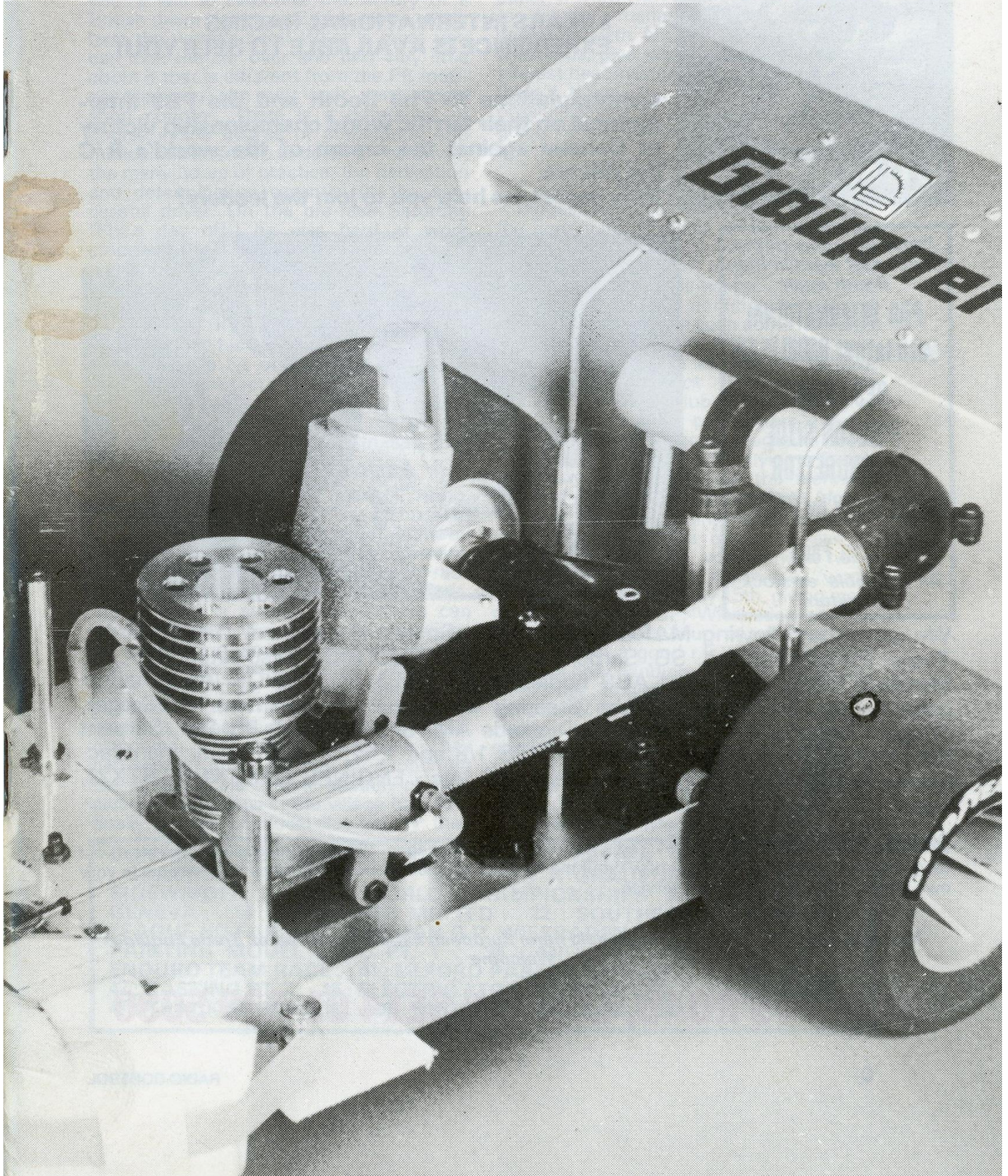
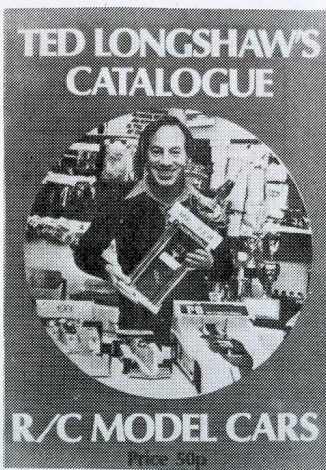


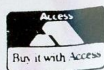
# M radio control MODEL CARS

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## radio control

# MODEL CARS

Published by L-D EDITORIAL — TECHNICAL SERVICES LTD., P.O. Box 30, HEMEL HEMPSTEAD, HERTS. HP1 1NL. SEPTEMBER 1979.

Editor: "Dickie" Laidlaw-Dickson

### FLAGS OUT AGAIN . . .

ONCE more we can wave our Union Jacks with a will to celebrate the victory of a British driver driving a British made car to beat the world's best! What is more you can look the car over and find very little about it that is different from the PB International you can buy over your model shop counter. There is a difference of course in the degree of preparation and meticulous attention to detail of the driver; the many hours of practice; the dedication and determination essential to the successful driver. On the pre-race Saturday (Phil's day off!) he was hard at work stripping down the car and meticulously washing off every part in the trough provided by the organisers and re-assembling. An almost invisible difference between the fit-up of pod and chassis on each side had his attention. "It just makes the little extra bit of sweet running from excellent to perfect," he said. There it is: anyone can be a champion . . . the goods are there . . . you are there . . . shall we see you in the winner's circle in, say, '83?

### PROBLEMS OF DISTANCE

With petrol prices up and still rising, filling stations tending to shut at weekends, possibilities of some limits on availability other than price, the question of how far to travel for a weekend race meeting must already be in many minds. The answer is several-fold. Drivers can concentrate on their local club meetings and probably improve the club standard by their stronger local support. They can study the fixture list and decide on patronising the nearer of two open meetings, rather than the far distant, and, of course, more desirable occasion. They can keep in good practice by supporting the 1/12th scale electric section of their club with meetings in the village hall. And finally, if there is no local club nearby, then

they can set about forming one straightaway with a note to the local paper, a word with local councillors, a talk to factory managers or supermarket operators with big unused car parks at weekends, give talks to local schools and interest headmasters. Where there's a will there's a way . . . I will gladly give any possible advice on procedure to get things going by clubbable people.

### OTHER PEOPLE'S MAGAZINES

Biggest regret of the season has been the continuing absence of the new style *Circuit Chatter*, though we all know and sympathise with the reason, Brian De Boo's continuing ill-health. Club and national newsletters continue to expand and proliferate. I have seen some numbers of Guerrino Stanzani's *Mach 2* from Italy which also contains a leavening of full-size material. *The Stock Exchange* from Southern R/C Car Club continues to give useful info on stock car matters. I get a very useful and regular magazine from Stock Car Holland (worth buying a Dutch dictionary for to work out the technical tips and jokes!) The German *Auto Modell Technik*, whose editorial staff were indefatigable in Geneva under the eye of their publisher Attila von Sandor, who rushed copy home to achieve a "world beat" publication by July 15th, giving me a copy at German GP, Wiesbaden on that day! Gerard Couvreur of *Adeptes* not content with a good r/c section in *Minis Autos* is now handing round copies of No. 2 of the English language *Minis International*. Meanwhile Bill Birkenshaw of *Radio Control Models & Electronics* is showing an ever increasing interest in our branch of r/c — he was hard at work in Geneva and has been racing in handicap events. *RCM & E* has just published a one-off Special on *Model Cars R/C* — an

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# 12

excellent 80p's worth for the newcomer with lots of useful features including a club list — virtually mine from my book *Radio Controlled Model Racing Cars* with a few additions and deletions made necessary by the passing of time. Then there is a good 50p publication for the electric man — specially mini-scale — produced by Tamiya with loads of good material.

Any group or club producing a news sheet, letter, or club mag please remember me . . . I am agog to hear all about you.

#### PLUGS AND SOCKETS

Do you ever want to use a Futaba servo with a MacGregor Rx and another servo from Sanwa? You do? Then you will have to spend a fortune cannibalising Futaba leads to get them to fit together. I have at present four different RX/Tx/servos sets that only by cutting up leads can I get to go together. Tx will operate Rx but the bits and pieces do not go together. In a local model shop we checked six different makes and ALL DIFFERENT. This is ridiculous! Can we not find some body to arrange a get together and standardise a common plug and socket. Futaba is undoubtedly the nicest — but not possible to mate except by scissors on another lead. MacGregor is simplest but not very elegant . . . others in between. Again the makers may say it keeps people from trying some other rival make. Good luck to them in this sentiment — but my belt fits any pair of trousers; my braces hook onto anybody's buttons! In the model railway world a multiplicity of small scenic gauges have been very nearly standardised: entirely so with the most popular sizes in spite of the numerous rival manufacturers.

#### BODYSHELLS! ANYBODY FOR A BODY?

In America where the greatest range of model car bodies still come from they have a pleasant working arrangement amongst the manufacturers that they shall not introduce new bodies except by mutual agreement. This prevents two firms each spending the fairly high cost (as much as £2/300) in making a mould that will only rival someone else's. Accordingly everyone nominates his bodies of the season and this is respected in the trade. What incenses them is for someone to use a bodyshell as the basis for a mould — thus dodging the initial expense though making a somewhat inferior product. Opportunity was taken in Geneva to encourage European manufacturers to follow this principle — and certainly abstain from moulding from bodies . . . I hope it works . . .

#### WORLD ORGANISATION FORMED

Opportunity was taken at Geneva to call a meeting to consider the formation of an association to govern r/c model car racing throughout the world whilst leaving national and continental organisations autonomous. This was welcomed by all the first steps taken to form the International Federation of Model Automobile Racing (acronym: IFMAR). Ted Longshaw, who has done most of the preliminary work was elected President and all communications should be addressed to him at Beech Tree House, West Hill, Downe, Orpington, Kent, England. A full report of objects and activities in next issue.

#### BRIAN DE BOO

After a brave struggle against illness Brian De Boo died whilst we were away in Geneva at the Championships. He was a true professional photo journalist who had made many friends as he visited clubs getting to know people and model car racing, always willing to talk and learn and generous too in imparting instruction in picture making with the camera. As Editor elect of the new style *Circuit Chatter* he set a pattern for the BRCA Newsletter that provided a splendid shop window for the hobby and was moreover virtually self-supporting. He will be hard indeed to replace. It is hoped that a suitable perpetual trophy will be added to the competition programme as a fitting memorial in his name; its exact nature will be the subject of discussion.

#### ANOTHER "WORLD" CHAMPIONSHIP

Keighley & District M.E.S. are promoting on behalf of the Radio Stock Car Association the "Championship of the World" for 1/8th scale Stox to be held on 30th September 1979. I understand that a generous allocation of places has been offered to overseas drivers so that a representative meeting can be expected. Details from Mike Varley, 10, Briarwood Avenue, Riddlesden, Keighley, Yorkshire BD20 5EQ.

#### THIS ISSUE . . .

This issue is late, deliberately so without any help from the Post Office (whose ways are by now doubtless reformed), so that the world champs could be included. Cover picture, which is prepared in good time, is also designed so that it could not possibly fluke into being a champion's picture. Shown is the Graupner RC-Car which may well be the training vehicle for some future champ. Who knows?

## CLUB & TRACK REVIEW

#### Tibshelf R.C. Racing Car Club

Secretary: Ray Heffer  
24 Back Lane (Tel: Ripley 872805)  
Tibshelf, Derbys. DE5 5LN

Imminently to be the scene of this year's British Nationals, the club have already had their fair share of excitement on the circuit. On May 13th S.A.P.A. Marathon. This annual event is sponsored by the locally based Swedish firm S.A.P.A. Ltd who have always held out a generous sponsoring hand to the club as well as providing aluminium for the drivers' rostrum, being manufacturers of aluminium extrusions. Eight teams lined up for a six hour race in ideal weather conditions plus some two hundred spectators. A neck and neck finish gave the victory to Bradford (1022 laps) with Tibshelf "A" on their heels with 1021 laps. Then came Newbridge (951), North Eastern (926), Tibshelf "B" (829), Derby (805), Tameside (675), and Boston (602). Managing director Peter Jones who had watched with Mrs Jones and taken a number of action pictures, presented the eighteen trophies, one to each of the six drivers in the first three places, and hopes that this can be an annual event (this is S.A.P.A.'s second sponsorship of the event).

#### Studley Model Racing Association

Secretary: Paul Dudley  
Moat House Works  
Kings Coughton  
Nr. Alcester, Warks.

Studley have not only a new address for secretary Paul Dudley, but also a new purpose built stock car circuit. Would this be the first purpose-built stox circuit? It adjoins the car park of the Coventry Arms, Upton Snodbury, Nr. Worcester. Meetings take place first Sunday in every month. It may be remembered that the Studley club is un-affiliated and follows its own stox rules, which indeed vary little from the RSCA rules except in a greater latitude towards engines accepting virtually any engine within the 3½cc capacity limits. They have also regularly taken part in the main Dutch events and have developed a firm friendship with the Dutch clubs. This to an extent that they will be running their first European Championship at Upton Snodbury on Sunday October 14th with a promise of very active Dutch support, plus Italian and Belgian drivers and the hope of some Scandinavian support. Paul will be happy to answer any enquiries, or applications for membership (SAE please).

#### Heywood & District R.C. Car Club

Secretary: R. E. Racey  
79 Furness Avenue  
Heywood (Tel: Heywood 621487)  
Lancs OL10 4UP

This new club has evolved from a group of three, was formed in July '78 and now stands at around the dozen active members. Original small school playground track has moved to a Supermarket car park by kind permission of the manager, with practice meetings every other Sunday, racing every other Sunday, and last Sunday of the month occupied with time trials and other events. Meetings start at 11.0 am. Winter evenings are occupied with a Scalextric Championship. Track is within easy reach of Manchester. New members welcome, contact Sec. as above.

#### Coventry R/C Model Car Club

Secretary: Clive James  
49 Sherlock Road  
Chapelfield (Tel: Coventry 74105)  
Chapelfield  
Coventry CV5 8EX

The club races stock cars fortnightly at their two racing venues, Tile Hill College, Tile Hill Lane, Coventry and Bickenhill Fire Station on the National Exhibition Centre. This season started off with a boost by a meeting sponsored by Quinton Hazell Automotive Products with local paper coverage. Later in the season the club will be racing and putting on a show at the National Agricultural Centre, Stoneleigh on 25/26/27th August. Electric meetings are also being run on Wednesday evenings at present running at the British Legion Club, Ryton-on-Dunsmore, Coventry. Intending visitors should check this last address with the secretary. New members and visitors welcome anytime.

#### Chesterfield Auto Racing Society (CARS)

Secretary: Malcolm Webb  
17 Lincoln Drive  
Mansfield Woodhouse Tel Mansfield 642090 (night) 52141 Ext 208 (day)  
Notts.

Formed a few months ago CARS (lovely acronym!) is purely for 1/12th electric. Regular meetings are held on Wednesday nights in a church hall at Bolsover with about a dozen hardcore plus other less regular members. Apart from normal racing a regular relay race is run with teams drawn out of a hat. Local model

shop Pepperdays team won the latest event by 38 laps. A handicap system is now being introduced based on past results so that no one need feel out-classed. Spectators (free) and new members very welcome. No sub required just a 50p racing charge per night.

#### Southern Radio-Car Club

Secretary: Peter Wooldridge,  
6 Patricia Avenue  
Worthing (Tel: Worthing 49934)  
West Sussex BN12 4NE

That energetic south coast club Southern RCC which organised the very successful Fiesta meeting last year is doing it again with another Fiesta Open International Meeting on August 26th. This of course is for stock cars. The club has now applied to affiliate with the RSCA in order to help strengthen the hobby in the UK. With a membership of 64 their support should be very welcome. Coming back to Fiesta Meeting this is being sponsored by Roberts Wine Company and will take place at the Civic Centre Car Park, Stoke Abbott Road, Worthing, which is about half a mile north of Worthing Pier.

Club racing goes ahead with fortnightly meetings. Currently the 1978 champion Geoff Bashall (what a lovely name for a stox racer!) is again in the lead, but Les Calder and Martin Robertson are on his heels with Irvine powered Mardave stox. The club newsletter 'The Stock Exchange' continues to flourish, with results, tips, adverts and anecdotes. Plea from sec. is more stock car articles and reports in RC/MC. Yes, please! Very welcome — and we actually pay money for features!

#### London R/C Car Club

Secretary: Bob Rosser  
17 Hapgood Close (Tel: 01-864-7313)  
Greenford Mix.

'Wheel Spiel' the club news letter is still bouncing through the letter box (what is that hole in the door for? asked one youngster recently) in spite of everything. Club meetings still to go are 2nd September (Sports/GT) and 21st October (Formula 1). Club is having a regular blitz on things like bodies — you must fit a body to go on the track — a practical safety precaution. Then to the current topic of silencing. Requirement is 80dB at 10 metres but tests on current available silencers PB, SG, Serpent, etc. show measurements of 86 to well over 90dB. Lowest reading to date is PB on K & B set slobbering rich at 82dB. (Recent improvements may have now been achieved Ed.) Club, by the way, has a 55 yard Drag

Strip marked out (which is the 1/8th scale ¼ mile!) and members are working on dragsters.

First leg of the Southern League (really 2nd but 1st at Taunton rained off) was won by Bournemouth (158 points) London 2nd (141 pts) in really hot sunny conditions. Ideas welcome for odd-ball racing activities... suggestions so far include team races, drag races and even motorcycles!

#### Mid. Beds Electric Car Club

Secretary: S. A. Samuel,  
19 Swan Lane, (Tel: Sandy 82636)  
Sandy, Beds

This new electric car club at Sandy already has a strength of 25 members. Meetings are at Sandy Roundabout Club every Thursday evening at 7.0pm. Subs are £5 a year for adults; £3 Juniors plus 50p per racing evening. Hall is a fairly good size but a bit dusty, though as sec says presence of a bat helps to keep the dust down. Further details from the sec. after 6.0pm.

#### Sussex Radio Auto Club

Secretary: D. Heighes  
310 Portland Road,  
Hove.

Club in process of formation with hopes of catering for all types of car on a local car park circuit. Use of this is still unconfirmed, but the intention is to race Sunday afternoons, and to arrange inter-club meetings in 1980. Please contact secretary if you are interested.

#### Rotherham Electric Car Club

Secretary: Phil Maxfield  
40 The Brow  
Brecks (Tel: Wickersley 5055)  
Rotherham. S Yorks S65 3HP

Racing takes place throughout the summer indoors at Montgomery Hall, Wath, Nr Rotherham 7-11 pm every Monday. Facilities include snack bar, licenced bar and a 22ft track. Current membership thirty; new members welcome. Membership for seniors £5 a year, Juniors £1.50 a year. Associate £1 a year. A club championship runs throughout the year, also driving test comps from time to time. Main event of the year will be Rotherham Scaledown Grand Prix on 29/30th September. Further details and entry form from sec. as above (SAE please). Meeting will include Junior Racing and Driving Tests on Saturday (11 Trophies) and Open Racing on Sunday (3 classes, Expert, Amateur, Novice — 20 Trophies). Roll up!

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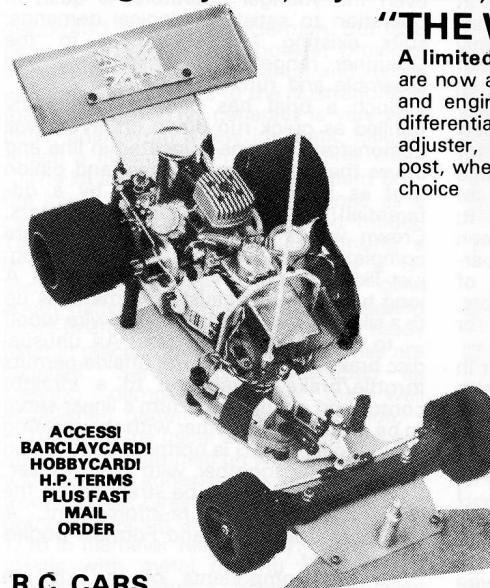
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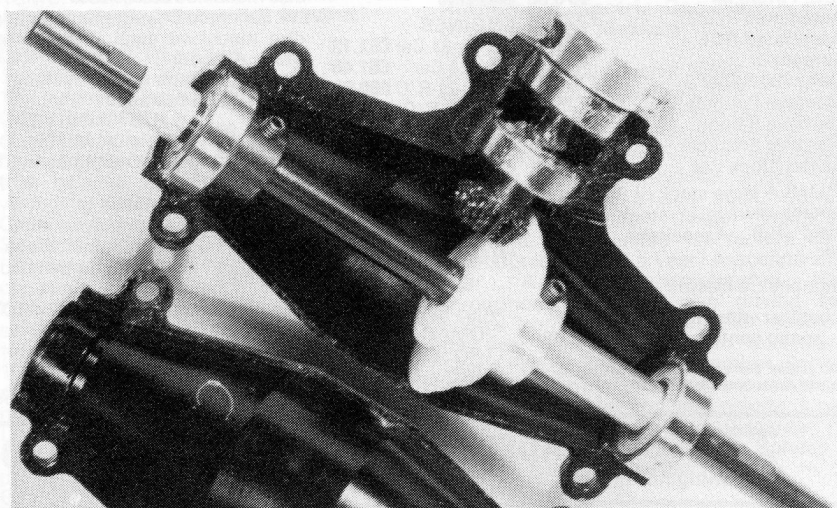
Opening hours: Mon., Tues., Thurs. 9.30-6.00 Fri., Sat. 9-7.00. Closed all day Wed.

# GRAUPNER R/C CAR

THE Graupner R/C-Car was first seen at the 1978 Toy Fair in Nuremberg and attracted immediate attention not only because development of a r/c car by that firm gave the whole movement additional status but also on account of the very different approach taken by Helmut Bernhardt who had been responsible for the design. Since that date it has come into full production and a number of continental magazines have reviewed it; only in the last month or two has it been offered on the U.K. market. I was particularly delighted when Max Coote of Ripmax, who are the British distributors, made a car and accessories available for my workbench and critical eye.

It is indeed a refreshingly different car in a market where the leading manufacturers have settled to a common pattern, kits differing only in the special attention given to various parts, and the effort made to improve the "standard" product rather than explore less certain novelties. I imagine the brief given to the designers was something like this: "Design a 1/8th scale r/c car that conforms to the accepted racing rules but is obvious to even the utmost beginner that it is a car in miniature: is as free from possible injury to

*Looking at the opened-up back-axle housing. Note ball-bearings for axle and for small steel bevel which engages with large plastic bevel. Lubrication: vaseline.*



even the younger operators: is quiet in operation to satisfy ecological demands: suits existing r/c equipment in the Graupner range: is reasonably easy to assemble and run."

Such a brief has been magnificently fulfilled as quick run down on layout will demonstrate. Engine is located in line and drives the wheels via a crown and pinion (*not* as I have heard it said by a differential!) and two stage step-down gears. Crown wheel and pinion and axle are completely enclosed in a plastic housing: just like the majority of full-size cars! A long tuned-pipe exhaust pipe matches up to a silencer box — stuffed with wire wool — to exit quietly at the rear. An unusual disc brake assembly on the offside permits throttle/brake connection to a straight control rod enabling the firm's linear servo to be used. This together with the steering servo (again linear) is normally enclosed in a plastic box together with the receiver. Battery is arranged to be strapped on the side of the chassis re-inforcement. A variety of Sports/GT and Formula bodies are on offer.

All the components of the kit are separately bagged and numbered. A comprehensive instruction book lists every part under its section. The basic book is a 52-page A4 size production, lavishly illustrated with stage by stage pictures, plus a centre-spread in colour. This to the

*The interesting end (as on the cover). I made no attempt to locate battery per handbook, not having the designated size and shape.*

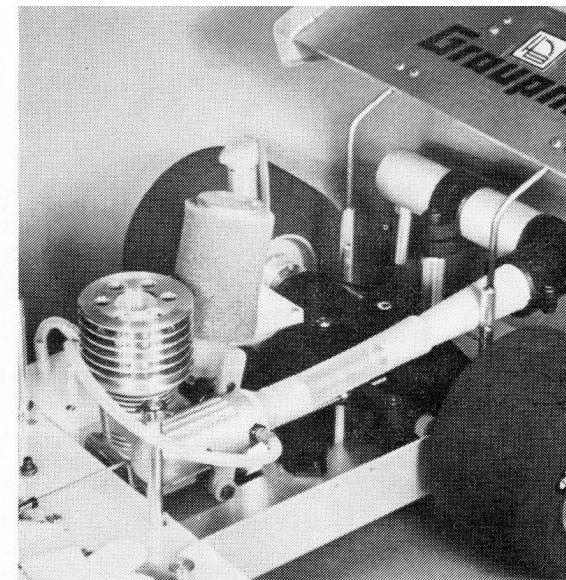
discomfort of some is in German. But take heart a further 68-page booklet provides translations in English, French and Italian with cross references to the illustrations in the main book. This generally is very well done, apart from a few idiomatic failures which a little thought soon makes clear.

The kit comes in a stout cardboard box, the lower part of which is designed as a carrying case for the completed model. Two-part chassis in alloy, comprising a long flat ready drilled plate plus a U-section reinforcing piece which goes about halfway along carries the steering cross-beam and rear axle housing ready fixed in place. Kingpins and stub axles are installed. Servo saver (described as steering damper) follows the well established pattern of spring over-ride.

Tyres are the usual style of stamped out rings to be assembled on wheels and stuck with contact adhesive. As provided both front and rear tyres are medium to soft and before balancing are of 3-9/16 ins and 3-1/16 in diameter respectively. Wheels are plastic with metal bearing insets. Rear wheels are attached to axles with two allen screws. Screwed tie rods and ball couplings are beautifully finished and proved a joy to assemble. Nuts should be firmly fixed with Loctite Multi-Bond or Bostik 890 or will certainly vibrate loose.

I expect nearly every user will unscrew the rear axle housing to have a look at the "works". A steel bevel drives a plastic bevel at just over 2:1. Axle runs in ballbearings held in place by the housing and the drive bevel also runs in a pair of ballbearings. The second stage gearing is provided by an annular ring of plastic in which runs a planet wheel of steel. The HB21 engine which is standard for the car takes a very neat clutch/bellhousing unit which runs in needle bearings. There is a note advising users how to put the needle bearings back if they should come away. However, the whole unit is pinned together for transit with a plastic screw which is discarded on assembly. This again is all very precisely made and a pleasure to handle. Clutch shoe is a single unit suitably slit to open out at speed so there is no need to fit springs or O-rings or do any work here. The shoe is so designed that it is impossible to fit in place the wrong way round!

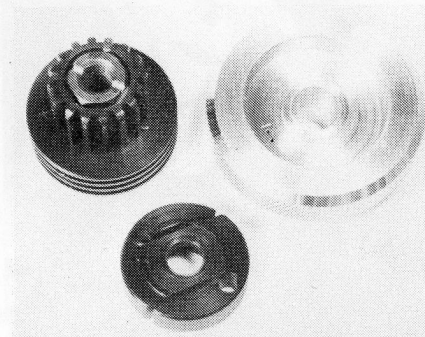
This two stage gearing, which with the annular ring and planet gear provides a

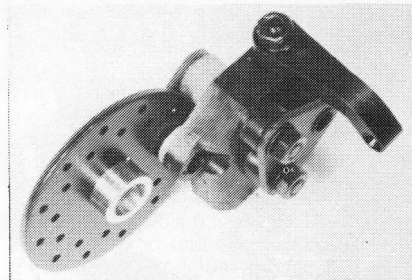


total step-down of 5.3125:1, obviates any of the usual wear problems of a spur gear drive which suffers when the tyres wear down by contact with the hard highway. However, lest we rejoice too soon, it has its own wear problem in some degree, so the user must be prepared for occasional annular ring replacements due to teeth bitten out by the drive gear. I wonder whether later productions may not devise a sun wheel idler that can take some of the strain from the driving gear.

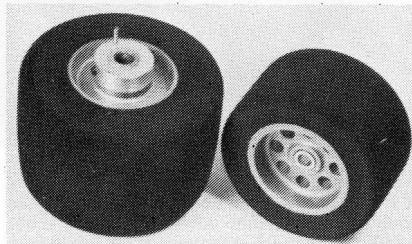
The engine bearers are provided with two additional shims each which should be fitted to give the exact location for the drive gear. Holding down bolts screw into a two station plate each side to hold all fast.

*Flywheel, planet wheel on bellhousing with its needle bearings, and one-piece slotted shoe block.*





Neat disc brake assembly. Note the two button brake discs. On/off lever is simple and positive in action.



Wheels and tyres front and rear. Metal reinforcements ensure long life.

A clear plastic fuel tank fits alongside the engine. It follows the best traditional form with a sump to use up all the fuel, plus an additional fuel lead to pressurise it via the exhaust manifold. A simple fuel filter is provided.

Disc brake is small and neat with two "penny-piece" size shoes which grip the well ventilated metal brake plate. With the in-line motor both throttle and brake are in

line so connection to servo is extremely simple and requires only adjustment of collets holding the springs. A good sized throttle lever enables blipping the engine at warming up to be very easily done.

Engine has its own integral heatsink and a very fine air-filter, comprising a paper filter concertina (so popular in U.S.A.) plus a slip over foam sleeve. This is held in place with a small cable tie when slid onto the carburettor. Material is mainly plastic.

Neat exhaust system comprises exhaust manifold which slips over exhaust exit, completely enclosing it so that no sealing compound is needed. A single screw holds it in place. Then comes a length of silicon tube going over a tuned pipe to a right angle junction piece of plastic in two screw-together parts, leading finally to the silencer box, which as mentioned above is packed with wire wool. An attachment post and support ring fixes it to the rear. To protect unwary fingers an engine cover is supplied which fits over the annular ring, so that any blipping of the throttle can be safely done. Cover also keeps stones out of the ring.

Body mounting posts make use of existing chassis bolts — but will require a little shortening in one instance. Longer posts for the rear airfoil to be slipped into screw onto bolts securing the axle housing.

Front bumper is conventional, and requires trimming for use with the Formula body — but should be right for sports/GT with little if any trim. It is also intended to carry the wrapped and pinned down aerial. At the rear a little red plastic cover goes over the end of the metal chassis and is locked in place by rivetting with a soldering iron. With the somewhat vulnerable exhaust unit I would recommend the would-be racer to fit a rather larger and stouter protector here, perhaps bent up to stop any wicked overtaking car wiping off some valuable bits!

Then we come to the radio installation. This, in the instructions, relates to Graupner Varioprop gear. However, in the U.K. other makes are in more general use so that it was my intention to fit Futaba. I do not really like boxes to put all the r/c items in, so was quite relieved to find in the instructions that users of the Brabham Formula body (with which my kit was provided) should discard the box. This is necessary since the front end slopes down

"Spurning the box provide" I made up a small radio plate to take servos, battery and rx.

too sharply to contain the box — though loads of room in Sports/GT.

I have opted for a mini radio plate, and slung battery and Rx. Others can follow their own line, but I rather like my layout. It involved a dig in the junk box for old plastic body posts, which, cut to 15/16 in long and drilled through fixed the plate in place using the holes ready drilled in chassis for the discarded box. Four short little posts to hold the rubber bands for the slung gear were turned up from alloy rod (with due acknowledgement to other longer ones seen recently!) If you lack turning facilities any short nut and bolt with a rubber tube sleeve will do. The plate holds two servos side by side, on-off switch and slung gear very happily. On second thoughts I have cut back the U-part of the chassis an inch to rest the plate there instead of slotting it as shown on photos. It is quite critical not to have it too high or the servos will foul the body. As it is there is adequate space if not much to spare.

The airfoil is a flat plate with side pieces added and not making any effort to be to an aerodynamic shape. This is probably adequate as very high speeds can hardly be expected from an untuned motor, and novice operators. The Formula body is very simple in ABS that can be painted with aerosol cans of cellulose paint, or, more ambitiously with enamels. A supply of decals suitable for any of the bodies in the Graupner range is included in the kit. Alternatively, bodies in Lexan are

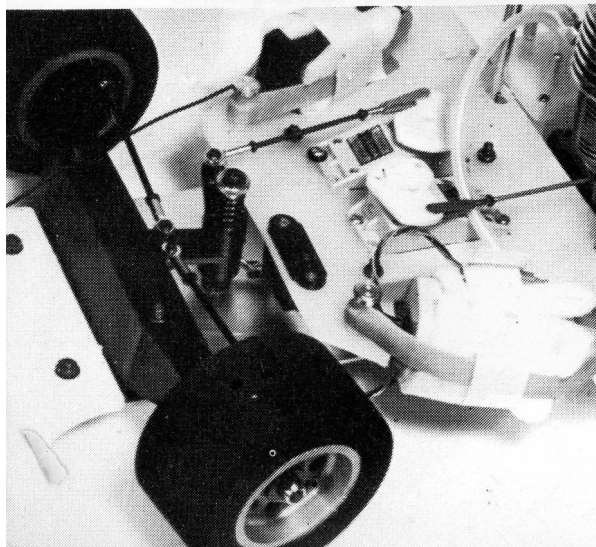
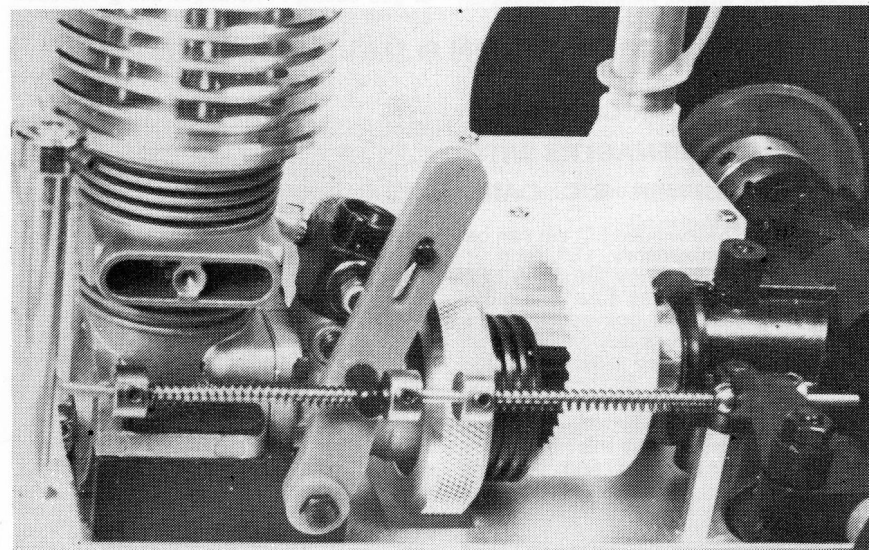
available, and naturally the whole wide range of other commercially available bodies can be used.

The body support posts by the way rely for their holding qualities on the insertion of rubber grommets in the holes through which they protrude. This may be enough for normal use, but in the hurly burly of racing it is worth cross drilling them to take retaining clips.

The excellent instructions give careful instructions on starting and operating the cars. Also included is a dimensioned set of drawings for a starter box. This with an in-line engine will, of course, have the drive wheel at 90 deg. to the customary starting box. Materials required other than a starter motor, it is carefully explained, are not available from Graupners. The kit itself also requires the usual necessary extras, namely engine (the officially prescribed HB21) plus air filter and the long exhaust/silencer system, not forgetting the radio equipment.

The question remains: is this a competitive car against the existing range of specifically racing cars? The answer must be both yes and no, in the same sense that in the full-size world of cars an MGB is a splendid car but not in its regular form a contest car. I would expect the Graupner

The ultra simple throttle/brake set up made possible by an inline engine. Extended throttle connection can be conveniently blipped when warming up. (Exhaust system not yet fitted nor has protective gear cover been installed).



RC-Car to hold its own in capable hands at club racing level (say up to handicap 15%) carefully assembled. To maintain a long and useful life some strengthening of the rear end against aggressive overtakers and perhaps the replacement of the steering crossbeam with a more solid unit would be advised. In its production form it is an excellent introduction to r/c model car racing and there will doubtless be countless father and son teams learning the ropes together in the months to come. I hope some enterprising distributors — or perhaps the parent company themselves? — will encourage "one make" races with a

series of regional Graupner Trophies . . . there are so many more people who will neither wish nor seek to be amongst the world's best but enjoy their local dicing. Already there are signs that the manufacturers are conscious of a need for this extra racing push as sundry grades of tyre hardness are on offer and special ball-raced front wheels available. Price-wise the car comes in to the middle-stream and offers a beautifully finished, intriguing design, capable of considerable development and yet within the skill of any enthusiast, young or old, to provide an immense amount of pleasure.

# LIFE WITH THE GRAUPNER SIDE WINDER



BY JON MOULTON & DAVE GOULDEN

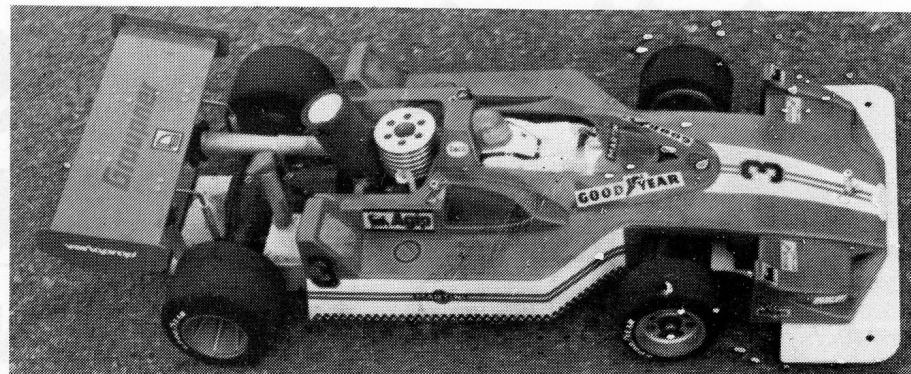
## AN UNEDITED ACCOUNT BY TWO YOUNG TEENAGERS WITH THEIR GRAUPNER R/C CARS

THE Graupner 'Sidewinder' I.C. car can be bought for approximately £89, and it comes presented in a very attractive box which also doubles up as a car and radio carrying case. The big box contains the various parts, packed as assemblies, each in a separate numbered plastic bag for ease of identification. In the adequate instruction manual, there is a check list for all the components. It is wise to cross check all the parts against this list, as we were unlucky enough to find the occasional nut and washer missing. Instructions are very easy to follow as they contain many photographs taken of ex-

ploded assemblies at each and every stage in the construction sequence.

The 'Sidewinder' Kit contains nearly all the parts required to complete the car, the major parts are as follows:

A two part pre-drilled 1/16 inch aluminium chassis pan to which is bolted a fully ball-raced and sealed rear axle containing bevel drive, and front axle unit which incorporates steering blocks and servo saver; a pressurized fuel tank with anti slosh partitions, a filler tube with flip top seal and fuel filler; a wear resistant centrifugal needle bearing clutch designed for high thermal loads; a non-fading disc brake assembly with drilled disc; a moulded plastic radio box with all the necessary servo mounting bolts and control linkages, and an ABS moulded body, front bumper and rear air spoiler.



Above: The young men's car duly decorated. Left: Dave (left) and Jor: start up using the box built almost as described in the building instructions.

No difficulties in building the 'Sidewinder' should be encountered even by the raw novice. The first stage is already completed as the two chassis plates, rear axle and front beam come pre-assembled, or at least they were in curs!

The next stage is the setting up of the steering geometry which is quite straightforward and quickly completed. Then the radio box is installed. The disc brake is next to be added, taking care to see that it is installed perpendicular to the chassis, and in-line with the brake disc. The fuel tank is then simply bolted to the chassis using three bolts. The toughest stage in all the construction of the 'Sidewinder' is the gluing and trueing of the wheels. To do this the tyre rings and hubs are glued together. A plastic bag is used during the assembly to keep excess glue off the tyres and off your hands.

The chosen engine and radio are best not fitted at this stage, as it is advisable to bench-run the engine using a propeller to ensure proper running-in and cooling, as this gives longer engine life. The engine is positioned in the centre of the chassis to give a centre of gravity which is well forward and which is also a bonus of inline drive. The engine is then installed, making sure it is exactly inline with the centre of the drive gear, and at the correct meshing height, which can be adjusted by using the special packing plates provided. This is a very crucial step, as one or two degrees either way in the alignment of the engine can result in a stripped drive gear! The final stage in the construction is to install the chosen radio unit. This is a fairly difficult stage, as the positions of the holes for the linkages in the radio box have to be exactly in the correct places or binding and stalling of the servos results.

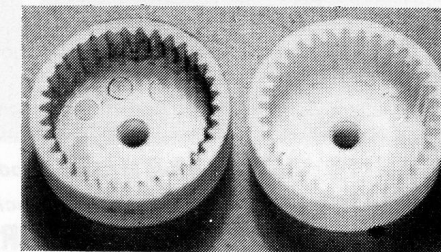
The most suitable engine for the 'Sidewinder' is the HB 21PDP as the car

was designed around it and also because this engine has low fuel consumption and high top speed. With the engine comes a paper cartridge type air filter, a very efficient heat sink head, a racing glow plug and an Allen key to suit the engine bolts. A specially designed silencing system is also available as an extra, which consists of a standard silencer with pressurising nipple, a length of silicone tubing and a short length of aluminium tubing that flares out to a plastic 'elbow' joint. This turns the gas flow through 90 deg. into the final muffler that is a wire wool filled cylinder. This package comes complete with all the necessary mounting screws and washers.

The body that comes with the 'Sidewinder' is an ABS Martini Brabham which is untrimmed and unpainted, this leaves the job of decorating the body to your own designs, using the self adhesive stickers supplied. There are two sets of stickers, one sheet contains sixty numbers from 0 to 9 and the other sheet containing various sponsors' names.

Continued on page 38

Left: A stone in the works destroys teeth! Keep the cover on. Right: The annular ring gear as new.

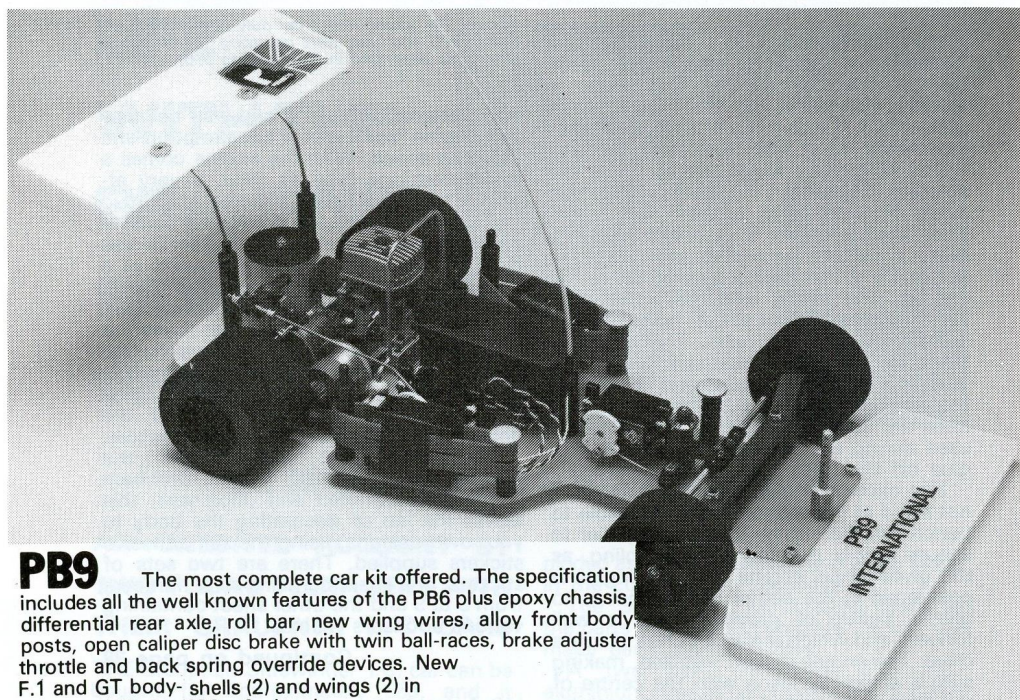




# PB racing products Ltd.

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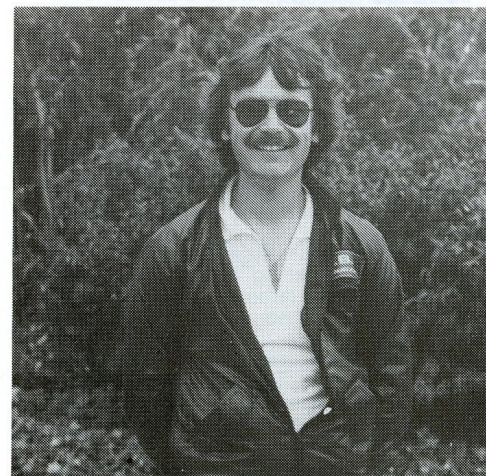
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**PHIL BOOTH: WORLD CHAMPION — GENEVA 1979**

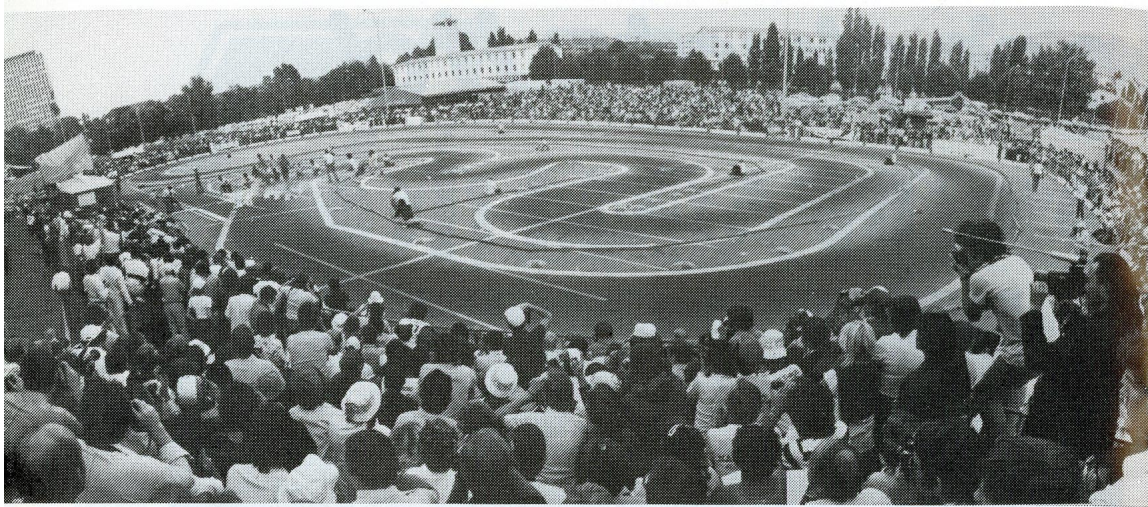


**PHIL GREENO: WORLD CUP MONACO 1978**



**DAVE MARTIN: EUROPEAN CHAMPIONSHIPS, LILFORD 1978**





## WORLD PART ONE CHAMPIONSHIPS GENEVA JULY 1979

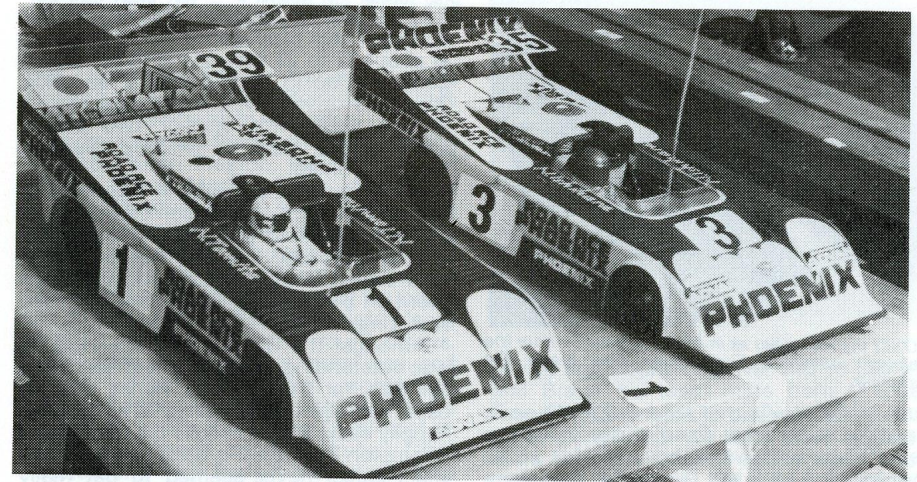
*A J-C Rumbeli shot of Sunday's spectacle with crammed stands and mounting excitement. Below the car and the trophy.*



PHIL Booth took his PB International through a strong field to achieve a magnificent British victory in the 2nd World Championships at Geneva on Sunday July 8th. This from an original entry of 163 cars from nearly all the model car world of which 148 actually engaged in the gruelling elimination heats. But behind this brief statement lies nearly a week of strenuous effort.

Interest naturally centred on the newcomers to racing in Europe. Only a few had seen the Americans in action and no one at all had any knowledge of Japanese progress, beyond the pictures in their magnificent bulky monthly magazine *Radio Technique*. Equally interesting too was the contingent from South Africa, where design detail had developed along different lines.

Basically then, the break down of cars was Associated with forty-six; PB International 28; SG twelve; Road Ace (Japan) 12; Kyosho (Japan) 6; Serpent 13; Challenger 5; Delta three, then a balance made up of ones and twos with a couple



of specials. Futaba was very much the wear for r/c equipment with almost hundred per cent Japanese support for Sanwa, again with the few odd makes in ones and twos.

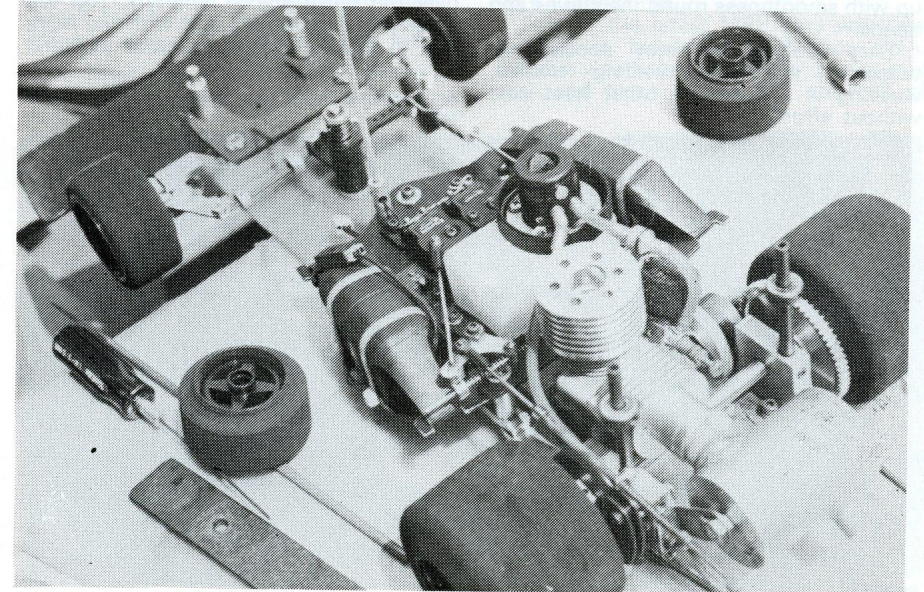
After all the speculation the circuit was at Les Vernets exactly as originally intended and used at the Swiss GP. A much higher drivers' rostrum enabled the Tx pound to be located beneath it. Stands and viewing areas were on all sides and there was room for the public to see into the pits close-up without actually being inside. Suitable crowd barriers regulated

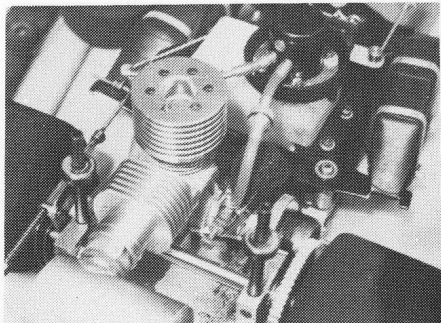
the spectators and provided space for advertisers. "Paddock passes" complete with photographs taken on instant Polaroid ensured that only authorised persons were actually in the pits.

### The Cars and the Drivers

Right from the start major interest focused on the Japanese. All but two of their cars were in Team Phoenix (Road

*Phoenix Road Ace cars in black and yellow livery. Below: The simple lightweight car that so nearly upset everybody's applearcars!*

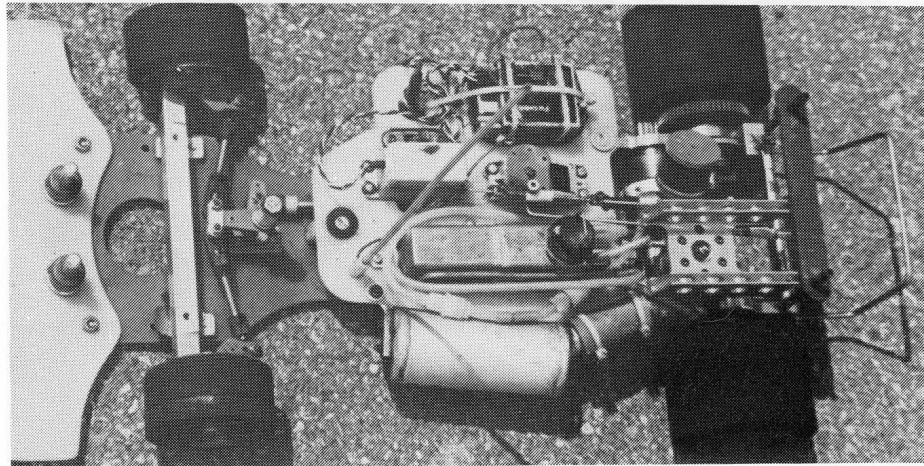




OS21 the fuel miser as in Matsuda's car — note the elegant manifold. Even tuned pipe inside the silencer.

Ace and Kyosho (Fantom 20). Phoenix colours were ideal for visibility in yellow and black whilst Kyosho went for an all white car with a red sun circle. Cars were immaculately prepared but as so many of us had expected seemed to be about four years behind the times in steering geometry and general layout. Power was by OS21 — the ABC version of the familiar OS20 using a ridiculously small carb. But the real surprise (should I say shock?) came when the Japanese drivers started to drive! One and all they were of exceptionally high standard, establishing and maintaining a line until they were running almost like slot cars. Not anything like as fast down the straights as US and European cars but more than making this up with smoothness round the curves and bends.

They seemed to enjoy special anticipatory skills in avoiding trouble, weaving in and out of other heat cars without effort.



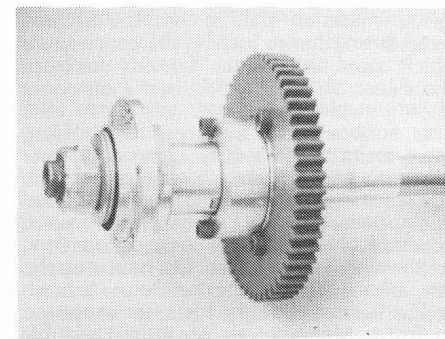
Art Carbonnel's car with silencer brought to the side.

Until serious practice started random timing of laps produced a fair to good lap at about 22 to 23 seconds with Bill Jianas getting a lap in at about 20½ seconds. Japanese drivers were managing regular 21 sec laps, with one or two drivers standing out such as Ishihara, Sasuga, Shudo, Tomita.

When qualifying heats of twenty laps started it was clear that something under eight minutes was going to be needed for an easy passage into the top 64 places who would be competing for the main event on Sunday. Again Ishihara surprised with times under 7½ minutes.

Amongst the US drivers Gene Husting was outstanding, though he had been, and still was, far from fit; Bill Jianas was his usual extrovert self making it all look so happily easy; Butch Kroells the first World Champion from the Pomona event of two years earlier never seemed to get really going; whilst young Repete Fusco showed wonderful skill and aplomb for a 12-year-old youngster. The Dutch Serpent Team headed by Peter Bervoets and Ronnie Ton were also looking over their shoulders at other Serpent drivers in their group, Denis Tassaux of Belgium, Steve White GB and Fiocchi of Italy who were continuing to show great promise. Ronnie Ton very cleverly later in the meeting filled up with 60 cc and checked that after racing he still had 2 cc left. This enabled him to save one pit stop and shave some 6 seconds off his time! (His car stopped just a few yards over the finish line — empty!). Top ten times on Thursday at 4.0pm with one more day to qualify at 64-breakpoint included

The new Delta Diff — a limited slip design very similar to Cecil Schumacher's for electric 1/12th cars.



five Japanese, Franco Sabattini, Gene Husting, Rick Davis, Jim Rold (these three USA) and Soderholm, Sweden.

Friday repeated the mixture with varying fortunes. Keith Preston, Phils Booth and Greeno, Dave Martin, Steve White and Debbie Preston (who was racing with Gene's Associated team after six weeks in sunny California training with them) went through into the top 64 places, and, in theory had a day off on Saturday watching the struggle for the remaining eight places to bring up Sunday's total to 72 drivers.

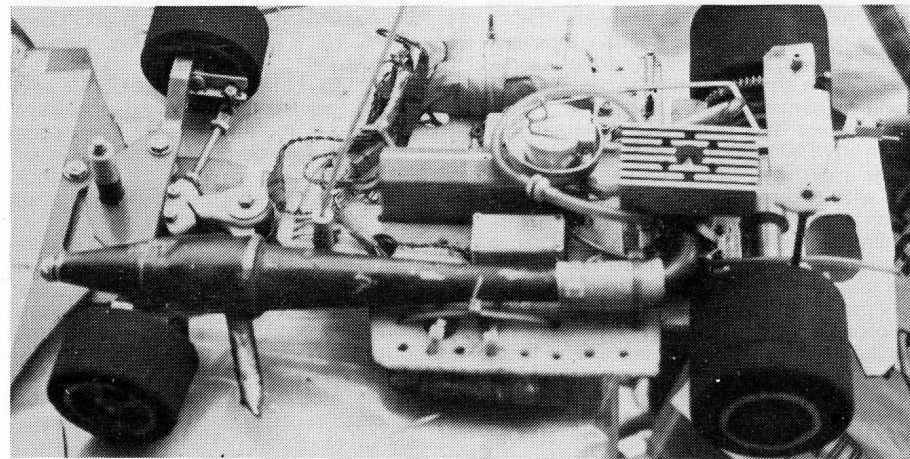
Saturday produced the usual ups and downs, Walt Bailey had something horrible happen in each of his three heats though he made it into the Demi-final to again be dogged by misfortune. Dave Preston and Paul Padgin also made it to the Demi-final.

Items of special interest during the meeting included sight of the new ACT engine now being made by Picco, sometime of OPS — indeed some cars using the first off of these are described as OPS. It enjoys a peculiar black anodised heatsink of larger than usual proportions and the few available were scanned most purposefully. Butch Kroells had one and could not seem to decide whether to use it or not. Then there was the South African three servo set-up. This is employed by both Weenie Bester as a "on the track" mixture control for his Webra slide carb — which by the way is fully encapsulated. Weenie regards it as the ultimate failsafe

Long tuned pipe exhaust seen on Finnish car (Mannio Ilkka).

device and hopes he never has to use it! Mel Braun his team mate from Orange Free State has built virtually all of his car starting from a basic Associated. Wheel hubs, steering, and his own design diff. are major parts, plus all the little linkages so vital. He too has a third mini servo to adjust mixture, which is programmed to be moved from lean through to rich without a pit stop, so that if conditions seem to be changing during a race the needed adjustment can be made. Butch Kroell had an interesting radio plate with battery fitted underneath it. Had also a long coiled lead to manifold for pressurising: claimed this helped to stabilise pressure. Expert Chuck Hallum however considered the need only to be long enough to prevent flow back into silencer. On silencers an interesting ribbed dustbin was noted on Ito's (Japan) car.

First of the latest MRP cars was performing in hands of B. Metras USA. Notable was heavy casting for power pod with end piece angled and attached of



lighter material, plus a broad-V-shaped metal strengthener just by the servo-saver which could be used to "tweak" the front end. Most of the PB diffs had metal gear carriers in place of nylon with three little bites scooped out between the holding down bolts to give easy access for gear changing of spur gear. Silencers came in all sizes and shapes — a commercial tuned pipe appeared on the Finnish cars; forward mounted ones on Team Associated cars; the new AMPS type that fits neatly at the rear, also a similar one by Delta, though Art Carbonnel thought his safer mounted up front. Merseberger of Spain had his upright type silencer mounted forward of rear wheel, and also had a very neatly wound aerial threaded through a small lexan plate beside it.

New diff designs were in evidence. The prototype for the Delta diff follows very much the pattern of the smaller 1/12th type developed by Cecil Schumacher with the 'Works' compressed into an addition to the wheel hub. Similar is that being manufactured by Rune Carlsson of Sweden, who is also making a most attractive kit. His design again follows a hub enclosed diff but using three bevel gears of plastic (like some of the Tamiya electric cars!) It seems to be standing up to a lot of hard work. I did not examine the two Brem cars entered but did look at a Brem kit on display in the official shop being a temporary branch of Viking Models of Geneva. This is surely the most expensive kit in the world at Swiss Frs 995. (Associated and PB about a third of this). The belt drive (a la Thorp) and the silencer mounting with very short manifold so within an inch of the engine. Masuda's manifold for his OS21 was beautifully finned and again used minimal tubing attachment. Other Japanese cars had a variety of styles, mainly dustbin type but one or two straight back cylindrical tube, coming to a smaller outlet nozzle (like the inside of some m/cycle exhausts).

Nor must we neglect the latest PB sugar-bowl silencers, now marketed with a fuel improving baffle, but in the team cars with a kind of snail shell twist inside which provides a tuned pipe effect in smaller space. Whether this will be a practical project for sale I do not know. Too late for use, but there for show was PB's production design fuel tank — still in its production white, but looking very efficient, and of shape to please. The team cars all had Johnson type tanks laid flat (Greeno style) with flip top fillers.

Phil Greeno was not blessed with any particular good fortune — he was well up

in the time lists, but just not his day, his times were running about a second behind the best. To add to his sorrow some vandals sprayed his full-size car in the adjoining official car park with green paint (symbolic I wonder?) which he was only able to clean off with methanol in time to save his paintwork. A passing woman was also sprayed with paint — I do not know if she was wiped over with methanol. The louts escaped on motorbikes — they have them in Switzerland too!

Saturday's finals were run to promote eight drivers into Sunday's meeting, with four best times of the day going straight into final, the two demi-finals yielding the top three in each to do battle for eight places out of the ten runners. This put Bob Errington straight in to final as third highest of the day. It was bad luck for Hamberg of Sweden that after FTD he should finish tenth; Lilford of South Africa was the other unlucky one. Bob Errington maintained his form to figure in Sunday's Demi-finals as well, but that is another story now to be told.

#### The World Championship Finals

Completion of Sunday's heats took place within minutes (early) of scheduled time to put top FTDs straight into final in shape of Ishihara, Japan; Rold, USA; Ronnie Ton, Holland; and Bill Jianas, USA. Semi-final A line-up was: Curtis Husting (USA), Phil Booth (GB), Peter Bervoets (NL), Franco Sabattini (I), Gene Husting (USA), Suzuki (J), Dave Martin (GB), Repete Fusco (USA), Takeda (J), and Petri (USA). Demi-final B: Phelps (USA), Davis (USA), Sasuga (J), Ljungcrantz (S), Kondo (J), Lee (USA), Gherzi (I), Kishi (J), Hassig (CH) and Bob Errington (GB). Curtis Husting won Semi A followed home by Phil Booth and Dave Martin. Semi B went to Phelps, Sasuga and Davis.

Final then comprised five USA, two from GB, two from Japan and one from Holland — a mixture which I suppose represents a fair percentage on basis of entries. (Bearing in mind the four essentials for winning: good car, good engine, good driver, good luck!)

Off to a clean start as the City of Geneva flag dropped Ishihara in lead after Ton rolled at the bend. The Japanese cars going faster down the straight than previously. Booth clearly fastest in the straight and going well. Packed stands roar for rolls rather than cleaning racing. Refuelling stops begin, with two to five secs. usual running stop and pits constantly busy. Ronnie Ton in trouble . . .

seems like new glowplug . . . off again. Phelps Jianas and Booth with Ishihara the leading group. Curtis Husting's car in pits and not responding to treatment . . . left on pit table. Thirteen minutes of the 35 minute race to go. Ton in again. Ishihara's car in stops and re-started. Ishihara in again with big trouble . . . body off wheel off frantic to and froing of tools and parts from main pits to race pits . . . refitting silencer . . . body on and away in the race again. The race now seems between Jianas, Booth and Phelps all on the same lap. Five minutes to go Jianas in for adjustment. Dave Martin in and out with troubles obviously not going well. Sasuga in the Kyosho going steadily, Rold the second fastest in heats going strong and unobtrusively. Last stages of the race Rold in for refuel and attention . . . restarted. Ton and Martin in again. Now under a minute, Jianas in again . . . count down five four three two one Phil Booth wins from Jianas with Phelps, Sasuga, and Ishihara battling for places.

So hail to the champion of the world: Phil Booth!

#### Thanks and Reflections

Congratulations to Jean-Claude Rumbeli and his team who kept things going so smoothly and never seemed to flap. (He did confess to seeing cars dashing by all night!).

A big hand for the tireless and competent young marshals who braved flying cars in all directions — and did they fly off those Fiat bollards!

Special praise to all drivers who raced courteously and avoided mayhem with particular comment on the skill of Japanese drivers who kept their much lighter cars intact.

Thanks to Kenji Matsuda who made communication with his fellow countrymen seem so very easy.

Stern penalties for beating the start were rigidly enforced! Even though there were drivers who claimed they didn't do it!

The beautiful Olympic swimming pool, diving pit and sunbathing terrace proved a welcome and adjacent boon (when you had worked out the slot machines).

#### ANOTHER FULL LENGTH CHAMPS FEATURE NEXT ISSUE!

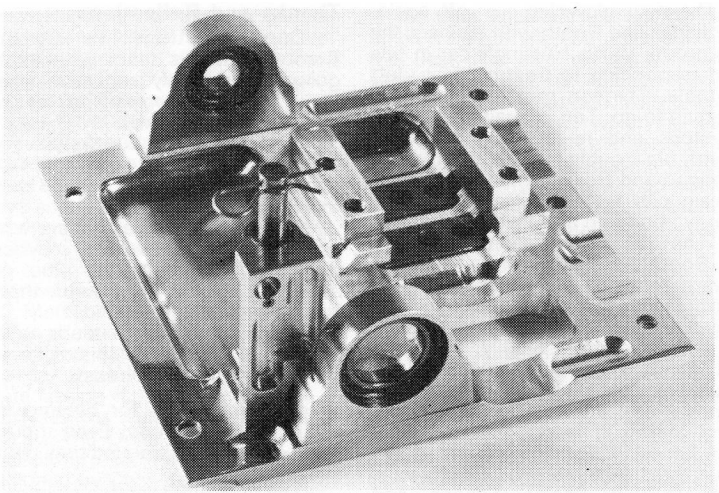
#### GENEVA RESULTS : FINAL

Place	Name	Country	Laps	Car	Motor	Radio	Diff
1	Phil Booth	GB	116	PB Int.	OPS	Futaba	PB
2	•Bill Jianas	USA	115	Associated	K & B	Futaba	
3	Chuck Phelps	USA	115	Associated	K & B	Futaba	
4	Fujio Sasuga	Japan	114	AAT Kyosho	ST	Sanwa	
5	•Naoki Ishihara	Japan	109	Road Ace	OS 21	Sanwa	
6	Rick Davis	USA	102	Associated	K & B	Futaba	Jacobs
7	•Jeff Rold	USA	91	Associated	K & B	Futaba	
8	•Ron Ton	Holland	81	Serpent	OPS	Robbe	AMPS
9	Dave Martin	GB	77	PB Int.	OPS	Futaba	PB
10	Curtis Husting	USA	38	Associated	K & B	Futaba	

(•Fastest times: straight through to Final)

#### SEMI-FINALS : Placings A & B Events

11	K. Kishi	Japan	75	Fantom 20	OS21	Sanwa	
12	K. Suzuki	Japan	74	Road Ace	OS21	Sanwa	
13	Ted Ljungcrantz	Sweden	74	Mirage	K & B	Futaba	
14	K. Takeda	Japan	70	Road Ace	OS21	Futaba	
15	Gene Husting	USA	70	Associated	K & B	Futaba	
16	F. Sabattini	Italy	70	SG	ST	Futaba	SG
17	K. Kondo	Japan	65	Road Ace	OS21	Sanwa	
18	Rich Lee	USA	56	Associated	K & B	Futaba	
19	Carl Petri	USA	56	Associated	K & B	Futaba	AMPS
20	RePete Fusco	USA	52	Associated	K & B	Futaba	
21	Rudi Hassig	Sweden	48	Perfect	K & B	Futaba	
22	Bob Errington	GB	47	PB Int.	OPS	Futaba	PB
23	G. Gherzi	Italy	5	SG	ST	Futaba	SG
24	Peter Bervoets	Holland	0	Serpent	OPS	Robbe	AMPS



**JOHN HALE  
MAKES**

**A POD FOR MR. TED**

A CHALLENGE is always difficult to resist so when asked by Richard Beckett if an 8mm thick duralumin blank could be made into a P.B. International style pod to provide a stronger yet lighter rear end, I just had to accept.

As the standard plate is 5mm thick and weighs 172,70 gms. it required over 45 c.c.s. of metal to be removed in order to reach square one, and that amounts to an awful lot of swarf! As far as the strength is concerned, I tried to keep as much metal as possible towards the front and incorporate as many curves rather than sharp corners in particular at the rebates for the chassis plate and the rear bumper

plate. The engine has been sited as low as possible, and with the majority of metal removed from the top of the plate, has resulted in a low C. of G. The steel strips, which really should have been lightened more, help to tie the centre of the pod as well as acting as washers for the engine block fixing screws which otherwise bite into the alloy and prevent fine adjustment of gear mesh. The engine blocks shown are in basic form so when the engine mounting holes are drilled and tapped, more metal can be removed.

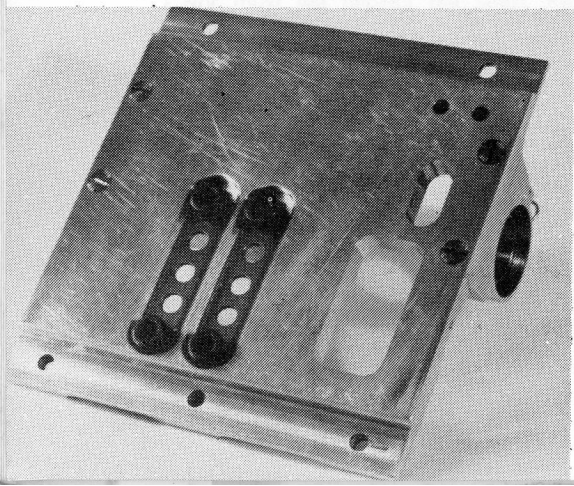
The bearing blocks are a good example of how weight can be saved. In this shaped form they weigh 12.27 gms as compared to 20.97 gms in trapezoidal shape.

A Greeno brake calliper, slightly lightened from 40.10 gms to 35.52 gms is located in a machined housing.

As a final touch of luxury, the bearing block screws are of titanium, machined from bolts which I obtained from a scrap yard, and of course as well as being about half the weight of steel, are rather strong — my M.5 die said so!

The basic plate now weighs 146,82 gms and I believe that it is stronger — it certainly looks it, so I am claiming a victory. However, the proof of this pudding is in the racing, so if in the hands of its owner Ted Longshaw, it is not successful, MR. EFRA can always use it as an ashtray.

RADIO CONTROL



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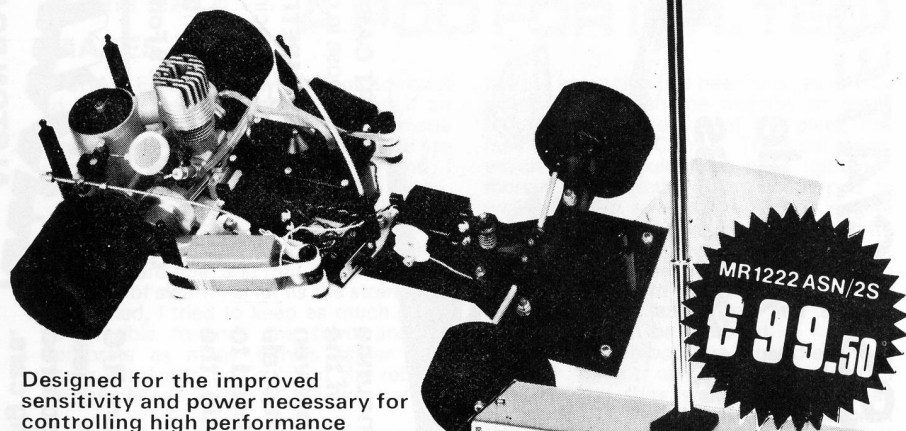
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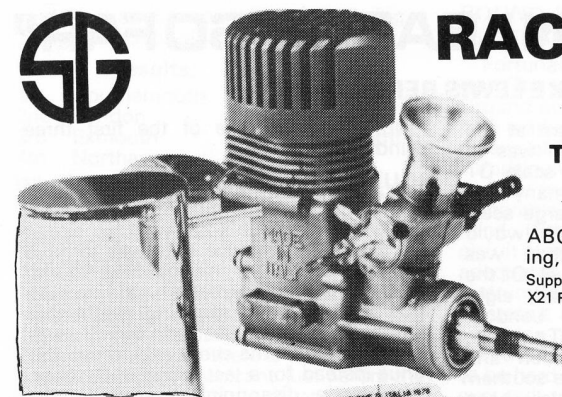
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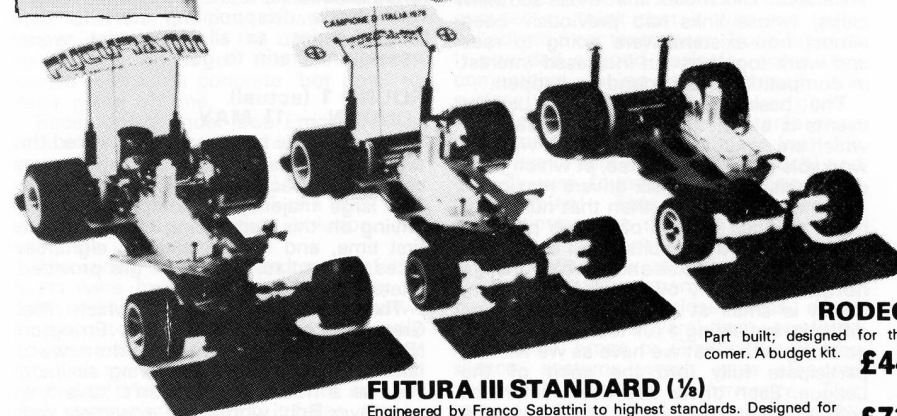
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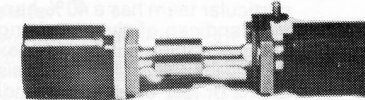
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# "SOUTHERN LEAGUE-SO FAR"

## LEAGUE SECRETARY: MIKE LEWIS REPORTS . . .

THE Southern League was born at the beginning of this year. The aim was to hold a series of friendly 1/8th scale GT events for club teams where many less experienced drivers, to whom large scale Open events do not appeal, would welcome more competition than was available at purely single club level. Of the twelve clubs originally contacted, eight finally decided to participate — London, Bournemouth, Exmouth, Taunton, Southampton, Mendip, Northavon and Aldershot. This meant that these southern clubs, whose links had previously been almost non-existent were going to race and work together. An increased interest in competition was bound to happen.

The basis of the Southern League events is a series of six rounds, each of which are genuine one day events within a workable geographical area, at which each club fields a team of six drivers maximum — if a club sends less than that number it has a reduced chance of a high place at that round as the results of all six drivers, count, and substitutes and double runs are not permitted! My own club at Taunton, which is small at present, has extreme difficulty in fielding a full team, but we still go along with what we have as we wish to participate fully into the spirit of the League. Each driver has five Heat races with one car from each team per race (eight car races). At the close of the Heats an individual Final is held for the top driver from each team. This is a 'token' event only and has no bearing on team results for the day, but produces good racing over a longer distance than is held for the Heats.

Under the agreed format the composition of each team is subject to a 100% BRCA handicap rating. For example, if a particular team has a 40% handicap driver, the handicap of the remaining five drivers between them must not exceed 60%. Thus, although the emphasis is to have teams of low or scratch handicap drivers, the better drivers are not debarred.

Each club is allocated a radio frequency which applies to each of the rounds. With eight teams this, of course, means that two of them have split-colour frequencies but this does not appear to have caused any interference problems. Teams are asked to ensure that their radio equipment is regularly serviced, so this probably helps in this respect.

Now for a resume of the first three rounds:—

### ROUND 1 (as originally intended) TAUNTON — 25 MARCH

The Taunton club's 220 yard lap circuit at a nearby M5 Service Area was to have been the scene for his opening round. Unfortunately, torrential rain which showed no signs of stopping meant that not even practice started and it was decided to abort the event and to use this venue instead for a last round in October. This was a disappointing start to the League series, as all the teams were present and 'rarin to go.

### ROUND 1 (actual) LONDON — 11 MAY

An extremely hot sunny day greeted the teams at the large 390 yard lap Leyton circuit, and traction promised to be high. The large majority of competitors were driving on this demanding circuit for the first time, and the principle of eight car races was put to the test — this provided interest packed racing.

The particular heats in which Phil Greeno (London) and Bob Errington (Bournemouth) raced together were fantastic, neither of them giving an inch! Phil, as a home driver, didn't have any edge over Bob, who drove extremely well to win each time (as a newcomer to the circuit). It must be said that these two top class drivers were competing in this first round event only and their maximum BRCA handicap rating meant that, to keep below the maximum of 100% handicap per team, the remainder of their teams had to be comprised of low handicap or scratch drivers — according to the League rules. Some good quality racing was shown by drivers from all the teams and it was refreshing to see so many new faces.

The 15 minute individual Final for the top drivers from each club again brought forth a Greeno/Errington battle for the lead, with the six other drivers pressing hard. Poor Phil had motor trouble and afterwards many people were going around saying that they had beaten Phil Greeno today. The moral is that you have to finish to win!

It must have been a great disappointment to the London team not to have won on their difficult home circuit. However, the results were good for the League as

nothing can be counted on as being a foregone conclusion.

### Round 1 results;

1st	Bournemouth	5th	Mendip
2nd	London	5th	Aldershot
3rd	Exmouth	7th	Southampton
4th	Northavon	8th	Taunton

Winner of indiv Final: Bob Errington (Bournemouth).

### ROUND 2 BOURNEMOUTH — 17 JUNE

Another fine day for the teams at this round. The Bournemouth track is a real drivers circuit but has a good flowing line. Traction is high and there is (for strangers) a particularly nasty chicane just before the start/finish line, which is situated more or less at right angles to the driver's line of vision. The edges of this are liberally coated with large concrete 'bot dots' to deter going off line.

Race control under Bob Errington was slick and each driver had his full five heat races for his team. The usual scaffold rostrum provided for BRCA events was not in evidence but the back of a truck was a simple but effective solution for adequate visibility.

The racing was keen and most of the heats were hard fought. The beauty of team events is that a real interest is shown in the outcome of each race. The only adverse feature of this round was the way in which members of one particular team tended to drive through, and not around, their competitors. Watch it fellas, this is supposed to be a friendly event!

As can be expected there was a great variety of cars and engines in use. Most cars were probably the 'norm' ie PB Internationals, but with an increasing number of SG Futuras and Serpents. Motive power was, in the main, OPS 21's, K & B's or Tigres (rear exhaust).

### Round 2 results:

1st	Bournemouth	5th	Southampton
2nd	Aldershot	6th	Exmouth
3rd	London	7th	Northavon
4th	Mendip	8th	Taunton

Winner of indiv Final: Dave Farnedale (Southampton)

Opinion at the close of this second round was that the purpose of the League was being met. Each of the participating clubs had entered teams, the events had provided an opportunity for lesser-known drivers to take part in very competitive racing, on a one day basis, without having to travel too far.

### ROUND 3 ALDERSHOT — 8 JULY

Fortunately, another dry weather tyre day! The venue was a fairly small Parade Ground at HMS Swiftsure. The host club had marked out a 170 yd lap circuit by means of 2" wide chalk lines which were surprisingly effective, and wooden barriers and old tyres gave protection to the more vulnerable parts of the layout. Bearing in mind that this was a non-permanent circuit everything was there on the day — adequate pit areas, a scaffold drivers rostrum and a large tent housing the electronic lap counters, a PA system, etc.

During practice everyone soon found that this extremely twisty circuit was going to be hard work and one could have been excused to think that it was not really suitable to 8 car team races. Not a bit of it! It provided a good basis for some very competitive racing and although the surface was bumpy the grip was good.

Unfortunately radio interference problems caused several delays (not due to the use of split-frequencies as such) and one Tx was found to be affecting five frequencies! This matter was a disappointment to the host club as they had never experienced this kind of problem previously at this site.

The heats were extremely interesting to watch, with many close dices down through the field. Several cars were fitted with either Amps or Greeno tuned pipe silencer systems which gave standard engines a turbo-like performance. This sort of additional power could not be utilised to the full on the short Aldershot straights, but the potential for larger circuits was obvious.

Yours truly didn't see much of the 15 minute Final as I was furiously trying to solve carb/fuel problems on my OPS, which first occurred just before the start. However, David Jones of the Northavon Club was a worthy winner of this as he drove very well.

### Round 3 results:

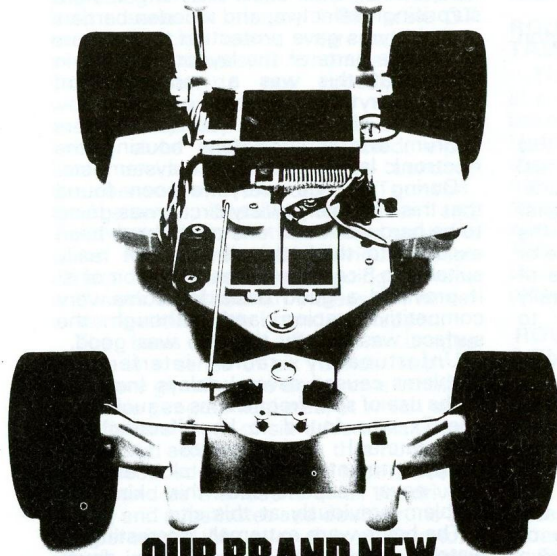
1st	Bournemouth	5th	Aldershot
2nd	Exmouth	6th	Northavon
3rd	London	7th	Taunton
4th	Southampton	7th	Mendip

Winner of individual Final: David Jones (Northavon)

The half-way score at the close of the first three League rounds indicate that Bournemouth must be favourites to win (having scored maximum round points) but there is quite a tussle brewing for second place between London, Exmouth

Continued on page 36

# ASSOCIATED RC12E 1/12 SCALE ELECTRIC



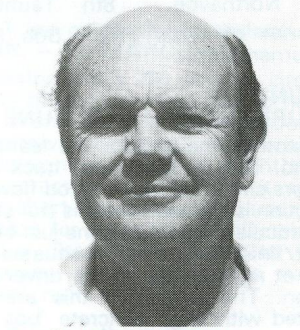
**OUR BRAND NEW  
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**IT SHOULD.**

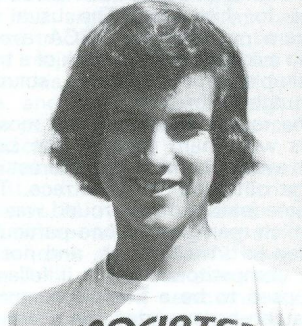
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134 ENTRIES**

Modified Class	Car	Motor
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2 Curtis Husting	RC12E	Reedy
3 Bill Jianas	RC12E	Reedy
4 Mike Rowland	RC12E	Reedy
5 Chuck August		
6 Bill Steele	RC12E	Reedy
7 Frank Killam		
8 Matt Azzara	RC12E	Reedy

*Reedy Motors available from Associated*



**1 GENE HUSTING  
TOP QUALIFIER**



**2 CURTIS HUSTING**



**3 BILL JIANAS**

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**1 RICK DAVIS**

Can-Am Class	Car	Country
1 Rick Davis	RC300	USA
2 Mike Rowland	RC300	USA
3 Gene Husting	RC300	USA
4 Phil Greeno	Greeno-PB	England
5 Bill Jianas	RC300	USA
6 Roger Curtis	RC300	USA
7 Arturo Carbonell	Delta	USA
8 Phil Booth	PB	England
9 Keith Plested	PB	England
10 Jack Jacobs	RC300	USA



**2 MIKE ROWLAND**

**STOP PRESS:** Rick Davis wins German G.P. Debbie Preston 2nd. **WORLD CHAMPS:** 5 in Final Places 2:3:6:7:10



**3 GENE HUSTING**



**5 BILL JIANAS  
TOP QUALIFIER**



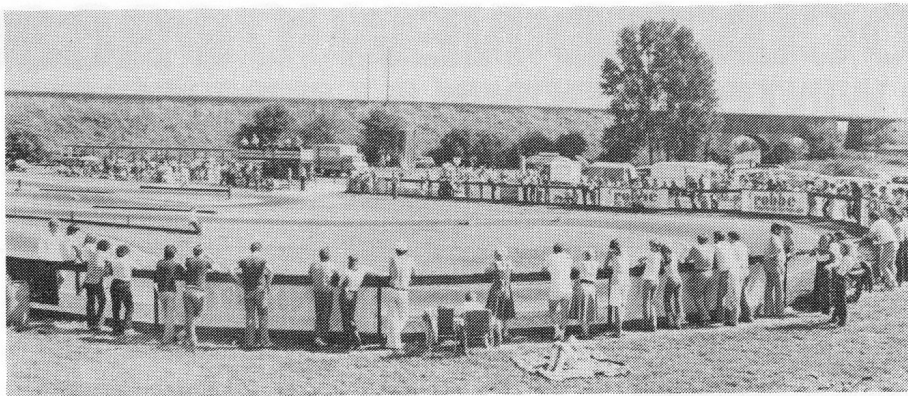
**6 ROGER CURTIS**



**10 JACK JACOBS**

**ASSOCIATED, 1928 East Edinger, Santa Ana, CA.92705, USA**

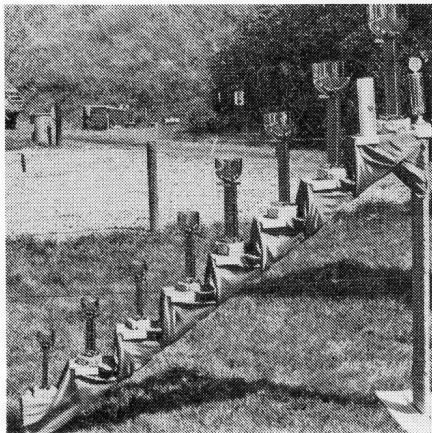
*Available from:* **IRVINE ENGINES**



## GERMAN GRAND PRIX

The grand opening meeting at the new Wiesbaden Circuit was billed as a meeting "de revanche" following the World Champs the week before, and certainly it gave the powerful Associated team from USA the satisfaction and consolation of a 1-2 victory to make up for their defeat in Geneva with Rick Davis winning a closely fought battle from Debbie Preston, both in Associated colours.

It also gave the visitors from America a chance of seeing what a really beautiful purpose built circuit can be like. Picture a year or two ago a triangle of land covered with some 500 tons of rubble and surrounded on all three sides by railway embankments, two active and one disused. This was the start. All the muck was removed by hand, the area turned over and seeded, trees planted, and a circuit very similar in shape and size to



Lilford laid down with a smooth tarmac surface, plus permanent pit benches with clear roof over, stout rostrum, toilets . . . the lot. This cost a lot of labour and a lot of money . . . members either put in labour or were assessed so many hours a month and paid into the kitty for their work at so many marks per hour. The result, truly a little island paradise for r/c cars. No noise problems with the railways all round; a natural grandstand on the disused embankment side, one large established tree already there for shade, plus some newcomers to make fast growth. The grass both for the circuit infield flourishing and the spectator area adequate. For the occasion a bock-wurst and beer plus soft drinks stand provided, seating for eaters and drinkers and a number of local model shops with spares, kits and the like. A timing caravan kept up a constant flow of IBM result sheets and the meeting flowed like quicksilver.

To make the most of a galaxy of foreign talent the two day meeting was devoted entirely to Sports/Proto racing with an entry of eighty running eight-car heats. In addition to the German hosts, G.B., U.S.A., Holland, Belgium, France, Switzerland, Sweden, South Africa took part giving it very nearly a repeat-World Champs air. Only the absence of the Japanese was to be regretted but alas they had not made provision for an extended stay.

It was very much a deadly battle to the very end since all final places were competitive, that is to say, no one went

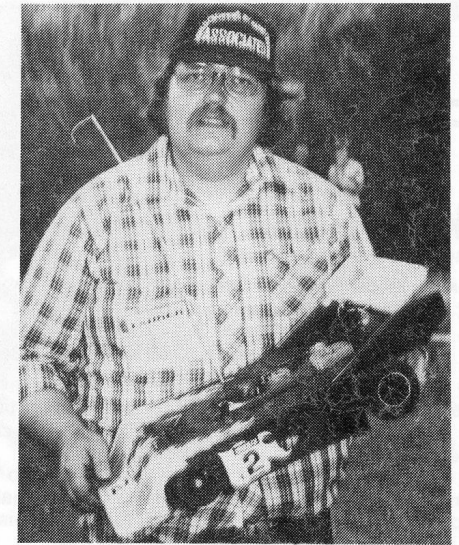
*The Trophies on display! Opposite: The permanent Pit benches with clear roofing over.*

*Left: A view of the circuit. Right: Winner Rick Davis with his Associated car. Incidentally, he discarded the Jacobs diff. used at Geneva and ran "straight", in the final.*

through to the final on time trials alone. The top sixteen drivers had to race for the eight final places, providing in effect three needle matches. Thus we had the lucky eight: Debbie Preston, Bob Errington, Phil Greeno, Rick Davis, Franz Groeschl, Ronnie Ton, Peter Bervoets, Curtis Husting with the rest of the semi-final: Walt Bailey, Tibor, Phelps, Fusco, Jianas, Rowland, Rold, Carbonnel. Art by the way at the bottom of the semi list blew a pencil sized lump out of his motor in lap two . . . and become hors de combat.

Then came the final — a thirty minute race in excellent weather conditions on a nearly perfect track surface. From the start it was a battle between Debbie Preston and Rick Davis, with Debbie in the lead though Curtis Husting showed in front for a while until a loose connection put him out. Phil Greeno and Ronnie Ton were battling for the next places, with the sole representative of the German host country Franz Groeschl showing up in close pursuit and quite on terms with the best. Ton, Errington and Bervoets all gave glimpses of greater things during the race; Phil Greeno faded. Ultimately it was Rick Davis' race from Debbie Preston followed by Franz Groeschl, Peter Bervoets, Bob Errington, Ronnie Ton, Phil Greeno and Curtis Husting.

A very pleasant meeting: thanks to our hosts who did everything — including a



very adequate English broadcast service — to make their visitors welcome, which meant that such local stalwarts as Karlheinz Will were not able to race. There were English, French, Dutch, Spanish interpreters available. Intervals were enlivened by displays — helicopters, buggies, etc., and local shops had provided prizes for a splendid tombola . . . and the trophies were elegant, all identical in design but going down from Giant Size in steps to large Dwarf . . .







# PAINT SYSTEMS

For use on LEXAN AND ABS

**PAINT FOR MODEL CARS** Specially developed for use on the body shells of Model Racing Cars in both 1/8th and 1/12th scales.

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- Metallic Colours available**
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These Paints have been produced for easy application on both ABS and Polycarbonate (LEXAN) body shells. It can be brushed straight from the can or by thinning up to 50% with a special thinners.

Does not distort body shell or craze if applied too thickly. Thick application of any paint is not recommended as this reduces the flexibility of the paint film. The paint dries quickly to a semi-matt finish. This gives an excellent key for any subsequent lacquer or fuel proofing coats.

The PAINT has been specially formulated to give high adhesion to the shell without requiring 'flattening' with sandpaper. The body shell should be washed and finally degreased with Methylated Spirit. For maximum adhesion however, it is recommended that the surface to be painted is lightly 'flattened' with a rubbing pad or very fine 'Wet or Dry Paper'. When dry the paint has a high wear resistance so that it can be used to paint the outside of LEXAN bodies for example when painting drivers in cars.

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A very special masking tape made from plastic. This tape can be stretched to conform to double curvatures or to produce smooth curves. Produces a sharp paint line with NO BLEEDING under tape, even when using very thin paints. Tape film is not attacked by paint solvents and can therefore be easily removed after painting. Adhesive allows good adhesion without taking off previous paint layers when removed. This is providing that previous layers have been allowed to cure sufficiently.

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*Distributed in UK by G.B. Models (see advert) as Lexan Paint, Adhesive, etc.*

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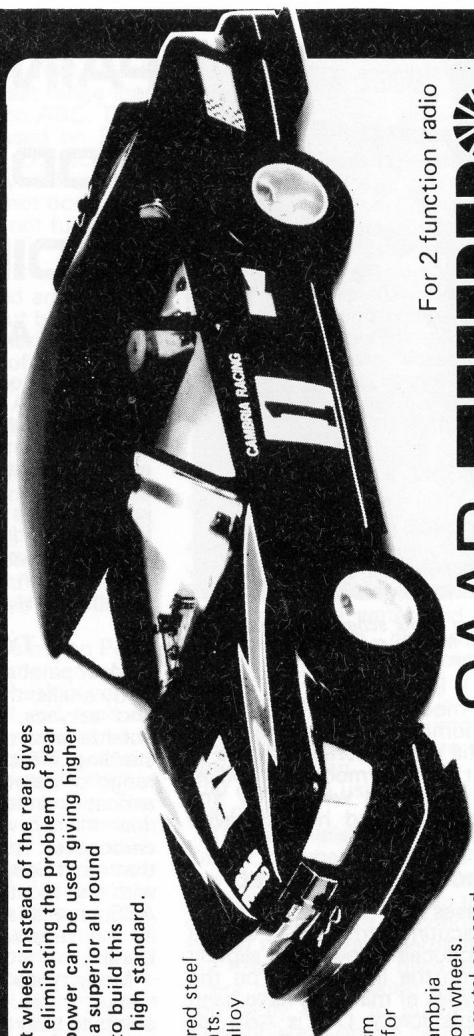
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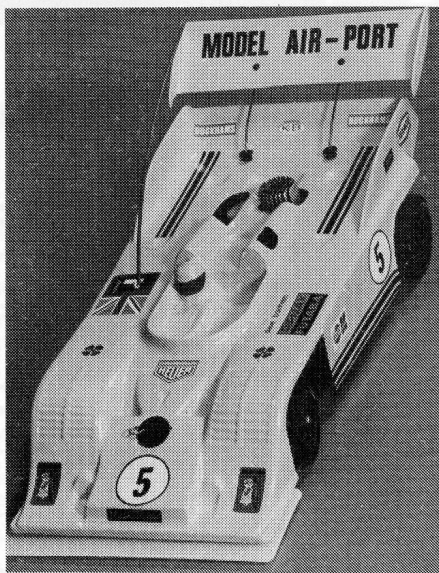
For 2 function radio

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Kit complete with batteries. **£52.95**

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Simple but effective colour scheme for Model Air-Port team, seen at Mendip recently — yellow and black can hardly be mistaken!

ALTHOUGH models cars have been around for a number of years, it appears that there is still a considerable degree of difficulty about painting model car bodies. In this series of articles we will try and outline the problems and how to overcome them.

### THE ARTICLE TO BE PAINTED

In most cases the body shells are produced by vacuum forming over a male model. This produces a body with slightly sharper detail on the inside than on the outside. Two types of materials have been found to be satisfactory. One is ABS (or for the purists Acrylonitrile Butadiene Styrene) the other is Polycarbonate (such as Lexan).

**ABS** is very cheap to produce but the material is brittle and therefore breaks easily. It is usually opaque and has to be painted on the outside. This means that any windows have to be cut out or painted in. Also it is easy to scratch the paint job in an accident.

**Polycarbonates** are expensive. Although Polycarbonate shells have been available for almost as long as ABS, they are only now achieving general acceptance in the market (other than use for the top echelons of racing). They are expensive because the material cost is high. In addition much tighter control is

# PAINTING MODEL CAR BODIES PT.1

BY BOB AGNEW, B.Sc. (Eng)

required in order to produce successful mouldings. A life of many times that of ABS should be achieved. Most of these shells are moulded in clear materials enabling painting to be carried out on the 'inside' of the shell. This protects the paint job as well as guaranteeing a shine to the finished body. It does require more thought however because the job has to be painted in the reverse order of colours i.e., trim first, solid colour last.

### TYPES OF PAINT

Most paint systems can be used on ABS body shells, this includes enamel, cellulose and acrylics. They are painted on the outside and as such it is easier to get startling effects. It also means that the range of paints, colours, metallics etc., is almost unlimited. For this reason we will deal mainly with the painting of polycarbonates. It is painting this type of body that most people appear to have problems with and most of the tips are applicable to ABS as well (although remember they are in the reverse order to application on Lexan).

Many types of paint are available on the market today. However, there are certain points to bear in mind when selecting your type of paint to use.

**First, always** try your paint on a scrap sample of the Lexan. Polyurethanes, enamels, vinyl paints can all be used, however, they can be difficult to spray satisfactorily and if brushed tend to form a thick paint film. Adhesion can be marginally good.

**Note:** It is not generally appreciated just how much a model car body flexes during use. All the paints usually used are flexible to varying degrees. The flexibility however is greatly reduced the thicker the paint film is. For this reason it is best to spray thin coats or use a paint specially formulated for polycarbonates which is thinned so that even when brushed it produces a thin paint film.

### Cellulose or Nitrocellulose paints

These are generally what is used on full size motor cars. There is a vast range that can be used to great effect on ABS. They cannot however be easily used on Polycarbonates. Without being too technical these paints are not very 'chemically aggressive' and as such do not bond very well to the Lexan. They are not fuel proof either.

### ACRYLICS

A great deal has been said and written about using acrylic paints, but be careful.

The term acrylic is a general one and covers many different types of paints. One thing can be said however that unless great care is taken most acrylics can damage, chemically, Polycarbonates such as Lexan.

Many plastics (Lexan being one such material) contain compounds known as plasticisers. These make the material flexible. Unfortunately these compounds can act as a weak link by absorbing other chemicals which reduce the flexibility properties. This is known as 'Plasticiser Migration' or embrittlement.

The problem with acrylic paints on Polycarbonates is that embrittlement can happen very easily. The adhesion would be good but the body shell will tend to crack and star. In addition some acrylics metal flake is one such material, contain Toluene. This type of paint applied thickly tends to shrink to quite a large degree. The result can be that the body shell literally curls up and makes a very expensive mistake. Acrylics can be used very successfully if very thin or 'dry' coats are applied. "Dry coats", means spraying the paint from a distance such that much of the thinners or solvents evaporates before reaching the body shell. Do not worry if the colours do not appear to be very dense. This can be improved by final spraying over the whole job with white. Even if this is not done you will be surprised how dense the colours look when the body shell is put on the car, on the ground.

The best acrylics are almost 100% fuel proof, however they are also the most likely to embrittle the Lexan. Most custom colours are high quality acrylics, but providing care is taken some terrific results can be achieved.

A suitable fuel proofer such as Tuf Coat is excellent for protecting non fuel proof paints.

### Specialised model car paints

There are a number of these paints on the market. Some are what is called

modified acrylics others are vinyls, etc. The aim of these paints is to give good adhesion without too many of the problems as listed above. As a rule of thumb it can be said that if the instructions say apply the paint 'dry' then it is probably of an acrylic base; if the instructions say put it on wet then it could be cellulose, vinyl or polyurethane based.

The best paints of all tend to be a combination of several types of these paints. The ideal requirement is a paint which sticks aggressively to Lexan or ABS, can be sprayed or brushed and does not embrittle Lexan. These paints do exist and are on the market. In all cases, however, it is vital to use the correct thinners as supplied with the paints.

### PREPARATION OF THE BODY SHELL

#### Cleaning

ABS shells do not need much preparation providing they are clean. A wash off with weak detergent solution should be fine providing the shell is thoroughly rinsed off with water and dried. A final wipe over with methylated spirit or methanpl. The Polycarbonate bodyshells are usually formed using a release agent on the model and as this is on the inside of the moulding it is important it be thoroughly cleaned before being painted. Detergents can leave an invisible film after drying so using alcohol direct avoids this problem.

The specialist paints do not require further treatment to the shell. At this point there are two tips that may be useful.

Firstly, after masking up the model wipe over again with alcohol (methylated spirits) to remove fingerprints, etc. Wiping like this should not have any detrimental effect on the masking tape. Secondly, if you really want to guarantee that your paint job stays on the body then the inside of the shell should be lightly abraded. This can be done with very fine 'wet and dry' paper, grade 1200, or one of the new plastic abrasive pads which are dry and enable easy access into the tight corners. The body shell will appear dull after this operation but don't worry. Providing you have not gone berserk and put deep scratches into the body then once painted you will not be able to tell the difference between the roughened and the original supplied body shell. Wipe off the dust with alcohol.

#### Masking up

This often causes a lot of problems because very complicated designs are chosen.

It is surprising how effective a simple design consisting of a few straight lines and a couple of curves can be. One trick is to use a chinagraph pencil on the outside of the shell to roughly mark out the design. This can be wiped off afterwards.

**Note:** Do not use a felt tip pen. Some felt tip inks are permanent when put on plastics even some of the washable pens.

Use a good quality masking tape. Various tapes have and can be used.

**Crepe paper.** These are the most generally known. There are various types and widths available at the model shops, stationers and car accessory shops. These tapes can be stretched and are not attacked by the solvents in the paint. They have one major problem — if the tape edge is not rubbed down well the paint 'bleeds' under the edge. One of the best tools for rubbing down these tapes is a Letraset rubbing tool. This can be bought for a few pence from a good art or office supplies shop. Another good tool is the rounded end of a small metal nailfile.

**Vinyl tapes.** These are often used for packaging boxes. This tape has the advantage that it is not corrugated like crepe paper tapes and therefore does not allow the paint to 'bleed' under the edge. Unfor-

tunately, it does not stretch around corners easily. It can also be attacked by the paint solvents. This means that when you wish to remove the tape at the end of the job you find that you have to remove hundreds of small pieces of tape. It can drive one up the wall believe me!

**Polypropylene tape.** A new tape has just been released onto the market which combines all of the good features of the above tape with apparently none of the problems. This is a stretchable plastic masking tape available in various widths which does not 'bleed' and is not attacked by the paints. This will be available in your model shops during August. The only problem is that it will be expensive (what isn't these days!) A tip when painting over masking is, before applying the main coat to give the edges of the tape a very light mist coat. If this is done slightly 'dry' it has the effect of sealing off the tape without the danger of 'bleeding' under the edge should the tape not be fully rubbed down.

#### Articles to come

Equipment & Tools, Spraying v Brushing, Customising & Tricks to strengthen the bodies and increase their life.

## "SOUTHERN LEAGUE SO FAR" . . . continued

and Aldershot. In general the (newer) south-west clubs are not doing so well but the exception to this is the Exmouth team who are in a fine third place overall — well done Ian Davies and his team.

#### RESULTS AT END OF FIRST THREE ROUNDS

1st Bournemouth	30 points
2nd London	22 points
3rd Exmouth	19 points
4th Aldershot	18 points
5th Southampton	14 points
5th Mendip	14 points
7th Northavon	13 points
8th Taunton	7 points

NB at each round 10 points are given to the winning team, 8 points to the second team — then 1 point stages down to last place. Points then carried forward to next round.

In conclusion, the question must be asked "is the Southern League a success?" The answer to this must be "yes"

as it has fully lived up to everything the founder clubs expected of it. Concern had been expressed by some BRCA officials at the time the League was formed that the southern clubs intended to break away from the national scene. This course of action was never intended and, in fact, the added interest in racing caused by the League events has resulted in a greater number of southern competitors entering BRCA national events.

The whole point is surely that Southern League events are intended to supplement, not replace, national meetings. The whole basis is different anyway — team events as opposed to race meetings where drivers are racing purely as individuals. With three more rounds to go interest within the League is still high and I would be most surprised if the League did not hold a further series in 1980. If additional clubs wish to enter the League next year this will result in some amendment to the organisation (more cars per race or two Leagues perhaps) but this bridge will be crossed when it presents itself.

Long live the Southern League!

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## LEXAN PAINTS AND ADHESIVES

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Can be brushed or sprayed, excellent adhesion to Lexan and ABS. Does not embrittle Lexan. All colours are intermixable.

These paints have been produced for easy application on both ABS and Polycarbonate (Lexan) body shells. It can be brushed straight from the can or by thinning up to 50% with a special thinners (special thinners required).

**RUBBING PAD** Aluminium Oxide impregnated plastic PAD. Ideal for flattening off any model or paint surface prior to painting. Super fine or medium grades available (medium approx. equivalent to 1200 grade 'Wet or Dry' paper).

**NO BLEED MASKING TAPE.** A very special masking tape made from plastic. This tape can be stretched to conform to double curvatures or to produce smooth curves. Produces a sharp paint line.

**LEXAN ADHESIVE.** Solvent bonds Lexan to Lexan permanently without making the Lexan brittle.

*Paint available in 50ml tins sufficient for approx. 2-3 body shells. Thinners in 125ml easy pour tins*

## LIFE WITH A GRAUPNER R/C SIDEWINDER

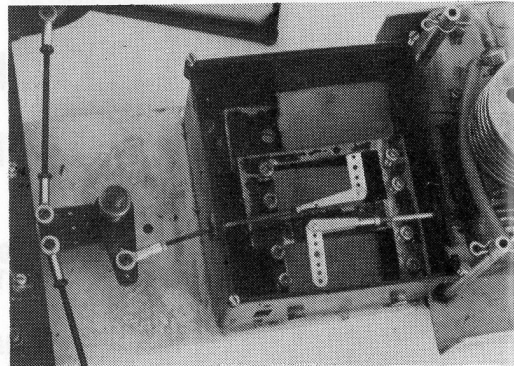
(continued from page 13)

Before the 'Sidewinder' had its first trial run (minus the body) all the necessary adjustments were made. Starting with the front steering beam which needed the toe-in adjusting (up to 5 deg. for each wheel is recommended). The steering geometry also includes pre-set Castor, Camber and Ackerman steering. The operation of the disc brake was again checked before the trial run and also the throttle was checked for free and easy movement.

The instruction manual includes the plans for a starter box, but a hand held starter with a *large* flywheel will do the job of starting the 'Sidewinder' just as well.

The first trial run then took place at a local empty car park which was free of stones and other obstacles. The car was carefully driven over short distances to get used to the handling characteristics. After a few circuits with greater confidence the speed was gradually increased until short bursts of top speed were used. At this stage a few problems arose. Waste exhaust goo started to leak from the manifold joints and from the silencing system. This was subsequently cured by sealing with silicone rubber. In addition, servo tape had been used to secure the servos to the electronics box with the result the servos pulled free and it was necessary to find a more permanent method of securing the servos.

This was done by constructing a servo mounting tray and securing it to the electronics box. A further fault occurred in the braking system. Part of the mechanical force of the throttle/brake servo was lost in compressing the cushioning spring before movement was applied to the brake pads. It was found that by removing the spring and re-positioning the collets a more direct braking action was obtained. Lastly, insufficient tension in the servo



*Kit r/c box in use but with other servos in a metal sub-container.*

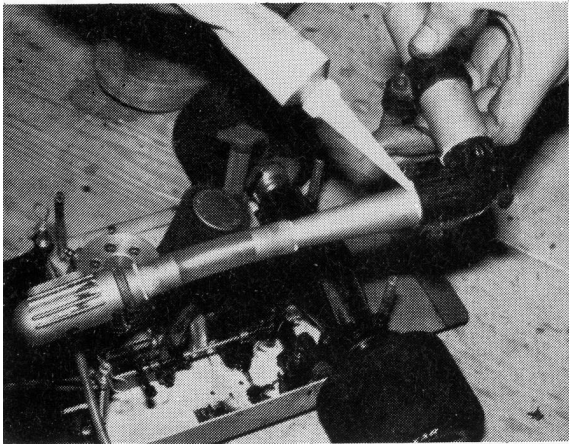
saver caused the front wheels to flutter and this was remedied by increasing the tension on the spring.

In later races with the car another serious problem arose. The receiver batteries were positioned too close to the hot exhaust. Subsequently the battery casing and the electrical wiring harness started to burn and short out! All this was because there was insufficient clearance due to the fact that the battery pack used was larger than the one the car was designed for. This difficulty was overcome by re-positioning the battery pack immediately in front of the front axle beam. An added bonus of this modification was to increase the weight over the front wheels which improved the handling characteristics.

When our 'Sidewinders' were purchased we were complete novices in the field of I.C. car racing. The cars were relatively easy to build and maintain and after 6 months they are at the stage where on occasions they have run continuously in excess of two hours which includes pit stops for re-fuelling. This serves to demonstrate the reliability. The kits seemed to be very suitable for beginners, give lots of fun and are just as fast as we shall ever want.

We are very satisfied and would recommend them to anybody who wants to take up this exciting sport.

*Sealing off leaking joints in the exhaust system with Devcon sealant that made them absolutely gootight.*



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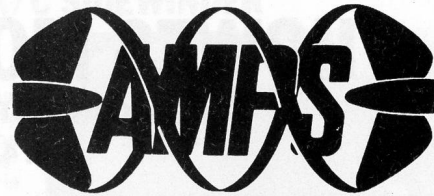
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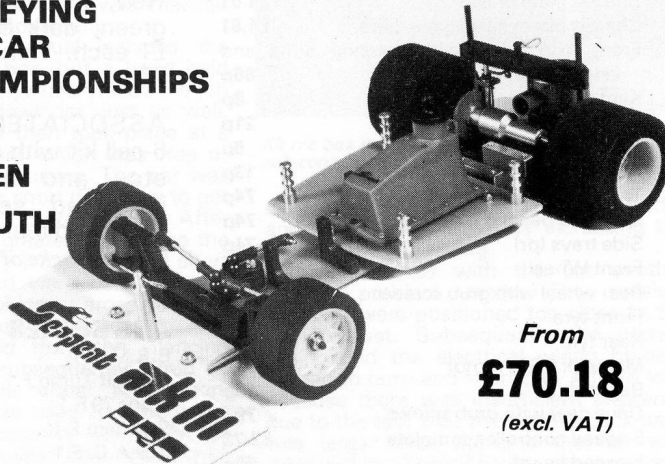
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Winning Team Mardave: L. to r.: Wes Raynor, Phil Davies, Geoff Labbett, Tony Devonport.

## MIDLAND

## 5HR ENDURO

### TEAM RACE

THEY say golfers are a keen, mad breed, but model car racers cannot be far behind! On Sunday May 20th the first Barwell National Open 5 hour Endurance Team Race was held. It proved to be an extremely enjoyable and exhausting day!

It was decided that the entries would be restricted to the first twelve teams to return their entry forms. Unfortunately, several teams showed interest after the spaces were filled and we were unable to accommodate them. Sorry, better luck next time! Each team consisted of four drivers and a team manager. The race was run to R.O.A.R. rules.

The venue for this meeting was Barwell Liberal Club, where the M.E.R.C.C. hold their weekly club meetings. It was a difficult job for the club's committee to set out as large a track as possible, pit areas, and access to the endless supply of tea, coffee and aspirins!

The eleven teams (one didn't turn up) were Team Nene, Team Mardave, Team Modelcraft, Team Unitrol, Team Bretby, Team Spectron, Ally Pally Team, Team Lectricar, Team Tronic, Team Quinton, and Jim Davis Models. The teams began to arrive at 10 o'clock, to find the track

ready for practice, which, of course, everyone wanted to get on with. Practice ended at 12 o'clock at which time a halt was called. Cars wishing to be entered for the Concours were put onto the track ready for judging. The Concours prize went to Team Bretby with their attractive Porsche Carrera bodies.

The race itself got underway at 12.30 p.m. As in any race the start was fast and furious, and with eleven cars, it was even more chaotic than usual. Team Modelcraft set an early lead, but were soon overtaken by Team Mardave, who progressively drew away from the pack. Team Mardave were pressed very hard by Team Spectron, who in turn were closely followed by Quinton Model Club. The latter team made a gallant effort, as they were a team of club members who got together for the first time to race as a team. The climax of the race came as 5.30 approached, with the teams all making a final 'do or die' effort to catch the Mardave team. However, they had by this time built up quite a cushion for themselves, and they finished as worthy winners. This was a fitting victory for Wes Raynor, who masterminded this, the second triumph for his Mardave cars.

The final results were ...

1. Team Mardave	1141 laps.
2. Team Spectron	1135 laps.
3. Team Quinton	1122 laps.
4. Ally Pally Team	1103 laps.



## LILFORD ELECTRIC

THE first annual Jim Davis R/C racing two day meeting at Lilford Park for 1/12th scale electric cars was blessed with superb weather and racing to match. The individual event was run over a modified shorter circuit than the i.c. cars use in order to keep the racing closer and increase the number of laps run. The Three Hour Team Race on Sunday, with thirteen teams entered was run over the full circuit. This provided an opportunity of seeing how the smaller electrics compared with their larger counterparts. (Only about 5 seconds a lap slower than medium class club events I understand).

Forty-four heats with sixty-six cars were run off on Saturday morning and afternoon, the best three of the four heats being totalled to find the quarter-finalists. The heats were arranged so that each round comprised a different grouping of drivers to give everyone a fair chance of equally clear/obstructed running. It soon became clear that a score of 12 laps plus would be required to make the quarter finals. P. Field was the first to break the barrier into 13 laps in Heat 6; and FTD fell to W. Maisey with 14 laps 5 secs. With Lilford being a tarmac ribbon type circuit it was essential that the driving was accurate, as any run off put the car in the grass, where it was marooned until put back on the track by marshals.

By 5.30 after a continuous day of good racing with only one heat in need of a re-run due to a kickup with the lap counting,

## JIM DAVIS MODELS' TWO-DAY SPECTACULAR

there were twenty-four quarter finalists. Everyone then retired to the adjoining camp site for a well earned rest, or to the local hostelry to celebrate or drown their sorrows.

Racing re-started at 10 a.m. Sunday for the individual quarter finals. The top twelve then went through to the semi-finals. Final length was increased to six minutes and produced a close race between Richard Gammon, John Chamberlain and Bill Maisey, with Chamberlain eventually crossing the line four seconds ahead of Maisey. Prizes were awarded down to twelfth place so all the semi-finalists got a share of the spoils.

The Three Hour Endurance Race was run on Sunday afternoon with thirteen teams competing, made up for the main of drivers who had already been running in the individual event plus others who had been unable to make a two-day event of it. Before racing started a member of each team had a practice five minute run which also served to check against interference on the spectron analyser. Each team manager was supplied with a pennant to suit their frequency which had to be attached to the car which was on the track. Every time a car change was made the car with pennant left the track to the right of the control post into the pits behind. The replacement car regained the track to the left of control. Thus each change meant a loss of one lap. This gave the team manager a dilemma to resolve: keep the

Continued on page 47



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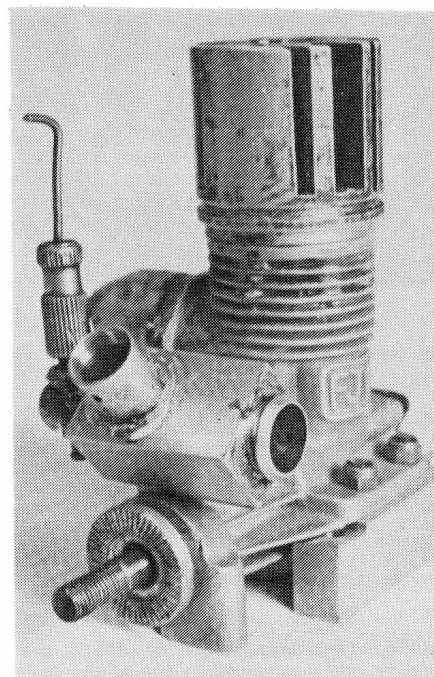
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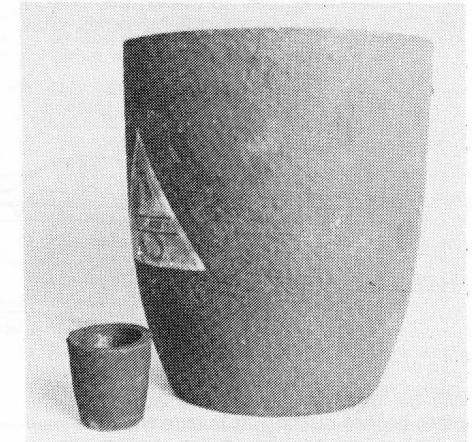


# CASTING PT. II

BY FRED LIVESEY

PHOTOS: B. DEBOO

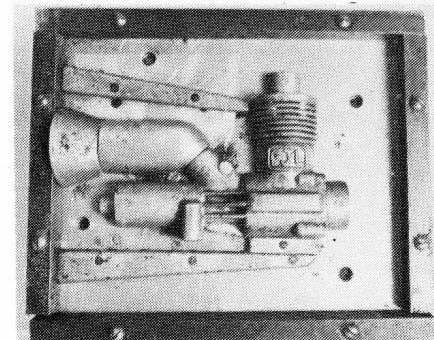
Left  
 Engine with crankcase cast by shell moulding.  
 Below: Big Daddy and Baby crucibles!



FIRST I must apologise to those readers who have been awaiting part II. With the racing season rapidly approaching and an extension to the homestead finally reaching its conclusion — I'm afraid that 20 hours every day left little time for articles.

The second apology concerns part I — an error crept in with the conversion from pen to type confusing nitrogen and hydrogen. The sentence concerned should read "... I blamed this on dirty scrap but on further investigation it appears that aluminium alloy attracts hydrogen gas during the melting process." The mistake was pointed out by a metallurgist reader

Below Half Plate Pattern.



who also very kindly sent a sample of resin based sand — of which I'll give more details when available.

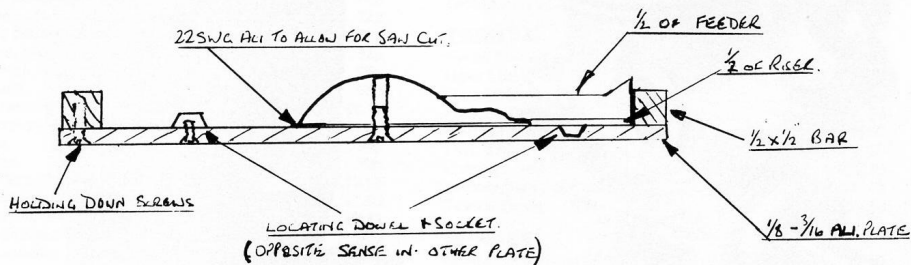
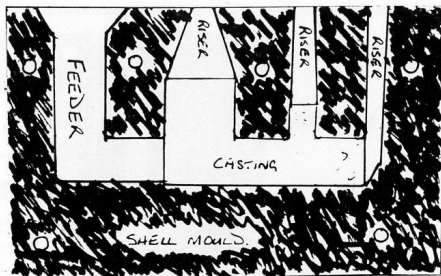
For some time now I have been using a casting method known as shell moulding. This involves the use of a pattern capable of withstanding a temperature of about 250 C and is usually made of metal. To avoid the sand sticking to the mould it is coated with a thin layer of silicon grease. The pattern is heated to 250 C and a special resin impregnated sand is shaken or sprinkled over half the pattern. When the sand touches the pattern the resin first melts then sets. Shells are produced up to ¼ in. thick. The two halves when removed from the mould are then cured at 400 C — or I bake them to a mid brown colour.

The mould halves are then joined together with a resin adhesive clamped with clips and baked to cure the adhesive. Cores in the same material can be baked and added as desired. The advantage of this method of casting is the accurate dimensional casting produced and, apart from cleaning up bearing housings, liner fits, etc., only minimal machining is needed on the outside of engines, etc.

The only problem I can see for the amateur is the need for detailed metal moulds and a heating system for the shells. I use a heated hot plate.

For anyone who wants repeat castings of similar dimensions for a reasonable outlay it seems worth the effort.

The moulds I make consist of a 3/16 dural plate with a 1/2 in. square bar fastened around the outside edge. I first make the part I am going to cast in the aluminium alloy and finish to size. If very critical use a casting allowance on the overall dimensions. The article is then cut in half observing that no undercuts exist. I take the precaution of drilling holes that



will be used to fasten the article to the plate before cutting. It is true that the saw cut should be allowed for during mould making, but as my moulds are usually made from a part which has already been in service I make a small allowance for the cut by adding a slice of 22SWG alloy sheet to each rear face with epoxy adhesive and trim to the shape around each half.

To obtain alignment of each half some form of dowel location on the plates is essential. Again, I use the holes in the plates from the pattern to drill plates and fit dowels in one plate, counter sunk holes in the other plate. (See diagrams).

The feeder and risers to feed the molten aluminium alloy are also provided on the plates, again split down the middle. The

moulds, when joined ready for casting, are stood on end supported by fire bricks with feeder uppermost, the molten metal is then poured in. On cooling the sand is broken from the casting and the feeder and risers cut off.

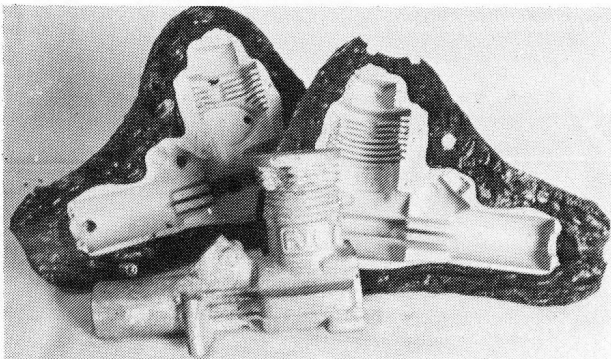
For a casting used by modellers the feeder needs to be about 3/4 in. to 1 in. in diameter. I use 1/8 in. aluminium plate for the risers. The location of risers is decided by the hit and miss method of looking at the pattern in its casting position and locating areas which form pockets and may trap air (see diagram).

The processes can be explained much more easily of course with the example in ones hand and the person alongside — then by writing about it.

Top  
Location of Risers.

Above  
Cross section of Pattern Plate.

Right  
Shell mould halves before  
joining.



## ELECTRIC STOX...

MIKE Varley, secretary of Radio Stock Car Association has sent me these draft rules for 1/12th electric stock car racing (they will of course require endorsement at the AGM, but meanwhile offer opportunities for use and discussion). The Keighley club have made up their own electric stox, and at least two manufacturers are imminently producing them in kit form . . . so more fun for the long winter evenings . . .

### CONSTRUCTION RULES 1/12th SCALE

- Models are to be 1/12th scale, and a reasonable representation of a full size car.
- Overall length to be between 11 1/4" and 12" or scale.
- Overall width to be a maximum of 6".
- Wheelbase to be between 7 3/4" and 8 1/2" or scale.
- Front and rear bumpers must be fitted, with a contact surface of 3/8" to 1/2", and shall not project beyond the outer edges of the wheels. The distance between the bumper centreline and the ground must be 1 1/8" to 1 1/2". All bumpers and nerf bars must be plugged, and have no sharp edges.
- Overriders must be fitted to front and rear bumpers. The height from the top of the bumper must be: FRONT 3/4" to 1 1/4". REAR 3/4" max.

- Nerf bars may be fitted, but must be on the same level as the bumpers, and have a maximum contact surface of 3/8", and they must not project beyond the outer edge of the wheels.
- Tyres must have a maximum width of 7/8", and the diameter should be between 1 1/8" and 2 1/4".
- Motor 30 turn standard Mabuchi RS54.
- Batteries allowed — only SUB-C sized NiCad batteries shall be allowed. The size of the individual cells rated at 1.2 Amp/hour 1.2 volts is 23mm diameter x 42mm length.
- Cars will use a maximum of 6 cells and 7.2 nominal volts.
- The height of the body from the top of the chassis must be 2 3/8" to 3 3/8" or scale.
- The drivers name must be on the outside of the car.
- The drivers number must be on a 3/4" high fin on the roof of the car, and facing sideways. The numbers are to be BLACK on a WHITE background.
- and 16. AS PER R.S.C.A. RULES.
- Aerofoils may be fitted with the following restrictions. Maximum width to be 3 1/2". Maximum depth to be 1 3/8". Maximum height above chassis to be 3 1/2". Or Scale.

## LILFORD PARK (cont.)

cars running extra laps but slower or change and lose a lap. The start provided the only hitch on Sunday. After most of the cars had passed the lap counter for the first time after using Nick Adams' Demon Electronic Counter it was realised that with thirteen cars on the circuit in lieu of the six previously checked that a different technique was required. A halt was called and a re-start ordered. This proved a blessing to a number of teams who had made a mess of the start and lost their pennants around the circuit.

The flag dropped at 1.30 and from the start Team Spectron began to pull out a lead they were never to relinquish. The main battle of the race was between Schumacher Differentials Team and Jim Davis Models Team. After 1 1/4 hours

Schumacher had a five lap lead, after two hours this was down to one lap, then for the last hour they stayed on the same lap, keeping commentator and spectators attentive right up to the final flag, when the clock split them in favour of Team Schumacher. Another good duel was between Team Giles and Team Unitrol for sixth place. They stayed locked on the same lap for the last hour and the clock was unable to separate them.

Whilst the results were being compiled a demonstration of 1/8 i.c. was laid on by the Lilford model club.

### RESULTS

#### Three Hour Team Race

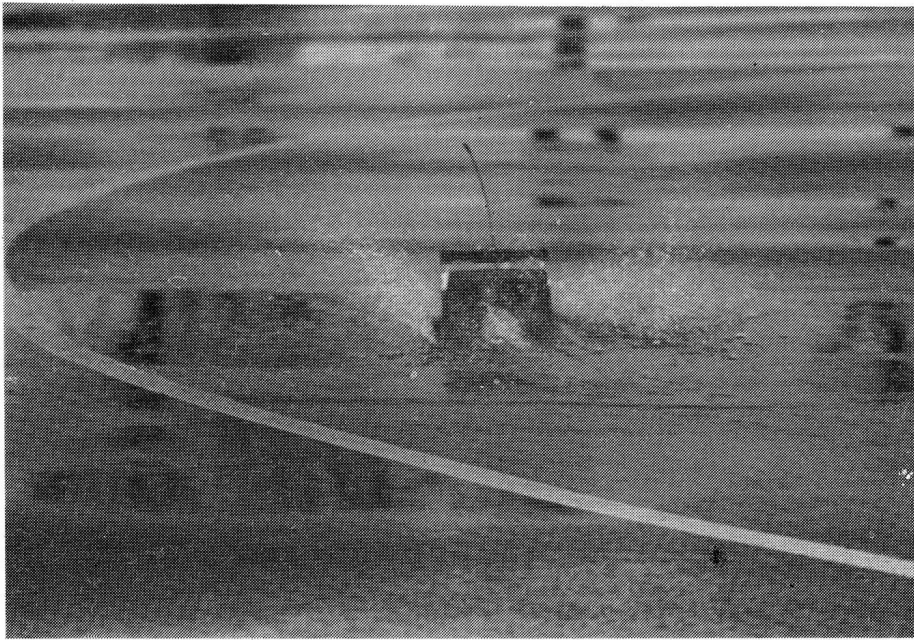
1 Team Spectron	341 laps
2 Schumacher Differentials	306
3 Jim Davis Models	305

#### Individual Event

1 John Chamberlain	Maidenhead	Spectron	13 laps	1 sec
2 Bill Maisey	Midlands		13 laps	5 sec
3 Richard Gammon	Ally pally/Smoothy	Spectron	13 laps	16 sec
4 Tony Devonport	Midlands	Mardave	12 laps	22 sec
5 J. Pearson			12 laps	26 sec
6 P. Field			11 laps	17 sec

P. Hales, Secretary of Meeting





## TRACK SURFACES

BY D. H. JENKINS

*London's Leyton Raceway under the worst possible conditions. Action shot by Clive Woodley. Not too often we must hope.*

TYRES run on surfaces, and the interaction between these surfaces produces the grip. The surface contributes therefore a great deal to the grip, and although it is equal for everyone it bears looking at.

It is also important for its water drainage capability.

The track surface must allow the tyre to slip for anything constructive to get done, and the graph of a slipping tyre, plotting effective friction force against relative slip shows that the maximum friction force (therefore, the best cornering, and best braking and acceleration) occur at about 15% slip.

There are four classes of common road surface which the R/C racer could encounter. Usually the track surface is made up of pebbles or grit or aggregate chippings left to set in a fluid type of substance like concrete or tarmac. The pebbles or aggregate usually stand slightly proud of the matrix. This is called the **macro** texture. This gives it a superficial roughness.

The pebbles or aggregate etc. have a

surface of their own, and this may be smooth or rough. This is called the **micro** texture. This gives rise to the combinations available.

### 1. A coarse macrotexture coarse microtexture.

This would be a bitumen macadam matrix with the quartzite aggregate chippings standing slightly proud.

This is a harsh surface providing heavy wear rates, especially with tail out driving styles.

The surface has, however, good drainage properties, and wet weather tyres may not be necessary where they would be on other types of tracks under the same conditions.

Because of the general coarseness of the track the higher hysteresis rated tyres will show proportionally more rolling resistance. Thus, on a track layout where there are many constant radius curves, or fast open curves once the car is on the cam the grip should be maximum, and the revs kept high. Highest possible hysteresis tyres should be used.

If, however, the track layout sports

hairpin bends and short straights, so that the engine has to drop revs consistently and then has to accelerate, a lower hysteresis compound will provide the same lower speed grip and let the revs pick up more quickly due to its lower rolling resistance.

### 2. Coarse Macrotexture, Smooth Microtexture.

This type of track is exemplified by a hot rolled asphalt with precast chippings rolled into the hot asphalt.

Here the frictional grip is reasonably good and all should go well. It would take a full scale grand prix meeting before the track conditions would deteriorate. Microscopically then the problem lies in the smooth microtexture which is close nit and does not drain microscopically at all well. Here particles of rubber and dust and exhaust oils are allowed to build up. The effect is cumulative and may present as a quickly deteriorating handling problem late on in the meeting, as the surface, already smooth, becomes smeared.

The problem, as stated, only occurs if the track is allowed to become dirty or greasy when the problem can become extremely acute following damp conditions as the water will not disperse or drain and only succeeds in lifting off the oil and dirt and floating it across the coarse macrotexture of the track. The handling can be bad in these greasy conditions, and there is no easy tyre answer, but the rubber is more important than the tread. The handling is not as good as on a coarse microtexture.

### 3. Smooth Macrotexture, Smooth Microtexture.

This would be represented by a polished granolithic concrete flooring or an old fashioned glossy tarmac.

Here when the going is good, all is well but if somebody spits the track is undrivable. Even dampness in the air can cause loss of grip. There is little or no drainage due to the fine macrotexture, and tread tyres have to be brought out early on. Acceleration, high speed and heavy braking have to be done in a straight line and corners negotiated gently. A point and squirt driving technique is a must, and softer than normal rears are needed. The rear inner rear under the slow conditions will still be able to slip around the corners due to the reduced grip anyway.

### 4. Fine Macrotexture, Coarse Microtexture.

This is represented by a concrete motorway made of crushed or mechanically rigid concrete. I trust our R/C drivers do not race on motorways but Airfield runways are of this type.

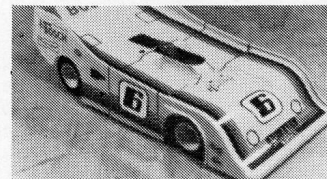
The fine macrotexture ensures there is no drainage, and so in the wet tyre tread patterns have more effect than softer rubbers. Dampness will produce a greater effect here therefore.

A coarse micro texture, of course, is better dealt with by a rubber change not a tread pattern.

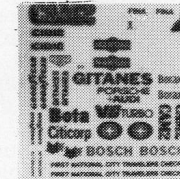
A fine macrotexture like this has the unfortunate effect of making the friction coefficient more variable with the speed of the vehicle. Thus, a sedate practice session followed by a 'bat out of hell' racing lap could well need a change to, softer compound. This type of surface can produce a high speed understeer with its attendant problems.

## CLEAR LEXAN BODIES

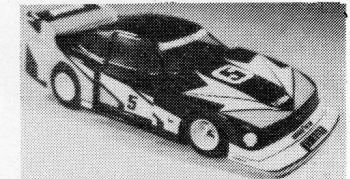
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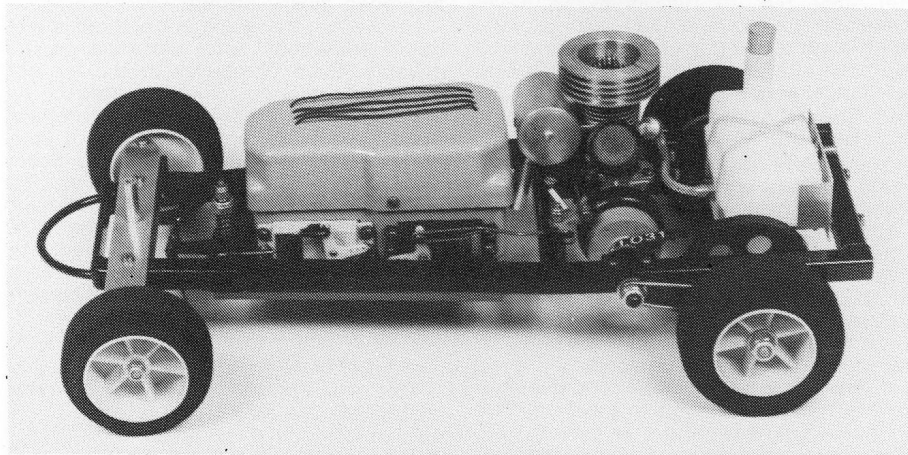
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Now available in 1/12 scale: Thunderbird, Toyota and the Ferrari Daytona

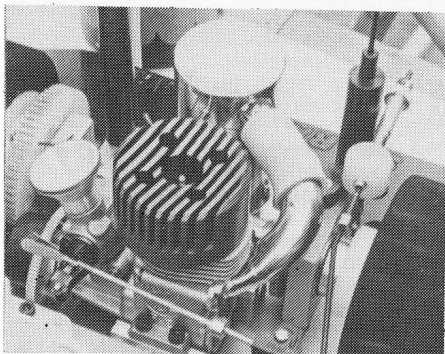
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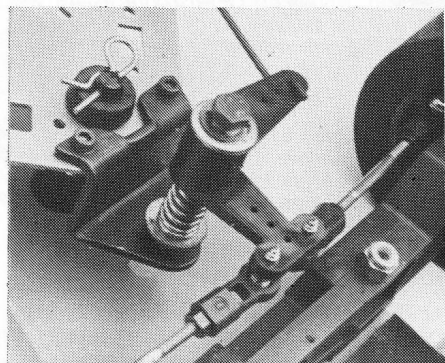
# SHOPPING AROUND



Mardave Autocross car: strong family resemblance to stock car will be noted.



Futura III details of "floating" servo-saver and the SG version of manifold for ST X21 RE engine.



HAPPILY, there always seems to be something new! Latest is Autocross — and here is the latest Mardave autocross car to prove it. Selling at a modest £26.75 it follows stock car lines very closely, using in fact a great many stox parts, springing, belt drive, welded chassis and fuel tank arrangement, but lacking the nerf bars. A new body shape well protected with screen netting gives it an authentic air. Wes Raynor tells me he hopes to promote an initial autocross meeting later in the year . . . the French have already had a number of successful events in this genre. Meanwhile any piece of meadow with shortish grass and a few bumps and hollows can be your training ground (plus the farmer's approval of course!) Also soon to be coming from the Mardave works will be a new 1/12th electric car, plus — Guess what! — an electric stock car. But soon, Wes!

Micro-Mold have managed to get a large delivery of all the latest Bo-Link spares including the latest bodyshells for Mazda, Mercedes 500SLC, Spyder Can-AM, VW Scirocco and Lamborghini Countach. A really good back-up service for the cars is not only promised but the bits and pieces are on this side of the ocean. The Micro-Mold car should be coming into the shops by now and we look forward to describing it in detail very shortly. Other new 1/12th electrics on the way but not yet seen include Mantua and SG plus of course the sensational FWD Saab from our own homegrown Cambria.

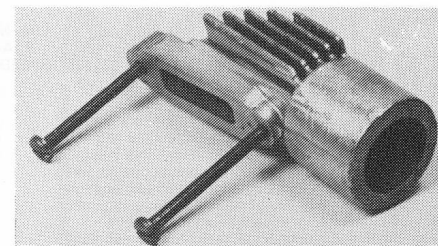
First fruits of the new American drive for better silencing come from Delta. They are

specifically for K & B and OPS engines and designed to fit straight on to the Delta Super J and Panther cars. They follow very closely those used for their 24-hour record run and at the winter nats in Florida. The silencer part bolts directly in place of the rear pod spreader bar which makes it virtually impossible to get it knocked off in the heat of a race. Manifold (header pipe in American) fits on to engine in the usual way and the parts are joined with the usual silicone sleeve. Very neat and workmanlike and adaptable to other cars with very little trouble.

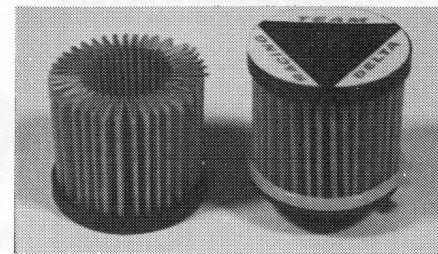
World Engines are offering a new neat little finned manifold for the Super Tigre XT21 RE with 90 deg. plus bend. This comes now with the engine as supplied by them, or can be bought separately at a modest price. The SG exhaust which comes with engines supplied via Model Rectifier UK Ltd, Jack Williams' company is a quite different shape sweeping round up to mate with the SG silencer and polished up to match it. A modification to the Futura III recently seen locates the servo saver on a bracket attached to the radio plate. I think this is a great improvement as it raises the level of the actual connecting bracket to line up with the track rods for smoother action.

Another goodie from Delta is their new paper air filter. This follows the usual concertina pattern providing some 18sq. ins of aircraft quality filter paper. It sits on a nylon base and attaches to the carb with a set screw. Two sizes are available to fit either the large carbs (Perry Pumper, etc.) or the smaller sizes.

Parma are on the ball again, not only with new bodyshell releases including Toyota and Thunderbird, in both clear lexan or as factory painted bodies, but with some useful decal sheets. These are on a pressure sensitive Mylar sheet and are claimed to be more resistant to damage



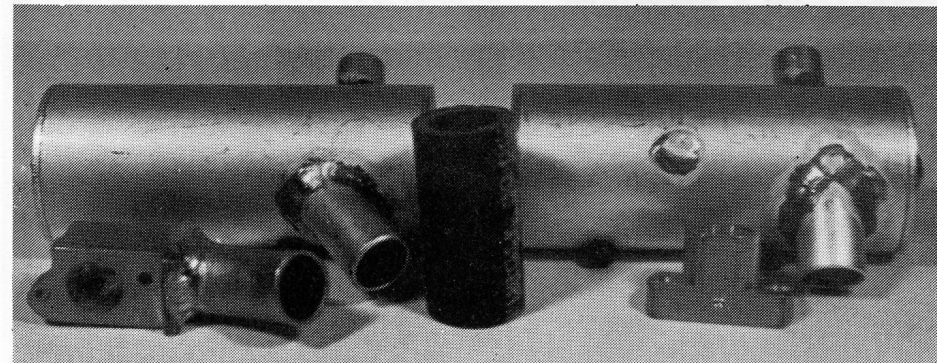
Ribbed manifold for Super Tigre X21 RE as supplied by World Engines. Below: Delta paper air filter.



than waterslide transfers. In addition to usual sponsor type decals they also offer Dunlop, Michelin and Goodyear as tyre stickers. Very attractive Silverbird decals are supplied with all bodies, clear or pre-painted of the Silverbird car. Available in both 1/8 and 1/12 scales.

I should have mentioned in last issue that the Schumacher differential is now being produced in black nylon in place of the original white finish. It would have been shown in Cecil S.'s advert like that but the photo was reversed back by the printer who checked with the previous month! Nice black wheel hubs are also being offered so that a matching set can be fitted.

Delta' latest silencer designs for (left) K & B and OPS engines. They fit neatly between engine hangers on the Delta Super J.



# SUPER Tigre

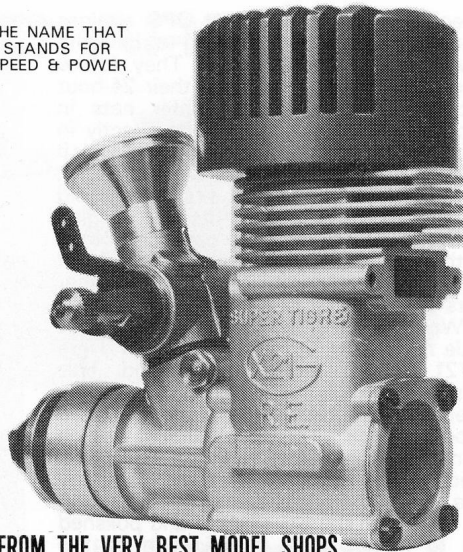
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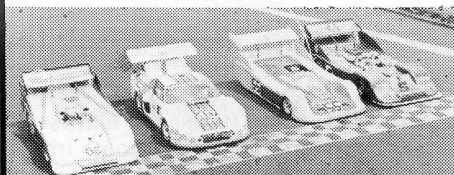
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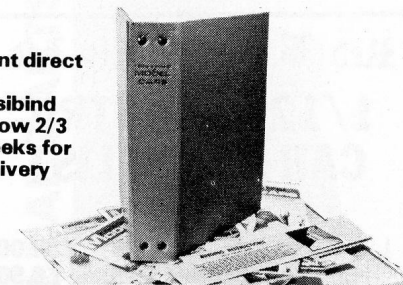


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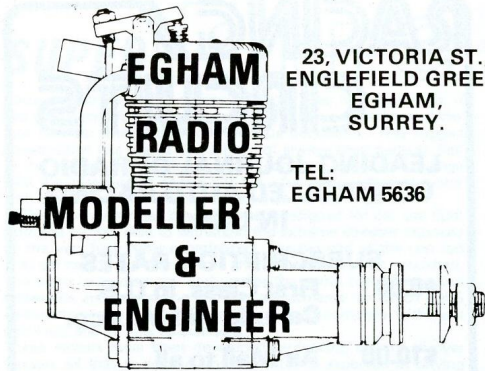
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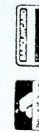
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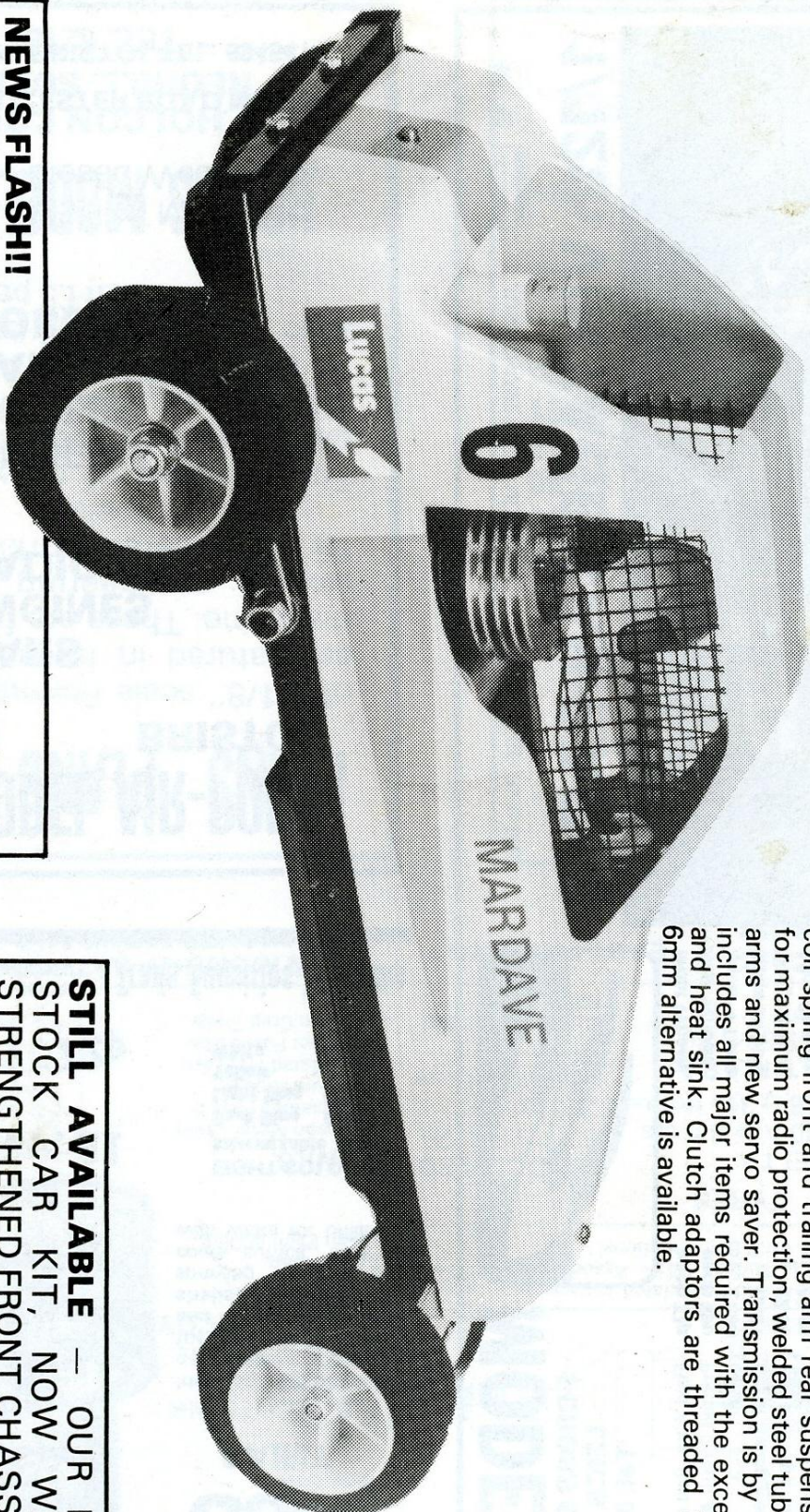
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