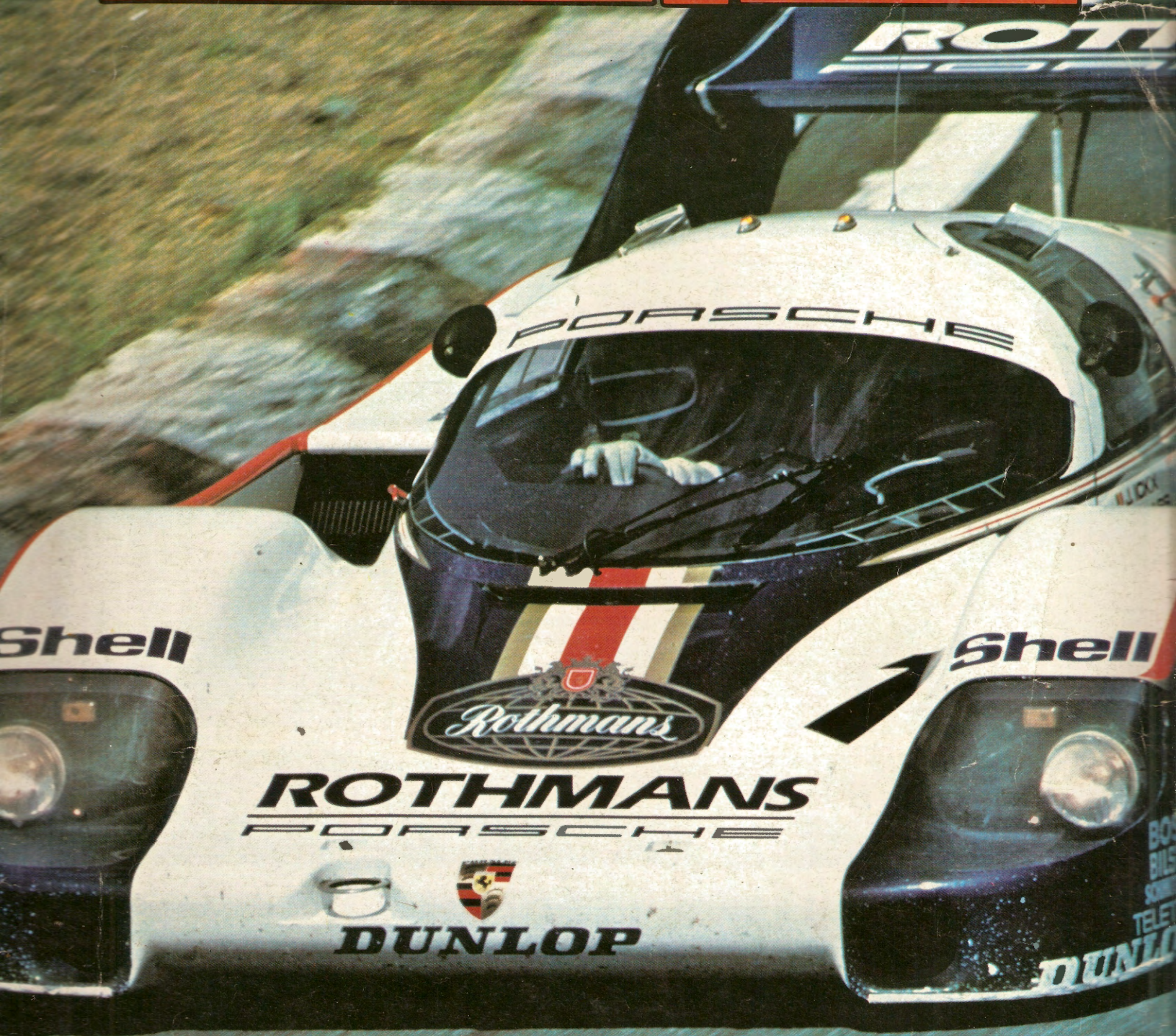


Autosport



**ENDURANCE RACING
REVIEW 1982**

Turning point

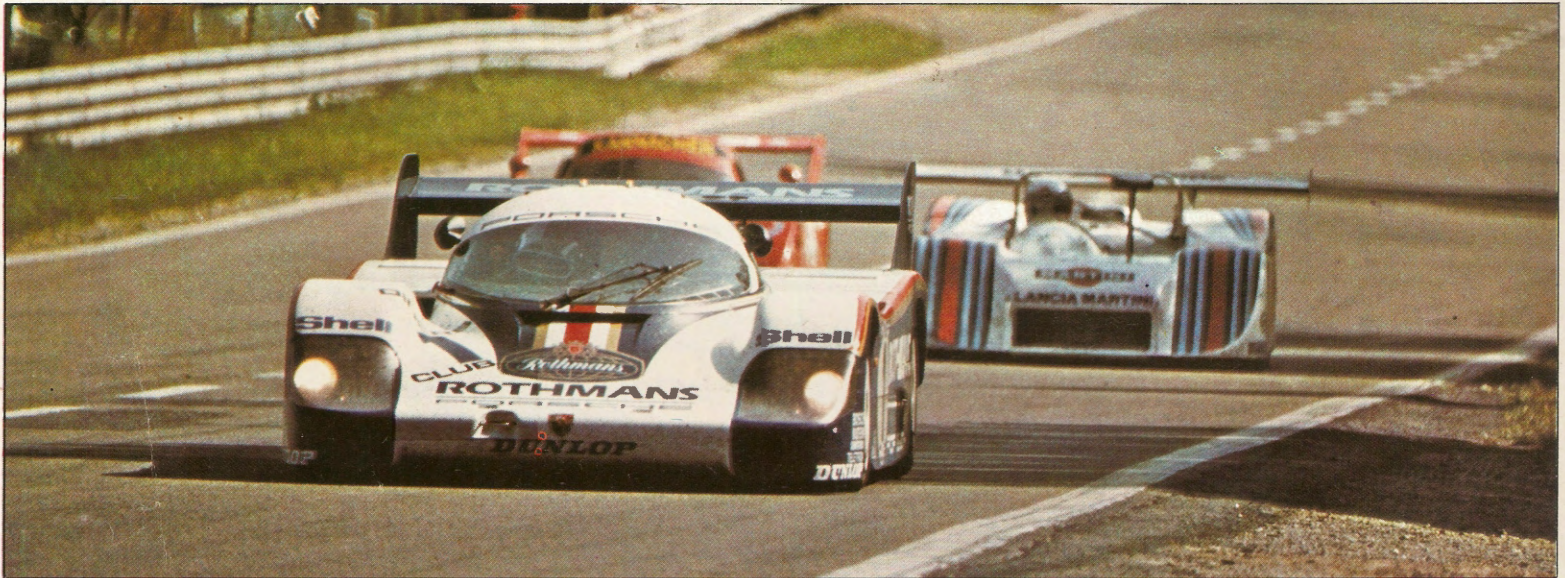
Porsche was again the dominant marque, but all the signs are that World Championship sports car racing is set to reverse the decline of recent years. QUENTIN SPURRING reports on a promising first season of Group C.

Porsche won the World Championship of Makes for a ninth time, and Le Mans for a seventh time. The factory team's lead driver, Jacky Ickx won Le Mans for a sixth time, and became a World Champion for the first time in his career. When planning the new Group C sports-racing car class, FISA hoped to avoid domination by any single marque. But, alone among the factory and private teams which became involved with the new formula, Porsche had the expertise, the facilities and the determination to make the transition and tread the new ground with confidence. While Lancia took an easy way out, new C-cars were fielded regularly by Ford, Rondeau, Nimrod Aston Martin, Joest, WM, Lola, Sauber and Grid but, through a variety of causes to do with lack of experience or shortage of funds or over- and sometimes under-engineering, they proved to be not only generally unreliable, but also, ultimately, uncompetitive with the latest Rothmans-Porsches.

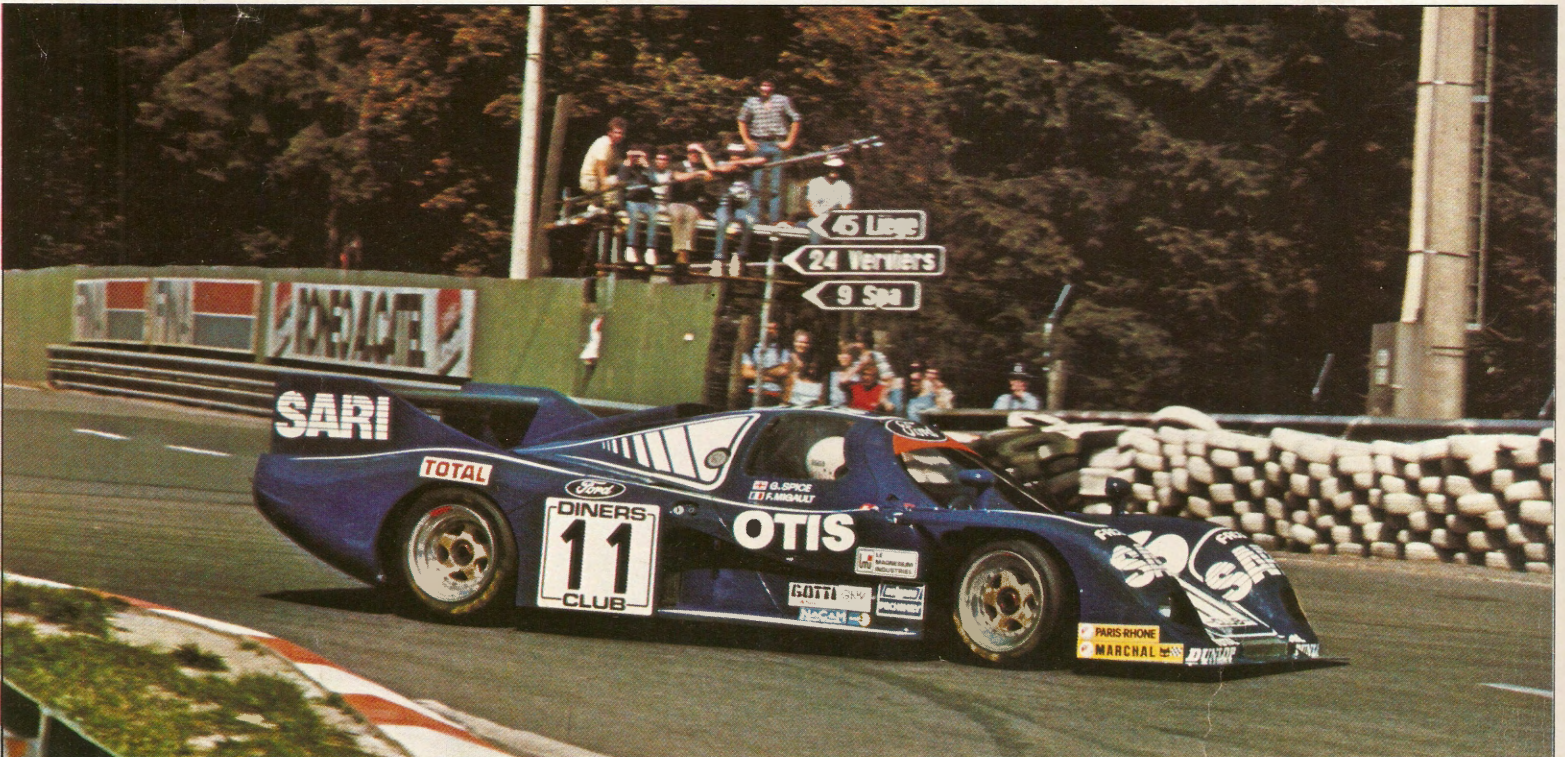
The German Group C team set out primarily to win at Le Mans, which it

achieved with a stunning one-two-three efficiency. Once arrived on the endurance racing scene, however, the team decided to stay on, because no clear leader had emerged in the Makes championship series, and the works Lancia Martini Group 6 team was seemingly intent on making a mess of its bid for the Drivers crown. At the end of the season Porsche, aided by a bad rule in the Makes championship and by the faltering Italian team in the Drivers series, carried off all the glory.

Statistically, then, Porsche remained very much the top marque. What the statistics do not really show is the closeness of this outcome. Ford-Rondeau might easily have won the Makes title, Lancia's Riccardo Patrese or Michele Alboreto the Drivers crown. And the new Group C class produced a wide and interesting variety of new cars and engines, new sponsors and tyre companies. While there were problems with the new category, as is always the case, Group C was encouragingly successful in its debut year.



Above: Man and car of the year — Jacky Ickx with the Porsche 956. Below: Moral champions? The Rondeau of Gordon Spice at Spa. Photos: Jeff Bloxham.



For a decade, World Championship sports car racing has been in a decline which was uninterrupted by the introduction, in 1976, of the Group 5 'silhouette' production based formula cars. The adoption of an entirely new class, Group C, was FISA's method of restoring public and manufacturer confidence to this area of the sport.

Of the four new competition classes which came into force on January 1, 1982, Group C is the only pure track racing category. Groups A, B and N are all classes for series production cars, intended for dual useage in both circuit racing and rallying. Group C is essen-

tially a fuel economy formula, based not on the classes it replaces (Group 5 and 3-litre Group 6), but on the 'Grand Touring Prototype' concept pioneered at Le Mans six years ago.

Group C was conceived in consultation with the world's motor manufacturers (represented by the BPICA) by the FISA Technical Commission. Although it was clear from the start that FISA was thinking along the right lines, the Commission's ideas did not receive unanimous BPICA support, and the finalising of the vehicle rules was a long and sometimes very difficult process, which led to a number of serious

difficulties at the very moment that the new class came into being.

For a start—and a bad one—the rules were finalised months too late. During the preliminary discussions, FISA insisted that all four new Appendix J classes should be enforced in 1982, although the consensus of BPICA opinion was that the rules should be tried and polished prior to formal introduction in 1983 or even 1984. The result was that detail changes to Group C were still being made in December last year.

Inevitably, many C-car build programmes were seriously delayed, and the organisers of the series-opening events in

March had to postpone their races at Mugello and Brands Hatch until the autumn, purely due to a shortage of competitive entries.

The problem was aggravated by the early failure of Group B, which was devised to be not only the premier class in International rallying, but also a useful back-up on the circuits to Group C in World Endurance Championship events. The homologation run of Group B is only 200 in a year, but the class got off to a slow start in rallying and was practically non-existent in racing.

FISA was too slow in recognising this

1982 GROUP C RULES

● As far as engines are concerned, the rules could not have been more simple. Any petrol engine — of any cylinder capacity, configuration or induction system — could be used, provided that it emanated from a manufacturer which had homologated cars in one of the two new production car categories, Group A or Group B. Engine modifications were free.

● The practical restrictions on engine performance were provided not by a limit on engine size, but by the emphasis in the rules on fuel efficiency. The maximum amount of fuel tankage permitted was 100 litres, and the number of refuelling stops was also limited (five for races of 1000 kms or six hours, 25 for 24-hour races).

● In addition, and as a safety measure in the pits, the flow of petrol through the monitored pit road refuelling systems was fixed at 50 litres/minute, so that most routine pitstops were of around two minutes duration.

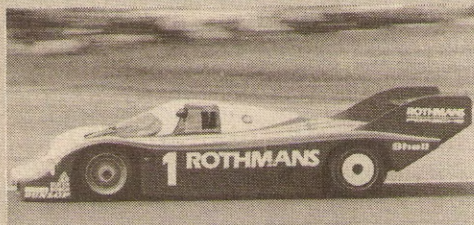
● Broadly speaking, FISA left the constructors to work out their own optimum equation governing power output/fuel economy, and the rest of the rules concerned the chassis. The minimum weight was 800 kgs (1746 lbs, or 0.79 ton). The maximum length was 480 cms (189 ins), maximum width 200 cms (79 ins), and maximum height 110 cms (43 ins). The top of the glass area of the windscreen could be no more than 100 cms (39 ins) from the ground.

● Further restrictions defined the lengths of the front and rear overhangs in relation to the wheelbase and each other, and there was legislation against ground-effect, taking the form of the provision of a solid, flat and continuous surface which had to be built in underneath the cars between the wheelbase, measuring at least 100 cms (39 ins) by 80 cms (31 ins). This had to be an integral part of the body/chassis unit, and no aerodynamic device (nor any part of the bodywork) could protrude below the level of that surface. This was in fact, a total ban on 'skirts', moveable or otherwise. Nevertheless most of the new C-cars did incorporate ground-effect air tunnels or other means of creating a low-pressure area beneath the car: the rules reduced ground-effect capability, but did not ban it.

● Tyre width was restricted to 16 ins maximum, and the actual two-door, two-seater coupe bodywork had to cover all the mechanical components of the car.

● Most of the above rules have been retained for 1983, but the number of refuelling stops will no longer be specified. Now the rules simply state that maximum amounts of fuel may be consumed during each race, depending on length or duration.

● A new Junior C class has been confirmed for 1983. Minimum weight: 700 kgs. Fuel tankage: 55 litres.



FIA WORLD ENDURANCE CHAMPIONSHIP OF MAKES 1982

		Monza (I)	Silverstone (GB)	Nürburgring (D)	Le Mans (F)	Spa-Francorchamps (B)	Mugello (I)	Mount Fuji (J)	Brands Hatch (GB)	Total points
	Nat	Apr 18	May 16	May 30	Jun 19	Sep 05	Sep 19	Oct 03	Oct 17	
1	Porsche	—	20	15	20	20	—	—	—	75
2	Ford Rondeau	20	12	20	(8)	10	—	—	—	62
3	Aston Martin Nimrod	—	10	—	10	4	—	—	—	24
4	Peugeot WM	15	6	—	—	—	—	—	—	21
5	Ford	—	8	—	—	2	—	—	—	10
	Ford Sauber SHS	—	4	—	—	6	—	—	—	10
7	Ford Lola	—	3	—	—	—	—	—	—	3

() Score dropped — best four results.

FIA WORLD ENDURANCE CHAMPIONSHIP OF DRIVERS 1982

1	Jacky Ickx	B	—	15	—	20	20	—	20	20	95
2	Riccardo Patrese	I	—	21	21	—	13	—	16	16	87
3	Derek Bell	GB	—	15	—	20	15	—	—	20	70
4	Teo Fabi	I	—	—	21	—	13	—	16	16	66
5	Michele Alboreto	I	—	21	21	—	—	21	—	—	63
6	Henri Pescarolo	F	20	8	15	—	3	12	—	3	61
7	Jochen Mass	D	—	—	—	15	20	—	20	—	55
8	Giorgio Francia	I	20	11	—	—	7	11	—	—	49
9	Rolf Stommelen	D	15	—	15	—	—	—	—	—	30
	Vern Schuppan	AUS	—	—	—	15	15	—	—	—	30
11	Bob Wollek	F	—	12	—	—	—	12	—	—	24
12	Jean-Michel Martin	B	—	12	—	—	10	—	—	—	22
	Philippe Martin	B	—	12	—	—	10	—	—	—	22
	John Fitzpatrick	GB	—	—	—	10	—	—	—	12	22
	David Hobbs	GB	—	—	—	10	—	—	—	12	22
16	Piercarlo Ghinzani	I	—	—	—	—	—	21	—	—	21
17	Luigi Moreschi	I	—	—	—	—	7	11	—	—	18
18	Hans Heyer	D	—	—	—	—	2	12	—	3	17
19	Corrado Fabi	I	—	—	—	—	—	16	—	—	16
	Alessandro Nannini	I	—	—	—	—	—	16	—	—	16
	Volker Merl	D	10	—	—	—	—	6	—	—	16
	Dieter Schornstein	D	10	—	—	—	—	6	—	—	16
	Gordon Spice	GB	—	8	—	—	8	—	—	—	16
24	Ted Field	USA	15	—	—	—	—	—	—	—	15

No score dropped — best six results.

A TOTAL OF 101 OTHER DRIVERS SCORED POINTS. 13 points: Mario Benusiglio (I), Gabriele Ciuffi (I), Giulio Piazzi (I), Masakazu Nakamura (J), Kiyashi Misaki (J). 12 points: Tony Dron (GB), Ray Mallock (GB), Mike Salmon (GB), Helmut Kelleners (D), Enzo Calderari (I), Umberto Grano (I), Hurley Haywood (USA), Al Holbert (USA), Jurgen Barth (D), Diullo Truffo (I). 11 points: Joe Castellano (I), Mauro Baldi (I), Gianpiero Moretti (I), Klaus Ludwig (D), Mario Ketterer (D), Tony Fischhaber (D), Eckart Schimpf (D). 10 points: Guido Dacco (I), Gianni Giudici (I), Jonathan Palmer (GB), Desiré Wilson (ZA), Naoki Nagasaka (J), Fumiya Sato (J). 9 points: Mario Casoni (I), Richard Lloyd (GB), Hans Volker (D). 8 points: Armin Hahne (D), Heinz Becker (D), Dany Snoeck (F), Marc Surer (CH), René Metge (F), François Servanin (F), François Migault (F), Sigi Müller Jr (D), Walter Brun (CH), Kaoru Hoshino (J), Nobuhide Tachi (J), Aguri Suzuki (J). 7 points: Jens Winther (DK), Lars Viggø Jensen (DK), Jean-Paul Libert (B), Tom Walkinshaw (GB), Takashi Yorino (J), Sekiya (J). 6 points: Guy Frequelin (F), Roger Dorchy (F), Jean-Daniel Raulet (F), Pierre Dieudonné (F), Carson Baird (USA), John Paul Jnr (USA), Frank Jelinski (D). 4 points: Karl-Heinz Gurrthler (D), Karl-Heinz Schäfer (D), Simon Phillips (GB), Jim Adams (USA), Ralph Cooke (USA), Rupert Keegan (GB), Guy Edwards (GB). 3 points: Richard Cleare (GB), Manfred Winkelhock (D), Jurgen Lassig (D), Georg Memminger (D), Fritz Müller (D), Michael Martini (D), Jurgen Mohle (D), Hans Weissgerber (D), John Cooper (GB), Paul Smith (GB), Claude Bourgoignie (B), Jean-Pierre Jaussaud (F), Shiratori (J), Ihara (J). 2 points: Odoardo Govoni (I), Giovanni del Buono (I), Jim Crawford (GB), Edgar Dören (D), Alain Cudini (F), John Paul Snr (USA), John Morton (USA), Hans-Joachim Stuck (D), Giovanni Alberti (I), Antonio Codognelli (I), Toyo (J), Iida (J), Suzuki (J). 1 point: Pierre Yver (F), Bruno Sotty (F), Lucien Guittney (F), Teddy Pilette (B), Fabrizio Violati (I), Shinji Uchida (J), Haruhito Yanagida (J), Fred Stiff (USA), Emilio de Villota (E), Derek Daly (IRL).

1982 WORLD ENDURANCE CHAMPIONSHIPS

● Points towards the FIA World Endurance Championships of Makes were scored by Group B and Group C cars on the basis of 20-15-12-10-8-6-4-2-1 to the first ten finishers in these classes combined.

● Points towards the FIA World Endurance Championship of Drivers were scored irrespective of class on the basis of 20-15-12-10-8-6-4-3-2-1 to the first ten finishers overall. Bonus points were awarded according to car performance, the various classes being divided into four categories for this purpose.

● The bonus points awarded for each finishing position were as follows: Category I (Group C/G5 over 2000cc/MSA GTX over 2000cc) 0 points; Category II (Group B over 2000cc/G6 under 2000cc/G5 under 2000cc/G4 over 2000cc/MSA GTO), 1 point; Category III (MSA GTU/G2 over 2000cc/G3 over 2000cc), 2 points; and Category IV (Group B under 2000cc/G4 under 2000cc/G2 under 2000cc/G3 under 2000cc), 3 points.

● Drivers who changed cars during race did not score points. Only three drivers were permitted per car.

Turning point

continued

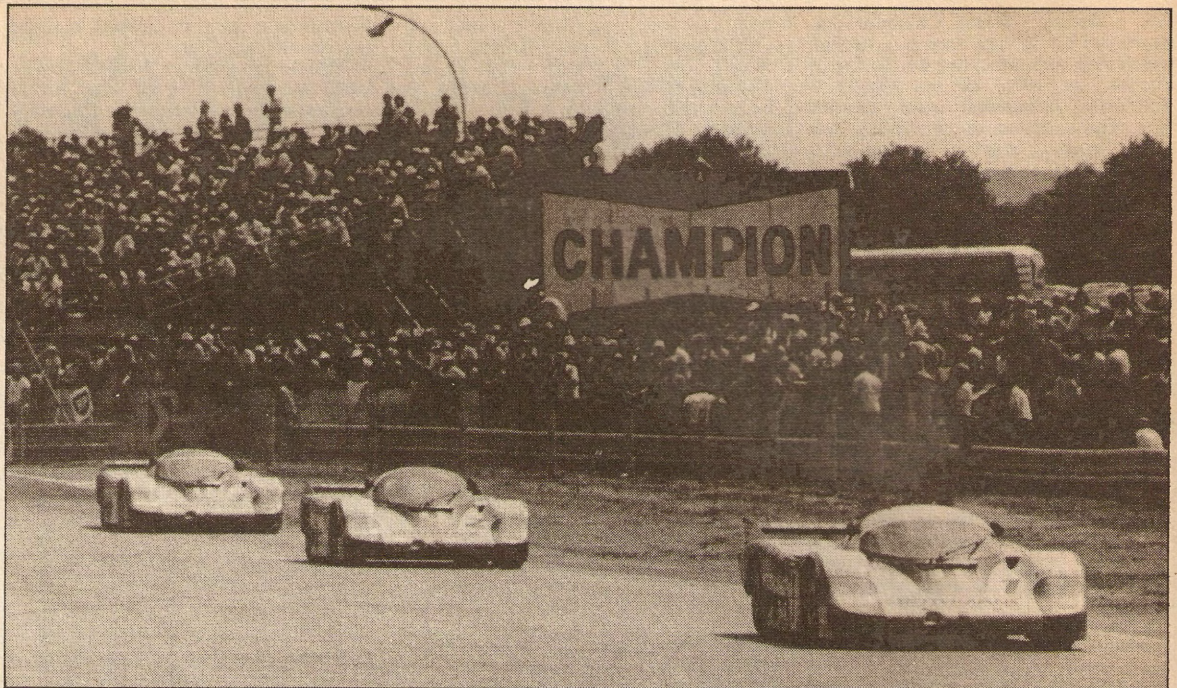
difficulty and, in late May, an incident occurred which covered the governing body in embarrassment. A privately entered Porsche 911 Turbo finished second in the combined Group C/Group B classification at the Nürburgring. The rules stated that both C- and B-cars could score for their manufacturers, and Porsche duly claimed the 15 World Championship points.

Now, this 911 Turbo had nothing to do with the Porsche factory team, and in any case it was the solitary Group B car to race during the 1982 World series. There is no doubt that the rule allowing it to score for Porsche was a bad one, which should have been deleted, perhaps even before the series was under way. FISA, after making the problem worse by contemplating it for a month, announced its intention to issue a clarification to the rules, so that only C-cars were eligible to score points.

As it turned out, this had a direct effect on the outcome of the Makes championship. Porsche and Ford Rondeau had to sit it out until October before the FISA Executive Committee decided which was the World Champion marque. The Executive decided that rules were rules: the Group B score at the 'Ring stood.

The Lancia team, meanwhile, was aloof from this problem, because it had decided at an early stage to build a new car to an eight-year-old formula—2-litre Group 6. Very competitive in overall terms, the Lancia Martini damaged the image of Group C further by winning races, the team content to amass points towards the Drivers championship which was open to drivers in any type of car participating.

FISA, then, was in difficulty over the vehicle and the series rules, and had image problems created by Lancia and by its own inefficiency in handling the



One-two-three were their race numbers, and that's how they finished. The Rothmans-Porsches at Le Mans.

Group B farce. In addition, FISA found itself struggling with fixtures, particularly in the USA. The leading American road racing organisation, IMSA declined to adopt FIA Group C as its premier class, unable (for very sound, local reasons) to agree with FISA's fuel economy concept. IMSA defined its own IMSA GTP category in which the cars were split into a series of classes according to engine capacity and weight. John Bishop's organisation then pulled out of the World Championship and ran its own endurance racing series alongside the well established sprint championships, despite considerable efforts be-

tween the two bodies to find a workable compromise. The only US fixture left to FISA was the race at Watkins Glen and, when the New York circuit went under, the World Endurance Championship of Makes was reduced to only five races. And every one was in Europe...

These were at Monza, where ten new C-cars proved to be woefully unreliable but FISA's face was saved by a Rondeau when both the Lancias broke down; at Silverstone, where Lancia ran away from a field slowed by an anomaly in the fuel regulations; at the 'Ring, where Lancia won against weak Group C opposition; at Le Mans, where Porsche were totally

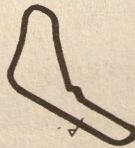
dominant in a race of attrition; and at Spa, where the new circuit hosted a World Championship race for the first time, and the Porsche and Lancia teams were embroiled in an exciting, race-long battle which went to the Group C team.

The Drivers series ran concurrently with these five events but, having lost fixtures at Dijon and Enna, extended only to Mugello, where the Lancias enjoyed complete supremacy in the worst supported race of the year; to Fuji, where only five European based cars competed but another long battle between Porsche and Lancia was resolved in Porsche's favour; and to Brands

MONZA (I)

Apr 18

Trofeo Filippo Caracciolo 1000 Kms
173 laps — 623.51 miles



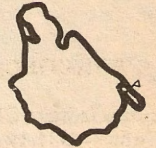
1	Pescarolo/Francia	GC	Rondeau-Ford M382	173
2	Stommelen/Field	G5	Porsche 935 K3	172
3	Ciuti/Benusiglio/Piazzini	G6	Osella-BMW PA7	167
4	Merl/Schornstein	G5	Porsche 935	167
5	Casoni/Castellano/Thatcher	G5	Lancia Montecarlo	163
6	Freuquin/Dorchy/Raulet	GC	WM-Peugeot P82	162

Lancias fail on debut—First Group C blood to Rondeau—Kremer G5 Porsche only a lap behind—GC Lola disqualified at start—WM-Peugeot in the points—Porsche 936C finishes but also disqualified—All other C-car debutants fail—Cleare Porsche wins G4—27 starters (9 GC), 12 finishers (3 GC).

NÜRBURGRING (D)

May 30

Rudolf Caracciola Wanderpreis 1000 Kms
44 laps — 624.35 miles



1	Patrese/Alboreto/Fabi	G6	Lancia Martini	44
2	Pescarolo/Stommelen	GC	Rondeau-Ford M382	43
3	Grano/Kelleners/Calderari	G5	BMW1	41
4	Ketterer/Fischhaber/Schimpf	G5	BMW 320i	39
5	Lloyd/Dron/Becker	GTO	Porsche 924 GTR	39
6	Hahne/Becker	GTU	Mazda RX-7	39

Patrese survives practice somersault, switches to sister car to win when own breaks gearbox—Ford on pole, leads race over halfway—Small entry due to proximity with Le Mans—Photographers injured when URD crashes on lap one—Lloyd Porsche wins GTO—51 starters (8 GC), 23 finishers (1 GC).

SILVERSTONE (GB)

May 16

Pace Petroleum 6 Hours
6 hours



1	Patrese/Alboreto	G6	Lancia Martini	240
2	Ickx/Bell	GC	Porsche 956	237
3	Martin/Martin/Wollek	GC	Porsche 936C	231
4	Francia/Truffo	G6	Osella-BMW PA9	228
5	Pescarolo/Spice	GC	Rondeau-Ford M382	227
6	Mallock/Salmon	GC	Nimrod-Aston Martin NRA/C2	227

New works Porsche on pole but slowed by fuel consumption—Easy win for Lancia—All C-cars affected by anomaly in refuelling rules as winning car goes 1132 kms—Encouraging debut by Pace Nimrod—Revised Ford C100 shows potential—Rondeau extend Makes lead—39 starters (15 GC), 22 finishers (8 GC).

LE MANS (F)

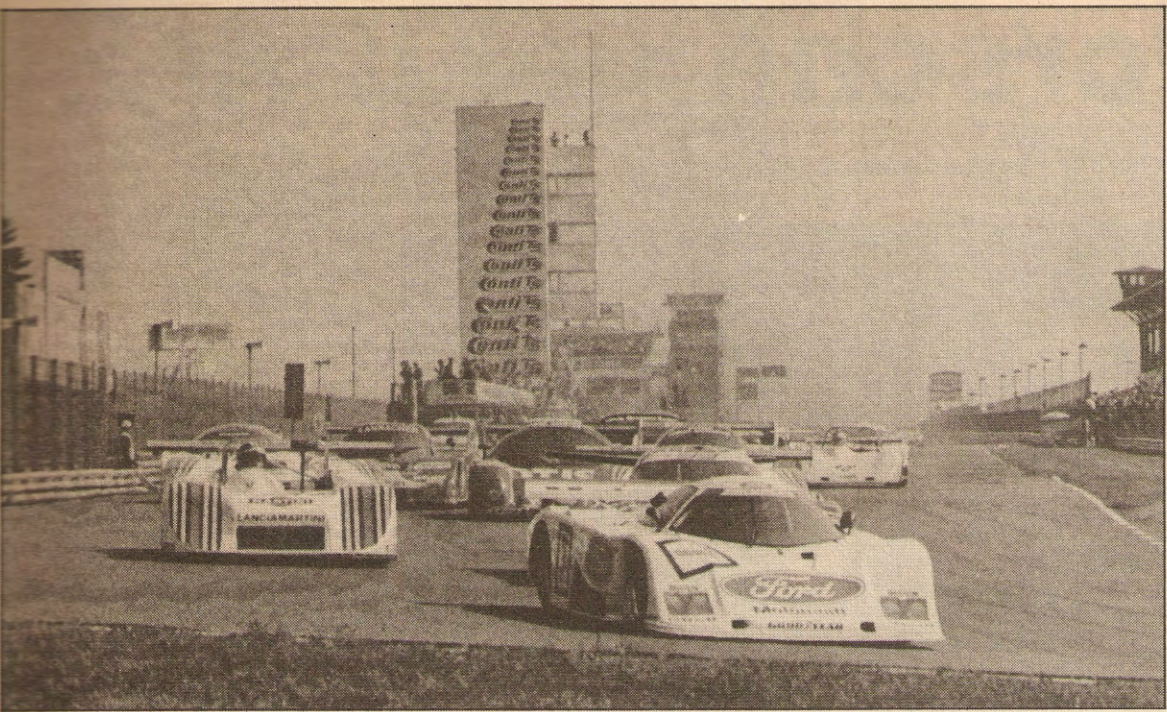
Jun 19/20

Le Mans 24 Hours
24 hours



1	Ickx/Bell	GC	Porsche 956	359
2	Mass/Schuppan	GC	Porsche 956	356
3	Haywood/Holbert/Barth	GC	Porsche 956	340
4	Fitzpatrick/Hobbs	GTX	Porsche 935 K4	329
5	Snoeck/Servanin/Metge	GTX	Porsche 935 K3	327
6	Dieudonné/Baird/Libert	GTX	Ferrari 512BB	326

50th Le Mans—Works Rothmans-Porsches totally dominant—Engine failures take out works Fords and Rondeaus—Lancias in trouble early—New Mirage prevented from racing—Porsche win every class—Pace Nimrod seventh overall—Ivey Porsche wins G5—55 starters (29 GC), 18 finishers (6 GC).



The high point of Ford's year as Ludwig beats Alboreto's Lancia off the line to lead at the 'Ring.



Pescarolo and Rondeau, here scoring the only Group C finish at the 'Ring, were both in line for championship honours for most of the season.

Hatch, where a wonderfully thrilling race between the same two teams gave the title to Porsche's Jacky Ickx on the final finishing line.

These were eight races of varied success, but the intense competition between Lancia and Porsche at Spa, Fuji and Brands Hatch did immeasurable good for the prestige of this class of motor racing. While FISA might regret that, in the end, Porsche's domination was complete, the governing body has the German team to thank for the fact that, as originally intended, the Drivers championship was won by a Group C driver.

Fewer than 40 cars were built in the first season of the new class, but there is every reason to hope that FISA has taken a big step forward with Group C. It was unfortunate in 1982 that BMW, in particular, could not agree with the fuel economy rules as defined, and that Lancia chose to act against the spirit of the new regulations. But there was strong support for the new formula from Porsche, Ford and Aston Martin, while Ford financed the development of the Cosworth DFL engine so that a promising number of private teams such as Rondeau, Lola, Sauber and Grid could build new C-cars. An increase in public

interest in sports car racing was undoubtedly achieved, and there was plenty of trade support, including participation by Dunlop, Goodyear, Avon, Michelin and (with Lancia) Pirelli.

With the groundwork thus achieved, we believe that FISA can be confident that the 1982 season will in future be regarded as the turning point in the fortunes of sports car racing—the season when this type of motor sport began once more to challenge the monopoly on prestige which Formula 1 promoters have so long taken for granted. ■

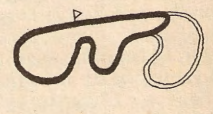
SPA-FRANCORCHAMPS (B)
Sep 5
Trophée Diners Club 1000 Kms
144 laps — 624.19 miles



1 Ickx/Mass	GC	Porsche 956	144
2 Bell/Schuppan	GC	Porsche 956	141
3 Patrese/Fabi	G6	Lancia Martini	140
4 Martin/Martin	GC	Porsche 936C	134
5 Spice/Migault	GC	Rondeau-Ford M382	133
6 Francia/Moreschi	G6	Osella-BMW PA9	132

World Championship racing returns to Spa on new circuit — Race-long battle between Porsche and Lancia teams — Second placed Alboreto stranded on circuit on final lap — Other Lancia in electrical trouble — Porsche try new electronic systems — Hare Rondeau crashes out — 37 starters (17 GC), 21 finishers (10 GC).

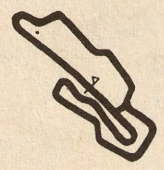
MOUNT FUJI (J)
Oct 3
Fuji 6 Hours
6 hours



1 Ickx/Mass	GC	Porsche 956	260
2 Patrese/Fabi	G6	Lancia Martini	258
3 Nakamura/Misaki	G6	March-Toyota 75S	243
4 Nagasaka/Sato	G5	BMW M1	238
5 Hoshino/Tachi/Suzuki	GC	Toyota Celica C	234
6 Walkinshaw/Yorino/Sekiya	GTO	Mazda 254	228

Another long duel between Porsche and Lancia — Both teams lose second cars in accidents — Patrese error costs four laps and hands race to Porsche — Ickx leads Drivers series for first time — Pescarolo unlucky as Rondeau breaks transmission in dying minutes — 39 starters (4 GC), 18 finishers (2 GC).

MUGELLO (I)
Sep 19
Trofeo Banca Toscana 1000 Kms
191 laps — 622.49 miles



1 Alboreto/Ghinzani	G6	Lancia Martini	191
2 Nannini/C.Fabi	G6	Lancia Martini	191
3 Wollek/Heyer/Pescarolo	GC	Porsche 936C	184
4 Francia/Moreschi	G6	Osella-BMW PA9	175
5 Brun/Müller Jnr	GC	Sauber SHS-Ford C6	175
6 Merl/Schornstein	G5	Porsche 935	175

First Drivers-only round — Easy for Lancia although Patrese car retires — Works Porsches, Fords, Rondeaus absent — Best 1982 result for Sauber, loses fourth place by running out of fuel on last lap — Pescarolo drives Joest-Porsche to keep title hopes alive — 19 starters (2 GC), 12 finishers (2 GC).

BRANDS HATCH (GB)
Oct 17
Shell Oils 1000
Shortened 211 laps — 551.47 miles



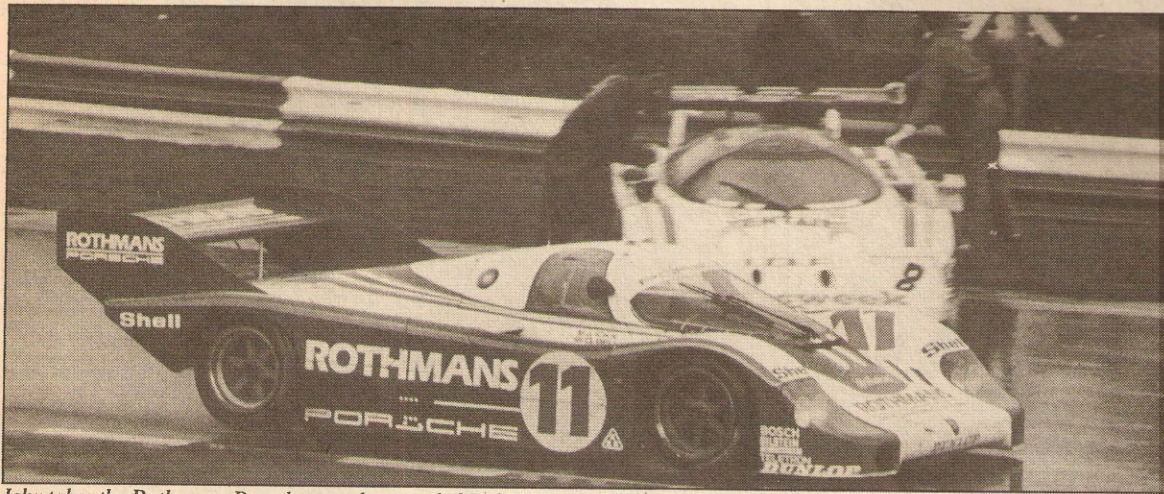
1 Ickx/Bell	CG	Porsche 956	211
2 Patrese/Fabi	G6	Lancia Martini	211
3 Fitzpatrick/Hobbs	GTX	Porsche 935 K4	202
4 Palmer/Wilson	GC	Ford C100	201
5 Ludwig/Surer/Winkelhock	GC	Ford C100	200
6 Paul Jnr/Jelinski	GC	Kremer-Porsche C-K5	198

Thrilling finale — Race stopped after third C100 knocks down barriers — Alboreto out early — Restart a long duel between Lancia and solo Porsche — Brilliant Ickx closes on leading Lancia in final laps to win on aggregate times — Best result by Fords after pole — Sauber-BMW leads in rain — 33 starters (14 GC), 21 finishers (9 GC).

Seasonal Survey

Only Porsche get it right

QUENTIN SPURRING presents his team-by-team analysis of all the new generation Group C cars.



Ickx takes the Rothmans-Porsche past the stranded Lola during his fine drive at Brands Hatch.

The new 956 cleans up

At about 3.40pm on Sunday, June 20, 1982, the three works Rothmans-Porsches took up station together on the Mulsanne Straight to prepare for a formation finish. For the next twenty minutes, at the climax of another Porsche parade, the trio of type 956 Group C cars rubbed salt in the wounds of the decimated opposition. The German team's priority was achieved with a total effectiveness. Peter Falk's organisation had won Le Mans for Porsche — but its season was far from over.

For this first year of the new FIA Group C, Porsche had had in mind to undertake a limited programme of racing with the new car. But no other team, until Le Mans, had stamped its authority on the World Endurance Championship of Makes — and Porsche, with class maxima in the bag from Silverstone and the 24 Hours, found themselves unexpectedly in contention for the title.

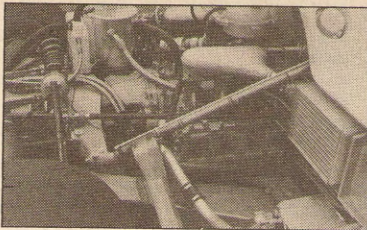
So the team entered two cars for the final round at Spa and monopolised the front row and won the race and, after a six-week wait while FISA sorted out a rules dispute, the Porsche executives saw their ninth Makes title confirmed.

And yet more glory was to come.

While it awaited FISA's confirmation, the Porsche management pondered the remaining three races in the Drivers championship series. When Mugello produced no decisive points leader, Falk persuaded his board to put Jacky Ickx into a winning position. Ickx won at Mount Fuji, then again in a thrilling finale at Brands Hatch, and suddenly Porsche celebrated not just Le Mans (and victory in every class in that race) but also both the 1982 World Championship titles which were on offer.

Such was the superiority of the team which set out only to win at Le Mans. During the team's three-race Makes programme, none of the type 956 cars was ever beaten in Group C. An accident, caused by a deflating tyre, blotted the copybook in Japan, but more overall victories followed in that Drivers round and at Brands Hatch, while another win in the non-championship season-closer at Kyalami made the

Powerful twin-turbo 956 engine.



message clearer than ever.

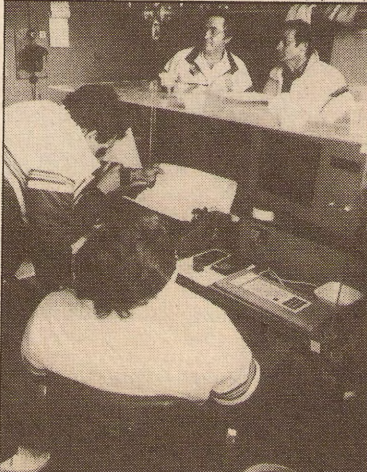
Helmut Bott's Research & Development Centre at Weissach lavished on the new 956 all the dazzling armoury at its considerable command, and the result was a typically purposeful and reliable racing car. This was Porsche's first monocoque and first ground-effect competition car. Its very strong chassis and wind-tunnel developed body were designed to take the so-called 'Indy' engine which had revitalised a type 936 to win at Le Mans the year before. The old four-speed CanAm gearbox was replaced by an all-new five-speed Porsche transmission, and the design was subjected to the company's awesome pre-race test-development programme at Weissach and Paul Ricard before making its public debut with a Le Mans 'shakedown' at Silverstone.

In England, the Porsche 956 instantly became the star of the endurance racing show but, at the same time, it became

Ickx/Bell pitstop at Silverstone.



Computer hardware at Le Mans.



clear that even Porsche could get their sums wrong. Drivers Jacky Ickx and Derek Bell were compelled to 'race' the car well below its potential: the fuel consumption was excessive, and the situation was aggravated by an anomaly in the rules which equated six-hour duration events with 1000 kms distance races. On this fast circuit in dry weather, the winning Lancia went 1132 kms which was far beyond the Porsche's capability on the fuel available.

Porsche immediately went to work, in cooperation with the engineers from Bosch (also based in Stuttgart), to remove this flaw in the 956. Come Le Mans, and the engine's fuel economy had been honed to such good effect that the team also finished one-two in the coveted Index competition which sets fuel consumption against distance covered, although admittedly Porsche were aided in this by the attrition which took out all opposition.

Come Fuji — another six-hour event — and the winning Porsche was able to out-distance the Lancias and covered, coincidentally, 1132 kms . . .

The improvement in fuel economy on the four-cam motor was in the region of 10% during the season and was achieved primarily by increasing the engine's compression ratio. With a further reduction in fuel tankage envisaged by FISA for 1984, Porsche are confident that electronics will take them several stages further.

At Spa, one of the cars was fitted with the first evidence of Porsche's 'engine management' project which will culminate in all-electronic throttle control systems. The experimental electronic control tried at Spa featured six entrance signals, namely engine revolutions, engine temperature, inlet air temperature, battery voltage, idle adjusting switch and boost pressure. It proved troublesome when the car was in traffic, but such is the potential of the Bosch systems that Porsche will be concentrating in this area over the winter.

At this stage, no further major areas of development seem to be required, save for some paring of weight. During 1982 the Rothmans Porsche 956 was not only the most reliable C-car, with a finishing record in World Championship events of 89%, but it was also the fastest, storming the Mulsanne Straight at 221mph. Norbert Singer and his engineers evidently got the ground-effects just right for, although not in the same class as the Lancias, the 956 was among the most effective C-cars in slow and medium corners, obviously at no sacrifice to maximum speed.

A superb car, a superb team, and superb drivers. After Le Mans, Ickx requested and got separation from Bell, and number one treatment so that the effort at the Drivers crown was behind him and, effectively, him alone. Derek, winning his third Le Mans, had co-driven Jacky to his sixth. After the split, Jochen Mass re-emerged as a winner of endurance races as Ickx's co-driver, but in the end, at Brands Hatch, it was Bell who put his ability and experience at Ickx's disposal. Showing great sportsmanship, Derek put his all into Brands Hatch and, although the spotlight was not upon him during those thrilling final laps, he is owed much by the Belgian whose title bid was so sensationally successful.

Porsche conducted the development

of the 956 in close cooperation not only with Bosch but also with Dunlop, who won their 27th Le Mans, no less. At Kyalami in November, the Castrol 9 Hours was won on Dunlop's advanced new Denloc tyres, which use a new technique to lock them to the rim without using bolts, and which will stay on the rim at high speed even at zero pressure. Porsche, during 1982 in particular in this area and in the research into engine management systems, remain at the forefront of motor racing technology and continue to derive great benefits for their road car customers.

PORSCHE 956

Constructor.....Dr Ing hcF Porsche AG, Weissach, Stuttgart, West Germany.
Designer.....Porsche R&D Centre (under Norbert Singer).
Comps Director.... Peter Falk.
Chassis/Body.....Aluminium honeycomb monocoque, GRP body. Ground effect.
Engine.....Porsche flat-six (four valves per cylinder), 2649cc. Twin turbo. Approx 620bhp at 8200rpm.
Weight.....Approx 860 kgs (at Le Mans).
Topspeed.....221mph (at Le Mans).
Tyres.....Dunlop.

CHAMPIONSHIP RESULTS

Silverstone
 2nd Ickx/Bell (Q1)

Le Mans
 1st Ickx/Bell (Q1)
 2nd Mass/Schuppan (Q2)
 3rd Haywood/Holbert/Barth (Q14)

Spa-Francorchamps
 1st Ickx/Mass (Q1)
 2nd Bell/Schuppan (Q2)

Fuji
 1st Ickx/Mass (Q2)
 Rtd Bell/Schuppan (Q4) accident

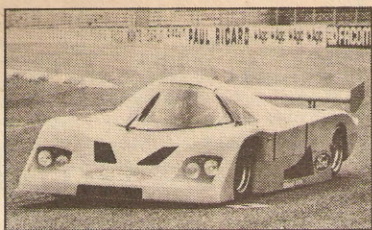
Brands Hatch
 1st Ickx/Bell (Q6)

Ickx. **Bell**

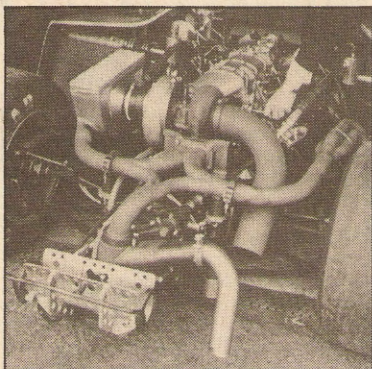


Ford: A shaky start

In late September, 1981, the Len Bailey designed prototype Group 6 version of the Ford C100 made its debut at Brands Hatch. It qualified on the pole and led the race for over an hour. At the time, AUTOSPORT praised Ford for giving the public this solid evidence of the company's commitment to endurance racing, taking the trouble to race in 1981 although the car had been many difficult months in development. Behind our admiration for Ford, however, there lay the nagging feeling that we might have seen all this before. The C100 appeared at Brands Hatch before it was ready for the race track; in this instance, the car was not fitted with a gearbox oil cooler, with inevitable results. We cast our minds back to 1964: could this really be the GT40 project all over again?



Above: Early C100 testing at Ricard. Below: Turbo Cosworth DFL under development.



The original C100 ran in Group 6 because it had been designed before the Group C regulations were finalised. All praise to Ford for starting the Group C programme in such good time. Unfortunately, however, much of the development work went to waste because the prototype was incompatible with the final regulations when they were eventually published, very late in the day, by FISA.

Bailey, who had been involved with both the GT40 and P68/69 projects, began work on the pukka C-car but, disillusioned by the political aspects of Ford which (as in 1964-65) were intruding on the race programme, left the project early in 1982.

The project, including the aluminium chassis which had been built by Hesketh, was transferred to Lothar Pinsky's competitions department in Cologne, with former Porsche man Eberhard Braun in charge of engineering.

Whether because of pressure from Ford management or the PR divisions of the company, or from his own single-mindedness, Pinsky elected to debut the Group C Ford at Monza and, again, the car was far from race-ready. The Italian race was deeply embarrassing for Ford and led instantly to another change in direction.

Ford had given permission for British privateer Alain de Cadenet to build a C100 replica, using a honeycomb chassis built by John Thompson. De Cadenet was approached by Ford and accepted

FORD C100

Constructor.....Ford Motor Co, Cologne, West Germany (Zakspeed, Niederzissen, West Germany; chassis by TC Prototypes, Northampton, England, replaced Hesketh built chassis used at Monza).
Designer.....Ford Competitions Department under Eberhard Braun (adapting original Len Bailey design) later modified by Tony Southgate.
Team Manager.....Erich Zakowski.
Chassis/Body.....Aluminium honeycomb monocoque, GRP body. Partial ground-effect (flat bottom at some races).
Engine.....Ford-Cosworth DFL V8, 3955cc. Normal induction. Approx 540bhp at 9500rpm.
Weight.....Approx 870kgs (at Le Mans).
Topspeed.....198mph (at Le Mans).
Tyres.....Goodyear.

CHAMPIONSHIP RESULTS

Monza
 Rtd Ludwig/Surer/Winkelhock (Q6) engine

Silverstone
 8th Ludwig/Winkelhock (Q4)

Nürburgring
 Rtd Ludwig/Winkelhock (Q1) transmission

Le Mans
 Rtd Ludwig/Surer (Q6) engine
 Rtd Winkelhock/Niedzwiedz (Q1) engine

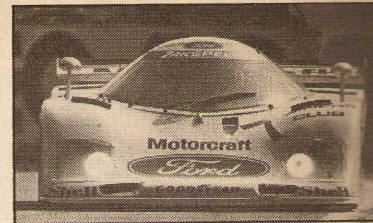
Spa-Francorchamps
 18th Winkelhock/Niedzwiedz (Q8)
 Rtd Ludwig/Surer (Q6) fuel pump

Brands Hatch
 4th Palmer/Wilson (Q8)
 5th Ludwig/Surer/Winkelhock (Q1)
 Rtd Niedzwiedz/Winkelhock (Q2) accident

compensation for the loss of his car, which was taken over by Ford and transferred not to Ford Germany, but to Erich Zakowski's organisation in Niederzissen. Zakspeed, perhaps that country's best private racing team with many years of experience of semi-works Escorts and Capris, took on Tony Southgate as freelance designer and completed the de Cadenet project in its workshops.

Externally similar but internally different, this third Ford C100 design made its debut at Silverstone and, like its predecessors, it was not ready. Drivers Klaus Ludwig and Manfred Winkelhock, however, overcame a myriad of problems to finish the race.

There were only six weeks between Monza and the 'Ring, and the improvement in the C100 programme between



Above: Ludwig's C100 at Spa. Below: Best-placed Ford, fourth at Brands Hatch.



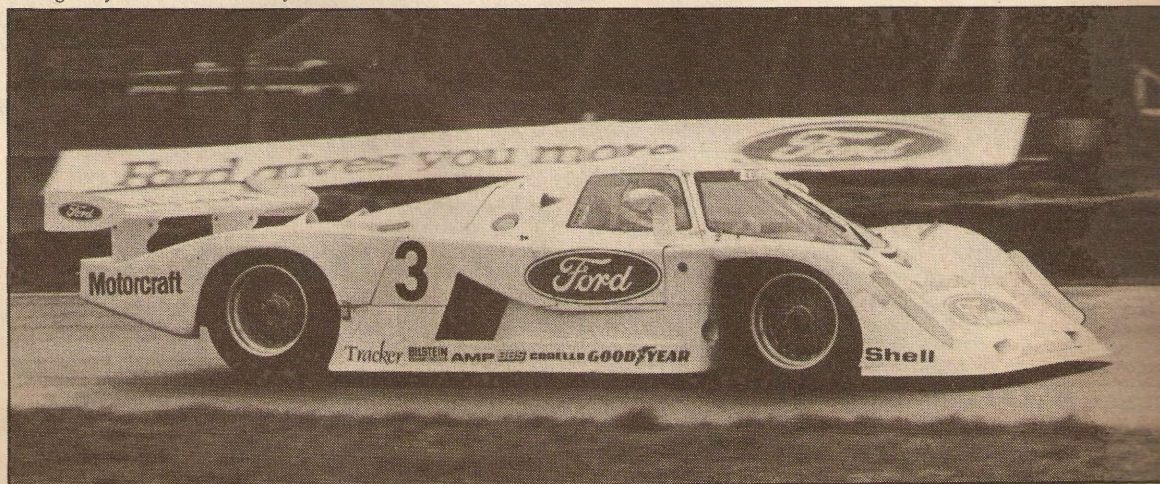
those two races was impressive. Having tested extensively on the Eifel circuit, the C100 was qualified on the pole and it outpaced the Lancias in the race. It was leading by over a minute just after half-distance when stopped by transmission failure.

For sure, the Porsches had been absent from the 'Ring, but had Ford managed to overcome the many teething problems?

At Le Mans came another blow when the Mulsanne Straight exposed an unsuspected fault in the Cosworth DFL engine. Held at maximum revs for well over a minute, the engines overheated, causing the rubber crankshaft vibration damper to soften. The outer steel ring on the crankshaft was then free to move backwards, and it cut or shorted out the wires to the ignition pickup. Both the works Fords, not to mention all three works Rondeaus, were parked by half-distance.

The engines were modified by Cosworth with technical assistance from the Ford Research Centre in Dunton but, although the C100s had their moments later in the season and the Ford became a race winner in the German national 'sprint' series, World Championship success never looked likely. The 540bhp DFL engine, the long-distance version of the evergreen DFV Formula 1 power unit, proved to be less than adequate for the job of putting a chassis which was 70 kilos overweight into contention with the powerful Porsches and the lightweight

Ford gives you more — a trio of works cars at Brands, two of them on the front row.



Seasonal Survey

Ford continued

Lancias. Reliability, also, remained suspect.

The C100's best result came at Brands Hatch and the drivers, much to the chagrin of the team's regulars, were Jonathan Palmer and Desiré Wilson, who were having a one-off outing in a third chassis and were individually managed by the Rondeau team manager, Keith Greene.

The early part of the C100 season was marred by confusion, dissension and unprofessionalism. Having said that, the company achieved dramatic improvements and, by the end of the season, the C100 chassis seemed to have reached the point where it would form the basis of a very effective C-car with more power. The original Silverstone 'Mk 3' chassis was converted mid-season into a mobile test-bed for the turbo DFL under development at Cosworth.

As it was, the C100 did finally establish itself as the fastest of the normal induction C-cars, and its many critics would do well to remember 1966. That year, Ford put behind them the many disappointments of the first phase of the GT40 programme, and won Le Mans.

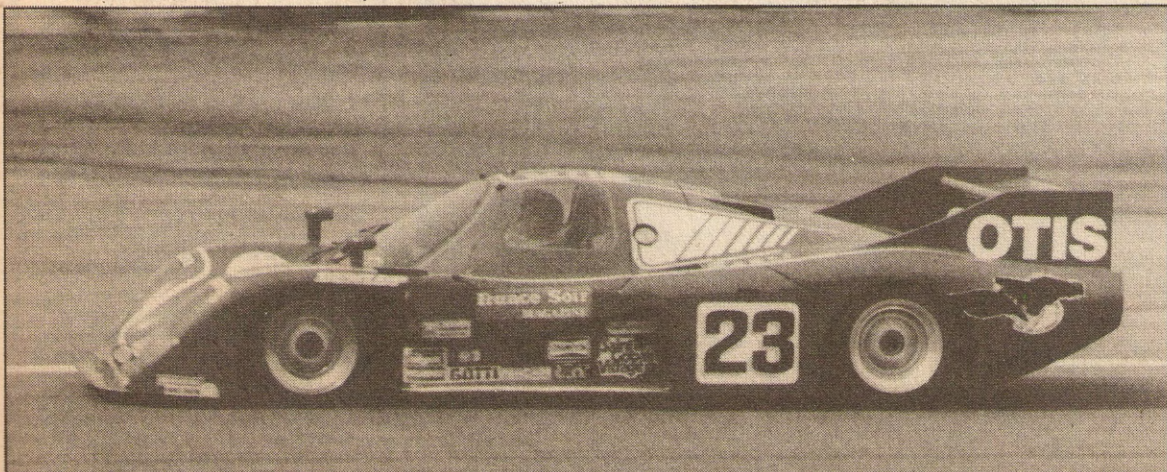
Rondeau: C-car champ

The first man to win Le Mans in a car bearing his own name, Jean Rondeau set his sights on the World Endurance Championship of Makes, and took his little team into its first full season looking good. The French operation came out of it the moral, but not the actual, winners of the title.

Pending the arrival of its new Rondeau wing-car, the M482, the team fielded an interim version of its proven flat-bottom GTP design, called the M382, equipped with the latest 3.9 DFL power unit. The 3-series car featured the new brakes and tall rear suspension of the 4-series machine, and bodywork slightly longer and lighter than that of the M379C cars which were used at Le Mans in 1981. The M382 was light in weight (among the lightest 1982 C-cars) and two things occurred which convinced Rondeau that he should stay with this model throughout season.

First, he inherited from Lancia the victory in the opening race at Monza, where the car emphasised its proven reliability. Second — and more important — the 4-series project turned out to

Below: Pescarolo moved into the lead of the Drivers series in this damaged Rondeau at Silverstone.



be a disaster.

The M482, featuring full ground-effect air tunnels, appeared at Silverstone before it was race-ready and was afflicted by severe overheating. Its striking Max Sardou bodywork was never seen again, because the problem could not be cured in testing later, and the car also handled badly. Ultimately the project was shelved.

At Silverstone, the 3-series machine anyway scored more Makes series points although it was delayed by a broken suspension bolt. The failure was caused by the inherent vibration of the DFL engine, which affected all the users of the Ford power plant to a greater or lesser degree.

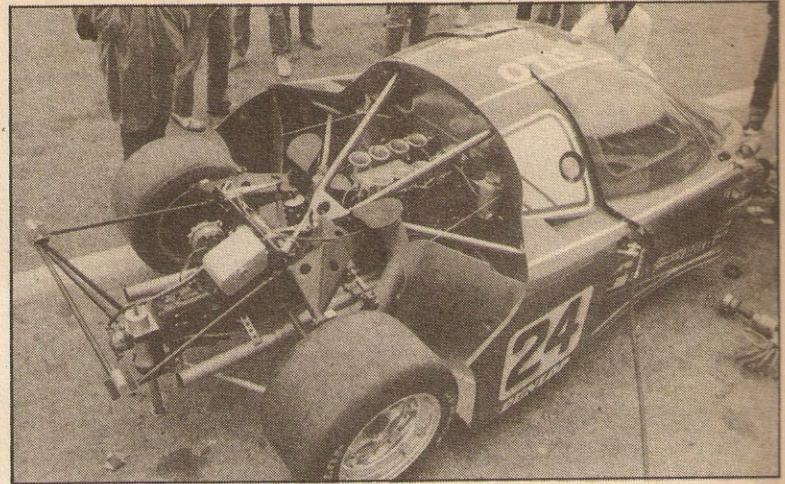
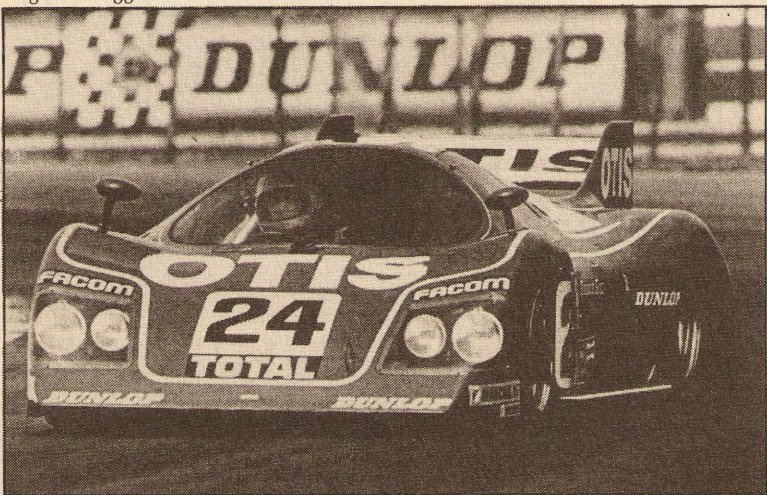
Financially backed by the Otis Lifts company, the Rondeau team quickly set to in building two entirely new M382 cars for Le Mans, and the meantime the solo works car came through another suspension failure to achieve the only Group C finish in Germany.

Now with a solid looking points lead in the Makes table, Rondeau had a desperately disappointing Le Mans, smitten by the same engine failure which took out the factory Fords. The only face-saver was a lowly points score by Pierre Yver's privately run, DFV engined M379C, one of several private Rondeaus which raced during the season among which Christian Bussi's new M382 was a regular, if unsuccessful, series contender.

With Porsche now breathing down his neck, Jean took three cars to Spa and finished high enough, he thought, to secure the crown. The team enjoyed a celebration party in the hotel after the race, but subsequently FISA allowed Porsche to score points for a privately entered Group B car at the Nürburgring, and the title was lost.

All season Rondeau followed a policy

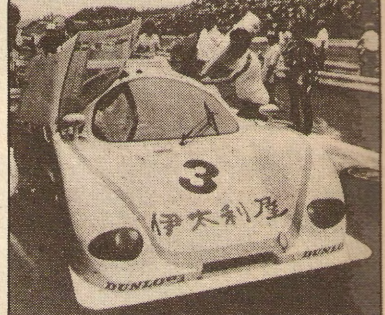
Migault struggles with the disastrous 4-series Rondeau at Silverstone.



The 382 was an updated version of a 1979 design which had won Le Mans.

of employing a local driver in each race: Giorgio Francia at Monza, Gordon Spice at Silverstone, Rolf Stommelen at the 'Ring, Thierry Boutsen at Spa. The only constant on the driving side was the veteran Pescarolo, who was at the top of the Drivers points table during the first half of the season. Unfortunately for Henri (and ultimately for Rondeau, too), the Otis-Rondeau budget extended only to the five Makes championship rounds. To take his title bid further, Pescarolo had to buy in to the Joest-Porsche team at Mugello and Brands Hatch, persuading Rondeau to send a car to Fuji in between. Unluckily, the M382 broke a driveshaft only a few minutes before the end of the Japanese event, making Henri's quest a hopeless one after such a promising start.

Jean Rondeau began the season with a



Mid-race pitstop at Fuji.

distinct advantage in that he had a proven car designed to comply with the Le Mans GTP regulations, on which Group C is based, and he capitalised on this by building up a very professional privateer organisation. His early season domination of the Makes points table was achieved through reliability rather than speed, but in the end his car was uncompetitive with the Porsches, and its reliability let him down. He can rightly say that this distinctive marque in the 1982 Group C champion, nevertheless.

RONDEAU M382

Constructor.....Automobiles Jean Rondeau, Le Mans, France.

Designers.....Hubert Rohée, Philippe Baloué.

Team Manager.....Keith Greene.

Chassis/Body.....Aluminium monocoque, GRP body. Flat bottom.

Engine.....Ford-Cosworth DFL V8, 3955cc. Normal induction. Approx 540bhp at 9500rpm.

Weight.....Approx 810kgs (at Le Mans).

Topspeed.....204mph (at Le Mans).

Tyres.....Dunlop.

CHAMPIONSHIP RESULTS
Works team only

Monza
1st Pescarolo/Francia (Q4)

Silverstone
5th Pescarolo/Spice (Q9)

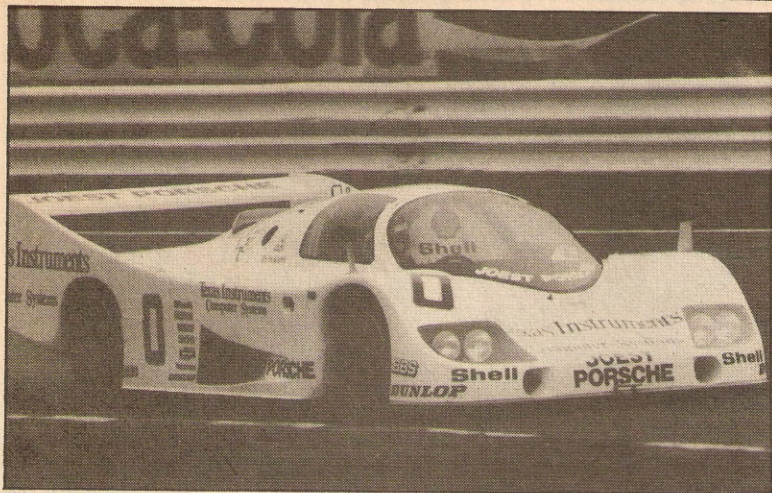
Nürburgring
2nd Pescarolo/Stommelen (Q7)

Le Mans
Rtd Spice/Migault/Lapeyre (Q16) engine
Rtd Jaussaud/Alliot/Pescarolo (Q22) engine
Rtd Pescarolo/Ragnotti (Q38) engine

Spa-Francorchamps
5th Spice/Migault (Q11)
8th Jaussaud/Rondeau/Pescarolo (Q9)
Rtd Boutsen/Pescarolo (Q7) accident

Fuji
Rtd Pescarolo/Boutsen (Q5) driveshaft

Seasonal Survey



The Joest-Porsche raced out of Belga livery in the non-Makes events.

Joest: ingenuity



Silverstone pitstop for the 936C.

Alongside a big programme in the German national championship, Reinhold Joest ran his 908/936 based Porsche 936C. This attractive space-frame car, racing in the livery of Belga cigarettes and Texas Instruments, was campaigned in the Makes events by the Belgian Martin brothers, joined (except on their home track at Spa) by Bob Wollek. The results contributed to the brilliant Frenchman's 1982 Porsche Cup triumph, but the Martins' season was spoiled by bad luck.

It started at Monza. Surprisingly for such an experienced team, the rules had not been read properly and, when the car made an unscheduled stop for a puncture, it was topped up with fuel. Up to 1981, this had been normal endurance racing practice but, in 1982, the move effectively used up one of the team's precious refuelling stops. Realising the error (which was also made by the WM-Peugeot team), the team had to nurse the 936C to the finish — only to be disqualified when the fuel tank was found to be 1½ litres oversize, the result of an installation mistake.

A satisfactory third placing at Silverstone was followed by a blow-out at the 'Ring which pitched the car into the barriers. Repaired for Le Mans and fitted with a bigger engine, the Belga-Porsche was splitting the works Rothmans-Porsches in third place overall when the engine failed — in the 23rd hour.

After such ill fortune, the Martins cannot be blamed for a circumspect drive at Spa before their car was reclaimed by the Joest team for its own use.

Wollek stayed on Joest's driver strength and the 936C finished at both Mugello and Brands Hatch, but not well enough to secure the Drivers crown for rent-a-driver Henri Pescarolo. The Joest-Porsche was an ingenious C-car, strong and mostly reliable, good equipment for endurance racing even if it did lack front-running pace.

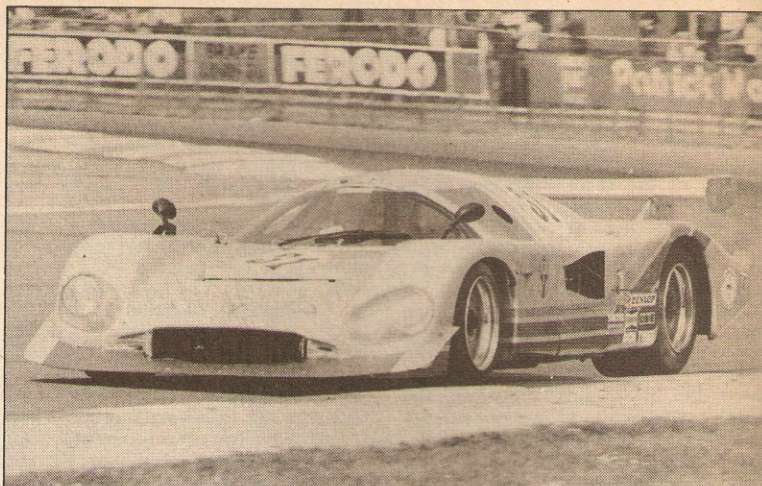
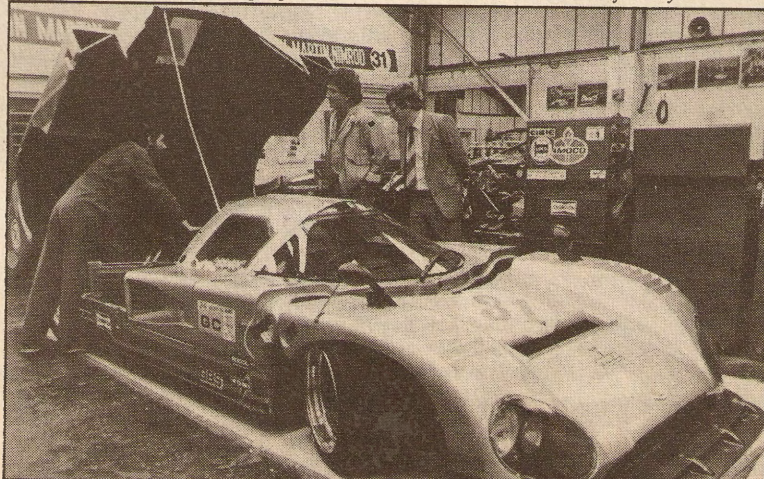
PORSCHE 936C

Constructor	Joest Racing, Absteinach, West Germany.
Designer	Reinhold Joest (based on Porsche design).
Team Manager	Reinhold Joest.
Chassis/Body	Tubular spaceframe (based on 908/936 series), GRP body. Flat bottom.
Engine	Porsche flat-six (two valves per cylinder), 2142cc. Twin turbos. Approx 560bhp at 9000rpm. Also raced with similar power units of 2517cc and 2825cc.
Weight	Approx 880kgs (at Le Mans).
Topspeed	Not known.
Tyres	Dunlop.

CHAMPIONSHIP RESULTS

Monza	DSQ Martin/Martin/Wollek (Q5) oversize fuel tank
Silverstone	3rd Martin/Martin/Wollek (Q7)
Nürburgring	Rtd Martin/Martin/Wollek (Q4) accident.
Le Mans	Rtd Martin/Martin/Wollek (Q3) engine
Spa-Francorchamps	4th Martin/Martin (Q14)
Mugello	3rd Wollek/Pescarolo/Heyer (Q4)
Brands Hatch	8th Wollek/Pescarolo/Heyer (Q14)

Works Nimrod being race-prepared at the Hamilton team's Burton factory.



The works Nimrod team failed to finish in all its three races.

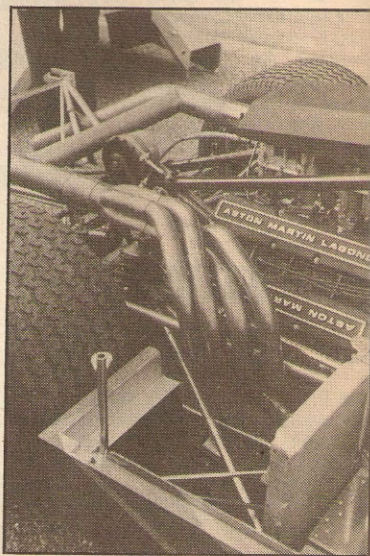
Nimrod: third place

Robin Hamilton's organisation, so desperate to be taken seriously, could not really expect to win races with a design drawn a decade ago, and weighing more than 25% over the minimum weight limit.

The basis of the Nimrod was a shelved design by Lola's Eric Broadley, modified by Hamilton's team for Group C. To this very strong monocoque was fitted the big V8 road car engine, race-developed and fuel-injected by Aston Martin Tickford. The engine was certainly powerful enough, but not to shift that weight.

Hamilton ran one car as a works entry and sold another to Viscount Downe, whose machine was sponsored by Pace Petroleum. The works car was unreliable and never finished a race. The strength of the chassis was shown by Tiff Needell's high-speed accident at Le Mans, from which he emerged unmarked. Unfortunately the team was quick to blame its tyre supplier, although the cause was never properly determined.

In stark contrast, the Pace entry finished on every occasion, bringing the marque third position in the Makes championship, albeit a distant one. Not only that, but Ray Mallock's expertise saw to it that the private car was quicker than the works entry each time out. At Le Mans, the 23,000 or so British spectators were glad that Hamilton had brought the name of Aston Martin back to the Sarthe, and the Pace team's seventh place finish was widely applauded.



Call it a lump, but it puts out 580bhp.

On balance, the big Aston engine showed well, and the two Nimrod teams did enough to make the prospect of this power unit in a lighter chassis an interesting one.

NIMROD

Constructor	Nimrod Racing Automobiles, Burton-on-Trent, England.
Designer	Eric Broadley (shelved Lola design adapted by Nimrod team under Robin Hamilton).
Team Manager	Robin Hamilton (Paceteam: Richard Williams).
Chassis/Body	Aluminium monocoque, GRP body. Flat bottom.
Engine	Aston Martin V8, 5340cc. Normal induction. Approx 580bhp at 7250rpm.
Weight	Approx 1050kgs (at Le Mans).
Topspeed	204mph (at Le Mans).
Tyres	Avon.

CHAMPIONSHIP RESULTS

Silverstone	Rtd Lees-Evans (Q14) distributor
	6th Mallock/Salmon (Q11) (Pace)
Le Mans	Rtd Lees/Evans/Needell (Q26) accident
	7th Mallock/Salmon/Phillips (Q23) (Pace)
Spa-Francorchamps	Rtd Lees/Needell (Q18) engine
	11th Mallock/Salmon (Q13) (Pace)
Brands Hatch	9th Mallock/Salmon (Q12) (Pace)

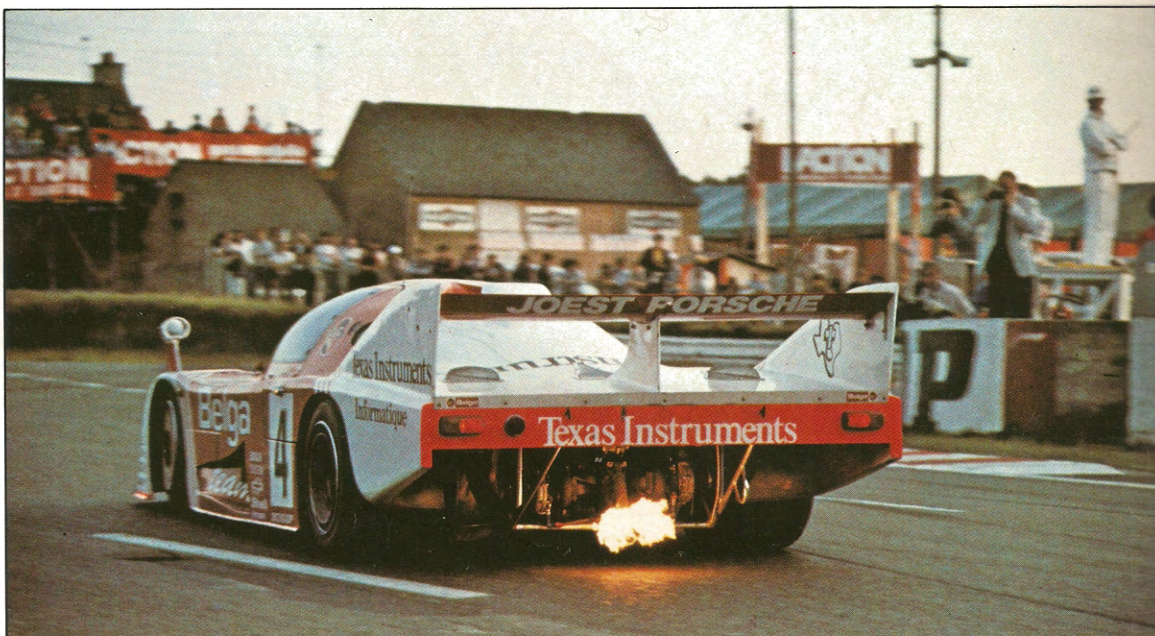
WM: short of finance

Like Jean Rondeau, his compatriot, Gérard Weltier took his team into its first full season of racing, having formerly confined his activities to Le Mans. However, Weltier's was a far less well financed operation, an almost entirely amateur one, for he employed no full-time people, and his Esso France sponsorship was intended primarily to get his team to Le Mans.

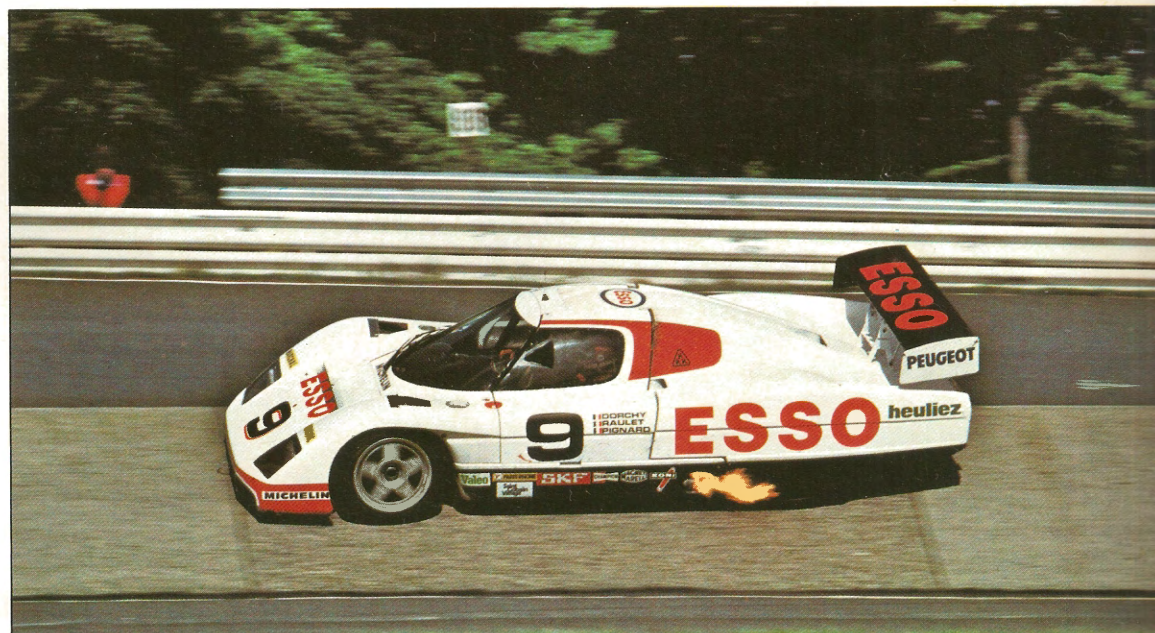
Also like Rondeau, the WM team started out with a proven GTP design, and his car was easily converted to Group C. Weltier retained his unusual power unit, a turbo race version of the Peugeot PRV road car V6. Assistance from Citroën-Peugeot, however, was technical and not financial, and the team's lack of proper backing showed.

The team made a mistake at Monza and had to drive to conserve fuel after topping-up, but came in second in class behind the winning Rondeau. Another points-scoring finish at Silverstone (where the drivers, incredibly, were freewheeling down the Hangar Straight to save petrol!) decided Weltier to conduct a full Makes series. But no WM finished another race, smitten in many instances by the lack of money to obtain the best equipment.

The latest WM was only really in its element at Le Mans, where it was only 5mph slower than the Porsche 956, but this is a team urgently in needs of funds and with a record which suggests that it would spend any sponsorship well.



Above: The Belga-Porsche team was very unlucky at Le Mans (here at Mulsanne Corner), going out from third place near the end. Below: Ray Mallock produced several strong drives in the Pace Nimrod, here at Brands Hatch, Druids Corner. Bottom: The WM-Peugeot flames out in the Karussell, at the Nürburgring. Photos: Jeff Bloxham.



WM PEUGEOT P82

Constructor.....WM AEREM, Thorigny, Paris, France.
Designer.....Gérard Weltier.
Team Manager.....Vincent Soullignac.
Chassis/Body.....Aluminium monocoque, GRP body. Partial ground-effect.
Engine.....Peugeot 'PRV' V6, 2850cc. Twin turbos. Approx 550bhp at 8000rpm.
Weight.....Approx 830kgs (at Le Mans).
Top speed.....216mph (at Le Mans).
Tyres.....Michelin.

CHAMPIONSHIP RESULTS

Monza
6th Frequelin/Dorchy/Raulet (Q11)

Silverstone
11th Dorchy/Raulet/Pignard (Q40)

Nürburgring
Rtd Dorchy/Raulet/Pignard (Q15) electrics

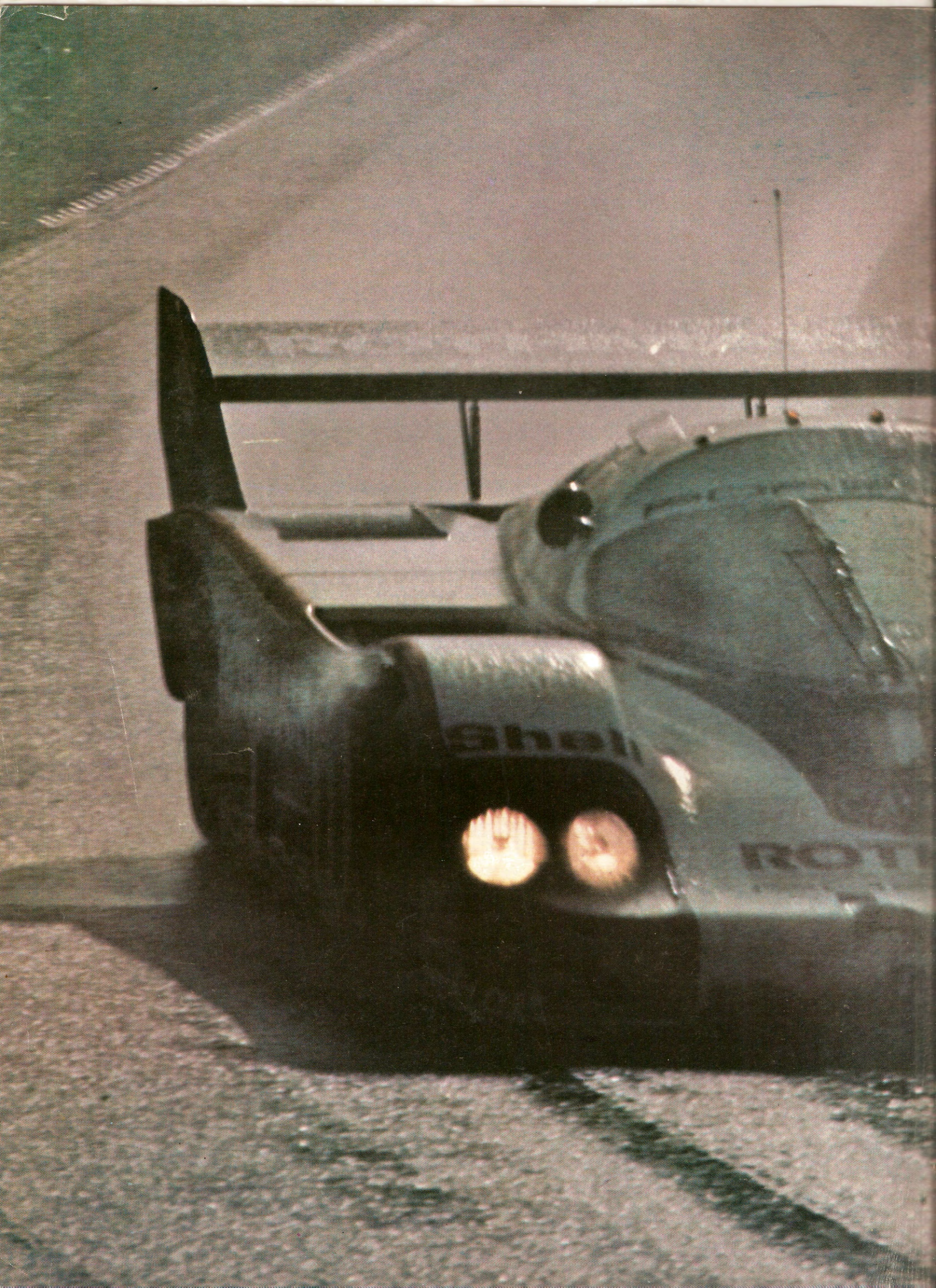
Le Mans
Rtd Pignard/Raulet/Theys (Q9) gearbox
Rtd Frequelin/Dorchy/Couderc (Q10) fire

Spa-Francorchamps
Rtd Dorchy/Raulet/Pignard (Q20) exhaust

Lola: all frustration

Coming into endurance racing from the politicking world of Formula 1, where he had managed the Williams team, Jeff Hazell must have wondered what had hit him this year when he ran the works Lola T610.

At Monza, the car was black-flagged on lap one after an official had spotted an





RC RACING

PORSCHE 934 TURBO

THE TEAM

Peter Twitchen
Don Holland
Geoff O'Connor
Ian Garwood
Mark Wendelken
David Polhill

THE DRIVERS

Richard Cleare
Tony Dron

FOR THEIR SUPPORT

Geoff Hockley
Paul Edwards
Bob Whymys
David Woodward



Canon

Autofram

PORSCHE SPECIALISTS



Winner Group 4 category - Monza 1000 Km - Le Mans 24 hours - Brands Hatch 1000 Km

Autosport

Seasonal Survey

Lola

continued

illegal (flexibly mounted) piece of bodywork at the last minute. At the 'Ring, Rupert Keegan was fined under threat of disqualification after failing to stop for a marshal waving a red flag in the pits approach loop. At Spa, Keegan was disqualified after ignoring the red light at the pits exit, and this effectively disqualified the car. At Brands Hatch, the Lola was disqualified because of a push-start by marshals coming to the rescue of Guy Edwards, who had spun off in avoidance of another car and stalled the engine (although it was later reinstated after Hazell's appeal). All in all, Jeff probably needed his Yellow Book more in Group C than he had in Formula 1...

Sponsored by Ultramar, Rizla, Newsweek and others, the factory Lola team had a wretchedly frustrating season, as you can see. Driven by Keegan and Edwards, joined at Le Mans by Nick Faure, the T610, in much the same way as the Ford C100, was a complex piece of machinery. The car was overweight but extremely quick in a straight line. However, despite a great deal of wind tunnel work at Didcot, Eric Broadley's designers never completely resolved the problem of instability in the corners.

In the end, the team made drastic revisions to the bodywork and produced a short-nose, short-tail version for Brands Hatch, the culmination of a plethora of detail aerodynamic alterations made as the season had progressed. The improvement in downforce was noticeable on this relatively tight circuit, but it was too late for the T610 to make a deep impression on the season's racing.

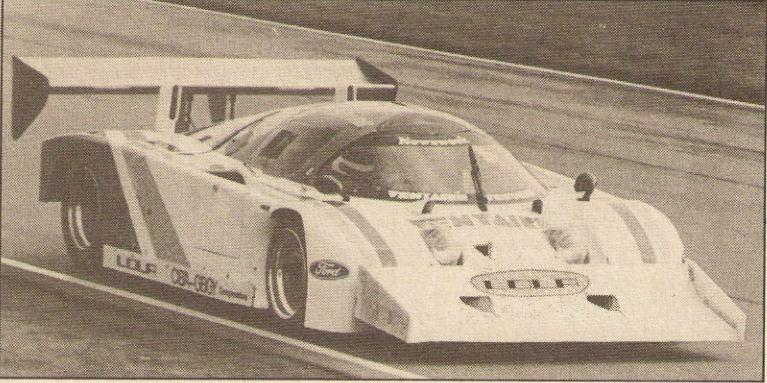
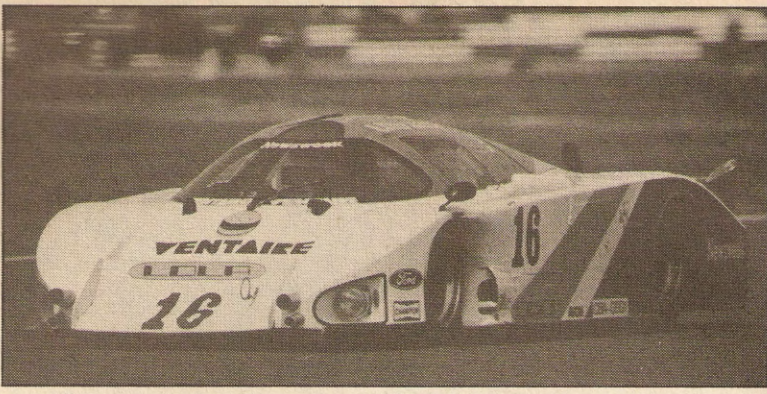
One more Lola T610 raced during 1982 in Group C, this the Cooke-Woods team car which was built by the American mechanics (led by Briton John Bright) at the Huntingdon factory and taken to Le Mans en route to the USA. Crewed by team owner Ralph Kent-Cooke with Jim Adams and Brian Redman, it became beached when it ran out of fuel — yet another maddening 24 Hours for the great Lancastrian who has never won this race.

LOLA T610

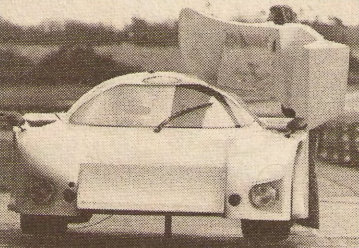
Constructor.....Lola Cars Ltd, Huntingdon, England.
Designer.....Lola design team under Eric Broadley.
Team Manager.....Jeff Hazell.
Chassis/Body.....Aluminium honeycomb & carbonfibre monocoque, GRP/Kevlar body. Ground-effect.
Engine.....Ford-Cosworth DFL V8, 3955cc. Normal induction. Approx 540bhp at 9500rpm.
Weight.....Approx 885kgs (at Le Mans).
Top speed.....220 mph (at Le Mans).
Tyres.....Avon.

CHAMPIONSHIP RESULTS

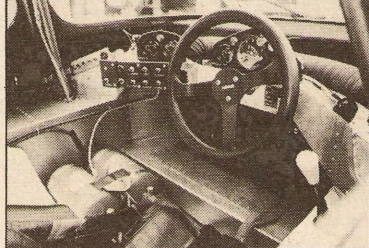
- Monza**
 DSQ Edwards/Keegan (Q9) bodywork
- Silverstone**
 16th Edwards/Keegan (Q8)
- Nürburgring**
 Rtd Edwards/Keegan (Q8) engine
- Le Mans**
 Rtd Edwards/Keegan/Faure (Q10) headgasket
- Spa-Francorchamps**
 DSQ Edwards/Keegan (Q12) Keegan penalised
- Brands Hatch**
 7th Edwards/Keegan (Q10)



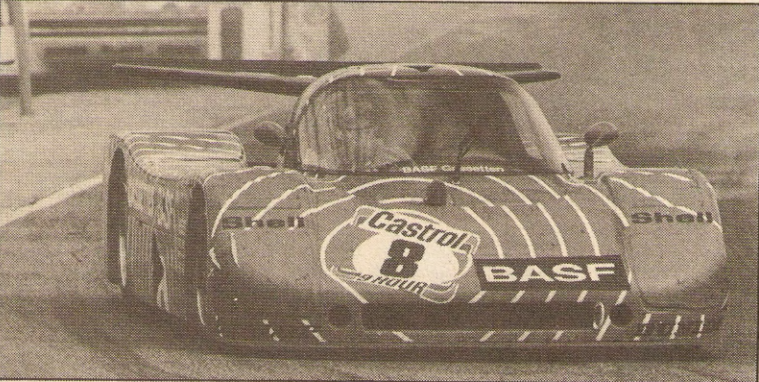
Top: The works Lola started out long and sleek, here at Silverstone. Above: Come Brands Hatch, and the T610 was short and winged, looking for downforce.



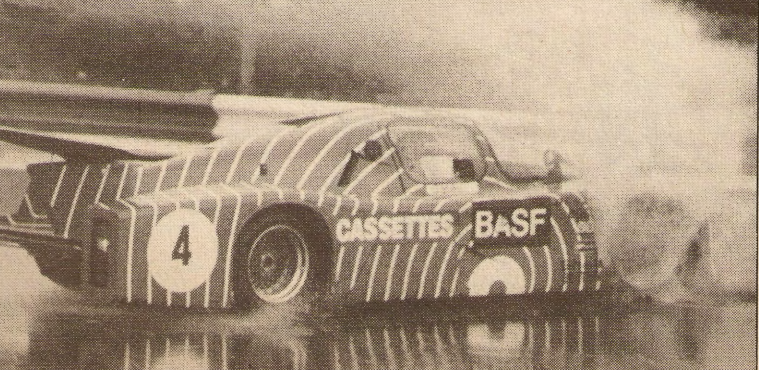
Lola shakedown run at Goodwood.



Sauber SHS C6 cockpit.



Above: Stuck takes his BASF Sauber past its stricken sister car at Kyalami. Below: Müller spins the Walter Brun C6 on Bottom Straight at a soaking Brands Hatch.



Sauber SHS: disappointing

The most dramatic Group C car in appearance, Peter Sauber's design began well at Monza and looked to be a front runner, but doubtful preparation and engine problems plagued the cars all season.

The C6 was built in Switzerland with the financial and technical backing of Seger & Hoffman, the aerospace company, and two chassis were sold, one to Gerhard Schneider's GS Tuning team, the other to Walter Brun's organisation.

Of all the C-cars (like the Ford C100, the Rondeau M382 and the Lola T610) which used the Cosworth DFL engine and Hewland VG series transmission, the Sauber SHS was the worst affected by engine vibration. All manner of ancillaries, and even the monocoque itself, were damaged, and the problem persisted even after rear end modifications were made so that the DFLs were carried in their own loadbearing subframes. The GS team finished only at Spa, a misfiring ninth after a good early run.

The improved performance did nothing for the team's morale, for at this time it became clear that Schneider was in financial difficulty. Brun came to the rescue by buying out the racing side of the Freiburg business. After an equally disappointing season with his own DFL powered car, Brun forsook his Ford Switzerland backing and modified his C6 to run a four-cylinder, 1.7-litre BMW engine, with which Hans Stuck led the Shell Oils 1000 at Brands Hatch in the rain, undoubtedly the high point of the Sauber season.

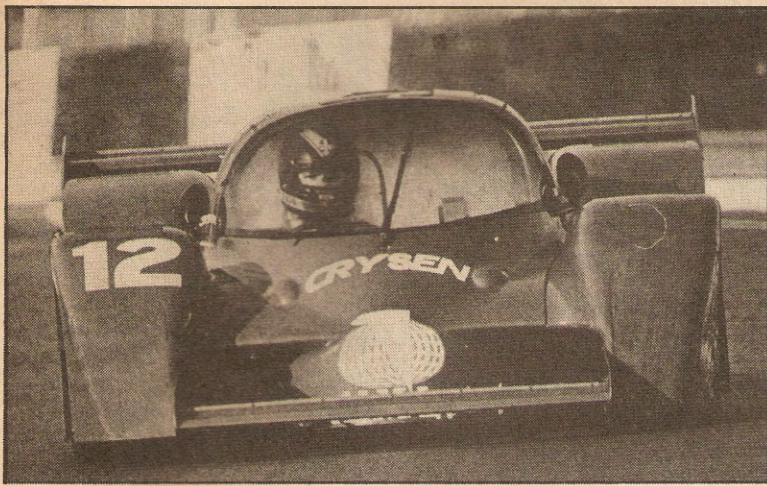
SAUBER SHS C6

Constructor.....Sauber Racing Switzerland, Hinwil, Switzerland.
Designers.....Peter Sauber, Seger & Hoffmann.
Team Manager.....G S Tuning: Domingos Piedade. Brun: Walter Brun.
Chassis/Body.....Aluminium honeycomb monocoque, Kevlar/carbonfibre body. Partial ground-effect.
Engine.....Ford-Cosworth DFL V8, 3955cc. Normal induction. Approx 540bhp at 9500rpm. At Brands Hatch (Stuck/Brun): BMW in-line four, 1700cc. Single turbo. Approx 580bhp at 9500rpm. Also: 3.3 DFL used at some races.
Weight.....Approx 860kgs (at Le Mans).
Top speed.....203mph (at Le Mans).
Tyres.....Dunlop.

CHAMPIONSHIP RESULTS

- Monza**
 Rtd Stuck/Heyer (Q3) fuel pump (GS)
 Rtd Brun/Müller (Q19) radiator (Brun)
- Silverstone**
 13th Brun/Müller (Q12) (Brun)
 Rtd Stuck/Heyer (Q6) ignition (GS)
- Nürburgring**
 Rtd Stuck/Heyer (Q3) engine (GS)
- Le Mans**
 Rtd Stuck/Schlesser/Quester (Q7) engine mount (GS)
 Rtd Brun/Müller (Q15) starter motor (Brun)
- Spa-Francorchamps**
 9th Stuck/Heyer (Q10) (GS)
- Mugello**
 5th Brun/Müller (Q7) (Brun)
- Brands Hatch**
 Rtd Stuck/Brun (Q5) engine
 Rtd Müller/Johansson (Q15) clutch

Seasonal Survey



Daly corners the neat but unlucky Grid at Brands Hatch.

The other C-car teams

The very professional Ian Dawson ran an underfinanced season with his rather ungainly but impressively simple, light and strong Group C machine. Backed out of the USA by Plaza finance and Crysen oil, the Grid handled well but lacked power except at Le Mans, where the long awaited 3.9 DFL blew in the first hour. Engine failure with the 3.3 had already halted the Grid at Monza and Silverstone.

Dawson engaged the very experienced David Hobbs to drive the car but, contracted to John Fitzpatrick's IMSA team, 'Hobbo' parted company with the Grid team before Le Mans.

Needing to race and show a profit, Dawson despaired of the shortage of events in Europe and converted the Grid to IMSA GTP, taking it off to America to compete in several races. He returned only for the season finale at Brands Hatch where Derek Daly joined regular driver Emilio de Villota and the team's new sponsor, Fred Stiff of Atlantic International Management.

With more power, the Grid could have been on the pace, and Dawson's team is one to watch in 1983.

GRID S-1

Constructor.....GRID Racing, Leamington Spa, England.
Designer.....Geoff Aldridge.
Team Manager.....Ian Dawson.
Chassis/Body.....Aluminium honeycomb monocoque, GRP body. Ground-effect.
Engine.....Ford-Cosworth DFL V8, 3299cc. Normal induction. Approx 500bhp at 9000rpm. Also raced with similar power unit of 3955cc.
Weight.....Approx 825kgs (at Le Mans).
Topspeed.....190mph (at Le Mans).
Tyres.....Avon.

CHAMPIONSHIP RESULTS

Monza
Rtd de Villota/Hobbs (Q10) engine

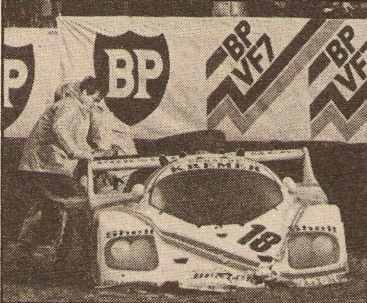
Silverstone
Rtd de Villota/Hobbs (Q10) fuel system

Le Mans
Rtd de Villota/Wilson/de Cadenet (Q17) engine

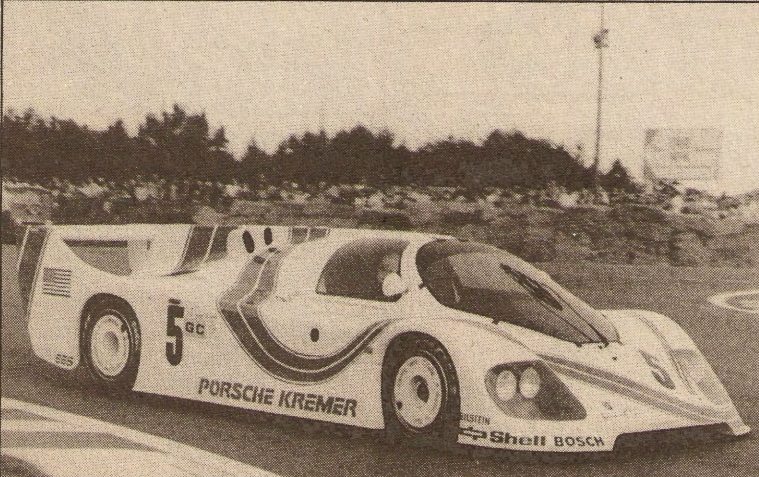
Brands Hatch
10th de Villota/Daly/Stiff (Q9)

The Cologne based Kremer brothers, Erwin and Manfred, came up with an intriguing and very distinctive C-car which first appeared at Le Mans, and proved itself to be more or less on the pace straight away. Basically a flat-bottom car but with a modicum of ground-effect in the form of short air

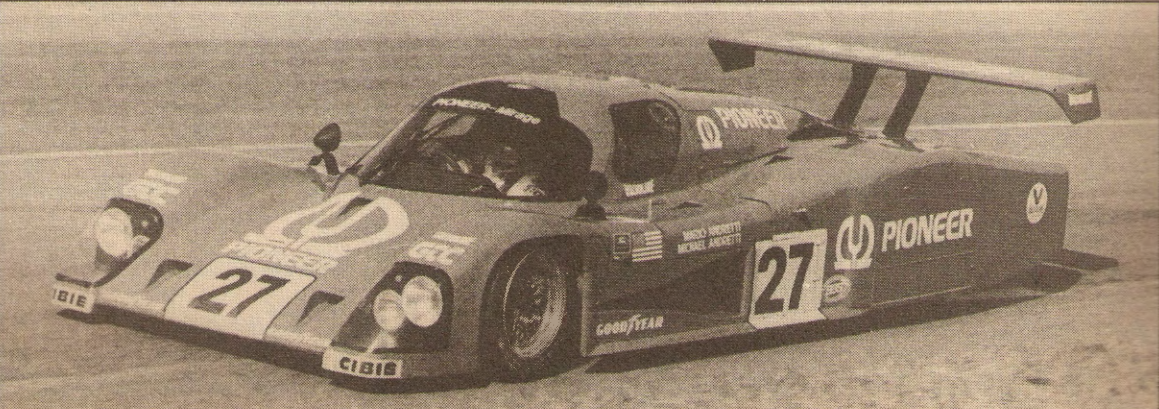
Assistance for the Kremer at Brands.



Below: The stylish K5 hustles through Mulsanne Corner at Le Mans.



Below: The purposeful Mirage was thrown out on race morning at Le Mans, to the dismay of the Andretti family.



tunnels, the K5, like Reinhold Joest's 936C, used a spaceframe chassis, although in the case of the K5 the frame was purpose-made.

Also like the 936C, the Kremer used Porsche 935 type engines and was among the fastest cars at Le Mans, although the performance at Spa was more impressive yet. But the only finish in a short programme came at Brands.

For the purpose of scoring in the Makes championship, it was never tested whether the K5 could amass points for Porsche, or whether it was to be regarded as a Kremer.

In 1981, the brothers confined themselves to building a Porsche 917 replica, and their 1982 Group C project was strictly exploratory. In the K5, however, they have the basis of a very effective C-car for next season.

KREMER C-K5

Constructor.....Kremer-Porsche Racing, Cologne, West Germany.
Designers.....Erwin and Manfred Kremer.
Team Manager.....Erwin Kremer.
Chassis/Body.....Tubular spaceframe, GRP body. Partial ground-effect.
Engine.....Porsche flat-six (two valves per cylinder), 2825cc. Twin turbos. Approx 620bhp at 9000rpm. Also raced with similar power unit of 2928cc.
Weight.....Approx 880kgs (at Le Mans).
Topspeed.....207mph (at Le Mans).
Tyres.....Goodyear/Dunlop.

CHAMPIONSHIP RESULTS

Le Mans
Rtd Ongais/Field/Whittington (Q7) engine

Spa-Francorchamps
Rtd Stommelen/Bellof (Q5) starter motor

Brands Hatch
6th Paul Jnr/Jelinski (Q16)

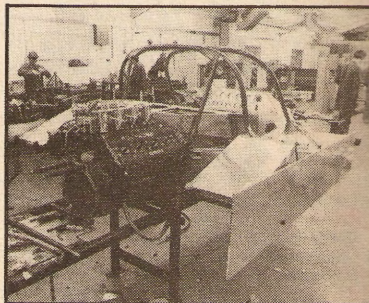
Out of World Championship racing too long with his Mirages, Harley Cluxton welcomed the arrival of Group C by commissioning Tiga Cars to build him a new monocoque chassis and John Horsman to pen the bodywork and complete the car in Scottsdale. Cluxton's GTC organisation undertook the project with Phil Conte, and backing came from Pioneer hi-fi and Valvoline.

The impressive car was entered for the Andretti family, Mario and Mike, to try emulating the Rosiers by winning Le Mans as a father and son team. Well tested and looking reminiscent of a Lola T600, the new Mirage was heavy but it proved to be quick down the straight, and before the race the American team was justifiably optimistic.

But then came the famous oil cooler incident. Shortly before the off, a scrutineer spotted that the oil coolers were incorrectly located and, in a spectacularly stupid decision, the M12 was prevented from taking part in the 24 Hours.

The Mirage looked good and, barring the perhaps inevitable new-car problems yet to be encountered, capable of victory. The organisational low point of the season, the decision sent Cluxton and his team back to the States in thoroughly disillusioned mood.

Mirage under construction at Tiga Cars.



MIRAGE M12

Constructor.....Grand Touring Cars Inc, Phoenix, Arizona, USA (chassis by Tiga Cars Ltd, Reading, England).
Designer.....John Horsman (chassis: Howden Ganley).
Team Manager.....John Horsman.
Chassis/Body.....Aluminium honeycomb monocoque, GRP/Kevlar body. Ground-effect.
Engine.....Ford-Cosworth DFL V8, 3955cc. Normal induction. Approx 540bhp at 9500rpm.
Weight.....Approx 936kgs (at Le Mans).
Topspeed.....212mph (at Le Mans).
Tyres.....Goodyear.

CHAMPIONSHIP RESULTS

Le Mans
DNS Andretti/Andretti (Q9) disqualified

Seasonal Survey

Eyes on the Drivers title

Two-thirds of the 1982 race starts were made in the other classes, as QUENTIN SPURRING reports.

Lancia thwarted

"The glorious uncertainty of sport." That is what the generous end-of-season Lancia press release said about it. More cynical observers might say that the Lancia Martini team's failure to win the World Endurance Championship of Drivers was all it deserved for going so unashamedly against the spirit of the new rules.

The World Champion marque with the Group 5 Montecarlo cars in 1980-81, Cesare Fiorio's patriotic team took advantage of the concession made by FISA to owners of outdated 2-litre Group 6 sports cars, allowing them to race in 1982 for Drivers points only. This was designed to keep their cars in the sport for one more season, and thus also to boost the numbers in an uncertain first season of the new Groups B and C. It was not FISA's intention that new Group 6 cars should be built. But there was nothing in the rules to stop Lancia from doing just that.

When the new Lancia Martini was announced, it came not only a surprise and a disappointment, but it was also obviously a potential front runner. FISA officials were furious, because it was clearly a car capable of damaging the image of Group C at a time when that image was all-important.

In defence of Lancia, it might be said that the team had no suitable Group C engine, although that again is down to its attitude to the sport. Back in 1979, Lancia initiated the Montecarlo project with an eye on an easy World Championship, up for grabs in the poorly supported 2-litre Group 5 class. Thus the engineers developed the 1.4-litre turbo which, apart from the unreliable 1.8-litre version with which Lancia had toyed during 1981, was the only power plant available. Producing less than 450bhp, this four-cylinder unit could not be regarded as a competitor with the DFL or Porsche turbo, developing 540 and over 600bhp respectively.

Lancia were also confident that no other team would set out to do all the races in the Drivers series, and hence the Group 6 project. A braver decision would have been to develop that 1.8-litre motor, and build a C-car.

Seeing the new Dallara built car for the

first time, however, one could appreciate Lancia's point. The Group 6 rules permit a far lower minimum weight limit (640 kilos against 800 for Group C) and full-skirted ground-effects (skirts are banned in Group C and the cars must feature a large flat-bottom area). And the small capacity engine was obviously very fuel-efficient, also offering a power/weight ratio superior to anything in Group C.

Thus armed, and with an array of world-class drivers and a productive liaison with Pirelli, the team took its Martini drinks and MS cigarettes backing into a full Drivers championship programme of eight races. Rothmans-Porsche did only five, and Lancia ought to have cleaned up as intended. But the statistics tell the story. Lancia made 17 starts and achieved only seven finishes; there were three pole positions and three wins. Porsche made nine starts and scored eight finishes, with three poles and four wins.

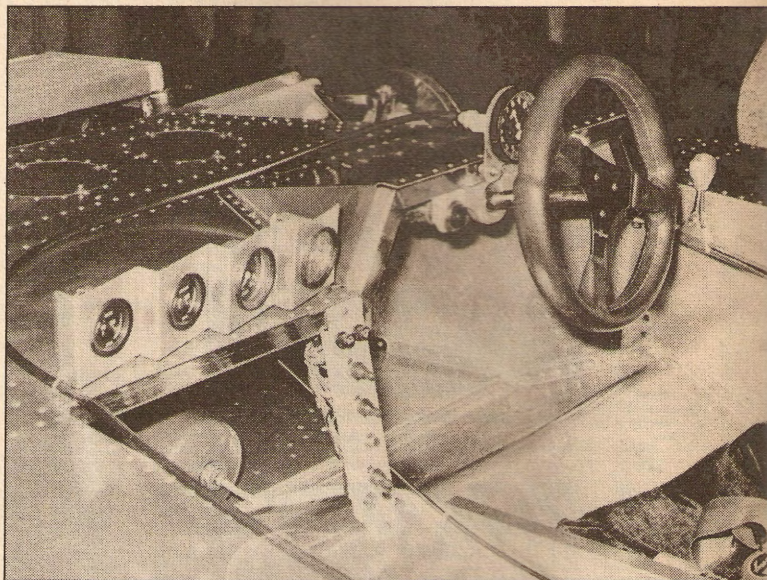
Very fast through the curves and only a little off the pace on the straights, the little open-cockpit cars were unreliable, and the team was unlucky because that unreliability was spread evenly and frustratingly between its star drivers. Such was the performance of the cars that they finished well when they lasted but, in the end, the team was uncertain whether to promote Riccardo Patrese or Michele Alboreto, who led the points

chase briefly after Mugello.

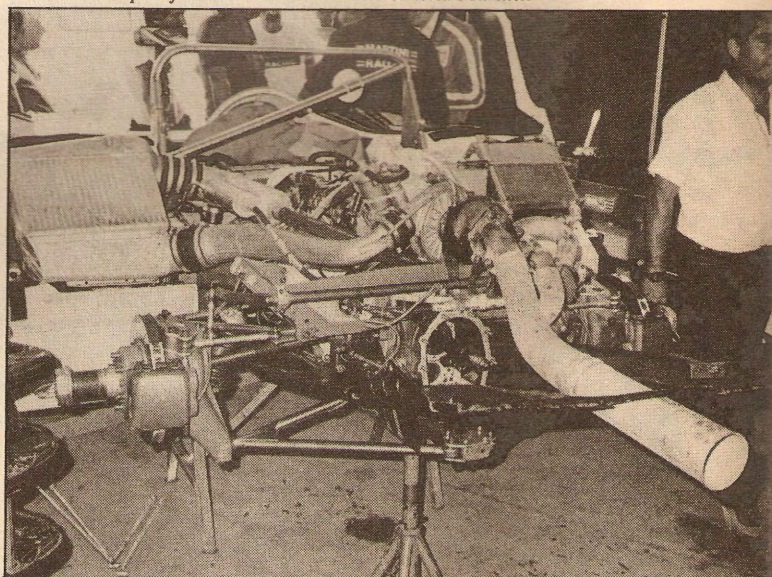
A faulty batch of distributor rotor arms thwarted the Lancias in front of their home crowd at Monza, but victories followed at Silverstone and the 'Ring before another disappointment at Le Mans, where the cars qualified surpris-

ingly well but never recovered from fuel pump failures in the very early laps.

In the second half of the season, Lancia celebrated a one-two against meagre opposition at Mugello (although they lost the Patrese car) where the team

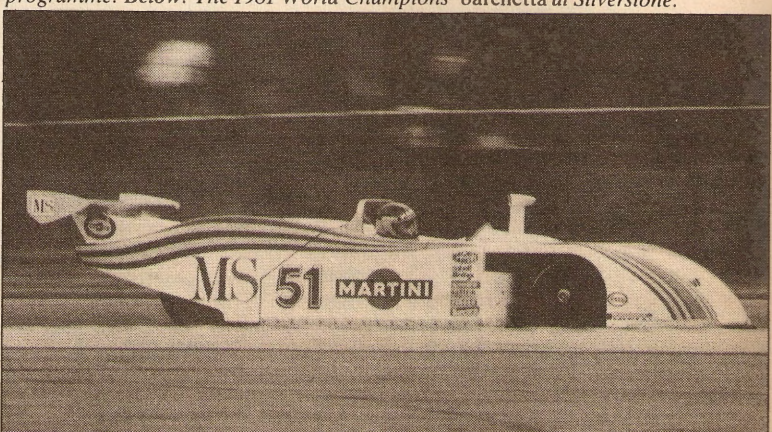
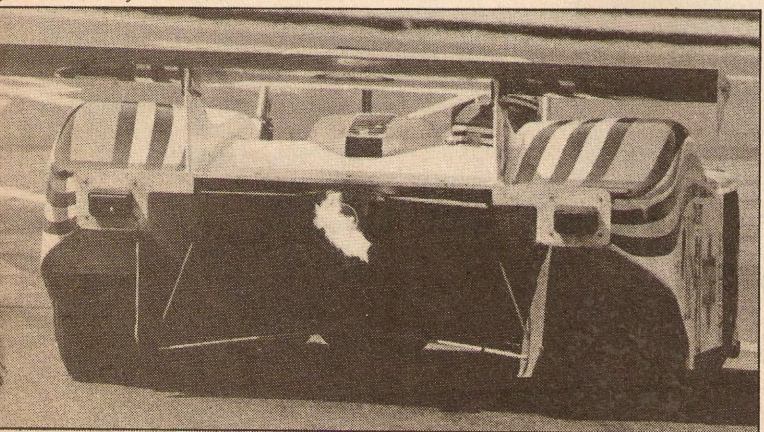


Above: Cockpit of the aluminium chassis Lancia Martini.



Above: The 1.4-litre Group 5 Montecarlo engine was used for the Lancia Group 6 race programme. Below: The 1981 World Champions' barchetta at Silverstone.

Below: Patrese's ground-effect Lancia rounds La Source hairpin at Spa. Above: Pitstop for the unlucky Ghinzani.



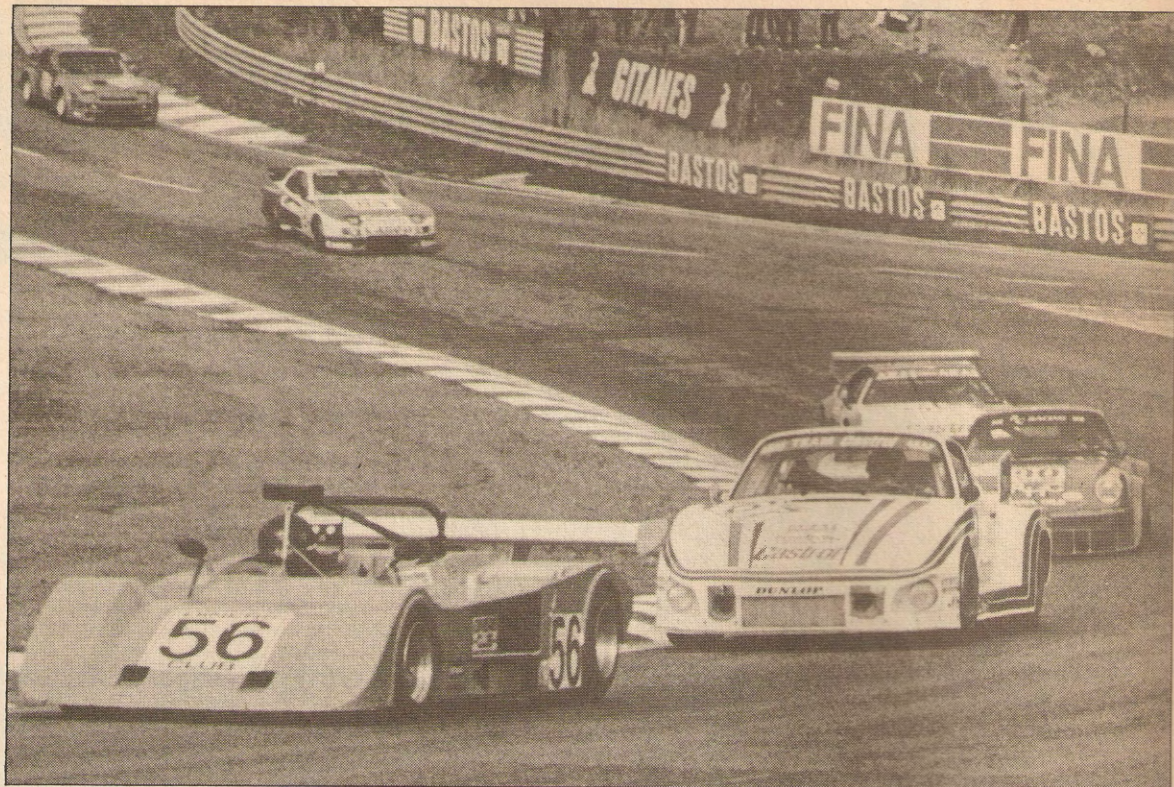
Seasonal Survey

Lancia

continued

'blooded' Formula 2 drivers Corrado Fabi and Alessandro Nannini, and where Piercarlo Ghinzani scored his first points of the season after six races. The *barchettas* were also involved in three straight fights with the Rothmans-Porsches. The Lancias lost them all, at Spa, Fuji and Brands Hatch, but all three races were exciting and the confrontations were very equal, the outcomes in doubt until the end. Had it not been for a succession of niggling electrical problems, Lancia would have won at Spa, while the winning margin at Brands Hatch — 4.7 seconds — was the smallest in an endurance event for many a year, the loss the result of an inspired drive by Jacky Ickx.

Had Teo Fabi managed to keep Ickx at bay, then Riccardo Patrese would have been the World Champion. Save for a costly mistake at Fuji, Patrese drove magnificently all season, quick and precise and with great sympathy for the car. At one stage he established a new record of three FIA World Championship victories in as many weekends when he won at Silverstone, Monaco (in the Brabham) and the 'Ring, where he had survived a horrifying somersault in qualifying. He would have been a worthy champion for sure; but there is a kind of justice in Lancia's failure to give it to him.



Assortment at Spa: Mercer's Vogue is pursued through Eau Rouge by Jurgen Poulsen's Porsche 935, Cleare's 934, the Danish BMW Group 4 car, Lloyd's Porsche 924 and the similar car of the FRC Schweiz team

The 1982 endurance racing season marked the end, after seven years at the top, of the Porsche 935 as a World Championship racing car. John Fitzpatrick and David Hobbs, two of Britain's most experienced endurance racing experts, made sure that the type bowed out in style with a third place finish at Brands Hatch, the same J David Kremer K4 having finished fourth overall at Le Mans.

Sadly, Fitz's Joest built Moby Dick replica was not seen in Europe, but Gianpiero Moretti's was, after its owner had forsaken his difficult March 82G and transferred the Momo backing to the Porsche. With Mauro Baldi as co-driver, Moretti finished seventh at Silverstone and Spa, eighth in Mugello.

Only the Rondeau stood between victory and the advanced Kremer K3-81 of Ted Field and Rolf Stommelen at Monza, and their second place position was the best result by a Group 5 car all season.

Of the more conventional 935s, the star performer was the Charles Ivey Racing K3 which brought the team a second straight Group 5 class victory at Le Mans, with Paul Smith joining John Cooper and Claude Bourgoignie on this occasion. The Ivey team had set out to do a full season but, after engine failures in the opening three races, followed up its Le Mans triumph by taking off for the USA in search of action in the IMSA GT events. The team returned to give the talented Cooper a run at Brands Hatch, but finished only 12th after a troubled race.

A Peter Sauber built BMW M1 spaceframe Group 5 car, similar to the machine which had won overall at the 'Ring in 1981, came close to repeating that success in the hands of its new owner Enzo Calderari with third place, co-driven by Umberto Grano and Helmut Kelleners.

Notable among the other Porsches which competed regularly were the IMSA GTO entry of Richard Lloyd and the Group 4 car of Richard Clear.

Lloyd's Canon Cameras backed 924 GTR was extensively modified by his GTI Engineering company, with a more aerodynamic shape the most noticeable

new feature (hence having to run in the IMSA class). Using a variety of co-drivers (Jonathan Palmer, Andy Rouse, Jeff Allam and Tony Dron, plus German comingman Hans Volker at the 'Ring), Lloyd had a full but mixed season, winning his class on each occasion that he finished in Germany, at Spa and at Brands Hatch, retiring in four races.

Arch-rival Richard Clear, with his accomplished 934 which was now equipped with a 600bhp plus engine, could not match the fine fifth overall finished by Lloyd at the 'Ring, but his high point was the victory in Group 4 at Le Mans. More class wins came at Monza (tenth overall) the Brands Hatch, but the car was defeated by the Danish BMW M1 of Jens Winther/Lars Viggo Jensen at Silverstone and Spa. Like Lloyd's 924, the red 934 was a late retirement at Mugello.

No 2-litre Group 6 car could live with the factory Martini Lancias. The most notable effort was the Mirabella team's quasi-works Osella-BMW with which, after sharing the winning Rondeau at Monza, Giorgio Francia was fast with Luigi Moreschi or Diulio Truffo. The team achieved two fourth place finishes and one sixth, from only four events.

Having abandoned their Ferrari 308 GTB bi-turbo Group 5 beast, Carlo Facetti/Martino Finotto threatened to contest the World series with their similar PA9, powered by a 1.4 BMW turbo, but relented and contented themselves with the Italian sports car title.

Three British Group 6 cars were semi-regulars, none successful. David Mercer's Vogue and Martin Birrane's Chevron B36 both achieved two finishes from four starts, the Vogue 12th overall at Spa. The Dorset Racing Lola T298, typically, was classified in all three events it contested, although at Brands Hatch it almost brought about Jacky Ickx's downfall when its engine stopped and beached Roy Baker in the middle of a corner, two laps from home.

Mazda, who are contemplating Group C, once again engaged the services of Tom Walkinshaw Racing for a limited exploration programme with the latest rotary engine device, the 254. From four starts at Silverstone, Le Mans and

Fuji, the Mazdaspeed team took its 310bhp IMSA GTO cars (based on road shells) to a 14th finish in France and a sixth on home ground.

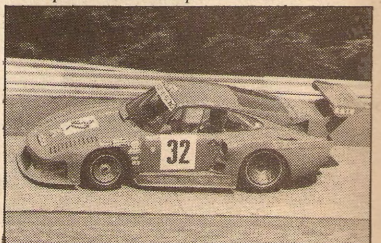
Although eligible for Drivers championship points only, these other categories outside Groups B and C made up the bulk of the race fields everywhere except at Le Mans, which featured the biggest C-car entry of the year with 29 cars. They provided 198 of the 300 race starts and huge variety: from Porsche, 935, 934, 924, 911; from Ferrari, Boxer and 308; from BMW, M1 and 528 and 320; all manner of other makes plus the 2-litre Group 6 cars built by Lola, Chevron, Osella, Vogue and others.

Next year, all will be banned from World Championship racing, which will rely solely on Group C and Group B, along with the new Junior Group C category.

The numbers in 1983 will certainly be smaller, and FISA's biggest gamble yet (which it was understandably unwilling to take in 1982) is to hope that the quality will compensate for the loss of the old Groups 1 to 6 and the various IMSA classes. It is a brave move, and one that deserves to succeed.



Above: Fitzpatrick's Porsche K4 heads for fourth at Le Mans. Below: Le Mans Group 5 winner cooper's K3.



LANCIA MARTINI

Constructor	Lancia & Co, Turin, Italy (chassis by Gianpaulo Dallara).
Designer	Lancia Competitions Department.
Comps Director	Cesare Fiorio.
Chassis/Body	Aluminium monocoque, GRP body. Ground effect (with skirts).
Engine	Lancia in-line four, 1425cc. Single turbo. Approx 450bhp at 9200rpm.
Weight	Approx 705kgs (at Le Mans).
Top speed	201mph (at Le Mans).
Tyres	Pirelli.

CHAMPIONSHIP RESULTS

Monza

Rtd Patrese/Alboreto (Q1) distributor
Rtd Fabi/Ghinzani (Q2) distributor

Silverstone

1st Patrese/Alboreto (Q3)
Rtd Fabi/Ghinzani (Q2) engine

Nürburgring

1st Alboreto/Fabi/Patrese (Q2)
Rtd Ghinzani/Patrese (Q5) gearbox

Le Mans

Rtd Alboreto/Fabi/Stommelen (Q4) engine
Rtd Patrese/Ghinzani/Heyer (Q5) electrics

Spa-Francorchamps

3rd Patrese/Fabi (Q3)
Rtd Alboreto/Ghinzani (Q4) reserve fuel switch

Mugello

1st Alboreto/Ghinzani (Q2)
2nd Nannini/C.Fabi (Q3)
Rtd Patrese/Fabi (Q1) overheating

Fuji

2nd Patrese/Fabi (Q3)
Rtd Alboreto/Ghinzani (Q1) accident

Brands Hatch

2nd Patrese/Fabi (Q3)
Rtd Alboreto/Ghinzani (Q4) electrics

Patrese.

Alboreto.



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