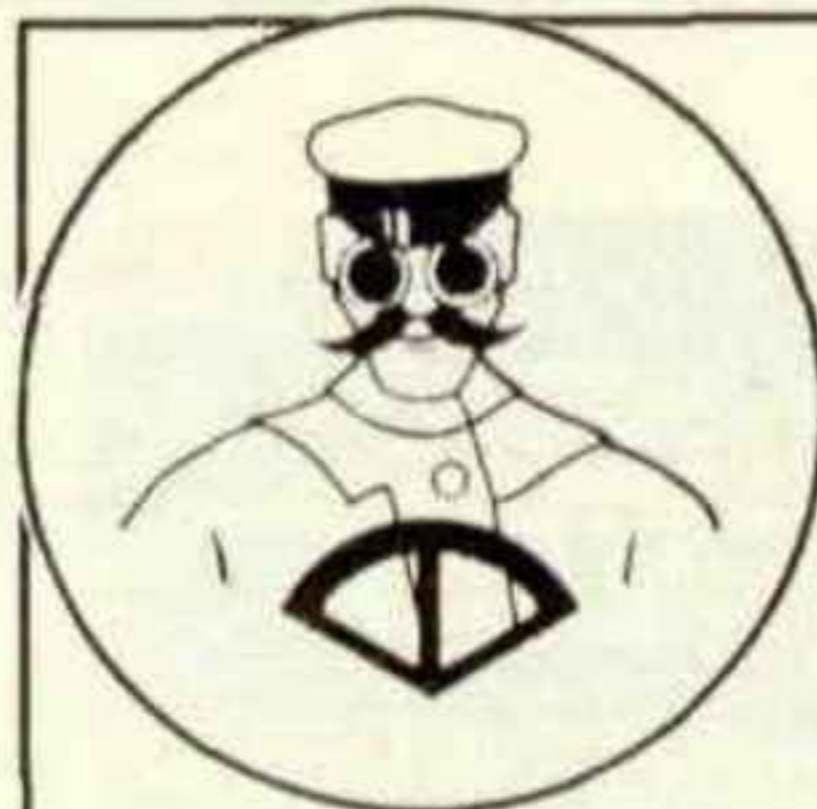
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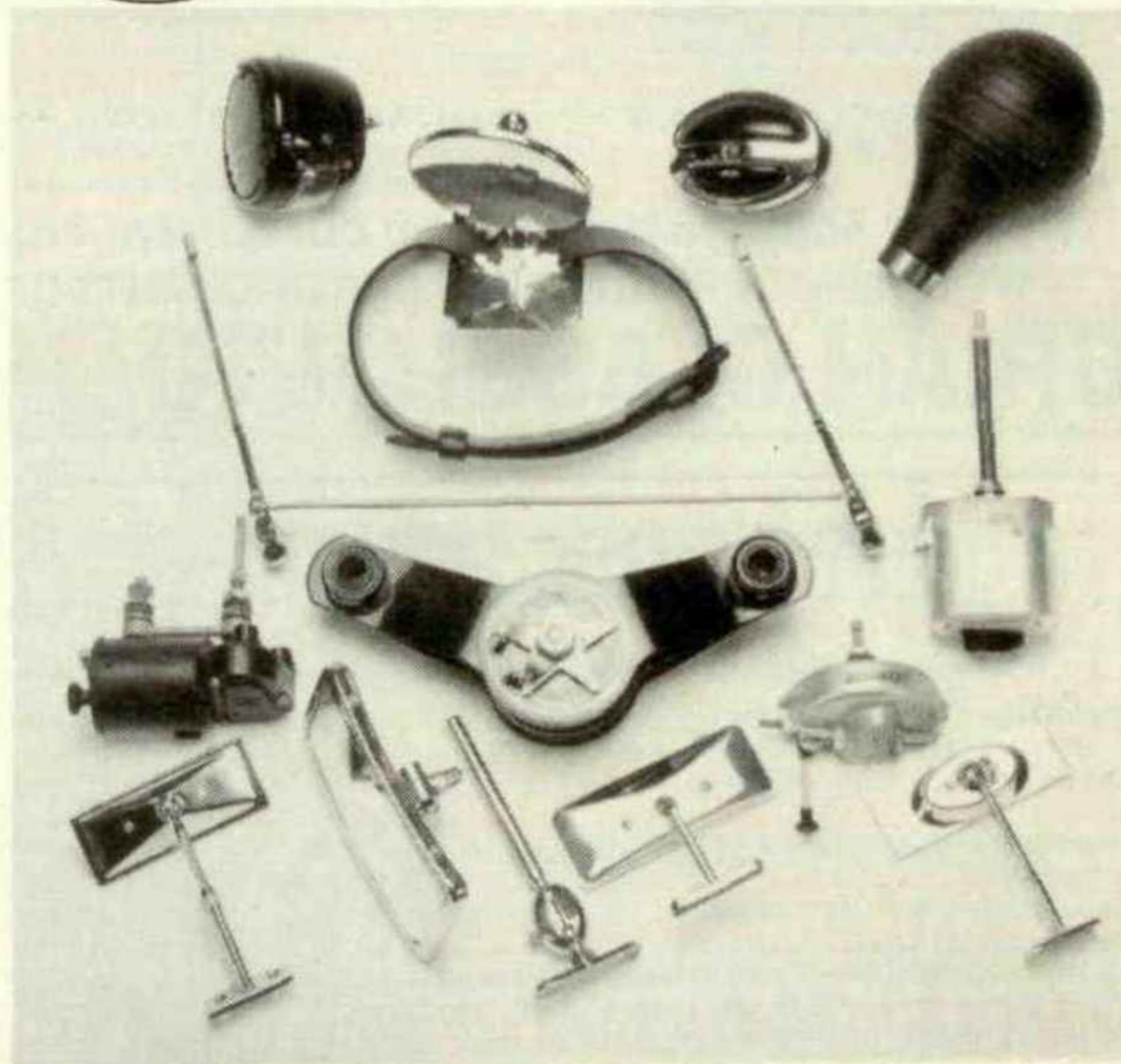
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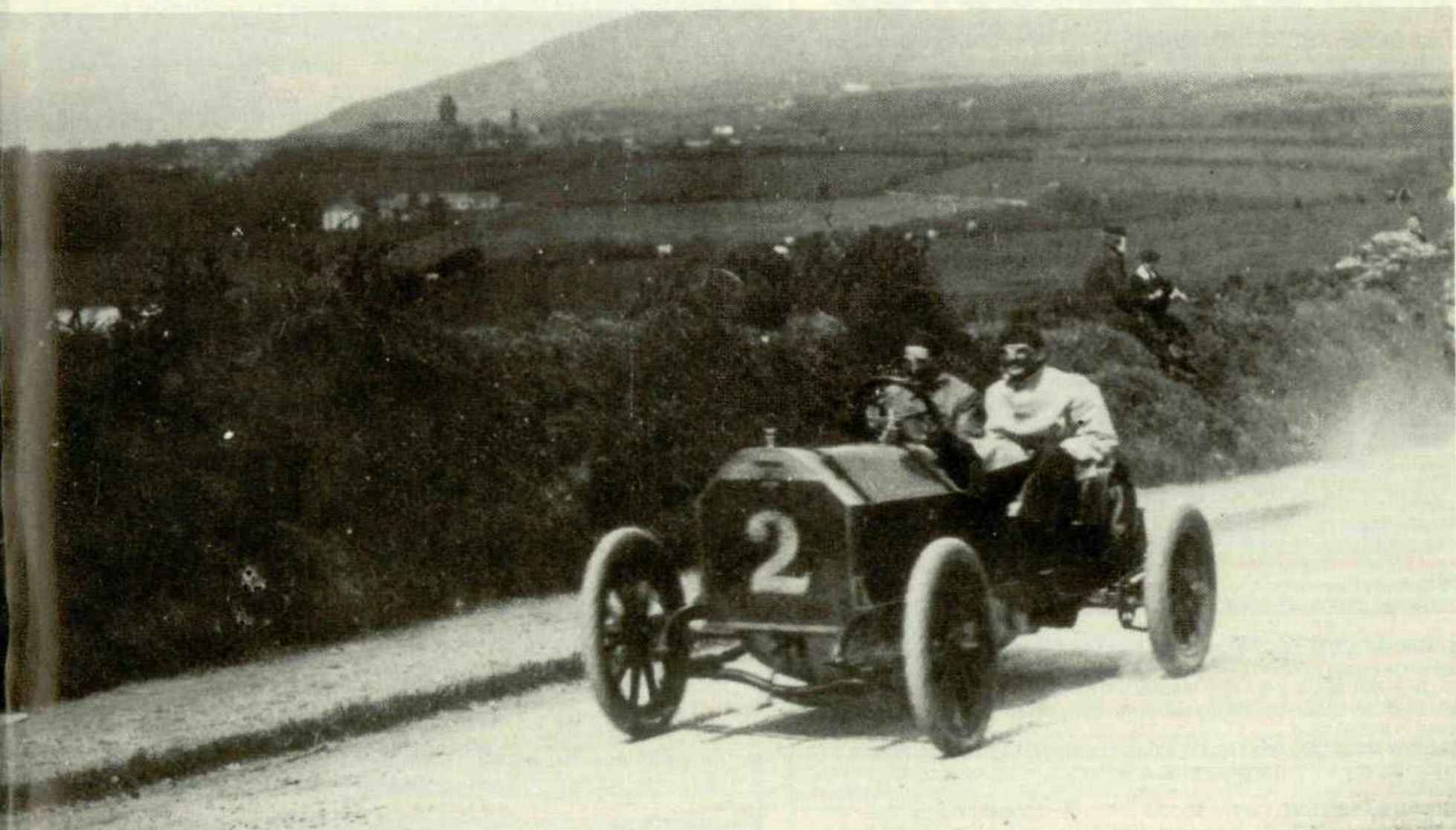
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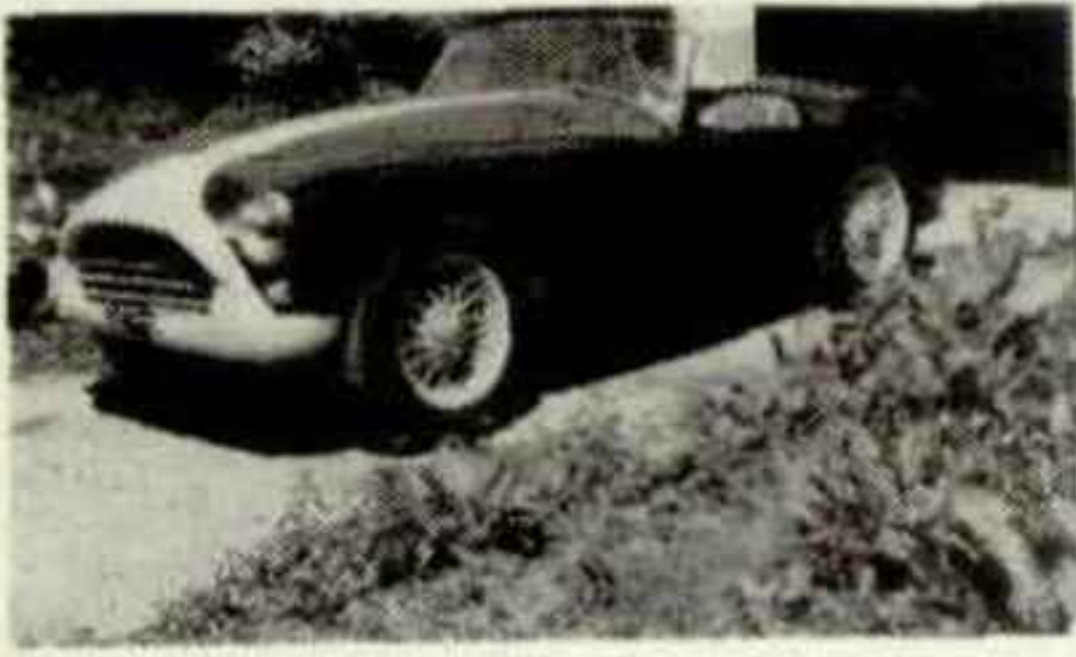
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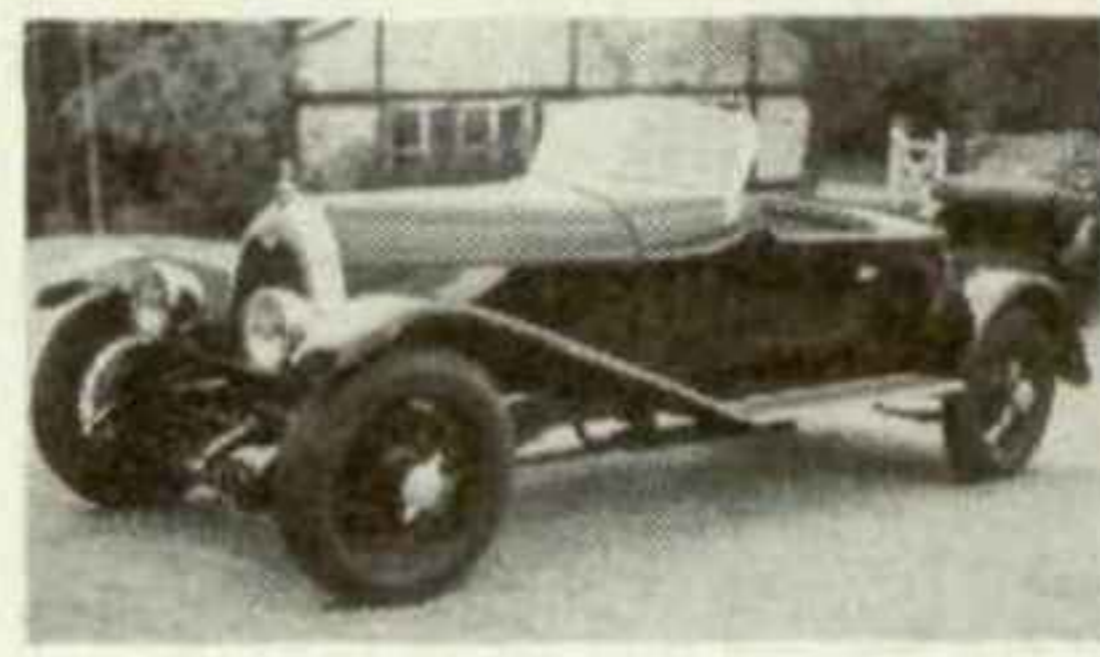
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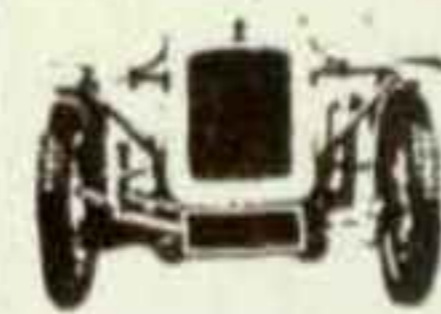
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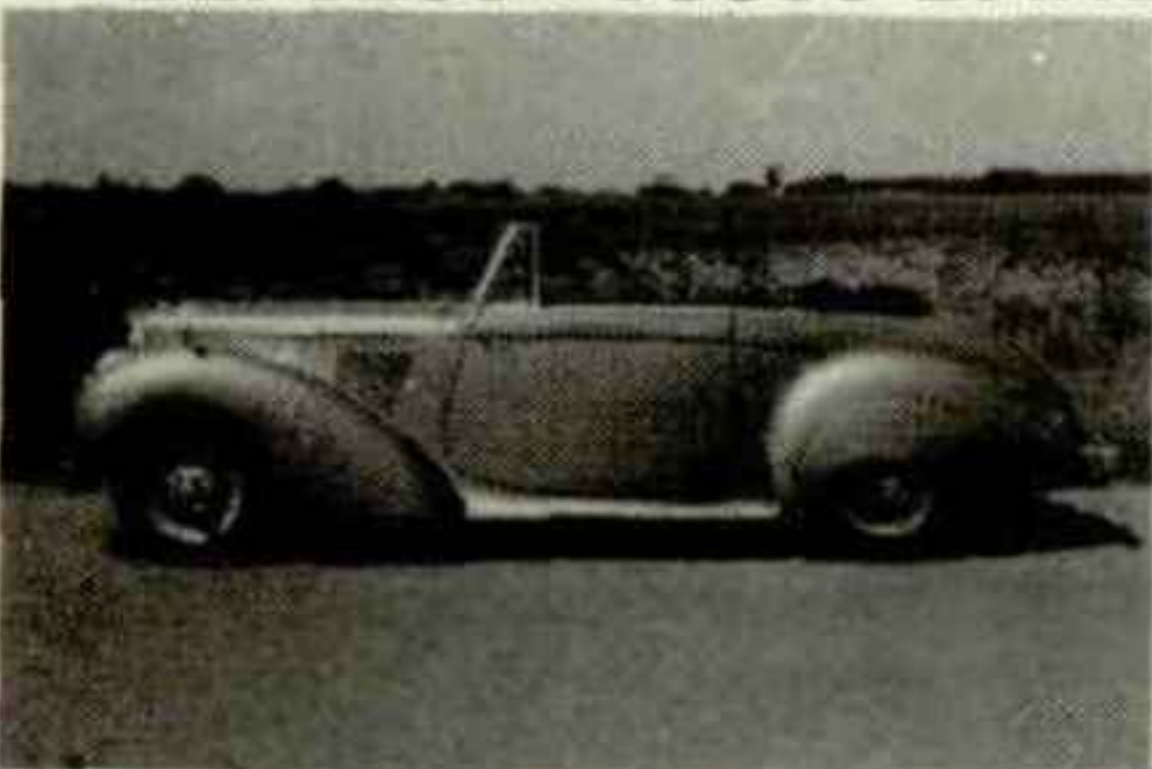
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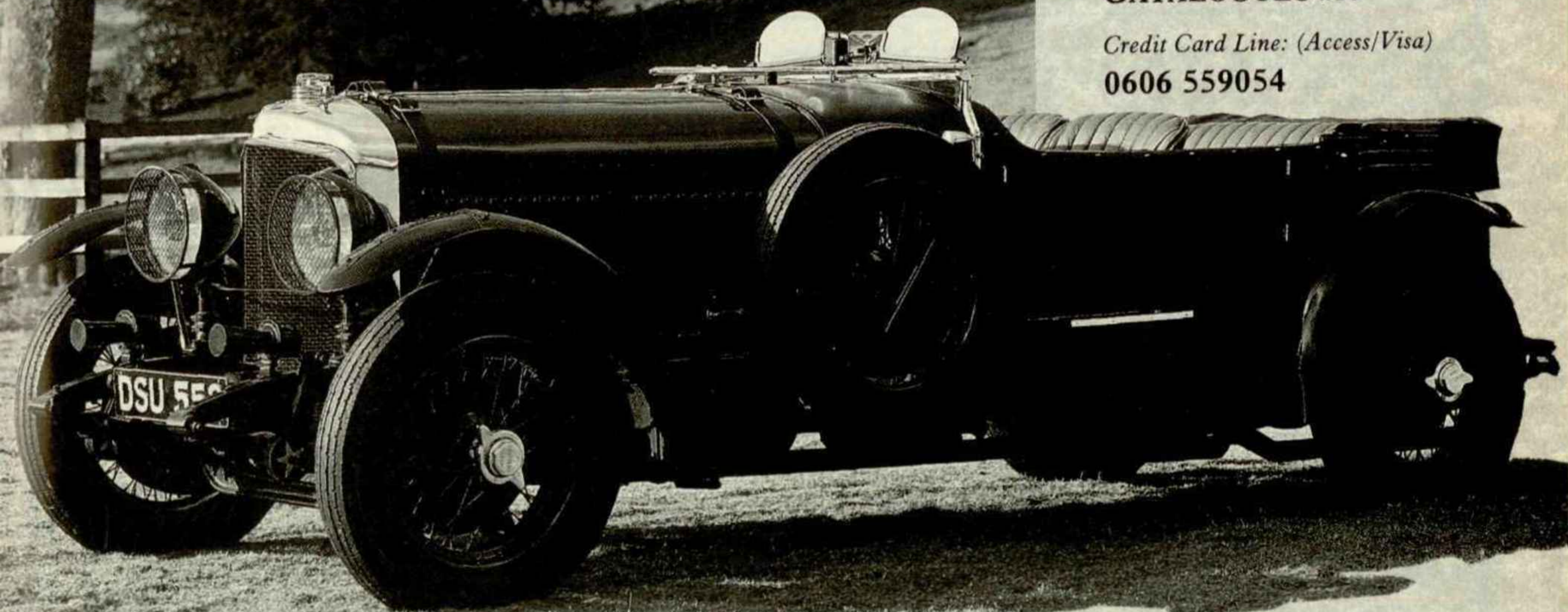
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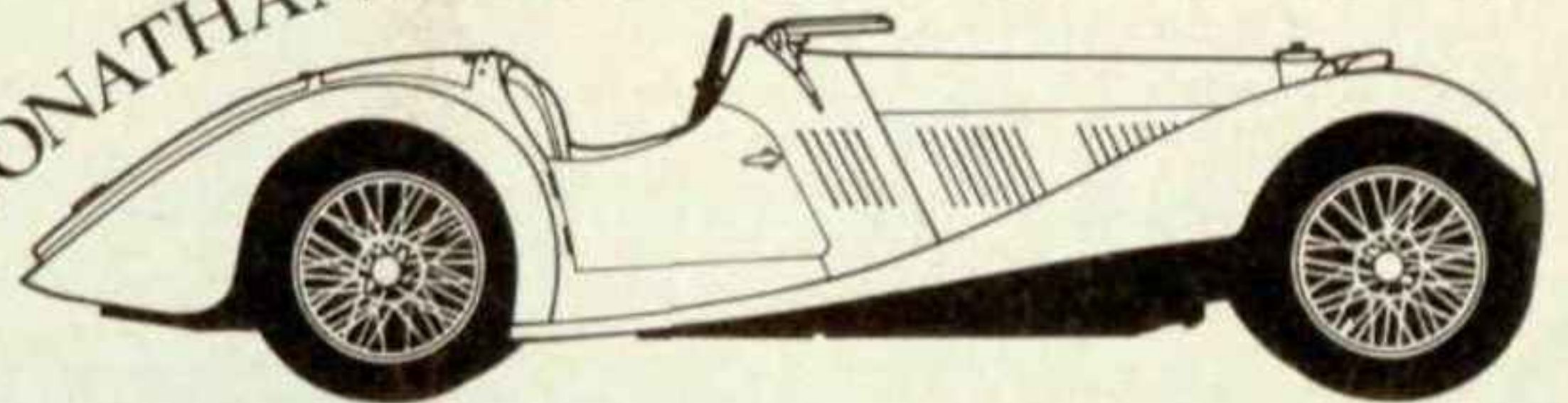
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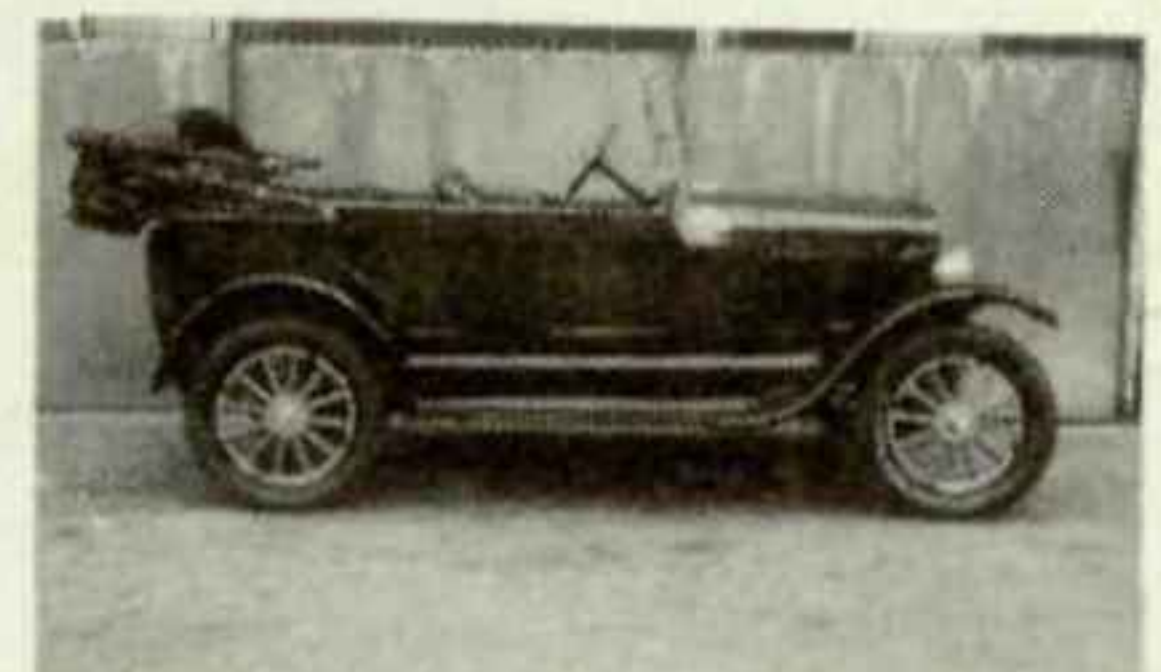
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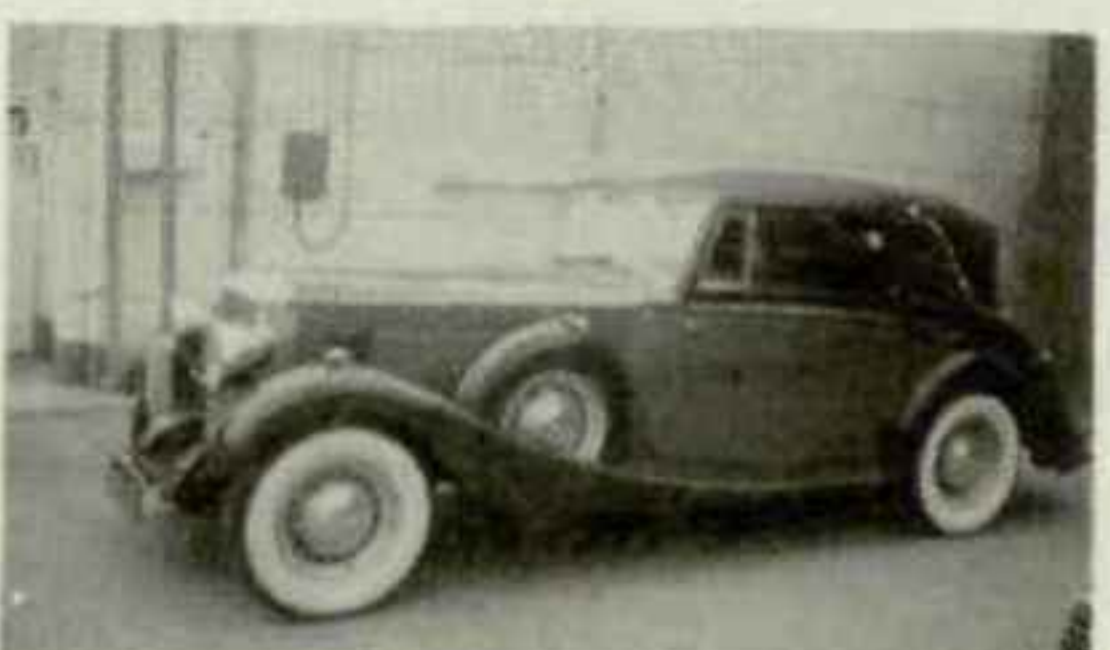
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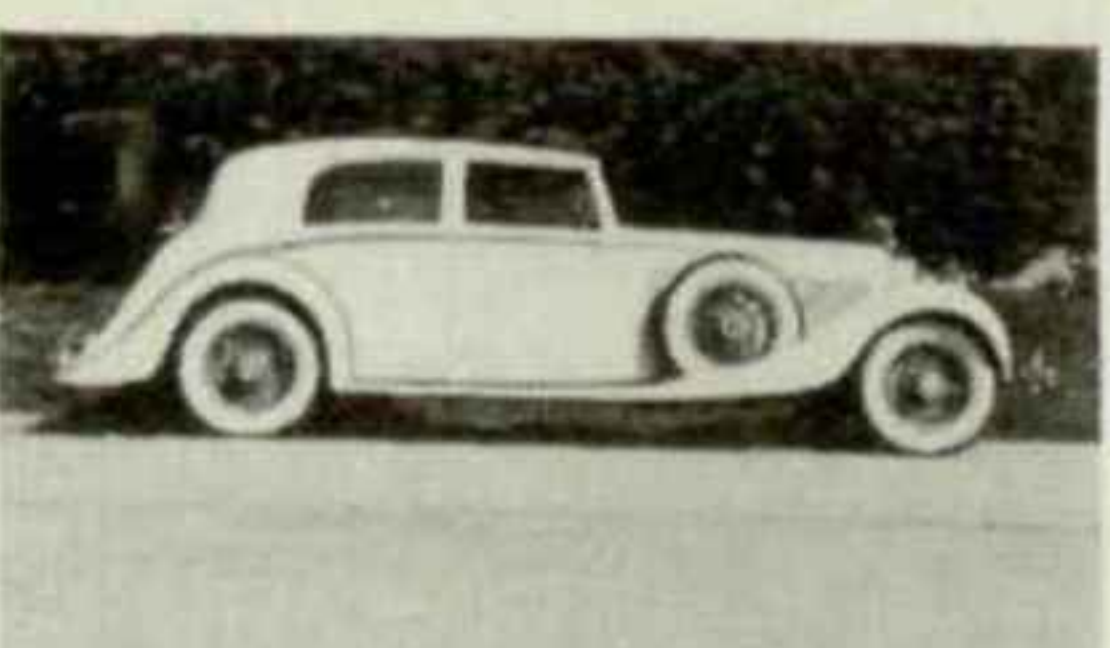
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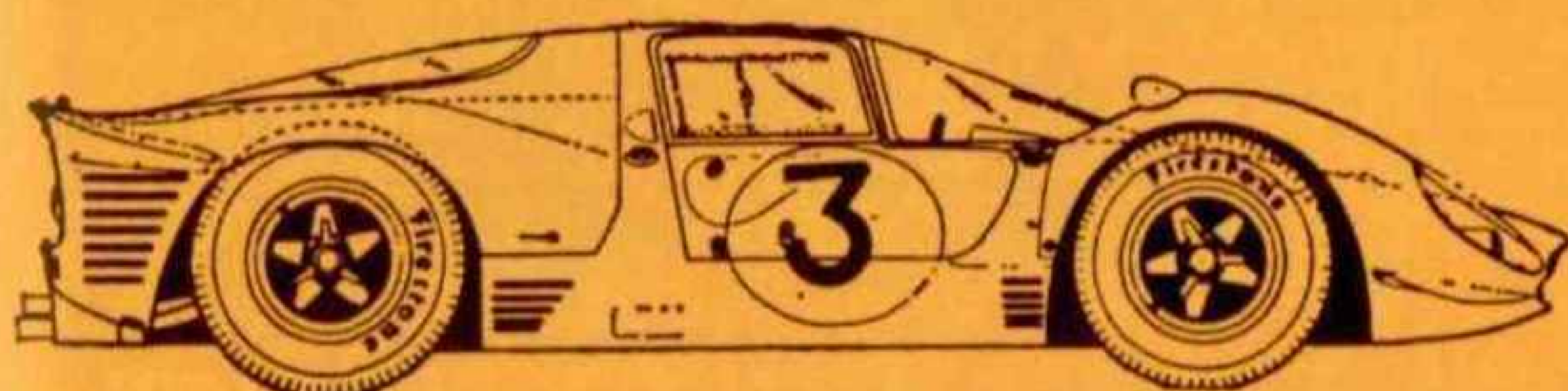
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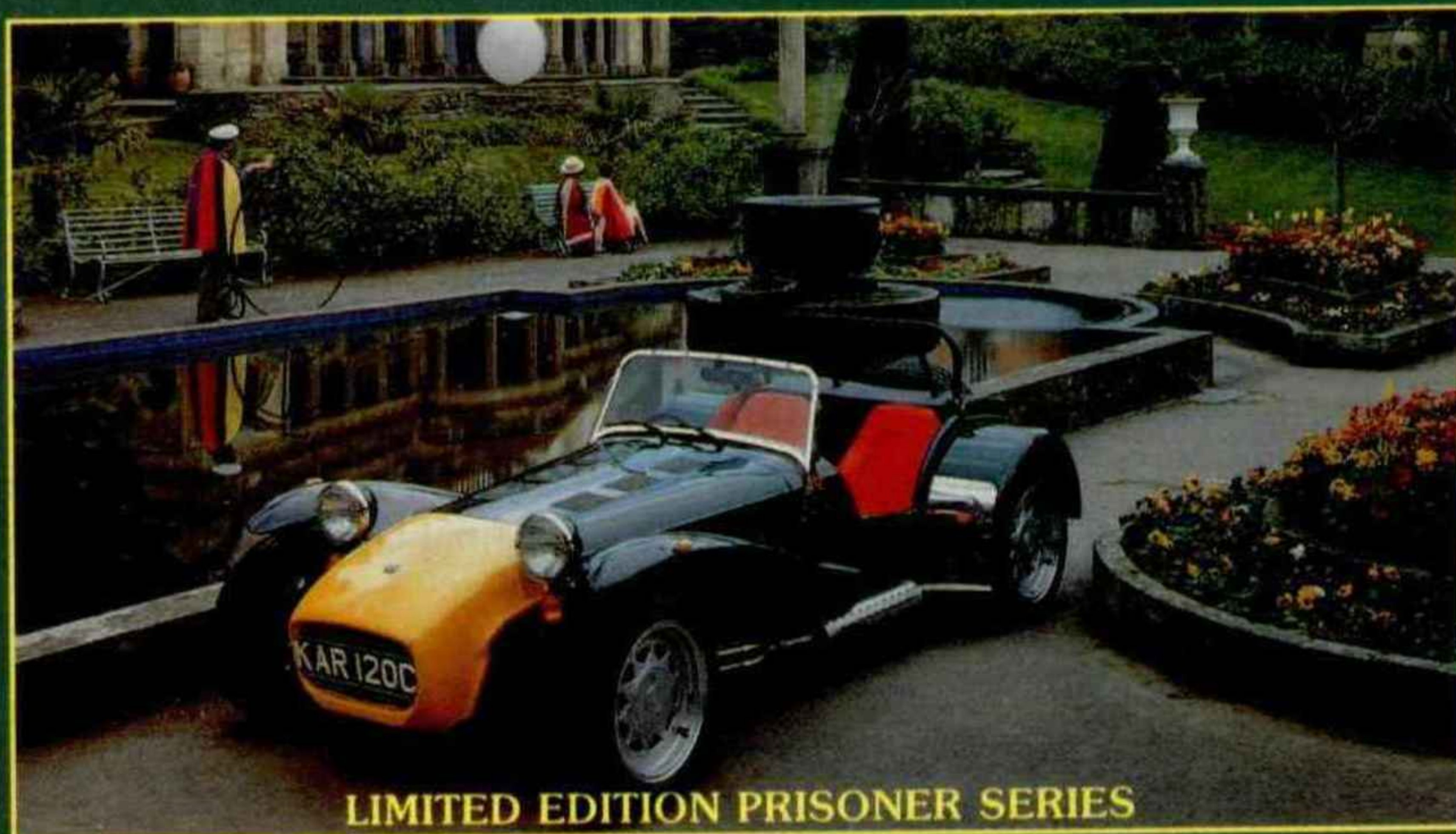
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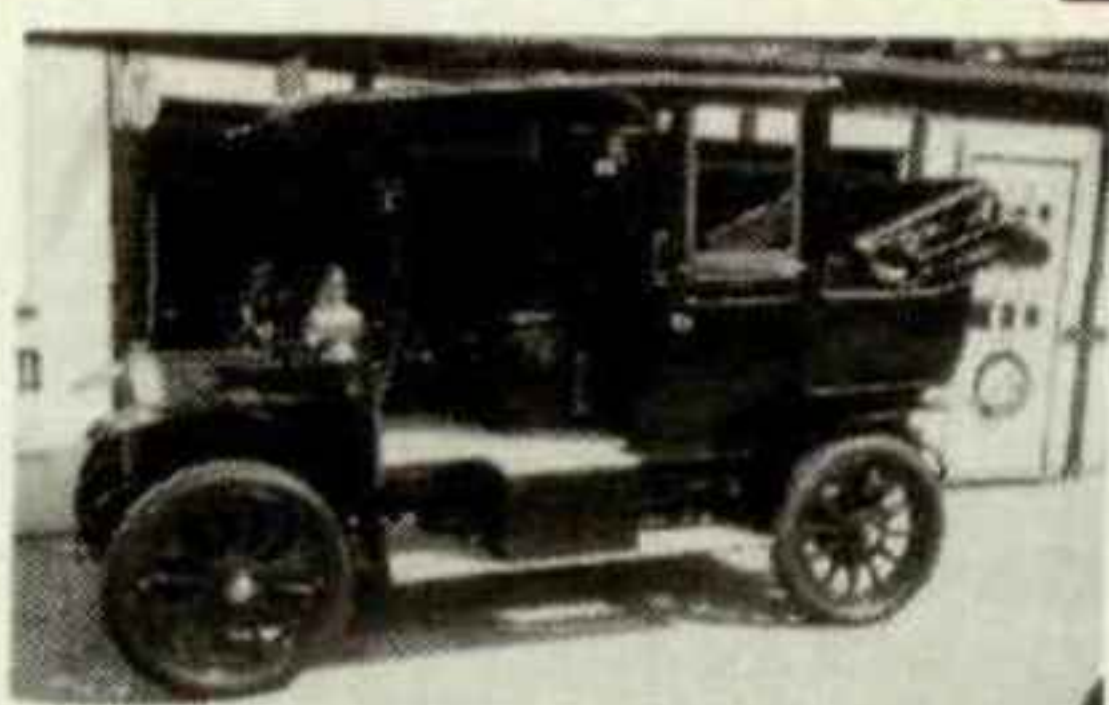
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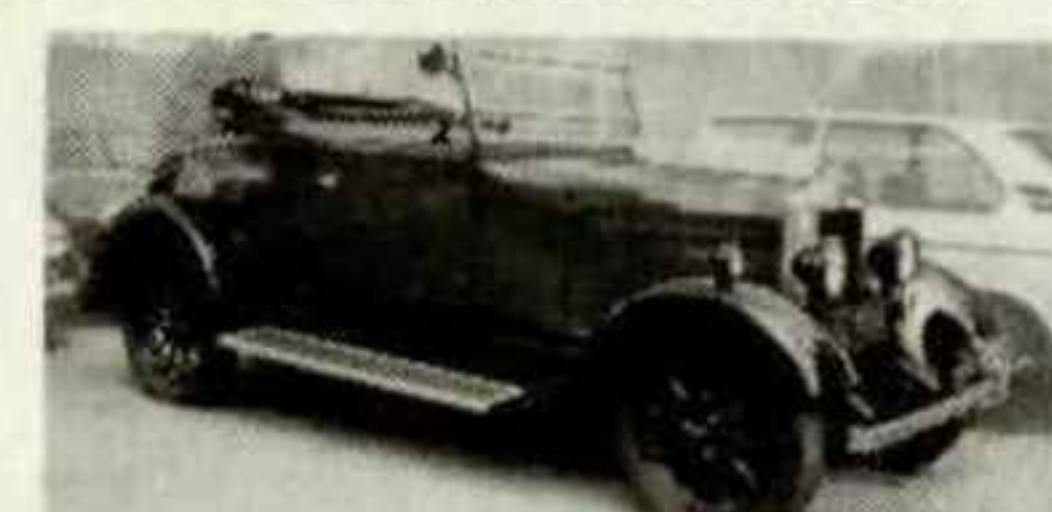
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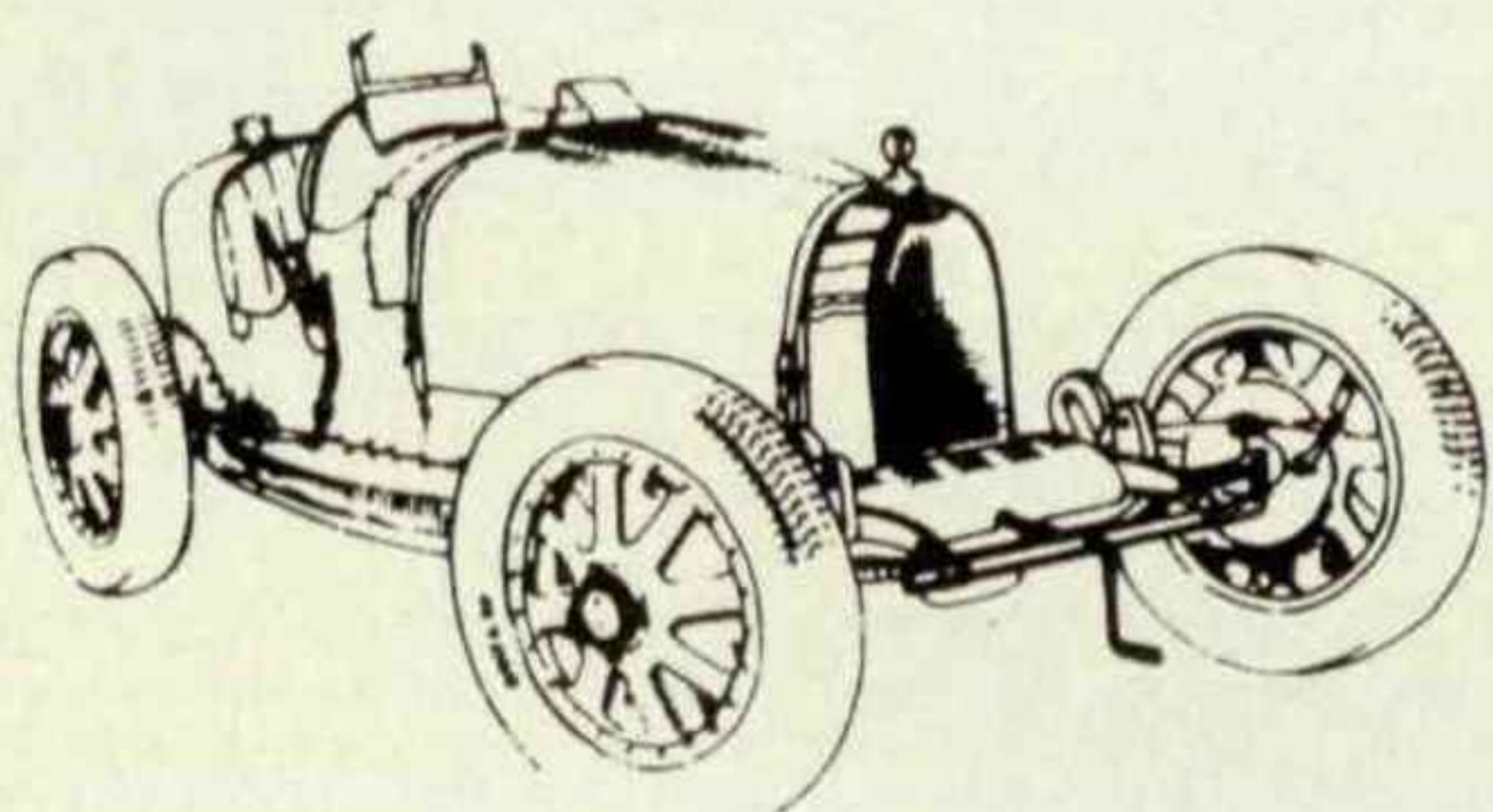
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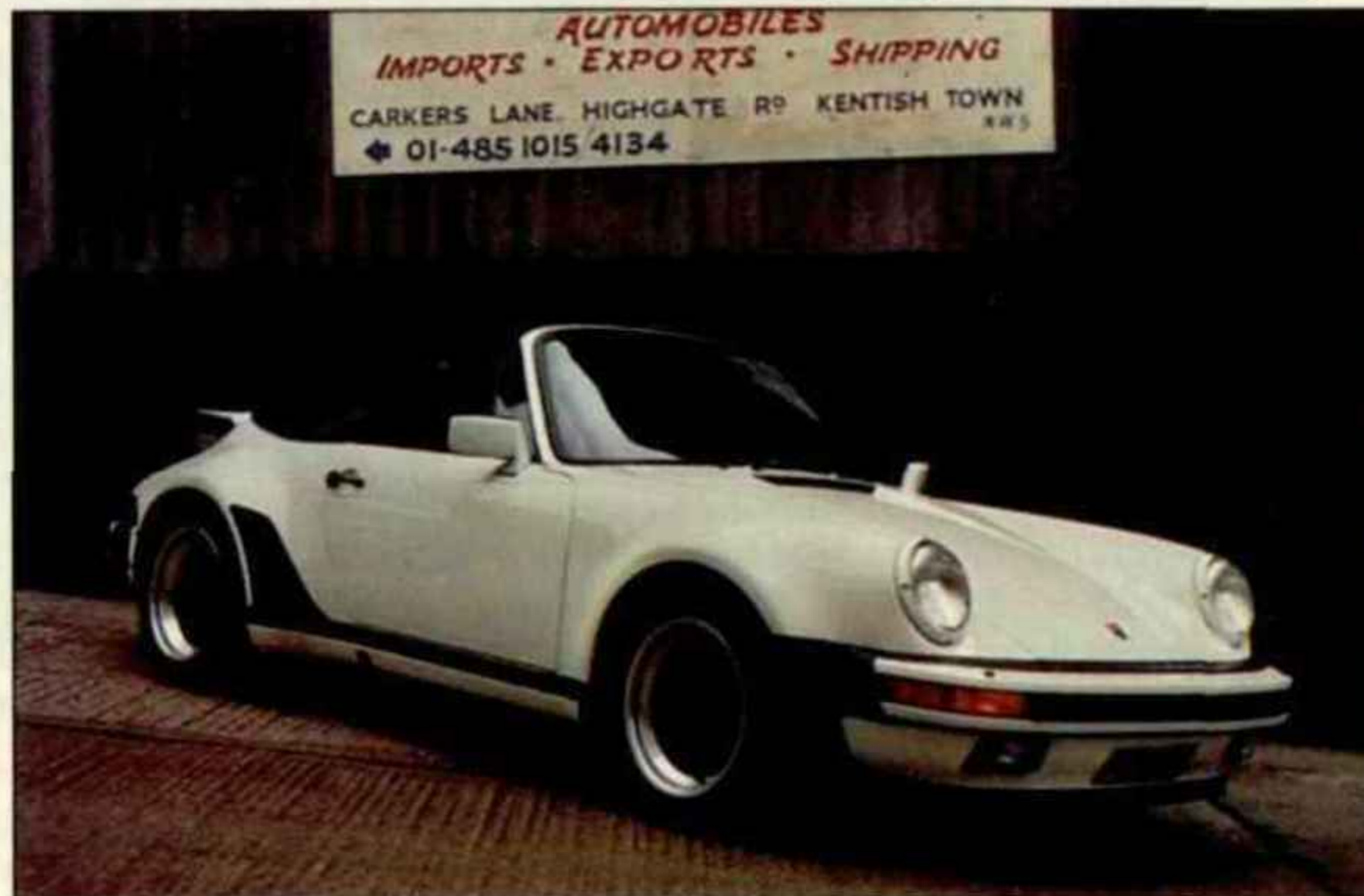
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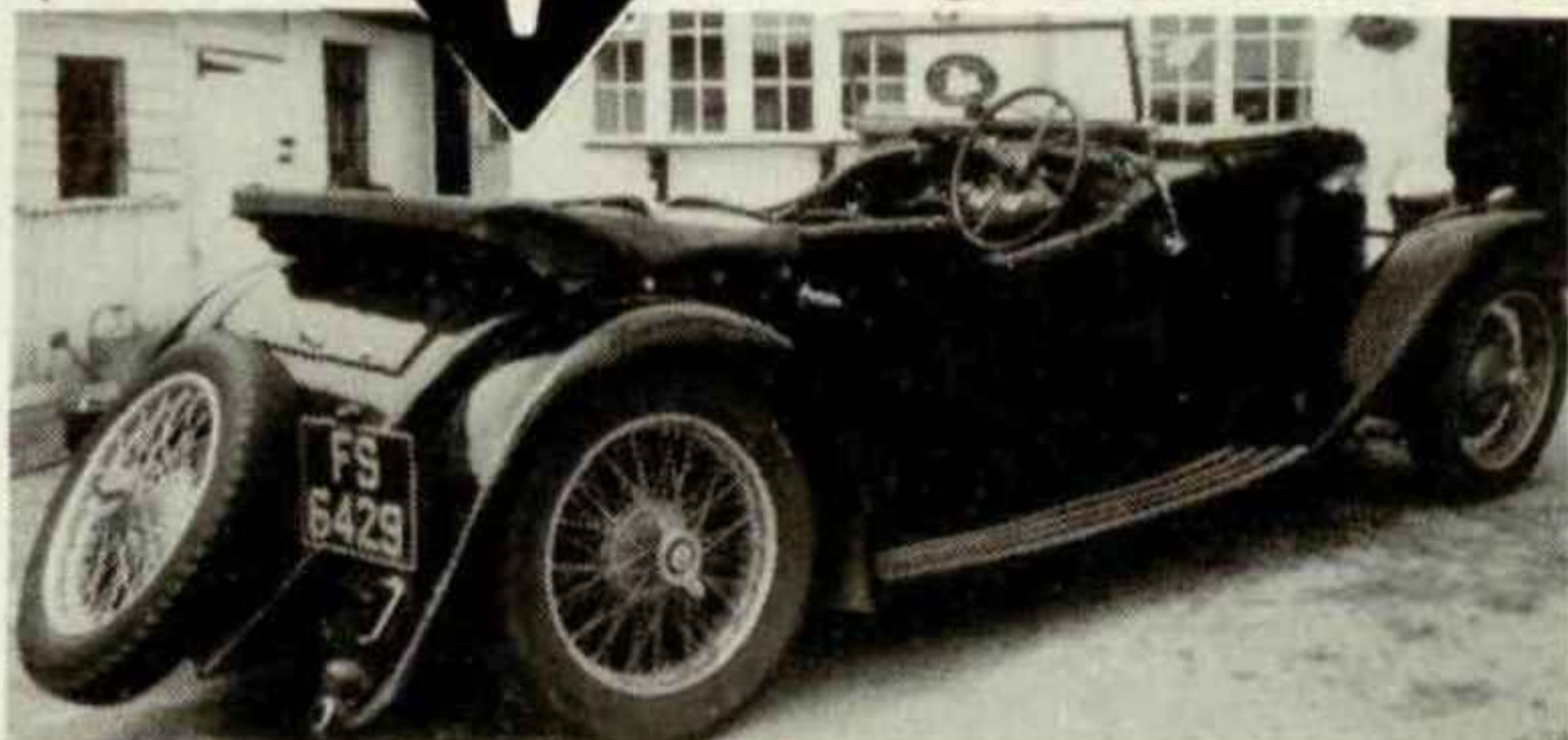
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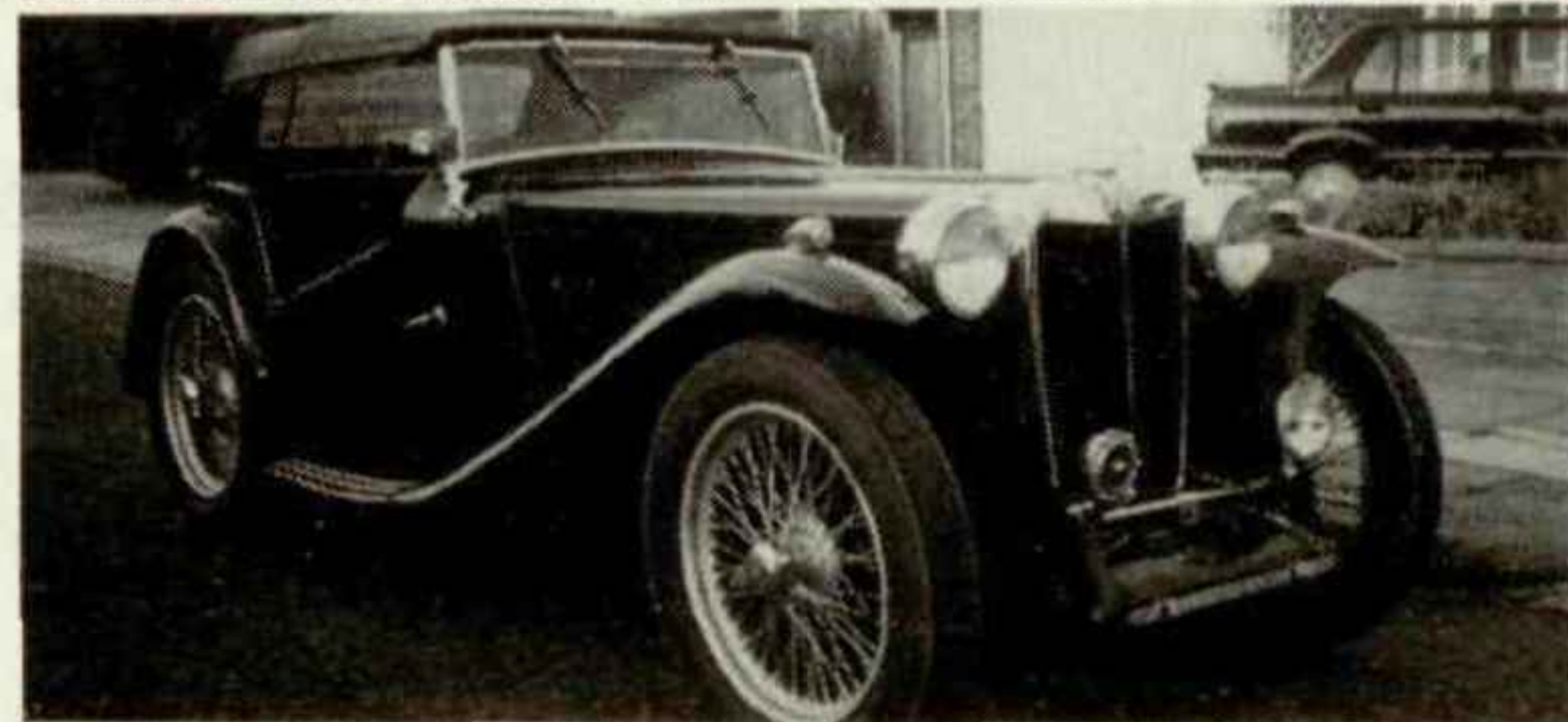
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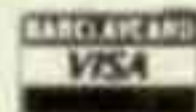
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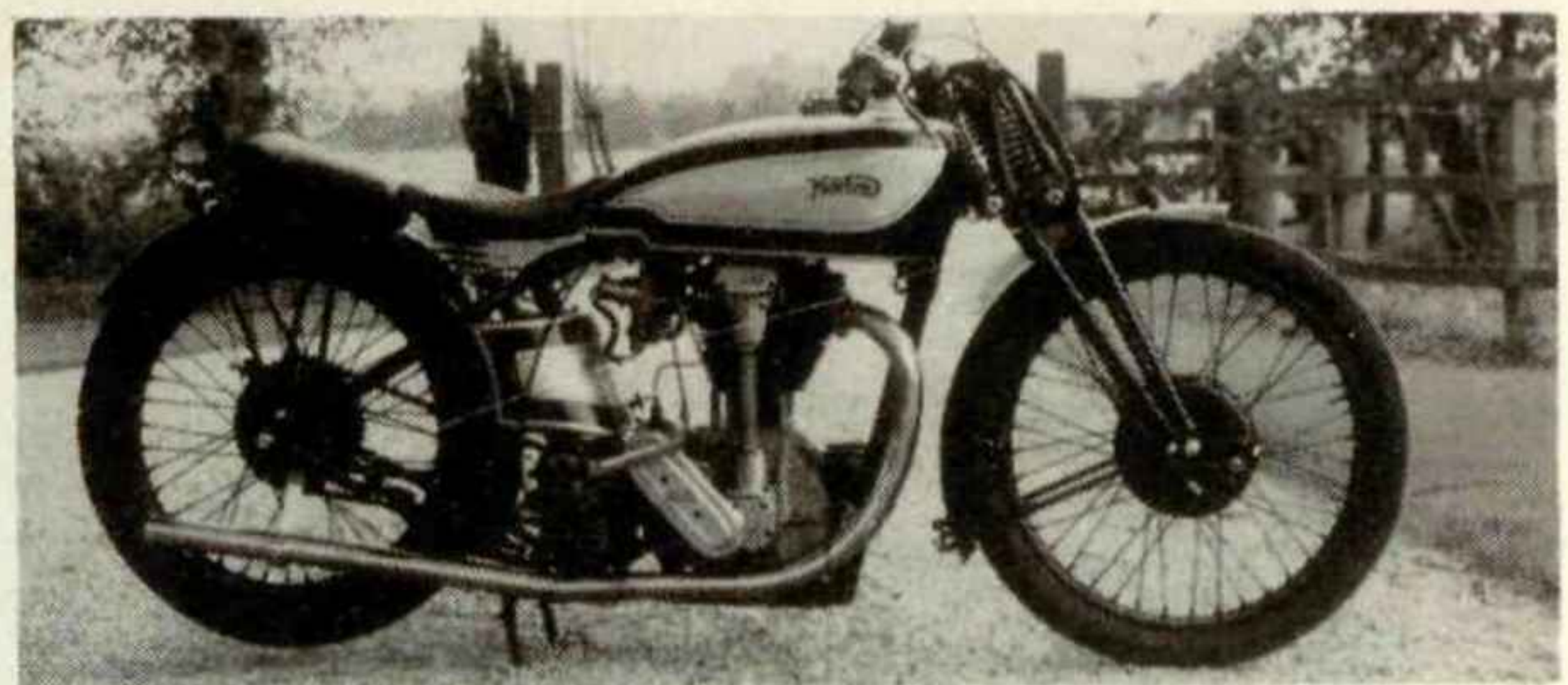


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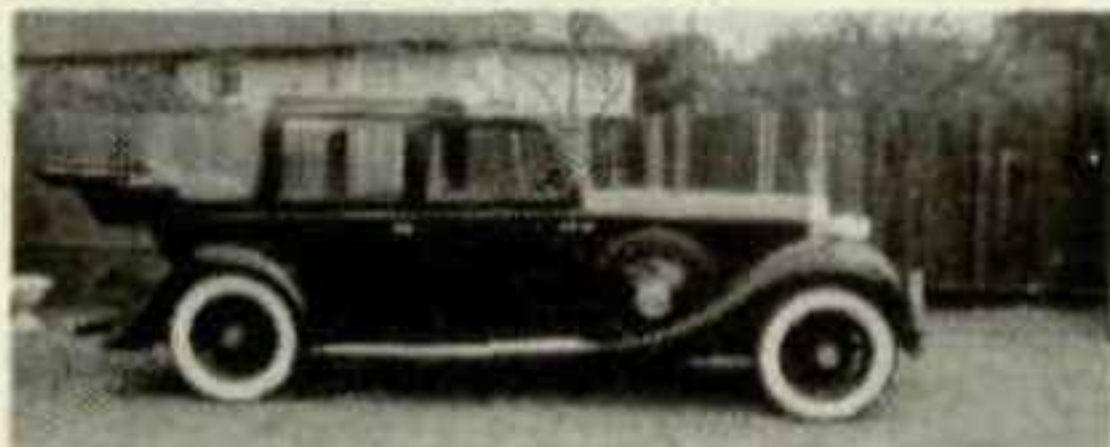
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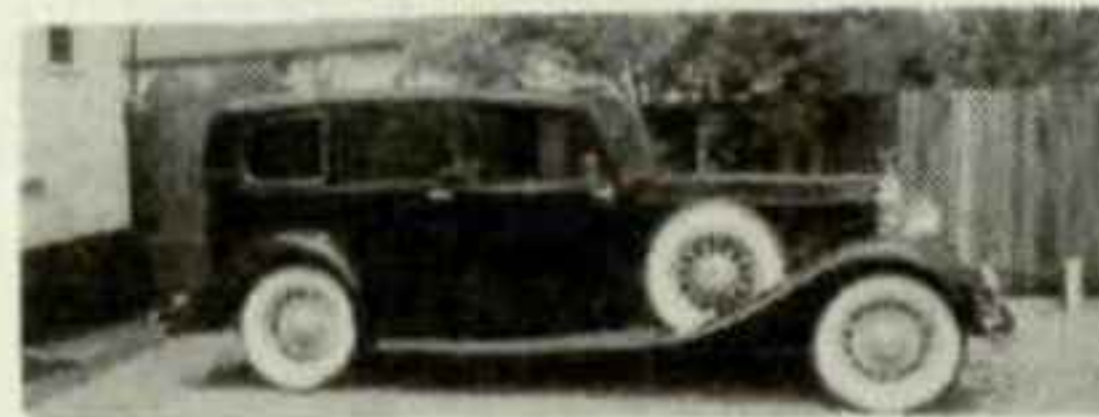
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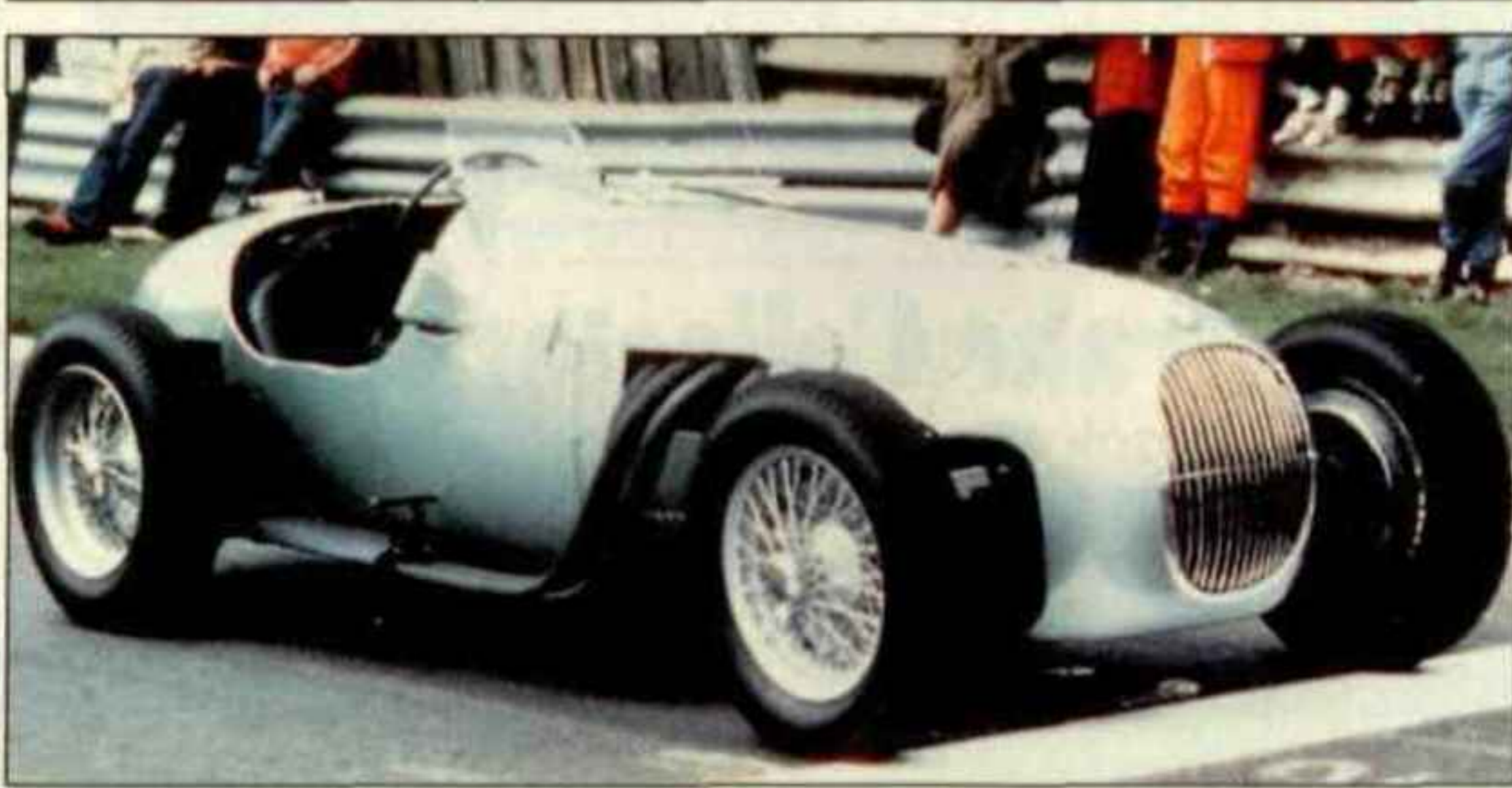
1990 'S-C' model



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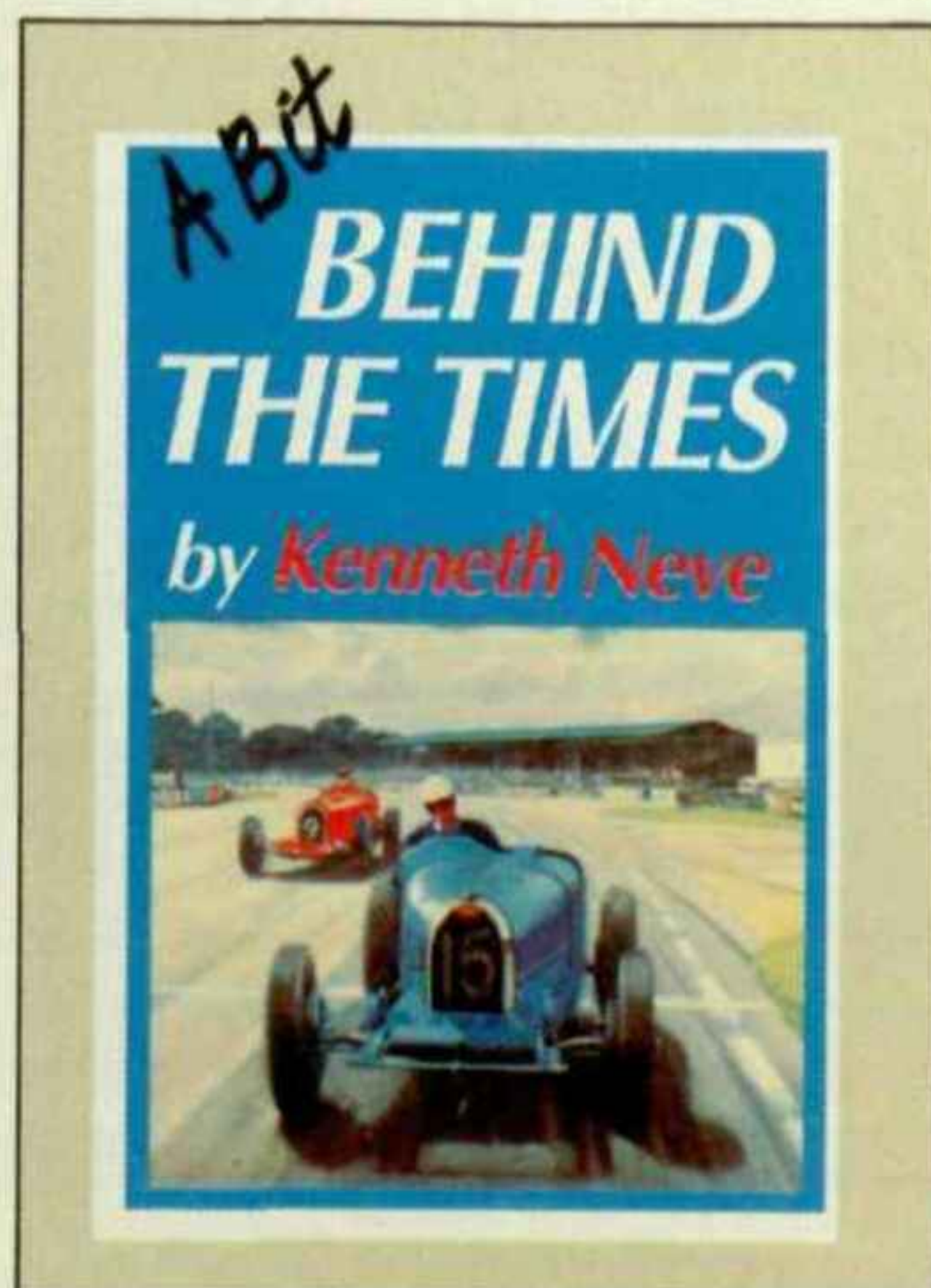
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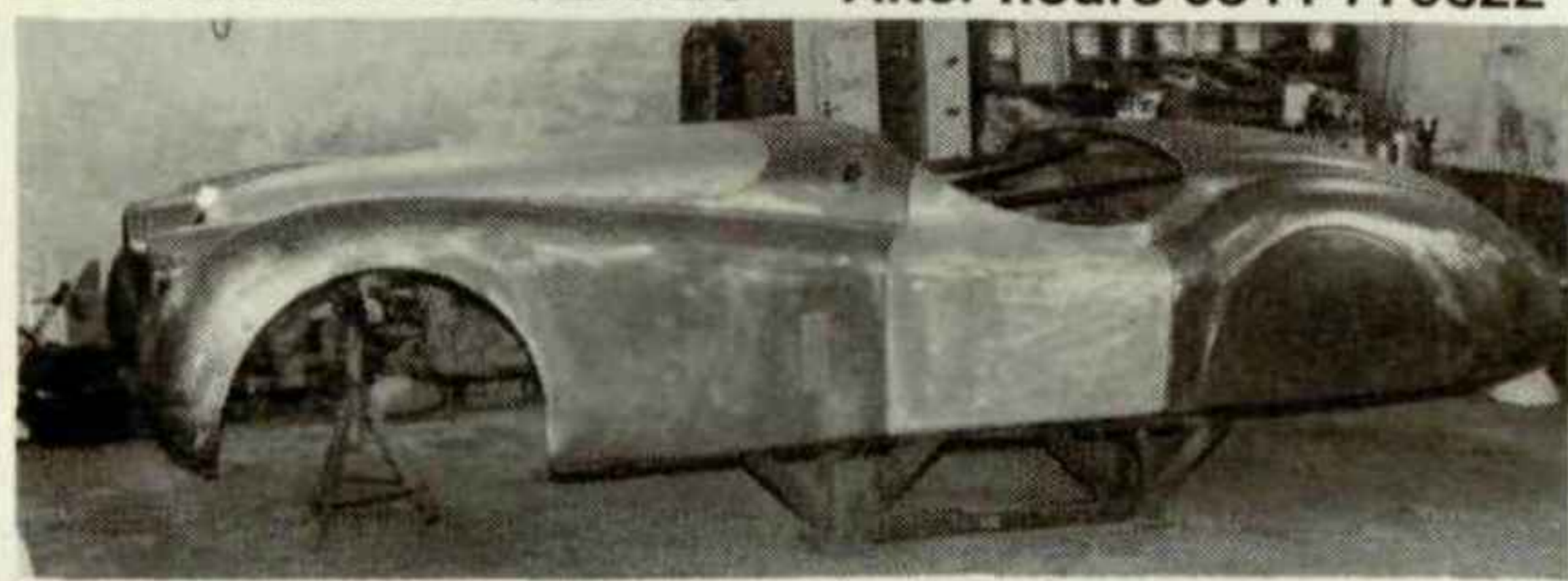
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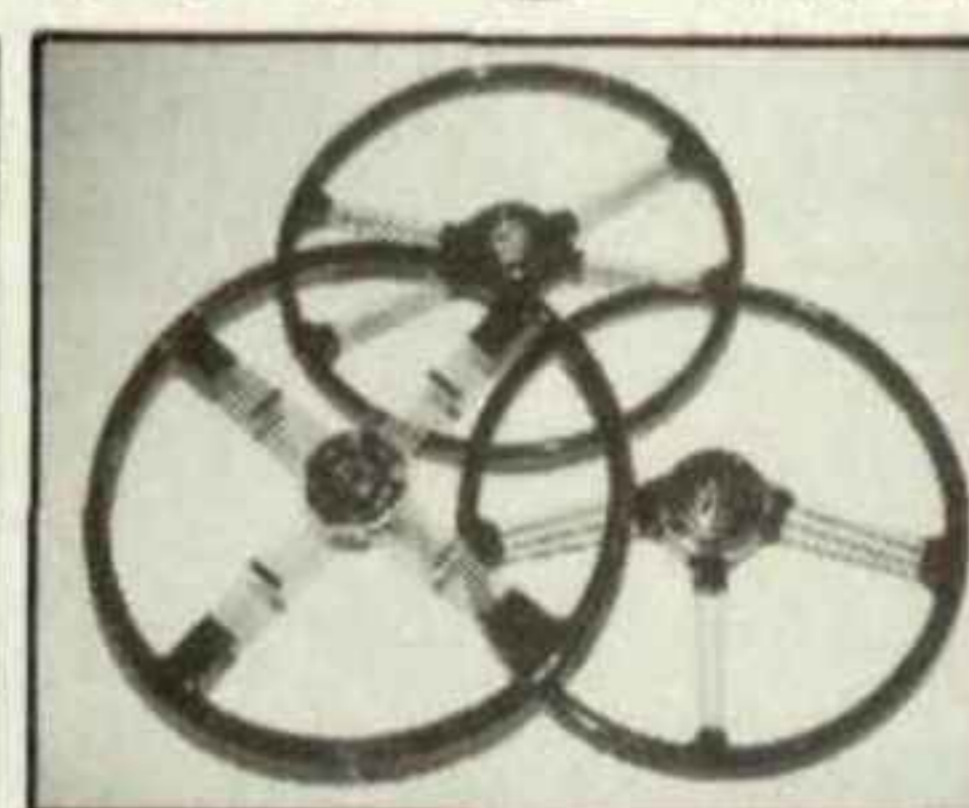
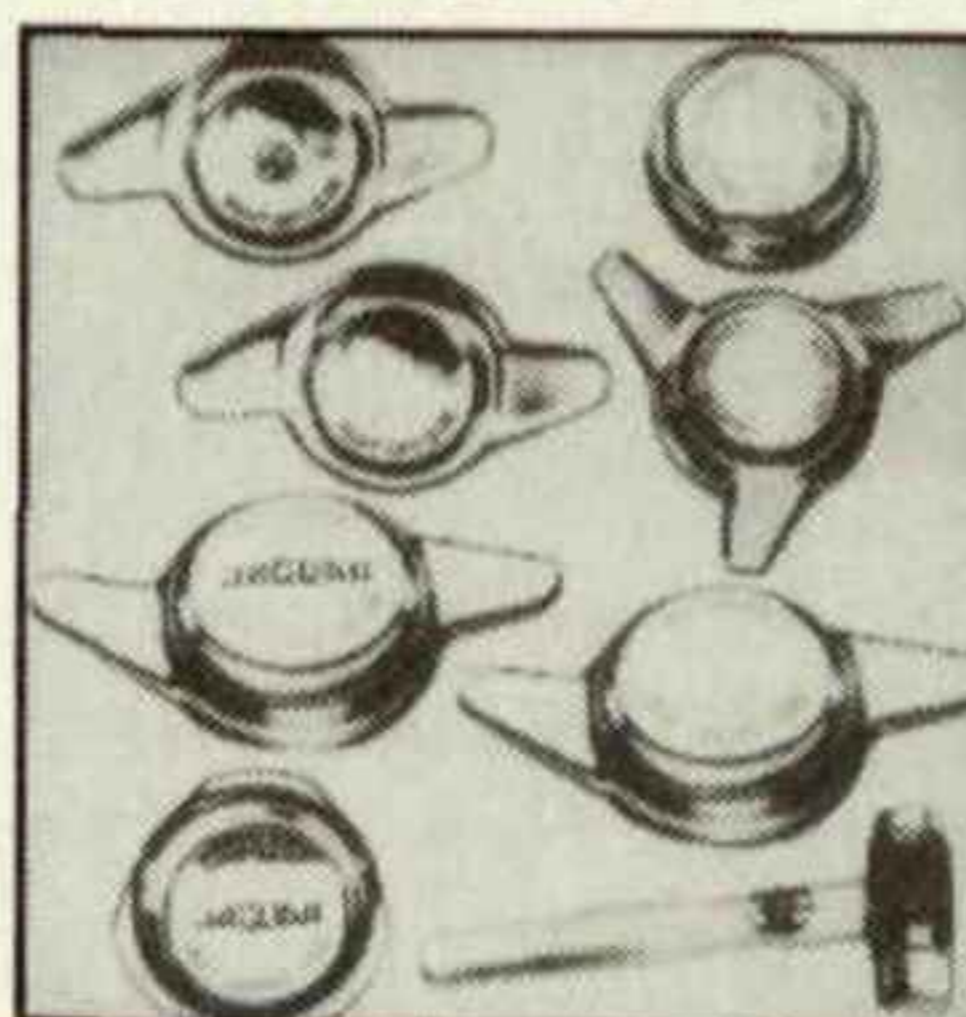
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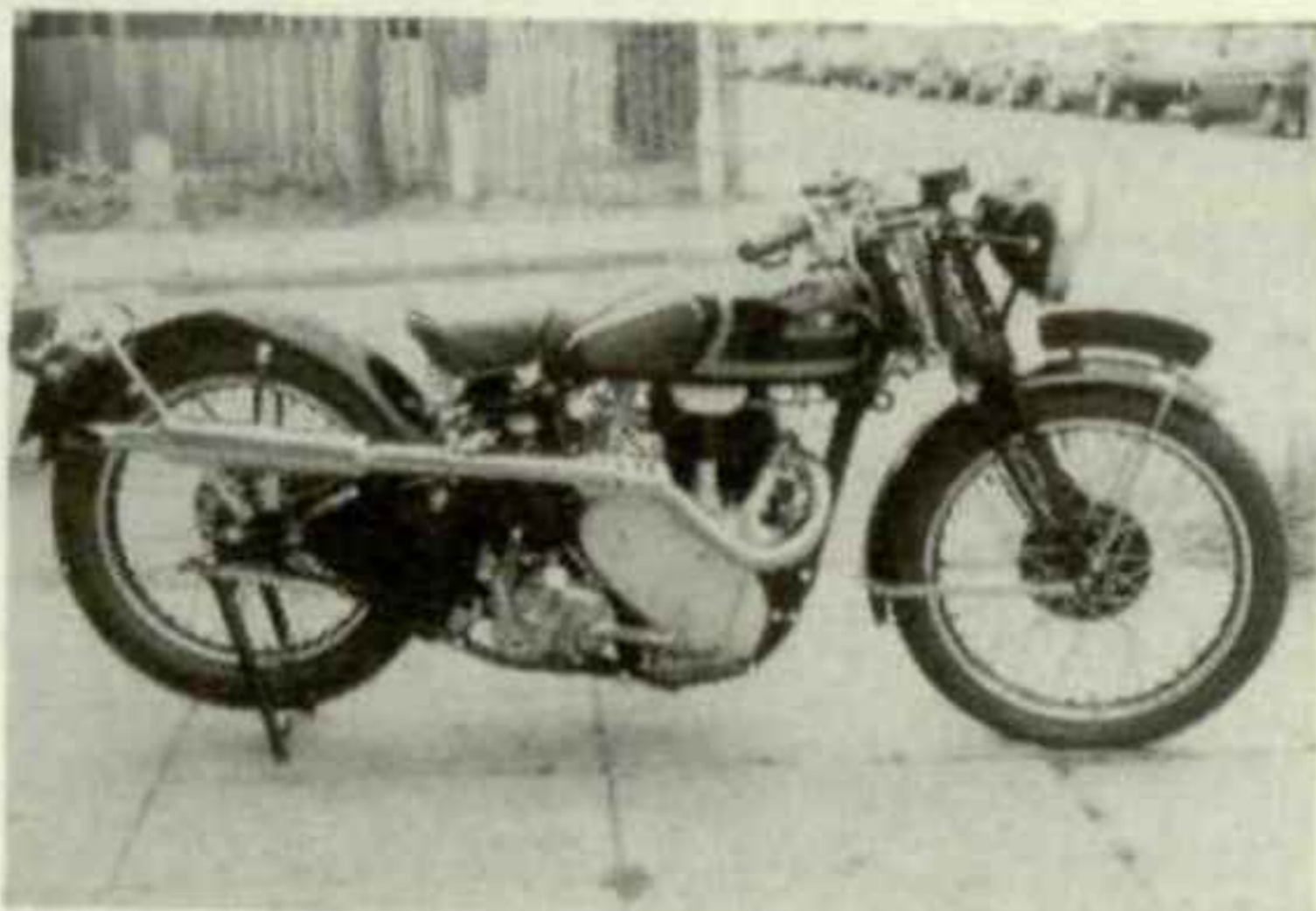
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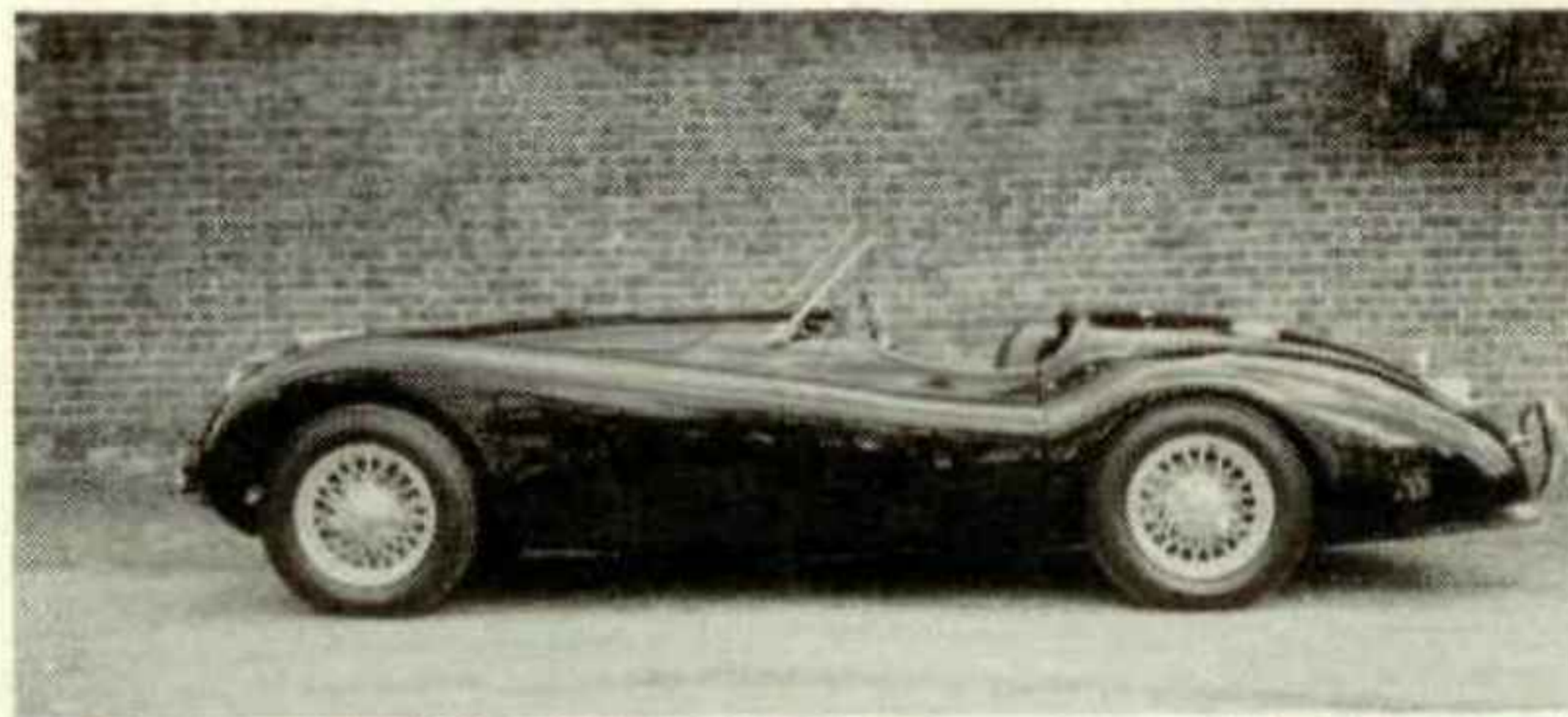
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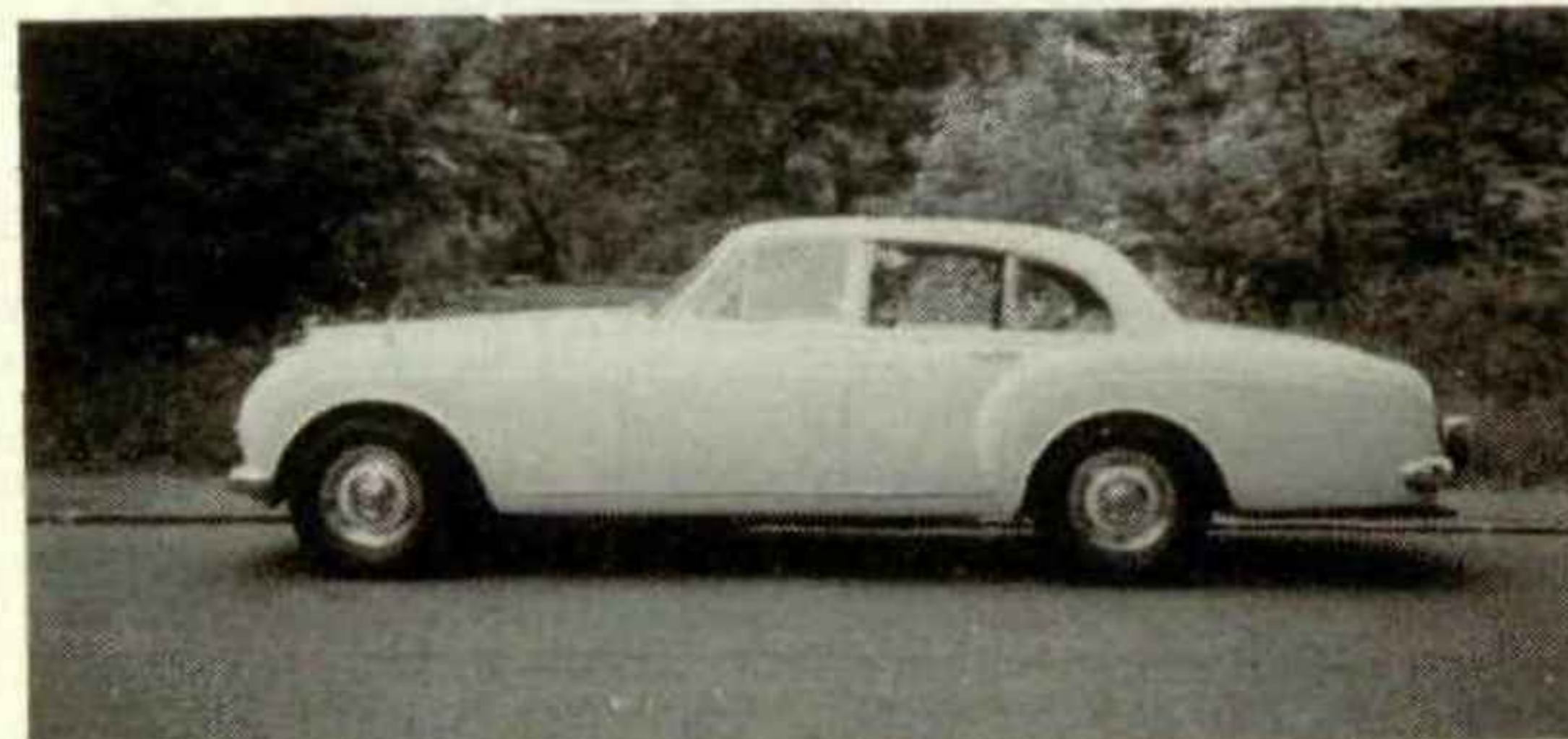
1959 ROLLS ROYCE SILVER CLOUD I L.W.B. with division by James Young, finished in Royal blue with tan interior, outstanding condition.



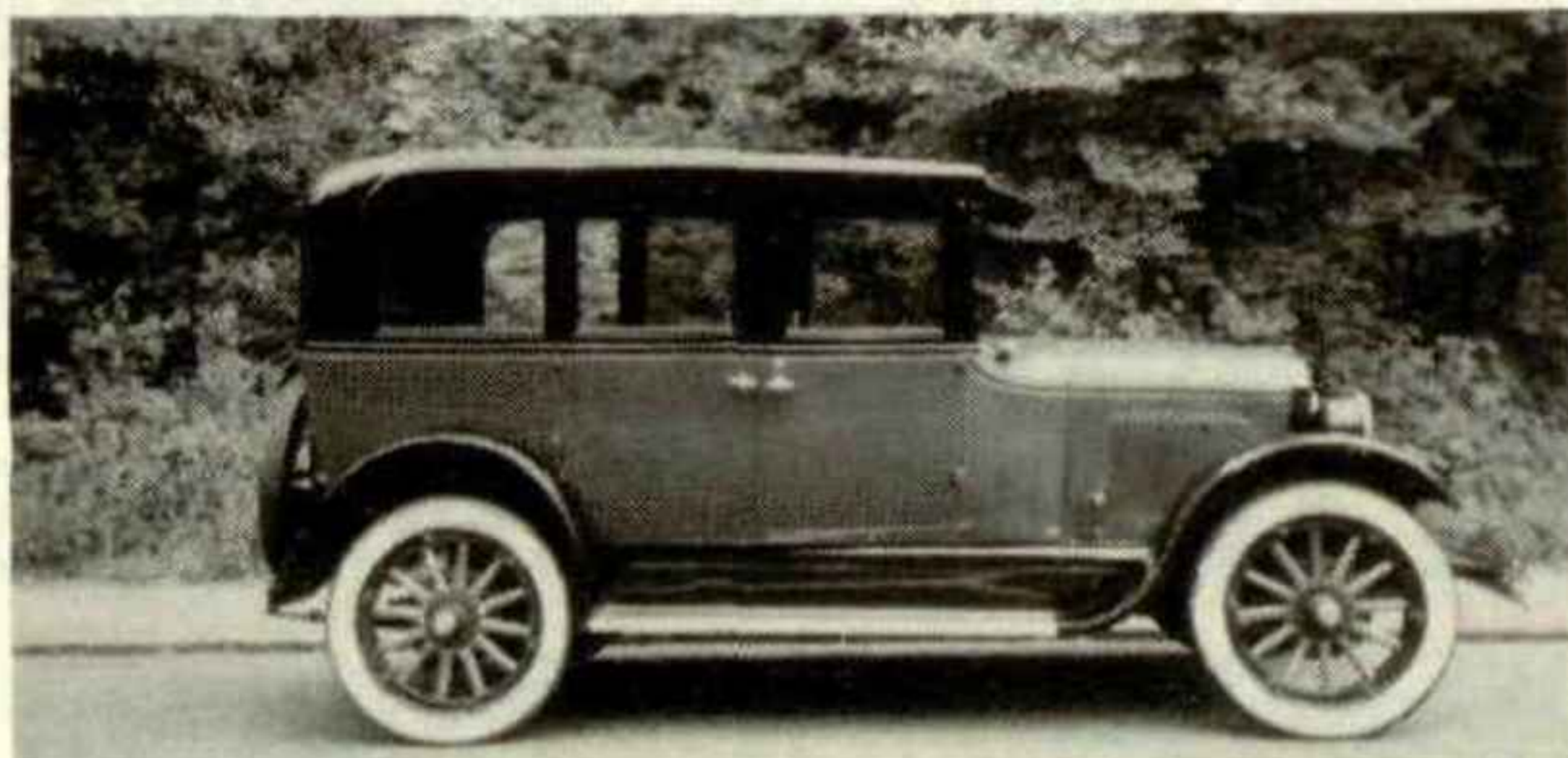
1952 JAGUAR XK120 ROADSTER in black with grey hide, piped in red, C.W.W. Fabulous throughout.



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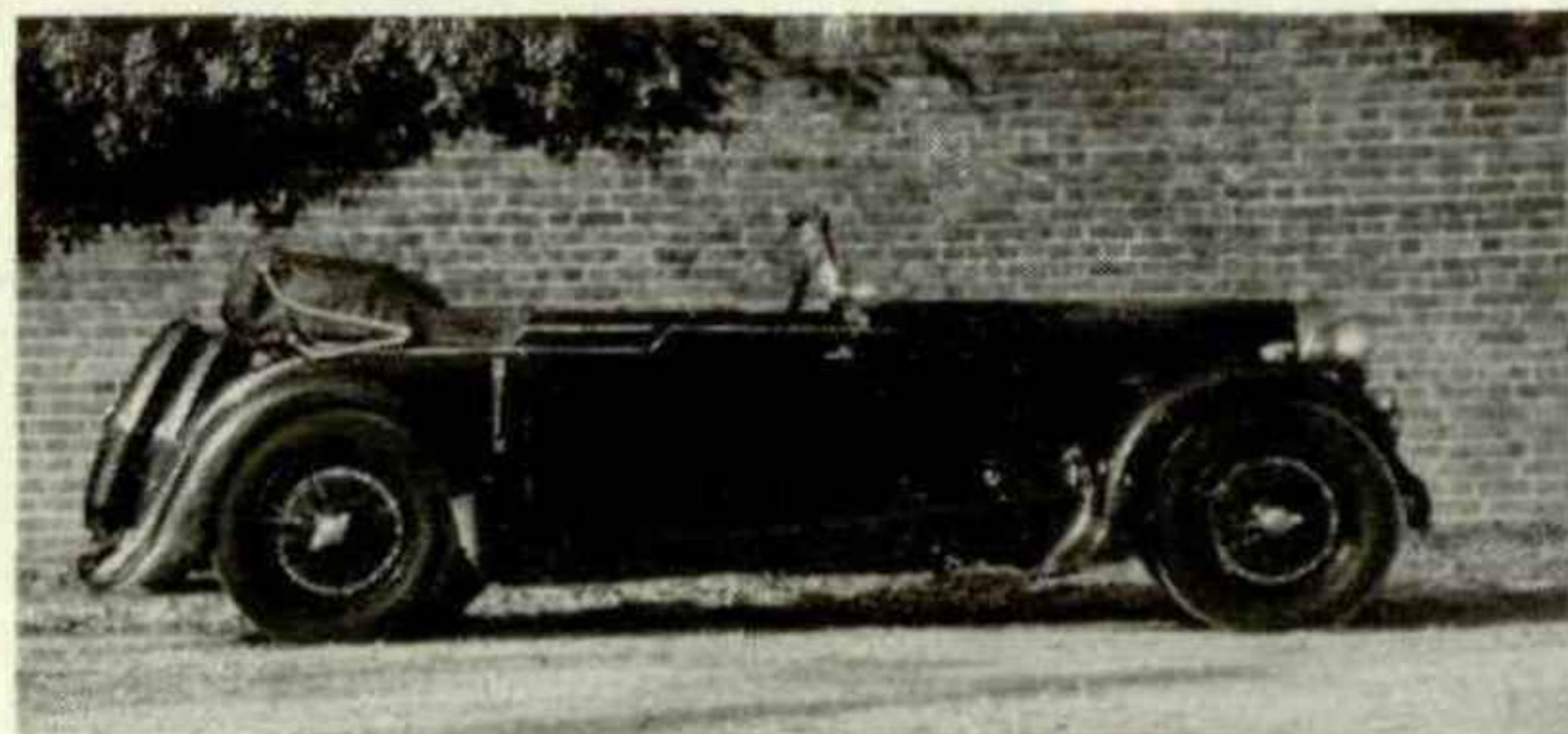
1960 BENTLEY S2 CONTINENTAL "FLYING SPUR" with coachwork by H. J. Mulliner, beautifully finished in beige with sand hide interior.



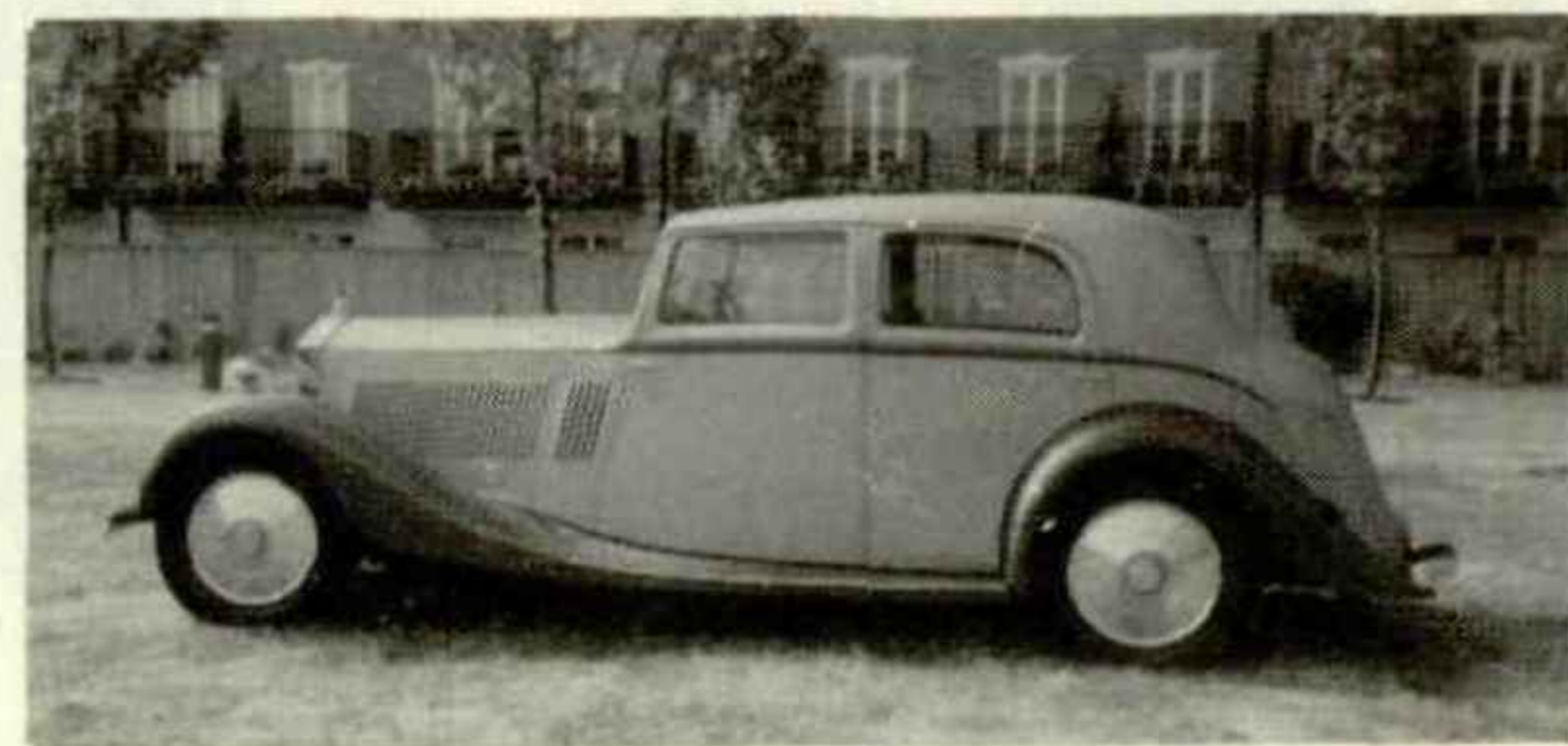
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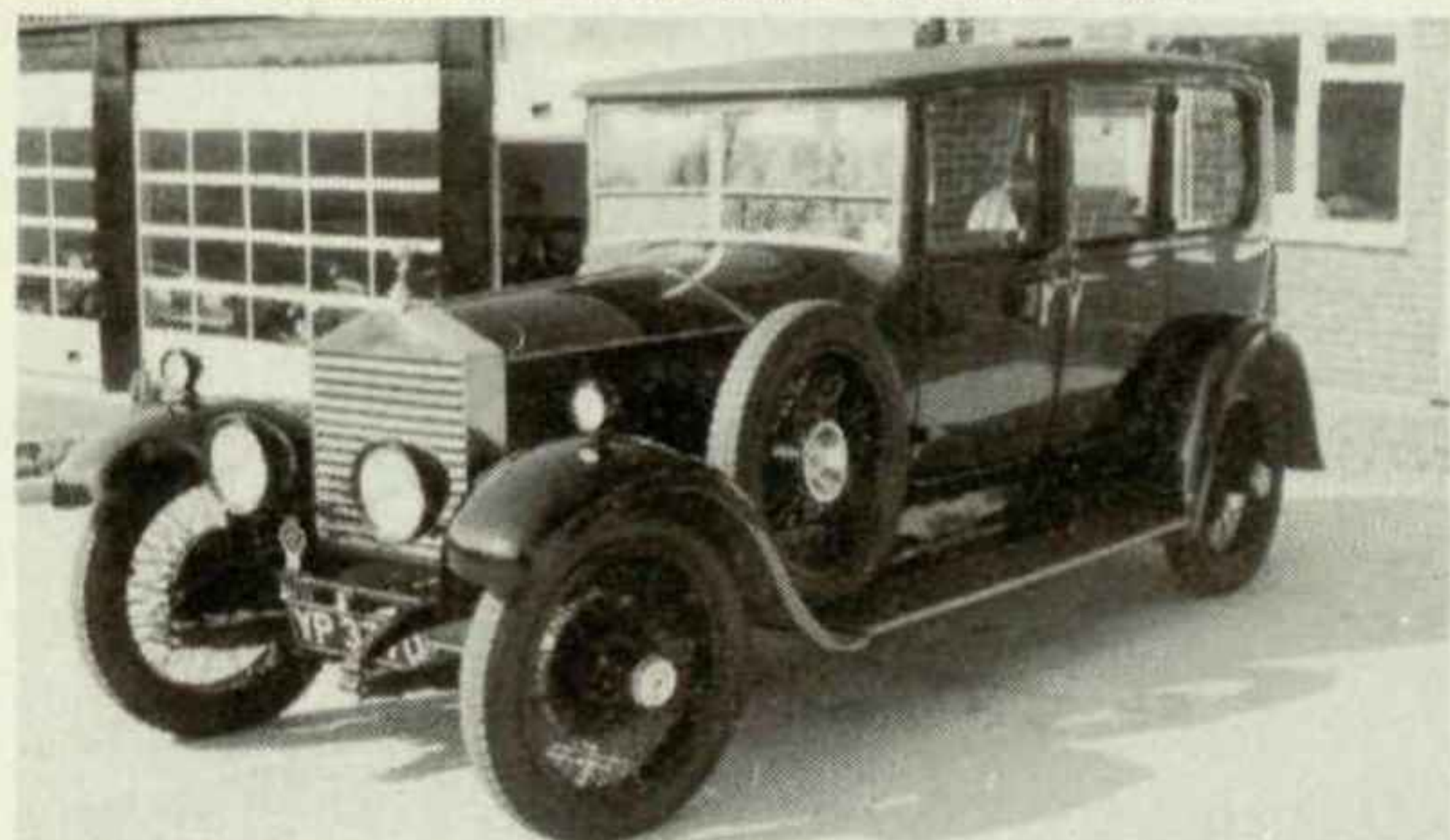
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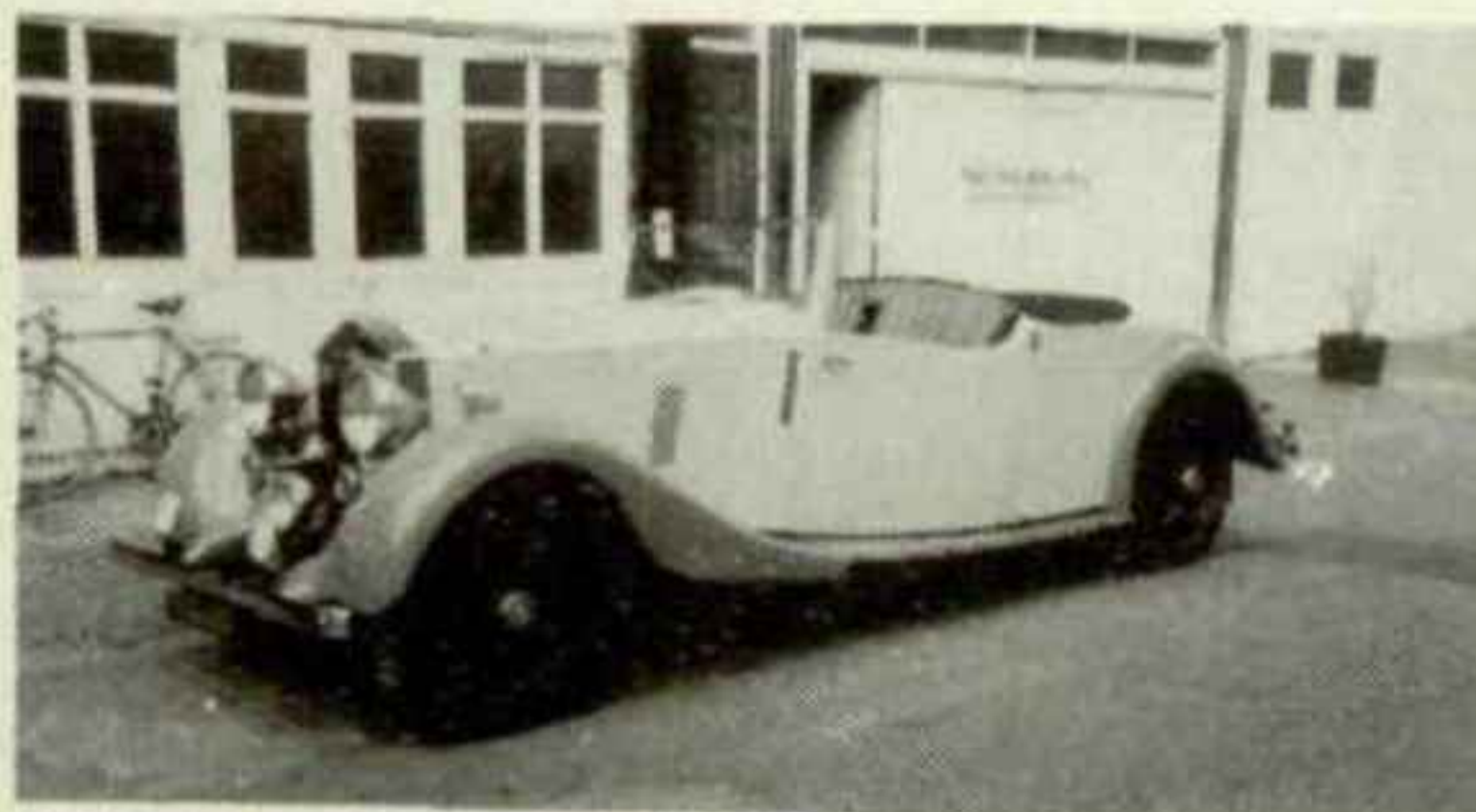
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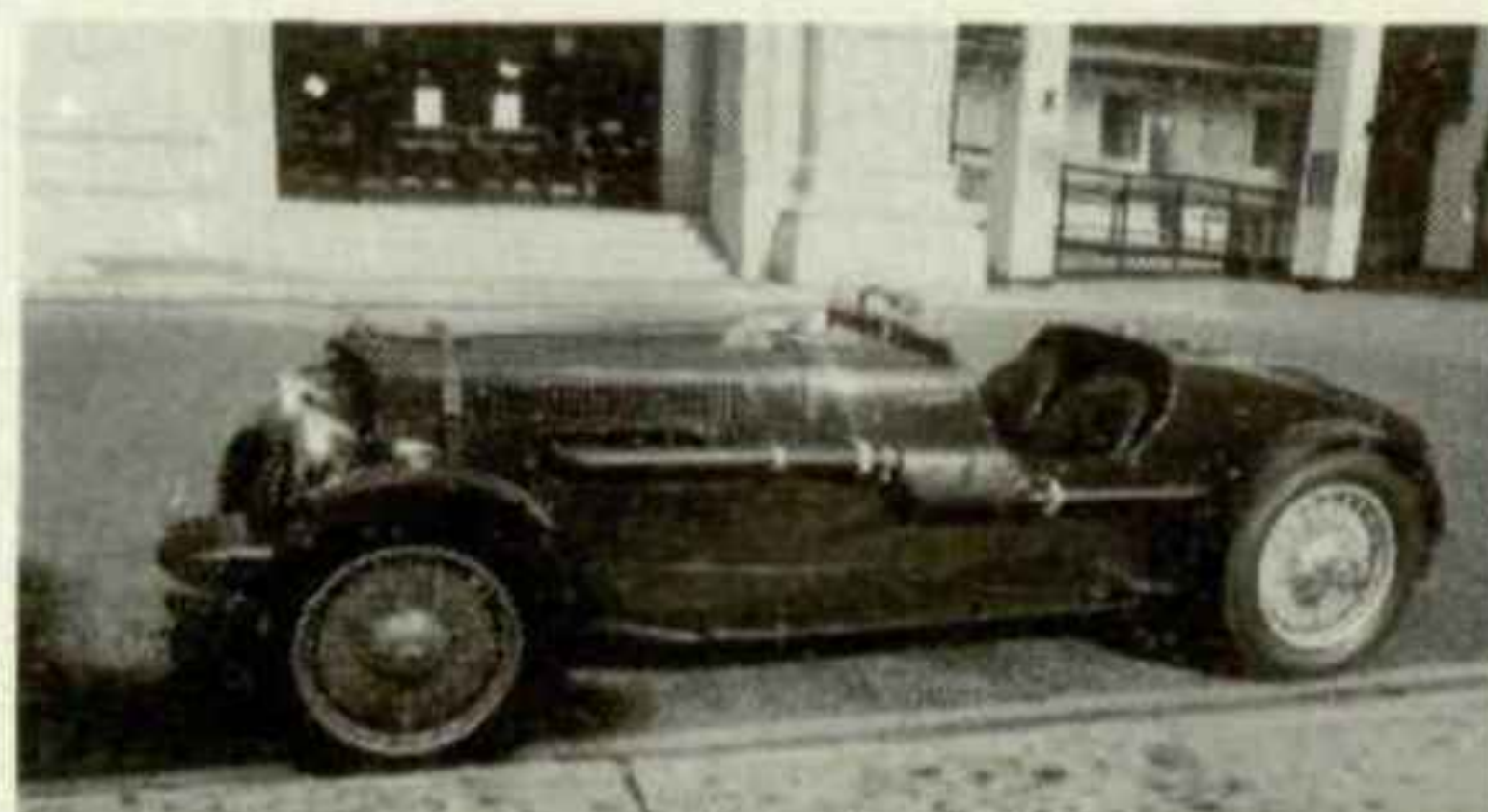
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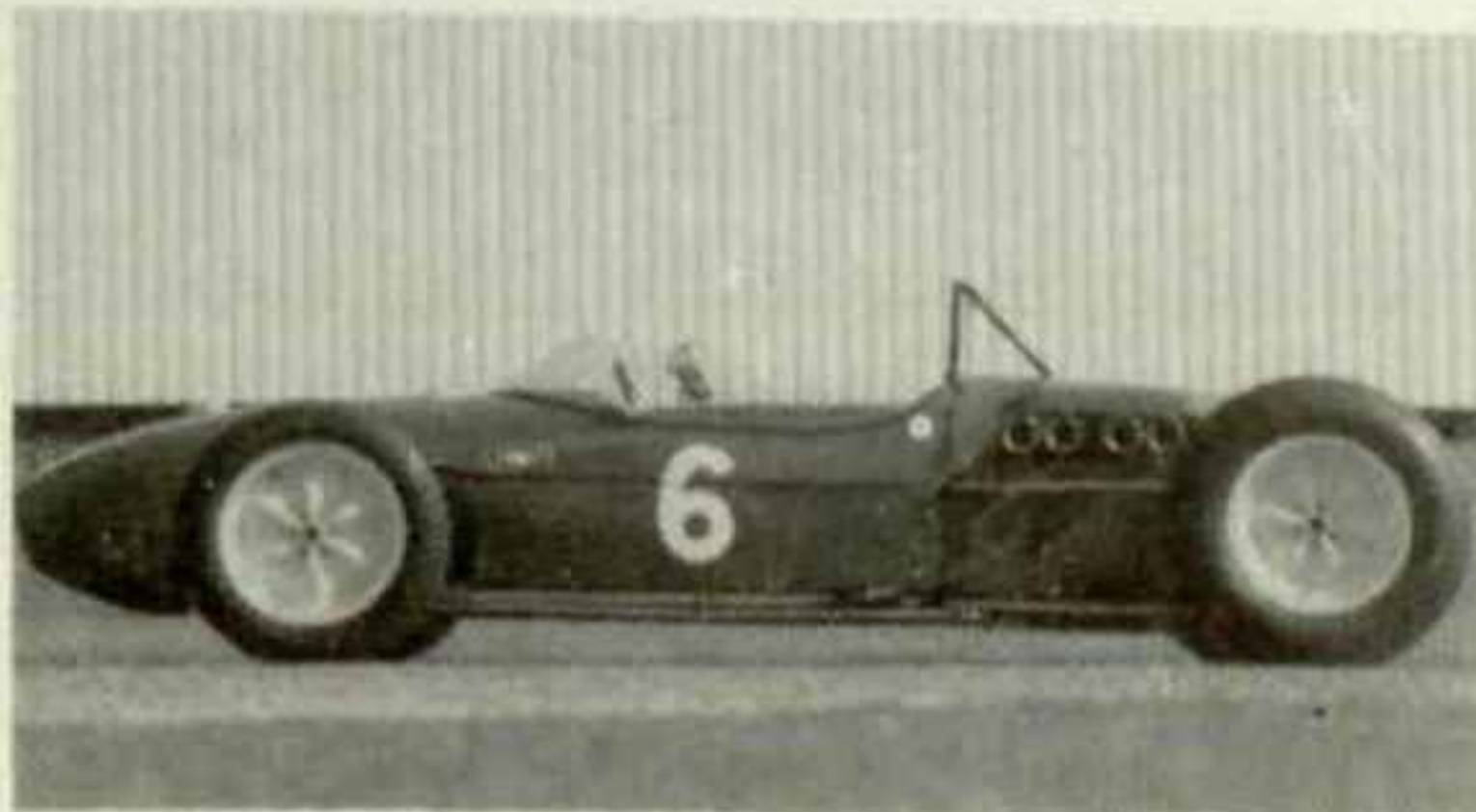
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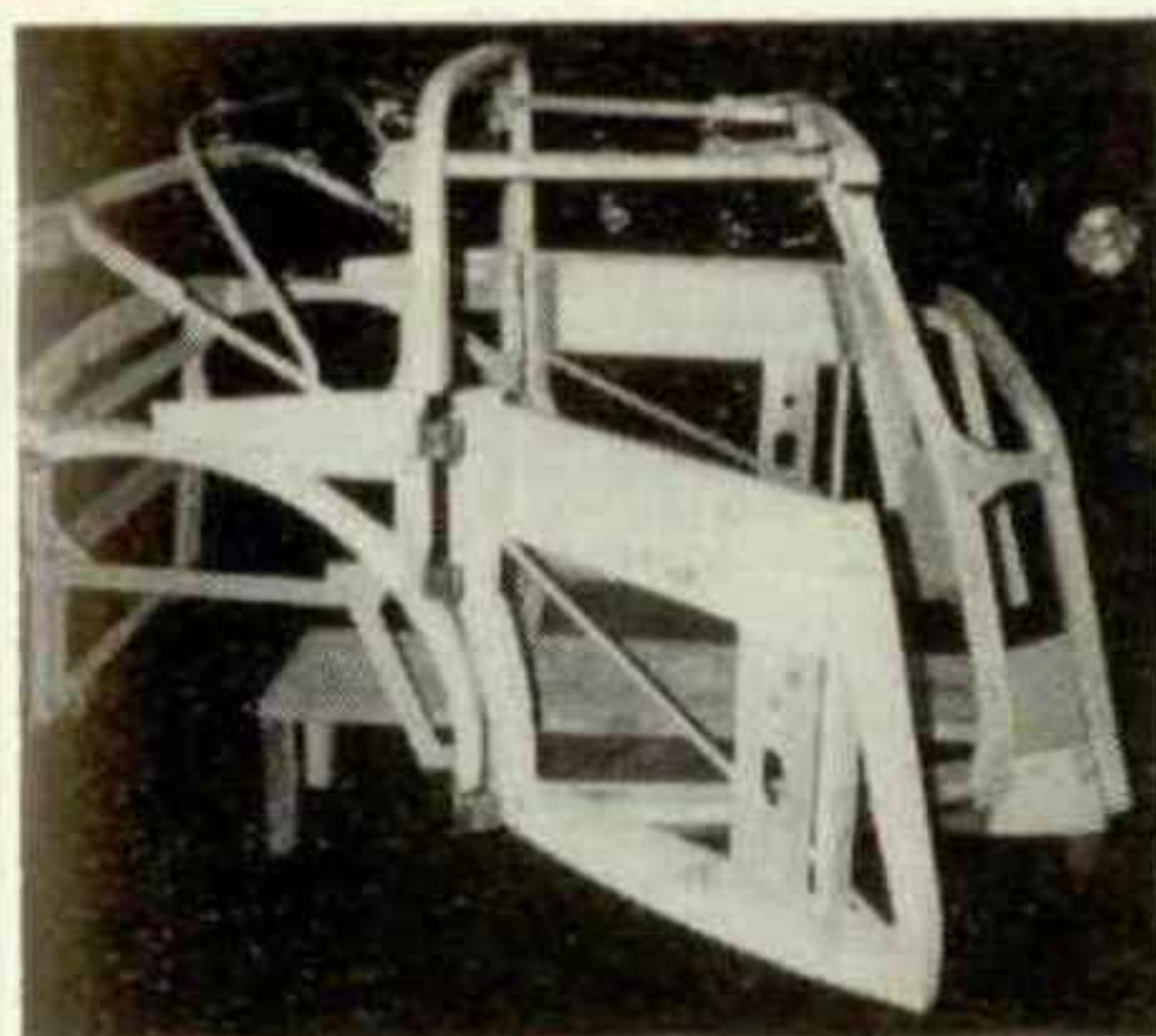
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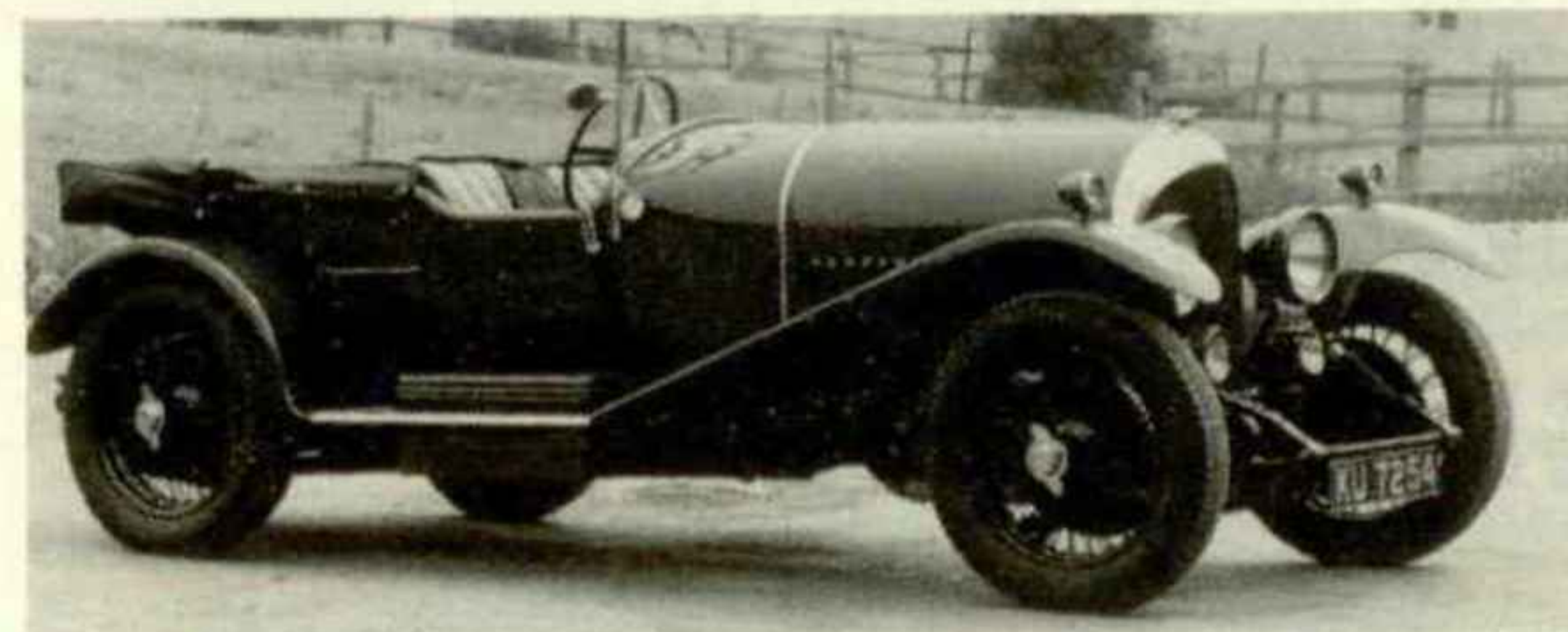
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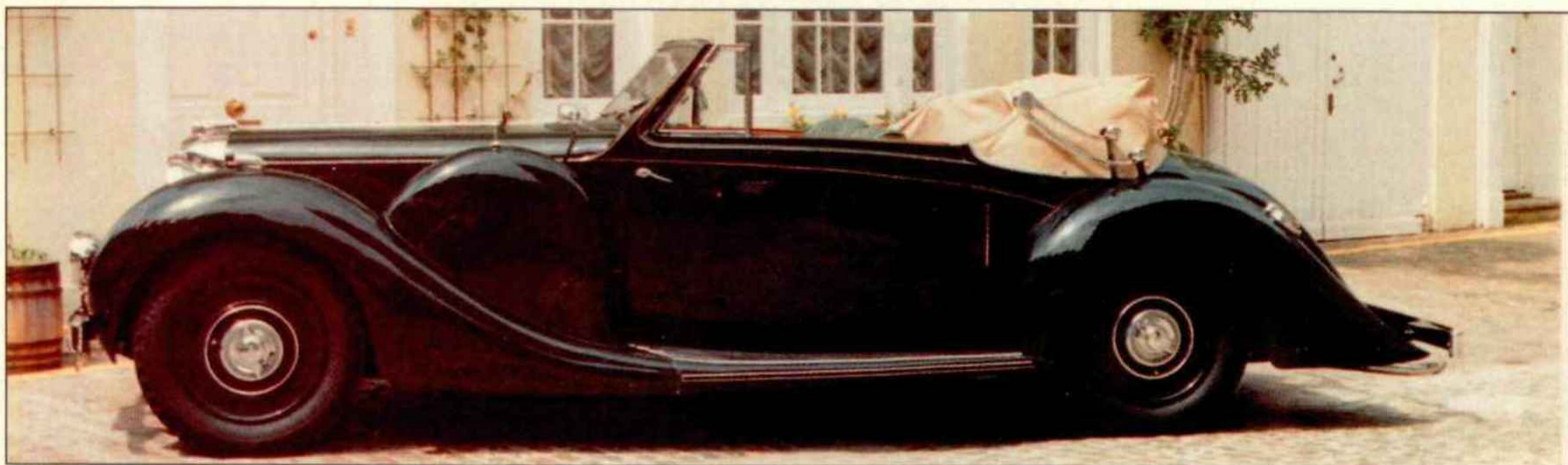
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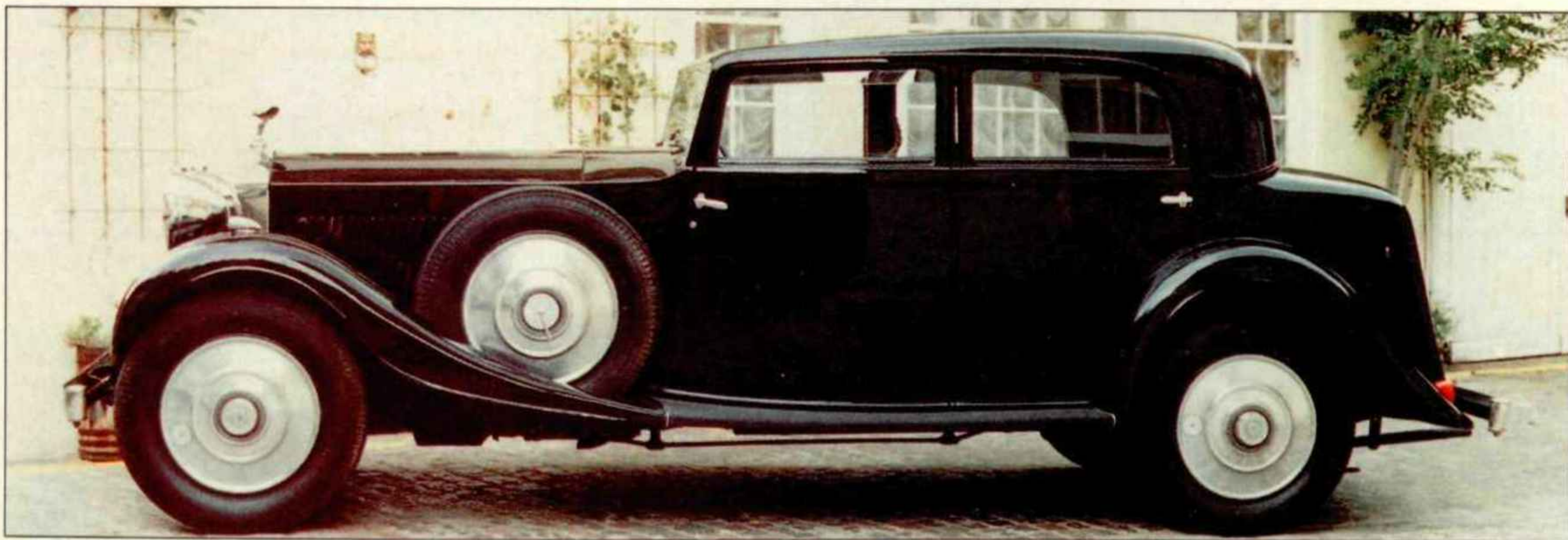
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