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SO FAR IN 1984:

① BRAZILIAN GRAND PRIX WON ON MICHELIN ② STH AFRICAN GRAND PRIX

WON ON MICHELIN ③ SAN MARINO GRAND PRIX WON ON MICHELIN ④ FRENCH GRAND PRIX WON ON MICHELIN ⑤ MONACO GRAND PRIX WON ON MICHELIN ⑥ CANADIAN GRAND PRIX WON ON MICHELIN

⑦ DETROIT GRAND PRIX WON ON MICHELIN ⑧ MONTE CARLO RALLY WON ON MICHELIN ⑨ SWEDISH RALLY WON ON MICHELIN ⑩ PORTUGUESE RALLY WON ON MICHELIN ⑪ AGROPOLE RALLY WON ON MICHELIN

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SANDOWN 1000

*December
1st and 2nd*

- Vern Schuppan shows his stuff
- German superstars battle it out
- Inside the world's fastest racer
- Aussies take on the world's best

Your full WEC guide to cars, drivers and teams



VICTORIA 150
GROWING TOGETHER 1984-5





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Welcome to Sandown

On behalf of the Light Car Club of Australia, we would like to welcome you to Sandown and to the first World Championship motor racing event to be held in Australia.

We would like to welcome the competitors, their teams and all those people who have travelled from overseas to be here and share in this last round of the World Endurance Championship. We hope that you enjoy both the motor racing here at Sandown and also Australia and its hospitality.

We thank you, the spectators, who help to make motor racing possible and we hope that you enjoy the race which heralds Sandown and Australia as part of the international motor racing calendar. We look forward to your continued support and hope that you enjoy this event and all those in the future.

PETER J. NOONAN
President, LCCA

Sandown 1000 programme

Editor: **Barry Naismith**
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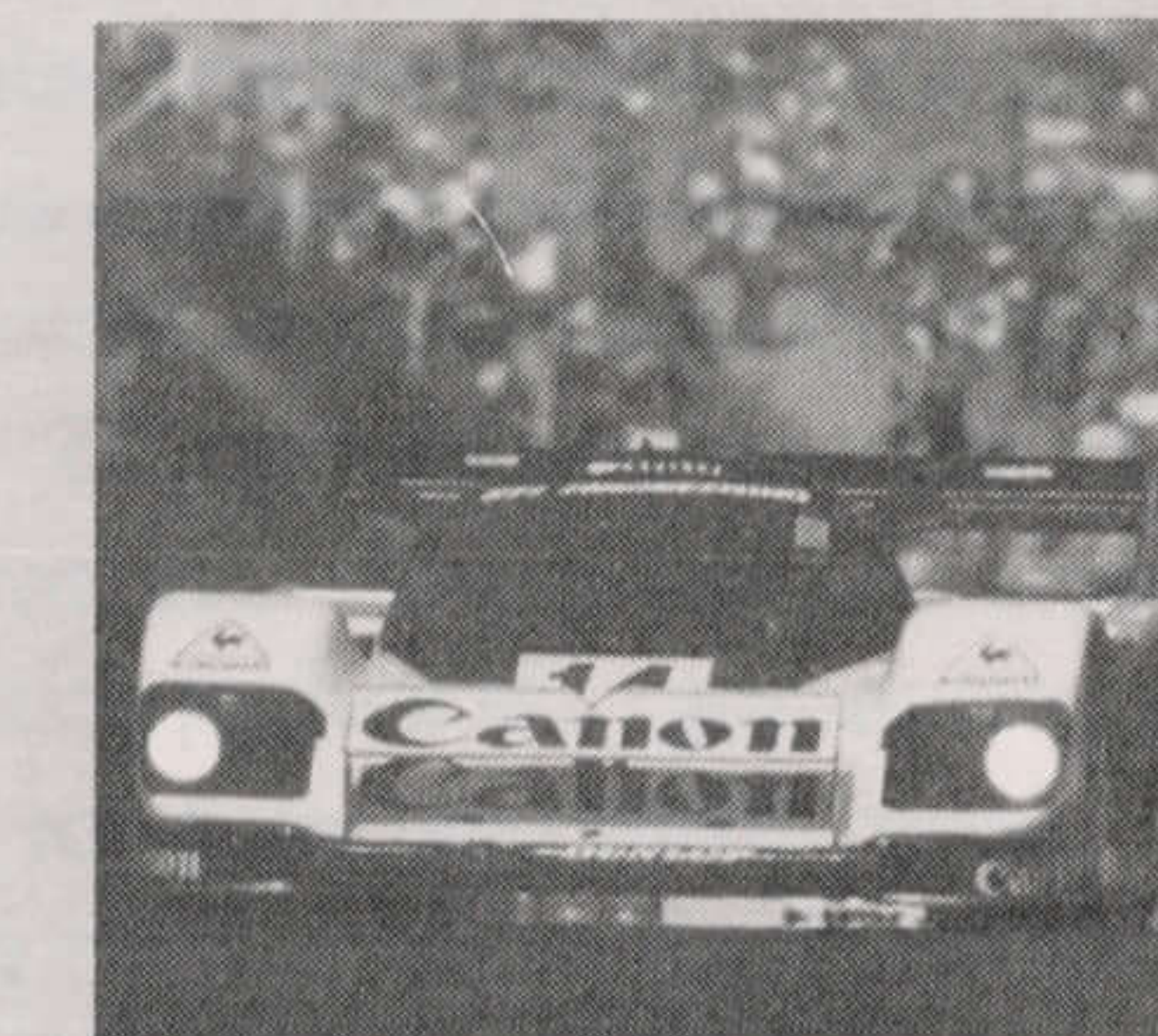
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Champagne for the winners'
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THE COVER: The innovative GTi Engineering Porsche 956 from Britain. Driven by Holland's Jan Lammers and Englishman Jonathan Palmer, the Canon-sponsored GTi car has been a constant thorn in the side of the factory Porsches.

New V8 Holden Commodore SS. Loses by 0.6 sec. Wins by \$38,000.

To measure the performance of the new Holden Commodore SS V8, compare it with the well bred Porsche 911 Carrera.

Both cars accelerate from rest to 100Ks in under 7 secs. The Carrera in 6.1 secs, the SS in 6.7 secs.

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Not only does the SS go like a Carrera, it stops brilliantly too, with big discs all round.

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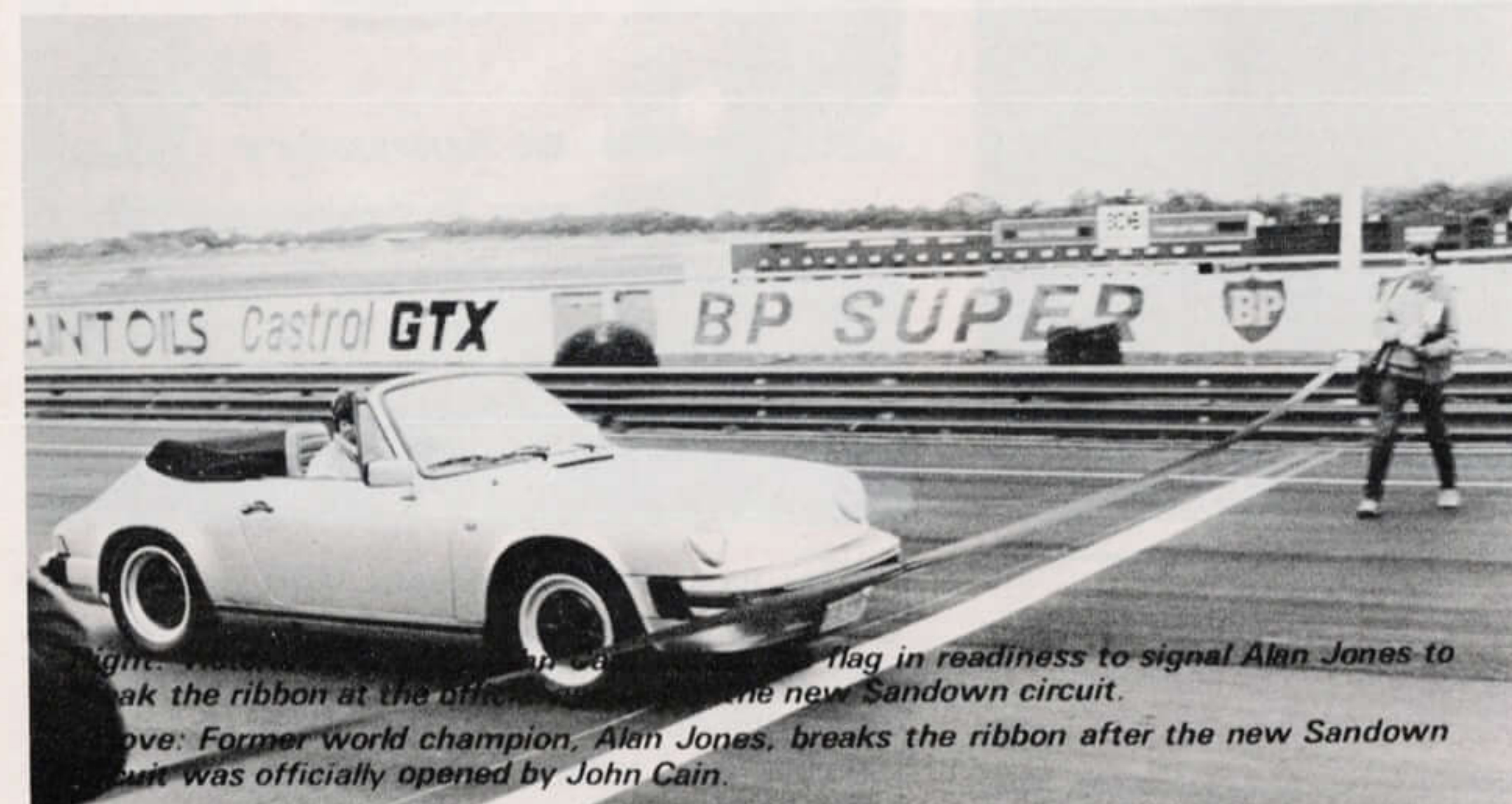
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HISTORY IN THE MAKING

Motor racing history is being made today as Sandown conducts Australia's first world championship event.



It began more than two years ago as one of those 'What if?' conversations between two leading motorsport administrators — David Hardy from the Light Car Club of Australia and former CAMS president and current regional FIA delegate, John Roxburgh.

It quickly developed into a 'Why not?' conversation and the wheels were set in motion, both in Melbourne and Paris, for Australia to secure its first world championship race and end, once and for all, our isolation from international motorsport.

The problem was Australia still lacked an international standard venue, but fortunately the world championship win by Alan Jones helped put a track re-development project high on the priority list for the Federal Government's programme to lift sporting venues to international standard. The Light Car Club of Australia's bid for the funds to rebuild Sandown was made while the ground-work was done for securing a world championship race for Australia.

Initially, Hardy and Roxburgh, discussed a round of the World Driver's Championship, the World Endurance Championship and the World Rally Championship. Further discussions settled on the endurance championship for the new-look Group C sports cars as the best bet. It would have been nice to have grand prix but the high cost of sponsorship guarantees and the Formula One Constructors Association's insistence on new grands prix being run on a road circuit, made it an unrealistic objective, in the short term.

Hardy and Roxburgh felt that the chances of gaining approval to run an endurance race at a re-built Sandown were very high. They also felt that Australian racegoers, with their love of touring cars would find the closed sports cars very appealing.

When the LCCA won the new circuit tender against some 50 applications last year, Roxburgh put in an application for a WEC for 1984, via the Confederation of Australian Motor Sport. It was knocked back by FISA, the Paris-based controlling body of world motor sport, because the WEC 1984

calendar had just been completed, without an Australian round.

Then a stroke of luck — the Spanish round was cancelled because of problems with their track re-working and there was a spare round floating. Australia's WEC competitor, Vern Schuppan, who is based in London, was quickly on the phone to Hardy with the news. This was in March this year, and another application went through CAMS to Paris and was successful. The only proviso was for Hardy, a former LCCA president and currently LCCA Special Projects Manager, to go to Le Mans in June to discuss the proposed Australian event with teams and then on to London for a week to work out travel and financial arrangements with the World Endurance Racing Commission, the delegate body of FISA.

What was missing was an actual date. Sandown had to work in with the other established WEC rounds at Kyalami, South Africa and Fuji, Japan. Fortunately there were no problems there because Kyalami was happy to move from a December to November date to make way for Sandown, which then became the final round. Once this was done the application was rubber stamped in Paris to ensure the Australian round's go-ahead.

From the outset, the WEC team and drivers expressed great enthusiasm for coming to a new country and racing at a new track. That helped produce the quality field on the grid here today.

All the visiting cars were transported to Australia by ship — the normal cost effective procedure to enable the WEC to be a true world championship. For Sandown, the competing cars came on four ships. First to arrive was the GTi-Canon and Kremer 956s, the Alba-Gianninis, Chuck Kendall's Lola-Chev and Roy Baker's Tiga. They competed at Fuji on the Bathurst weekend and were all on the Japanese ship which yielded that precious cargo in Melbourne in early November. The other cars in the field arrived two weeks later on three ships from Europe — the British-based cars on a ship from London and the German privateers and the Rothmans-

Porsche team on separate container ships from Germany.

On arrival, the factory and privateer 965s were housed at the Porsche Cars Australia complex at Noble Park near Sandown, which was transformed into a massive race workshop. The non-Porsches were located around the corner at the Porsche body repair centre, while the BMW machinery made its workshop base down the road at BMW Australia's Springvale service centre.

Everything was set up and ready for the teams and drivers when they flew in the week prior to the event to check over the pre-prepared machinery and a first look at the new Sandown circuit.

The Sandown track is of the minimum track length for a WEC endurance race at 2.9 km and fully complies with all FISA track design requirements. The track itself was completed just prior to the running of the Castrol 500 touring car race in September. What remained for contractors was cosmetic work and clean-up of the track verges. Most work at the track has centred on the pit complex which was partly finished for the first meeting in September. The garage section of the pit has been completed for the WEC meeting, as has the new race control tower.

The new \$3.9 mill. Sandown facility, although not completely finished, was officially opened by the Victorian Premier, John Cain, in September prior to the running of the Castrol 500 race. Following the Premier's address, Alan Jones, in a road Porsche became the first person to 'drive' around the track. The grant to help build the new circuit came from the Federal Government's International Standards Sports Facilities Programme, and was administered on the Federal Government's behalf by the Victorian Government's Department of Youth, Sport and Recreation.

It is fitting then that the Sandown 1000 km, Australia's first world championship race is part of the official celebrations for Victoria's 150th Anniversary.

— BARRY NAISMITH



BELLOF OR MASS? IT'S A CLIFFHANGER!



Just as the 1984 World Formula One Championship went down to the wire, the 1984 World Endurance Championship for Group C sports cars will be decided in the last race today at Sandown.

The parallels between the two very different world titles go further because the endurance title will be fought out by teammates Stefan Bellof and Jochen Mass, just as McLaren-TAG Porsche drivers Alain Prost and Niki Lauda duelled for the F1 championship recently.

The outcome of the final round of the World Endurance Championship for drivers, is certain to be as gripping, because Bellof and Mass are closely matched in their identical Rothmans Porsche 956s and significantly on unfamiliar ground. Neither is likely to have much of an advantage.

After battling it out with the world's best long distance sports car drivers on four continents, Bellof and Mass come to Sandown for the showdown three points apart. With a points score for the race going 20-15-12-10-8-6-4-3-2-1 from first to tenth, there is virtually nothing between Bellof on 119 points and Mass on 116.

Bellof can't afford to play the percentage game, he must go for a win, because it would seem that Mass can take the title by winning today, even if Bellof gets second. But it is not quite as simple as that. The FISA rules stipulate that each driver may actually score only the best eight results from the eleven events in the 1984 series. Both Bellof and Mass have already scored eight times. Thus, if they score again here, they must drop one of their lowest marks. Bellof's lowest score so far is one point, so, if he wins this race, he can add only 19 to his total. Mass' lowest score is four points, so if he wins it would add only 16 to his total.

Bellof, the 27-year-old German, who also drives in Formula One, is the current sensation in Group C sports car racing, since joining the Rothmans Porsche team last year. In fellow German, Mass, he has come up against a 39-year sports car specialist of vast experience and ability.

At Sandown today, in the 1000 km event, Bellof will be paired in the No. 2 Rothmans Porsche with reliable Britisher Derek Bell. They will line up against Mass, who will drive the German factory team's No. 1 car with the current world endurance champion, team leader and sports car legend, Jacky Ickx, from Belgium. Mass is within two race wins of being the second most successful sports car endurance driver in history, although some 16 race wins behind his current team-mate. With more than 50 sports car races between them, Ickx and Mass make formidable opponents for one so young as Stefan Bellof. Ickx doesn't have enough points to win yet another title today, nor does any other driver, so it will be between the two Germans.

To date this year Bellof has been the quickest driver in Group C, setting pole positions and winning five races, to Mass' two. In a sense Bellof has been groomed to succeed Ickx, and shows every indication of matching Ickx's record in a long and glorious career. If the exciting German wins today to take the title and end Ickx's run on top, it could be the historic start of a new era.

Bellof must start as a slim favourite in what is a strong field, despite the fact that Porsche have already romped in with the all-important manufacturers title again and also since the European-based team had to travel half-way across the world for this race.

Bellof's wins this year have resulted from his exceptional ability to drive competition demoralising first-stint charges that have often put his car into an unassailable position. The works Porsches are designed, built and prepared to take that sort of treatment, and if he and Bell have a trouble-free run, they usually win.

Even if Bellof doesn't win today, it is a safe bet that the first car across the line after about six hours will be a navy blue and white Rothmans Porsche, probably closely followed by another one, and possibly the third car as well. This is because trying to beat the Rothmans Porsche team in WEC racing is like trying to beat McLaren in F1 — only harder.

The world's best private WEC teams — Germany's Joest Racing and Kremer Racing and Britain's John Fitzpatrick Racing and GTi Engineering — are here today to take on the powerful works. They are ever hopeful but with their inferior 'custom' versions of the works 956s, they are obviously finding it a difficult task to beat Porsche at their own game.

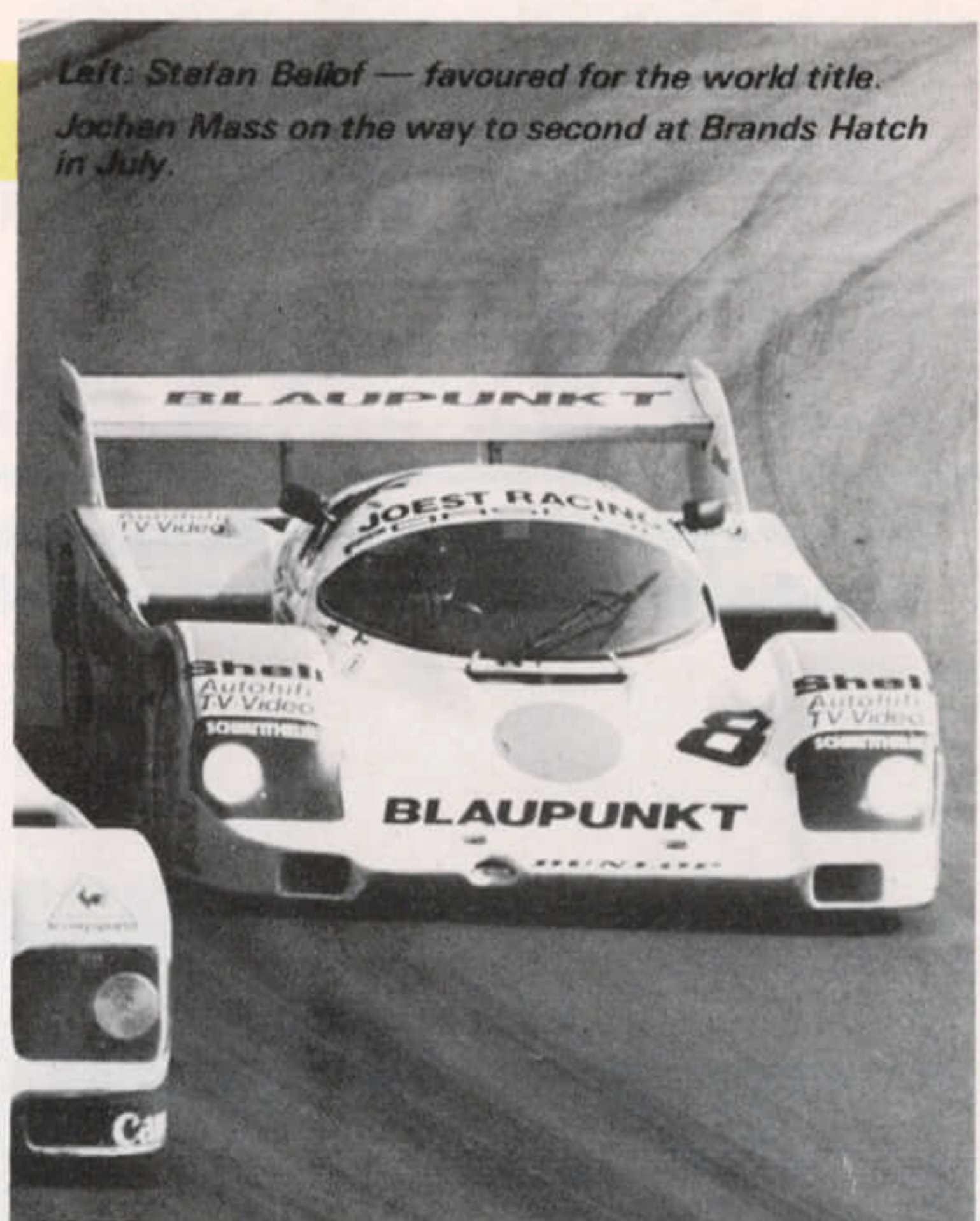
This year the privateers have embarked on their own development programmes for the 956 to look for some improvements that would give them an edge on the factory. Work there has centred on aerodynamics and the innovator has been the Canon sponsored GTi team. As a consequence, the GTi Engineering car piloted by Holland's Jan Lammers and Britain's Jonathan Palmer, has proved to be quickest of the privateers in the 1000 km races this year.

The other highly favoured privateers here today are Le Mans winner Henri Pescarolo from France and quick Swede Stefan Johansson in the Joest Team car. Pescarolo drove at Le Mans, British veteran David Hobbs and young Belgian charger Thierry Boutsen in the John Fitzpatrick Racing 956 and South African duo George Fouche and Sarle van der Merwe in the Kremer Porsche.

The privateers remain committed to trying to knock off the factory team and the feature of the race will be the determination of hard-chargers like Johansson, van der Merwe, Palmer, Lammers and Boutsen to try all they know to inflict a defeat on the factory team.

Several Australians have entered to take on the world, and the best chance for a local victory will be Vern Schuppan/Alan Jones in the third Rothmans Porsche. They have the machinery to beat the privateers and to mix it with their works compatriots Bellof/Bell and Ickx/Mass, to the extent that Schuppan, a long-time sports car specialist and former world champion Jones, in this new role could dictate who wins the world endurance championship today.

Progress points, final round, Sandown: Stefan Bellof 119, Jochen Mass 116, Jacky Ickx 89, Henri Pescarolo 87, Derek Bell 71, Jonathan Palmer 63, Jan Lammers 63, Hans Stuck 54, David Hobbs 54, Paolo Barilla 49.



Left: Stefan Bellof — favoured for the world title. Jochen Mass on the way to second at Brands Hatch in July.

THE STORY SO FAR . . .

Australia's 1983 Le Mans winner, Vern Schuppan, described his young German team-mate, Stefan Bellof, as "something special", soon after Bellof joined the Rothmans Porsche team in 1983. This year, the 27-year-old German, has proved Schuppan, and many others, correct.

Four pole positions, two fastest laps and four wins to Bellof's credit so far in the 1984 WEC, speaks for itself and after a season mostly following around team leader, Jacky Ickx, Bellof comes to Australia with a three points lead in the world drivers title, ahead of team-mate Jochen Mass, and looks sure to end Ickx's run at the top.

With Bellof, Mass and Ickx in the team for 1984, the Rothmans Porsche factory looked set for another good year, after being dominant in the previous year. Porsche had won the last two manufacturers titles and Ickx had won the drivers title. They were going for a double hat-trick in 1984.

Rothmans Porsches opened the 1984 championship in familiar style at Monza, Italy, crossing the finish line just 24 seconds apart — and five laps ahead of anyone else. Monza set the scene for the following seven rounds; in all the Rothmans team scored six wins and three one-two finishes.

Le Mans they did not contest — factory anger at proposed changes to the rules was expressed in a boycott of the famous 24 hour race — and at Imola, Italy, a sole car fitted with an experimental clutch failed to finish.

The calibre of the Rothmans drivers matched that of the machinery. Defending world endurance champion, Ickx, a six time winner at Le Mans, was paired with former March Formula One driver, Mass, in one car. In the other, experienced Englishman Derek Bell partnered the sensational Bellof.

But neither the Rothmans team nor Bellof have had it entirely their own way this season. The results belie a determined effort from the top privateer Porsche teams to topple the factory cars.

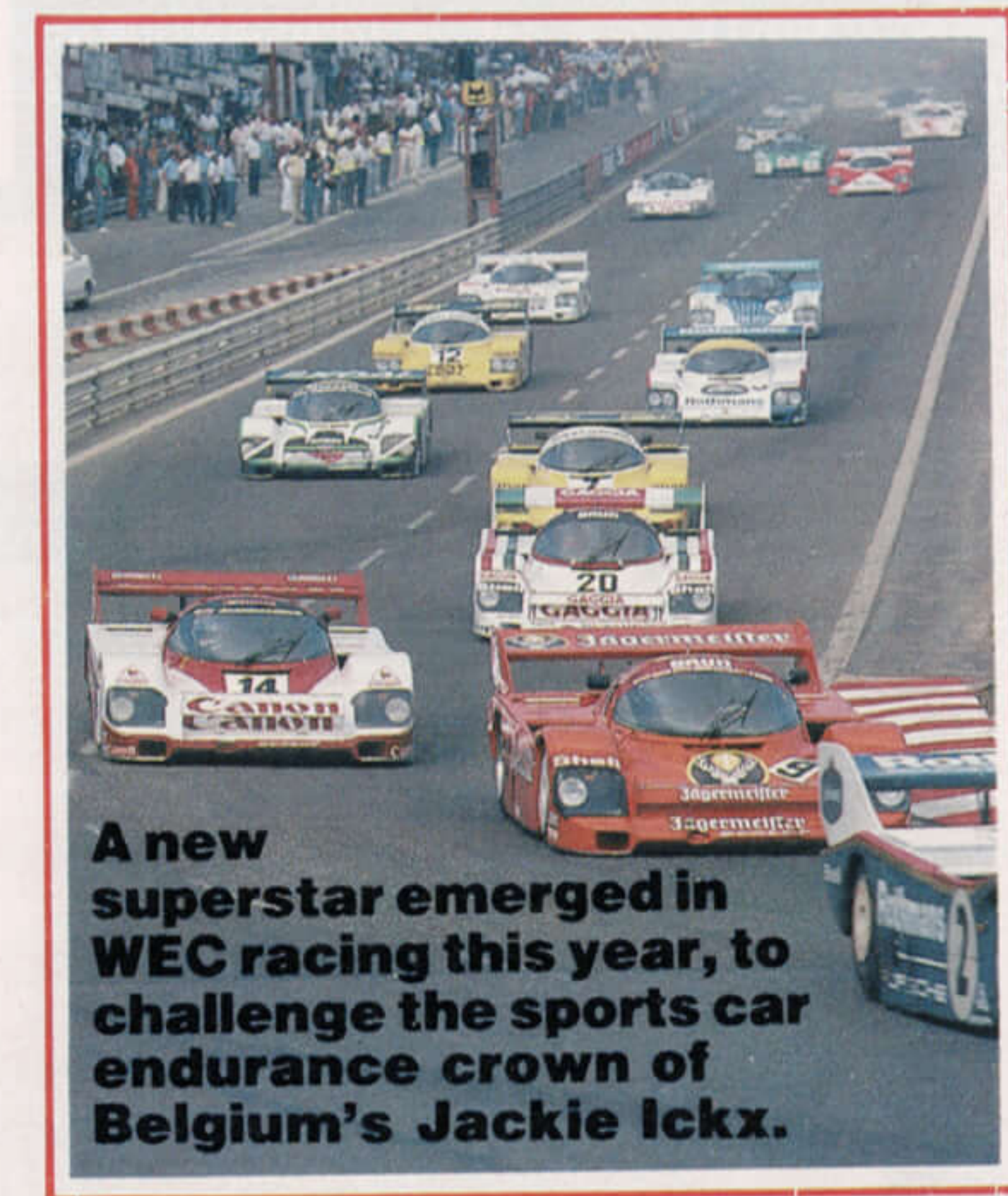
Teams like GTi Engineering with their Canon sponsored car, John Fitzpatrick Racing with their Skoal Bandit cars, Joest Racing with the New Man cars, Brun Motorsport and the Kremer Brothers have all given the Rothmans Porsches a run for their money. These teams have worked particularly hard in the areas of aerodynamics and chassis tuning, in an effort to overcome the slightly more powerful and economical engines the factory cars enjoy. Extra wings and different body panels are now common sights on the privateer 956 Porsches.

Confidence in the reliability of the twin turboed 2.6 litre Porsche engines took a battering early in the season when no less than 14 of the very expensive powerplants were destroyed.

At first, at Monza, poor fuel was blamed when private teams lost five engines and the factory two during qualifying. Three weeks later, at Silverstone, the factory cars blew four engines, forcing mechanics to install their last complete spare in one car and build an engine out of bits for the other. Some team managers suspected the new computerised

Bosch Motronic engine management system was causing the engines to run lean at speed and destroy pistons. A metal workers' strike at the Mahle piston factory in Germany and the extra work generated by supplying the McLaren Formula One team with TAG turbo engines meant that Porsche engines were in short supply in the lead up to Le Mans.

The only make capable of taking Porsche on this year was Lancia. They ran two factory cars, backed by long time sponsors Martini, and supported one other car run by a private team.



The Lancia LC2 featured a turbocharged Ferrari V8 engine, a new three litre version of which was run for the first time at Le Mans, developing about 670 bhp in race trim. Potentially very fast — F1 Alfa Romeo driver Riccardo Patrese put one on pole at Silverstone and Imola and Frenchman Bob Wollek was nine seconds faster than any Porsche 956 during qualifying at Le Mans — the Lancias suffered from niggling problems.

At Monza it was the wheels. The suspension had been redesigned during the winter to take bigger, grippier Dunlop Denloc slicks. Unfortunately the three-piece wheels made for the new tyres showed an alarming tendency to leak air, as Patrese discovered when a sudden flat sent him spearing off the track at the fast Lesmo Curve during qualifying.

At Silverstone it was the turbochargers. Both cars refused to run cleanly during qualifying. The mechanics changed turbos, then intercoolers, then the engines themselves, but nothing worked. The problem, which was eventually traced to a lubrication fault in the turbos, re-appeared on race day and only one car finished — in fourth place, six laps behind the winning Porsche.

At Le Mans it was the gearboxes. Blindly fast in practice, the Lancias circulated one-two for more than six hours — the Wollek/Nannini car covering 137 laps in the lead — before first one, then the other pulled into the pits minus fifth gear.

The Martini-Lancias also raced at the Nurburgring, where Italians Sandro Nannini and Paolo Barilla ran a strong third place, but missed round five, at Mosport Park in Canada, and round six, at Spa in Belgium.

Lancia re-appeared at Imola, anxious to do well in front of the home crowd and repeat their 1983 win at the circuit. Patrese responded by taking pole position, but the race turned out to be a disaster, with both cars crashing in separate incidents on the same corner.

ROUND ONE

(Makes and Drivers)
Monza, Italy, April 23

Pole position to Bellof, who charged from the start to take an early lead from English driver Jonathan Palmer in the Canon Porsche. Ickx, starting from grid position eight, was third by lap 14 and pressuring Palmer for second. A slow pitstop cost the Canon team second place and the Rothmans Porsches continued one-two until the finish.

An oil leak caused a fire in the engine compartment of the Patrese/Wollek Lancia on lap 128, forcing it out of the race. The second works Lancia, driven by Mauro Baldi and Paolo Barilla, finished third.

At the post race weigh-in both the Bellof/Bell Rothmans Porsche and the Baldi/Barilla Martini-Lancia were found to be underweight. They were disqualified, then reinstated in October.

RESULTS (173 laps 1003.4kms): 1st — Bell/Bellof (Porsche 956); 2nd — Ickx/Mass (Porsche 956); 3rd — Barilla/Baldi (Lancia).

ROUND TWO

(Makes and Drivers)
Silverstone, England, May 13

Win two for Ickx, Mass and Rothmans Porsche.

Patrese grabbed pole for Martini-Lancia, but retired from race on lap 56 because of a persistent misfire. The Palmer/Lammers Porsche took the lead on lap 28, holding it until an oil line broke shortly before mid-race distance.

Ickx/Mass virtually inherited the lead when the Canon Porsche pitted. The second Rothmans car suffered a split oil cooler and pitted for 20 minutes before resuming the race.

The Baldi/Barilla Lancia also suffered a misfire, but soldiered on to finish fourth behind the Porsches of experienced sports car racers Klaus Ludwig/Henri Pescarolo and Englishmen Rupert Keegan/Guy Edwards.

RESULTS (212 laps 1000.2kms): 1st — Ickx/Mass (Porsche 956); 2nd — Ludwig/Pescarolo (Porsche 956); 3rd — Keegan/Edwards (Porsche 956).

ROUND THREE

(Makes and Drivers)
Le Mans, France, June 16/17

The Lancias led away from the front row at 3pm Saturday, but the little WM Peugeot of ►

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Roger Dorchy led the pack up the start/finish straight after the first lap, to the delight of the French crowd. Dorchy spun under brakes on lap three and dropped out of contention as a major scrap that was to last five hours developed between the Lancias and the Vern Schuppan/Alan Jones/Jean-Pierre Jarier Porsche.

Shortly after the sixth hour the Wollek/Nannini Lancia pulled a lap ahead of the rest of the field. Tragedy struck on Mulsanne straight when both Aston Martin Nimrods crashed, killing a French track marshal. Team driver John Sheldon was badly burned. The field was run under a yellow flag behind pace cars for just over an hour. When the pace cars left the track both Lancias scuttled off into the night with a solid one-two lead, which they were to hold for about five hours.

The first Lancia gearbox, on the Mauro Baldi/Paolo Barilla/Hans Heyer car, failed shortly after 3am — the second struck down the leading Lancia about three hours later.

Meanwhile veteran long distance racers Klaus Ludwig and Henri Pescarolo had worked their Porsche up from 30th place at the end of the first hour — caused by an early pit stop to fix a fuel pressure problem — to the lead by the 16th hour and kept it.

A charge by Schuppan/Jones/Jarier ended in the last hour when the Kremer Brothers Porsche bent a rod.

For the full story turn to page 56.

RESULTS: 1st — Ludwig/Pescarolo (Porsche 956); 2nd — Rondeau/Paul Jr/Henn (Porsche 956); 3rd — Hobbs/Strieff/Van der Merwe (Porsche 956).

ROUND FOUR

(Makes and Drivers)
Nurburgring, Germany, July 15

Rain midway through forced organisers to stop the race at the six hours limit, while the lead car was still 60km short of the 1000km race distance.

No one car dominated the race. First the pole winning Bellof/Bell car led, then the Brun Motorsport Porsche of Germans Hans Stuck and Harald Grohs took over the front running. Then it was the turn of Jonathan Palmer and Dutchman Jan Lammers to lead in the Canon Porsche, but they in turn succumbed to pressure from the Skoal Bandit Porsche driven by David Hobbs and Belgian F1 driver Thierry Boutsen.

The changing race distance meant that fuel consumption figures and pit stop schedules also changed. With 14 minutes to go, the Boutsen/Hobbs Porsche pitted for fuel allowing the Bellof/Bell car to close and pass in the last 10 minutes to win by 15 seconds.

RESULTS (6 hours): 1st — Bellof/Bell (Porsche 956); 2nd — Boutsen/Hobbs (Porsche 956); 3rd — Nannini/Barilla (Lancia LC2).

ROUND FIVE

(for Drivers)
Brands Hatch, England, July 29

No works Porsches, only works drivers, Stefan Bellof and Jochen Mass running in private Porsches.

On home ground it was the Canon-GTi Porsche of Jonathon Palmer/Jan Lammers which dominated to win. Palmer led away from pole, and his only worry, Bob Wollek in the factory Lancia, could make no impression from a solid second place early on.

Mass, paired with Henri Pescarolo in the Joest car, did well to move up to second. His Rothmans team-mate, Bellof, in the Brun Porsche was not so fortunate, when he clashed with Thierry Boutsen in the JFR Porsche.

RESULTS: 1st — Palmer/Lammers (Porsche), 2nd — Pescarolo/Mass (Porsche), 3rd — Edwards/Keegan (Porsche 962).

ROUND FIVE for Makes

(Rd. Six for Drivers)
Mosport, Canada, August 5

The Canadian race lacked depth. Only six 956 Porsches entered — two works cars and a camera car driven by Vern Schuppan and Pink Floyd rock band drummer, Nick Mason, were among them — and no Lancias.

As expected the Rothmans Porsches ran one-two in the early stages, but the pole winning Bellof/Bell car dropped out of the lead with a broken fanbelt and then alternator problems which meant constant pit stops to change the battery.

At three-quarter distance Ickx and Mass led by six laps from the Porsche driven by David Hobbs/Rupert Keegan/Franz Konrad, which was in turn two laps ahead of the Walter Brun entered car driven by Brun and Oscar Laurari and nine laps ahead of the Kremer Brothers Porsche driven by George Fouche/Bill Adam/Kees Nierop.

The third and fourth place Porsches both suffered gearbox problems and retired towards the end of the race.

RESULTS (253 laps): 1st — Ickx/Mass (Porsche 956); 2nd Hobbs/Keegan/Konrad (Porsche 956); 3rd — Coppelli/Dacco (Alba-Giannini 001).

ROUND SIX for Makes

(Rd. Seven for Drivers)
Spa, Belgium, September 2

Rothmans Porsche brought three cars to Spa — the usual pair for Ickx/Mass and Bellof/Bell — and one for Vern Schuppan and former McLaren F1 driver John Watson. The result was another one-two for the team, with Bellof and Bell winning from Ickx and Mass.

The Schuppan/Watson car suffered electrical problems and finished sixth, five laps behind.

It was a lucky win for Bellof, who straightened the chicane during a particularly desperate braking move — a stunt that would normally have earned him a 60-second penalty. Fortunately at Spa only a fine is imposed. Fortunately, because Bellof hurried into the pits to change a flat tyre before going on to win the race by 58 seconds.

Much was expected of the privateer teams, now well into their aerodynamic experimentation. Thierry Boutsen put the Skoal Bandit car on pole in front of his home crowd and was looking good for a strong second place until the engine blew 23 laps from the finish.

RESULTS (144 laps 999.36kms): 1st — Bellof/Bell (Porsche 956); 2nd Ickx/Mass (Porsche 956); 3rd — Stuck/Grohs/Brun (Porsche 956).

ROUND EIGHT

(for Drivers)
Imola, Italy, September 16

Riccardo Patrese, on pole in the Martini Lancia, led for the first two laps before pulling into the pits with a braking problem, much to the disappointment of the partisan Italian crowd.

The sole Rothmans Porsche, entered for Jacky Ickx and John Watson, retired on lap two after blowing its third experimental "quick change" clutch in as many days.

Both Lancias crashed on the same corner — the Nannini/Barilla car on lap 128 when Barilla spun on oil, and the Patrese/Wollek car on lap 163, when Wollek ran out of brakes.

The battle for the lead was fought throughout the race between the Palmer/Lammers car and German Hans Stuck with a free-lancing Bellof in a Brun Motorsport car.

Fuel consumption decided the race as Lammers, slowed by a 7000 rpm limit and only allowed 1.15 bar turbo boost in an effort to conserve fuel, was caught and passed by Bellof in the last hour.

RESULTS (199 laps 1002.96kms):

1st — Bellof/Stuck (Porsche 956); 2nd — Palmer/Lammers (Porsche 956); 3rd — Mass/Pescarolo/Heyer (Porsche 956).

ROUND SEVEN for Makes

(Rd. Nine for Drivers)
Mount Fuji, Japan, September 30

Mount Fuji gave the Rothmans team its third one-two finish of the season, and sixth win.

Bellof, sharing with John Watson, put the car on pole position and proceeded to establish a handy lead, which Watson, mindful of his co-driver's need to finish in front of Mass, maintained studiously during his stints at the wheel.

Ickx and Mass continued to follow their teammates, unable to make much of an impression, eventually finishing 32 seconds behind.

Vern Schuppan and Hans Stuck finished third in the Japanese Trust Porsche Schuppan drives in the Japanese Group C Championship.

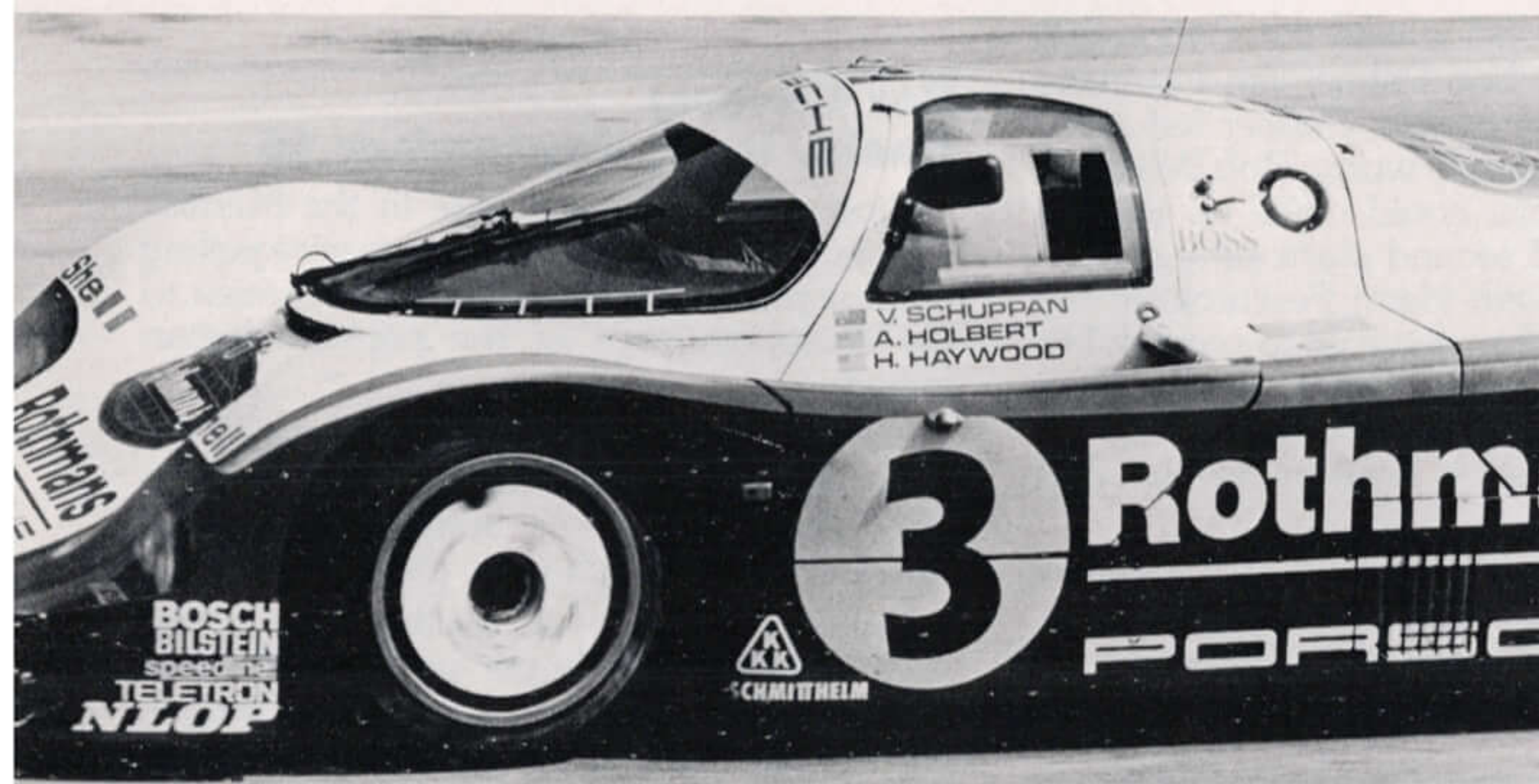
RESULTS (226 laps 996.67kms): 1st — Bellof/Watson (Porsche 956); 2nd — Ickx/Mass (Porsche 956); 3rd — Schuppan/Stuck (Porsche 956).

ROUND EIGHT for Makes

(Rd. Ten for Drivers)
Kyalami, South Africa, November 3

No Rothmans Porsches, in fact, hardly any Group C cars competed except the works Lancias and the Dieter Schornstein Porsche 956.

The Lancias of course won, with Riccardo Patrese/Sandro Nannini finishing two laps ahead of team-mates Bob Wollek/Paolo Barilla. Schornstein/John Winter/Henri Pescarolo came in ninth in their Joest Racing prepared 956.



SCHUPPAN SHOWS HIS STUFF

Australia's international sports car ace, Vern Schuppan, lines up at Sandown today for the most important Australian race of his career. It is a rare chance to see why the 1983 Le Mans winner is so highly regarded overseas.

To the French he is fondly known as 'L'Australien, rapide du volant' — the fast Australian racing driver and there are many other European countries where he is better known than in his home country. It was only after winning Le Mans last year that the low-key, sandy haired former Whyalla motor mechanic — Vern Schuppan — attained in the eyes of the Australian public, the status of our world champions Jack Brabham and Alan Jones.

Schuppan is now a regular in international sports car endurance racing and particularly at Le Mans which has always been the most important day on his yearly work schedule. He is currently rated very high on the list of the world's top sports car endurance drivers, keeping company as he does with such sports car legends as Jacky Ickx.

At Sandown today, Schuppan will line up in one of the three very fast Rothmans Porsche Team works Porsche 956s, with Alan Jones as his co-driver. It will be identical to the factory machine Schuppan drove to win Le Mans in 1983. He and Jones, his Silverstone 1000km and Le Mans 1984 co-driver, will start as one of the favoured pairings in the event today, which is the final round of the 1984 World Endurance Championship of Drivers.

Schuppan cannot win the title today because he has not contested all rounds of the title this year. This year has been a less hectic year for the South Australian, due to his resolve to concentrate on Le Mans, some of the WEC rounds and the Japanese Endurance Championship — all in Group C Porsche 956s. Including Sandown today he will have done 11 1000km races plus Le Mans this year, which is still a lot of driving for any professional driver. In the WEC races he drove for the Rothmans Porsche Team, at Silverstone he was with the Swiss Walter Brun team and at Le Mans drove for the German Kremer Porsche team following a boycott of the big race by the Rothmans Porsche after an argument with Le Mans organisers over changing of the regulations. For the Japanese Group C championship Schuppan was with the local Nova Engineering Team.

It was in the Nova Porsche in June at Suzuka that Schuppan had one of his few accidents. This was a big, high speed shunt that left a rear suspension upright and the two doors as the only parts of the car intact. His only injury was some bruising.

Schuppan's long term success in international racing comes from his cool, even

tempered, approach to his task. He has established an enviable reputation overseas for his reliability and dedication to the job at hand, as well as being what the best endurance drivers are — fast while being kind to the machinery. Proof of that is the sincere, well-liked Schuppan has driven for many teams, who never hesitate to invite him back when a seat is available.

1 — Vern Schuppan on his way to victory in the 1983 Le Mans 24 Hour Endurance Classic
2 — Race veteran and title holder, Vern Schuppan, plays teacher for 1984 Le Mans rookie, Alan Jones.
3 — Vern Schuppan in the Trust Nova Engineering Porsche 956, winner of the 1983 Japanese Group C National Endurance Championship.



"... next year I may run my own car in a few races."

Vern Schuppan started his racing career very late. At 26, he only had a few years of South Australian go-kart racing behind him when he bundled up his savings and a renovated van and headed for England in 1970. In 18 months after starting in Formula Ford, he was in the BRM Formula One team, only to lose his spot to a young Austrian named Niki Lauda, who had 'bought' the seat. That same year Schuppan was invited to drive at Le Mans and he never looked back.

After several years in Europe, Schuppan moved his base to Phoenix, Arizona and concentrated on lucrative F5000, Can-Am and Indy car racing, which brought him many successes, culminating in a third at the Indianapolis 500 in 1981. That Indy result

helped get him an invitation to drive for the Porsche team in sports car racing that year. In 1982 he became a regular in the Rothmans Porsche team and largely specialised on the new-look Group C sports cars in Europe and Japan from his current London base.

Over his long career, Schuppan has raced very little in Australia. He won the 1978 Rothmans International season here in the European off-season, has driven touring cars at Bathurst with the Marlboro Holden Dealer Team, Allan Moffat and Dick Johnson, and has also made a few Australian Grand Prix appearances in recent years driving a Formula Pacific. Sandown today will be the first time he will be driving in Australia in the type of class which has brought him so much acclaim overseas.

Schuppan will have raced in the final round of the Japanese Group C championship in the weekend prior to Sandown and will have arrived in Melbourne for his first look at the new circuit on the Wednesday before the event. BARRY NAISMITH spoke to Vern Schuppan about Sandown and Group C...

QUESTION: Sandown will be the first time we have seen you in the type of car and racing that has brought you fame. Will the race evoke some special feelings?

Schuppan: I am looking forward to it. I like driving with Alan (Jones) and I still believe he is a top contender and he doesn't like to be beaten. He was the best man in his world championship winning days, he has his business and his home here in Australia, and any racing he does he likes to do it in Australia. He was actually offered the drive at Fuji with me before Hans Stuck was offered the car, but it was important for Alan to do Bathurst and keep something going here. I can understand from the people I have spoken to here that he was really flying and unlucky not to wind up second there. The time when Alan said he decided to do Bathurst instead of Fuji, I was somewhat disappointed and perhaps thought he made the wrong choice. I said to him, 'Well how do you expect to go to Bathurst and beat Brockie?' And he said, 'Nobody expects you to do that but we can beat the others.' He said that if you do that in Australia, it is a lot better for him out here. The World Endurance Championship and the races in Japan, don't get a lot of press out here, so he was able to do what he wanted to do, I know he is keen to do well at Sandown and I want to do well at Sandown.



2

Q: Was Alan your choice for Sandown?

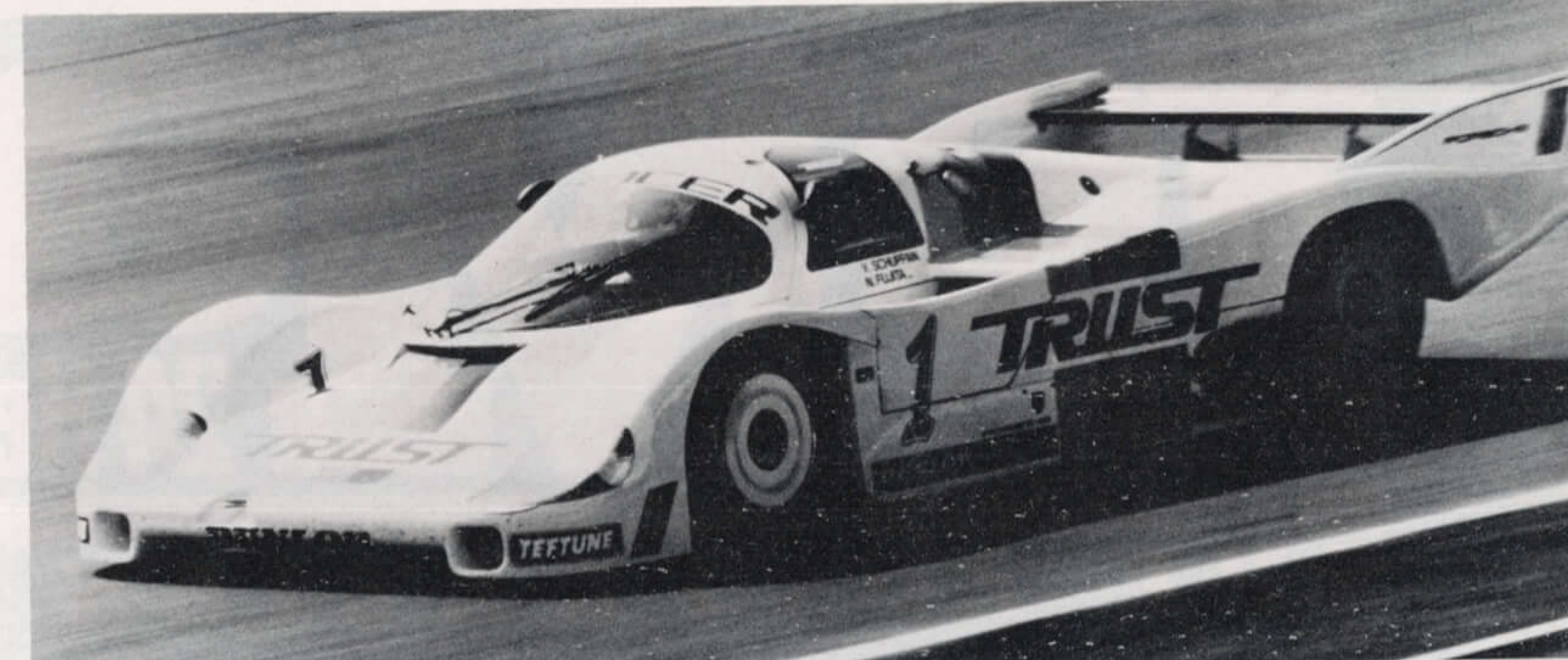
Schuppan: Yes. John Watson was coming. He is a bloody good steerer too, but because Alan and I had driven together on two other occasions and I knew he wanted to do Sandown and I just thought, we went well together at Le Mans, and as far as I was concerned it was better to have two Aussies in a car. There will perhaps be more local support with two Australians driving. Alan's still got a big following here and I think the two of us will do a good job.

Q: Is Sandown going to be any different or do you have to approach it as another race?

Schuppan: Honestly, I never look at any other race as any more special than the last one. It is very easy to psyche yourself out. Even going to Indy or Le Mans, I have never looked upon it as being super-special, you just try and do your best. There doesn't seem to be any point unless you try your best. I guess Sandown will be a bit different because I don't race often in Australia, but I'm trying not to look at it that way, just to do the best I can.

Q: The field looks strong. Can you win?

Schuppan: Everybody's coming here for the first time, there is no information for the teams to use to say, well that's what we will run at Sandown. The factory and all the privateer teams are really starting from square one and some of the private teams have actually given the factory team a run for its money this year. That doesn't mean to say that I think the factory team doesn't have a good chance of winning, I think they do. They get the results when they really want to. I think a factory car will win. But there is a problem preparing three cars. I had the experience at Spa this year when the third car was definitely not up to par. We were the only car that really had problems — silly things like the alternator packing up and not enough good tyres to go around on the first day of practice so we went out and practised on the last race tyres and things like this. So Wattie (John Watson) and I expressed our displeasure at that. I think Sandown will be different because there is more time between the various races for the tyre people to get rubber organised for everybody. It has been a problem in Europe for Dunlop to supply enough tyres. Most of the teams are running on Dunlop and it is just difficult to keep up the supply. You need so many tyres in a long



3

distance race, that if you are looking after 18 or 20 teams, there is just a supply problem, to give everybody a fair shot.

Q: That fact that we are so far away, is that going to affect how the teams prepare for the race?

Schuppan: I don't think so because the cars are prepared before they come here. The factory cars will be prepared here, because they are coming straight from Japan. The Porsche mechanics will come out a couple of weeks beforehand. The motors will come out separately. There is a ton of time between the last round at Fuji and the last round at Sandown. If anything, they have had more time and they should be prepared better than they would be for a couple of European races a couple of weeks later.

Q: What is it like to drive for a team like Rothmans Porsche. We hear a lot about the Formula One teams, but not so much about Porsche?

Schuppan: Group C racing is slightly more relaxed, in terms of qualifying and so on. Formula One is much more intense; they get it over and done with fairly quickly. But in terms of preparation, the Porsche team approaches Formula One standard. You know what they are doing in Formula One with the engine technology, and that same technology goes into Group C.

Q: How did you come to be involved with the Porsche team?

Schuppan: I drove for Porsche in 1981 after my third at Indy. They had spoken to me before about driving one of their 936s — theirs or for Reinhold Joest. What gave me the drive was in 1981 when Rick Mears was burnt in the pits accident and I actually took a few days off and went fishing with some friends in Florida. When I arrived back in Phoenix there was a whole lot of messages from Porsche saying, could I please come over and replace Mears in the car. I literally had to jump onto a plane and whizz off to Le Mans. I had known the Porsche people through my involvement with the Mirage team, when I was competing more in Europe. The team manager often said, one of these days we will get you driving a Porsche. I had one drive in a Porsche — that was organised by Porsche — with Derek Bell at the Osterreicherung in a 934 in 1976. With Mears' misfortune I drove the second team car with Jochen Mass. After that one race at Le Mans I was offered a full season with them in 1982.

Q: What sort of involvement is it for you? Is testing required before each race?

Schuppan: No, there is really very little of that. In fact they are the most laid-back team I have ever been with. You certainly turn up and drive the thing, but it is very rare for them to ask you what the oil pressure is or the temperature of the transmission. I'm used to with Mirage or any other team to have the team manager come up to me after each run, no matter if it is one lap or ten, you have got to rattle off all the various oil temperatures and pressures and they note them down. I first went to drive at Le Mans with them in 1981 in the 936, I wondered where the team manager was and why he wasn't asking me questions about the car. I can only assume they treat the driver as a total professional and if something goes wrong with the engine, they expect you to tell them! And they don't expect anything to go wrong.

Q: Then what do you have to do to prepare for a race from a personal point of view?

Schuppan: It is an individual thing. Some drivers need more training than others. I don't do anything special for Le Mans. Probably I should — perhaps some pre-season training. I had a bit of a run with the local footy team at home last year and this year. It is hard work to do that race with two drivers now. I have done the race seven or eight times with two. In an open car it was never a problem, but with greater down force on the cars and closed cockpit there is just a bit of a problem with heat if the weather's extremely hot. Many drivers have a problem, if there is only two. It is more a safety precaution now that most teams want to run three drivers in case one of the drivers gets sick.

Q: Can a 1000km race be a problem too for drivers?

Schuppan: It can be. Mosport was a problem. Jacky Ickx said it was the first time he had a problem in a race, physically. He was buggered after 20 laps and we have to run 40 laps between fuel stops. It is a very bumpy track and it was very hot there, so again heat was the big problem, combined with a very twisty circuit. It is extremely hard work.

Q: You have driven many good cars over your career, how does the 956 rate in comparison?

Schuppan: On most circuits I find it very enjoyable. You have lots of horsepower and it is a lot more fun to drive a powerful car than a

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little car. Atlantic type cars can be fun to drive also, you can fling them around, but there is nothing like having brute horsepower. The 956 has good brakes and very good handling. I mean Jonathan Palmer was telling me at Fuji that the Porsche handles better than his Formula One car and I can believe that because they have more down-force than a Formula One car. They are just a bloody good car and in most cases they are enjoyable to drive.

Q: Is the 956 difficult to drive? Does it take a definite technique?

Schuppan: It is something you get used to. I have known drivers who have gone very, very well in single seaters, and various other cars, and perhaps been the best in their field. A driver like Stefan Johansson, he is good and he is one of the coming stars in Formula One and has won everything in Formula Two and so on, but they don't seem to be able to do that when they get into a big, heavy sports car. It is a bit like getting into a touring car after a single seater, they feel dreadful — there is not the same finesse in driving them; they are heavy and they don't stop properly and of course there is very little downforce on them. I think most drivers have the same problem adapting to a heavy sports car, heavy by single seater standards, and with lots of horsepower. You don't really realise how well they stop. Even Jonesy said he didn't like the way the things stop and they were not like Formula One brakes. In fact if you have confidence in the brakes, you can just about outbrake anything else on a circuit. If you do enough miles in these cars, you can drive them well. There has been the odd driver, like Stefan Bellof, a Jochen Rindt type of driver, who can jump into anything and immediately go faster than the recognised experts.

"I'm sure if Brockie was just driving Porsches, he would be one of the top of the field."

Q: So it's adapting and attitude. There is not such a thing as a born endurance driver?

Schuppan: There are natural drivers who can jump into anything and go fast. Bellof and one or two of the others have proved that. Other drivers, it takes them a bit longer. I'm sure if Brockie was just driving Porsches, he would be one of the top of the field. If somebody went from a Porsche to a touring car they would eventually be quick. Perhaps in the initial transition, people would say that he was not all that good. It is really because it is different.

Q: The latest Group C regulations seemed to have enlivened sports car endurance racing to a degree. What is your view of the regulations? Are we heading in the right direction?

Schuppan: Group C has become an alternative for some sponsors and drivers to Formula One because you can go along and buy a very competitive racing car. In fact you can buy a new Porsche and be competitive straight out of the box. I suppose a few years ago you could almost do that in Formula One by buying the Cosworth engine, perhaps using the same chassis from somebody like March, but not a winning chassis.

That's certainly gone by the board now in Formula One unless you have a couple of millions of dollars for an engine programme and the same again for a chassis programme. And even teams who have got that are still scratching around at the back of the grid and many of the sponsors are disillusioned. They have spent millions of dollars and are getting nothing back. Whereas in Group C, for much less money, sponsors can go along and have a very competitive car. Likewise drivers who have been scratching around on the back of a grid in a Formula One car, they can get in a 956, a private one, and show people that they are good at driving powerful cars. Many drivers now see that as a stepping stone to Formula One.

Q: Is the 956 now the epitome of the sports car?

Schuppan: I think it has brought back the 917 era when sports cars went 230 or 240 mph down the main straight. They looked fantastic and the 956 had put us back into that era. It has become a classic in a way. Sports car racing has been in the doldrums for a few years and now Group C has put it back on the map.

Q: Is sports car racing as advanced in its own way as Formula One?

Schuppan: No, nowhere near it really. Maybe the engine technology is, and can be, but in terms of chassis and things like that, it hasn't been necessary to go to the lengths they have in Formula One. Formula One is still the pinnacle of racing in terms of what drivers want and in technical development and that's the way it should be. I'd really hate to see it come into Group C to that extent. It creeps into all racing and while Formula One will always be like that, not all racing can stand the expense and economics of that type of development.

Q: So you could build a car to beat a 956 if you wanted to?

Schuppan: Yes, you could but there are different problems in Group C racing. It is a car that is built to be thrashed over six hours or 24 hours and Porsche have already put the millions of dollars into doing that development and running the cars on the proving ground in Germany for 24 hours until they break. The next stage is to build your own car, but then you are getting into the Formula One cost, without building the ultimate in carbon-fibre chassis and things. You have still got to build the car to go for 24 hours and that in itself is a very expensive exercise and one that Renault went through for two or three years before they finally won Le Mans. So the actual development costs can perhaps approach Formula One levels for a team and this of course is the appeal of buying a Porsche, or something that has had all that development done to it and perhaps try and improve on the car a bit. Some people are making changes to the aerodynamics and so on. It still is a form of racing where a privateer can buy his car and be competitive. There are teams which are building their own car but it is a struggle for them to be reliable and competitive and beat the Porsches.

Q: The Group C regulations have been framed to attract manufacturers, but are we always going to see one manufacturer like Porsche dominate?

Schuppan: Yes, but I'm sure Porsche will

eventually bow out of it. In past years they have tended to come into a new formula, stay there for two or three years, and then quietly bow out and let the customers get on with it. They did that the year that Renault won at Le Mans. They ran but they had cut back a lot. There will come a time when there will be other manufacturers in there when they see there is less of a challenge from Porsche. Suddenly they see they have a chance in Group C to do something. It is not one of the Porsche priorities.

Q: So when Porsche pull out it won't be the end of Group C?

Schuppan: No. There will be a lot of customer Porsches running and more encouragement for other manufacturers to have a go. The Japanese teams for example are building some very good Group C cars. They are only seen in Japan, but I can see the day when some of those cars will run in Europe.

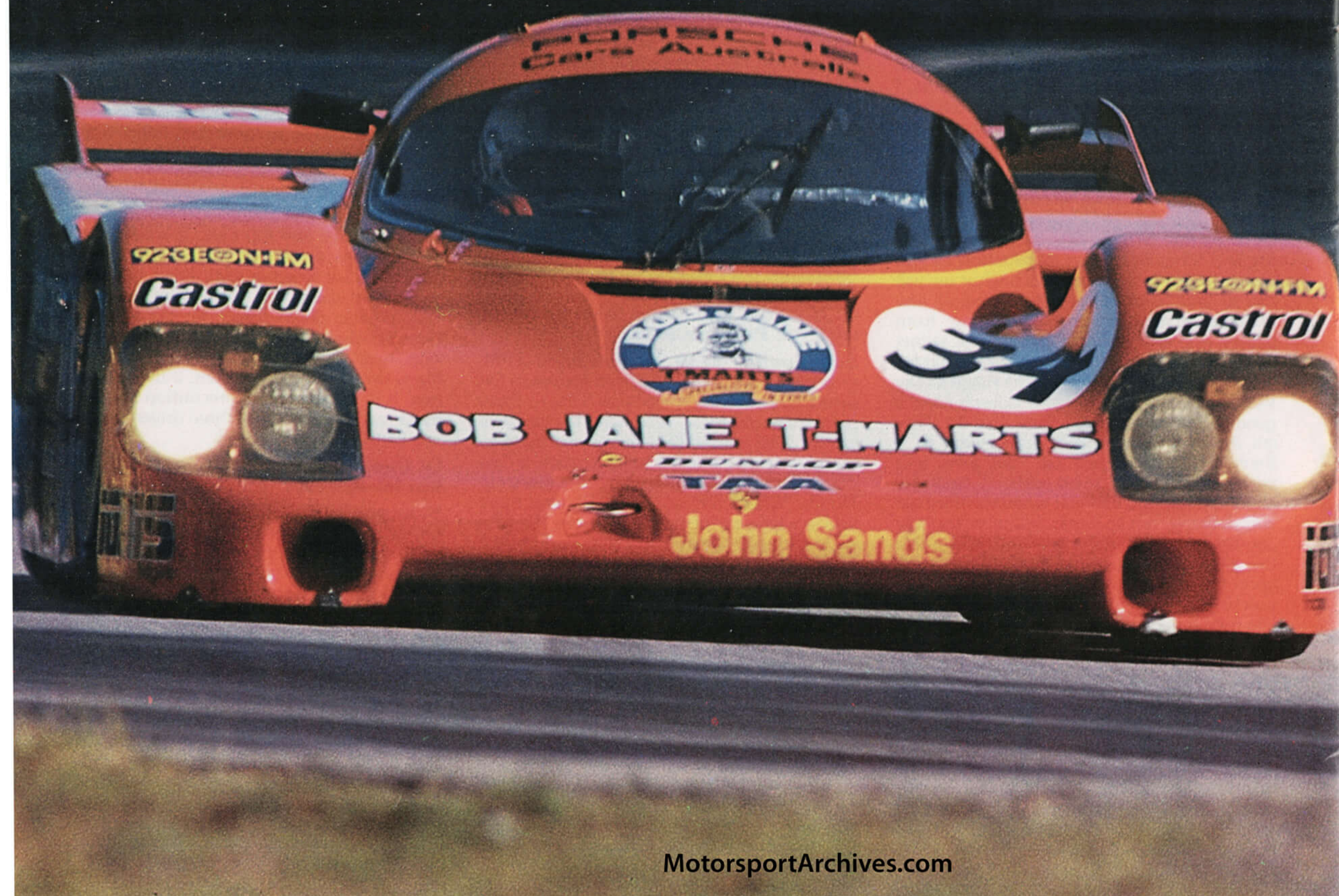
Q: Alan Jones has made the point many times that he received very little support and recognition from Australia in the early part of his career. Did you feel the same way when you were climbing the ladder in Europe?

Schuppan: That was certainly the case, but I never really thought that Australia should sponsor an Australian. First of all it was very hard to get a sponsor of any kind and I think my total savings were \$5000 to go racing, so I must have like every other driver, written 100 letters to prospective sponsors. The luck I had was driving for people who already had cars. I never really thought about the fact that I'm Australian, why can't I get Australian sponsorship? I went to Europe as a total unknown. I had never done any racing in Australia, apart from go-karts and I had only seen a couple of race cars, so when I started my career in England, I had no experience of car racing at all. I thought it was hard getting a sponsor anywhere and it was only in latter years that I attracted some Australian backing. It doesn't matter what profession you're in, unless you have had some success and show people what you can do, you wouldn't expect anybody to back you. Young drivers have come up to me and asked, well how do I get started? It is so bloody hard out there, you have got to go and buy the car and show people you can do it first. It is not like any other sport where the equipment cost is a minor fraction of what it takes. In car racing you have got to buy the car and go off and prove yourself, and that is really hard unless you have bulk money behind you.

Q: Do you tell young drivers that it is possible to succeed by starting the way you did?

Schuppan: It is possible but it takes a lot more money, if you are going to do it the same way. Like everything, the costs have gone up. In the same way, companies are spending a lot more advertising dollars today, than 15 years ago, but it requires a certain amount of luck finding the first person to give you a drive or the first sponsor to kick your career along a bit. There are no guarantees that you are going to make the grade as a professional driver, you need a bit of luck to go your way when you did what I did, going around banging on people's doors.

Q: Should young drivers be still



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aiming at Formula One, or look at something as a viable alternative like you did?

Schuppan: They should set their sights on Formula One because you might as well set your sights at the top. It can be just as hard to get into a top touring car. It depends a lot on the ability of the guy. If the driver has outstanding talent and has the tenacity, sooner or later somebody will notice him. So in my opinion he should set his sights on Formula One.

“If I found that the other forms of racing were giving me a lot more pleasure than the time and frustration I spent in Formula One.”

Q: If they do decide to take the road you have taken, can they still eke out a reasonable living?

Schuppan: Yes, of course. I mean there are a lot of drivers that want to do Formula One, and are doing it. Some say, well unless I do that, I don't want to do anything else. There are those like Jonathan Palmer who may be looking at it as an alternative, but they are certainly doing quite well driving those types of cars. You have just got to keep an open mind and say, do I want to keep on motor racing and is Formula One the only thing? I found that the other forms of racing have given me a lot more pleasure than the time and frustration I spent in Formula One with a bad car and a bad team. I could get out of that car and drive for John Weir in the Mirage and thoroughly enjoy that. In a way it was the other racing that kept me going although I thought I'd like to be in Formula One. I didn't see that as the only priority. I thought that as long as I'm driving a good car and earning a living, that has been a way to stay in racing. Geoffrey Brabham's another example. He went through the frustrations of Formula Three in Europe and yet he is a bloody good driver. He is making a good career in the States. He'd like to be in Formula One, but he is realistic enough to realise that there are only so many places.

Q: You were in a sports car very early in your career. Did you continue wanting to drive Formula One?

Schuppan: In a way yes, although I was in a Formula One car in 1972, which was only 18 months or so after I was driving. That was going to be a full season in 1973, but of course I had the misfortune to have Niki Lauda come along and he had a few dollars to buy his way. At that time he had really done nothing in racing. Suddenly he arrives and at that time, as a young bloke, I felt that had crushed my career. But I started sports car racing that year and I suppose sports cars restored my confidence and I still wanted to continue in car racing. To be signed for a full season of Formula One and then lose it was fairly devastating.

Q: If Niki Lauda hadn't come along, where do you think you could have ended up?

Schuppan: I have no idea. I might have still ended up saying Formula One is not for me. Niki was a special sort of driver, not just in what he could do with the car; he had a way of charming the right people in the team but in a very forceful way. By the end of 1973, Niki was really the No. 1 driver and doing all

the tyre testing, having the best engine and the best car, and just having had a way of putting the whole thing together. If he said, we must do this, he would get it done. Through all those qualities he has shown to all of us that he was more than a natural talent. He is one driver who just comes along now and then who has something extra. I'm not saying I couldn't have achieved what he achieved, but could I have persevered to the extent that he has done or been reasonably happy to accept a good drive in a sports car, F5000 or Indy car or whatever there has been that was reasonably competitive.

Q: It has been a bit of a novelty for Australians to be racing overseas and with Australia being a sort of 'flavour of the month' in recent times, has being an Australian been a help or a hindrance?

Schuppan: In the days of the advent of sponsorship, there were many sponsors looking for a driver and said, well, we want a German driver because we are a German company and we can promote this guy in Germany. Australian companies have certainly lagged behind European companies in terms of using motor racing as a promotional vehicle. If you think about what the European and some of the American companies have poured into motor racing, is just like telephone numbers to an Australian company. I went through a period in my career when I felt that being an Australian made it a little bit harder to get a drive.

“... those people who previously took no notice of Vern Schuppan suddenly realised that there is another Australian over there...”

Q: Did Alan's presence in Formula One and his success help you in any way overseas?

Schuppan: It is very hard to say. I think it made people in Australia much more aware of motor racing, with the advent of the direct telecast and Alan being right up there and then winning the world championship. People here had a much better appreciation of what car racing was all about. That did make people more interested in what was happening and those people who previously took no notice of Vern Schuppan, suddenly realised that there is another Australian over there and he is doing all right.

Q: It has not been possible to base yourself in Australia?

Schuppan: Not really. If you are not over there, you are not part of the scene at all and you have got to be around where people know how to get hold of you — because races do come along suddenly when a team wants a driver for an extra event, if you are there and if it is the type of racing you are specialising in. Even at the factory, if I'm not driving a factory car they will often say to a customer, well, Vern's not racing this weekend, if you are short of a man we will get hold of him for you. That wouldn't happen if you are back here.

Q: You are 40 now. Have you thought about the future and are you planning to keep on racing for a while?

Schuppan: I'm taking each year as it

comes. I'm planning on racing again next year, but I'm not saying I will the year after because I don't do as many races now as I used to. Normally I'm driving a reasonably competitive car and getting good results and while I'm enjoying it I'll keep going. Eventually I'll bow out of it and maybe run my own car and in fact next year I may run my own car in a few races.

Q: What sort of racing?

Schuppan: It will be Group C and there are some negotiations at the moment and I might put together my own team for next year.

Q: Like a Fitzpatrick Racing?

Schuppan: That's right.

Q: Based in London?

Schuppan: Near London.

Q: You will obviously still spend a fair bit of time overseas?

Schuppan: Yes, well I have been living out of Australia for the last 15 years and it was only a few years ago that I bought a house back here. I thought Australia was where I would like to be during the off season. My wife and I have both got our families here, our parents are living in Australia, so it is nice to come back and spend Christmas here.

Q: Have you thought about building your own car?

Schuppan: I enjoy test driving and I like thinking about a car and seeing if we can do things to improve it, but to start from a blank sheet of paper, those days are gone. It is not on anymore when you see what companies like Porsche can do.

Q: How do you think you are driving at the moment?

Schuppan: In all honesty I think I'm driving as well now as I have done for a few years. It is better to specialise and drive the one type of car. It is hard to be competitive if you are leaping between all types of machinery. The racing has become more competitive and each class seems to have its specialist drivers.

Q: How is your desire to drive these days after so many years? Do you have to psyche yourself up or do you just jump in and it all comes back?

Schuppan: It does actually. I don't believe in psyching. I suppose I have just got used to it and most professional drivers feel the same way. It is like going to work. I get in the car and drive it and I still enjoy it. On most occasions I find it exhilarating and it is still a challenge and you are still learning things all the time. As the cars change you learn different techniques. It is amazing how you can keep going back to the same circuit and find a better way to negotiate a corner.

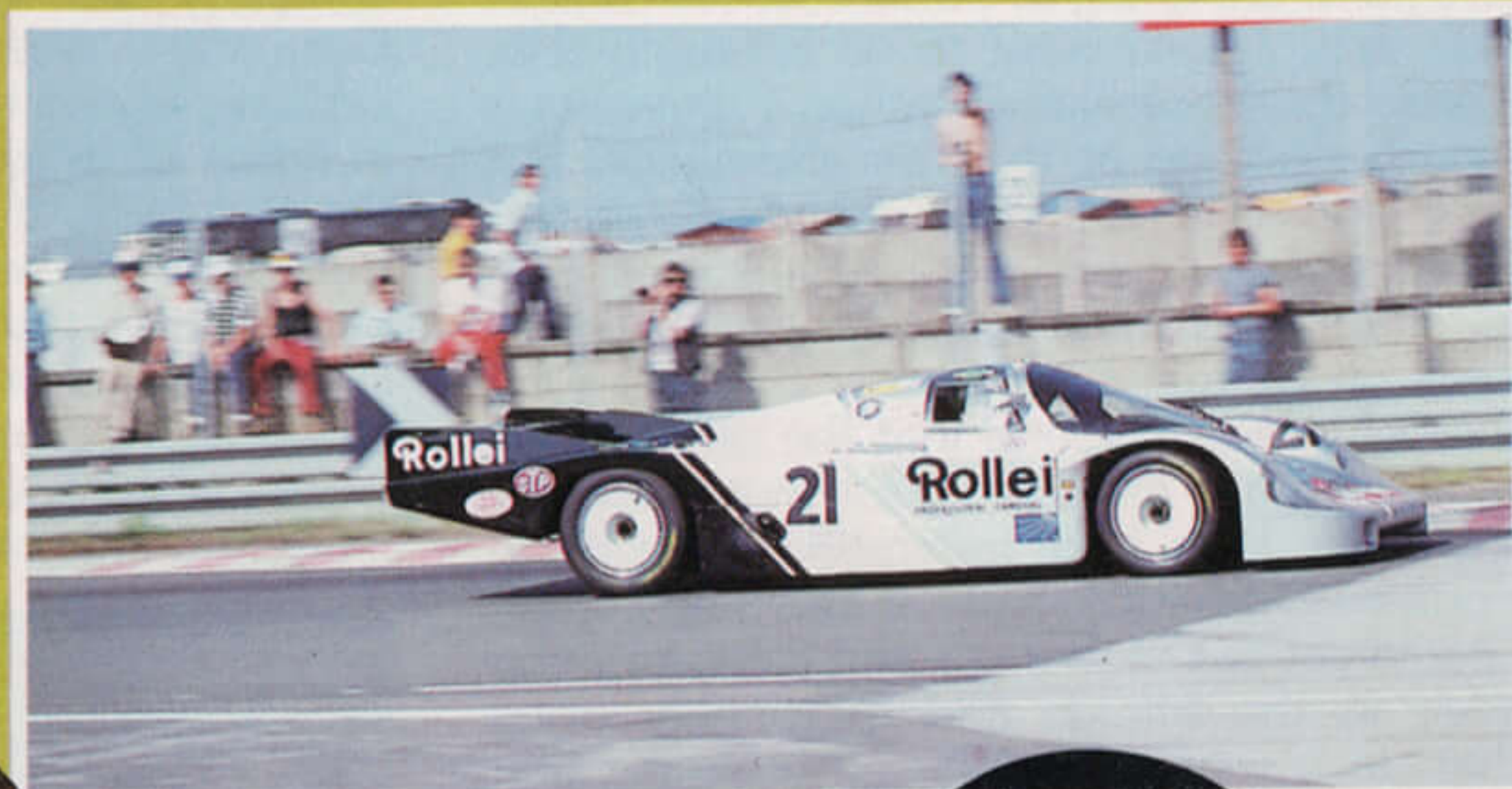
Q: How do you think the WEC teams will react to racing in Australia?

Schuppan: We have been motor racing in this country for a long time on a very professional level and Sandown, with the new circuit, the facilities will be impressive. These drivers and teams are used to going to circuits all around the world — both good and bad. I know they are all looking forward to coming to Australia because it is a place very few of them have been to and I can only see them coming here and being very pleasantly surprised. It is the last race of the season which will be more relaxed for them and a lot of them will want to stay on and have a bit of a look around.

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VERN'S DRIVE TO THE TOP

It all started in the South Australian steel town of Whyalla in 1970 when a 25-year-old motor mechanic, Vern Schuppan finished off preparing a van to take to Britain in the pursuit of a career as a racing driver.

By the end of 1970, his first season in England, he had already penetrated the local club scene with his well-prepared Formula Ford. He was operating on a shoe-string budget, dragging his car from one track to the next and usually winning if the car lasted.

The Ford Motor Company were most impressed by the quiet, but undoubtedly talented sandy-haired Australian and offered him a Formula Atlantic — the next step up from Formula Ford then — for the 1971 season. The Australian rewarded Ford's confidence in him by winning the British Atlantic Championship immediately.

Schuppan had used the BRM unit following an offer from the famous race engineering firm. It was an important link because that same season BRM offered him a few non-championship races in their Formula One car. Now a winner of the Grovewood Award as one of the most promising new drivers of the season, he was at the wheel of the BRM and mixing it with the likes of Fittipaldi, Hulme and Peterson.

In the off season, Schuppan kept busy by buying a March Formula Two and taking it to Singapore where he was second in the local grand prix. Then on to Macau where he put the car on pole position.

The new season of 1973 looked bright. BRM signed Schuppan and Swiss Clay Regazzoni to their Formula One team, and the Australian was on the way to a world championship. Then BRM decided to run three cars and Jean-Pierre Beltoise joined the team. Shortly thereafter, Niki Lauda, who was to become world champion two years later, was also signed, moving Schuppan to the sidelines as reserve driver in his first taste of Formula One politics. Ignoring that setback at Brands Hatch in the Race of Champions, Schuppan qualified third, just two-tenths slower than pole-sitter and teammate Beltoise. BRM might not have been impressed, but patron John Wyer quickly signed Schuppan to drive a Gulf Mirage at Le Mans.

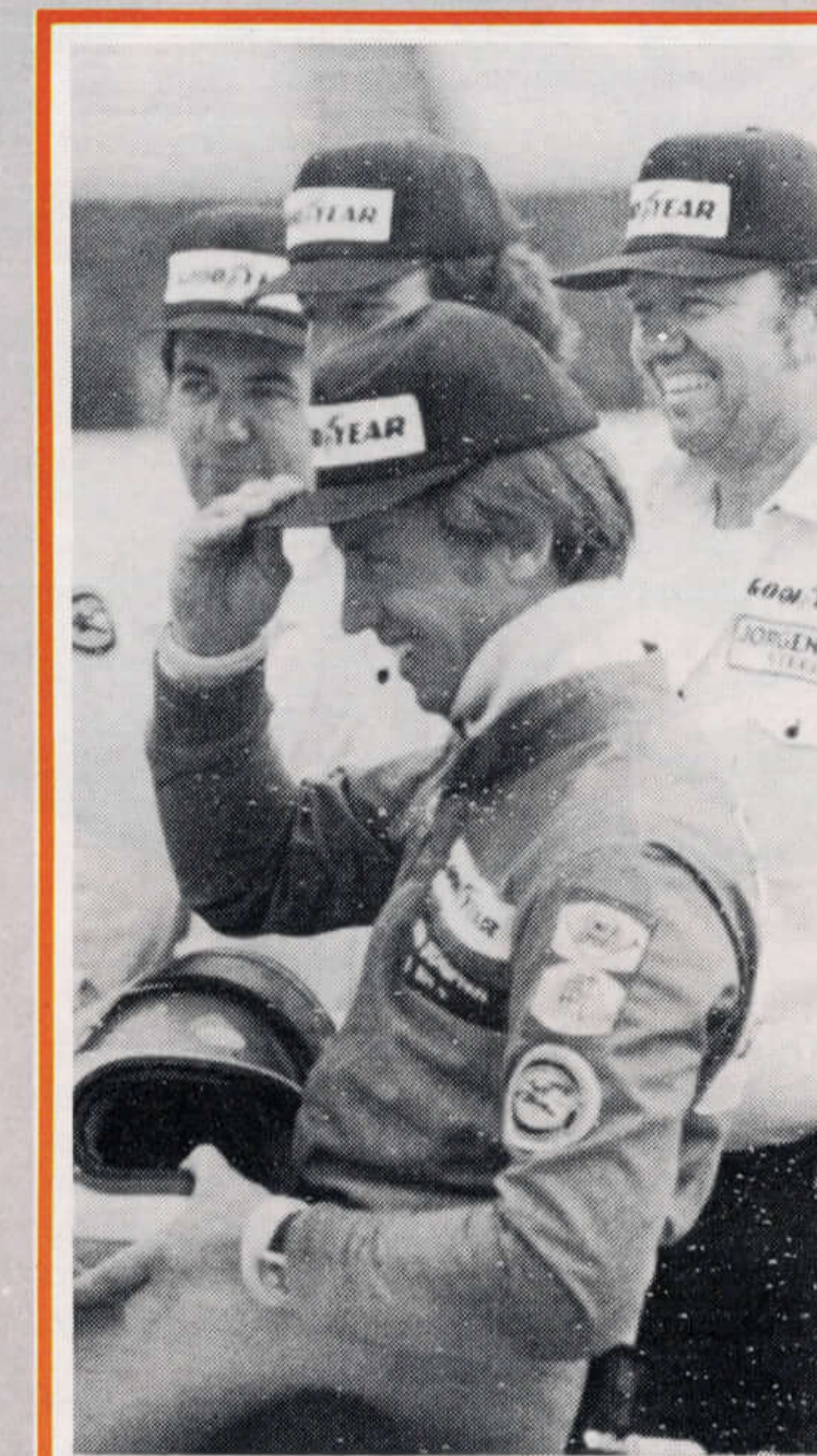
Another trip to the Orient followed at the end of the season. Hong Kong race team owner, Teddy Yip, bought Schuppan's March, although Vern still did the driving. He won the Singapore Grand Prix this time and then went on to record pole position in the Tokyo Grand Prix at Mt Fuji.

Schuppan got his first taste of the Formula 5000 scene in 1974 when his new patron Teddy Yip joined up with Ireland's Sid Taylor and put the Australian in their Lola 332. He led five races, winning Dublin, Ireland and the final race of the European F5000 Championship at Brands Hatch, swapping this time to the Team VDS Chevron.

Taylor took Schuppan to Laguna Seca and Riverside in the U.S.A. at the end of 1974 with the F5000. At Riverside, he started on the front row in his heat alongside Bobby

Unser's Eagle, only to spin in oil at turn seven, along with British world champion James Hunt. In the final event he and Hunt were catching the lead bunch when they clashed in turn nine.

That same year Schuppan won the Macau Grand Prix and established lap records on several tracks. He also set the outright lap record at Thruxton Park in Sid Taylor's F5000 and in a Chevron set a two-litre lap record at Spa Francorchamps.



Vern Schuppan at the 1981 Indianapolis 500. He finished third at his first attempt.

In 1975, Vern began with a second place in the Daily Express Race at Silverstone in Sid Taylor's Lola and set fastest lap time. Later he had a great win in the 1975 Road America 252 handicap in the ex-Gulf Team Mirage sports car.

By 1976 Schuppan had become a regular face at Le Mans, taking a fifth in the Mirage in 1976, following his third in 1975. In 1977 Schuppan salvaged the pride of the French Renault organisation when he took the privately entered Harley Cluxton's Mirage Renault into second place outright. After transmission problems, he could manage only tenth outright in 1978 with the ailing car.

Meanwhile, Schuppan had success in his first serious racing back home by winning the 1976 Australian Rothmans International Series in the Team Theodore Lola T332. He also further diversified by placing and being Rookie of the Year at Indianapolis in 1976. In

1977 he returned to the U.S.A. to compete in the Can Am Challenge and when the car was not ready, managed to pick up Formula One drives in the British, German and Dutch grands prix.

By 1979 Schuppan was campaigning the Australian Elfin in the U.S. Can Am Challenge, and was also busy with drives in the CART Indy-car Series driving a Wildcat and competing at the Indianapolis 500 and Le Mans. Vern finished eighth overall in the Can Am Challenge Championship.

During 1980 Schuppan contested the Indy-car World Series driving a five-year-old Wildcat for the Wysard Team, although not being able to contest all races in this championship, he finished tenth overall. Schuppan and his co-driver Howdy Holmes, driving the Australian Can Am Elfin, were robbed of their first place in the 1980 Lumbermen's 500 North American Sports Car Championship at Lexington, Ohio, when two laps from the finish it was necessary to make a brief pit stop for brakes, return to the race and finish second outright.

In 1981, in the Indianapolis 500 Schuppan claimed third place at his third attempt on this most prestigious event. Schuppan's form at Indy during the month of May was nothing less than marvellous, driving one of the few non-ground effect cars in the field — a McLaren M24B — and doing the last few laps with a flat tyre.

His chances of winning the 1981 Le Mans 24-hour race faded after his factory entered Porsche 936/81 had held an easy second place, despite losing a couple of laps at the start when a broken spark plug was found. Then the clutch failed, which dropped him back to 12th while it was replaced. The car battled its way up to fourth place, but with four hours to go it stopped out on the circuit. The fuel flow had suddenly gone rich and the engine refused to rev. For 35 minutes Vern worked on the problem with radio instructions from the pits, finally getting it fixed well enough to return to the pits for proper repairs. Eventually he was back in the race to finish in 13th place.

The next year, 1982, was a most successful year for Vern Schuppan. Driving the Rothmans Porsche 956 in the World Endurance Championship, he finished second at the Le Mans 24 Hours, second at Spa-Francorchamps in Belgium and second at Kyalami in South Africa.

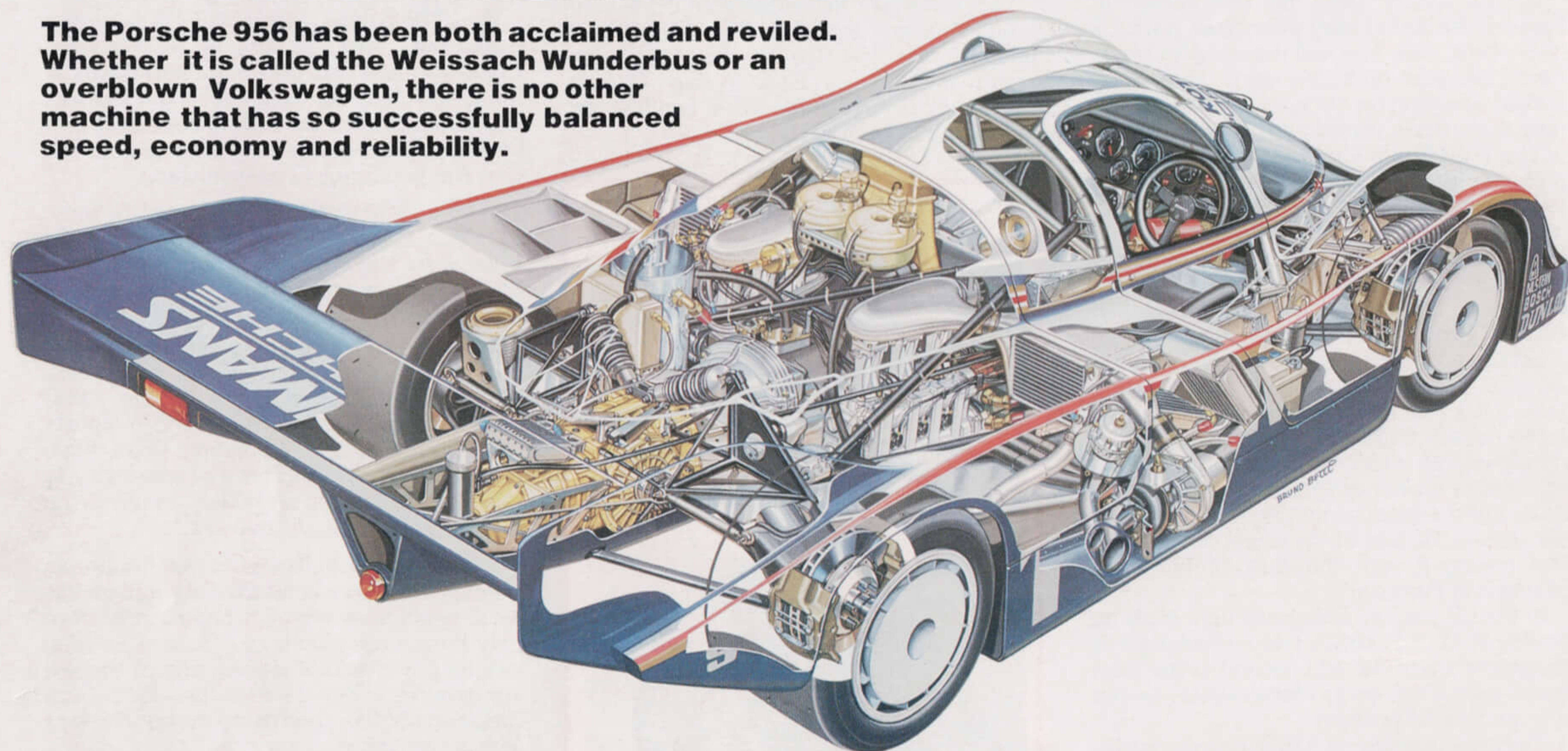
He became the first Australian to win Le Mans last year. During the race, just before 3pm, and one hour before the finish of the race, Schuppan was driving the lead car just over two laps ahead of team-mate Jacky Ickx in the second placed car when Schuppan's left-side door blew off at 355 km/h. Nothing much could be done, so as the engine temperature rose, the Schuppan Rothmans Porsche 956 staggered across the finish line in clouds of smoke and steam to win.

MotorsportArchives.com

SANDOWN 1000, December 1984 — 17

INSIDE THE PORSCHE 956

The Porsche 956 has been both acclaimed and reviled. Whether it is called the Weissach Wunderbus or an overblown Volkswagen, there is no other machine that has so successfully balanced speed, economy and reliability.



The Porsche 956 Group C sports car is unique. It is the first of the new breed of sophisticated racing machines built to be miserly about fuel, yet still win races by outright speed. So far nobody has been able to do it as well as Porsche and if you want to win 1000 km endurance races there is really no other choice than fork out around \$300,000 for a 956.

Porsche has always been unbeatable in endurance racing, when the German manufacturer gets serious. In just two years, Group C racing has become Porsche's own private playground.

At Sandown today we will see the might of the 956, and particularly the quicker factory team cars, transplanted — roots and all to Australia. The 956 is the epitome of all that is sought-after in two-seater racing vehicles and is expected to indelibly etch itself on the collective consciousness of Australians. The all-conquering Porsche 956, the 370 kmh Le Mans-winning rocket-ship, will be on Australian soil in anger for the first time and should stamp its authority on yet another round of the 1984 World Endurance Championship Series.

It all started on the last day of March, 1982 when Porsche 956.001 — the prototype Group C contender — turned its wheels for the first time at Circuit Paul Ricard. In the intervening two and a half years the 956 has undergone a gradual metamorphosis to hone its competitive edge to something akin to perfection and the fruits of victory have accumulated at a staggering rate.

The 1982 model evolved into the 956-83, and finally the 956B — the archetypal Porsche embodying all the previous developments by the factory. A cursory examination of 956 entries at any given circuit recently reveals that, in the main, the up-rated '83 to '84 model is the most common variety, though there are no absolutes.

The 956 represents a departure for Porsche, in that the construction of the cockpit tub is not the expected space-frame that has become a factory characteristic. It is an aluminium monocoque and, while noteworthy as the first such structure produced by the factory, rates as a fairly conventional approach. This should not imply that the capabilities to work with more exotic materials were lacking, it was just that the FISA guidelines precluded the use of hi-tech, lightweight material from the makers' own plastics and aerospace consultant engineering facilities, at least, not in the chassis.

Group C regulations demand a flat floor of specified area beneath the cockpit, a ruling intended to reduce the available ground-effect and thus lessen cornering speeds. The roll-cage and windscreen hoop are attached to the tub, the outer glass cockpit skin being bonded to the tubular aluminium cage. Any additional reinforcement by the privateers would almost certainly be of carbon fibre.

Forward vision from the cockpit is good, while a little restricted to the sides and virtually non-existent to the rear. The dash is pock-marked with lights, gauges, switches and knobs. A combined water and oil

temperature gauge, an alternator light, an oil pressure and gearbox temperature gauge butt up to the boost gauge, which is highly visible through the steering-wheel spokes, as are the low-fuel light and the rev-counter. No telltale is fitted to the rev counter, an electric rev limiter set at 8800 rpm protects the engine.

The 956 chassis seems almost a one and a bit seater, the driver being located on the right-hand side and utilising a right-hand gear-shift. The steering-rack passes over the driver's shins and is a structural member of the tub, the outer points being the location mounts for the top wishbones. Future regulations will require the foot pedals to not project beyond the axle-line and the 962, which conforms with this IMSA requirement, has a lengthened wheelbase of 14 inches as a consequence.

Attached to the front of the foot-box are an aluminium nose-frame and the clutch and brake master-cylinders. Boxy plastic-side sponsons bring the body out to the full width of the car's track, intakes on the rear of these feeding air to three cooling radiators — engine oil, engine water, engine air (air/water inter-cooler), and the turbochargers.

The front suspension employs a milled aluminium top-arm, with hand fabricated steel lower arms profiled for strength not aerodynamics. Roll-bar arms are of titanium and can be cockpit adjustable if the team prefers. Porsche cast their own magnesium uprights, all nuts being of titanium. Bilstein shockers and titanium coil springs soak up the bumps, while the 1¼-inch thick, Porsche

13-inch diameter discs and four-piston calipers, are cooled via fibreglass ducts and flexible hoses that draw air from intake openings at the corners of the car's nose.

Rear suspension is not unlike a current Formula One car — an A-type wishbone at the bottom attaching to the upright at a single pick-up point. Parallel links at the top are also A framed. The uprights are of magnesium, while the 25 mm driveshafts are of titanium. Constant-velocity joints are ball-type and the roll-bar is a particularly short, large diameter titanium unit.

Brake air is pumped in through the NACA ducts on each side of the flat upper tail-surface, a similar duct in the roof behind the cockpit feeding air to the fan that cools the engine barrels.

Tyres tend to be Dunlop (as run by the factory), 280/600 by 16 in 13-inch rims at the front and 350/650 by 16 at the rear, the choice of wheels gravitating to Denloc.

The monocoque finishes at the rear of the cockpit, the engine and drive-train being supported by a light aluminium A-frame on each side. A significant piece of casting embodies the clutch housing, the bell-housing, the rear suspension pickups, the rear chassis pick-up and the roll-cage to boot, tidying-up the rear bay of the car.

The tilted engine is a flat six of 2694 cc, with four valves per cylinder (whereas the 962 has two) and twin overhead camshafts per bank, based on the ubiquitous 911 design. The head shape is not unlike that of a BDA, with four relatively small valves and a central plug in a wedge. Cylinder heads are welded to the barrels, the heads being water-cooled and the barrels air-cooled.

Tracing the engine back to 1978 and the 'Moby Dick' prototype, the first four-valve design suffered from gasket problems. Welding the two components together resolved the issue. The 935 was the first Porsche to have the water-cooled heads, the factory not releasing these engines to the private customers until the 956. The only other distinctive break with the 911-family relates to the camshaft-drive, where the chains have been replaced with gears.

The barrels are so short that the valves are still easily accessible; the only obvious disadvantage being that any head or barrel damage results in half the engine being replaced, unlike the air-cooled engine with its individual head/barrel set-up. The water-cooled heads proved to be a distinct advantage with their higher thermal capacity and the twin turbochargers' resultant higher cylinder-head temperatures. KKK supply the boost units to the factory.

Turbocharger sizes vary, but usually only on the exhaust side and not the induction side. The type of turbocharger run at Le Mans will be different from that used at Sandown today, where greater throttle response, and not necessarily bulk horsepower, is the prime requirement. Horsepower production is as much as you can handle, usually around 650 hp for an endurance race like Le Mans. More power can be easily produced by upping the boost pressure, the driver utilising this to tailor the car's characteristics to a particular circumstance via a cockpit control. About 1.2 bar seems to be a safe setting.

The immediate trade-off is a limitation on the number of racing miles that can be covered per 100 litre tank. The expected consumption is around 2.5 km/litre based on last

THE PORSCHE 956

— technical specification

Chassis: Three-piece aluminium monocoque.

Body: GRP/Kevlar body (seven-piece).

Engine: Porsche 935/76 six cylinder horizontally opposed with water cooled cylinder heads, dry sump lubrication. Four valves per cylinder (inlet 33 mm, exhaust 31 mm). Four overhead camshafts with spur wheel drive. Bore/stroke: 92.3 mm/66 mm. Capacity: 2649 cc. Compression ratio: 8.5 to 1. Induction via Bosch Motronic engine management system. Twin KKK K26 turbochargers at 1.3 bar. Power: Approx. 650 bhp at 8200 rpm. Torque: 462 lbs/ft (64 mkp) at 5400 rpm.

Transmission: Fully synchro Porsche 5-speed with oil cooling.

Clutch: Single plate dry type.

Suspension: Independent front and rear with double wishbones. Titanium coil springs, Bilstein shock absorbers.

Brakes: Twin circuit Porsche with ventilated discs and twin calipers per wheel.

Wheels/tyres: Front: 13 ins x 415 mm rims, 300/625 - 415. Rear: 15 ins x 415 mm rims, 350/680 - 415.

Dimensions: Length: 4800 mm. Width: 2000 mm. Height: 1030 mm. Wheelbase: 2650 mm. Track: 1665 mm (front), 1545 mm (rear).

Capacities: Fuel: 99 litres. Oil: 15 litres.

Weight: Approx. 850 kg (with pneumatic air jacks).

Maximum Speed: More than 350 kph (220 mph).

year's Le Mans figures, though most competitors were running a mechanical Kugelfischer fuel-injection system. Porsche made available their Bosch Motronic computerised engine-management system for the up-date to 956-84 specifications, the refined fuel-delivery system having already been proven to be more economical while delivering more power in the dominant works cars. This Bosch systems monitors all engine functions and symptoms such as temperature, and makes adjustments to maintain the fuel efficiency formula.

Porsche applied themselves diligently to the task and, after a phenomenal expenditure of both time and money, arrived at an engine management system that meant that the engine could run right on the edge of maximum reliability/performance, going way beyond the capabilities of the mechanical unit. The factory cars run this system as a matter of course, while many privateers con-

tinue to run the mechanical units, almost certainly because of the cost and therefore slightly compromise the '84 specs.

The clutch is a dry single-plate unit and the gearbox is a Porsche all-synchromesh five-speed which first surfaced at Le Mans in 1981, where it placed seventh in a Porsche 944. The 'Indy' engine and transaxle unit in the 956 is mounted tail-high in the car to assist the profile of the under-car venturi. The alloy dry-sump tank resides at the rear of the engine, its pump driven from the bottom of the engine at its centre.

Smooth aerodynamic flow is vital to the dialling-in process when setting the car up for a particular circuit and, in this area, the privateers are considered to be either holding the advantage or at least equal to the factory cars. Fibreglass and Kevlar abound, as the fine-tuning of the bodywork represents the new frontier for performance gains.

Air from the nose is channelled into the side venturis, which sweep up to the tail and expose only the driveshaft and lower wishbone. The factory now has a new underbody that channels more air onto the engine block, while also increasing the effective downforce and has been supplying them to the paying customers recently.

The 956 runs a long or short-tail body as circumstances demand and it seems likely that the Sandown configuration will be the high-drag short-tail. The nose can similarly be in either form, the fuller Kevlar panel producing less drag.

The privateer GTi-Canon 956 represents the ultimate development of this philosophy, a nose-mounted wing and directional end-plates at the rear being the obvious external developments. The underbody does not agree with the Porsche thinking and neither does the rear wing. In fact, Richard Lloyd's GTi Engineering in Britain has gone down a different road and produced a complete lightweight honeycomb construction chassis that seeks to come to terms with the foibles of the understeering 956.

GTi-Canon Racing, Joest Racing and John Fitzpatrick Racing represent the cream of the private racers and each team is investigating the differing solutions to the ever-present and pressing problem — how best to thwart the Rothmans Porsche steamroller.

Development of the 956 is still underway at Porsche's Weissach research centre, the factory having logically developed the suspension, steering, brakes, aerodynamics and engine efficiency. The gearbox and halfshafts have been strengthened, the car lightened to the point that ballast is carried in most cars as a matter of course.

The Porsche reliability is legend and the inevitable victories crushing, although possibly the days when privateers can stand on the winner's rostrum regularly is a little overdue.

The latest factory investigations are centring around an experimental transmission, a twin-clutch unit enabling the drivers to make gear shifts without lifting off the throttle. While proving to be successful in testing, competition has been a tougher testing ground. On the basis of the interest the factory continues to show in the 956, and the response from the racing teams, it seems that we can be assured of further spectacular development from Porsche when the second generation of Group C sports cars come around in the foreseeable future.

— TONY GLYNN

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Yella Terra

At the wheel of the Porsche 956:

WORKING UP A SWEAT

Driving the Porsche 956 is hot and hard work, and will be especially so at Sandown today, if the weather is warm.

Australia's Rusty French is prepared for a tough race in the final round of the World Endurance Championship at the wheel of the Kremer Team Porsche 956 he drove into ninth place at Le Mans. It was the first Le Mans for French, the wealthy Melbourne farmer/businessman and self-confessed hobby racer, and the first time he had driven the much acclaimed Porsche 956. Today will be his second drive in the car.

One of the overriding impressions of the 956, according to French, is an impression that will be a key factor in determining driver success today. French recalls it in his driving stints at Le Mans: "During the day the car was very hot and the perspiration was unbelievable. I wear a three-layer driving suit and underwear, and by the time your hour stint is up you are saturated."

The Group C sports cars have a closed cockpit, with almost no ventilation. That is a deliberate design feature in those cars to keep the cockpit clear of all the dirt and debris that could be sucked in over such a long distance race. The discomfort French and indeed other drivers felt at Le Mans was despite mild weather conditions. The ambient temperature at Sandown is likely to be much higher.

French's driving in Australia has concentrated on GT cars like the Porsche 935 and tourers such as the Commodore. There is very little to compare his Australian machinery with the 956, but French does make the point that the 956 is easier to drive than both.

The thing to remember about the 956 is that although it is capable of very high speeds, as much as 370 kph, outright performance is not its main feature. It is built like the proverbial brick outhouse and its performance has to be balanced by a fuel efficiency formula that is the basis of the new Group C regulations. Where it picks up its speed is the ground effects chassis, which increases the car's speed through the corner and keeps it on the ground as the speed builds up on the straights. French makes the point that the 956 does in fact produce significantly less power than his familiar John Sands Porsche 935 turbo with its bigger engine - around 100 hp less.

"It (the 935) has 700 to 750 hp, and running normal boost and under normal acceleration out of a corner, it is like somebody hitting you in the head with a sledge hammer. The 956 is a similar sensation but with a smaller hammer!"

French says the 956 is not a hard car to drive, but does take some learning, particularly because of the ground effects. "I found that if you keep your cool and take it easy, I could go down Mulsanne and get through the kink flat out after five laps - on the first lap I think I even had the brakes on there."

French, who has a pilot's licence, says the sensation on the long Mulsanne straight was

a bit like flying his plane on the ground. "The cars are very safe because they have so much aerodynamics built into them. The quicker they go, they sort of push themselves into the ground. They have good road holding, unlike the touring car and the 935 is not exceptional in that area."

He describes the handling on the 956 as precise, and says that he didn't even get the car sideways once to search out the car's limit; he was going fast enough thank you very much. "If you don't have a go in one of these things, you don't realise how easy they are to drive. I don't say they are super easy, but they are easier than a touring car, once you get the hang of it."



"Obviously I never really drove right on the limit because I probably would have had the biggest lose of all time! You can actually feel when they are starting to go because they are a lot more evenly balanced car than what I have driven before, a bit like my old Pantera, which had the engine in the back and you could actually feel it. If it was going to let go, it would give you a bit of a feeling. In the 935 it is so light in the front and so heavy in the back, it is trying to get away from you. It is like having a trolley jack under the back, trying to steer you from the back."

French says the thing he found most awkward was the fact that the 956 is so big, so wide and so long for a car so low, which is because of the ground effect 'tunnels'. You sit down low right at the front of the car, with the engine taking up most of the vehicle at the rear. There is hardly any vision, apart from front vision, and a little bit on the side. The mirrors are a waste of time. "It is a funny sensation because you are sitting in the front like an open wheeler with your feet right up the front and that goes through your mind constantly at 240 mph - in case you are going to hit something!"

Apart from the poor cockpit ventilation, French's other major complaint was the gear-

shift lever. It was the only minor design fault in an otherwise well laid out cockpit and it was indeed fortunate that the 956 uses synchromesh for the five-cog box:

"It is a little stick about five inches long and you get to the stage after a long stint that you get a decent old blister in the palm of your hand. It is not an easy box to change because it doesn't pull through cleanly; probably the mechanism taking the gear linkage to the back of the car is reasonably long. It is a big beefy box and with such a short gear-shift, it is a bit tiring."

"The fact that you are on the pedals the whole time, heel and toeing or whatever, you are doing a fair amount of work in there, particularly on a circuit like Sandown where you are going up and down through the gears almost every lap, so there won't be a moment for you to look at your gauges, at Sandown."

Another taxing aspect of the 956, according to French, is the steering which is unassisted. He says they are heavier in the steering than the 935, for instance, because the 956 has more forward weight to balance the car. The steering becomes heavy when the downforce starts to operate and therefore loads up the steering. At Sandown today that fact will be particularly noticeable because of the many tight corners on the new international layout. The 956 is built to run at high speed on the wide, sweeping European circuits and French makes the point that we really don't have a circuit in Australia really suitable for the 956.

A lot of comments have been made about the brakes on the 956. Some say they are good, some say they are bad. French is in the former category: "The pedal is not a hard feeling pedal. It is not a pedal that you go roaring in at 150 mph and jump on and think you are going to stop. Once you get over the fact that the pedal doesn't feel good pushing it to the floor, the car will stop. It's like they have a constant air problem that requires bleeding all the time."

French predicts that the 956 won't necessarily be that far in front of the other marques at Sandown but their unrivalled reliability will come into play over the 1000 km.

Driving Sandown in the 956, French believes the straights will be fine, and the new corner at the end of the main straight will see a little bit of ground effects assist the cars. That first corner will be reasonably quick, in 956 terms, but the next two corners leading onto the back straight will be negotiated in a conventional manner, relying on acceleration. The hairpin at the end of the back straight and the next one will be brake and accelerate.

French says there may be a bit of ground effect assistance in the following right-and-left-hand kinks. At the next right-hander the cars will be back to second for the really tight section around to Dandenong Rd. where it will be back to straightforward braking and acceleration back onto the main straight.

— BARRY NAISMITH

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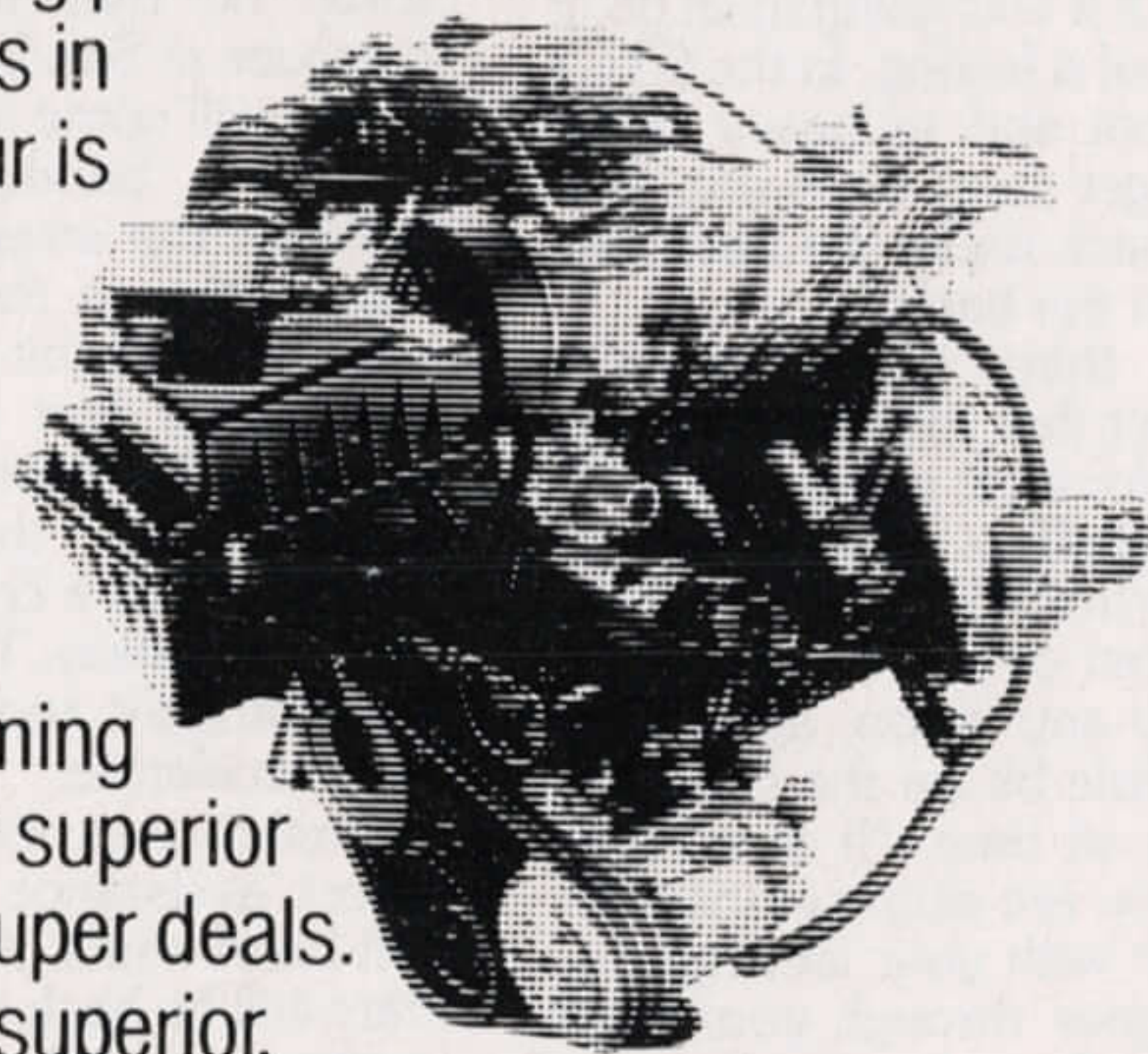
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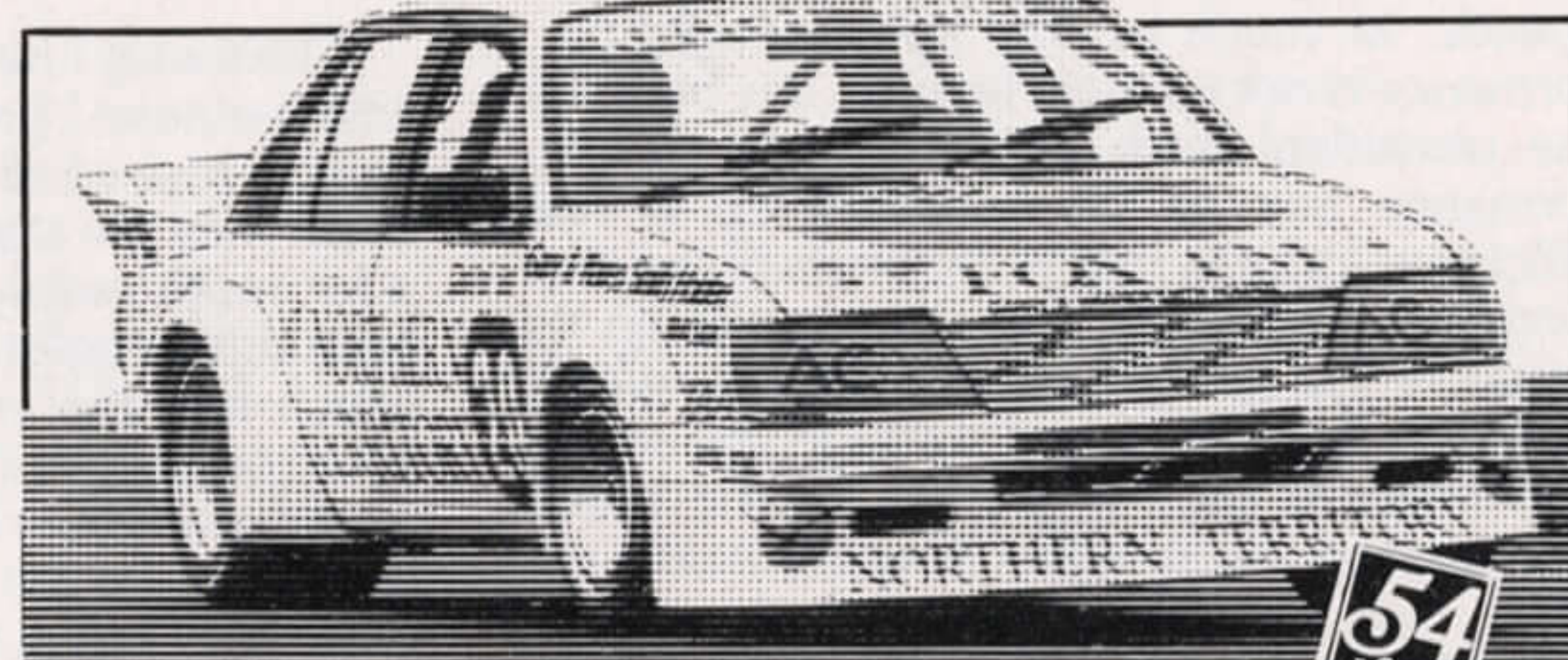
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SURVIVING 1000 KMS

The task assigned to Holden Dealer Team workshop manager, Larry Perkins, was, on the surface, a fairly straightforward one — prepare a racing car. The difference was that the race was at Silverstone, England, not Bathurst and the car was the phenomenal Porsche 956, not a Holden Commodore.

Team Australia, in the guise of drivers Larry Perkins and Peter Brock, was making its first venture into the world of long-distance racing with one of John Fitzpatrick Racing's spare 1983 956 Porsches up-rated to '84 specifications. Perkins, who has experience of working on a whole range of vehicles, was equal to the task and set about the time-consuming and laborious business of readying a truly raceworthy car.

Normal procedure for a standard 956 that is not brand-new and has a number of racing-miles under its belt is to totally dismantle the car, exposing the bare monocoque and removing the suspension, engine, gearbox, radiators and all ancillaries. Decisions regarding component status and replacement can then be speedily expedited and the gradual rebuild begun.

The flat-six twin turbocharged engine must be rebuilt to 1000 km specs, as distinct from a 24-hour race set-up, as no previous experience of these engines existed for the team, Porsche recommendations were followed. The engine was returned to the factory for this work, the usual procedure for all but a couple of teams and, in due course, Porsche delivered the engine in small turbo, 8.5:1 compression ratio race-trim. The factory recommendations always fall on the conservative side, Porsche adopting the view that the customers must finish the race and, as a consequence, some of the teams run larger turbos which pump more air and raise the boost pressure from about 1.2 to possibly 1.5 bar. But then engine reliability tends to become suspect.

An inspection of the gearbox in the Team Australia car revealed no obvious undue wear but, as it had done some 52 hours of racing on the same crown-wheel and pinion and bearings etc, it was sent back to Porsche as a precautionary measure, for checking, particularly as Le Mans was looming.

The stripped monocoque was then thoroughly washed, only the windscreen and wiring-loom remaining in place. A careful check revealed no loose rivets or elongated holes, but turned-up evidence of repair-work that had been competently carried out. A brake-pipe had been missed, it was kinked and was replaced. No chafing was apparent at any point in the loom, a positive vote in Porsche's favour as road-related vibrations and buffeting can be the bane of endurance racing.

Perkins elected to utilise the change in regulations from 1983 to 1984 to strengthen minor areas of the car, as he had doubts as to the life of various small aluminium brackets. This car had been carrying some 30 kilos of ballast as the new minimum weight increased and he decided to use this advantage in a positive manner. Lightweight brackets that were suspect in the long-term were

The Porsche 956 is one of the toughest racing machines ever built, but meticulous preparation is required to get the car to the line in a 1000 km endurance race. Larry Perkins, who prepared the Team Australia Porsche for the Silverstone WEC round tells how the European Porsche teams prepare to win.



restructured in steel... brackets that held the bodywork in place, the nose, seat brackets, fittings to keep water-lines in place, retain brake hoses in the chassis, attach the aerodynamic sidepods etc.

The standard front bulkhead proved to be flexible, which didn't overly enthuse Perkins, resulting in a spongy brake-pedal. He reinforced the area with extra gussets, which remedied the problem and lengthened the brake-pedal ratio about 20% to favour a lighter pedal effort.

In 1983, Porsche lost a few doors at Le Mans due to hinge fatigue and subsequently produced a modification that most teams took advantage of. The team Australia car was one of the cars that missed out. The aluminium hinges were replaced with steel and the doors very carefully checked for proper fit.

Squareness of the shocker-towers was the next area of concern, as the car needed to be within tolerances to facilitate the actual set-up of the wheel weights.

The rack and pinion steering, having been stripped, crack-tested, and reassembled was reinserted in the monocoque, as were the pedals (after bearings, bushes and hinges were checked) and new solid throttle cable. New master-cylinders were mandatory. The front lower wishbone bushes were pushed into their housings with too much preload, resulting in stiffness and a bending-moment on the wishbone or its mount. After crack-testing, the magnesium uprights had new bearings fitted and the preload adjusted

before a new set of thicker-walled, up-dated stub axles went in at Porsche's recommendation. Porsche guidelines were followed when fitting the shock absorbers and springs, the spring platform heights being adjusted to suit.

Discs from the factory were within the acceptable 6-thou run-out and needed de-burring and edge-radiusing. The chassis was then set level to get the ride-height, with dummy shockers pinned to the right length for full bump and full droop. Bump-steer, castor and camber alignment were now set, Perkins achieving the preferred zero bump-steer on the 956.

Mounting the engine in its bay is a critical stage in the preparation and Perkins went to pains to determine that it was correctly positioned on its mounts, using a dummy engine for trial fits and shims to guarantee the mounts did not necessitate an out of square alignment — a time-consuming but vital task.

The pressure-relief or pop-off valves for the turbochargers were suffering from the expected warpage and cracking and were beyond servicing. They were replaced.

The clutch was replaced also and the gearbox refitted. Driveshafts, universal joints and rear wheel-bearings were renewed, bushes being inspected "as routine, standard engineering preparation".

Removal of the fuel system proved to be a prudent measure as it was less than satisfactory and not at its efficient best. Radiators, oil coolers and intercoolers were visually checked, a primary concern being that chafing could occur in the mounts and lead to wear or that they could become stressed members, leading to cracking.

The front aluminium nose frame and rear sub-frame being attached, left the team with the final exercise of ensuring that each of the body-panels fitted correctly. The nose, engine-cover, side-pods, under-trays and at least one spare set of panels had to undergo a lengthy trial and error process in order to ensure the compatibility of each component.

The vital ground-effects under-tray was, in fact, a three-piece affair. Ascertaining that the bodywork height was correct and that there were no drag-inducing ill-fitting panels would pay dividends on the track.

At this point, the 956 is ready for the choice of wheels and tyres suitable for the familiarization process, the bedding-in of brake-pads and the run-in to the serious practice and qualifying periods prior to the actual race.

Perkins treated his handiwork circumspectly: "On the face of it, the car was to Porsche factory specifications and all we had really done was check the mechanical installation of every component, doing all our homework to aid reliability."

"Everything should be back in the car in a condition that will ensure 50 hours of racing. At this very critical point for an inexperienced team, you don't want to have to pull a component off the night before the race. You prepare the car in the workshop and go racing on the weekend."

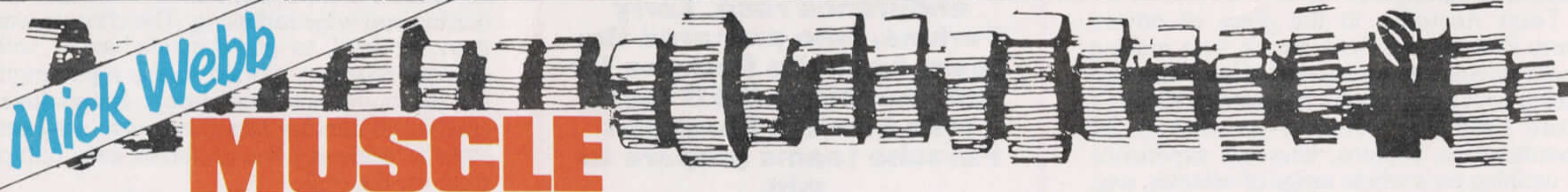
— TONY GLYNN



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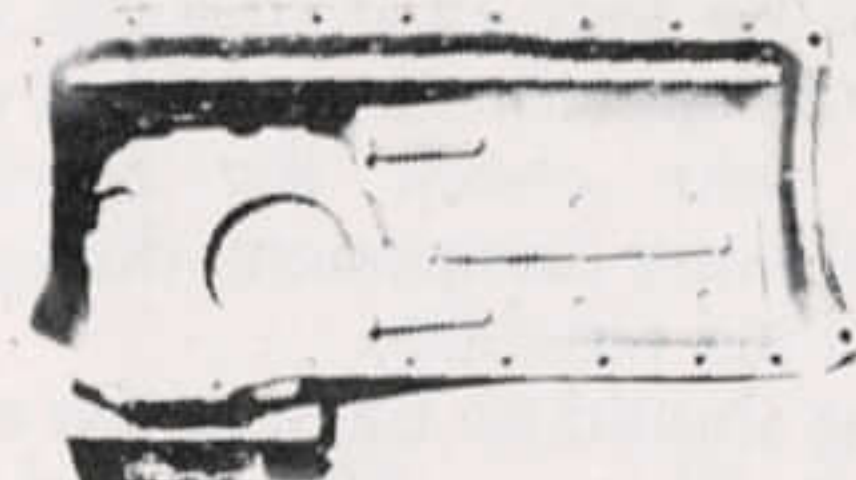
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IN THE BEGINNING...

In the beginning... more than 80 years ago, there was the sports car. It was just a little better than the standard version of the new-fangled automobile. Inevitably, man raced it against the clock and against other sports cars for a bit of fun and excitement.

Today's sensationally quick Group C sports cars like the sophisticated 956 have come a long way since that age and it would seem that there is no relationship between the two. But in fact the Group C cars are the bona fide descendants of those early cars. The experts say that the line can be traced back, that today's endurance racers are the finest expression of that pioneering sports car spirit and for proof they point to the passenger seat in the Group C cars.

Passenger seat? Yes, even the latest high-tech, super powered sports racers have a passenger seat on the left — and doors — two of them! Of all the various classes of racing cars, the Group C cars are the only purpose-built racing machines still with those impractical features. They are cars in the truer sense of the word.

Sports cars — with a passenger seat and doors — were raced almost exclusively through the early decades of the sport in Europe and other parts of the world, including Australia. Even the early grands prix were for sports cars until the riding mechanic was banned for safety reasons pre-World War II. Single seaters began to challenge the more conventional sports car and the parallel paths of the two types of cars diverged. The uncompromising single seater open wheeler off-spring took control of grand prix racing, while sports car racing was confined to the gruelling, long distance road racing events like Le Mans, the Mille Miglia and Targa Florio. At that stage the link between the sports car and road car was very clear, and thereby attracted its fair share of manufacturer support and patronage, particularly sports car builders like Jaguar and Aston Martin. For them Le Mans was the focus of the year.

Plainly the loyal sports car builders required a little more incentive to go racing, so

The world championship for sports cars is 30 years old but sports car racing goes a lot further back than that.

In 1953 the FIA commenced the sports car world championship for manufacturers. In that first year competition was fierce and Ferrari came out a narrow victor over Jaguar and Aston Martin.

Since 1953 the sports car world championship has evolved through various stages, and after being the world sports car championship to 1961, the International Manufacturers Championship to 1967, the International Championship of Makes to 1971, it became the World Championship of Makes in 1972 and finally the existing World Endurance Championship from 1982, with the emphasis on endurance racing rather than the grand prix style two-hour sprint.

Over the 30-year history of the sports car championship, Ferrari dominated from the beginning until the mid to late 1960s when Ford and Porsche flexed their corporate muscles. Until then only Mercedes-Benz (1955) and Aston Martin (1959) briefly halted the Ferrari onslaught. Ford won in 1966 and 1968 with their GT40s and then Porsche had a hat-trick of wins when a more highly modified form of regulations was introduced. Porsche have mostly held sway from then on, except for some breakthroughs by Ferrari in 1972, Matra-Simca in 1973-4, Alfa Romeo in 1977 and then Lancia in 1980-1. Porsche built a new car for the new Group C regulations for 1982. This turbo-charged flat-six 956 has been the car to beat since, and won the title since the regulation change by beating off the fast but fragile Ferrari V6 turbo-powered Lancia LC2s.

To give the specialist sports car endurance pilots some kudos and add some interest to the racing, the FIA added a driver's world title to the maker's championship in 1980. Calculating the winning driver has not been an easy task because two drivers are required to cover the distance, just like at Bathurst, and the pairings do not necessarily stay the same for each race. Nor do the drivers contest every race over the nine events on at least four continents.

lating the winning driver has not been an easy task because two drivers are required to cover the distance, just like at Bathurst, and the pairings do not necessarily stay the same for each race. Nor do the drivers contest every race over the nine events on at least four continents.

The World Champion Drivers have been:

1980: JOHN PAUL Sr. (USA)
1981: BOB GARRETSON (USA)
1982: JACKY ICKX (B)
1983: JACKY ICKX (B)

The actual races in the championship have varied from year to year, but essentially the world title evolved around the major European long distance races like Le Mans, Monza, Silverstone, Nurburgring and Spa. In its latest form the championship has really become a world championship, taking in races in South Africa, Japan, Canada, U.S.A. and now Sandown in Australia.

The regulations for the cars have changed also over the years, but the basic formula of the two-seater sports cars has remained, even though the current passenger seat is just unused space and the doors have become an integral part of the aerodynamics and engine cooling system.

The most recent innovation has been the standard 1000 km distance six-hour duration and with Group C, the fuel restriction, which has introduced a new form of race engineering. This new element has put greater importance on good pit management and carefully planned tactical approaches to running a race.

The new regulations were introduced to return the relevance to sports car endurance racing, rather than just make it a two-seater version of Formula One.

The success of the category since the rules were introduced in 1982 proves that sports car racing has a unique appeal. In 1982 it became a tasty side serving to a solid diet of Formula One and today gives the international menu of motor sport some real variety.

Thirty-one years after the make's first appearance at Le Mans, Carroll Shelby had the honour of driving the Aston Martin DBR/1-300 to victory.



The FIA Sportscar World Champions have been:

1953: Ferrari	1969: Porsche
1954: Ferrari	1970: Porsche
1955: Mercedes-Benz	1971: Porsche
1956: Ferrari	1972: Ferrari
1957: Ferrari	1973: Matra-Simca
1958: Ferrari	1974: Matra-Simca
1959: Aston Martin	1975: Alfa Romeo
1960: Ferrari	1976: Porsche (Prototype)
1961: Ferrari	Porsche (GT)
1962: Ferrari (over 2000cc)	1977: Alfa Romeo (Prototype)
Porsche (2000cc)	Porsche (GT)
Fiat Abarth (1000cc)	
1963: Ferrari	1978: Porsche
1964: Ferrari	1979: Porsche
1965: Ferrari	1980: Lancia
1966: Ford	1981: Lancia
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| 5 — 1968 DAIMLER 250 V8 | 13 — FIREBIRD | 22 — CITROEN BIG 6 |
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THE 'REAL' RACING CARS

They are often referred to as the fastest and most exciting of all the various types of racing classes. It is a tag that many Formula One devotees reject, but the facts weigh heavily in the favour of the 370 kmh, wedge-shaped, Group C sports cars which contest the revitalised World Endurance Championship of Makes and Drivers.

The Group C regulations which have injected new life to the age-old pursuit of sports car racing, as opposed to open wheeler racing, kicked off at the beginning of 1982. A golden age in sports car racing had begun and in just three seasons Group C racing over 1000 km in several countries around the world and at Le Mans has captured the imagination of many.

The fast-developing new category has its base in Europe and Britain, where most of the latest vehicles are constructed and raced but many innovative cars have joined the class from Japan and the U.S.A. to give it truly international flavour.

The class is formally defined as for enclosed two-seater cars built as single examples and destined solely for racing — usually long distance racing. It is a class which can be traced back to the very beginnings of motor racing in Europe and classic road racing events like the Mille Miglia and Targa Florio. Formula One was merely a recent off-shoot, without such a fine pedigree.

The rules have changed radically over the decades but essentially the spirit of sports car racing has never altered. It has always been about striking that unique balance of outright speed and bullet-proof reliability — a mix that provides car designers with great challenges. It is relatively easy to build a car that will go fast, but how long will it last at that speed? As a consequence the FIA, which controls world motor sport from its Paris base and frames the regulations, boasts that sports car en-

durance racing is at the leading edge of automotive engineering. The record speaks for itself; disc brakes, modern tyre construction, fuel injection, electronic ignition, safety fuel tanks and laminated windscreens are just a few of the countless items which originated in sports car racing.

The current rules for Group C are very simple and give race car designers full opportunity to let their imaginations go, employ the latest in high technology and generally push out the barriers of man's engineering knowledge and expertise.

The growing list of converts to Group C sports cars claim these cars are what race car engineering is all about.

The class is generally designed to attract manufacturers to the sport, so the basic rules, which are largely free, are that a Group C car must emanate from a manufacturer who has homologated cars in one of the two FIA production car competition categories — Group A and Group B.

The designer doesn't actually start out with a blank sheet to design one of the two classes within Group C — C1 and C2.

In the case of C1, which are the outright contenders — the designer has a minimum chassis dimension he must work within — 4.8 m length, 2 m width and 1.1 m height and a minimum weight of 850 kg, to establish some sort of class compatibility. The same dimensions apply to the C2 cars but the minimum weight for them is 700 kg.

The feature of the new regulations, and where the class has new meaning, is that a

fuel restriction was introduced for the first time for each 1000 km event. For C1 cars their maximum fuel tank capacity is 100 litres and they cannot use more than 600 litres for each event. In C2 the restriction is 55 litres a tank and 330 litre maximum for the distance.

The result has been that car designers have had to now design for maximum economy as well as outright power and reliability. Advanced aerodynamics on the all-enveloping body work and ground effects is all part of the game and space-age materials are also widely used to help achieve the optimum performance/economy ratio.

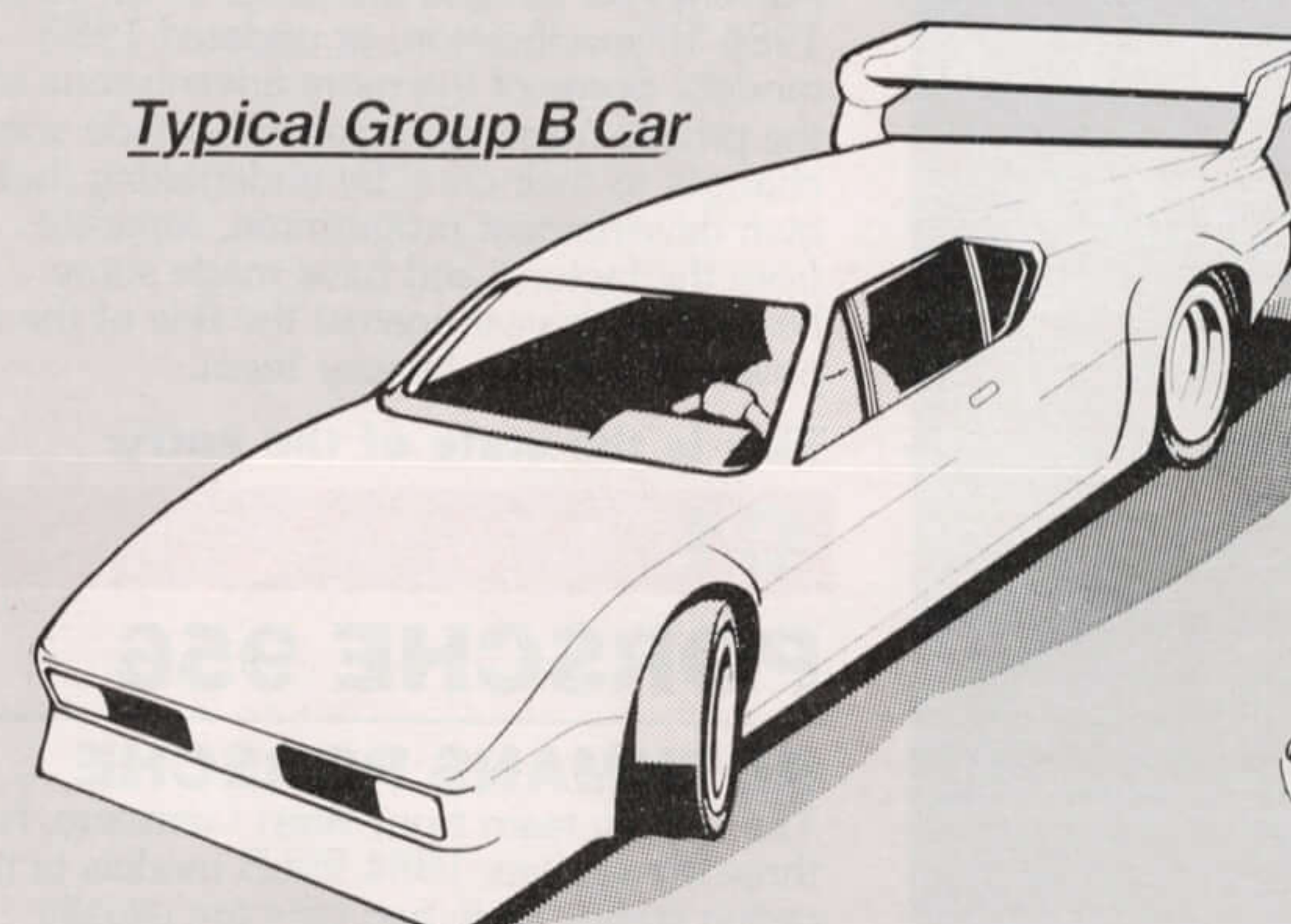
Designers are given full opportunity of finding the right power/economy formula because a Group C car can be fitted with any capacity petrol engine, of any configuration, of any number of cylinders, and using any type of induction system.

Such an extreme discipline in design provides manufacturers with a fertile competitive environment, the reward of which is the best test bed possible for new ideas and components.

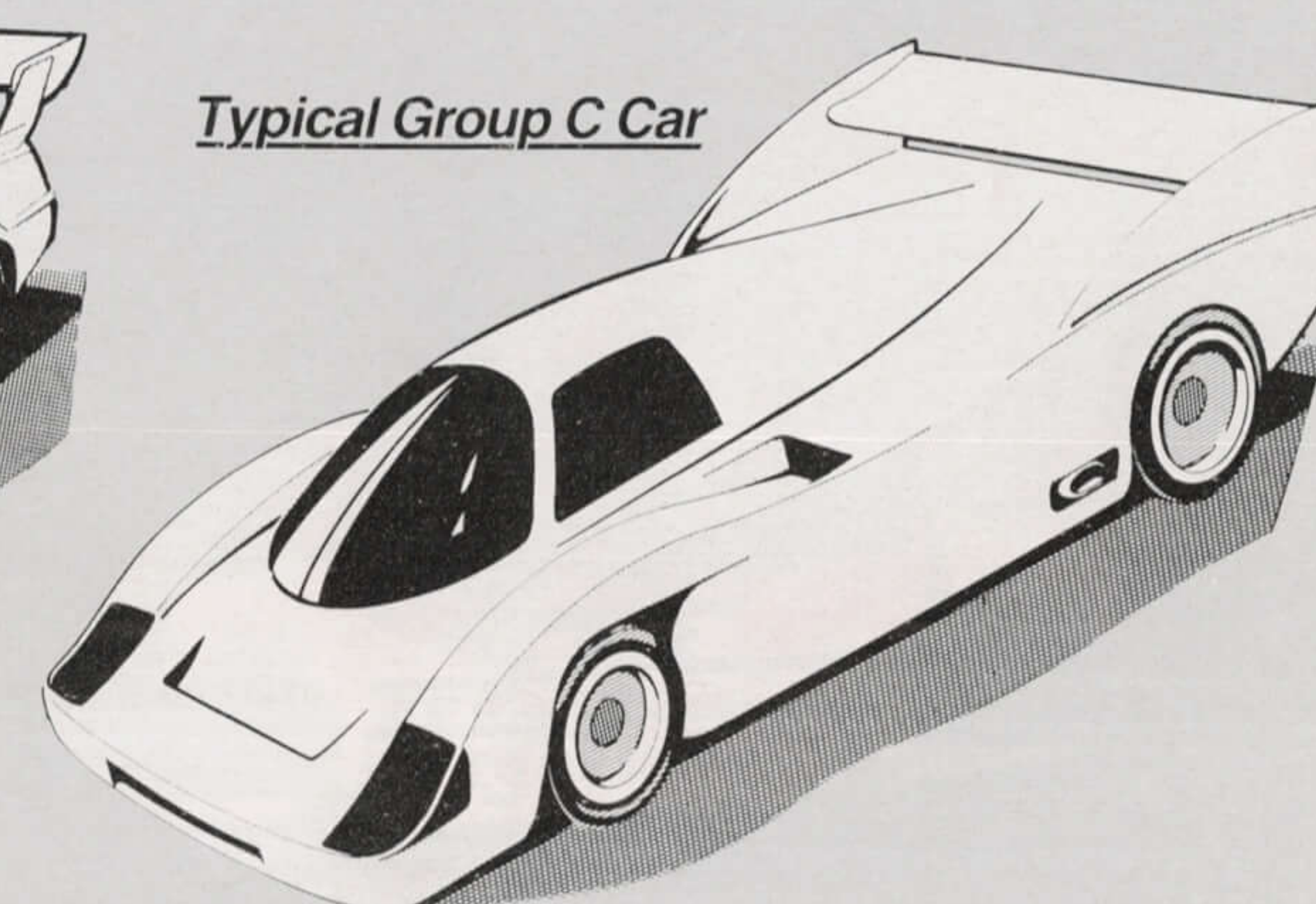
The manufacturer which has come out on top in the new era of Group C racing is Porsche. The Group C Porsche 956 is what the regulations are all about. Right on the weight limit, it is made of aluminium and kevlar fibre, covered by plastic bodywork. Its rear-mounted powerplant is the familiar nine-series Porsche in Boxer six cylinder configuration, 2.6 litre in capacity and turbo-charged.

Group C racing is also open to the more conventional, road-going Group B cars like the Porsche 930 and BMW M1. These cars are built over a 12 month period at a minimum production run of 200 and as their outright performance is limited by their compromised design, they do not race under the same weight/fuel restrictions of the C1 and C2 cars.

Typical Group B Car



Typical Group C Car



THE CONTENDERS:



YOUR GUIDE TO THE WEC SPORTS CARS

There are more than 20 cars from around the world at Sandown today, covering the three main WEC classes — C1, C2 and Group B. This guide fills in the background of each vehicle.

Porsches, Porsches and more Porsches. The marque dominates the grid today, as it has done since the inception of the 'new look' Group C regulations in 1982.

Nobody builds a sports car quite like Porsche and of the dozen or so visiting international cars capable of outright honours, most of them originate from the Porsche factory in West Germany — either in full factory trim or in the 'customer' variety, used by the top World Endurance Championship teams, centred in Britain and Europe.

Of the outright C1 class cars, 11 are Porsche 956s, powered by the bullet-proof 2.6 litre, turbo-charged flat six engine, derived from the Porsche 935. The Porsches on the grid are either in the latest 1984 'B' specification, or updated 1983 models. Some of the more adventurous of the private teams have recently made some changes to their cars, by undertaking their own development programme, separate from the factory, and have made some headway this year against the tide of the all-powerful Porsche factory team.

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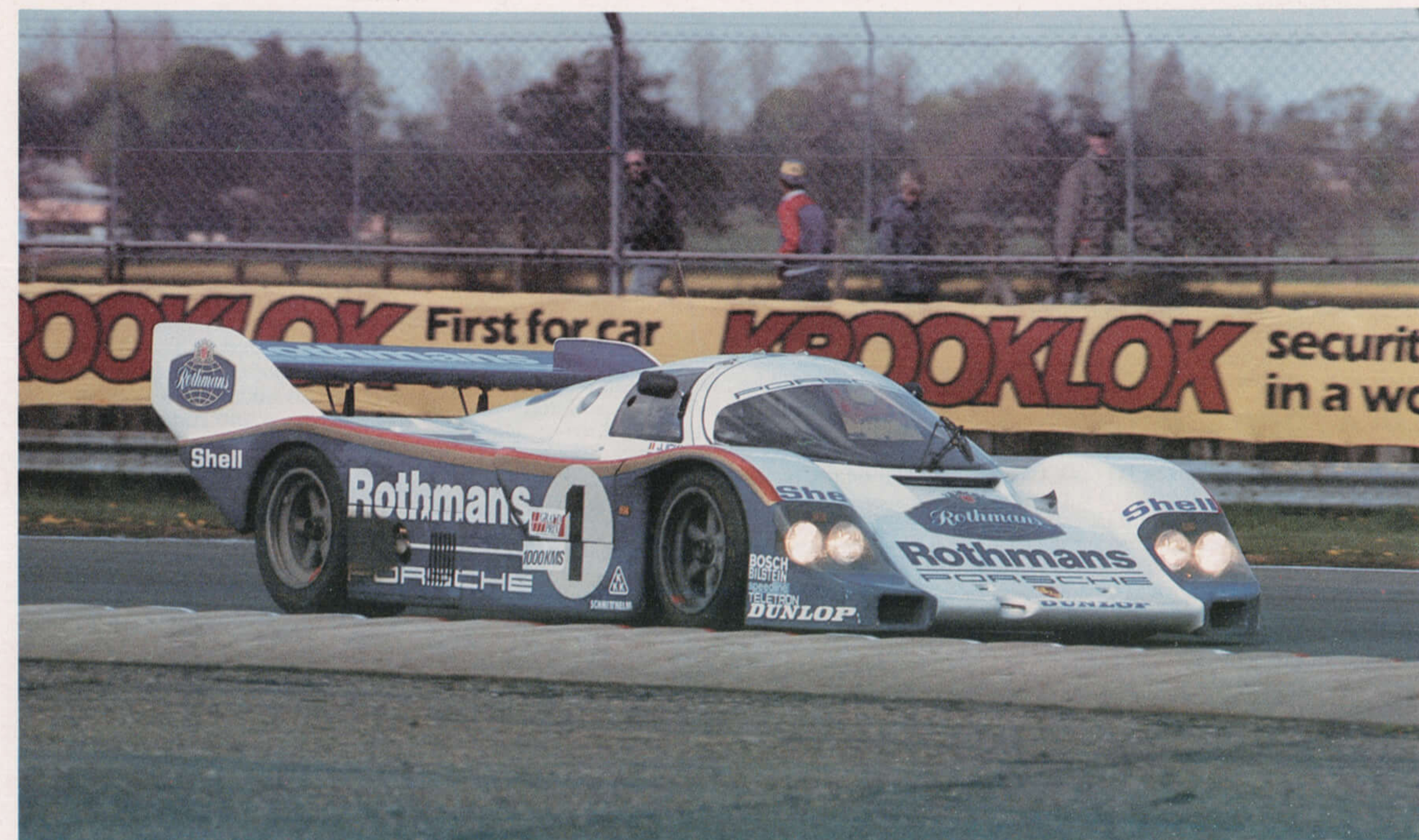
C1

PORSCHE 956

ROTHMANS PORSCHE —

The factory team from West Germany, has three immaculate 1984 956B models in its racing stable. Only two cars are usually raced; the third car being used as a spare. At Sandown today they will be running the full three-car team, numbered 1 to 3.

The factory cars obviously have an edge



on the privately run vehicles, because they feature all the latest thinking from the factory, before such new ideas are shared with the privateers.

The 956B only featured minor improvements on the 1983 model.

In the engine, some refinements were made to the Bosch Motronic computer engine management system. Some teams remained sceptical of the system this year and reverted to the mechanical injection in some races. Improvements to the chassis include new front suspension geometry to lighten the steering load, upgraded brakes, lighter body due to a higher Kevlar content, the longer, thicker high downforce front nose as standard and an all-new lightweight, one-piece aluminium monocoque chassis with relocated engine cooling vents.

The new monocoque undertray is the most significant advancement for it provides greater downforce for improved handling. As would be expected, the customer version of the 956B had all the new features, except the new chassis. The customer model 956B for 1984 came with the conventional 956-83 three-piece aluminium chassis with the cruder engine vents.

After Le Mans the new chassis was made available to the private teams for a price. But by that time most teams had devised a chassis arrangement of their own to produce the desired improvement in downforce. This was achieved by blocking or partly blocking the usual vents and simply compensate by putting vents in the body to draw out overheated air from the engine bay.

The privateers, being a determined lot, were by this time used to looking for chinks

Top left: The flagship Porsche 956 for John Fitzpatrick Racing. Centre left: The JFR Porsche 962, fitted with 956 mechanicals. Bottom left: The GTi Engineering 956 features an innovative chassis and aerodynamics. Above: The lead factory Porsche 956.

in the factory's armour, and most felt there were a few tenths to be gained in the area of aerodynamics. By Spa in September, most of the private Porsches sprouted various front and rear aerofoils to help them combat understeer on the tighter tracks.

But still the Rothmans Porsches held sway.

JOHN FITZPATRICK RACING

— The British-based sports car team of former driver, John Fitzpatrick, equals the factory team in its number of Porsche 956s entered. These are two 956s in the colours of the team's main sponsor, Skoal Bandit, and a third 956 as a spare.

The third car is normally not raced by the team alongside its usual two cars, but offered to drivers outside the team on a lease-drive basis. It is quite likely that the car might race today with some familiar Australian faces or some internationals who want to have a drive at the last moment.

The spare car is the vehicle Peter Brock and Larry Perkins used for their Team Australia assault on Le Mans.

The two main Fitzpatrick Porsches are only new this year. The No. 33 team flagship of Hobbs/Boutsen is a latest specification 956B fitted with the new monocoque/undertray after the first few races this year.

The second is actually a new 962 model, No. 55, ordered by the team to contest the 1985 Daytona 24-hour under IMSA rules. This car is the same as the 956, apart from

a slightly longer wheelbase and is meant to run a larger capacity two-valve Porsche engine. For this year the Fitzpatrick team fitted it with the 2.6 six and used it in C1.

The spare car is one of the team's original 1983 models, updated to 'B' specification and numbered 34.

GTI ENGINEERING — The British team is the innovator in Group C racing, pioneering add-on aerodynamics this year, which were quickly copied by the other privateers, and also developing a special honeycomb chassis which supposedly gives the team an edge in downforce.

The credit for such innovations goes to the team's ex-F1 designer Nigel Stroud.

The sole Canon sponsored car they have at Sandown, No. 14, is a 1983 model, totally rebuilt and modified by the team and featuring the new innovations.

JOEST RACING — The team that won Le Mans this year, in their only entry — the car that won Le Mans to be driven by the man who won Le Mans.

The New Man sponsored German team won the classic 24-hour race in June, largely due to the absence of the Rothmans Porsche team but nevertheless put in a fine effort in the battle of the privateers.

The team's No. 7 car is a new 956B which was brand new at Le Mans. It has been fitted with the latest one-piece undertray, but utilises the Canon-GTi concept of venting engine bay heat.

KREMER PORSCHE — Vern Schuppan and Alan Jones drove for the German Kremer team at Le Mans and led the race at one stage. Melbourne's Rusty

French also drove for the team in their second, older car, at Le Mans.

The team cars at Sandown are those cars — a 956B, No. 10 and a fully updated 956-83, No. 11. French will be driving the 83 model again at Sandown.

The Kremer team has a third car entered. This is the No. 17 **Kremer CK-5 Porsche C1** car. The CK-5 runs the large capacity 2.8 litre, turbo-charged Porsche 935 engine in a Group C chassis of the Kremer team's own design. The car's central rear fin and wedge-shaped front sets it apart from the crop of Porsche 956s. The CK-5 lacks ground effects but is quick in a straight line.

LOLA FORD — One of the more interesting outright cars to compare with the Porsches is the No. 83 Lola T610 Ford of Britain's John Bartlett. It is powered by the Ford Cosworth 3.3 litre DFL V8 — the endurance version of the venerable F1 powerplant.

Bartlett's car, rarely driven by himself, is the ex-American CW racing car, purchased by Bartlett to find his way in Group C racing. The car has been gradually upgraded this year — specifically by lightening it for Group C by using Kevlar and honeycomb in the body and chassis. Bartlett's intention is to acquire a more competitive car and possibly build his own.

IMSA-GTP

KENDALL LOLA — American Chuck Kendall took his No. 131 Lola T600 Chev to Japan at the end of September to race in the Fuji WEC round and his first appearance in the 1984 championship. This car usually races in the U.S. IMSA sports car events but Kendall decided to take the car to Japan and then south for Sandown. The Lola is powered by a Traco modified 5.7 litre V8 Chev.

C2

The smaller, more fuel efficient C2 cars are not dominated by one marque like C1. This class offers variety and has become the province of several imaginative, small European race car designers and builders like Britain's Tiga, Italy's Alba and Germany's Gebhardt. The variety is not just confined to the chassis, it is seen in the engine compartment as well. Not a Porsche in sight.

The C2 class has consistently provided tight competition, running behind the Porsche horde. This year, the two British Tigas, very different in their own way, have had a tough battle with the Italian Alba-Gianninis and the German Gebhardts, to enliven the class.

The three marques are represented at Sandown. This is how they line up:

ALBA GIANINNI — The Albas are built and owned by talented Italian engineer, Giorgio Stirano. They are powered by the interesting 1.8 litre four cylinder Giannini engine, fitted with a turbo developed by the Italian CARMA company of racers Carlo Facetti and Martino Finotto.

Facetti and Finotto pilot the newest No. 80 002 Alba Giannini, which is the 'works' car while the older and heavier No. 81 001 model is run by privateers Almo Copelli and Guido Dacco.

The Albas are handsome looking cars, and that's not so surprising since Stirano used the Pininfarina wind tunnel to perfect the shape. They are very quick too, capable of producing 505 hp on practice boost and around 400 to 380 hp in race trim.

GEBHARDT — The cars of German driver Gunther Gebhardt will be prominent today. There will be two in the field — a 'works' 842 model — No. 73 — powered by a BMW two-litre motor, and a newer 843 in private hands.

The 843 is powered by a 3.0 litre Ford Cosworth engine and is part of the Anglo-American ADA Engineering team headed by English driver John Harrower.

TIGA — The two Tigas from Britain do the job of going quickly by taking different paths.

The factory car, No. 70, of regular drivers Spice/Crang debuted last year fitted with a 3.3 litre Ford Cosworth V8. Designated a GC284, this car was overweight and for this year but has gone quicker with Kevlar and carbon-fibre being used for the body in the place of fibreglass. Major front suspension changes were also made earlier in the year.

The other car, No. 99, owned by Britain's Roy Baker is also a GC284, and built to Baker's special instructions for the

1984 season. He wanted a strengthened, but honeycomb version of the sports 2000 chassis, with stronger suspension and the C2 body. To that car was fitted a special prototype Ford RS1700T on loan from Ford research centre at Boreham. The intriguing four cylinder turbo-charged engine began as a rally block at Britain's JQF Engineering, where it is prepared.

We are likely to hear a lot more of this engine — not just in Group C.

URD — This new German marque debuts at Sandown today. The URD was built by Ernst Ungar as the new vehicle for Danish BMW distributor Jens Winther and his regular co-driver and compatriot Lars Vigo Jensen. Winther raced the quicker BMW M1 in Group B until this new car was finished.

The URD is a flat bottomed, spaceframe car, fitted with an M1 3.5 litre six pumping out around 400 hp. What the car lacks in downforce it should make up in performance.

GROUP B

This class is for production cars, not specially developed for WEC racing. It is a class that normally attracts the production variety of Porsches, like the 930 turbo and the sensational BMW M1. These cars are powerful and fast, but lack the sophistication of the purpose-built Group C cars.

Only a handful of these road going cars

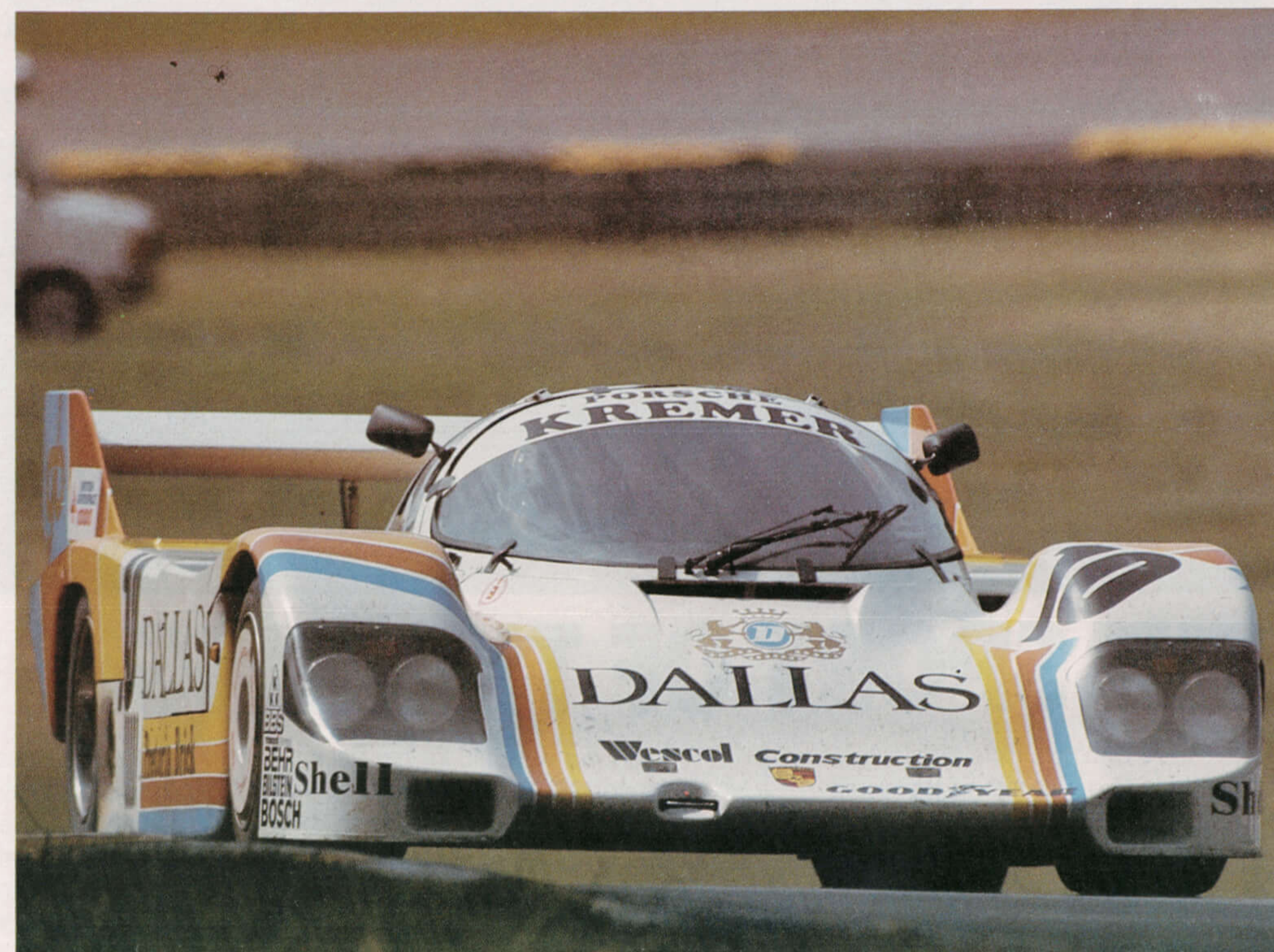
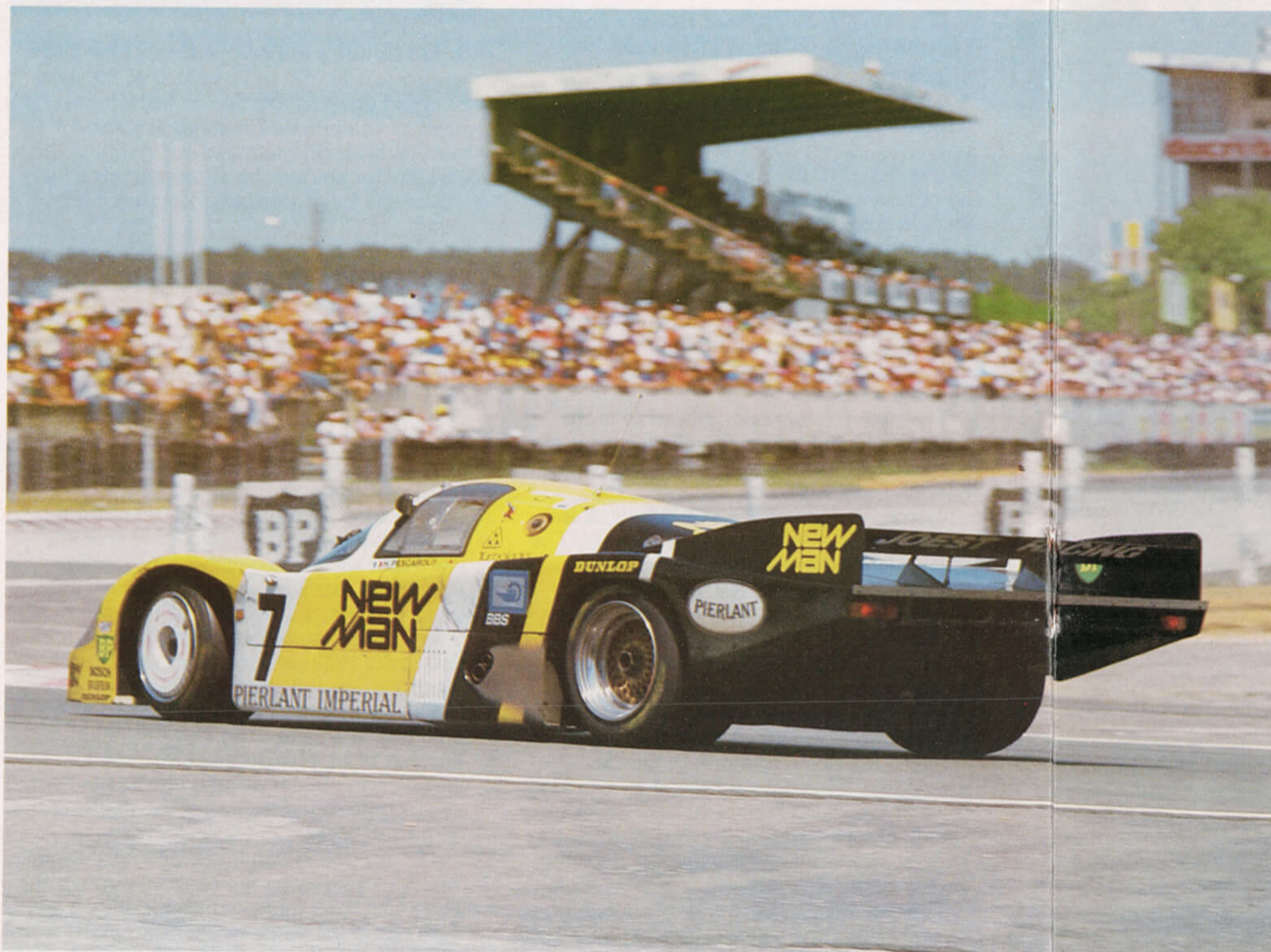
compete in WEC racing. Two of them are at Sandown.

BMW M1 — The sleek M1 began as a BMW development exercise in the late 1970s. It was a new concept in a BMW — rear engined and with the look of an exotic two seater sports car, rather than a luxury sedan or coupe. The chassis and mechanical, put together by BMW, was married to a body commissioned from Lamborghini in Italy. The response to the car was so positive that the car went into limited production and a racing series, called Procar, was instituted by BMW for the vehicles. They then filtered into sports car racing around the world.

There is a sole 3.5 litre M1 here today, the No. 106 car of Germany's Helmut Gall. It helped BMW win the Group B title for the BMW marque this year.

PORSCHE — The sole No. 111 Porsche in the class is a 930 turbo — a distant relative of the 956 and using the familiar 911 body. This more standard Porsche of Britain's Nick Faure is fitted with a turbocharged 4.1 litre flat six developing 400 hp.

Below left: The Joest Racing Porsche 956. Henri Pescarolo drove it to victory at Le Mans this year and will drive it today. Below right: The Kremer Bros. Porsche 956 to be piloted by Australia's Rusty French. Right: A leading contender in the C2 class will be the Cosworth V8 powered Tiga from Britain.





THE SPORT OF THINKING.

At BMW we have a definite attitude to motor racing. We would rather return from the track with an innovation than with a trophy.

For to us, every race is an opportunity to test a theory or improve a component.

Every car we build for the track is an experiment in automotive technology.

And every lesson we learn on the track we apply directly to our production cars.

We believe it is this philosophy

that distinguishes a car that carries the BMW symbol from all others.

For while others regard factors such as peak performance and superlative manoeuvrability as desirable, to us they are absolutely compulsory.

But perhaps even more important than our commitment to research and technological innovation is our intrinsic certainty that without individual brilliance and disciplined creativity, cars such as the 318i, the 323i, 520i, 528i, and the 735i would

never have seen the light of day.

Let alone produce the sheer pleasure experienced by those who drive them.

These demands on the creative capacities of our designers are the most important reasons for our

involvement in motor sport.

When we are asked what we think about sport we reply: Thinking is our sport.



THE ULTIMATE DRIVING MACHINE

THE VISITORS—SANDOWN 1000

DEREK BELL — One of Britain's most experienced and respected drivers who established himself as a sports car specialist after concentrating on open wheelers in the early stages of his career. Now 43 and with three Le Mans wins to his credit, Bell's racing started at Goodwood in 1964 with a Lotus 7 while still a student. In 1965 he raced a Formula Three Lotus 31, winning his first race that year, and then a Lotus 41 in 1966. A change to Brabham netted him 12 major European F3 races the following year — and Formula Two, still with Brabham, came in 1968. Ferrari were so impressed with his performances that they took the rare step of offering an Englishman a factory contract for Grand Prix, F2 and the Australian Tasman series. He debuted the McLaren 4WD Grand Prix car in the 1969 British Grand Prix and then finished runner-up in the 1970 European F2 Championship with wins at Thruxton and Jarama in a Brabham. Derek's first endurance season was in 1971 with Gulf Porsche — he and Jo Siffert won the Buenos Aires 1000 Kms in the John Wyer team's championship year. From 1972 to 1975 his racing was in Gulf Mirages, winning Le Mans with Jacky Ickx — and in 1977 he won the Oulton Park Gold Cup in a Formula One Penske. He raced saloons too during this period, driving for the Leyland Cars Jaguar XJ12 team. In 1981 came his second Le Mans victory, again with Ickx, in a Porsche 936. The pair topped this with victory in the 1982 50th Anniversary 24 Hours in their Rothmans Porsche 956. In the same year they won at Silverstone and Brands Hatch. During 1983, Bell won at Silverstone, Mt. Fuji and Kyalami with Stefan Beloff in a 956, as well as finishing second at Le Mans with Ickx, losing the WEC Drivers title to Ickx by just three points. He also found time to run successfully in U.S. IMSA events, as well as winning the inaugural Thundersports race at Brands Hatch in a Porsche 908. Bell's last Australian race was at Bathurst 1981, when he paired with Allan Moffat to finish third in a RX-7.

STEFAN BELLOF — At just 26, the slim, wavy-haired German has quickly become one of the most sought after drivers. He has proved his speed and versatility by successfully dividing his time between Group C sports cars and F1, and is currently rated as the fastest sports car driver in the world, and the man most likely to inherit the sports car crown of the legendary Jacky Ickx. Beloff started in karting in 1973, and he soon made a name for himself throughout Europe, winning both the Luxembourg Championship in 1976 and German Championship in 1980 — the latter the same year in which he began Formula Ford. From 14 Formula Ford starts, he won nine races, and in 1981 he took the German Formula Ford title as well as finding time to win three Super Vee and three Formula Three events. For 1982 Stefan joined Willy Maurer's Formula Two team, winning the opening European Championship race at Silverstone in the

Maurer-BMW, and then adding Hockenheim to his trophy shelf along with three lap records and five fastest laps. Porsche could see his potential and signed the young German for the factory team at the start of 1983 as co-driver for Bell. After he set pole for his first World series race — Silverstone — the pair won for Rothmans Porsche. He and Bell followed this with further victories at Mt. Fuji and Kyalami and his personal victory in the Norisring for Rothmans Porsche made him the most victorious sports car driver of the year. This year, again paired with Bell, he has been the driver to beat in the WEC. In F1, he has been driving for the embattled Tyrrell team.



STEFAN BELLOF



THIERRY BOUTSEN

THIERRY BOUTSEN — One of the current young crop of F1 drivers, trying to find that elusive plumb drive, and looking to sports cars as a worthwhile diversification in the meantime. The 27-year-old Belgian driver is now in his second year of WEC racing and his first with the Fitzpatrick team. Boutsen went to Teddy Pilette's racing school at Zolder in 1976 having completed a two-year degree course in engineering and won the Pilette school championship. He drove in Formula Ford in 1977, coming second in the Belgian championship and seventh in the Benelux series. A change of chassis to a Crossle in 1978 brought 15 wins from 18 starts and naturally a move up to Formula Three. But the first F3 season was a disaster with only one win. As Martini team leader in 1980, he won three races and finished second in the European F3 championship. Moved up to F2 in 1981, winning two races in a March and finishing second in the championship. He moved to the Spirit F2 team in 1982, winning three races. Boutsen did not get Spirit F1 drive, but joined the Arrows GP team mid-season, making a very promising debut on home ground at Spa. He drove four different Porsche 956s in 1983, winning with the Joest's team at Monza.

DAVID HOBBS — The versatile Englishman is still going strong at 45 after a long

career spanning small capacity open wheelers, F1, F5000, touring cars and sports cars. His long career commenced in his mother's Morris Oxford in 1959 and his first drive at Le Mans in a Lotus Elite in 1962. After driving in Formula Junior and F2, Hobbs drove grand prix cars for the first time in 1967 in a Surtees Lola and later drove for Honda in F1 at Monza. In 1969, he began to concentrate on American racing and F5000 in particular, winning the local championship in 1971. He finished third at Le Mans in 1974 and fifth the same year at Indianapolis. After a brief season with a Jaguar XJ12C, Hobbs returned to the States to concentrate on IMSA racing, taking 10 wins and starting

a career as CBS TV commentator. He joined John Fitzpatrick Racing in 1982 and finished a fine fourth in his 14th Le Mans. His principal programme in 1983 was the American TransAm championship which he won in a Camaro but he also raced with Fitzpatrick in most World Endurance events, including finishing second at Imola. Hobbs drove at Bathurst in 1982, sharing the JPS BMW with Jim Richards and finished fifth.

JACKY ICKX — The Belgian ace has packed a lot of racing into his 39 years and to many, is regarded as a living legend for his feats in sports car endurance racing, especially at Le Mans which he has won an unprecedented six times. Ickx appears to be in a class of his own. He never had the fierce desire to race like most drivers, and when he did decide to race was successful in the most nonchalant of manners. He even retired a few years ago and was only coaxed back to the sport by the prospect of leading the Porsche team in the new Group C class of 1982. The son of a leading Belgian motoring journalist, motor sport was a part of everyday life. Too young to race automobiles, he started his competition career in motocross while still at school and became a Belgian champion at the age of 17. The same year — 1962 — he competed in his first motor race, turning professional just 12 months later. His career took off from there — saloon cars

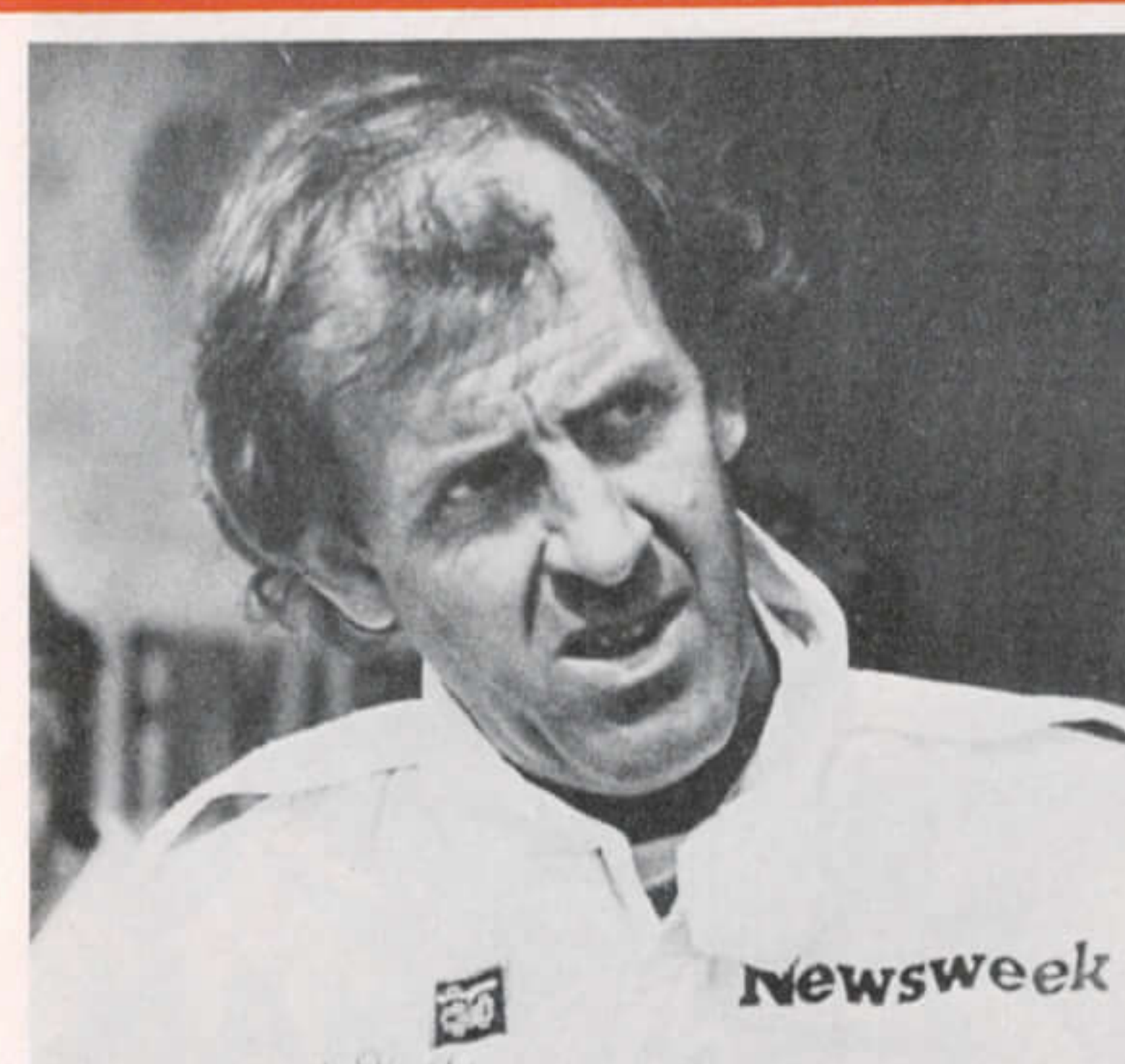
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(with Alan Mann), sports cars (in the Essex Wire Ford GT40) and Formula Two (with Ken Tyrrell's Matra team) all followed in quick succession. Still in 1962, he was to win the Spa 1000 Kms in a Gulf Mirage for John Wyer, followed by three other long-distance victories. In 1968 he got his chance in F1, with the Cooper Maserati team — and was then signed by Ferrari, winning the French Grand Prix at Rouen. The same year he was a member of the World Sports Car Championship-winning John Wyer team and contributed three wins. Ickx was wooed from Ferrari by Brabham in 1969 (the first year he won Le Mans), but returned to Ferrari in 1970 to race both Grand Prix and sports

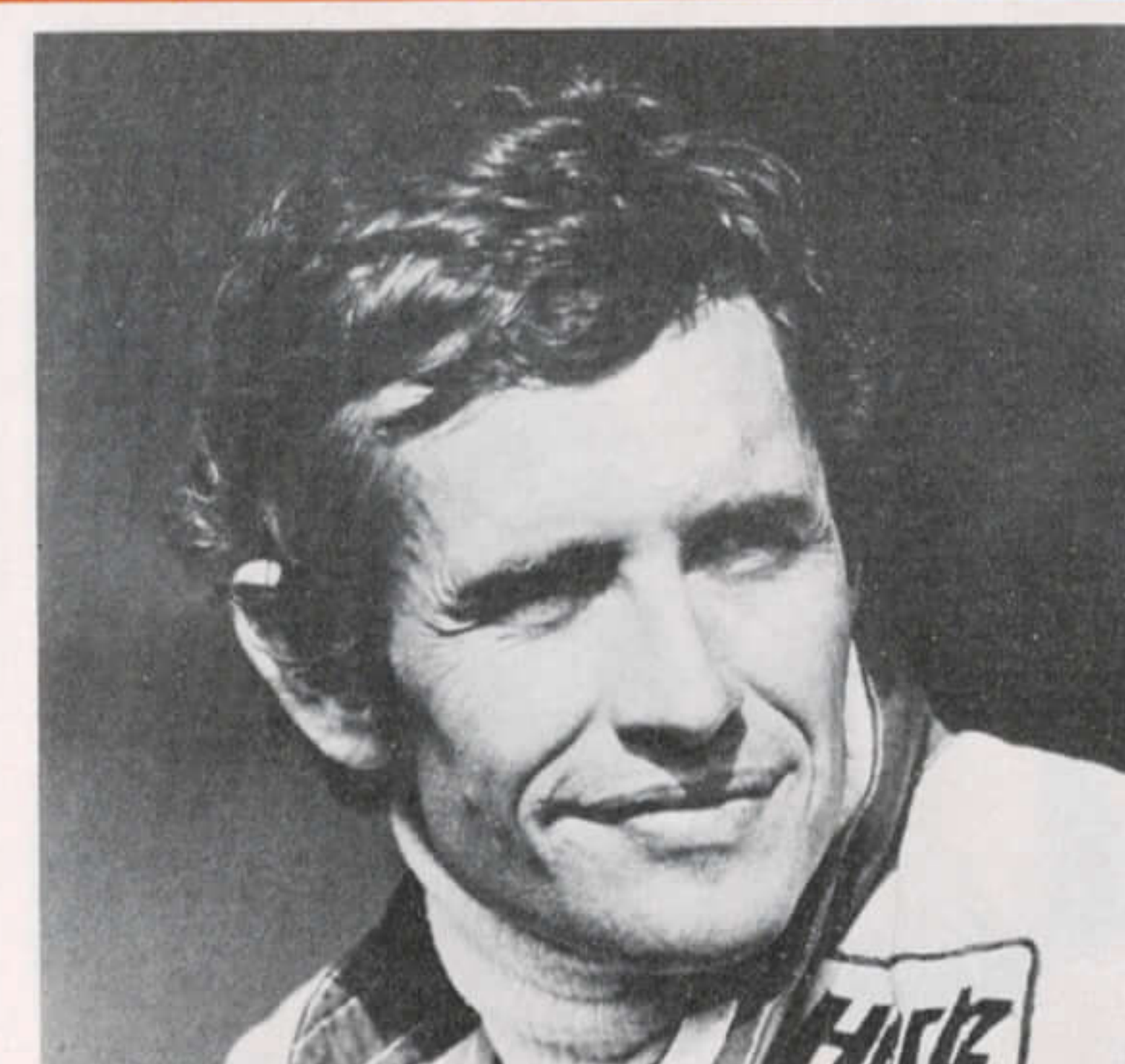
to F1 and the blond Swede was quickly dubbed the next Ronnie Peterson. That was fine by Johansson, because Peterson was his boyhood hero. Unfortunately for Johansson, success fell flat because of several F1 seasons in uncompetitive cars. Only this year with Toleman have people again focused on his outstanding ability. Encouraged by his father, a versatile former motocrosser, rally driver and touring car driver, young Stefan began racing karts at a very tender age. He began his car racing pursuits in Formula Ford but quickly moved up to F3, where he came third in the 1977 Swedish championship. In 1978 he moved to Britain to continue racing F3. He again raced in F3

business ventures including selling cars and campervans and by 1973 had finished a close second to Tony Brise in the British Formula Three Championship. The following season he won three rounds of Britain's Formula Atlantic series. His sponsor, wealthy industrialist Harry Stiller, was so impressed that he bought Jones a ticket into Formula One in the form of an ex-works Hesketh. The car proved disappointing, but then luck again was his way, when he replaced the injured Rolf Stommelen in the Hill team. He scored his first world championship points with the team and at the same time became a front runner in Formula 5000. In 1976 Jones finally had a full F1 drive with Surtees, but switched to Shadow the following year to record his first grand prix win in Austria, beating Niki Lauda. The turning point in his career came in 1978 when he signed up to lead the promising Williams team. His first year with Williams brought a second place at Watkins Glen and between time he won the CanAm Championship in a Jim Hall Lola. But it was during 1979, when the new Williams FW07, that Jones really came to the fore. In addition to victory in the Canadian GP, he scored a hat-trick in Europe, finishing third in the World Championship. The next year he started on pole position in Argentina, had a spin, a pit stop — and still won the race. Four further victories gave him the world championship. At the end of the year, Jones made his triumphant return home to win the Australian Grand Prix in his world championship car. Before he won his world title he had only briefly returned home to compete in the 1977 Rothmans international F5000 series. Jones lost his world title by four points to Nelson Piquet in 1981, and disenchanted with the direction of F1 and homesick, he returned to Australia to live and commence some business ventures, after winning his 13th GP. While resisting lucrative offers to return to F1, he has dabbled in local touring car racing, Pacifics and won the 1982 Australian GT Championship driving a Porsche 935 for the Hamilton team. Now, 38, he lives on the Gold Coast.

RUPERT KEEGAN — Britain's Rupert Keegan, 29, never managed to secure a top drive in F1 despite displaying the talent. He has nevertheless been a regular in British based F1 cars and since 1982, a regular in sports car endurance racing. Keegan had a conventional rise through motor racing formulae, starting with Formula Ford in 1974 when he finished second in the Townsend Thoresen Championship. He moved up to Formula Three in 1975, winning the BP Championship with nine wins in 1976. Raced F1 cars for Hesketh in 1977 and Surtees in 1978 but moved to the British F1 series in 1979, winning five races in the championship which he also won. Keegan then drove RAM-entered Williams FW07 during the second half of the 1980 grand prix season, and after a year's absence from the scene, moved into endurance racing in 1982.



DAVID HOBBS



JACKY ICKX

cars — taking his total to eight Grand Prix victories — before joining Lotus for a period from 1973. He also drove for Ligier in F1 in the later 1970s. He was to win the CanAm Championship in the U.S. before retiring from driving to run his home Spa circuit. But endurance racing had long been Ickx's forte and the attraction of the new Rothmans Porsche team brought him back in 1982 with the prospect of adding to his five Le Mans wins to then, which he did that year. He went on to take the 1982 World Endurance Drivers Championship and repeated that dose last year. On top of this, Ickx has indulged himself in his other great pursuit of off-road racing. After winning the 1983 Paris-Dakar Rally, Ickx persuaded Rothmans to back him on the 1983 Rothmans Pharoahs Rally with a Mercedes G-Wagen; he was leading when poor quality fuel forced his retirement. And then at the beginning of this year, he instigated Porsche's four-wheel-drive debut with a three-car team on the 1984 Paris-Dakar; the three Rothmans Porsche 911s finished 1st, 6th and 26th, taking 13 of the 20 stages between them — eight of them to Ickx, who was denied outright victory by electrical problems. This won't be Ickx's first race in Australia — he teamed up with Allan Moffat to win Bathurst in 1977.

STEFAN JOHANSSON — A very young Stefan Johansson rocketed from F3

in 1979 as part of a strong local F3 team and was quickly drafted into the Shadow F1 team that year for his GP debut. Things did not go his way in F1 and he has had better success driving a Porsche 956 for the German-based Joest team in Group C. This year could be the turning point for the sensational 28-year-old Swede.

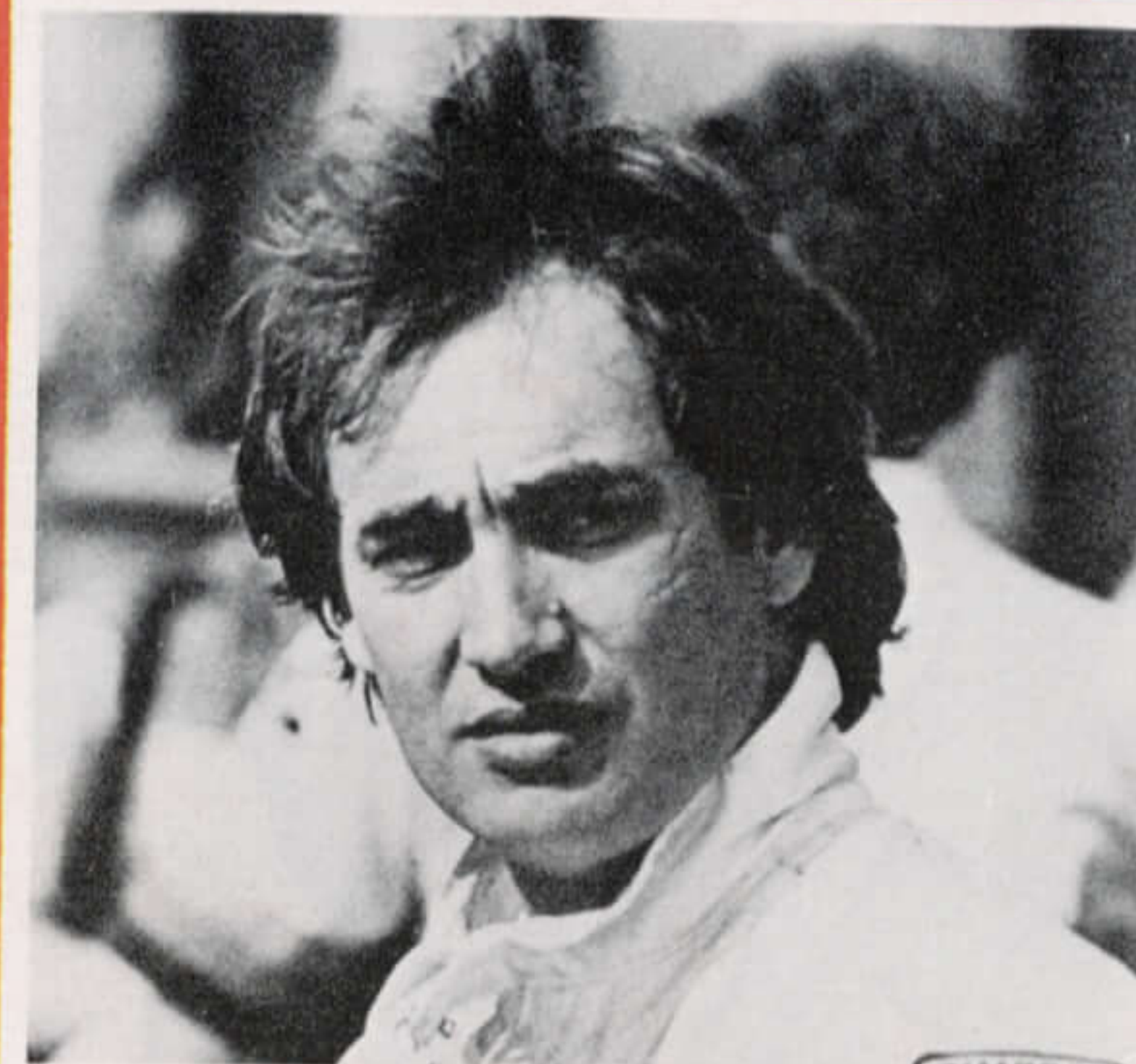
ALAN JONES — Still regarded by many as the best driver in the world, but these days only dabbles in the odd 'hobby' race, both in Australia and overseas. This year he drove for Warren Cullen's K-Mart Auto Racing touring car team, finishing fourth at Bathurst, and overseas he teamed up with Vern Schuppan to drive a 956 at Silverstone and Le Mans. At Sandown today he makes his debut with the Rothmans Porsche team. The son of successful Australian racing driver Stan Jones, he made an early start in racing in 1963, aged 16, when he was Australian Karting Champion. But when Stan's Melbourne business struck problems in 1964, Alan was forced to make an early withdrawal from racing. In 1967 he was in Britain to have a look at international motor racing but was very soon on an aeroplane for home after running out of money. With some karting, club racing and some hill climbing as his only experience, he was back in England by 1970, this time to stay. Jones largely self-financed his English racing through various

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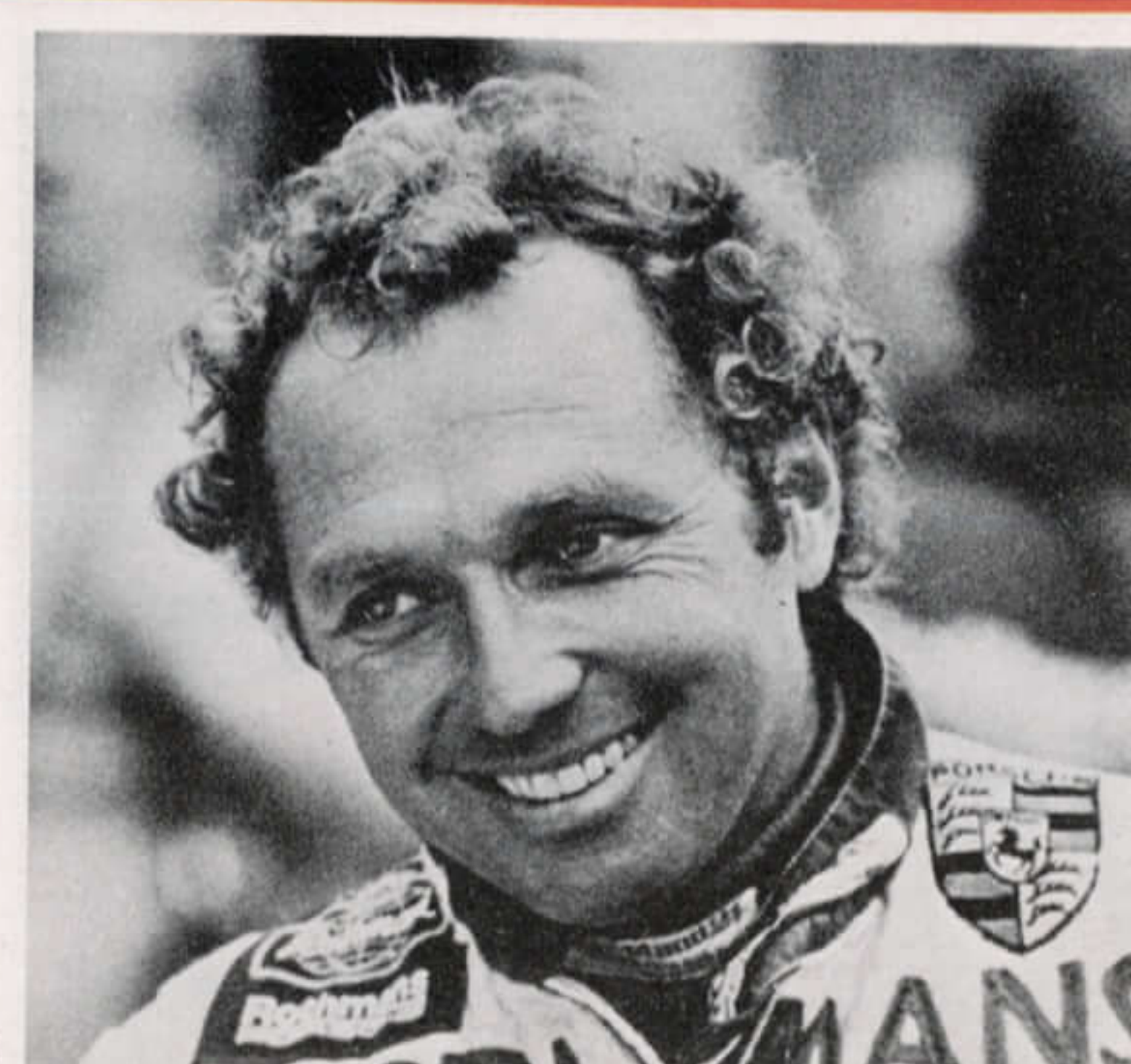
JAN LAMMERS — Holland's leading racing driver, Jan Lammers, might be the size of a jockey but he has more than his fair share of driving ability. At 27, Lammers has become a regular in World Endurance Racing, partnering Jonathan Palmer to successfully challenge the Rothmans factory Porsches, under the GTi Canon banner. Although relatively new to endurance racing when he joined the Canon Team in 1983, Lammers quickly made his mark as a fast and reliable driver, who has the stamina and the smoothness that are needed to succeed in this category. In Formula One, Lammers proved to be as fast as drivers in the best teams. Yet, when the good seats were available he never had the backing needed to secure one. So his career in Formula One ended when only mediocre vacancies were available to him. Last season, Lammers showed that he had lost none of the natural skill that was first recognised by Rob Slotemaker, Dutch driving school operator and former racer, when he drove the Canon-Porsche in Endurance races and a Renault 5 Turbo in the European Championship, which he won. After struggling to make his mark in Formula One cars that were not competitive, Lammers quickly regained his self-confidence, saying he would rather fight with the best in Endurance racing, than lose face driving a "worthless" Grand Prix car. The power and speed of the Canon-Porsche keeps his hand in, just in case an offer comes along in F1. Lammers learned his driving skills at the Slotemaker skid pad at home town of Zandvoort, where he still lives. He had his first race at the famous Zandvoort circuit in a Simca in 1973 and won the Dutch Touring Car Championship in the car that same year. He swapped to open wheelers in 1976, driving in Formula Ford, and moved up to Formula Three in 1977. The following year he won his first major F3 race and went on to win the European F3 title in the Racing Team Holland Ralt Toyota that season. Such a rapid rise resulted in him making his F1 debut for Shadow in the Argentinian Grand Prix. Then followed three troubled F1 seasons with Ensign, ATS and Theodore, before opting to concentrate on Renault 5 production racing and WEC with Canon-Porsche.

JOCHEN MASS — A most versatile 38-year-old German driver with a special affinity for sports cars. A former merchant seaman, Jochen Mass started his racing career in Formula Vee and Super Vee — leading to a 1971 Ford contract in Formula Three. Soon proving himself as an all-rounder, Mass also drove one of the famous Cologne Capris for Ford, winning the 1972 European Touring Car Championship. The same year he furthered his single-seater career driving Formula Two and debuting in Formula One at the British Grand Prix, both for Surtees. Another season with Surtees was followed by a switch to McLaren for 1974 — and it was with McLaren as Emerson Fittipaldi's teammate that he won the 1975 Spanish Grand Prix. He had two

more years with McLaren before moving to ATS in 1978 and then to Arrows in 1980. A year's absence from Formula One ended when he joined the new March team in 1982 — but a mid-season injury in the French Grand Prix finished his comeback season prematurely. But it was in the Rothmans Porsche 956 the same year that Jochen really made his mark, winning the Spa and Mt. Fuji 1000 Kms World Endurance Championship races with Jacky Ickx and taking the prestigious Norisring sprint-race. In 1983 Mass was again paired with Ickx — except at Le Mans, where the Belgian was teamed with Derek Bell — and shared victory at Nurburgring and Spa to finish third overall



RUPERT KEEGAN



JOCHEN MASS

in the World Drivers title. Mass also finished in the Paris-Dakar Rally, earlier this year, driving a Mercedes 500 SCL with American Stephen Perry.

JONATHAN PALMER — Consistently held up as Britain's brightest new hope, Palmer was drafted into the Williams team for testing in 1981 and was considered the probable replacement for Alan Jones — until Keke Rosberg came along. Palmer, now 28, is a fully qualified medical doctor, but concentrates on his racing career these days. Before taking up motor racing as a full time profession in 1982, Palmer successfully finished his medical exams at the end of 1979, and spent 1980 working as a hospital doctor, while racing his Formula Ford during the weekends. In 1982, he raced a Formula 3 Ralt Toyota in the British Marlboro Championship, recording eight wins, five second and three third places, to take the title. The logical step into Formula Two did not bring young Doctor Palmer immediate success. The second year with Ron Tauranac's Ralt-Honda team proved to be better. After winning six races, including five in a row, Palmer added another title to his already impressive list of successes. In the same year that he won the European Formula Two Championship, Palmer debuted the Canon-Porsche 956 alongside

Jan Lammers. At the same time he made his F1 debut at the wheel of a Williams-Ford. He drove this car to 13th place in the European Grand Prix at Brands Hatch. Progress in F1 ranks led him away from Williams to RAM-Hart, the small, but very professionally run outfit of John McDonald. Apart from his Formula One ambitions, Palmer agreed to race for the British Canon-Porsche Team also this season. As a matter of fact, his endurance programme has got priority this year, as it was this team that signed him first.

HENRI PESCAROLO — Along with Jacky Ickx, Henri Pescarolo is regarded as one of the modern greats at the art of sports

car endurance racing. He won Le Mans this year in the Joest Team Porsche 956, to notch up his fourth win in the French classic at 43 years old and in the second year of his comeback to the sport. Pescarolo picked up his love of motorsport in the French countryside as a boy, when he used to navigate for his medical doctor father in amateur rallies. He left studies for a medical degree to attend a French racing school. He then drove a Lotus in a Ford backed series to foster new talent which he dominated that year. In 1966 he went F3 racing under Matra's wing but it wasn't until the following year that he made his powerful presence felt and became that man to beat in Europe. His performances that year prompted Matra to move him up to F2 for 1968 and also give his first drive at Le Mans in a works Matra Simca that year. He was holding down second at one stage, but retired from the event. He was back there in 1969 but was badly injured and burned in a practice crash in the works Matra. He recovered quickly, although he still bears the scars on his face, and made his comeback, driving his Matra F2 in the German GP and won the class. For 1970 he drove both sports cars and finally F1 for Matra, and despite recording a third at Monaco for the team was confined to the Matra sports car programme. He continued his F1 career, between sports car drives, with the Williams team for 1971-2, switched over to BRM and

THE VISITORS—SANDOWN 1000

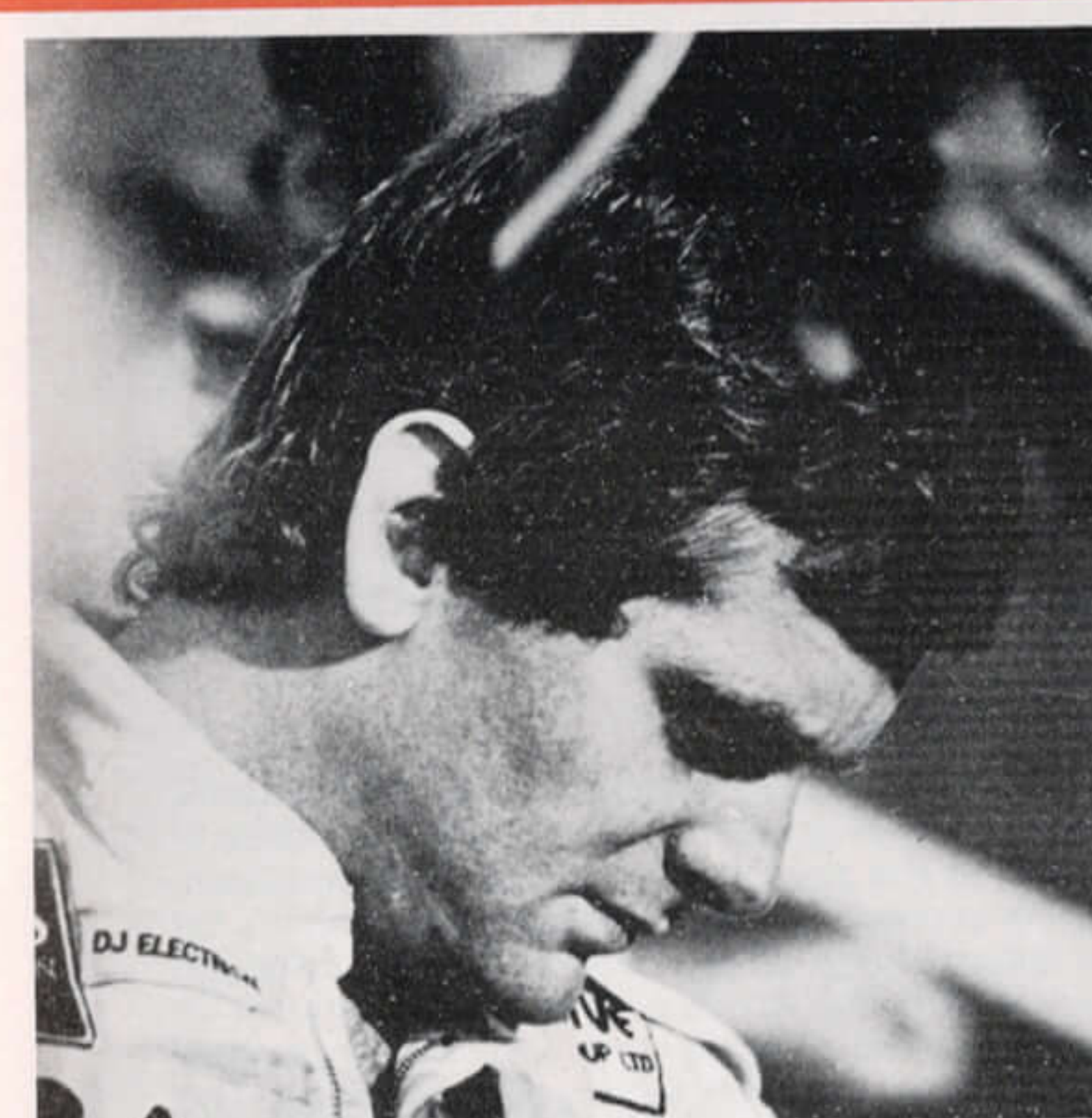
then drove a privately entered Surtees, but without any success. Many felt his 1969 crash took the edge off his driving. It didn't affect his sports car driving because he won Le Mans three times in a row for Matra, starting in 1972. Pescarolo's dead end in F1 and the fading of sports car racing in the mid to late 1970s saw him out for semi-retirement and establish a wheat farm near Paris. In 1983, like Jacky Ickx, he was attracted back into the fray by the new Group C regulations.

VERN SCHUPPAN — One of the world's best sports car drivers, and with the retirement of Alan Jones from the inter-

national scene, the 40-year-old London-based South Australian is currently Australia's most prominent international driver. Versatile Schuppan was a late starter in the racing game and only really reached his peak last year when he won Le Mans with the Rothmans team. After a successful karting career in Australia, Schuppan came to England in 1970 and was immediately noticed for his Formula Ford performances. He won the first Yellow Pages Formula Atlantic Championship in 1971 and was offered a place in the BRM Grand Prix team but then lost it to the well-heeled Niki Lauda. Later F1 drives were to be with Ensign, Hill and Surtees, but F1 was not to be his

destiny. In 1973 Schuppan was offered a drive in one of John Wyer's World Sports Car Championship Gulf-Mirages — the relationship was to last seven years and embrace two seconds, a third and a fifth at Le Mans among other classic races. Schuppan was also successful in Formula 5000 in Britain, the States and at home in Australia, where he won the 1976 Rothmans Championship. Schuppan rarely races in Australia, but when his busy international schedule permitted, he drove a F5000 for the Adelaide Elfin team, co-drove at Bathurst with Allan Moffat, the MHD and Dick Johnson, and contested some recent Australian GPs in a Pacific. After five years in America racing CanAm and Indycars — during which he won the Rookie of the Year award in the 1976 Indy 500 and finished third in his own McLaren in 1971 — Schuppan returned to Britain to race for Porsche. When Rothmans joined forces with the factory World Endurance Championship team in 1982, Schuppan was in one of the 956s for Le Mans and finished second with Jochen Mass in the famous Rothmans Porsche 1-2-3. Last year Schuppan teamed with Americans Al Holbert and Hurley Haywood to win the world's most important race, again with Rothmans Porsche, as well as finding time to win the Japanese Endurance Championship in the Trust Porsche 956. This year Schuppan raced for Rothmans Porsche at Spa and at Mosport in a camera-car role. He recently won the Japanese Group C Championship again.

SAREL VAN DER MERVE — Winner of this year's Daytona 24 Hour race and as an eight-time South African rally champion and reigning South African touring car champion, is by far the most versatile driver ever produced in South Africa. Sensationally quick, tall, aggressive, and often controversial, 'Supervan' has established himself over the years as one of the top rally drivers in the world and this year has emerged as a highly competent and talented sports car driver. In 1983, his first full season of IMSA racing in the U.S., the South African impressed American experts and this year he led the Kreepy Krauly Racing challenge in the all-South African assault on the Camel backed IMSA Series. In 1979, he shared the South African production car title with Judy Charlton. His flamboyant driving style has brought him a legion of fans in South Africa and overseas. In 1980, Van der Merwe and Franz Boshoff, the most successful combination in the history of South African rallying, won the Reno International Rally in the U.S. and 'Supervan' holds the South African record for the most number of national championship and international rally wins. He has driven for the works Toyota, Nissan and Ford teams and in 1983 played a major role in Audi Quattro's total domination of South African rallying. ■



JONATHAN PALMER



HENRI PESCAROLO



ALAN JONES (left) and VERN SCHUPPAN

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THE FLAGS

FLAG MARSHALS are posted at strategic points around the circuit as extra sets of "eyes" for the drivers. These are the various flags used around the circuit and their meaning:

NATIONAL FLAG: The race starts when the flag is dropped.

BLUE FLAG (Stationary): Informs drivers another competitor is following closely.

BLUE FLAG (Waved): Informs driver another competitor is about to overtake him or is closing in on him at a rapid pace.

YELLOW FLAG (Stationary): Informs the driver that there is a problem on the track (drivers shall not overtake while this flag is being displayed).

YELLOW FLAG (Waved): Situation on track ahead is rather dangerous and a large reduction in speed is necessary to negotiate the obstacle.

YELLOW AND RED STRIPES: Means there is a problem with the track surface

likely to cause an accident, i.e. oil or water on track or rain in the vicinity of flag point.

GREEN FLAG: Informs driver of "all clear" i.e. track is now in a condition to race at full speed.

WHITE FLAG: Informs drivers of Ambulance, Doctor or a slow moving competitor on the track.

BLACK FLAG: Instructs the driver to return to his pit on the next lap.

RED FLAG: Somewhere around the track there is extreme danger and the race must be stopped — all drivers must proceed to their pits at a greatly reduced speed.

BLACK AND WHITE DIAGONAL FLAG: Warning to driver(s) they are behaving in an unsportsmanlike manner.

BLACK FLAG WITH ORANGE CIRCLE: Informs the driver that his car has mechanical problems that he cannot see and which could endanger himself and others if he continues.

BLACK AND WHITE CHEQUERED FLAG: Signifies winner and end of race.

PUBLIC NOTICE!

YOU SHOULD KNOW ABOUT THIS

THE LIGHT CAR CLUB of Australia values you, the spectator, and having regard to the high speed racing for which the circuit is justly famed, has created many spectator viewing areas.

The high speeds attained here do create some drawbacks, however, in that your safety has to be the subject of careful study by us. At present there are many areas which are prohibited to the public because they are very dangerously situated. As time passes, planned improvements will, step by step, provide sufficient protection for you and your family to utilise these areas. Until that time however, it is essential that you keep clear.

Persons spectating from the outside of the motor racing track are requested at all times to remain behind the fences provided.

Wherever rope and stake fences are erected please remain behind them.

With your co-operation we will have an excellent day of motor racing with no hold-ups. Remember, when a hold-up occurs it is most likely due to our concern for your safety and the consequent necessity for officials to request persons in dangerous areas to leave them immediately. Sandown serves a dual purpose as Australia's top horse racetrack and the country's best motor racing circuit. Because of the former, it is not possible to erect permanent fences all round the track. In any case these would, in all likelihood detract from your enjoyment. Therefore, help us to give you that enjoyment by co-operating with officials.

SAFETY

THE FENCING erected round this circuit is there for your protection. It is forbidden to stand, sit or climb on.

ENTRIES

THE ORGANISERS accept entries and drivers' nominations in good faith. Every effort is made to adhere to the printed programme of competitors, but the promoters cannot accept responsibility for the failure of any driver or car to appear. Although every endeavour is made to avoid inaccuracies in the description of competing cars, the organisers accept no responsibility for any that may occur. The organisers reserve the right to postpone, abandon, or cancel the meeting or any part thereof.

ANTI-LITTER

PLEASE help keep Sandown tidy.

MOTOR RACING IS DANGEROUS

YOU ARE present at this meeting entirely at your own risk and it is a condition of admission that all persons having any connection with the promotion and/or organisation and/or conduct of the Meeting, including the owners of the vehicles and passengers in the vehicles, are absolved from all liability in respect of personal injury (whether fatal or otherwise) to you or damage to your property however caused.

MESSAGES

THE ORGANISERS regret that announcements to assist spectators cannot be made over the public address system except in cases of genuine emergency.

DOGS

IN THE interest of safety, dogs are not permitted at the course.

SANDOWN INTERNATIONAL MOTOR RACING CIRCUIT

SANDOWN 1000

FINAL ROUND — WORLD ENDURANCE CHAMPIONSHIP FOR DRIVERS

and featuring:

- SERIES PRODUCTION TROPHY RACE
- INTERSTATE CHALLENGE — GROUP N (FINAL ROUND)

Held under the International Sporting Code of the FIA and the National Competition Rules of CAMS

December 2, 1984

This meeting is organised by the

LIGHT CAR CLUB OF AUSTRALIA

Office and Clubrooms
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phone: (03) 51 5284
Telex: "LIGHTCAR"
Melbourne.

CAMS Permit No. A84-142

FISA Permit No. 11 WEC/84.9.10



PRACTICE

FRIDAY

Official practice (untimed):

Group N	12.00-12.20 p.m.
Group E	12.30-12.50 p.m.
World Endurance Championship cars	1.00- 5.00 p.m.

SATURDAY

Official practice (timed):

World Endurance Championship cars	9.30-11.30 a.m.
Group N	11.40-12.05 p.m.
Group E	12.15-12.40 p.m.
Pit walk	12.45- 1.45 p.m.
Lunch	
World Endurance Championship cars	3.30- 5.30 p.m.

SUNDAY

Official practice (untimed warm-up laps):

World Endurance Championship cars	9.30- 9.50 a.m.
Pit walk	10.00-11.00 a.m.

RACING

SATURDAY

Event 1: HARRY JUPP MOTORS CUP

A scratch race over 5 laps (19.45km)
for Historic Cars complying with
Appendix C, Group N of
the NCR's of CAMS 2.00 p.m. (5 laps)

Event 2: YOKOHAMA TROPHY

A scratch race over 8 laps (31.12km)
for production cars complying with
Group E of Appendix C of the
NCR's of CAMS 2.25 p.m. (8 laps)

Event 3: FORTE INTERSTATE CHALLENGE

A scratch race over 5 laps (19.45km)
for Historic Cars complying with
Appendix C, Group N of the
NCR's of CAMS 2.55 p.m. (5 laps)

SUNDAY

Event 4: SANDOWN 1000

Final round of the 1984
FIA World Endurance Championship
for Drivers 11.30 a.m. (257 laps)

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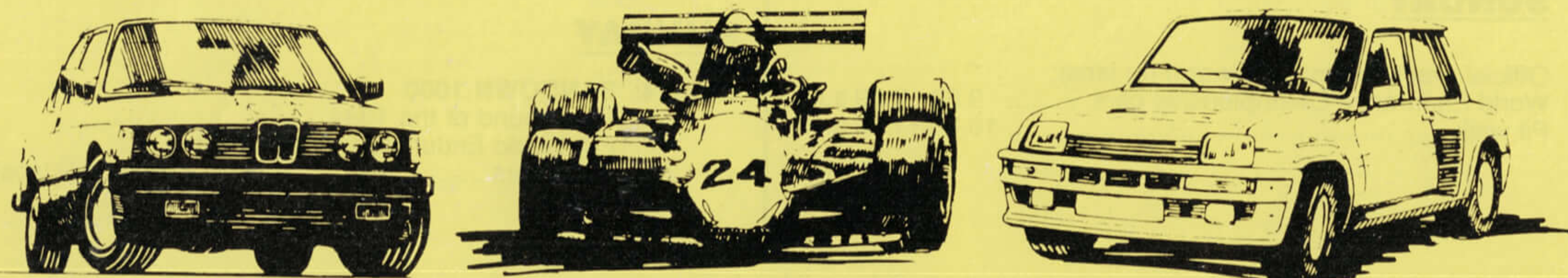
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EVENT 1: Harry Jupp Motors Cup

Saturday 2.00 pm 5 laps

A scratch race over 5 laps (19.45 km) for HISTORIC CARS complying with Appendix C, Group N of the NCR's of CAMS. Prizes in the form of trophies.

No.	Driver/Entrant	Car	Color	Cap.
1	Barry JUPP/B. Jupp	Chev Nova	Green	5600
2	Paul TREVETHAN/P. Trevethan	Lotus Cortina	White/Green	1598
3	Ken ZINNER/K. J. Zinner	Holden	Blue	2450
4	Gary SMITH/G. Smith	EH Holden	Blue	2980
5	Len READ/Appendix J Register Vic	Cooper S Morris	Green	1299
6	ROBERT JAMIESON Jnr/R. Jamieson Jnr	FX Holden	White	2596
7	Greg JUPP/Barry Jupp	Ford Mustang	Green	4727
8	Kevin ANKER/K. Anker	Jaguar	Green	4100
10	David CLEMENT/J. Hazel/I. Saxby	EH Holden	Brown/White	2998
11	Ken RAPER/K. Raper	Chev Belair	Blue	5300
12	David KING/D. King	Cooper S Morris	Neptune Blue	1293
13	Ken HASTINGS/K. Hastings	Lotus Cortina	Cream/Green	1600
14	John VIRGO/J. Virgo	Ford Mustang	Red/Gold	4727
15	Ross HUDSON/V. R. Hudson	Cooper S Morris	Green/White	1293
17	Frank BREWSTER/Appendix J. Regg. Vic	EH Holden	Green/White	2998
18	Graham SLATER/G. Slater	Ford Zephyr	Monza Red	2583
20	Graham NEILSEN/G. Neilsen	EH Holden	Blue/White	2990
21	Trevor THESSMAN/T. Thessman	Falcon Coupe	Black	2800
22	Ken GRINDROD/K. Grindrod	EH Holden	Red	1964
23	Glen CLARK/Ann DONALD	Cooper S Morris	Blue	1293
24	Anthony PEJKOVIC/A. Pejko	EH Holden	Red	2998
25	Roland HILL/R. Hill	EH Holden	Black	2998
26	Ernest MARTINEZ/E. Martinez	BMW 1800 Ti	White	1800
27	Bruce SMITH/B. Smith	Austin A40	Blue	997
28	Tony HUNTER/T. Hunter	Lotus Cortina	Black	1598
29	Warwick AGUSTIN/W. Agustin	Cooper S Morris	Green/Yellow	1293
30	Peter WINTER/P. Winter	EH Holden	White/Grey	
34	Bruce ALLEN/L.B. Allen	Cooper S Morris	White	1298
38	Barry BATAGOL/B. Batagol	Jaguar	Green	3870
39	Hugh GRIEVE/H. Grieve	EH Holden	Beige/White	2980
42	Ted BREWSTER/T. Brewster	Cooper S Morris	Green/Yellow	1293
43	Stephen HICKS/S. Hicks	Lotus Cortina	White	1600
45	John KORSTEN/J. J. Korsten	Falcon XM	White	3270
47	Denis O'BRIEN/D. O'Brien	Ford Mustang	White/Blue	4727
54	John MANN/J. Mann	Ford Mustang	White	4727
64	Geoffrey McINNES/G. McInnes	EH Holden	Red/Green	2994
65	P. K. SNEDDON/P. K. Sneddon	Prince Skyline	White	1988
66	Lloyd CLEAVER/L. Cleaver	Ford Cortina GT	White/Blue	1560
67	Warren TICE/Ian JOHNSON	Cooper S Morris	Green	1275
69	Ron HODGSON/R. Hodgson	Lotus Cortina	White/Green	1598
70	Ross WOODBRIDGE/D. O'Brien	EH Holden	Blue	2989
73	Henry DRAPER/H. Draper	Cooper S Morris	Red/White	1275
76	Leigh LAWTON/L. Lawton	Cooper S Morris	Blue	1275
77	Peter ROACH/P. Roach	Lotus Cortina	White/Green	1598
86	Stephen MOURITZ/S. Mouritz	Cooper S Morris	Red/White	1293
88	Greg TOEPFER/W.C. Automotive	EH Holden	Brown	2990
90	Ian WELLS/I. Wells	Super Anglia	Black	1200

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EVENT 2: Yokohama Trophy Saturday 2.25 pm 8 laps

A scratch race over 8 laps (31.12 km) for production cars complying with Group E of Appendix C of the NCR's of CAMS. Prize money and awards: 1st \$500; 2nd \$400; 3rd \$300; 4th \$200; 5th \$100; 6th \$100; 7th \$100; 8th \$100; 9th \$50; 10th \$50; 11th \$50 and 12th \$50.

No.	Driver/Entrant	Car	Color	Cap.
3	Peter FITZGERALD/Palcolor Photo Services/Eastside Mitsubishi	Starion Turbo	White	2800
5	Gary WALDON/Gradan Gears P/L	Mazda RX7	White	2292
9	Peter GRANGER/Bob Glazier	Cordia Turbo	Red	2153
10	Gordon ELLIOTT/Advanced Driving Centre	Commodore	White/Blue	4200
12	Geoff NEWTON/G. Newton	Daihatsu Charade	White	993
14	Peter DANE/P. Dane	Ford XE	White	4900
15	Joseph BENINCA/Beninca Motors	Alfa Romeo Sud	Red	1490
33	Gil SLADE/Pennant Hills Suspension	Cordia Turbo	White	2513
64	Des GIBBS/D. Gibbs	Cordia Turbo	Blue	2513
66	Ian BURRELL/Eastside Mitsubishi	Cordia Turbo	Red	2513
73	Brad JONES/B. Jones	Starion	White	2800
78	Brian SAMPSON/Melb. Clutch & Brake	Starion	Blue/White	2800
88	Mark PICKET/M. Picket	Ford XE	White	4900
89	Grame BABINGTON/G. Babington	Ford Laser	Silver	1490
99	Ken PRICE/K. Price	Cordia Turbo	White	1795

EVENT 3: Forte Interstate Challenge Saturday 2.55 pm. 5 laps

Final round Interstate Challenge for Group N cars.

For entrants see Event 1.

EVENT 4: Sandown 1000 Sunday 11.30 am 257 laps

Final round of the FIA 1984 **WORLD ENDURANCE CHAMPIONSHIP** for drivers. The event is open to Group C1 Prototype, Group C2 Prototype and Group B cars, in compliance with Appendix J of the International Sporting Code and with the FIA World Endurance Championship Regulations, and to GTP, GTX, GTO and GTU cars, complying with the 1984 IMSA Code. Group B cars and GTP, GTX, GTO and GTU cars must also comply with the Group C1 Prototype consumption regulations. Additionally the event is open to a maximum of five Australian cars, which do not fully comply with the championship categories.

Prizes and Awards: Outright — 1st \$5000; 2nd \$4000; 3rd \$3000; 4th \$2500; 5th \$2000; 6th \$1750. Category Awards — Group C2: 1st \$3000; 2nd \$2500; 3rd \$1500; Group B: 1st \$2000; 2nd \$1500; 3rd \$1000. Starters — Fastest C1: \$3000; Fastest C2: \$1000; Fastest Group B: \$1000. All other starters: \$150. All other classified finishers: \$350. All cars having covered 50% of the distance covered by the leading car after 129 laps: \$250.

No.	Entrant	Car	Drivers	
GROUP C1				
1	Rothmans Porsche	Porsche 956 T	Jacky ICKX (B)	Jochen MASS (D)
2	Rothmans Porsche	Porsche 956 T	Stefan BELLOF (D)	Derek BELL (GB)
3	Rothmans Porsche	Porsche 956 T	Alan JONES (Aus)	Vern SCHUPPAN (Aus)
7	New Man Joest Racing	Porsche 956 T	Henri PESCAROLO (F)	Paul BELMONDO (F) Klaus LUDWIG (D)
10	Porsche Kremer Racing	Porsche 956 T	George FOUCHE (GB)	Sarel VAN DER MERWE (USA)
11	Porsche Kremer Racing	Porsche 956 T	Manfred Winkelhock (D)	Rusty FRENCH (Aus)
12	DS Racing Team	Porsche 956 T	Dieter SCHORNSTEIN (D)	John WINTER (D)
14	GTi Engineering	Porsche 956 T	Jonathan PALMER (GB)	Jan LAMMERS (NL)
16	Terry Hook	Lola T610	Terry HOOK	Warwick BROWN (Aus)
17	Porsche Kremer Racing	Kremer CK5 T	Kees KROESEMEIJER (NL)	Jesus PARRARA (E)
33	Skoal Bandit Porsche Team	Porsche 956 T	Thierry BOUTSEN (B)	David HOBBS (GB)
34	John Fitzpatrick Racing	Porsche 956 T	To be advised	To be advised
55	Skoal Bandit Porsche Team	Porsche 956 T	Rupert KEEGAN (GB)	Franz KONRAD (D)

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AUSTRALIAN CARS

62	JPS Team BMW	BMW 320 GT	Jim RICHARDS (Aus)	Tony LONGHURST (Aus)
63	P.F. Motor Racing P/L	Mercedes Benz	Bryan THOMSON (Aus)	Brad JONES (Aus)
64	Re-Car Racing Pty Ltd	Chevrolet Monza	Allan GRICE (Aus)	Dick JOHNSON (Aus)
65	Jeff Harris	J.W.S.	Jeff HARRIS (Aus)	Ray HANGER (Aus)
66	BAP Romano Racing	Romano - Cosworth	Bap ROMANO (Aus)	Alfredo COSTANZO (Aus)

GROUP C2

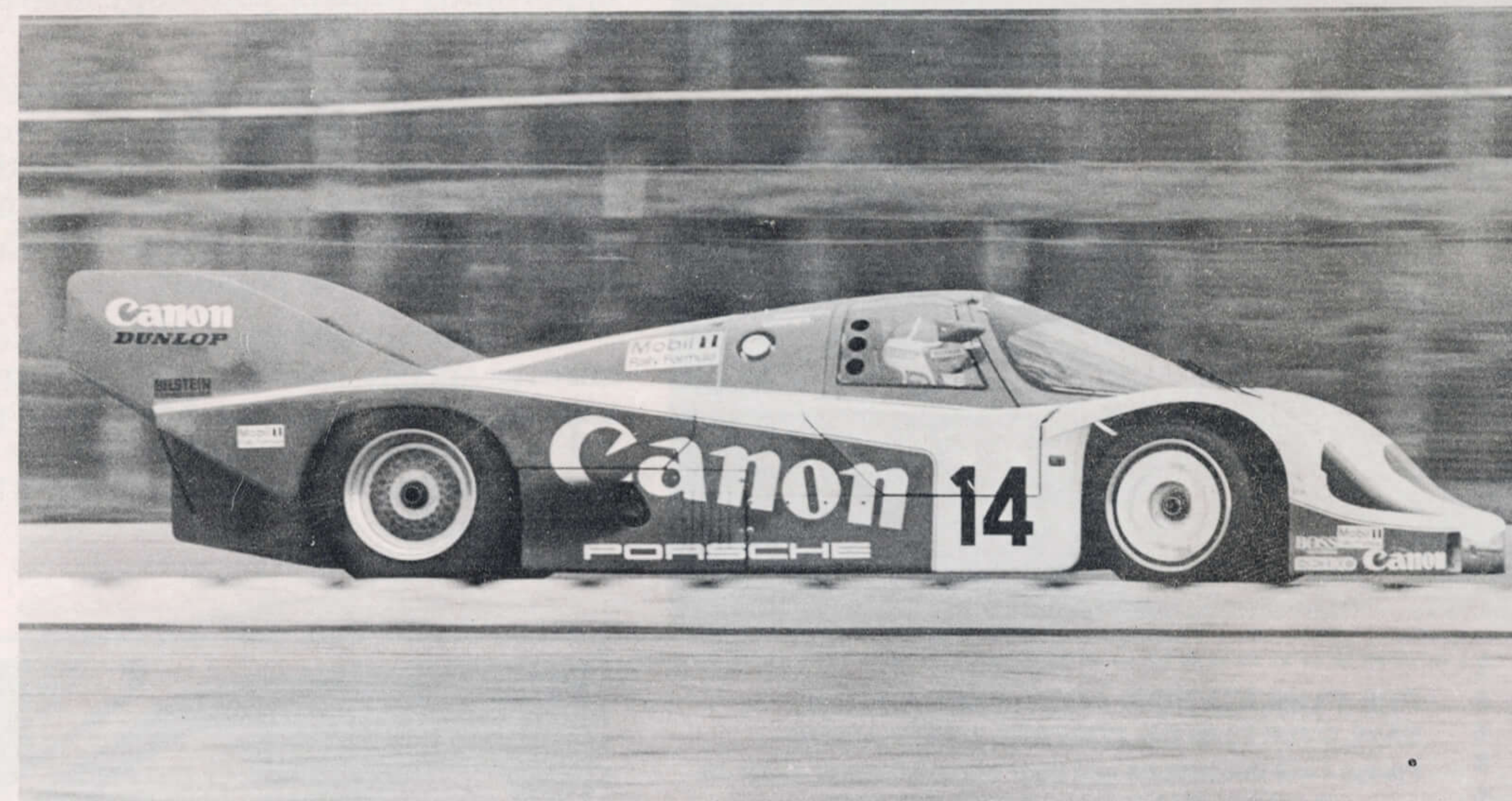
70	Gordon Spice Racing	Tiga GC84 Ford	Gordon SPICE (GB)	Neil CRANG (Aus)
			Jim TRUEMAN (USA)	
72	Gebhardt Motorsport	Gebhardt 843 DFV	John GRAHAM (CDN)	Ian HARROWER (GB)
73	Gebhardt Motorsport	Gebhardt 842 BMW	Betta NOBES (D)	To be advised
74	Gebhardt Motorsport	Gebhardt 843 DFV	Frank JELLINSKI (D)	To be advised
80	Jolly Club	Alba Giannini C2 T	Martino FINOTTO (I)	Carlo FACETTI (I)
81	Jolly Club	Alba Giannini C2 T	Almo COPELLI (I)	Guido DACCO (I)
83	John Bartlett	Lola T610	Roger ANDREASON (GB)	To be advised
90	Jens Winther Team Castrol	URD — BMW	Jens WINTHER (DK)	Lars Vigo JENSEN (DK)
99	R.B. Promotions	Tiga Ford T	Jeremy ROSSITER (GB)	Roy BAKER (GB)

GROUP B

106	H. Gall	BMW M1	Helmut GALL (D)	To be advised
111	N. Faure	Porsche 930 T	Nick FAURE (GB)	To be advised

IMSA/GTP

131	Charles Kendall	Lola T600 Chevrolet	Charles KENDALL (USA)	Jim COOK (USA)
			Peter FITZGERALD (Aus)	



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THE EUROPEAN INVADERS

The teams making the long journey to the other side of the world from their European bases represent the cream of the 1984 World Endurance Championships.

In terms of both quantity and quality, the entry of European Group C1 and C2 cars is comparable with those earlier this season at Monza, Brands Hatch, Spa-Francorchamps and Imola, and superior to those at Mosport and Kyalami. Only at Silverstone, Le Mans, Nurburgring and Fuji has the list been significantly longer and, considering the distance involved, that is a considerable achievement for Sandown.

For only the second time this year, the factory ROTHMANS PORSCHE team is fielding three cars, which is a true measure of the importance attached to this race. This is, of course, the final round of the 11-race World Endurance Championship of Drivers, and the series (like its Formula 1 counterpart) is going down to the wire.

The works Porsche team is based at the company's impressive R&D centre at Weissach, near Stuttgart, where the facilities include a private test track. It is directed by Peter Falk and managed by Norbert Singer, two engineers who have been with Porsche for most of their working lives. The team is in its third season of sponsorship from Rothmans cigarettes and continues a long allegiance to Dunlop tyres, Shell lubricants and KKK turbochargers.

The team is constantly involved in tyre development with Dunlop and in electronic

**Europe's top sports car teams
are taking over Sandown
today for the first time.
Quentin Spurring fills in the
background on each team.**

engine management research with Bosch. The works cars were all built in 1983, but thanks to this development they are still a match for the opposition. Relative to the privately entered Porsches, they have more power and subtly different aerodynamics.

There have been rumours of 3-litre engines, but the team insists that it runs the 2.6-litre version of the twin-turbo flat-six, with Bosch Motronic engine management designed to extract as much power as can be used on the fuel available. The official output figure is 630bhp at 8000rpm, but you can bet that 650bhp or more is available to the works drivers.

The Makes championship races at Monza, Silverstone, Nurburgring, Mosport, Spa and Fuji have all fallen to the Rothmans Porsches this year, putting the title way beyond the reach of all rivals. The works team, however, missed Le Mans, where it had competed every year (with one exception) since 1951. It boycotted the French classic this year as a protest against rule changes made by FISA, the governing body; FISA subsequently modified its decisions, but not until after Le Mans.

The great prize of sports car racing, therefore, was up for grabs. After an intensely dramatic race, with nine different leaders, it fell to JOEST RACING, one of the best privateer Porsche outfits which is based in Absteinach, West Germany, and owned by Reinhold Joest. Sponsorship comes from New Man fashion and Pierlant wine. When it won at Le Mans, the Joest team's Porsche 956B was crewed by Henri Pescarolo and Klaus Ludwig. But at Sandown, the French veteran Pescarolo (whose Le Mans win was his fourth, and brought his sports car victory tally to 20) is partnered by the super-quick Stefan Johansson. The team manager is wily Portuguese Domingos Piedade.

The Joest team also does the race preparation for Dieter Schornstein's Porsche, which is also backed by New Man and is co-driven here by 'John Winter' and young Paul Belmondo, the son of French actor Jean-Paul Belmondo, who has been racing Formula Three single-seaters. The DS RACING TEAM's car is less highly modified than the Joest model, which features the team's own one-piece underbody giving increased downforce.

A similar underbody appears on the GTi ENGINEERING Porsche, but this Silverstone, Britain, based team has taken its experimentation several stages further. With so many Porsches competing in the WEC, the better-financed teams have been trying out various ways of finding a performance advantage, usually by using a tyre supplier

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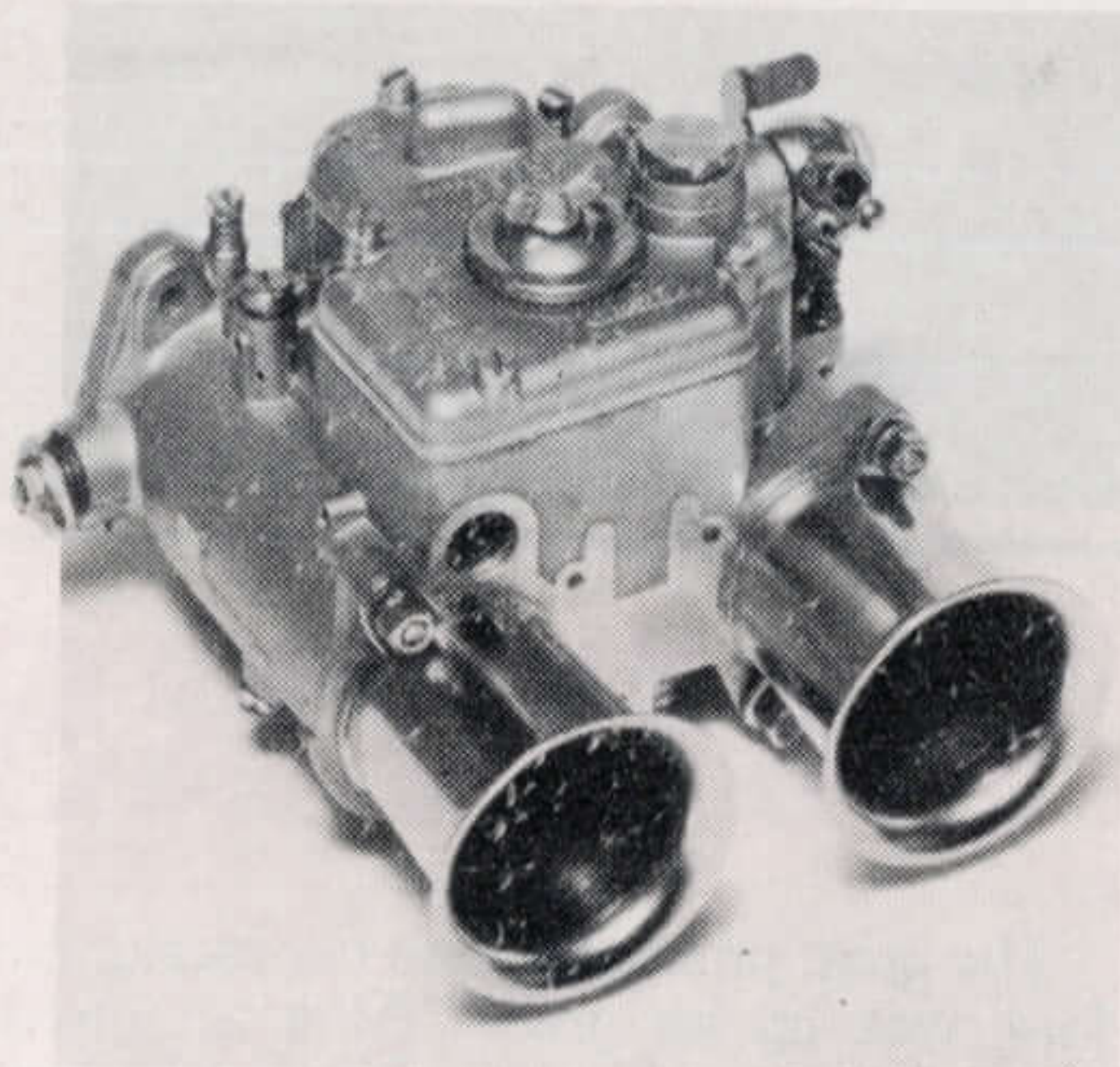
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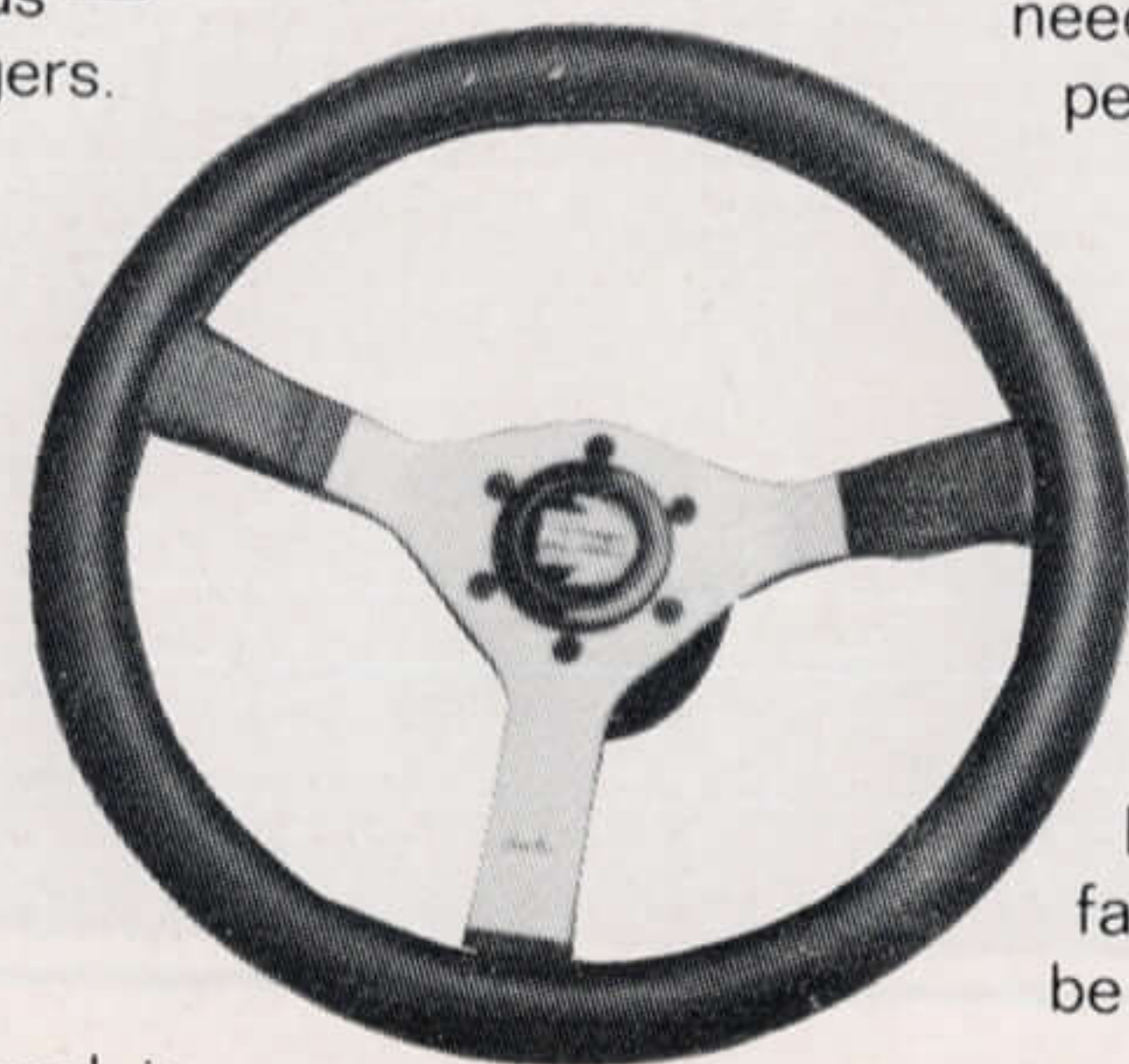
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other than the dominant Dunlop, or by fitting different engines or modifying the aerodynamics. Richard Lloyd's GTi team, however, has tried to get onto the pace of the works cars by constructing a much more rigid chassis. The monocoque of the Keith Greene managed, Canon sponsored car is made from honeycomb, rather than sheet, aluminium, and it also features pushrod front suspension.

Whether with this car or its predecessor (which was a customer-standard 956), the Canon team has been the quickest of the privateers, the car well driven by the evenly matched Jonathan Palmer and Jan Lammers. At Brands Hatch, this pair won handsomely, with the car equipped with an extra wing mounted on stalks above the nose. This effectively eliminated the understeer characteristic of the Porsche on slow circuits, and it was immediately copied by most of the other teams. So far, the proud factory team has declined to copy one of its customers, but the device will certainly be commonly used at Sandown.

The British team has been the innovator in WEC racing, almost from the beginning of the new regulations. The latest aerodynamic thinking comes from its ex-F1 designer Nigel Stroud. The hiring of designers like Stroud for WEC teams, would now seem likely in the near future.

GTi Engineering was formed in 1977 by race driver Richard Lloyd and ex-Broadspeed engineer Brian Ricketts. Initially they were involved in running the highly successful Golf GTi racing programme on behalf of Volkswagen Great Britain, resulting in a hat-trick of British Saloon Car Championship class wins in 1977, 1978 and 1979 — hence the company name. During this period GTi Engineering developed a range of race-bred quality performance parts and accessories for the Golf GTi. The company was appointed as the first official Audi-Volkswagen conversion centre in 1982.

The company also has a range of complete engines, called RLR, which are developed, and tested and then driven in road cars for, in some cases, as long as twelve months to ensure maximum reliability, economy and all-round performance, before offering them for sale. In addition to its own products, GTi Engineering offers a comprehensive range of German quality performance parts and accessories.

GTi Engineering also gives advice on the various stages of road car modifications in addition to carrying out the work to customers' exact requirements, whether it be a standard service or a complete 'transformation' at the Silverstone workshops.

Forty-year-old Lloyd established himself as Britain's leading touring car driver in the mid-'70s, before establishing GTi Engineering. He started his racing in sports cars such as the Triumph TR4A in the 1960s, and after a break from the sports came back in 1972 driving a Chev Camaro. He swapped to an Opel Commodore in 1976, then began a long association with VW-Audi, at the wheel of a GTi. It was in this car that he won his three British Touring Car Titles from 1977 to 1979, by winning his class.

In 1980 he raced an Audi with Stirling Moss, until deciding to concentrate his racing on the WEC, firstly with a Porsche 924 GTR and now the 956, prepared by his company's

racing department. These days he rarely drives.

One reason for the team's success has been 46-year-old team manager Keith Greene. He raced a variety of machinery, including open wheelers, up to 1972, but it is in the technical management and race management area that Greene excels. Since 1964 he has worked for the Armstrong shock absorber service and competitions department in Britain, assisting F1 teams, was team manager with Alan Mann Racing when Frank Gardner was driving for them, worked for Broadspeed, the Brabham F1 team, Alan de Cadenet and Gordon Spice. In 1980 he assisted France's Jean Rondeau win Le Mans and his last assignment before joining Richard Lloyd at Silverstone, he was with John Fitzpatrick Racing.

Also based in a factory unit at the Silverstone circuit is JOHN FITZPATRICK RACING, two of whose cars are sponsored by Skoal Bandit, an American tobacco product. Like Joest, the JFR team, managed by the very famous former British sports car ace John Fitzpatrick and David Prewitt, has a 1984 B-specification Porsche, which features a lighter chassis and bodywork, and revised front suspension geometry improving steering response. Driven by Thierry Boutsen and David Hobbs, a crew combining youth and experience like no other, this car has not won a race this year but came tantalisingly close (15 seconds) to doing so at Nurburgring, and has been on the pace all season. The other member of the Bandit gang is a 962 driven by Rupert Keegan and Franz Konrad, and the JFR team shipped its spare car here too.

PORSCHE KREMER RACING, based in Cologne in Germany and run by the inimitable brothers Erwin and Manfred Kremer, like JFR races on Goodyear and has brought both its 956B and its older 956. This team is also looking for its first win of the season, the 956B having led at Le Mans when driven by Alan Jones/Vern Schuppan. This time the drivers are South Africans George Fouche and the very quick Sarel van der Merwe (this year's Daytona 24 Hours winner), and Australian Rusty French in the other car.

The Kremer team is also running its own C-K5, a tubular framed car powered by a twin-turbo Porsche 935 engine which is quick and very stylish, but has less ground-effect than the pukka Porsches. Holland's F3 are Kees Kroesemeijer and Spain's Jose Parrara will drive it.

Group C2

As in 1983, the Group C2 section of the Makes championship has been won by the ALBA GIANNINI team from Zingonia, Italy.

The cars are financed by racer Martino Finotto and based on advanced, carbonfibre chassis designed and built by Giorgio Styrano, powered by a unique engine built by Carlo Facetti's Carma organisation. This is a 1.9-litre turbocharged four-cylinder, with 16 valves, and it was homologated for the WEC under a paperwork agreement with the Italian manufacturer, Giannini. 'Alba', the name of Styrano's company, is Italian for 'dawn'.

This year, the team has been under very much more pressure than last in the emerging C2 category, and reliability has suffered. The team's 1983 chassis 001, now run by the Jolly Club for Almo Coppelli and Guido

Dacco and sponsored by Duracell batteries, has won the class on two occasions, but less lucky has been the newer and lighter 'works' 002 car.

The biggest threat to the Alba wing-cars has been the Waspeze Tiga of GORDON SPICE RACING, to be raced at Sandown by owners Spice and Neil Crang with the leading US motorsports figure, Jim Trueman. This car started life last year as a C1 with a Chevrolet V8 engine, but has since been rebodied and fitted with a 3.3-litre Cosworth DFL motor which makes it a very competitive C2 contender. It has only done five WEC races this year, but has won the class four times.

The other Tiga is quite different. Roy Baker's RB PROMOTIONS team commissioned from Tiga Cars in High Wycombe, England, an uprated Sports 2000 design based on a new honeycomb chassis. To this is fitted a research engine loaned by Ford — one of the BDT single-turbo four-cylinder engines originally destined for the stillborn RS1700T rally car project. This unique package is at an early stage of its development but the car, driven by Baker and Jeremy Rossiter, shows signs of coming good.

Gunther Gebhardt's British based GEBHARDT MOTORSPORT team has a trio of cars at Sandown, including a BMW Formula 2 engined machine. The two other cars are powered by the more potent Cosworth DFV normal induction engine, Frank Jelinski, John Graham and Ian Harrower among the drivers. The Gebhardt has good ground-effect aerodynamics and, raced by a driver of the calibre of Jelinski, it could be quick round Sandown, and a contender for its first class win.

Another car with a normally aspirated BMW engine is the TEAM CASTROL URD, but this is the more powerful six-cylinder type M88 engine, which started the season in Jens Winther's Group B BMW M1. The cheerful Winther has been a prominent Group B category winner but is now switching to the C2 prototype class for the first time.

The URD, built in Grafenau, Germany, by Ernst Ungar, is a flat-bottom, tubular frame car, but will make up in power what it lacks in downforce. A similarly powered Japanese Lotec romped away with C2 in Fuji recently, providing Winther with the inspiration for his new project. As usual, his co-driver is fellow Dane Lars-Viggo Jensen.

Two years ago, Lola Cars of Huntingdon, England, constructed two Group C type 610 models, and they are both at Sandown. This has happened only once before, when the works team and the American Cooke-Woods Racing ran together at Le Mans in 1982. JOHN BARTLETT's T-610, prepared by Roger Andreason who is one of its drivers here, is the ex-CW Racing model formerly driven by the great Brian Redman, now fitted with a 3.3 Cosworth DFL engine as a C2 entry. It is similar to the Australian owned machine (the ex-factory car which was raced by Guy Edwards and Rupert Keegan) although this now has a Chevrolet V8 motor and is running in C1.

Nick Faure was one of the drivers of the works Lola T-610 in 1982 at Le Mans, and he will be at Sandown with his newly acquired Group B Porsche 930 Turbo. The only representative of the 1984 Group B championship winning BMW marque will be Helmut Gall's ex-Procar M1.

John Armitage's

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KILLER MONZA GOES PORSCHE HUNTING

The car: **Chev Monza**
The drivers: **Allan Grice/Dick Johnson/Ron Harrop**
The objective: **Finish in the top six**

After six years of racing, the Pat Purcell designed and built Chev Monza is still Australia's fastest 'tin top'. Throughout that period the car has fired the imagination of racegoers like no other racing machine so far built in this country.

Bob Jane, who commissioned the building of the Monza 'supercar' back in 1978, Peter Brock and Allan Grice, have been the privileged few to have driven the Monza. All have sung the Monza's praises.

At Sandown today, its current driver, Allan Grice, will roll the car out onto the international stage and will be joined in the driving chores by Dick Johnson, who has been lured away from Ford products by the prospect of driving the sensational Monza in the final round of the World Endurance Championship.

Grice is confident that the car, better suited to the new Sandown track than the Porsches, can finish in the top six, if it is reliable. However, car builder Purcell who knows the car inside out goes a lot further. Purcell says that with drivers of the calibre of Grice and Johnson, the car could take pole, if the Group C Porsche doesn't screw up their boost for qualifying, and the Monza could win the race!

The man behind the Monza assault, Melbourne businessman/racer Alan Browne, bought the Monza from Bob Jane early this year. His financing of the project gives the Monza every chance of frightening the purpose-built Porsches.

Grice has been driving the car for Browne this year in much the same condition as the previous year when Peter Brock took over the driving chores for Jane. Grice won the 1984 GT championship with the car, but it was in need of an overhaul. For Sandown, the car runs under the FISA waiver for local 'GT' cars, and has had a major re-build to ensure it both performs better and lasts the 1000 km.

In charge of the re-build was long-time Grice chief mechanic and current Roadways Team chief, Les Small. Small has been preparing the Monza for Grice all year and spent a lot of time re-building the Monza, with some expert help. His talented 'aides' at the Melbourne workshop were automotive engineer/racer Ron Harrop and Pat Purcell.

Purcell, the chief mechanic for Masterton Racing in Sydney since the disbanding of Bob Jane racing, re-built the Monza's six-litre V8 Chev engine and also built a spare. He spent the week prior to Sandown in Melbourne on secondment from the Masterton Team to assist Small with final work on the Monza.

Purcell, a respected engine specialist, is part of the Monza pit crew today, handling the engine side of the work.

Harrop, a chassis and drivetrain specialist, fabricated most of the heavier long distance components for the car, and today will act as reserve driver for the team.

Purcell built the Monza in 1979 and it was immediately hailed as a supercar when it first appeared in Jane's hands late that year. It had been built to the then sports sedan regulations and despite displaying enormous speed, the Monza lacked reliability. That poor finishing record was blamed on lack of testing and development work and too little racing by Jane. The problem had been that exotic components, normally checked out in testing, were breaking during the car's brief race appearances.

With the advent of the higher performance GT regulations in 1982, Purcell re-thought and re-built the car, and thanks to some testing and much more racing by Brock, the car has been a competition killer ever since, even against such pure bred opponents as the Porsche 935.

Its WEC re-build started with the car being stripped to the shell. The car had been designed along the lines of IMSA regulations so was certainly a sound enough basis for conversion from sprint racing to endurance racing specification.

Through Ron Harrop, beefier new suspension was built and fitted, with particular atten-

tion to the front uprights. The team also fitted slightly larger capacity front and rear vented discs, which could allow the car to get through the event without a pad change.

Elsewhere in the chassis, special heavy duty CV joints were fitted, prepared by Harrop, and a bigger crownwheel and pinion will be used following the lessons of the Castrol 500.

The same Wiseman four speed transmission has been used, although with a rolling start, the thinking is that the usual first gear won't be required. This meant the team could move up a ratio — the old first second gear became the new first. The advantage there is that Grice, Johnson and Harrop have the option of using the new second through all the twisty stuff, to take a bit of strain off the drivetrain, or snatch the new first for a really quick time on that section of the track.

The car itself looks much the same as before, although painted in its new Re-Car "Aussie" livery of green and gold striping on a white background.

Most of the fibreglass bodywork on the car has been replaced with new panels moulded in special lightweight Kevlar. The weight saving, especially at the front has been beneficial and the car will run right on its 900 kg limit.

The only major concession to long distance racing has been the fitting of an on-board air jack system to speed up wheel-changing, and the coupling of a drybrake fuel system to the larger 100 litre long distance fuel tank.

The key to the Monza's success today will be its new engine. The engine in the car for the GT championship was the same Purcell-built powerplant for the start of the GT regulations and virtually untouched since then. It was consequently a little tired and according to the dyno at Roadways was down about 100 hp on what it should be. Purcell points out that the engine had done more than 1000 km of racing.

During the WEC engine re-build in Sydney Purcell fitted tougher roller rockers for the camshafts, a new set of Titanium valves and heavy duty injector trumpets, before putting it on the dyno. He expects 630 hp today, which is not far behind the 956.



Allan Grice is quietly confident about the Monza's prospects. Having driven the Monza at the new Sandown track and having experience with the 956 at Le Mans, he has strong views about the outcome of the race.

Grice is quick to explode the myth of Porsche reliability and super speed: "For a car designed with a blank cheque and a white sheet of paper, it is not very reliable. It has won by weight of numbers."

The Sydney-based touring car ace says the 956 has problems with brakes and suspension and with its engine management system. In particular he points to a poor brake pedal, pad knock-off and half shaft failures. Those problems should be enough to give the Monza a shot at the top six, if it finishes.

Grice says the Monza will hold its own through the tight section and be up with the Porsches down the straights: "Where we will get our tits blown off is under brakes. The 956 has a higher turn in speed and will go much deeper under brakes because of the ground effects."

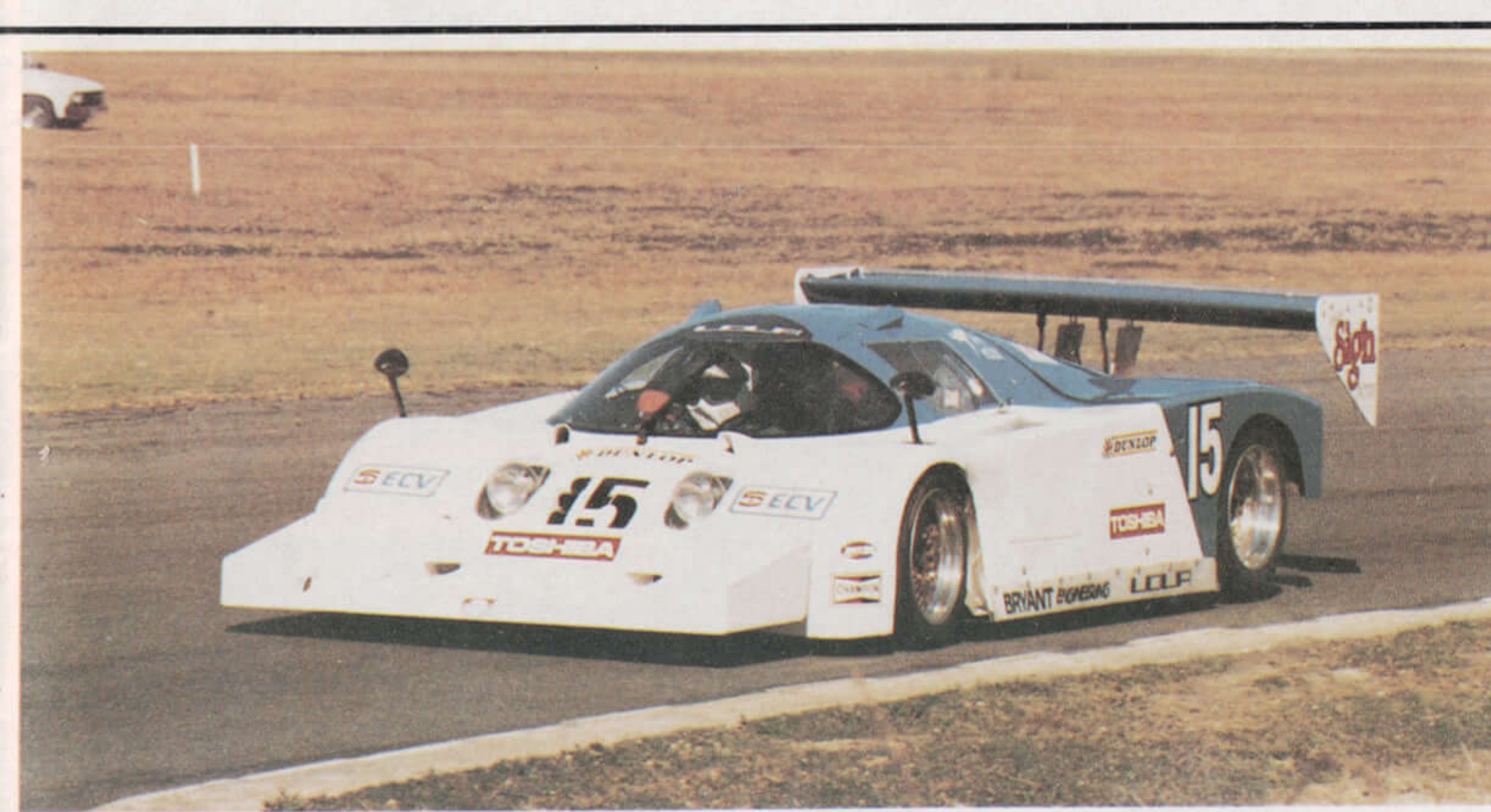
Les Small predicts the 956s will do about 1m 35s around Sandown. That compares with Grice's September practice time in the Monza of 1m 40.9s, with the old engine. With more power the Monza could be capable of matching the Porsche times, because of its bulk torque and good throttle response.

The car is also very easy to drive, which is another advantage, and a comment made by Dick Johnson. Johnson had six practice laps in the Monza in September and was very impressed. His only complaint was that it was a "bit nervous" due to its small steering lock and had to be driven on the throttle. He did a 1m 41.6s with new brake pads and the wrong front tyres.

"It was capable of 39s given half a chance," Johnson said. He said it was the first time he had driven something with that much grunt. "It'll sure be a feather in the cap to beat a few 956s."

Pat Purcell said they could do a lot better than that, if they have a good run: "I think they will get a surprise," he said.

— BARRY NAISMITH



LOLA SEDUCES WARWICK BROWN

The car: **Lola T610 Chev**
The drivers: **Terry Hook/Warwick Brown**
The objective: **To win**

It took Terry Hook's sensational Lola T610 to lure one-time Australian world championship hope, Warwick Brown out of a long retirement.

Brown, now 34, retired from international racing in 1979 while still at his peak and apparently had no intention of racing again. But when he heard about Terry Hook's plan to take on the Porsche at the Sandown WEC race, he was onto the phone to offer his services to Hook's team.

Brown, from Sydney, believes the attractive looking Hook Lola is the 'dark horse' of the race and capable of winning. Former F5000 driver Hook, bought the car from the British Lola factory earlier this year with the intention of refining it for the Sandown race. And with the international experienced Brown in the team, and sharing the driving duties, Hook believes the team's chances have been dramatically enhanced.

"I think Warwick can put the car on pole position," Hook said.

Hook spent about \$150,000 on the project, with former VDS mechanic Phil Harris doing the preparation and the major engineering work being completed by Brian Schuster of Bryant Engineering in Brisbane.

The car is a one-off. It was built by Lola's Eric Broadley in 1982 to compete in the new WEC racing, with Britain's Guy Edwards at

Below: Terry Hook's unique Lola — it has the capabilities to beat the fearsome Porsches. Left: Touring car ace Allan Grice and Dick Johnson will join forces in the re-built Chev Monza.

the wheel. At Le Mans in 1983, Edwards put the car second on the grid and recorded fastest speed down Mulsanne in the race.

Since bringing it to Australia, the car has been gradually refined in testing at Surfers and in four local sports car sprint races, all aimed at doing well at Sandown. Most of the team's effort was concentrated on setting up the suspension so that the combination Kevlar and aluminium honeycomb ground effects chassis would work to its optimum on the new Sandown track. Sandown is of course much tighter than the fast European circuits where ground effects works best.

The Lola T610 was originally fitted with the 3.9 litre Cosworth V8, but at Sandown today it has a fresh American-built, Bryant Engineering assembled, all aluminium Chev V8, pumping out some 580 hp. But more importantly this type of engine produces 510 ft lb of torque, which is vital at the new Sandown. That's about 150 ft lb of torque more than the Cosworth.

Noosa, Queensland based Hook has shared the testing of the car with Brown, and they really did their homework. They have used special testing equipment in the car to assess spring compression at various speeds and have fitted a fully computerised fuel system with a cockpit readout to enable the driver to monitor fuel usage during the race. This is essential as the car is a full C1 entry — the only local one in the field — and must comply with FISA Group C fuel restrictions to be eligible for WEC points.

"According to all the experts, we have more horsepower than we need to have and still get the fuel economy we want," Hook said.

Hook said the Lola is "enormously quick" which is an interesting comment from a man who spent most of the 1970s driving a Formula 5000. He said it is very delicate to drive and responsive to the throttle — like a Mondial.

Hook said their plan would be to keep their fuel in reserve for the last hour charge: "It is no good going like the clappers in the first hour when it is a six-hour race."

At the time of writing, the appearance of the car here today depended on the outcome of sponsorship negotiations. Hook had spent a lot of his own money, from his family business on preparing the car and required extra funds to help him make the trek south and run the race.

"We want to run the car and run it well because it is more than capable of blowing off the Porsches," he said.

THE THRILL OF BEING THERE

The car: **Mercedes Benz-Chev Turbo**
The drivers: **Bryan Thomson/Brad Jones**
The objective: **Finish within 10 laps of winner**

Just being part of a world championship race and the rare opportunity of getting some international exposure was enough to get Bryan Thomson and the Peter Fowler Mercedes turbo GT car to Sandown today.

"I could have bought a seat in a competitive 956," veteran Thomson said, "It would have been the same cost as the Mercedes re-build, but that is not our style."

Thomson and long time associate Fowler are very proud of the progress made in the ambitious homegrown Mercedes project over four years, and believe they will get more than their money's worth racing against the Porsches, perhaps get their photo in an international magazine, and at least have their presence recorded for posterity in the international record books.

Thomson is no stranger to international long distance racing. He raced a Camaro extensively in British and European touring car races in 1967, including one 24-hour race. At Sandown today he will be sharing the driving with young Albury panel beater and Group E racer, Brad Jones, who has been involved with the Shepparton, Victoria based project, from very early on.

Thomson is hopeful that the Mercedes 450 coupe can finish within 10 laps of the winners: "If we can run with the BMW M1 and some of the C2 cars, then we will be very thrilled."

The car has not been specifically re-built or strengthened for the 1000 km event, because car builder and preparer, Peter Fowler, deems it strong enough to last the distance. The car began life in 1980 as a sports sedan and with the advent of GT regulations in 1982 had a major re-build. Since then it has been extensively modified, particularly in the bodywork, to improve its aerodynamic efficiency, and was fitted with large capacity endurance-style brakes earlier this year. The car has always shown great promise and although not yet quite a match for the Allan Grice Monza, is potentially the fastest GT car in the country.

Fowler went "right through" the car to confirm that it was strong enough for the race and found everything in order. Most of the time preparing for the meeting was spent on scores of minor details.

"This is its fourth year and we have never had any fatigue or structural problems," he said.

The major concession to the Sandown event was the replacement of the 70 litre sprint racing fuel cell with a 100 litre tank and drybrake system. Provision was made for the use of air jacks under the car rather than have on-board jack system. That would have added unnecessary weight to the car which is already right on the 1100 kg GT limit.

The existing 4.2 litre Chev V8 powerplant was freshened up by Fowler fitting a special Ron Harrop crankshaft as the main change over sprint specification. The car normally runs twin 4-bbl Holleys, to feed the twin Garrett turbos. This induction system was unchanged except a rev limiter, set between 7000 and 7500 rpm, was added, simply because the engine spins so freely on high boost, and can easily self-destruct if a gear is missed.

The boost will be screwed right down for the race, giving the drivers only between 600 and 650 hp to play with, in the interest of reliability. The actual boost pressure will depend on ambient temperature on the day. Obviously the cooler and denser the air, the better for the Merc — and the Porsches.

The appearance of the car has changed radically this year following the result of research work done on its aerodynamics by technicians at the Royal Melbourne Institute of Technology. The new, more efficient bodywork, with its altered nose and side pods, owes a lot to the GTP Mustang and the Porsche 956, according to Thomson.

The objective of the team in practice is to run the car in its sprint trim to get a good grid spot — full boost and with the new aerodynamic undertray fitted.

The undertray is one of the car's 1984 aerodynamic innovations, which Thomson considers worth .7 sec at Calder. This tray allows pressure to reduce under the car, to aid grip, but unfortunately creates heat in the

cabin. It is fine for a sprint race but will make the car intolerably hot in the longer driving stints at Sandown and will have to come off for raceday.

As it is, Thomson volunteered that the heat in the cabin will be a major problem here today and will probably limit driving stints to 45 mins. The Mercedes takes full advantage of the GT regulations and has its engine beside the driver's elbow, shielded only by an aluminium cover, so heat transfer will make the car uncomfortable to drive for an extended period, even with side window ventilation. It is a problem the Group C cars don't have because they are rear engine, and even the Grice Monza is OK in that department because its engine is fully under the bonnet.

Thomson hopes to get down to 42s in qualifying, in sprint trim — a time the Porsches are likely to do with ease in the race. He expects the 956s to be qualifying nearer to 36s.

Once they have set their practice time, Thomson, Fowler and Jones will sit down and work out a race plan, with the object of finishing the race as their major concern. Thomson feels that with less boost and less grip, they may have to settle for 48s in the race, which will hopefully see them within 10 laps or so of the winners at the end. The car will be hard on the drivers, Fowler says, that will contribute to lower race times than desired. But going all out to be as fast as possible is not what the Fowler/Thomson assault is all about.

"First of all, we are excited and delighted to get on the grid in company with these cars," Fowler said.

Thomson added: "We want to be part of the meeting, part of the international scene. It is the ambition of every motorsport competitor to be at Le Mans and run with these types of cars. When they are only 100 miles from your doorstep, it is an opportunity that is not to be overlooked."

— BARRY NAISMITH



The Peter Fowler-built Mercedes Chev turbo. Fowler and drivers Bryan Thomson and Brad Jones want to be part of the scene today.

ROMANO vs. GOLIATH

The car: **Romano Cosworth**
The drivers: **Bap Romano/Alf Costanzo**
The objective: **To win**

Irrepressible newcomer, Bap Romano, had planned to take on the world at Le Mans, but now the world has come to his Romano, nee Kaditcha, the fastest car so far built downunder.

To date Romano's experience of international competition has been a couple of sprint races against the local GT cars and two Kremer Porsches at last year's Australian Grand Prix meeting. And he has never raced his Romano sports car over any distance.

The enormity of the task ahead of him and his Brisbane team led by former Williams mechanic Wayne Eckersley, hasn't been lost on the fiercely competitive Romano. He is very proud of his locally built sports car, and believes he has the raw material for a winning combination in such celebrated company. But he has tempered his usual bravado because he realises that it will be a real David vs. Goliath effort.

"Really, who are we kidding? We have spent maybe \$70,000 of our own money and Rothmans Porsche spend hundreds of thousands of pounds, not dollars, each year on their cars!"

Romano believes his car, entered as an 'IMSA' class vehicle will be better suited to the new Sandown track but he quickly pointed out that regardless of the Porsche 956's highly publicised weaknesses, the factory cars will be very fast.

"Certainly we aim to win — we will give it our best shot with the budget we have got

and we have to be the most fancied to do well," he said.

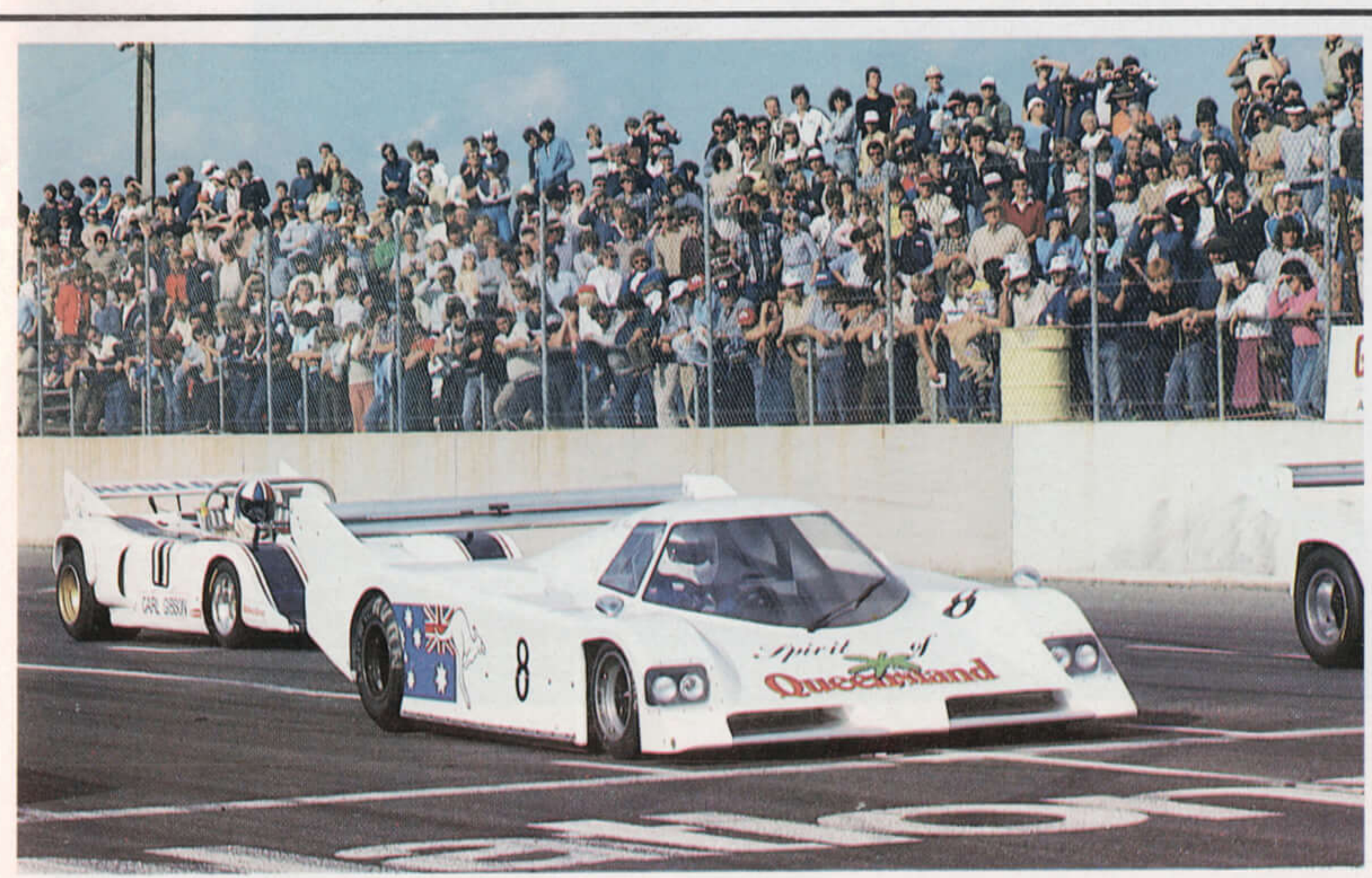
Romano said he believes his car is more technically advanced in many respects than the full Group C cars in Europe and that most people don't realise how much work has gone into the car, despite the limited funds.

The car was originally conceived for Romano by former McLaren grand prix engineer, Barry Lock, who fathered the Kaditcha line of open wheelers and sports cars in Brisbane a few years ago. The Romano Kaditcha was his ultimate creation and drew upon many existing Formula One components and the latest design thinking of Group C sports cars and IMSA regulations.

Romano used the car for his comeback to motor racing. A former top rugby league player, surf lifesaver, and world-class hang gliding competitor, he started racing with John French in the BMC touring car team in 1968. After racing an MGA with some success in local events, he took a break from racing until about 1976 to concentrate on building up his business interests. Before the Kaditcha was built he became a strong force in Queensland speedway racing.

The car, despite its incredible speed, proved unreliable and was withdrawn from racing at the end of last year for a major re-think, re-build and update, by Romano

Below: Bap Romano and his magnificent Kaditcha coupe made the crowds suddenly take notice of sports car racing during 1983.



Racing chief, Wayne Eckersley. Eckersley, who worked on Alan Jones' championship winning Williams F1, virtually built a new car from the ground up and it has been renamed the Romano WE84.

The re-build has worked in well with the scheduling of the Sandown WEC race, and while the new car has raced since its re-build, to give Romano the 1984 Australian sports car championship, further changes have been incorporated since then.

The re-build earlier this year began from the stripped aluminium monocoque, which incorporates ground effects. Major work was the strengthening of the rear of the car, fitting a full roll cage, totally new front suspension, improved body shape in Kevlar and fibreglass and a new nose-piece which has a re-designed, integrated wing.

On the mechanical side, the Romano WE84 has a new, stronger, five-speed Hewland transmission/transaxle and a bigger, more powerful engine, replacing the previous 3.0 litre Ford Cosworth V8.

The new motor is the latest specification 3.9 litre Ford Cosworth DFL V8 especially built in Britain for the team. Eckersley claims it is the best engine so far made by the Cosworth firm and should produce at least 560 hp in its un-turboed form, which should give the 835 kg car exceptional performance.

From the outset, the car has used many suspension components supplied by the Tyrrell Formula One team, thanks to Romano's close links there. The new car uses full Tyrrell F1 rocker-style rear suspension.

Tyrrell have provided the team with a lot of advice and the team's works manager, Neil Davis, came out from Britain to assist the Romano team in their pre-Sandown preparation. The team utilised Davis' expertise in long distance racing and on Cosworth engines to ensure they are in the best shape here today. Davis will act as an adviser with the team today.

Romano considers that the race today will be really tough on drivers and has ensured that he is superbly fit for it and has the right co-driver. His co-driver and in fact the "logical choice" is Melbourne's Alf Costanzo. Costanzo, ironically works for Alan Hamilton's Porsche Cars Australia, where the Rothmans Porsche Team is based while in Melbourne, but has been cleared by Hamilton to drive with Romano.

"I couldn't get into a 956," Costanzo said, "So I am very happy to be in the race and of all the local cars Bap is the only local with potential to do well."

Costanzo drove a sports car once, many years ago, but this is really his first experience of this type of racing. He said it was a pity he and the Romano team hadn't a bit more experience before taking on the internationals.

The former Australian Driving Champion doesn't see any problem adapting to the sports cars: "Racing cars are racing cars, after a few laps you get used to it. Even driving a touring car you get used to the body roll after a while. Sports cars are not greatly different, it will be a bit strange in the beginning. The car should have a bit more grip but should feel much the same inside as the Pacific."

— BARRY NAISMITH

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THE AUSTRALIAN CHALLENGE

THE RETURN OF BLACK POWER

The car: **BMW 320**

The drivers: **Jim Richards/Tony Longhurst**

The objective: **Outlast the GT cars**

The JPS Team BMW GT car will return from whence it came at Sandown today. But the immaculate little black BMW will be only a shadow of its former self in terms of outright performance.

The car that has successfully mixed it with the Chev Monza and Porsche 935s in local GT racing will return to international racing and rub shoulders with the Porsche 956s in the WEC final round, without the main reason for its winning Australian form over the last few years — its turbocharger.

Outwardly the car will look the same, except it won't be spitting flame, which has become its trademark over the years in the hands of Allan Grice and in recent years, former Kiwi Jim Richards.

Under the bonnet will be a new heart — a brand new BMW Motorsport four cylinder powerplant. This 1998 cc engine, about the same capacity as the previous turbo'd donk, is actually a full house European Formula Two engine with a four-valve head and mechanical fuel injection. Incidentally it has the same block as the Brabham F1 engine.

Power output of this engine is around 300 hp and these engines, built to long distance specifications, have been a proven small capacity engine in WEC racing. In fact one of the C2 Gebhardtts also at Sandown today is powered by the same powerplant.

But, of course, the JPS Team BMW '320', built at the team's Sydney workshop, under the direction of Frank Gardner, is down by some 300 hp on the car's previous turbo engine, in the interests of reliability and fuel efficiency. There is however solid thinking behind this move, despite the fact that the car will be slow when compared with the Group C Porsches and therefore an unlikely winner.

Team manager, Gardner, who tested the car in Sydney, prior to Sandown, emphasised the point about economy and adds that car will be "quick in the in-field, handle well and be able to hang in there."

Gardner added that the 320, will do about 11 mpg and should be able to stay out on the track a lot longer and thereby make some inroads on the more powerful, thirsty Group C sports cars which are restricted by a fuel limit. He said the BMW might lose two seconds to most cars, particularly the ground effect cars on the faster sections of the new track, and pick up the same time through the tighter new section.

"A nippy little car, if it is reliable, won't be far away at the end of the day. It is not going to be a winner but it will be there," he said.

Drivers for the car will be 1984 team regulars, Jim Richards of Melbourne and the Gold Coast's Tony Longhurst.

Richards will be at home in the car, having

driven it in turbo form until last year. The team withdrew from the GT class this year to concentrate on its Group C BMW 635 touring car and prepare for the transition to Group A for next year.

Gardner points out the car, while identical to that driven by Richards last year, has actually never fired a shot in anger.

The 1983 car was sold to Queensland driver Barry Linton, leaving the team with a fully prepared spare Three Series GT shell, which was used for displays, shows and promotions. It has never raced.

Gardner used to have two cars and the shell. The first car, driven originally by Allan Grice in late 1980 in Craven Mild Racing livery, was sold to John Roberts in South Australia and raced by John Briggs.

The basic car was originally developed by BMW Motorsport from the Three Series touring car to compete in the European and German touring car titles in the mid-1970s when the titles were for heavily modified saloon cars. The success of the cars there under the BMW Junior Team banner saw versions of them campaigned in American IMSA events by the Jim Busby and McLaren teams from 1977. Gardner acquired the cars from the Busby Team and modified them to

The JPS BMW GT car won't be spitting flame today. It has a BMW F2 engine in place of its previous turbo-charged four to ensure a finish.



race under Australian sports sedan regulations. The 600 hp car was later upgraded to the current Australian GT regulations.

These cars did run successfully in European and American long distance racing and in Gardner's view are "over-engineered". That means that the team's F2-powered 320 will be tough enough to last the distance. The original 318i SS/GT car ran most of the heavy duty, long distance mechanicals, and the new 320 version will have all the long distance suspension, brakes, five speed gearbox and transmission.

Lead driver Jim Richards feels that it will be good to get in there with the Porsches and predicts that even with the power output cut by half, the lightweight 760 kg 320 will be a "fair bit quicker" than the team's Group C touring car.

"We are not going to the event with any thought of doing any good. We are just going to drive around for 1000 km, keep it going to the flag and get a little bit of exposure," Richards said.

He said the car will be reliable, and won't be that far behind the GT cars in speed and could finish in front of them. At least that's the objective. The key to its success will be its speed through the tight part of the track.

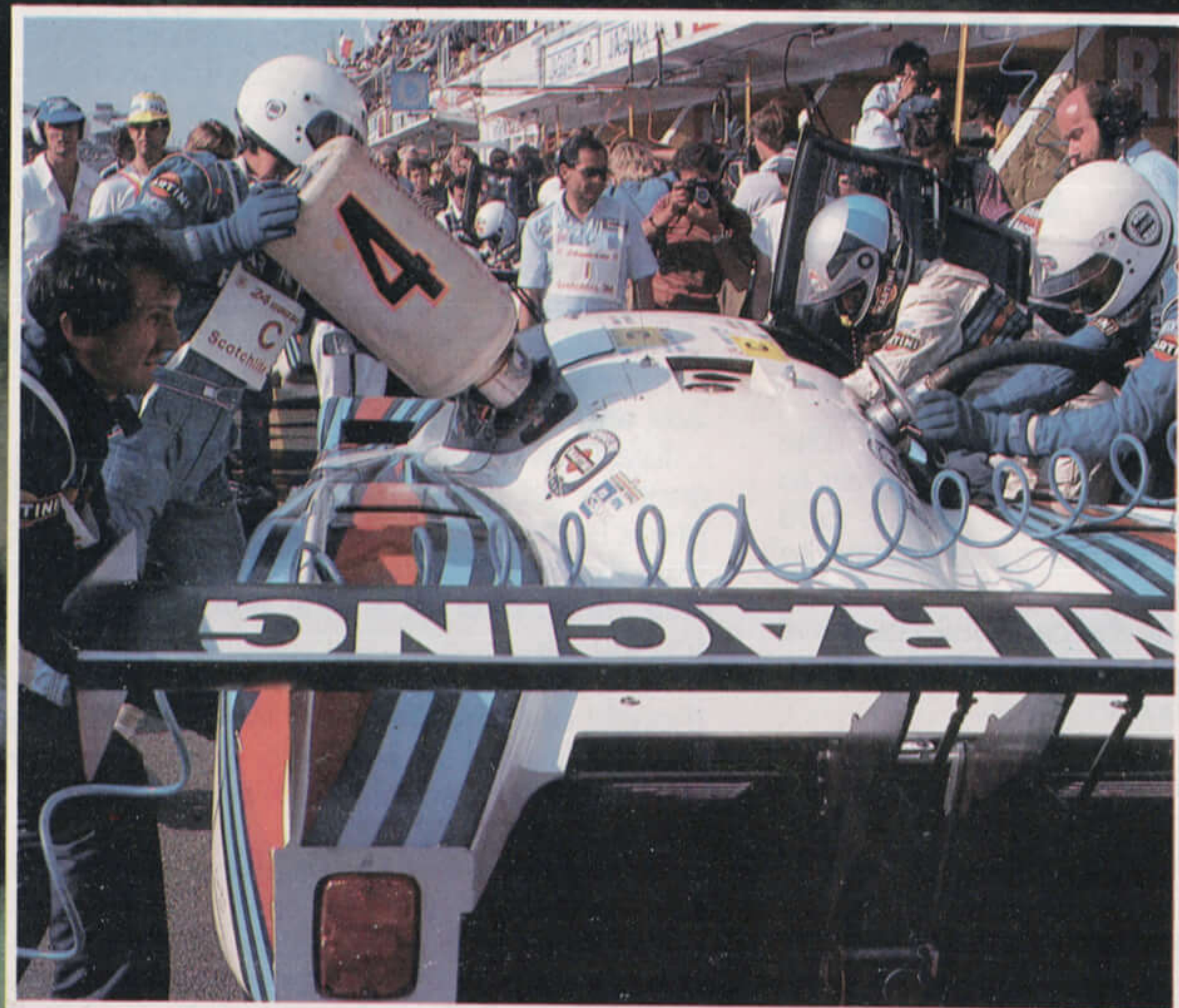
Twenty-six years old team newcomer, Tony Longhurst, is quite excited about his international racing debut, in only his third event with the BMW Australia-backed JPS Team. It will be the fastest car he has ever driven because the former Australian ski-racing champion has only raced touring cars in his brief racing career.

Longhurst's job will be to co-drive to strict team orders: "Frank usually instructs me in what to do and how it is to be done."

Longhurst expects that the compact 320 with its wild wings and big wheels and tyres will "hum through the far end of the track." And the team expects the car to keep humming to the flag in the type of racing it was originally designed and built for. ■

— BARRY NAISMITH

Le Mans 1984



Above: Lancia prepares to resume battle with the Kremer Porsche.
Below: Having reclaimed the lead following the replacement of a faulty front wishbone, Pescarolo charges on confident of his fourth Le Mans victory.

PORSCHE'S PRIVATE VICTORY

If ever Lancia was going to win Le Mans it was 1984, following the boycott of the event by the Rothmans Porsche factory team. In the end, however, the fast but fragile Italian cars were over-run by the horde of privately entered Porsche 956s.

The Le Mans 24 Hour race has traditionally been a contest between manufacturers. In the absence this year of the works Rothmans-Porsche team, winners in 1982 and 1983, it was left to the 16 Porsche 956s entered by private teams to defend the honour of the German factory.

Only one rival manufacturer, Italy's Martini-sponsored Lancia, was in a position to challenge the might of those private Porsche entrants. To the surprise of many, Lancia did the job well by convincingly leading the race for 166 of the race's 361 laps.



In the end, inevitably, it was a private Porsche which pulled through to win from the back of the pack after some early troubles. Reinhold Joest's New Man 956, sponsored by a major French manufacturer of leisure clothing, and driven by former winners, Henri Pescarolo and Klaus Ludwig, took the lead in the 17th hour of the race and hung on to it, albeit by the most slender of margins.

When the 53 cars taking part in the 1984 race completed their rolling start lap at 3 p.m. on the afternoon of June 17, the odds were that a private Porsche team would come up trumps. The only serious challenge, it seemed, would come from the Ferrari V8-engined Lancia LC2s, of which there were three examples. Of these, the two Martini entries had dominated qualifying. And the pole position entry of Bob Wollek/Alessandro Nannini seemed the most likely "hare" for, in countless endurance races over the past few years, the Lancia team has established a reputation for speed. Sadly, it is a reputation for speed not always matched by reliability.

Yet the first lap developed into something of a scramble, with a stocky French garage owner named Roger Dorchy in the thick of things behind the wheel of a WM-Peugeot. And while the V6 turbo WM has yet to become a household word in motorsport circles, there is no denying that the little French cars are built specifically for the unusual requirements of this circuit, in particular for its long straight at the expense of road holding.

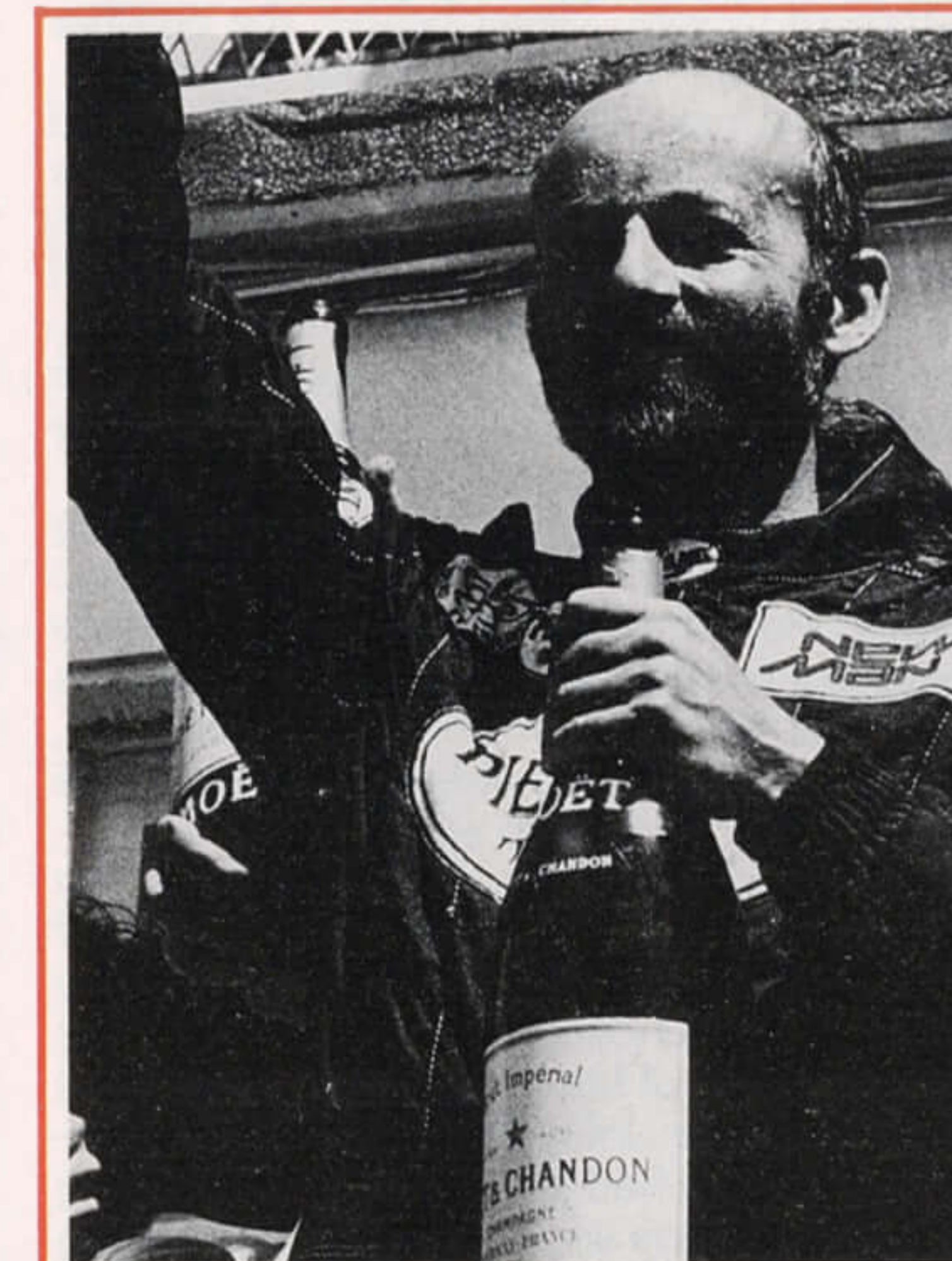
Dorchy was not to be denied as he picked off the "aces" on his way down the straight to Mulsanne, where he impudently snatched the lead from Lancia driver Mauro Baldi, who was briefly ahead of Wollek. Dorchy succeeded in staying under the feet of Baldi and Wallek through the remainder of the lap, a good six kilometres, and he was still there at the end of it. Thus the garage man proudly led from Stefan Johansson in the Joest Porsche, Paolo Barilla in the second Martini-Lancia, and a flock of Porsches headed by Pescarolo, Australia's Vern Schuppan, Jonathan Palmer, Oscar Larrauri and David Sutherland, in the car to be shared with Australian GT champion Rusty French.

For another couple of laps the WM stayed among the leaders until Dorchy was unwise enough to try to outbrake Schuppan at Mulsanne, and spun off into the guardrail. He returned to the pits to get the brake balance sorted out and to have the front bodywork replaced.

The lead, meanwhile, had been taken over by Schuppan, still swapping places with Johansson and Wollek. Pescarolo had missed most of the on-track excitement, having radioed to his pit on the second lap that his engine had suddenly lost 1500 revs. His crew instructed him to play around with the cockpit-adjustable turbocharger boost control, to see if it made any difference. It didn't. So the lugubrious-looking Frenchman called in at the end of lap three for a quick investigation. An electrical lead looked to be loose, so the mechanics tightened it before sending him back on to the track. Again, he radioed in that the problem was just as bad, and after another couple of laps he was brought in again. Then, and only then, was it

discovered that a screw in the metering unit had worked loose. Once fixed, everything was running perfectly, but by now the number 7 New Man 956 was at the back of the field. After an hour's running, Pescarolo was still 30th.

Schuppan, on the prowl for a repeat victory, held the lead most consistently in the first hour. Behind his Kremer 956, a pursuing group grew bigger, not smaller, with David Hobbs joining the chase. It was a great showing by the veteran Brit, whose Skoal Bandit Porsche had started with a brand new engine and unbedded brake discs.



As Pescarolo was led to join his German team mate in the champagne celebrations, all he could say with a big happy grin shining through his beard was "I am so happy to have won a fourth time, the team was great, the car fantastic".

With one hour down, and the first fuel stops over, Schuppan was still leading ahead of Palmer. Alessandro Nannini, having replaced Wollek in the pace-setting Lancia, was third, with Frenchman Jean-Louis Schlesser holding fourth after taking over from Johansson. These were the only cars still on the same lap. There were seven Porsche 956s and two Lancias in the top ten, with only a French-driven Ford-engined Cougar splitting them in an impressive, but temporary, sixth place.

Part of the reason for the Lancia's fine showing was an enormous amount of development work done at the Turin headquarters in readiness for this event. This programme had been initiated to reduce fuel consumption and to enable the Lancia drivers to use fewer revs.

Not everyone knew, for example, that a new version of the Lancia's Ferrari V8 engine had been adopted since the team's previous race at Silverstone. It was appreciably bigger (3014 cc, instead of 2600 cc) than its predecessor, and produced the same horsepower (around 750, or perhaps a little less in Le Mans trim, using less boost than for a normal 1000 km race), it did so at 7000 rpm instead of 8000. With a rev limit in the gears of 6500 and pulling 7000 along the straight,

the Lancias were not only as quick as expected, but their engines were also much less stressed.

Unfortunately, the same could not be said for their gearboxes. In theory, the Lancia transmissions are manufactured entirely by Fiat competition engineers at the Abarth factory, but although an Abarth gearbox casing and most of the final drive gears are made in Italy, the gear ratios themselves are Hewland-made parts, originally designed for Formula 2 "sprint" use and definitely not for the huge amount of torque developed by a big twin-turbo endurance engine.

THE MECHANICAL STRAIN began to tell in the third hour. The second WM, which had been almost as quick as Dorchy's, also went off the road and was brought in for a 40-minute stop for attention to damaged bodywork. Then the number 14 Palmer/Jan Lammers Canon Porsche, which had been mixing it with the leaders from the start, spent over 15 minutes having a broken rear wishbone replaced, which dropped it from fourth to 29th place.

Still the Porsche drivers hung on to Wollek: it was now the turn of Schlesser to harass Wollek in company with the Franco-Australian (Schuppan/Alan Jones/Jean-Pierre Jarier) Kenwood sponsored Kremer car. Very soon they would all be joined by the Hobbs/Philippe Streiff/Sarel Van der Merwe Bandit, now a very definite candidate for a leading position after Hobbs' hard work in the first hour.

Indeed, at three hours there were three cars still on the same lap, and a dozen others well placed to move up as the fuel stops fell due. The Ludwig/Pescarolo New Man 956 was going well now that its troubles had disappeared, but it was way back in 16th place.

Yet another car claimed the lead soon after the three-hour mark when both the Lancias and celebrated Le Mans rookie Jones made routine stops, allowing Schlesser to go ahead just before his own stop at 6.26 p.m. to take on fuel and hand over to Johansson.

Barely half an hour later, Johansson reappeared in his pit with the left side of the Porsche in a pitiful state where it had collided with the barriers at Indianapolis corner. The Swede climbed out with a face like thunder to explain to team boss Reinhold Joest that the car had slithered out of his control, probably on oil which the flag marshals had failed to spot. As if to confirm Stefan's story, he was soon followed by Rupert Keegan's Bandit, which had performed almost exactly the same manoeuvre at the same corner. Too late, the marshals brought out their oil flags: both Porsches would be repaired to return to the race, but neither of them would be able to make up lost time and rejoin the leading group.

It seemed equally likely that the second New Man 956 was permanently out of contention, for Pescarolo radioed in to say that an ominous "clunk" had developed in the front left suspension. Somewhat reluctantly, he agreed to continue for another two laps, until he was due in for his anticipated pit stop to refuel and to hand over to co-driver Ludwig. The two men had a brief discussion while the mechanics gave the front of the car a careful check. Nothing could be seen amiss, and Ludwig agreed to continue racing. Being ►

shorter than Pescarolo, he was able to see that there was some play — but nothing to worry about — in the uniball where the front wishbone is mounted. Thus reassured, he continued for 13 more laps while a replacement wishbone was prepared so that it could be fitted at the next fuel stop.

At 7 p.m. the race intensified as Jones/Schuppan fought a hand-to-hand duel with the Wollek/Nannini Lancia. Frenchman Streiff, in the Skoal 956, got so charged up at the thought of being in third spot that he spun at the Ford chicane, within sight of the pits. Luck was with him and the car was undamaged but team manager John Fitzpatrick was not amused.

With five hours of racing behind them, there was to be more excitement in the Porsche privateers' pits. At 7.12 p.m. Palmer had a second rear suspension wishbone failure, but this time it took only eight minutes to replace; and at 8.32 Schuppan came in with minor body damage to the Kenwood car, which had been in contact with Dorchy's unstable WM at Mulsanne corner, scene of its earlier shunt. Repairs cost Vern eight minutes, but he was sent back into the race with a temporary nose section. When Jones later took over the car, he was horrified by the up-and-down porpoising induced by the temporary nose.

Meanwhile, Keegan had retired his Skoal Bandit 956, while up front, for the first time, one car had pulled out a full lap on the opposition as Wollek piled on the pressure in the Lancia to pull away from Le Mans first-timer Van der Merwe in the surviving Bandit Porsche. AT 9.30 P.M. and with the light fading fast a big cloud of smoke had gone up. Yellow flags were waved and sirens wailed as fire engines and ambulances dashed to the scene. The news was bad: the two Nimrod Aston Martins had somehow collided at enormous speed, and one driver was hurt.

The cloud of smoke followed John Sheldon's Nimrod clouting the barrier, which it mowed down like satin ribbon. The car had broken into two large pieces, one of which instantly killed a marshal and seriously injured another: part of the car burst into flames and fuel had drenched the pine forests. The driver of the second Nimrod was Drake Olson, son of the US distributor of Aston Martins, who was unable to stop in time to avoid a collision with some of the wreckage.

The reason why Sheldon had gone out of control may never be clearly identified. However, it is known that the sister car had suffered two punctures earlier in the event, and a deflated tyre would explain why the Nimrod went off the road at the notorious kink.

This terrible accident did not, however, bring out the red flag. Instead, pace cars were brought out to control the entire field. The sun fell rapidly, and spectators saw the strange sight of groups of cars dawdling along behind the Mercedes coupes, with roof-mounted lights flashing. With several hundred metres of Armco to be remounted and bolted up, it was 62 minutes before the race was allowed to resume.

By that time, all fuel consumption calculations had been discarded. The Group C

regulations, which ration how much fuel may be used, in a vain attempt by the governing body to restrict engine power, do not provide for a period of neutralisation as long as one hour. It was bad news for Lancia; the rival Porsche teams predictably could step up the pace. And although Lancia's Cesare Fiorio took advantage of the break to ensure his two cars sneaked ahead into a dominating one-two position during the hour's neutralisation, the Bandit Porsche was hard on their tail when the pace cars at last pulled off and racing was allowed to resume.

There were 46 cars still in contention. And at last a dozen were still in with a good chance of victory. Nevertheless, the number of healthy cars was to be reduced very noticeably in the next couple of hours. The third Lancia, painted in the yellow colours of a French property developer, disappeared with incurable overheating problems. The second Canon 956, being used as a camera car, mysteriously stalled on the circuit. Then it was the turn of the Team Australia Porsche to be retired after an "off" by Larry Perkins.

As midnight approached and the race headed into the darkest hours, the two Martini Porsches and fancied Jaguars were beginning to look unstoppable. The Lancias continued to lead, almost monotonously, while the Jaguars consolidated their positions and moved into the top seven.

Notable among the Porsches was the black-and-red Henn's Swap Shop entry of American Preston Henn, ably assisted by local man Jean Rondeau (winner at Le Mans in 1980 in one of his own Ford-engined cars) and IMSA star John Paul Jr. The Franco-American crew had pulled into a threatening position in the top six, and looked like moving up at the expense of the Bandit Porsche when Van der Merwe made an unscheduled stop to repair damage caused by running over debris on the track.

The Pescarolo/Ludwig New Man car loomed into contention at last, aided by judicious use of softer tyres and a touch more turbocharger boost. By three o'clock in the morning the ultimate winner had moved into fourth place, while Jones/Schuppan/Jarier had slipped back to eighth place, four laps behind the leaders. The damaged nose cone had been replaced, but the drivers were having some problems with the fuel injection.

Infuriatingly for the Porsche teams, the only problem to afflict the Martini-Lancias so far — a broken suspension mounting on the Wollek/Martini entry — lost them very little time, and not enough to drop them out of the lead.

Shortly before half distance there was an unfortunate incident with the Canon crew when Palmer — who had just pulled the car back into the top 10 placings — asked team manager Keith Greene to have the gearbox checked. Perhaps fatigue was taking over among the mechanics, for Lammers was sent back into the race before the retaining pins had been fitted to the tail section. The tail blew off the car, and repairs eventually cost a good 10 laps, enough to drop the team right out of contention.

WITH THE RACE heading into its second half there were numerous changes of place and some signs of weakness by Lancia and

Jaguar. The first to suffer was Lancia, before 4 a.m., when Hans Heyer brought the second car into the pits complaining he couldn't get fifth gear. Since the problem had been anticipated, the mechanics were ready, but instead of taking only 25 minutes to fix, it took 45.

A grateful Fitzpatrick team moved the Bandit into second position. But Jaguar's American personnel were happiest, their immaculate green and white cars holding places in the first six, occasionally getting into fourth as thirstier Group C cars stopped for fuel.

Alas for Jaguar hopes, Claude Ballot-Lena went missing out on the circuit shortly before dawn. He radioed his pit to inform them that the throttle cable appeared to have broken, and he was instructed to bring the car back to the pits at all costs, losing eight laps in the process.

Retirements included the fast Cougar (with engine failure), and Schlesser in the New Man which Johansson had crashed after engine failure. All this was to the advantage of the second Kremer 956 (the Dallas car shared by British drivers Tiff Needell and David Sutherland with Rusty French), which had moved into contention after overcoming a misfire at the start.

Shortly before 5 a.m., another suspension mounting broke on Wollek's Lancia. Repairs took only four minutes, but the pace was such that the Hobbs/Streiff/Van der Merwe Bandit hit the lead for a short period until the Porsche pitted for replacement front brake discs. The delay enabled the Lancia to go back in front yet again.

At 5 a.m., the Needell/Sutherland/French Porsche (which had moved into 7th place an hour earlier), careered head first into the guard rail on the new section of the track, before the pits. The car, with Needell driving, had turned left without warning. Back in the pits, the mechanics discovered yet another Porsche rear suspension failure where a retaining bolt had broken. The damage was severe, but inevitably the crew set about repairing it, a task which was to take them almost two hours.

Simultaneously, at Tertre Rouge, one of the Jaguars was in trouble. Adamowicz, evidently unaware of a punctured tyre, ran into the catch fences. Damage was comparatively light. Behind him, as he returned slowly to the pits, he had laid a thin trail of oil from a damaged tank, and even if he had been permitted to take on more oil it would have been no use, for the Big Cat's V12 engine was already damaged.

Lancia's grip on the race was finally relinquished at 7.07 a.m. The sun was already shining strongly again when Wollek, who had been at the wheel for 30 minutes, brought the car into the pits with a repeat of the other car's fifth gear failure. The number 4 Lancia was stationary for a full 56 minutes, the time necessary not only to take apart the gearbox and replace the damaged pinion but also to replace a failing turbocharger on the right hand bank of the 3.0-litre V8.

Once again, the Fitzpatrick Bandit profited from the Lancia's misfortune. But the Porsche, with Frenchman Streiff at the wheel, was into the pits next time around with the Porsche flat-six sounding distinctly unwell. The ignition was checked, and the

spark plugs changed, but the frowns on the faces of the Fitzpatrick mechanics told their own story: one of the cylinders was out of action with a suspected crack in the liner.

Very soon after Streiff had stopped, yet another veteran, 47-year-old Brian Redman, appeared unexpectedly in the Jaguar pit. The American-built car, its non-turbo engine still sounding as sweet as ever, had stripped third gear. Like Lancia, the team had prepared for just such a possibility, but 45 minutes, and another five places, were lost.

These setbacks played directly into the hands of the New Man number 7, which carried Pescarolo and Ludwig into the lead for the first time. Second place belonged for the time being to the Preston Henn 956, while Jones/Schuppan/Jarier had found all their speed again and were giving the Kenwood flyer a real caning in a final valiant bid to win.

In the freshness of the morning Pescarolo noticed another "clonk" in the front suspension. The uniball on the other side had started to wear, and this time the mechanics were ready for him, changing the wishbone in a mere 7 minutes and 6 seconds. It was such a rapid repair that although Henn's Swap Shop 956 went into the lead, it stayed there only briefly, until its next fuel stop.

Elsewhere, there were walking wounded. The Rollei 956, in which Allan Grice and Alain de Cadenet had had their wheel flinging adventures very early in the race, had lost a lot of time having a broken valve spring investigated. Co-driver, Chris Craft was sent out to nurse it home before the engine stopped altogether at Mulsanne corner. Then the second Lancia was wheeled away with

terminal engine trouble, diagnosed as a broken camshaft.

At 11.26, Redman brought the surviving Jaguar into the pits. The mechanics busied themselves with normal refuelling and changing tyres, but Brian reported that the transmission, which had already been hurriedly rebuilt, was about to do something 'orrible again. The car was finally withdrawn in the interests of safety.

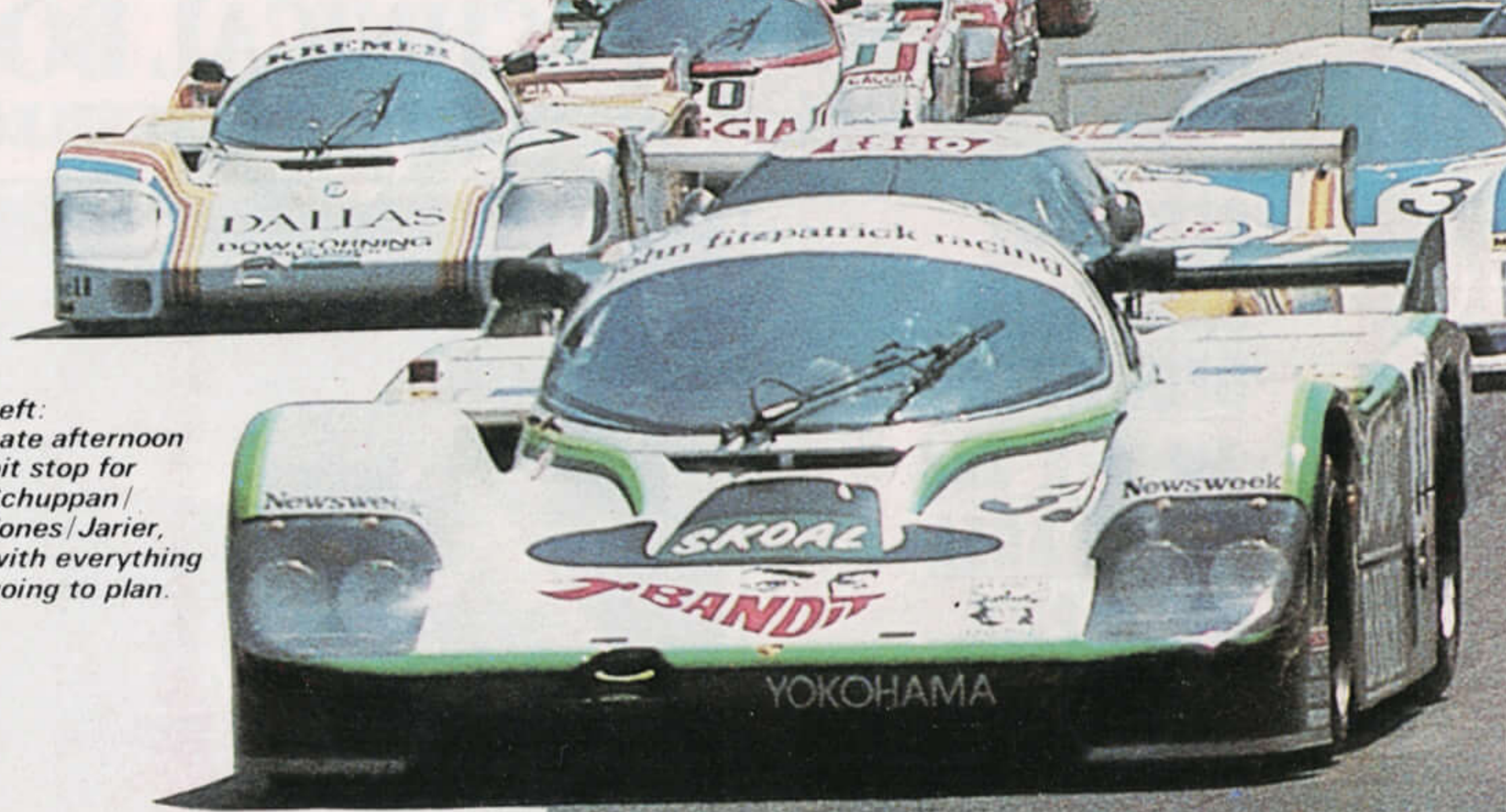
With two hours to run, the eventual finishing order of the first 11 cars had been established. A Porsche landslide was on the cards with the New Man 956 leading the Swap Shop car and the Hobbs Bandit. The Lancia team was definitely out of the running at last, for Wollek had suffered another gearbox failure.

If Wollek was disappointed in his 14th appearance at Le Mans, there was similar heart break for last year's winner, Schuppan with only 90 minutes of racing to go. He had just taken over the wheel from Jarier and was third and closing when a nasty noise and a stream of oil signalled a serious engine problem.

Schuppan got the car back to the pits, where it seemed that nothing could be done. However, he did climb aboard and fire up the engine again as the race entered its last 10 minutes. Somehow the Kremer Porsche made it, claiming sixth place. Wollek, too, was determined to be classified, and he tagged on behind the winning car. It was more than appropriate that the French veteran who had given the race so much interest, should be there to share some of the glory on the last lap.



Left: Late afternoon pit stop for Schuppan/Jones/Jarier, with everything going to plan.



POS.	No.	DRIVERS	CAR	LAPS	KLM	AV. km/h
1	7	H. Pescarolo — K. Ludwig	Porsche 956 T	359	4900.276	204.178
2	26	J. Paul Jr — J. Rondeau — P. Henn	Porsche 956 T	357	4873.979	203.082
3	33	D. Hobbs — P. Streiff — S. Van der Merwe	Porsche 956 T	350	4779.349	199.139
4	9	W. Brun — L. Von Bayern — R. Akin	Porsche 956 T	339	4628.068	192.836
5	12	W. Merl — D. Schornstein — "J. Winther"	Porsche 956 T	339	4625.728	192.738
6	11	A. Jones — V. Schuppan — J. P. Jarier	Porsche 956 T	336	4586.850	191.118
7	20	M. Sigala — O. Larrauri — J. Gouhier	Porsche 956 T	334	4555.610	189.817
8	4	T. Nannini — B. Wollek	Lancia-Martini T	325	4436.964	184.873
9	17	T. Needell — D. Sutherland — R. French	Porsche 956 T	320	4369.392	182.058
10	68	J. A. O'Steen — J. W. Morton — Y. Katayama	Lola T, 616 Mazda AR	319	4357.491	181.562

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BMW is one of the few dedicated car manufacturers that has maintained its links with motor racing through its long history. As a result the constant racing challenge that has now become part of the company's heritage has left a definite stamp on all its products.

BMW says that participation in motorsport provides the opportunity to test innovative automotive engineering concepts under the toughest and most extreme conditions. In this process, motorsport benefits from standard production and standard production from motorsport.

With this philosophy in mind, BMW developed the M1 to compete in, what was in 1979, the Group Four and Group Five categories of the World Championship of Makes. To achieve homologation in Group Four, at least 400 road going versions of the BMW M1 had to be produced in a period of 24 months. Group Five homologation was then based on a further development of Group Four cars. This meant that the road going version of the BMW M1 was a derivation of a racing car rather than a production sports car that was modified for racing.

The BMW M1 concept was developed by BMW engineers, who worked with Lamborghini on detail design and initial manufacturing plans. The car was styled by the famous Giorgetto Giugiaro, founder of Ital Design. Later on in the development, Ital Design was given full responsibility for the production of prototypes and manufacturing of the unstressed fibreglass body.

The tubular steel chassis was built under contract by Marchesi of Modena. The body and chassis were assembled by Baur in Stuttgart and finally assembly and testing were carried out by BMW Motorsport in Munich.

The road-going version of the BMW M1 is powered by a derivative of the 6 cylinder 3.5 litre unit fitted to the 6-Series coupe. It has a 24-valve cylinder head and Kugelfischer mechanical fuel injection; this engine delivers 204Kw (277 bhp) at 6500 rpm and gives the M1 a top speed of 262 Km/h (162 mph). In this version all the basic race car engineering is there: tubular steel frame, double wishbone suspension front and rear, ventilated disc brakes all round, rack and pinion steering.

The Group Four version, with the same basic engine was taken to 345 Kw (470 bhp) at 9000 rpm, appropriately wider wheels, tyres and body work flares, a deeper front

FROM RACE CAR TO ROAD CAR

spoiler, racing oriented interior and instruments were fitted. For Group Five, displacement was reduced to 3.2 litres, a turbocharger added and power taken up to 656 Kw (850 bhp) at 9000 rpm; further modifications and lightening measures were made as allowed by Group Five regulations.

As with most thoroughbred racing cars, the engine is mounted centrally and aligned longitudinally for optimum handling. A five-speed manual ZF gearbox is coupled to the engine via a Fichtel and Sachs twin plate clutch. The final drive/transaxle form one unit, and incorporates a limited-slip differential with 40% lock action.

The chassis is made from tubular steel, with integral roll-over bars and safety supports in the front and rear roof columns and over the entire roof panel. The front end of the car incorporates specially designed impact-absorbing body sections to protect the safety cell/cockpit. The body is unstressed and made of special glass-fibre reinforced plastic, resistant to fire and high temperatures.

The race car designed suspension front and rear is by double wishbones, with light alloy wheel carriers, Bilstein gas-filled shock absorbers and concentric coil springs (adjustable for height) plus interchangeable anti-roll

bars front and rear. The rose joints are replaced by rubber mounts on the road car, however, all pick-up points and configuration alternatives remain in their original locations.

These features together with electric windows, air-conditioning, high quality stereo system, BMW instruments and controls and high quality leather, made the BMW M1 a sophisticated and refined high speed exotic sports car. It's extremely tractable at low engine speeds yet can cruise at its top speed indefinitely.

The BMW M1 was first seen in competition in a special series of events during 1979 and 1980 called the Pro-Car series. The Pro-Car series was a special formula of racing devised by Jochen Neerpasch of BMW Motorsport and Bernie Ecclestone, president of the Formula One Constructors Association (FOCA).

The Pro-Car races were run in conjunction with European rounds of the Formula One championship. Only Group Four BMW M1 cars were eligible to participate with the elite of the Formula One drivers competing on equal terms with private teams.

Some of the drivers to compete in the Pro-Car series were Nelson Piquet, Niki Lauda, Alan Jones, Jacky Ickx, James Hunt, Derek Bell and Mark Surer. Some of the private teams to participate in Pro-Car racing included GS Tuning of Freiburg (Markus Hottinger), Team Krebs (Albrecht Krebs/Jochen Mass), Tom Walkinshaw Racing (Dieter Quester), Osella of Italy (Bruno Giacomelli/Eddie Cheever/Elio de Angelis) and Eggenberger (Helmut Kelleners).

Fewer Pro-Car races were held in 1980 and the BMW M1s began to participate in longer distance events of 1000 km and special two-hour races. Since 1980, the BMW M1 has continued to be campaigned successfully by private teams in Group B of the revised World Endurance championship Formula.

Some of the significant victories achieved by the BMW M1 have been the German Motor Racing Trophy and the US IMSA Series in 1981. More recently, the car achieved a class win in Group B at the 1984 Le Mans 24-hour race — six years after its introduction. A fitting tribute to its designers and the motorsport philosophy of BMW.

Today is the first time the M1 has competed in Australia. It has never been on sale in this country, although there is a privately owned road-going version in Sydney.

Below left: The BMW 635 CSi sedan and the classic M1. They share the same six cylinder, injected powerplant. Below right: The M1 in full racing trim, holds off a more powerful Porsche 935.





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A new World Championship class time-keeping/lapscoring system for motor racing is being used at Sandown for the final round in the 1984 world endurance championship.

It was developed by the major computer manufacturer, Digital Equipment Corporation, in conjunction with the engineering department of Sydney television station ATN7.

The system is based on Digital Equipment Corporation's standard business computers and made its debut at the 1984 James Hardie at Bathurst recently.

The computer provides faster information than traditional timekeeping/lapscoreing facilities and is attracting significant interest from motor racing bodies overseas.

At Sandown the system will be used to dramatically extend the broadcasting of race progress by being linked to a number of large screen closed circuit TV monitors distributed around the grandstand, spectator and pit areas.

Training for and testing of the unique new concept, operated by the Australian Automobile Racing Club timekeeping team, was made possible by the co-operation of various motor racing organisations and Digital during the previous rounds of the Australian Endurance Championship at Amaroo Park, Oran Park and Sandown.

This allowed the operators to develop an accuracy of greater than 99.8 per cent and maintain it over the six and a half hours of the James Hardie with some 6400 times being taken according to Mr Kevin Hutchison, a project manager for Digital Equipment Corporation and chairman and chief time-keeper for the Australian Automobile Racing Club.

"With this level of accuracy error correction was so minimal that we were able to transmit

progress results within seconds of cars crossing the line therefore keeping the TV announcers and viewers totally up-to-date," Mr Hutchison said.

The concept is so simple it required only three operators said Mr Hutchison.

During the Hardie 1000 Digital installed a completely independent backup system to provide a comparison with the results produced by the main system and to take over from it in the event of a malfunction.

The heart of the system is a Digital Equipment Corporation Professional 350 personal business computer which acts as timekeeper and correlates timing pulses with the numbers of cars as they are entered through the computer's keyboard.

This information is passed to the second system which checks for any errors before the information is transmitted to another Digital Equipment Corporation computer at ATN7 in Sydney. This computer is used to format the results for display on the home television screen.

The system at Bathurst also provided information to the commentators, press and Hardie VIP guest area, as well as to the operator of the circuit tower. This tower displays the completed laps, class of vehicle and leading 10 cars in the race.

The information generated by the computer system this year was limited to lap-scoring results as the times taken were not accepted as official. However Mr Hutchison hopes this will change in time for next year's Hardie 1000.

Regulations require that the accuracy of a manually operated timing system be to the nearest one-fifth of a second, a level easily achieved by the computer-based method, said Mr Hutchison.

"We are able to provide a system accurate to one-tenth of a second," he said.

At Sandown there are a number of large screen TV monitors distributed around the grandstand and spectator areas. This capability is being extended to the new enclosed pit area to allow each crew to view the live broadcast.

The computer system will also be used here to relay results and/or times. ■



A new timekeeping/lapsoring system, based on a standard business computer from Digital Equipment Corporation, is being used at Sandown for the 1984 world endurance championship. The system made its debut recently at the James Hardie 1000 at Bathurst where these operators achieved more than 99.8 per cent accuracy in lapsoring the race.

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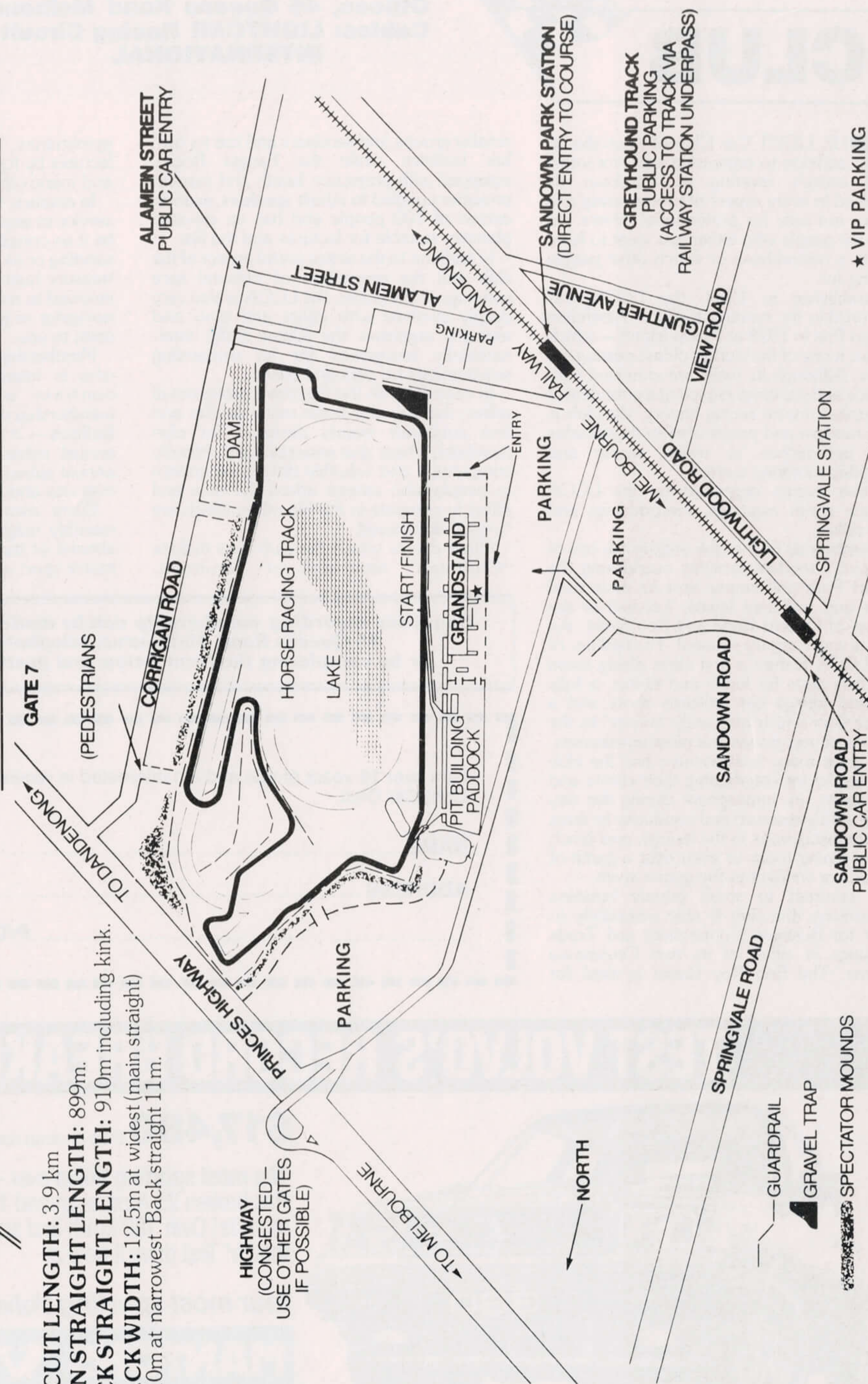
MAIN STRAIGHT LENGTH: 899m.

BACK STRAIGHT LENGTH: 910m including kink.
TRACK WIDTH: 12.5m at widest (main straight)

BACK WIDTH. 12.5m at widest (main) and 10m at narrowest. Back straight 11m.

LAP RECORDS

TOURING CARS:	Allan Grice (Commodore)	1-48.3
UNDER 3 litre:	Laurie Nelson (Capri III)	2-00.6
GROUP A:	Peter Williamson (Toyota Supra)	1-58.4
FORMULA MONDIAL:	John Bowe (Ralt RT4)	1-36.9
GT CARS:	Bryan Thomson (Mercedes Benz)	1-43.3
SPORTS SEDANS:	Dick Ward (Mazda RX7)	1-49.2
FORMULA FORD:	Geoff Walters (Elwyn 003/1)	1-53.9



THE CLUB



Light Car Club of Australia Club rooms and Offices, 46 Queens Road Melbourne (03) 51 5284
Cables: LIGHTCAR Racing Circuit SANDOWN INTERNATIONAL

THE LIGHT Car Club of Australia, in addition to organising and promoting today's meeting at Sandown, is involved in every aspect of motor racing and caters not only for professional drivers but also for people who either just want to have fun in a motorkhana or watch other people having fun.

Established in 1923, the LCCA was responsible for running the first Australian Grand Prix in 1928 at Phillip Island — which makes it one of the world's oldest existing car clubs. Although its walls are crammed with photos and paintings depicting a great deal of Australia's motor racing history, the club is very modern and progressive in its attitudes and approaches to motor racing and everyday motoring matters.

Other events organised by the LCCA include sprint meetings, motorkhanas and club rallies.

Membership of the club entitles the use of the club's modern facilities overlooking the Albert Park golf course and its associated trees and well-kept lawns. Located at the corner of Queens Road and Roy Street, the club is very centrally situated. The facilities of the LCCA feature a first class dining room which is open for lunch and dinner, a fully licensed lounge bar, billiards room and a dance floor which frequently "moves" to the sounds of pop groups and other entertainers.

A great many businessmen find the club very useful for entertaining their clients and colleagues, its atmosphere during the day being a little reserved and conducive to quiet private discussions in the lounge, over lunch in the dining room or even over a game of billiards or snooker in the games room.

In contrast to small private business discussions, the club is able adequately to cater for Business Conferences and Trade Evenings in either of its two Conference Rooms. The Rob Roy Room is ideal for

smaller groups and seminars and has its own bar facilities while the Fangio Room, equipped with projection booth and modern projector coupled to inbuilt speakers, seats in excess of 100 people and has an elevated platform suitable for lectures and the like.

In addition to the active social aspect of the club and the promotion of national race meetings at Sandown, the LCCA is also very deeply involved with rallies and trials and annually organises the Alpine Rally, internationally recognised for its demanding requirements on cars and crews.

In contrast with the "big time" professional rallies, the club also holds many smaller and less strenuous events designed for club members. These give entertainment, friendly competition and valuable driving experience to people who cannot afford the time and effort to compete in the big rallies which are "works" dominated.

Other events which the club runs include "Clubman" meetings at Sandown,

gymkhanas, motorkhanas, film nights, lectures by top racing and rally personalities and many other social events.

In essence, the LCCA provides a complete service to anyone interested in motorsport — be it as complex and professional as today's meeting or as simple as being an official at a treasure hunt. If you wish to become more involved in motor sport as an official, driver, navigator or just socially, then the LCCA is open to you.

Membership of the club is open to anyone who is interested in motorsport and, in contrast with some clubs, Junior membership does not restrict the use of club facilities — it merely entitles them to a lower annual subscription! There are also lower annual subscriptions for country, interstate, overseas and lady members.

Every member of the club receives a monthly magazine to enable them to keep abreast of the latest happenings within the motor sport world and the LCCA.

Enquiries regarding membership can be made at the Clubrooms at 46 Queens Road, Melbourne, telephone 51 5284, or by completing the form below and posting it to the club.

I am over 18 years of age and am interested in receiving more details on the Light Car Club.

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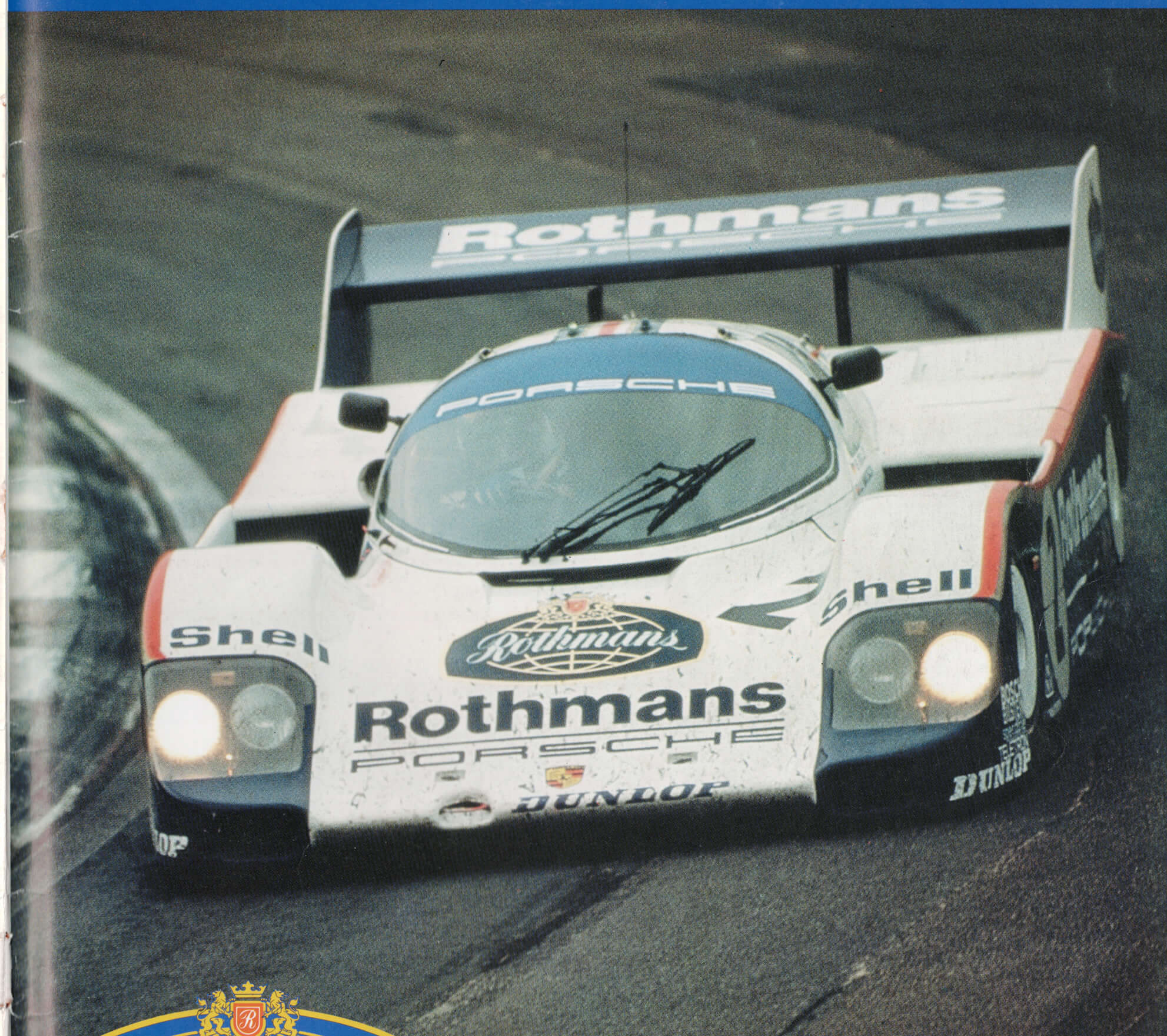
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