

# Radio Race Car

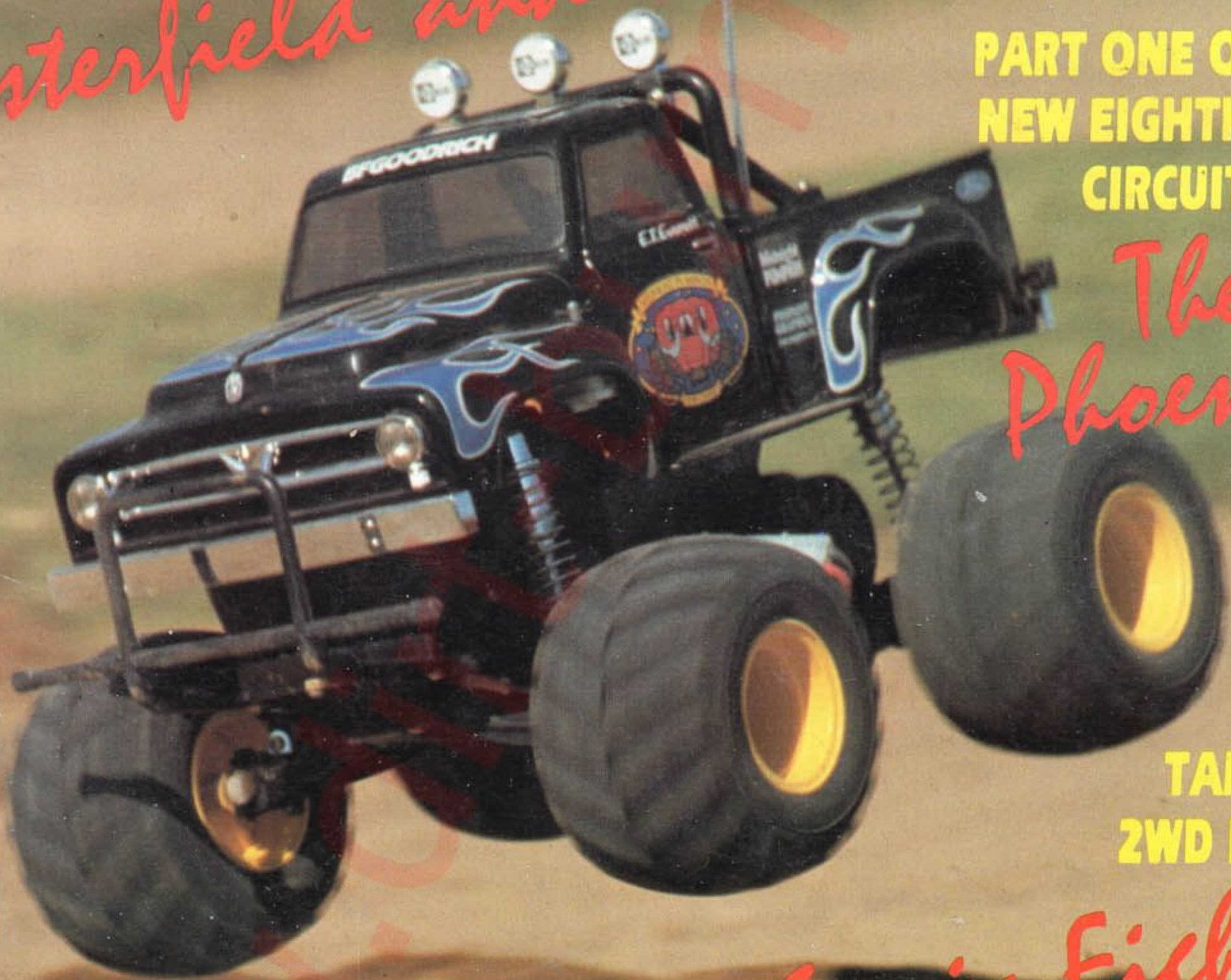
The Monthly Magazine  
for All Model  
Radio Control  
Car Enthusiasts

International

July 1988 • Price £1.35 (UK) • \$3.00 (USA)

RADIO RACE CAR INTERNATIONAL  
OFF ROAD SERIES:

*Chesterfield and Worcester*



PART ONE OF PB'S  
NEW EIGHTH 4WD  
CIRCUIT CAR:

*The Phoenix*

TAMIYA'S  
2WD RACER

*The Sonic Fighter*



FREE COMPETITION

*Win a  
Mardave Meteor*







# Radio Race Car International

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July 1988 • Issue 56 • ISSN 0268-3334

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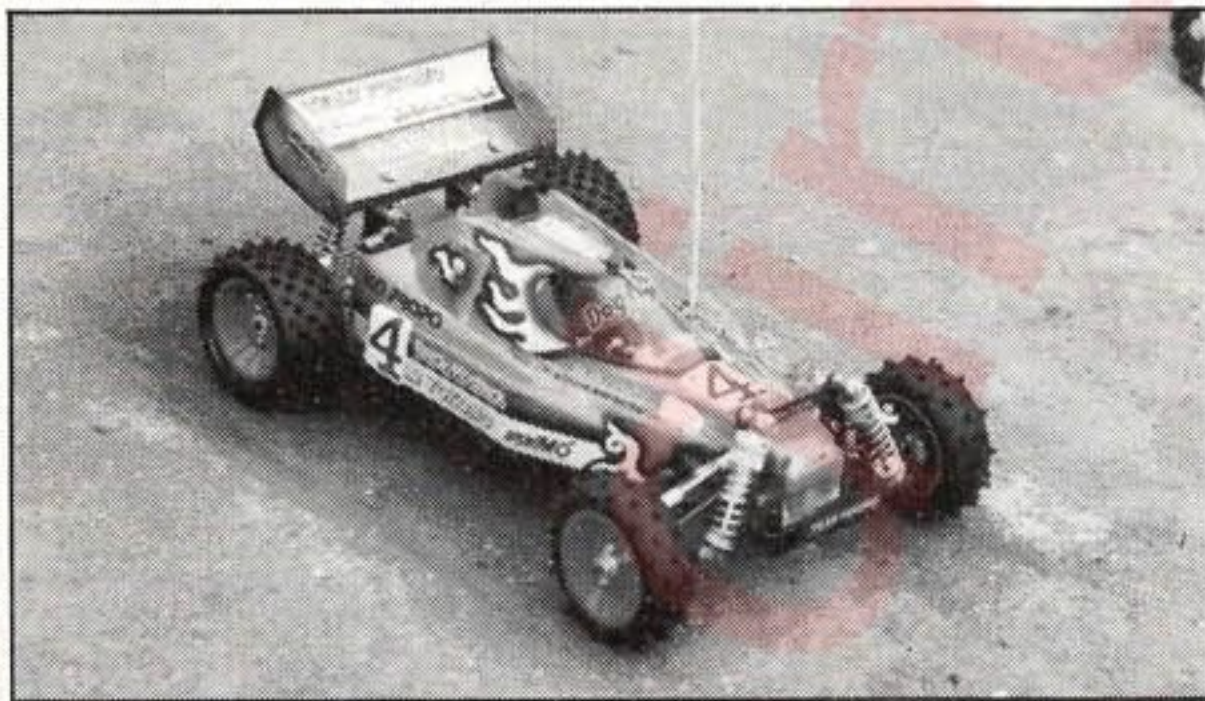
**Mike Smith • John Varley • Chris Evans • Nick Marson • Jim Crabb • Greg Halliday  
Jim Davey • Bob Errington • Mike Billinton**

### EDITORIAL

Again RRC brings you another great free competition, this month you can win one of the best two wheel drive cars on the market today, the Mardave Meteor. Quietly but often the Meteor has been picking up points, places, and trophies throughout the RRC series against some of the more established, exotic and more expensive machinery. The Meteor is a multi-level car being able to be raced and maintained by beginner and expert alike to a very high standard. Win yours today.

Due to the high demand it has been decided to run a winter RRC series, this at present is likely to be held at one venue over four rounds and a final, the chosen venue is likely to have indoor heated pits so that no one need suffer rain, hail, snow, or lightning strike. Watch RRC for further details of this great new event.

Finally this month don't miss next month's issue of Radio Race Car with two great one tenth reviews, Tamiya's new 4WD Avante and the long awaited Yokomo Wonder Dog Fighter, both state of the art racing cars from Japan.



Front Cover

Tamiya's Midnight Pumpkin and, inset, the 2WD Sonic Fighter.

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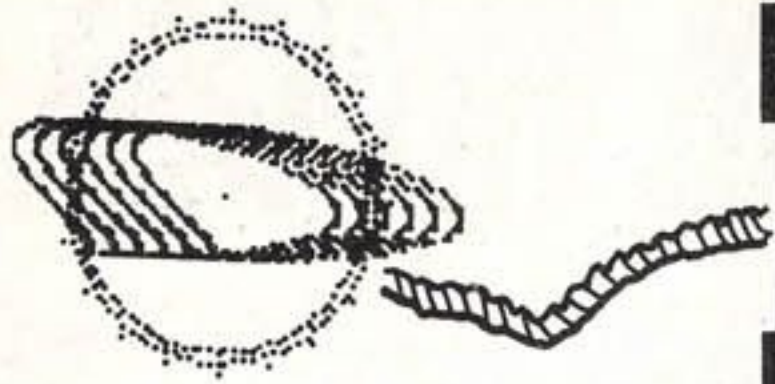
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RC10

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TS-2214  
Rear Tyre  
for  
RC10 YOKOMO  
SCORPION MARUI

TS-2216 TS-2217 TS-2218  
Front Tyre  
for  
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GRASSHOPPER RC10



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Front Tyre for  
HOTSHOT  
RC10

TS-3312  
Rear Tyre for  
HOTSHOT  
WILD ONE

TS-3313  
for  
TAMIYA FROG HORNET  
GRASSHOPPER  
SUPERCHAMP etc.

TS-3314  
for  
YOKOMO  
ASSOCIATED  
RC10

TS-2212S  
Rear Tyre for  
HOTSHOT KYOSHO

**WHEELS**



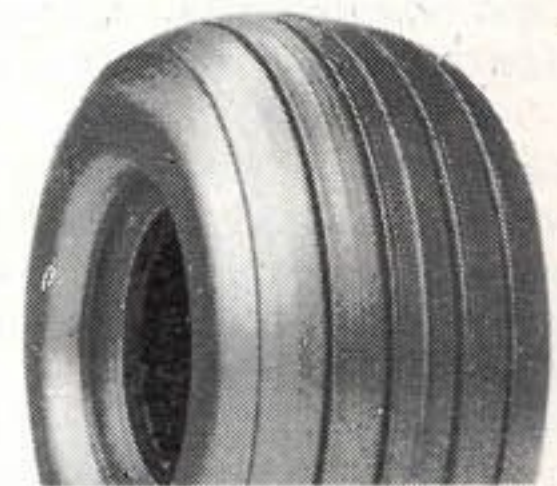
WS-661  
Front Wheel  
for  
Tamiya RC10



WS-662  
Rear Wheel  
for  
RC10



WS-663  
Front Wheel  
for  
Hotshot PB



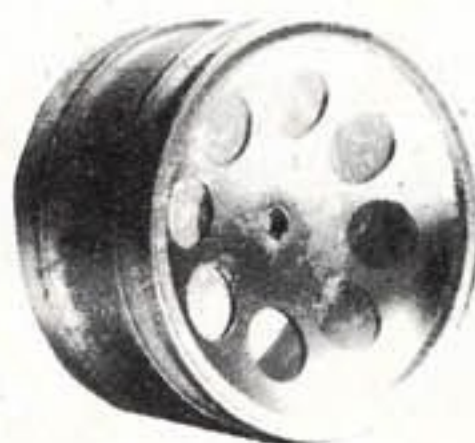
TS-2219  
On Road Rear Tyre  
for  
Frog Hornet  
Grasshopper



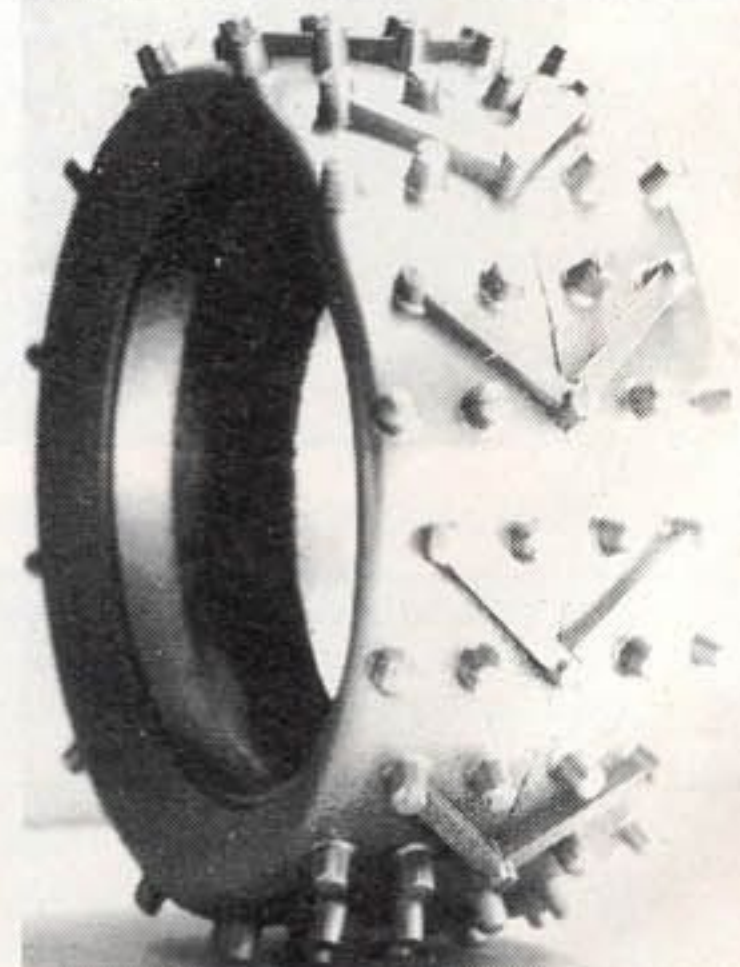
WS-664  
Rear Wheel  
for  
Hotshot



WS-665  
Rear Wheel  
for  
Tamiya



WS-666  
Rear Wheel  
for  
Kyosho RC10



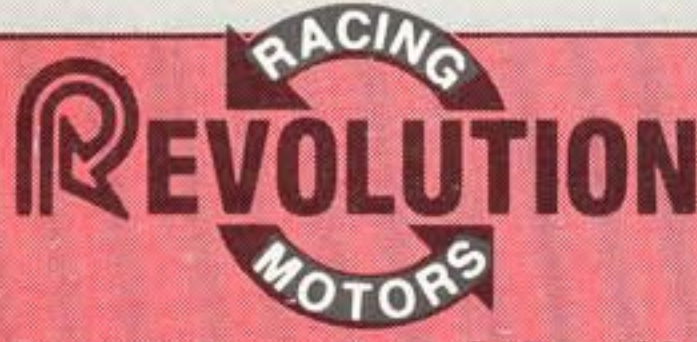
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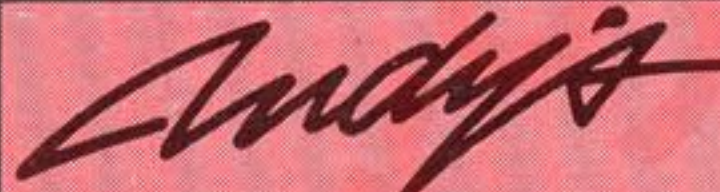
- NEW 1/12 MOTORS!!**
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**NOVAK  
ELECTRONICS**

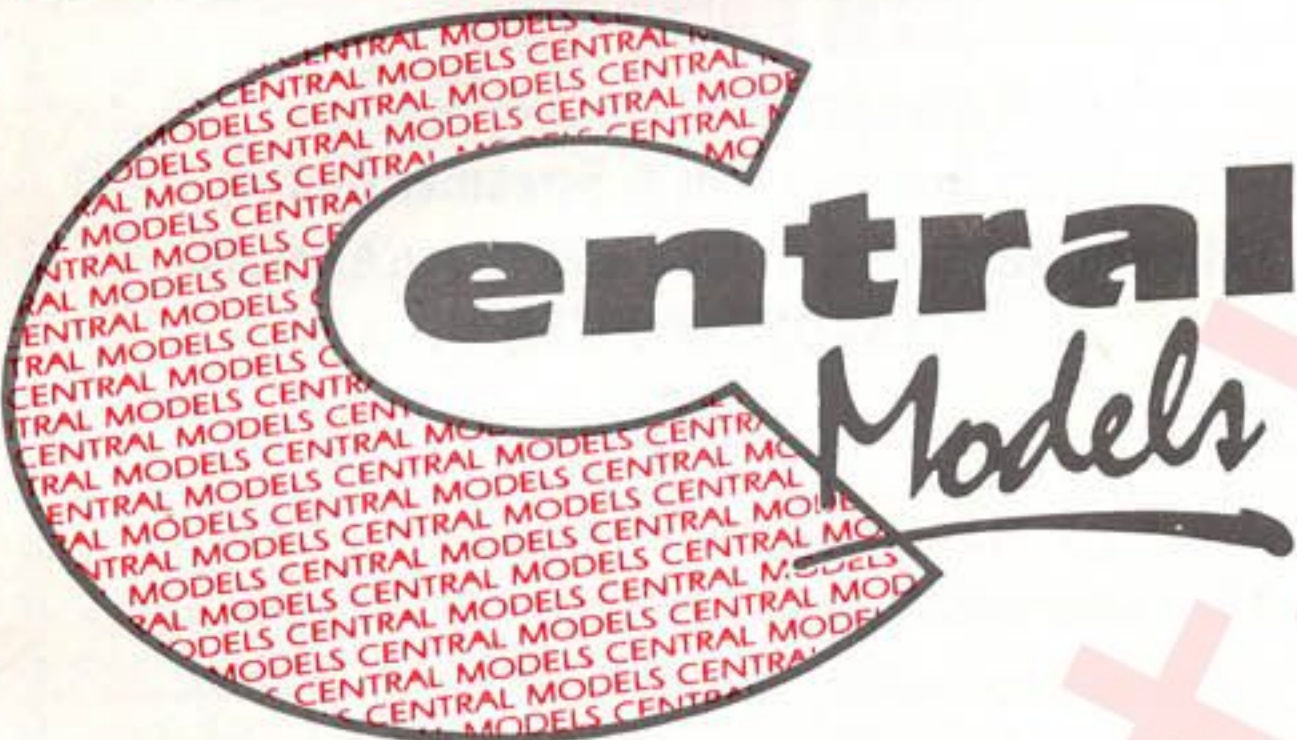
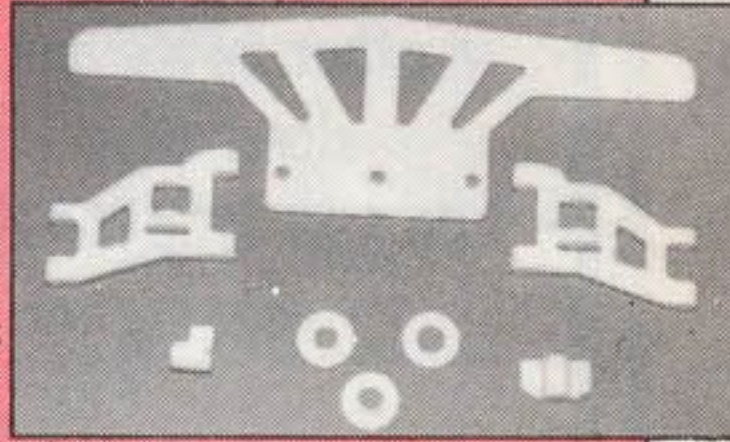
- Novak NESC-1X Eliminator — **£130.00**
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- (For more information see Novak advert in this issue.)

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Yokomo YZX780C  
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Full spares back up  
Other cars in stock:  
Schumacher, Kyosho,  
Tamiya, RC10,  
Mardave, with all  
spares



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- RC10 Wide Front Bumper **£4.25**
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- Ultima Short Front Bumper **£3.25**
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(slight different shape to suit different cars)
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(Snap together body washers to stop splitting around body holes.)
- Lightweight antenna mount **£1.25** (Mounts antenna from the chassis.)
- Lightweight antenna mount **£1.25** (Mounts it from the side of receiver or chassis tube etc.)
- RC10 Rear Arms and items for Optima Mid 4 call for details. **£7.95**



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1684 Bristol Road South,  
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  - 1021/1024 Diamond** (Diamond tread for 2WD, suits low profile wheels, Fox, etc. (1024) and RC10 stock hubs (1021))
  - 1003 Knobby** (small knobblies for tight control suits Hornet, 1.5 inch rims etc.)
- Used by many drivers on RC10, direct replacement on stock hubs.)

- 1018 Knobby** (small compact tread comprising of small knobblies for excellent control.
  - 1023 Knobby** (completing the range this tyre again has small tight knobblies and suit large 2.0 inch rims, Fox, Wild One etc. Excellent control with 2WD cars).
- All the above tyres are £6.50 pair.**
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- Full range of wheels in stock for all cars from Cat, Mid 4 to Hornet, Falcon etc. Superlightweight**
- 2517 Tamiya 2WD Rear Wheel** (fits Wild One, Falcon etc.)
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  - 2519 Associated RC10 Rear Wheel** (direct replacement)
  - 2520 Yokomo Wheel**
  - 2521 Tamiya 4WD Wheel** (fits Hotshot, Boomerang, PB)
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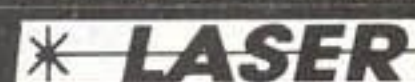
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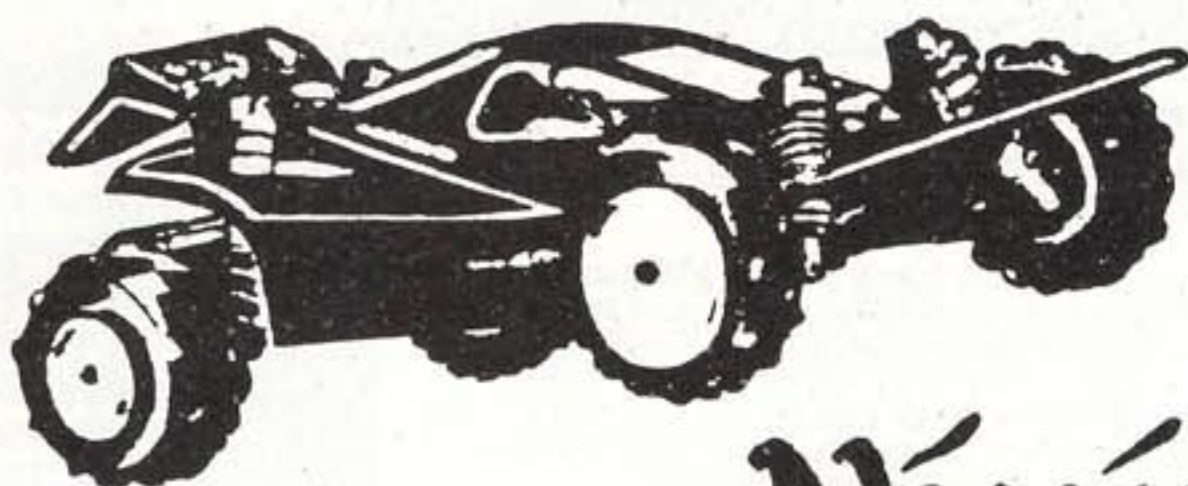
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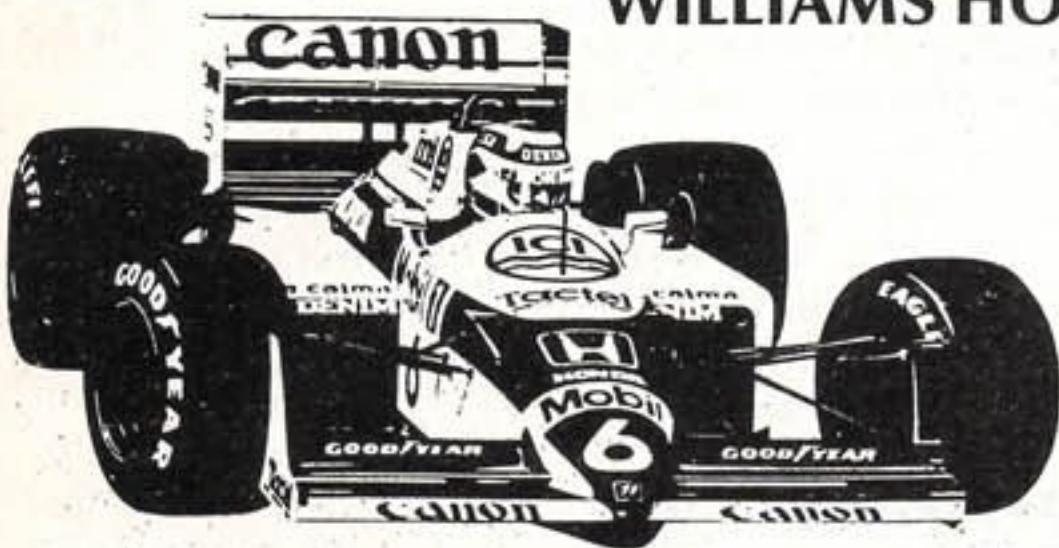
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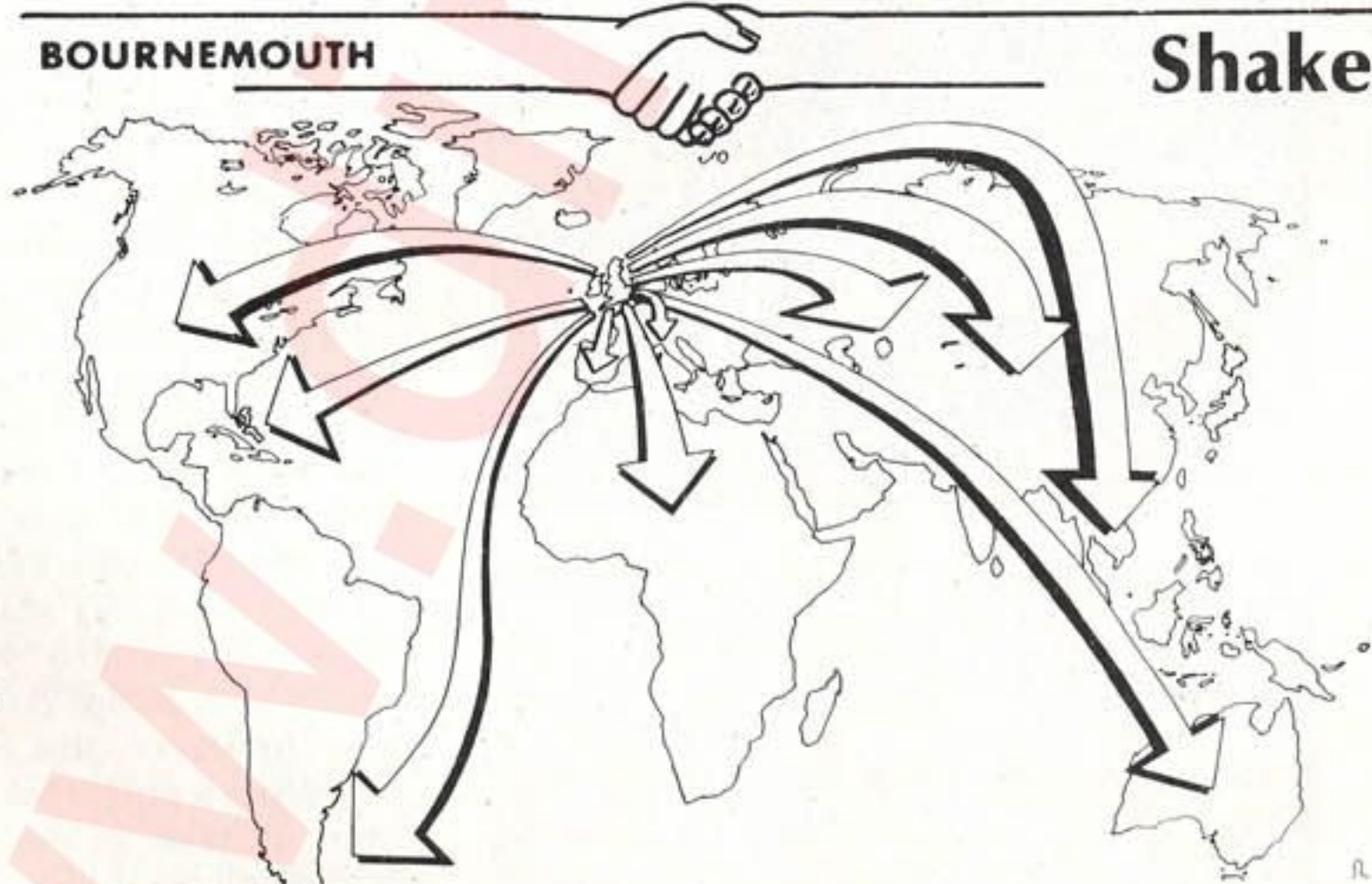


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# Personally Speaking

It may appear to some, that looking ahead to 1989 and in particular the Radio Race Car series is just a little far sighted, however due to the response that the Radio Race Car series has generated this season, look forward we must. As some of you are aware it is no longer possible to enter any of the remaining 4WD rounds, the 2WD series is also becoming full and so to avoid any disappointment we would urge you to enter any 2WD event you have decided to run in quickly. Returning swiftly to 1989 though, it has been decided that as from next year the Radio Race Car series will be regionalised, this will ensure that more drivers will be able to take part in the biggest national series in the UK.

At present it has been decided that the UK will be divided into four different regions. The North, the Midlands, the South and the West. A full set of rules will also be drawn up to cover both drivers and clubs participating so that no grey areas should remain, this then should make everyones day out a more pleasant and enjoyable one.

Clubs wishing to take part in the 1989 Radio Race Car series should contact Dave Pearson, Radio Race Car, Masefield House, Wells Road, Malvern, Worcestershire. WR14 4PA.

Full details of the 1989 series will be announced in Radio Race Car later this year.

## Schumacher Racing

Schumacher have just announced that they have signed British National Champion Jamie Booth to drive the CAT for the 1988-1989 season. The ultimate aim being a repeat victory at the World Championships in Sydney, Australia. Jamie has also joined Schumacher Racing Products Ltd as UK sales representative as part of Schumachers expansion programme.

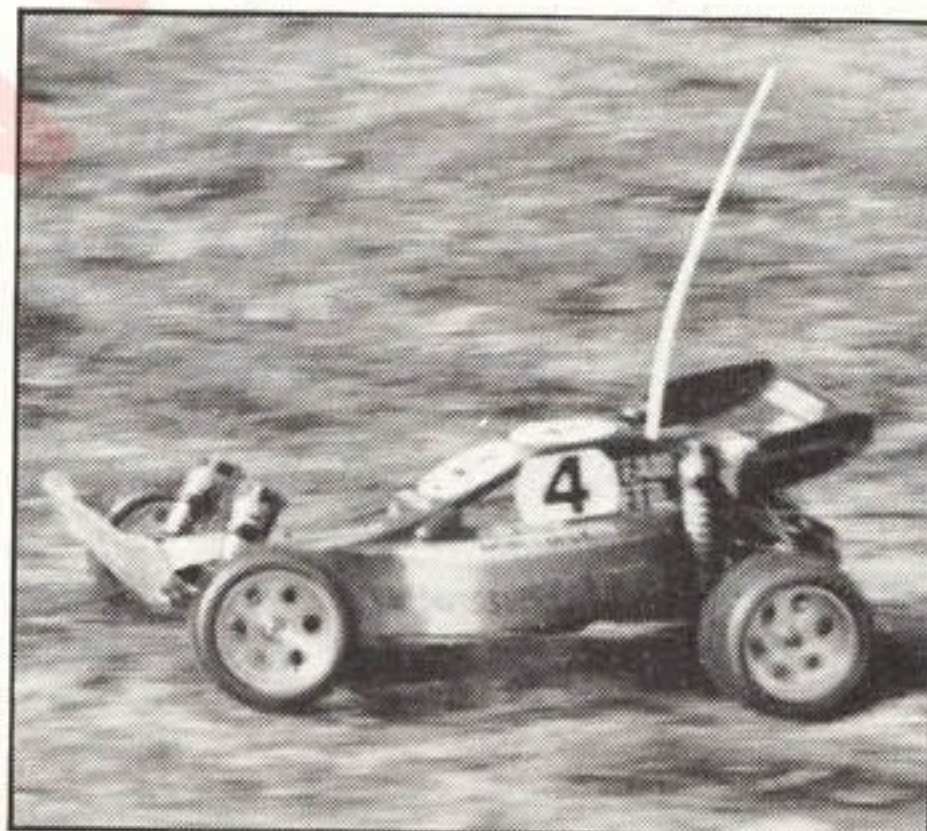
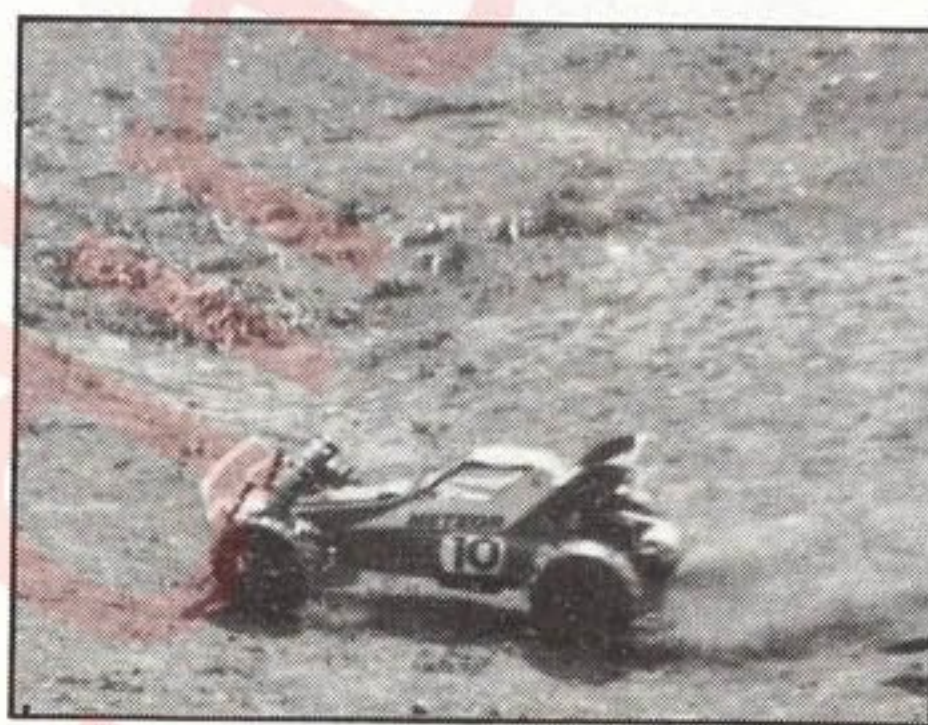
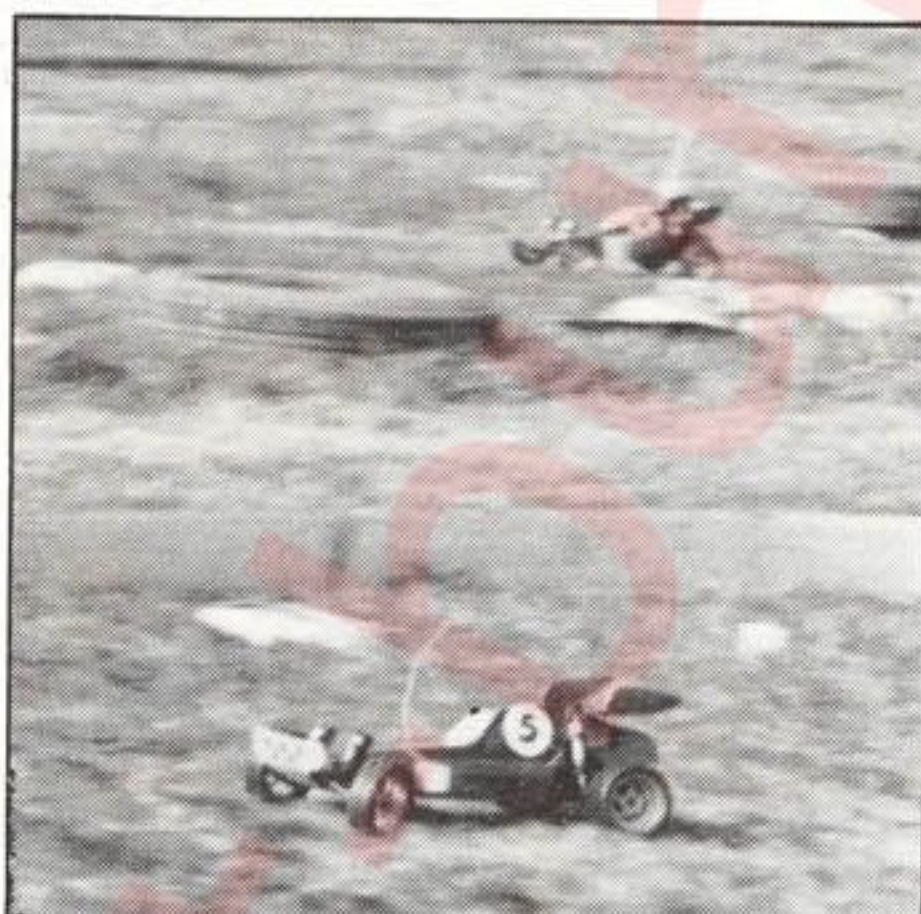
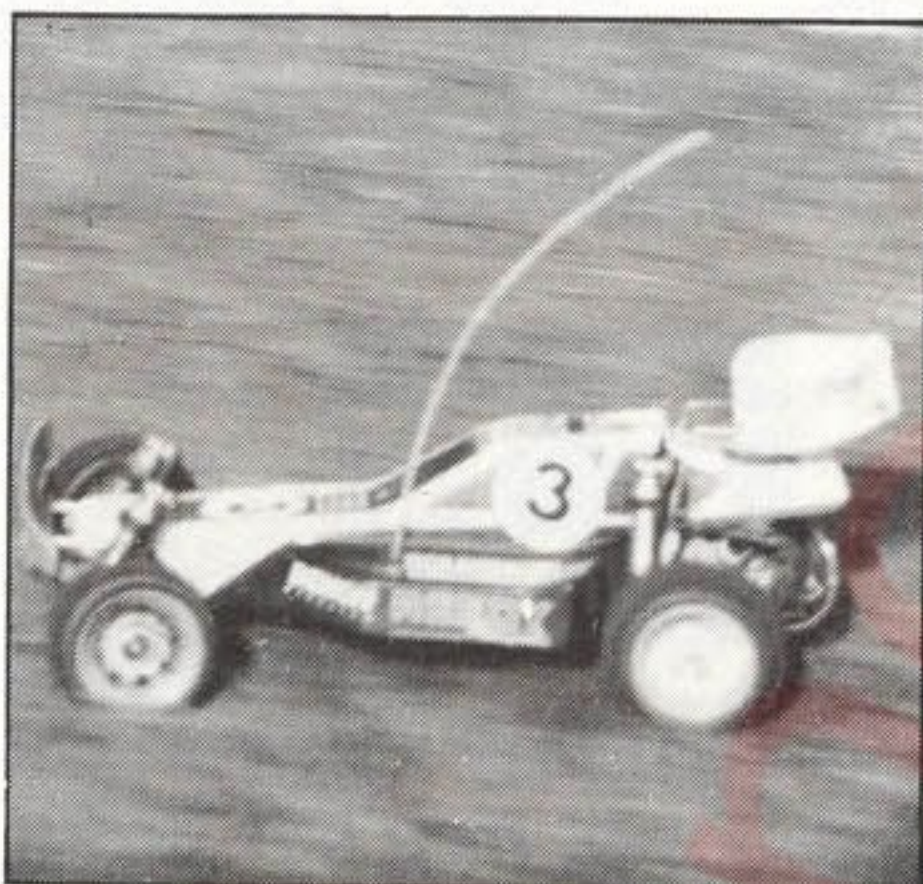
## Team Schumacher

Team news from Schumacher is that the current one tenth team in the UK for 1988 consists of Phil Davies, double European Champion, Jamie Booth, current British Champion and Rory cull current Radio Race Car Champion.

The one twelfth team consists of Phil "very busy" Davies, Pete Farmer and Mark Barford. Good luck for the rest of the season!

## Reedy Spring International

Now that the Reedy is all over bar the shouting, what conclusions can we draw from the event? Should we bother? Yes we should. First we should give all credit to Bill Jones for running a very tight racing schedule, sure he's tough, but with 130 plus racers to look after and organise wouldn't you be too, you bet your donkey you would. The track is possibly the most difficult track to drive on because of the lack of traction, but then the event is an International meeting and it should be tough.



A lot of club drivers who I have spoken to since the Reedy have expressed depression, disillusionment, or have been just too numb to comment, in fact, watching the drivers make their way home after the event, was how I had always imagined Napoleons retreat from Moscow to look like. What you must bear in mind is that you were up against the best the world had to offer, in driver skill which at times bordered on genius, in financial support which bordered on the ludicrous and from factory backing which as always was generous. All in all then you didn't do so bad, I'd like to bet that your driving has improved by about 50% by the start of your next club or National event and that's one commodity that you can't buy, or be supplied with from the factory!

## Pro-Panther 10

One of the most exciting developments in the United States over the last few months has been phenomenal growth in popularity in a totally new class of racing.

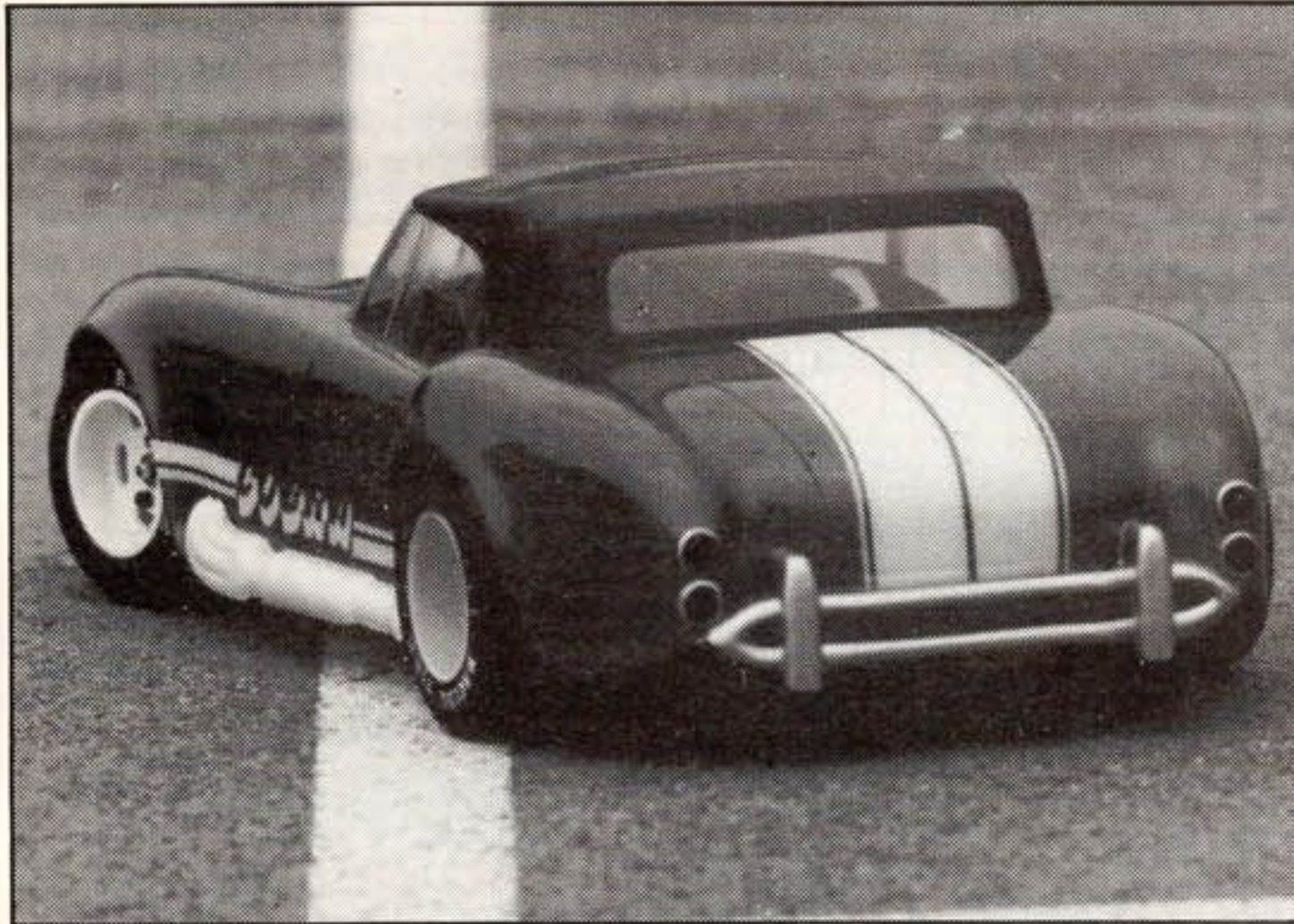
On Road racing for 1/10 scale circuit cars has hit big all over the continent as a fast, exhilarating and highly entertaining change from ordinary 1/10 scale Off Road activity. Indeed a great many of the converts to this formula have come from the massed ranks of buggy racers eager to try their hands at something completely different.

In the States (as over here), high competition Off Road racing has increased in costs so dramatically that even a change to 1/8 scale IC can be considered an economic move.

Enter 1/10 On Road. Faster than conventional buggies, but more accessible than 1/8, everything about the cars is geared towards speed, skill, excitement and above all else — fun!

New cars are being produced at an alarming rate and true, the technology race has already begun with companies trying all sorts of designs to gain a winning edge. One of the most successful cars on the market at present is the one shown here; the Parma Pro-Panther 10. It should be quite obvious after even the briefest of glances that this car borrows extensively from current 1/12 scale racing technology. Basically the Pro 10, just like its competitors, is a big 1/12 scale car. Dimensionally, however, the Pro 10 has the same wheelbase and track as a standard buggy, give or take a few millimetres. With the bodyshell on it looks much bigger particularly when fitting a saloon type body, but this is only an illusion born out of the fact that modern Off Road bodyshells only serve as a means to cover the chassis. In any case one of the nice things about this type of racing is that just for once the cars actually look like they are supposed to represent something real. This is particularly true of the saloon bodies such as the RS Es-





cort, Sierra Cosworth and '86 NASCAR Monte Carlo, all of which look fantastic charging around a tarmac circuit at upwards of 40 mph. Aerodynamics plays an important part, which is why sports bodies such as the Osella PA9 and Porsche 962 with their more streamlined shapes handle much better.

Constructionally, the Pro 10 could not be much simpler although care must be taken in some areas of the construction. Next month we intend to bring you a full review of this car including some helpful hints on building and setting up.

In the meantime Parma's Pro Panther 10 kit is available from your local Parma dealer in either basic or deluxe versions. The latter is supplied with motor (K-Stock), 6 cell battery pack and resistor type speed controller. You can also choose the type of bodyshell you desire between saloon and sports.

Racing is already taking place at various points throughout the country, although principally at Crystal Palace in London and Tibshelf in Derbyshire, both existing 1/8 scale circuits. Events are also being planned at Lilford park in Northamptonshire, Peterborough and Halifax.

Because the cars are 2 wheel drive and significantly quicker than buggies, a totally different style of driving needs to be attempted based on precision, taking correct lines into corners and skill. Finding enough grip on outdoor circuits has not been such a big problem as first imagined even during the colder months of February and March. Now that the summer months are upon us the cars will really begin to fly as track conditions begin to warm up.

As far as motors are concerned, you can run virtually anything from Standard types to full-blown Modified specification with the best choice for the latter being 1/12 scale winds such as 23 turn double, 19 turn quad or similar. By and large battery duration on a five minute heat should not be a problem as the cars are not stopping and starting all the time (theoretically!).

All and all we are expecting great things from this class of racing during 1988. Radio Race Car will be attempting to provide coverage of some of the major meetings along with kit reviews and hints and tips on the cars and racing.

**Modelex 88 RAF Cosford**

Don't forget July 9-10 are the dates of one of the years most spectacular model shows. RAF Cosford plays host to a whole



Watch Radio Race Car for the full review of this 1/10 Parma circuit car.

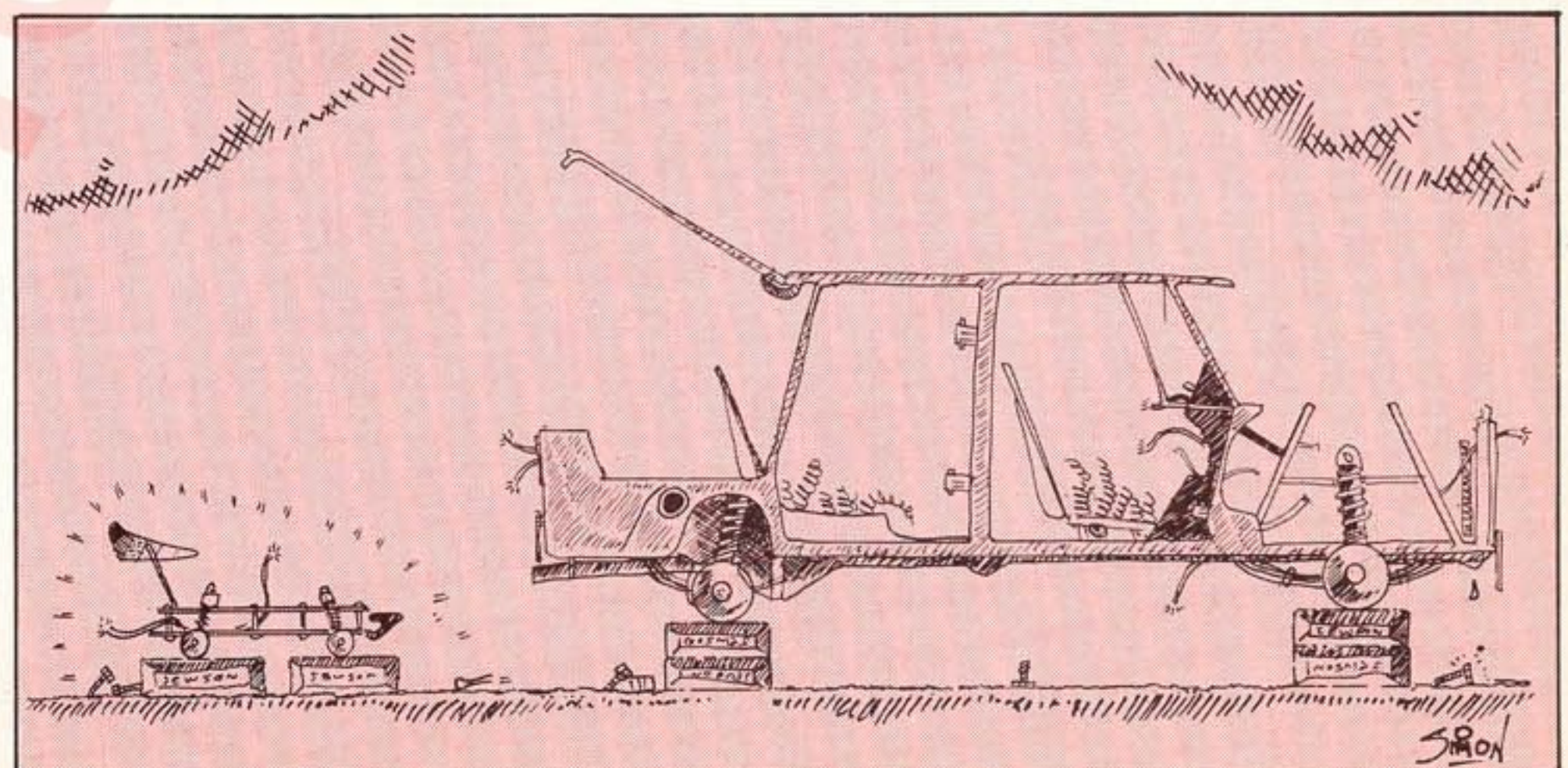
weekend of model flying, boating and most importantly as far as we are concerned, model car racing. Saturday sees the Beatties challenge being held, whilst on the subject please return your Beatties entry forms to the address on the entry form and not to the Radio Race Car offices, they will not be dealt with from here.

Sunday is the event that has had a staggering 600 plus entries this year, by now those of you who have been lucky enough to have your entries confirmed will know who you are (if you don't you will any day now) to those of you who didn't manage it there's always next year. One final comment, it has been heard that several people suggested that entry forms for Cosford should have been sent out as they arrived, this would have made things "fairer". Well to those people from that school of thought all I can say is, if that's how you want it done, so be it. However, bear this in mind,

within two days of announcing the Cosford date nearly 200 entries had been received at the Radio Race Car offices. Now you tell me whose way is "fairer" to the majority, after all this is your column to you know.

**Finally**

An alarming number of thefts concerning cars and equipment have been reported to the Radio Race Car offices lately, fraud seems to be a favourite method of obtaining your prized possession by leaving you an already stolen cheque and walking away with your equipment. Thefts from cars are also on the increase judging from the phone calls and letters we have received lately. We have all arrived home tired after a long days racing and thought "Flipping heck I can't be bothered to unload my gear tonight, I'll leave it in the back of the car till morning". Our advice to you is don't, you may not see any of it again!





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12-ball, ballraced front pulley  
50 or 51 tooth ..... £8.95  
One piece top pulleys available .... £13.95

Associated Spurs  
64 DP Tufnel 96-106 tooth ..... £4.95

#### GEAR RATIO CHARTS

Plastic laminated A4 size  
Opt/Ult. 32-48/6 Mod-64DP  
Opt Mid 48/6 Mod-64DP  
Cat 32DP-64DP ..... £1.50 ea + 30p post  
Trade Supplied

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#### STANDARD OPTIMA PARTS:

Layshaft gear ..... £5.25  
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Ultima layshaft gear ..... £3.95

### NODIS

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OT84 Gearbox Set	£4.75
OT85 Spur Gear	£2.95
OT86 Counter Gear	£2.20
OT87 Gearshaft Set	£2.20
OT88 Slipper Plate Set	£2.85
OT89 Belt only	£5.75
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OT109 Screw Set Std.	£7.25
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Very large range of bodies stocked from £9.95

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Polybones ..... pr £3.95  
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Foam Motor Cover ..... £1.25  
Fox Shock Plate ..... £2.95  
p&p.....50p

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T650 4 Row S Rear	£6.30 pair
T651 4 Row H Rear	£6.30 pair
T652 3 Row S Front	£5.80 pair
T653 3 Row H Front	£5.80 pair
T654 2 Row S Front	£5.80 pair
T655 2 Row H Front	£5.80 pair

PLEASE NOTE Some price changes for 1988; prices charged will be prices on stocks held at time of order, ie held stock old prices - new stock new prices!!  
Spares, any qty. 50p p&p except body & undertray £1.50 p&p

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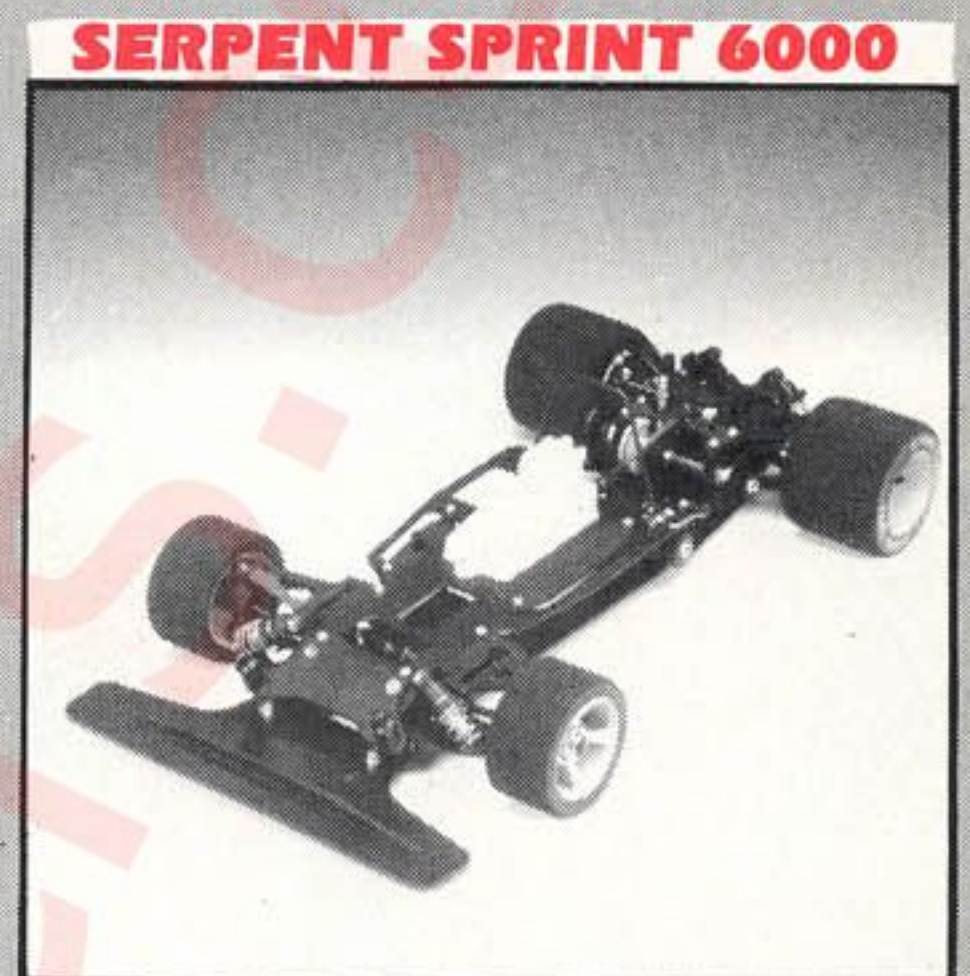
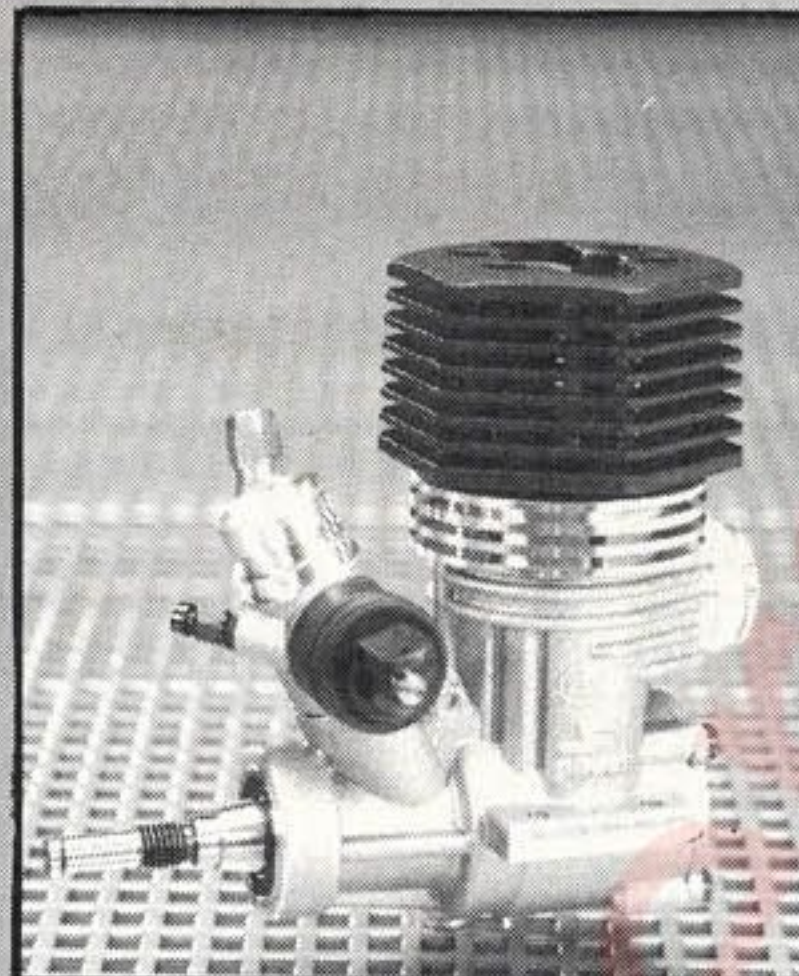




# Serpent 1988



**WORLD CHAMPIONS, EUROPEAN CHAMPIONS, BRITISH NATIONAL CHAMPIONS**



Latest version of the successful Cobra, completely redesigned, renamed and comes complete with the new Dart bodyshell. The Spirit was F.T.D. at the 1987 British Grand Prix, driven by Steve White. Kit price **£255.00**. Also available Kit No. 5006 with 3 differentials (geared). **£285.00**

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NEW LOW PRICE ON JAPS 30°, 35°, 40° only **£8.95 pair**. Full trade terms available on Jap tyres S-Power plugs, pipes, manifolds, air filters available

The New Serpent engine, called the 5-Power, the most significant development development of this year, at last, an engine designed by racers, for racers. No test bed wonder, developed on the track by the world famous Serpent factory team and already a winner. 1st place 1987 Dutch Grand Prix, Top Qualifier 1987 Euro-Champs, 2nd place 1987 World Champs. Features include chrome crank, 7 port liner, piston boost ports and the most important feature of all, the price, available in car, or buggy versions at only **£125.00**

It's here, what you've all been waiting for, a completely new car (not a copy of someone else's). A superb new design, featuring the tried and tested Quattro suspension geometry, plus a host of sparkling new features inc. coil over shocks, adjustable shocker damping via internal valves, lightweight aerofoil section wishbones, inboard disc brakes, Kevlar drive belts designed exclusively for Serpent, new lightweight wheels, designed by Ronnie Ton, produced by Berton, tested by Rody Roem. Not a model car but a racing car in miniature, once again Serpent puts you on the front row in model racing technology, even the box it comes in turns into a plastic carry case that holds 16 pairs of wheels and tyres, how about that for ingenuity. The only thing about the car that remains unchanged is the price. **Still only £325.00**

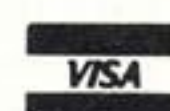
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"STOP PRESS" Quattros win all 3 National Championships and all 3 Series Championships in 1987 for the 3rd year in succession.

**1/10 SCALE**



# ELITE MODELS



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**KYOSHO KOLLECTION "SHOCKING PRICES"**

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Ultima .....	£85.00
Optima Pro .....	£90.00
Turbo Optima .....	£155.00
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CHALLENGER CHARGER, peak detect pulse charger up to 1700 MAH .....	£34.95
CHALLENGER PRO peak detect, pulse charger, 1-5.5 amp adjustable, charges up to 4000 MAH .....	£39.95
CHALLENGER PRO-EX, as above but with 1-6.5 amp facility .....	£45.00
SHINWA MOTOR TESTER, tests revs, amps, timing point .....	£64.95
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Over 100 Shinwa units already sold	

**STOP PRESS STOP PRESS STOP PRESS STOP**

**NEW TAMIYA AVANTE KIT**  
**PHONE US FOR PROBABLY THE BEST KIT PRICE YOU'LL EVER BE OFFERED**  
**LIMITED QUANTITIES OF THIS VERY SPECIAL DEAL AVAILABLE**  
**CPR UNIT AND TAMIYA RACING PACK EX. AVAILABLE SEPARATELY**  
**PLEASE PHONE FOR DETAILS**

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Turbo 16 valve 1/2 .....	£75.00
Shadow 4WD .....	£79.95

**OPTION HOUSE PARTS FOR MID OPTIMA'S**

Ball Diff Kit Front .....	£19.95
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With over 250 Optima Mids already sold, we probably have more experience than most other shops (we did have them 2 months before anybody else) so phone us for the best deals, information and modifications.

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K80 Magic Speed Controller, 720 amp forward, brake .....	£59.95
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KO CX-1 Speed Controller, 960 amp inst. 306 continuous .....	£125.00
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Used by most of the top indoor drivers.	
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BIONIC GOLD 2ch .....	£299.00
FUTABA 3EG PCM GOLD + 2 x 132 servos .....	£59.95
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*Please note, the Challenger range of pulse chargers are the only ones designed specifically to accept the new 1.7AH cells.*

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**1987 British Champions**

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# NOSRAM SPEED CONTROLLER

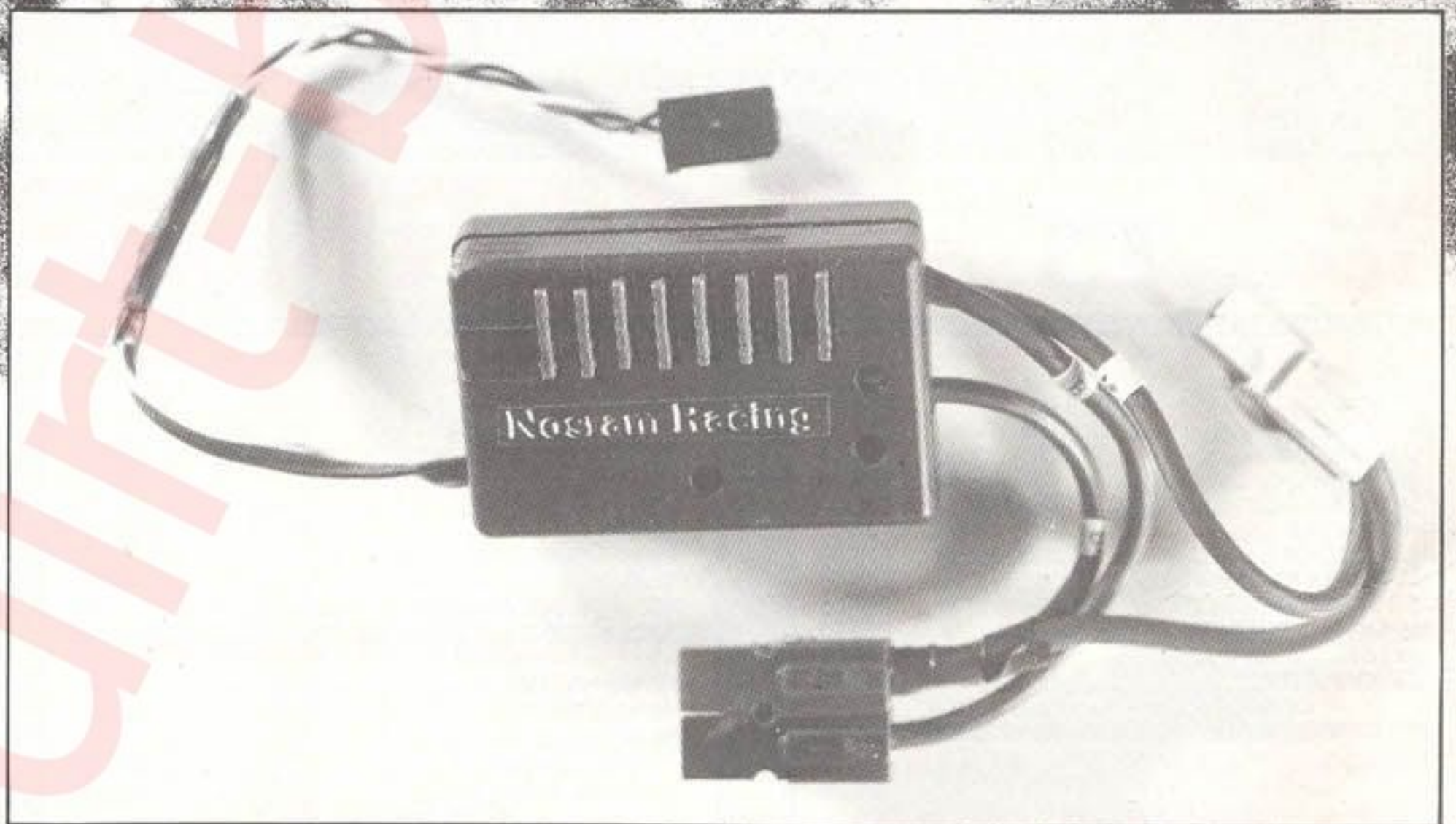
**B**efore another word is written, it must be said that apart from recognising which is the hot end of a soldering iron, this reviewer knows absolutely nothing about electronics. At first glance then, probably not the ideal candidate to review the latest speedo from Nosram or DNS, as they are known (Devices, Network Services).

### The Item

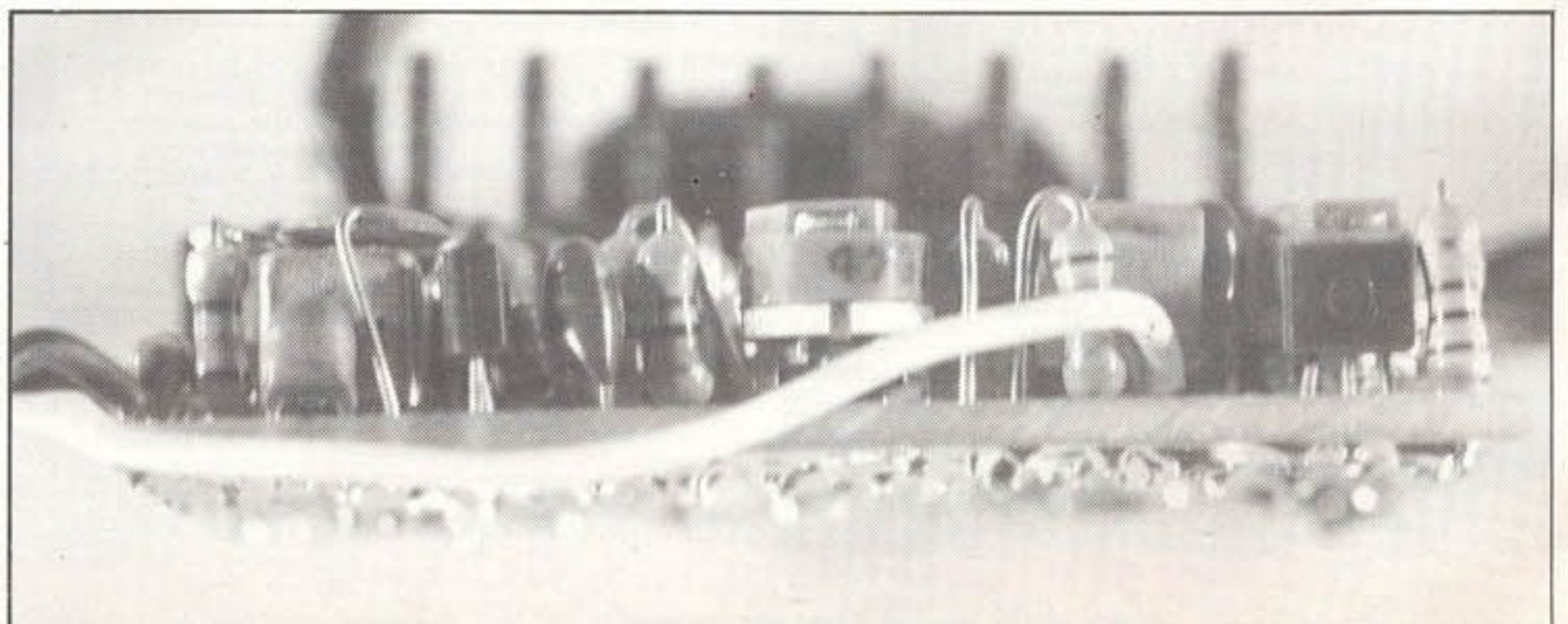
The first noticeable difference to the Nosram is of course the neat plastic case it is now contained in, this of course has two main, distinct advantages. One, it goes a great deal further towards weatherproofing the speedo, as we all know water and working FET's don't get along together at all well. Two, improving impact resistance, the extra crash protection afforded by the tough plastic case is well worth the very slightly weight penalty incurred. The new case has one other function albeit aesthetic rather than functional, it looks good!

### The Test

Romsey and Reedy International was deemed a fair place to put the new speedo through it's paces, after all six days of four heats a day should make or break any piece of equipment. Several motors and days later the new International speedo was still going strong, hardly getting warm and being very kind to my very non competitive batteries. Probably the most pertinent part to that last statement was, "hardly getting warm". Some of the hottest wind motors were tried, including one that came straight from the pit box of the world champion, the International took it all in its



Above, neatly packaged and cased, the new Nosram International. Below, even inside the Nosram is neatly assembled and soldered.





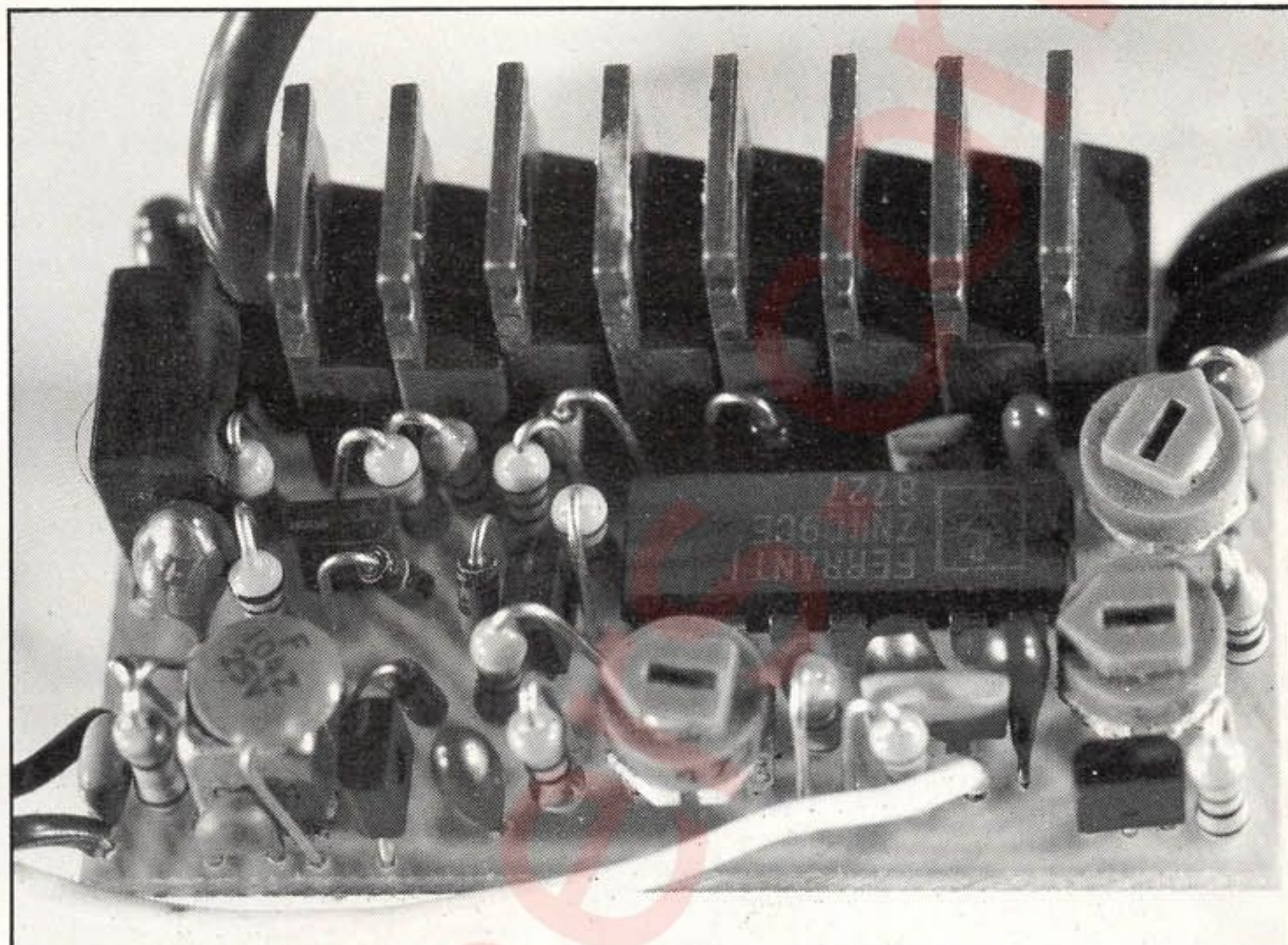
stride and still remained cool, literally, again a fine testament to the quality of both the components and workmanship.

**The Hiccup**

To be fair, other speedo's were tried as a comparison and one interesting point cropped up. If your radio, like mine, is fitted with a throttle blip switch for use with IC cars, it may damage some electronic speed controllers if inadvertently switched on. As luck or otherwise would have it, the designer of the Nosram International was at the Reedy that day, he casually informed me that his built in protection circuitry should handle that kind of occurrence well, the word that bothered me was "should", so the remark was casually ignored in the hope that the person that was trying to play Russian Roulette with my new toy would give up and go away, unfortunately this did not happen, with eyes tightly shut the throttle blip switch was engaged, much to my surprise no loud popping noises or pungent burning smells rent the air, Nick was unsurprised and was calmly thinking to himself "I told you so", I was both surprised and delighted that all was still in one piece and functioning perfectly.

**The Conclusion**

In use, the speedo is a delight giving raw power on the start line for those all importantly fast get aways. As already stated top speed runs are handled with ease, the International hardly getting warm, but the most impressive characteristic of the speedo was it's sensitivity around the mid range, allowing corners or chicanes to be handled with plenty of feel, so many speedo's lack this all important facility and



This shot shows how neatly the components are set on the board, tracks are wider where extra current flows.

it must rate as one of the best speedo's we have tested, ten out of ten.

**Technical Specification**

8 high spec FET's. Fully proportional forward and brake. FET brake. Voltage multiplying circuitry for increased efficiency. Independent rate adjustment for forward and brake. Electrical interlock circuitry for FET protection under fault conditions. Diminutive 5cm x 3 cm x 1.9 cm dimensions. Weight 34 grammes.

it is so necessary to smooth driving.

So, to sum up, the Nosram International does give value for money, it does give excellent service and treated with a modicum of respect, although as we have shown not in all cases, it also gives a long service life,

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STEVE WEST NEIL STRINGFELLOW  
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RECENT RESULTS

1st	BRCA — Lincoln	Steve Haines
TO	RRC — Chesterfield	Andrew Langdon
TO	Mersey Leisure — Southport	Mike Bridges
TO	Stafford Midland Champs	Mike Bridges
1st	Stafford Tarmac Meeting	Phil Borth

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**MG MOTORS**

Magnum Full Modified 15T, 16T, 17T Quad £39.95. 15T, 16T, 17T Triple £39.95  
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Trade Enquiries now welcome Distributed by: Malvern Models, 31 Pump Street, Worcester, WR1 2QX. Tel: 0905/29318 24127



# Why Parma motors are ... NUMBER ONE

Quite simply because at the Parma factory we have the expertise, the very latest technology and 25 years experience in building competition winning motors for all types of electric car racing.

Since 1964 we have been at the forefront of the technology drive, investing in the latest, state of the art equipment and using only the very best raw materials available. Now, more than ever, Parma are supplying racers with the performance and reliability necessary for all levels of competition, from club races to World Championships.

## The Range

Parma can once again claim to be out in front for the 1988/89 racing season with a new range of standard and modified motors incorporating new design features and motor winds for all occasions.

On release for the very first time is the all new Parma "Cyclone" wet magnet motor for standard and modified class racing. Developed by our factory experts this motor is a must for the serious R/C car racer. Besides the use of higher strength wet magnets the "Cyclone" has a host of innovative design features to give the ultimate in performance.

The "Cyclone" standard motor will be BRCA legal for this season whilst the modified version utilises a range of winds tried and tested for all circuit layouts and track conditions.

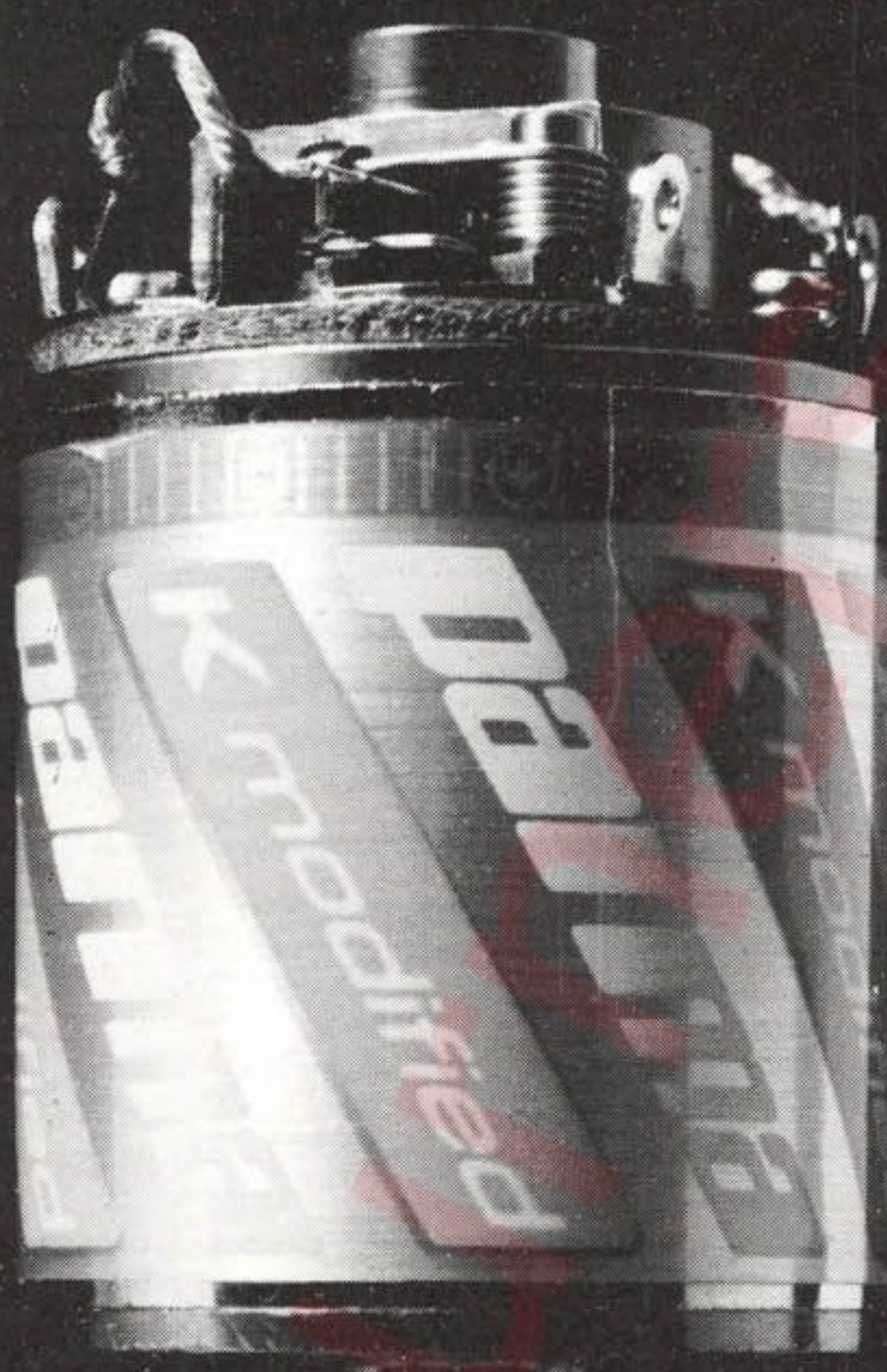
## Factory Built

Parma motors undergo the most stringent levels of accuracy in the manufacture and testing of every modified motor before it leaves the factory.

Precision building of motors includes special techniques and materials in the production process. All cans are inspected for strength and quality before being fitted with class 7 ballraces and high strength magnets.

Our armatures are given special attention to ensure they are reliable and true. The epoxy laminated armature blanks are wound with high copper content, polythermal coated wire to pass maximum current without the risk of shorting out the arm. A further coating of epoxy is applied for winding reliability.

The windings are welded to the diamond trued commutator again for maximum efficiency and reliability. After each armature is checked balancing takes place on the ultimate in super sensitive, high tech.



digital balancers to make sure the armature runs smooth and true in the can.

All the composite parts of a Parma motor are then brought together in a controlled environment and assembled with precision. High conductivity brushes are installed and run in on the test bench so that your modified is ready to go right from the start. Finally the adjustable timing end bells are dynamometer tested for high rpm and low current draw. Each stage of production is monitored closely so that only the best leave the factory.

## Motor Accessories

Besides the motor itself Parma are committed to providing the best back-up in performance tuning spares for all makes and types of motors. Again for 1988 there are several new items dedicated to allowing the racer to compete at the highest levels.

**3572-A** Motor springs

**3572-B** Yokomo/K-Motor springs. Medium tension.

**3572-C** Yokomo/K-Motor springs. Heavy tension.

**3573** Modified brushes.

**3574** Stock 'hard' brushes. Harder wearing.

**3577** Timed brushes. Advances timing on standard motors.

**3578** Cut motor Brushes. Reduces contact area.

**3579** Medium soft brushes.

**3580** Medium hard brushes.

**11012** Motor cooling plate. Fits all cars.

**11028** Heavy duty motor container.

These are just some of the products available for all makes of modified and standard motors.

For further details of prices and availability contact your nearest Parma dealer.

## 1988 SPECIFICATIONS

Part No.	Wind	Motor type	RPM
14001/2/3	19 turn Quad	Y/K/C	31,700
14004/5/6	23 turn Double	Y/K/C	29,250
14007/8/9	24 turn Double	Y/K/C	28,750
14010/11/12	19 turn Double	Y/K/C	30,000
14013/14/15	20 turn Double	Y/K/C	32,750
14016/17/18	15 turn Quad	Y/K/C	33,250
14019/20/21	17 turn Quad	Y/K/C	32,250
14022	28 turn Single	Yokomo stock	27,000
14023	27 turn Single	K-stock	27,000
14024	27 turn Single	Cyclone stock	27,000
14025	16 turn Double	Cyclone	33,000
14026	19 turn Single	Cyclone	31,500
14027	18 turn Single	Cyclone	31,000
14028	15 turn Double	Cyclone	35,000

Note: Y = Yokomo. K = K-Motor. C = Cyclone

All motors are supplied in protective packaging with instructions for installation and timing.



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Bob Errington's

# PIT PATTER

As you may recall, at the early season opener at Southampton, the new PB Pheonix showed to be quite promising, certainly the car performed better than any from that stable for some few years now, with Dave Dixon equalling the track record set last year.

Since then there has been a few club rounds prior to the next large meeting, the Grand Prix at Aberdeen and the new Serpent car has surfaced as well, again though, only in the hands of the very selected few. There does seem though to be a lot of adverse propoganda being put about by various factors. For example the P.B. was reported as being 'off' the pace at Halifax and the new Serpent to be 'not very quick' at Tibshelf. Whilst the other side of the coin shows both cars to be the absolute best thing since "Japs 'n' silvers"! Only time and races will show the truth and we may well have a better idea at Aberdeen.

The news from Italy regarding SG seems to be no news at all, except that Franco Sabatterie is apparently seriously ill. UK importer Phil Greeno knows no different and is reported to be considering dropping  $\frac{1}{8}$  and concentrating solely on  $\frac{1}{10}$  buggies as this is where all the money can be made.

Walt Bailey on the other hand is now celebrating ten years in the business by opening up a purpose designed shop not far from his existing premises. Walt says that the new shop will cater for all sides of the sport and that it will have much better display facilities. Rumours circulating regarding huge discounts in the opening

week are not as yet confirmed, but suggest that you don't hold your breath.

News has just reached us that the Wrexham club is no longer running  $\frac{1}{8}$  I.C. circuit cars, they have in fact converted their Hosley circuit to  $\frac{1}{10}$ . Which means that the BRCA round scheduled for June 11th/12th is now cancelled.

The BRCA round at West Burton on July 16th/17th is being run by the BRCA, so entries should be sent and made payable to Mr. E. White, 5 Wortley Drive, Oughtibridge, Sheffield, S30 3JM. Tel; (074286) 2733 (home) or (0742) 341288 (work). The usual on site camping facilities will be available as will the refreshment wagon.

With Wrexham no longer, there are no BRCA rounds down for June but there is still a fair bit of racing at club level, etc.

**June 5th**

East Midlands round for GT cars at Halifax.

Mendip Sports Club round.

Stonehaven Club round.

Southampton Sports Club round.

**June 19th**

Mendip Formula Club round.

Southampton Saloon Club round.

Halifax Club round.

**June 26th**

Aberdeen Club round.

**July 2nd/3rd**

BRCA round 5 (now) at Mendip.

**July 3rd**

Aberdeen Club round.

**July 10th**

Mendip Sallon Club round.

Southampton Sports Club round.  
Crieff Club round.

**July 17th**

BRCA round 6 at West Burton.

From the track record point of view, Mendip could be up to be challenged as the record changed twice in 1987.

The existing lap records are both thus down to Gary Culver (surprise, surprise) who pedalled his Serpent round the Mendip track to score 20 laps in 5 minutes 1 second for Formula and 21 laps in 5 minutes 2 seconds in Sports.

West Burtons records also were broken in 1987, this time by SG Spaces. Bob Errington setting the Formula record, Nigel Sayles holds the sports with 19 laps in 5 minutes 10 seconds.

It does seem likely that the records will not be kept by S.G. as there does seem to be a possibility that there won't be many, if any, SGs there to contest them.

The only other news worthy of mention is that the Bournemouth circuit is meant to be being resurfaced in June or July of this year. When it does get done then we will be there to see how good a job they make of it this time!

**The British Telecom UK Grand Prix**

This event is one of the premiere events to be held in the UK this year and was held over the Bank Holiday weekend, April 30th-May 2nd.

The Stonehaven and District Radio Car Club had worked hard and long for this event and had secured the help of British Telecom (North of Scotland district) to help finance the event. The circuit itself was in fine fettle and travelling competitors were greeted by BT direction signs to the site and large banners in the town of Stonehaven, just south of Aberdeen.

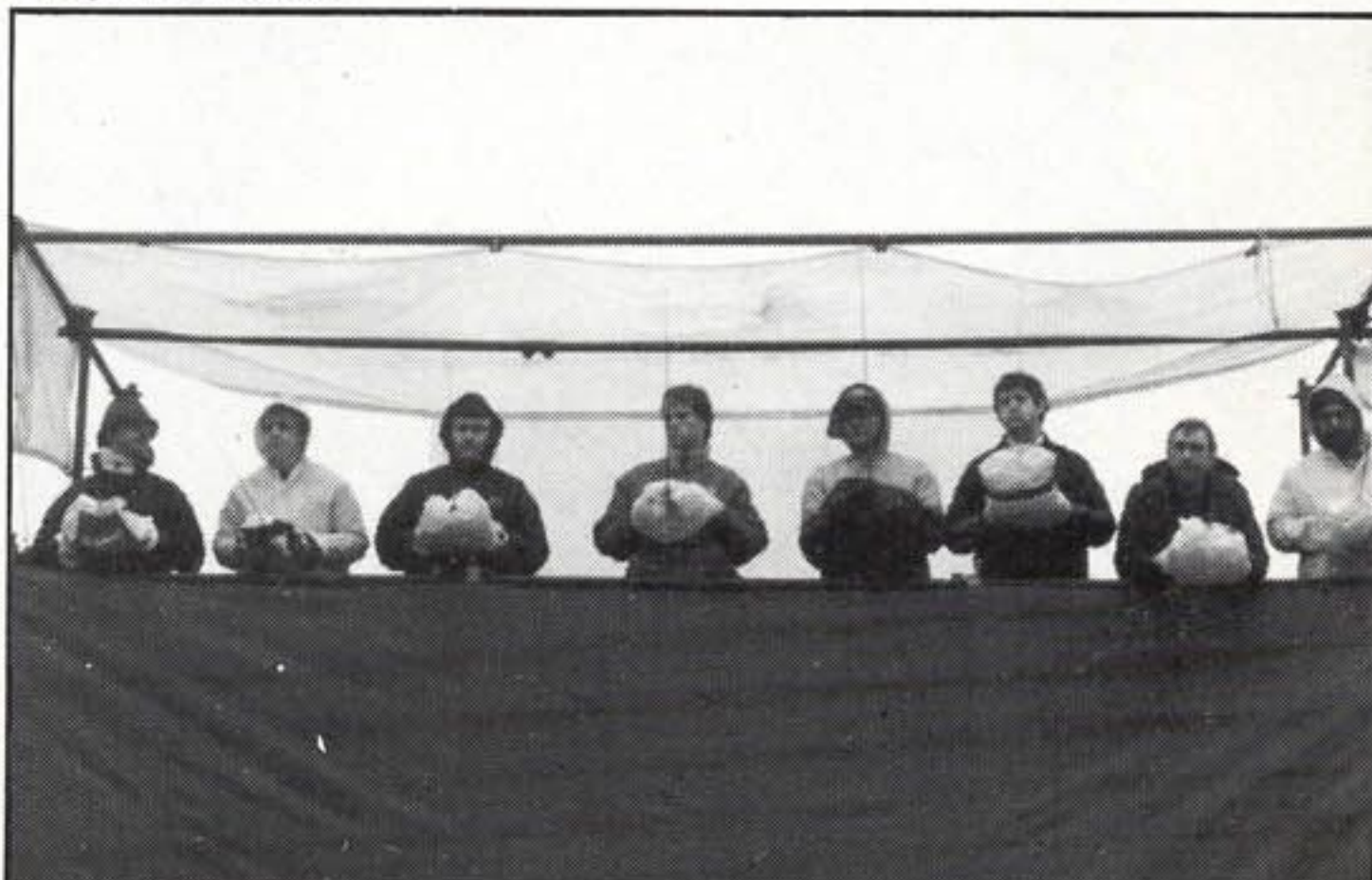
Visitor and competitor car parks, display areas, hospitality VIP enclosures, all added to the professional image of the event and the circuit itself had received loving attention with the grass neatly cut and the corner curbing all carefully painted in blue and red.

Friday was practice day, although many drivers used the day to travel the not inconsiderable distance "Up North". Dave Dixon was one of those testing and he and his companions had in fact arrived on the Thursday all with the intention of fine tuning the new P.B. Phoenix in to this circuit. Talk of the early morning mist on Friday, was of Dave's gearbox which had been

British Telecom seemed to sponsor everything.



The GP Finalists. Left to right, Chris White, Nigel Sayles, Steve White, Rody Rhoem, Dave Swift, Mark Stockford, Jim Strain and Bhajan Panesar.





considerably modified to make it a 3, yes THREE speed box!

Dave had taken the standard two gear device and grafted on another set of pinions, clutch and one way bearings. The car was seen testing all day and the distinctive two changes was already having a synching effect on other competitors. By midday, Steve White and Gary Culver had arrived with their brand new Serpent Sprint 6000 which really is a superb piece of engineering being as the advert says, "a racing car in miniature".

We were able to take some close up shots of the new car but have already asked UK distributor Walt Bailey, for a kit to enable a full review to be done as soon as possible to E.G. Those new adjustable shock absorbers are light years ahead of any previously seen and the range of adjustment and smoothness has to be seen to be appreciated.

Both Steve and Gary started to get their cars set, not only for this circuit but also because this was the first time that either has raced in anger. Anyway, by the end of the day it was Steve's car that had turned in the quickest laps unofficially timed, but both Gary and Dave Dixon were not far behind.

**Saturday, Qualifying Day**

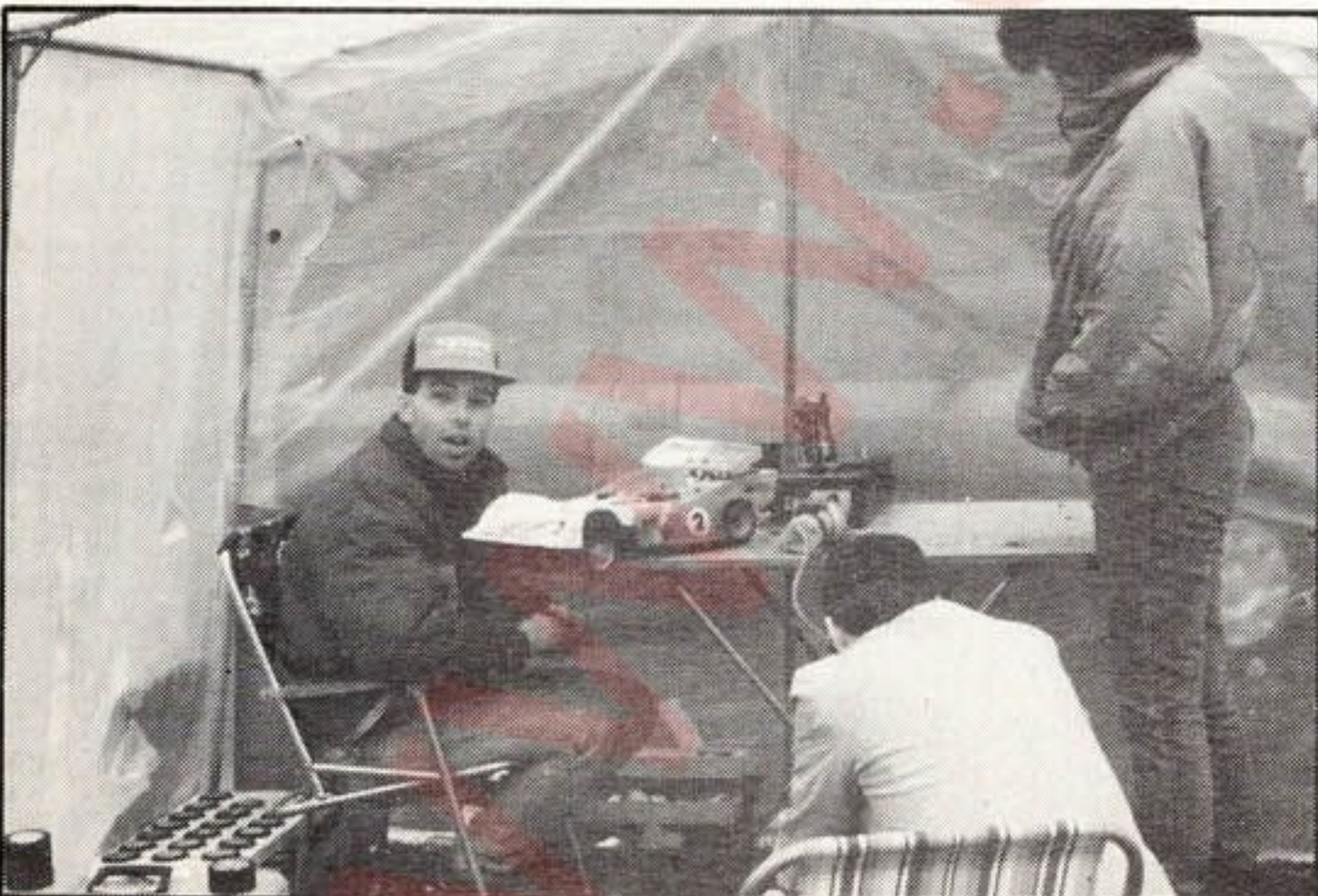
Drivers were out for the last free practice. Rody Rhoem from Serpent in Holland was trying to learn the circuit and was finding some parts very demanding to master, but weather conditions were perfect, perhaps a little cold but the sun was breaking through occasionally. By the time the meeting started at 9.40, the familiar black line was starting to form.

The local club had advertised the meeting as including the "Sierra Cosworth" class but unfortunately only three people entered this and all had travelled up together from Chelmsford. Where were all the people that voted for this class of racing back at the BRCA Annual General Meeting.

**Round 1**

Round 1 heat 1 and the first heat of qualifying saw Stan Brooke set the early bench mark by recording 14 laps. Heat 2 immediately upped this to 16 laps by Alex Jordan, George Dziedzic and Colin Perrin and then heat three pushed it to 17. Heat four saw two more seventeens by Alan Clark and Alan Wilson, where as heat five had Shaun Jackson pushing even further again with a new Phoenix but this time with a quick eighteen lapper.

Colin Straus practices an "Ah-So".



Steve White, the worthy Grand Prix Champion.

Heat six was the last of the non 'A' licence holders and this was to see Bhajan Panesar drive superbly with a new Serpent Quatro, lapping consistently in the sixteen second mark and recording a best lap of 16.13 seconds to secure the first of the nineteen lappers with a time of 5 minutes, 11.2 seconds, lapping everyone else in his heat.

Gary Culver, Dave Dixon, Walt Bailey, James Haydon and Paul Pagdin lined up for heat seven and right from the off Gary shot out into the lead from Dave Dixon, both of these pulling away from the ensuing dice between Walt, Jim and Paul as they swapped places carefully during the heat. Gary was really flying and got an almost unique thing in the shape of a perfect heat, even managing to record a best lap of 15.26 seconds on his way to 20 laps in 5 minutes 14.1 — a new track record. Dave Dixon tried to hang on but gradually slipped back to record 19 in 5 minutes 9.7 seconds. Walt, Jim and Paul Pagdin all recorded eighteen laps.

The final heat and all eyes were on Steve as he shot away from the start and like Gary Culver, gained a perfect heat. Steve's car was just a little slower though and with

a best lap of 15.07 seconds, recorded 19 laps in 5 minutes 3.3 almost lapping the entire field. Rody developed a problem and retired whilst Colin Straus tried hard to get past Chris White. Chris finished just three tenths of a second ahead but both himself, Colin and the rest of the field all on eighteen laps.

So at the end of the first round of heats the qualifying order looked like this:

1	Gary Culver	20 Laps	14.15 Secs
2	Steve White	19 Laps	3.26 Secs
3	Dave Dixon	19 Laps	9.71 Secs
4	Bhajan Panesar	19 Laps	11.90 Secs
5	Chris White	18 Laps	1.26 Secs
6	Colin Straus	18 Laps	1.60 Secs
7	Shaun Jackson	18 Laps	6.80 Secs
8	James Haydon	18 Laps	7.00 Secs

**Round 2**

Heat 3 was the first heat to show an improvement on the first round when Dave Jones clocked a 17 in 5 minutes 21.6 seconds and Jon Clark just pipped him by half a second to gain his 17 lapper. John Russell in the next heat improved by exactly one lap and Ian Anderson by half a lap.

At the start of heat 6, Bhajan Panesar's car shot off the line to lead for some eight laps, recording a best time of 5.75 seconds, until, whilst trying to pass a backmarker down the straight, he got rolled off the track causing some problem to his fuel mixture, eventually enforcing a lengthy pit stop to try and cure the problem. However this left the heat open for Neal Woodhead and Steve Whitting who chased each other around for the full five minutes finishing up with 18 laps in 5 minutes 10.7 and 12.1 seconds respectively.

Heat 7 and all eyes were once again on Gary at the start line, but as the flag dropped Gary got knocked and it was Dave Dixon who shot away followed by James Haydon and Gary just a little way behind. By the second lap Gary had passed Jim and was setting about closing the gap on Dave but not that quickly. Despite a singular best lap of 15.64, Gary was unable to pull Dave in, so it was that Dave clocked 19 laps in 5 minutes 3.9 seconds to Gary's 19 in 10.8 and James in third with 19 in 13.8.

The final heat in round 2 was going to be the last before the lunch break and so once again interest focussed on Steve White as he made an excellent start to lead Colin Straus, Chris White and Rody Roem down the straight. Whilst trying to pass Chris, Rody's car touches Chris's car sending it

The Scottish, British Telecom Team.





off and pushing Nigel Sayles up to third. Steve pulls away gradually with consistent times set 16 seconds (best 15.49), whilst Rody seems to be having handling problems and retires after just six laps. At the end Steve had recorded the second 20 lap run with a time of 5 minutes 14.9 with Colin Straus second on 19 in 7.2 seconds, Nigel Sayles third on 19 in 13.2 and Paul Cook also on 19 with 15.6 seconds.

Thus at the lunch break, halfway through the four qualifying rounds, the listing of qualifiers looked as follows:-

1	Gary Culver	20 Laps	14.15 Secs
2	Steve White	20 Laps	14.88 Secs
3	Dave Dixon	19 Laps	3.92 Secs
4	Colin Straus	19 Laps	7.17 Secs
5	Bhajan Panasar	19 Laps	11.19 Secs
6	Nigel Sayles	19 Laps	13.25 Secs
7	James Haydon	19 Laps	13.82 Secs
8	Paul Cook	19 Laps	15.55 Secs
9	Chris White	18 Laps	1.26 Secs
10	Shaun Jackson	18 Laps	6.83 Secs

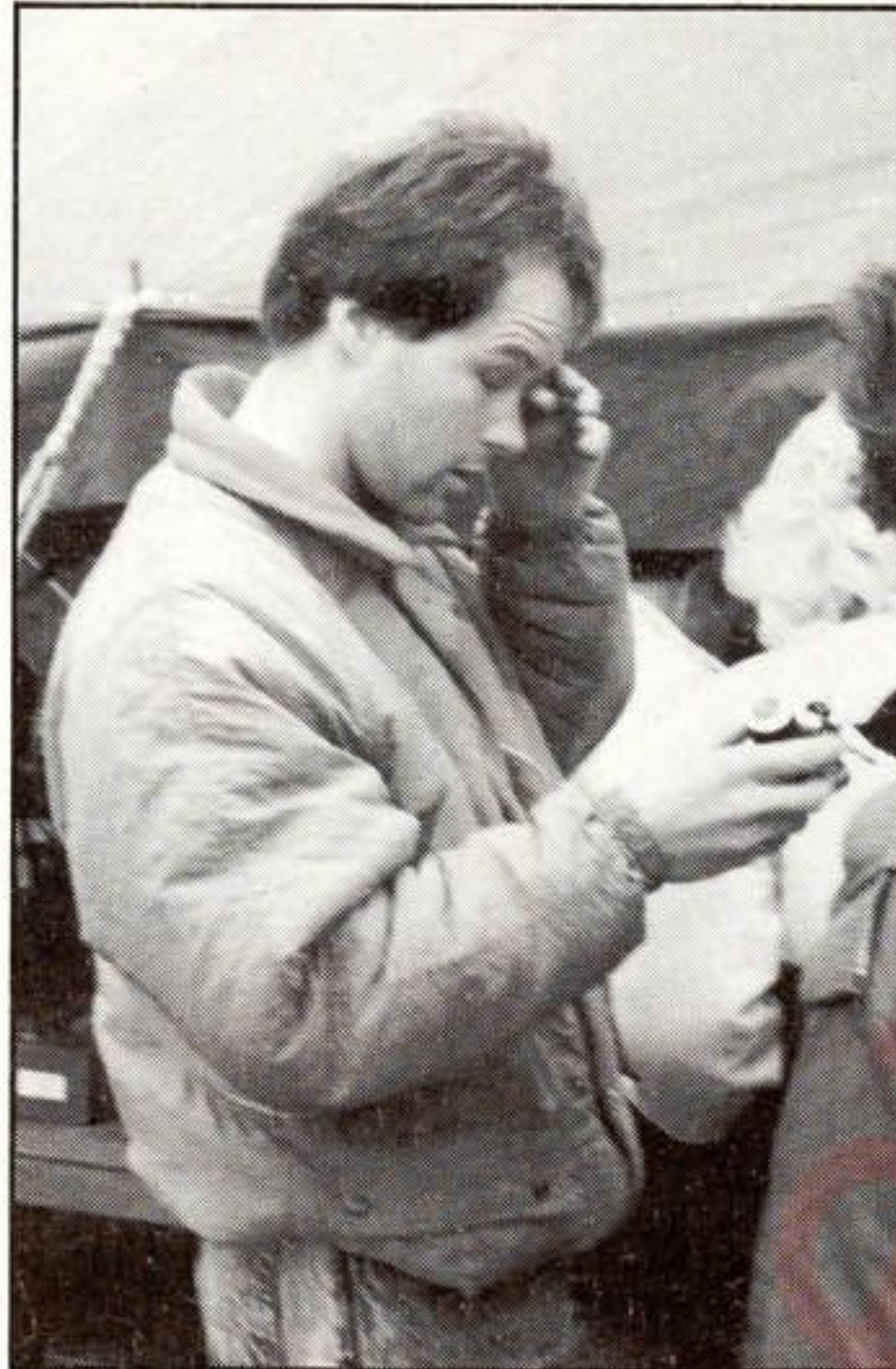
During the Lunch Break Walt Bailey gave a demonstration on how to drive an R/C motor cycle and Colin Straus took to the air showing his prowess in flying an R/C helicopter to much appreciated effect. The Refreshment tent filled to bursting point and all the race officials took a well earned break. Then back to work for:

**Round 3**

The track was gradually getting quicker as the oil was beginning to lay and even heat 1 now sported 15 laps by Suki Panasar and K. Watt. Four cars scored 16 laps in heat 2 with Andy Cly the quickest on 3.2 seconds.

Richard Saterley drove his best ever in heat four when he notched up the magic eighteen laps lapping the whole field, twice in some cases to cross the line in 5 minutes 17.0. Another two drivers achieved their bests by clocking 17, Ian Briggs in 5 minutes 8.8 and Bruce Edwards in 5 mins 15.6. John Pryce in the next also managed his first clean heat to go into the 17,s in 6.6 seconds, whilst Steve Whitting in No. 6 fairly rocketed around to clock an 18 in 5 minutes 4.7 seconds.

Heat 7 was a little dissapointing as Gary Culver failed to start, leaving Walt Bailey to lead for about five laps when James Haydon took over to finish with a good 19 laps in 5 minutes 10.2, Walt second on 18 in 5 minutes 3.3 and Paul Pagdin just behind on 5 minutes 4.8. Heat 8 was good as Steve White got away first followed by brother Chris, until Rody Roem got past to chase after Steve. Steve was lapping down to



*It's no good crying over spilt engines, Rody!*

15.5 seconds which enabled him to clock a 20 and in the process, take the new track record away from Gary, with 20 in 5 minutes 13.7 seconds. Rody also clocked 20 in 15.5 to become the third person on the magic twenty, whilst Chris achieved his best run with 19 in 13.4 seconds.

Thus qualifying at the end of round 3 was as follows with just the one round to try and qualify for the vital top four slot to go straight into the main final or to get in the top eighteen to make it to one of the two semi's:

1	Steve White	20 Laps	13.75 Secs
2	Gary Culver	20 Laps	14.15 Secs
3	Rody Roem	20 Laps	15.54 Secs
4	Dave Dixon	19 Laps	3.92 Secs
5	Colin Straus	19 Laps	7.17 Secs
6	James Haydon	19 Laps	10.70 Secs
7	Bhajan Panasar	19 Laps	11.90 Secs
8	Nigel Sayles	19 Laps	13.25 Secs
9	Chris White	19 Laps	13.41 Secs
10	Paul Cooke	19 Laps	15.53 Secs

**Round 4 — The Final Conflict**

For many competitors this last round achieved nothing, but for others it enabled their best to come out. Colin Perrin in 2 rose to a 17 score whilst R. Forrest and Pete Margretts in 3 got 16s and Alan Gordon a 17, just. Heat 5 enabled the hard working

Dennis Jones to score a best 17 in 5 minutes 15.7 making all that work on the computers worthwhile and even that other computer man, Ian Anderson, achieved his best with a 16 in 5 minutes 6.3.

Heat 5 saw best times for Frank Chung, Maurice Cox and Jim Strain, all recording 17s and in 1.5, 12.8 and 13.9 seconds respectively. Heat 6 was the last chance for Bhajan Panasar to make it to the top four but an absolutely disasterous start put and paid to that leaving Ian Cowreson and Murray Collins to gain best times.

Heat 7 and Garys last chance to snatch back the FTD slipped away as his motor cut on the opening lap leaving a charging Dave Dixon trying hard to break into the 20 lap barrier. As we approached the five minute mark it was going to be extremely close as to a 19 or 20 but on that last lap an unfortunate touch with Walt Baileys car, who had moved over to let Dave through, meant that Dave lost the 20 and had to settle on 19. It was in fact Walt's best run as well with an 18 in 0.9 seconds. In consequence the last heat was a dissapointment as Steve White lead from start to finish to 'only' clock a 19 in 4.8 from Rody some ten seconds behind and both Paul Cook and Chris White on 18s.

The final qualifying list and hence allocation into sub finals looked like this:-

*Bhajan Panesar, one of our foreign visitors from far away parts.*



*Scenes from the Stonehaven circuit.*



*Pits were fine when t'was dry!*





1st	Steve White	Serpent Sprint	S. Power	20/13.75
2nd	Gary Culver	Serpent Sprint	N. Rossi	20/14.15
3rd	Rody Roem	Serpent Sprint	S. Power	20/15.54
4th	Dave Dixon	PB Phoenix	N. Rossi	19/3.92
5th	Colin Straus	Serpent Quattro		19/7.17
6th	James Haydon	Serpent Quattro		19/10.17
7th	Bhajan Panasar	Serpent Quattro		19/11.19
8th	Nigel Sayles	SG Space		19/13.25
9th	Chris White	PB Phoenix		19/13.41
10th	Paul Cook	Serpent Quattro		9/15.55
11th	Walt Bailey	Serpent Sprint		18/0.88
12th	Steve Whitting	PB Phoenix		18/4.66
13th	Paul Pagdin	PB Phoenix		18/4.77
14th	Shaun Jackson	PB Phoenix		18/6.83
15th	Neal Woodhead	PB Phoenix		18/10.69
16th	Rich Slaterley	PB Phoenix		18/16.95
17th	Frank Chung	Serpent Quattro		17/1.5
18th	Mark Stockford	Serpent Quattro		17/4.45

Being a British meeting, as well as the Grand Prix, A, B and C Finals were also being run at the end of the qualifying. First off, there was the 'C' final which really was an excellent battle between the two cars of Colin Perrin and Andy Clay, who swapped places for most of the race.

The 'B' Final saw Richard Saterlay drive off into the lead, never to lose it, whilst Alan Clark kept the gap as close as he could and finished half a lap behind Richards 50 laps. Dave Jones finished in third place on 47 laps with Jon Clark fourth on 44 laps and Alan Wilson fifth on 43 laps.

The 'A' Final was the last race of the day and featured a whole host of star drivers, Shaun Jackson, Colin Straus, Bhajan Panasar, James Haydon, Paul Pagdin, Nigel Sayles, Chris White and Paul Cook. It's Jim Haydon who takes the lead from Chris White with Bhajan third and Paul Pagdin fourth. By the first fuel stop the positions haven't changed but the gap between Jim and Chris is only 1.3 seconds. Another five minutes and Jim cannot shake Chris. Jim has a bad fuel stop and so now it's Chris in the lead, just two and a half seconds ahead of Jim. Not content with this, Jim sets about closing the gap as both cars again lap the back markers where upon somehow, Paul Pagdin gets in between the two to keep status quo. Jim then closes right up and sits on Chris's tail trying to force him into making a mistake. Jim tries to get the inside line at a couple of turns but each time Chris slams the door shut and holds on to the lead. Inevitably

Jim passes in a clever little manoeuvre and starts to pull away, however Chris loses a front wheel which drops him back to fourth place. A couple of laps later the air filter drops off from Jims engine and he hastily stops to get it replaced letting Nigel Sayles into the lead just six seconds ahead of Jim and with only two minutes left to race. One and a half minutes left and the gap is down to 4½ seconds, one minute and its down to 3 seconds. Then with only 20 seconds left to go, Nigel cracks under pressure and makes an uncharacteristic mistake by putting the car on the grass down the straight letting Jim through to a gift victory.

1st	Jim Haydon	Serpent	69 Laps
2nd	Nigel Sayles	SG	69 Laps
3rd	Chris White	PB	68 Laps
4th	Paul Cook	Serpent	68 Laps
5th	Paul Pagdin	PB	64 Laps
6th	Colin Straus	Serpent	63 Laps
7th	Bhajan Panasar	Serpent	58 Laps
8th	Shaun Jackson	PB	22 Laps

### Saturday Night

As it is usual at any national meeting held at the Stonehaven circuit, evening entertainment had been organised at the Commodore Hotel including traditional Scottish dancing and the inevitable delights of "Haggis, Neets and Tattys", served free to all! Even those Sassanacks who didn't fancy the idea of Haggis had to admit that it really was very tasty. Poor old Chris White came in for some stick from the locals, Chris had strained his neck, doing what I do

not know, but was uncomfortably dressed in a surgical collar. Hence six others also turned up attired similarly to extract the michael. The kilted Scots also showed the extent of British Telecom sponsorship when they were asked to once and for all show what a Scotsman wears beneath his kilt. As kilts were raised the blue B.T. logo on the white under garments was quite apparent.

This enjoyable evening went on to midnight and for some till nearly 2.00 am, the drunken lot, no names but do the initials IA, IJ, PM, DJ mean anything?

Well done to the entertainment committee, another extremely enjoyable event.

### Sunday 1st May — Finals Day

What a shame! After all the work put in by the Stonehaven club and to the meetings sponsors — British Telecom — it had poured with rain all night, the track was very wet and the ground by the pits was starting to get churned into mud!

The first sub final away was the 1/16 B and on a wet track it was Chrales Baldry, Maurice Coull and Steve Lindley who qualified through to the 1/8. In the 1/16 A it was Phil Gregors, Stuart Hodge and Damon Gunn who went forward.

The 1/8 B had Mike Jackson in the lead by the first fuel stop lapping in about 22 seconds a lap, from Alan Gordon in second. Then a problem hit both Alan and Mike during the next five minutes swapping positions to suit. In the end Mike Jackson took the flag on 49 laps from Alex Jordan on 48 and Alan Gordon on 47. The 'A' had Phil Jones go off into the lead followed by George Dziedzic and Murray Collins. By Twelve minutes there was only those three left running in what was now really lousy conditions, so all three pulled off knowing that they could not be overtaken.

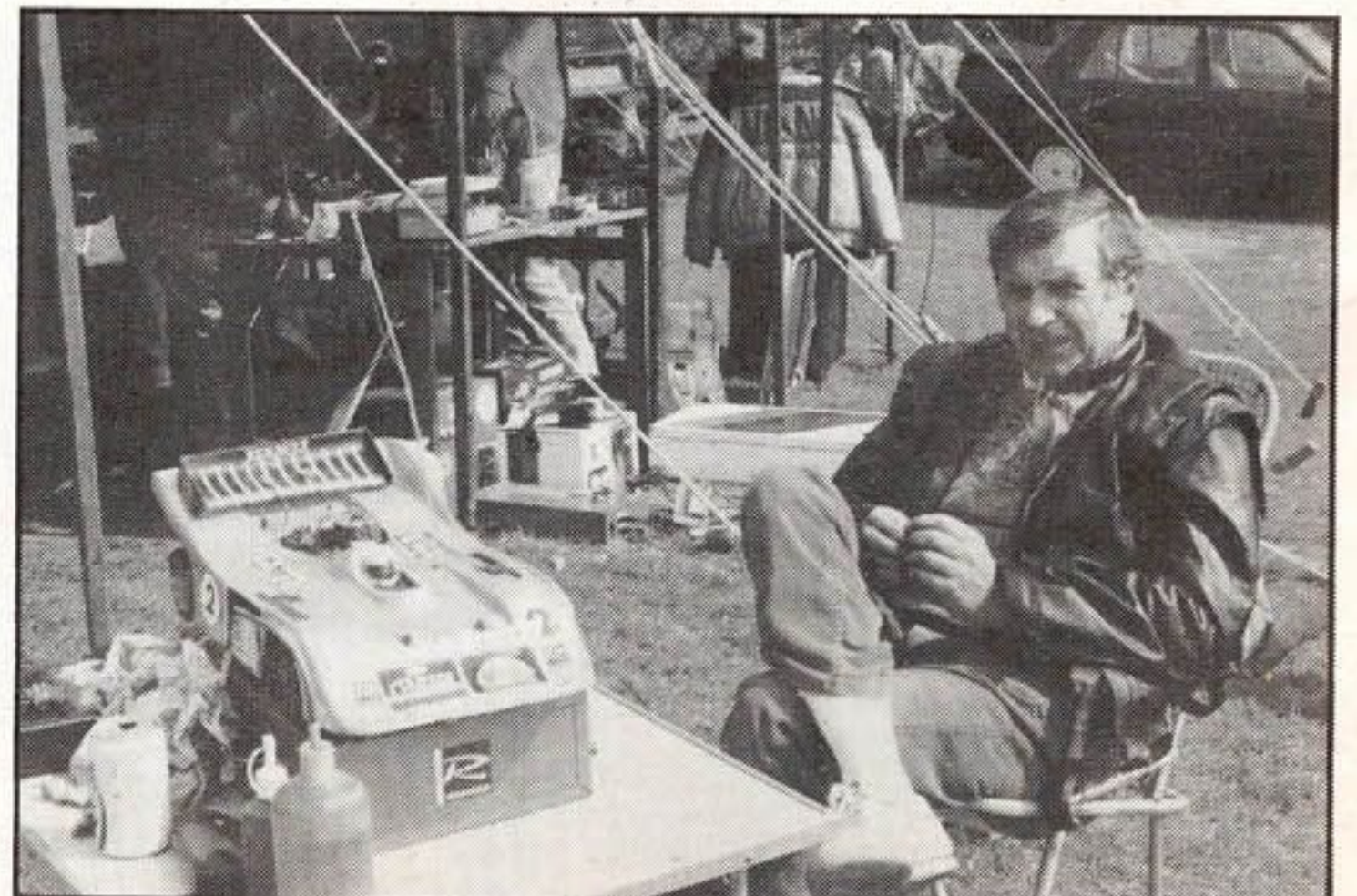
The lunch break was next and once again we had a superb display of helicopter flying and fine control by Colin Straus who was hovering his machine with great precision.

The Quarter Finals were next on and for the first five minutes of the 'B' the lead swapped constantly, but by the halfway mark it had settled down to Jim Strain leading from Colin Perrin and Mike Jackson again, Jim was starting to drive the best that we have seen from him and to clock 53 laps by the end was no mean feat. So Jim, Colin and Mike got prepared for the semi-final. The 'A' by contrast was a start to finish lead for Dave Swift with his

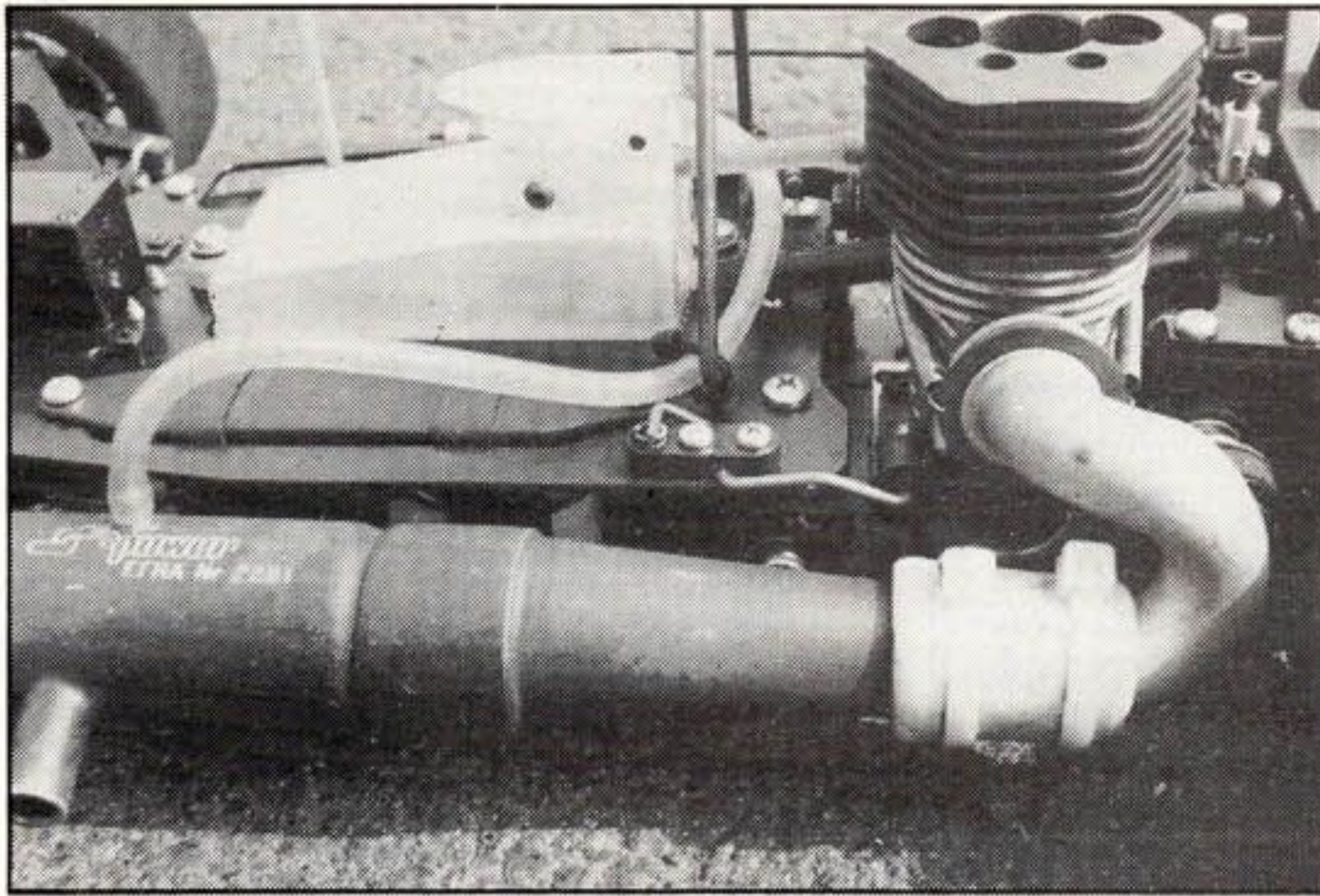
John Pryce and Jim Strain.



Jim Strain from Ireland makes his first ever big final.







**Serpent Spirit.**

new Phoenix on 54 laps whilst Bruce Edwards eventually came through into second also on 54 and Ian Anderson made good, just one lap down after missing the actual start of the race.

The 'B' semi-final started by rolling poor Chris Whites car on its roof and at the back of the field with Colin Straus leading from Bhajan Panasar and Frank Chung. After about five minutes Chris had moved up into third and all three were running nose to tail. A spin by Colin drops him down and allows Chris to take up the lead from Bhajan and Jim Strain, now up into third which is how it stayed to the end with Chris on 57 laps, Bhajan on 56, Jim on 55 and poor old Colin just out of the frame also on 55.

The 'A' semi showed that an SG in the right hands is still a competitive car as Nigel lead from start to finish with Dave Swift in a comfortable second and Mark Stockford first.

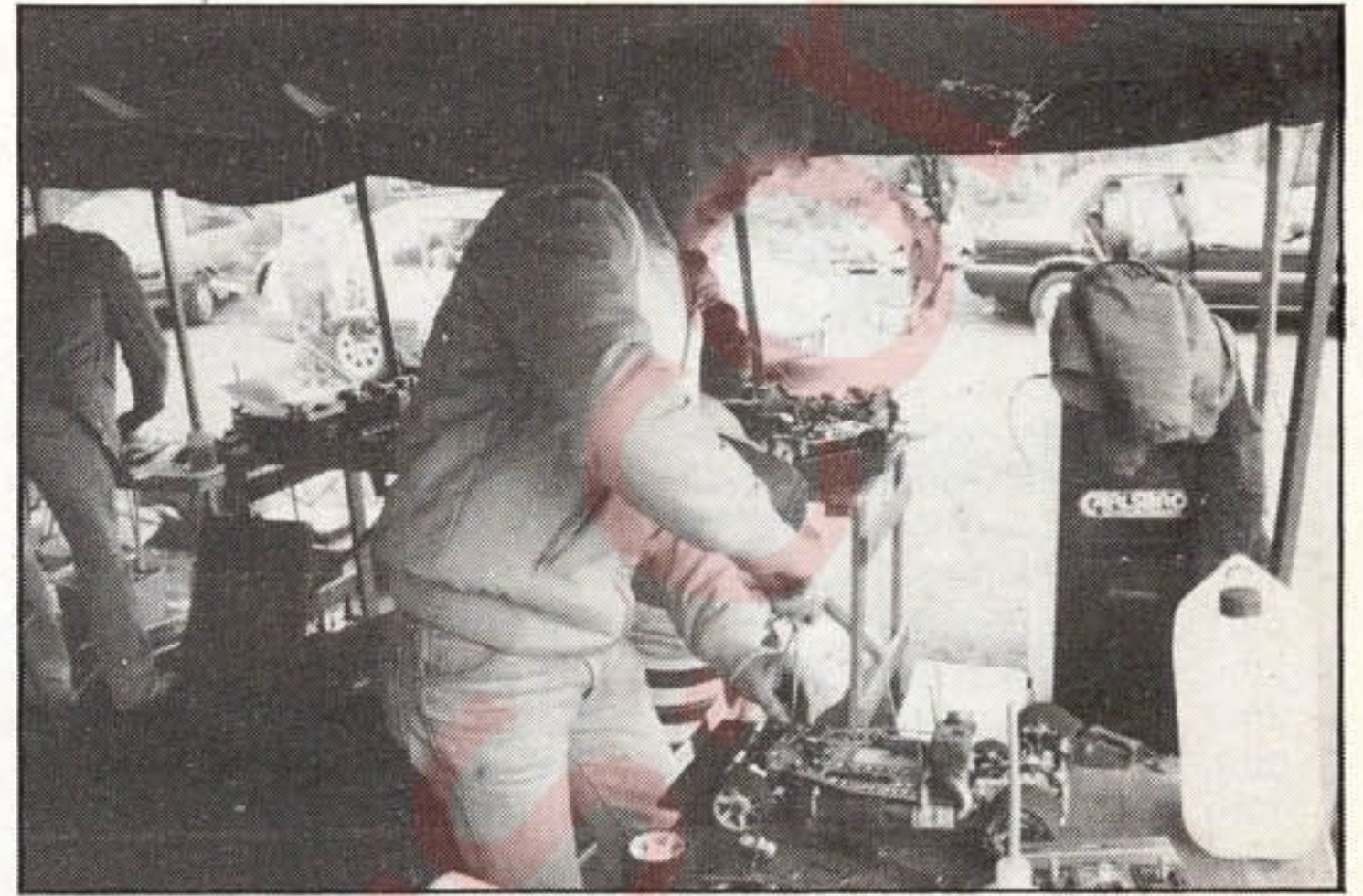
Before the main final there was a PRO/AM celebrity race featuring local Radio/TV/Press personalities racing 1/10 off road cars with Sierra Cosworth bodies in Telecom colours. Somehow British Telecoms PRO Gordon Gillies, turned out the winner!

**The Grand Prix Final**

Before the semi-finals there was a time slot allocated for the top four qualifiers to practice, but as the weather was really quite bad, no one practiced except for Dave Dixon who, as we all know, likes to drive in the wet. His car had looked quite good but suddenly shot off causing a bit of damage.

Now in the warm up for the start of the GP final, his car was still having problems and so a delay to the start was requested. The EFRA rules states that a ten minute

**The new Serpent Spirit.**



**Nigel Sayles at work.**

delay of the start may be requested and so race director Eric White, delayed the start from 4 minutes 15 to 4 minutes 25. Unfortunately at 4 minutes 25 Dave was not on the start so the race started with 8 cars, Gary Culver having decided not to run in these conditions.

Steve White took the lead at the start from Rody Roem, Chris White and Nigel Sayles but it was only a short time before Rody was able to pass Steve and start to pull away slightly. At 1 1/2 minutes into the race Dave Dixon comes out on the track but he has forgotten his transponder and so has to return to the pits to have it fitted.

At 4 minutes into the race Rody had clocked eleven laps and Steve is on the same in second spot. Chris is still on third but Jim Strain has moved up to fourth. One minute later and Jim has got passed Chris into third spot whilst Rody has stretched his lead to half a lap. Steve pits for fuel at 7 mins, whilst Rody goes in 7 minutes 50, together with Chris.

At the 10 minute mark, Rody is on 29 laps, Steve 29, Jim 28 and charging hard to try and make up his lost time.

13 1/2 minutes — Steve fuels, 15 minutes Rody fuels — it looks for sure that Rody is going to save a fuel stop aswell.

At 21 minutes, Rody is on 62 laps, now a full lap up on Steve whilst Chris is third on 58 laps and Jim Strain one lap behind. Nigel is on 55 and Dave Dixon has now moved up to sixth place with 53 laps.

Half distance and Rody comes in for fuel, now on 66 laps. At 25 minutes Dave Dixon has moved up to fifth place, still 8 laps behind. Twenty nine minutes and Rody is in for fuel again which seems to be too early by a minute? As he exits the pits the

gap back to second place is now 11 seconds, now its down to six seconds, now four. Yes Steve is starting to reel Rody in, but now has to fuel again and this drops the gap back to 15 1/2 seconds with Dave Dixon now upto fourth place.

Rody comes in for fuel again, still a little ahead of schedule and its a slow stop as well allowing Steve to reset the gap at 5 1/2 seconds. By 38 minutes its back down to 3 1/2 seconds and Rody's car is starting to understeer. Thirty nine minutes and Steve is in for his last stop as Dave Dixon moves up to third. Rody fuels and by the time he exits the pits, Steve White has taken the lead albeit only just. For the remaining five minutes Rody tries hard to keep Steve in his sight but to no avail as what he can gain by skill he loses on the, now getting worse,

**Rody Rhoem, a fine second place.**



**The GP Finalists were presented with the awards by British Telecom area Manager Mr. Forbes-Hamilton.**





understeer. So at the end of the marathon forty five minutes, we had a British Telecom Grand Prix champion in the shape of Steve White with the final results as follows:-

So a great win for Steve and a superb debut for the new Serpent Sprint, proving that it can qualify well in the dry and run in the wet. The new Phoenix also went well especially for Dave Dixon.

Next month we will cover the BRCA saloon meet at Stonehaven as well as — reflections on.  
Bye for now.



1st	Steve White	Serpent Sprint	S. Power	131 Laps
2nd	Rody Roem	Serpent Sprint	S. Power	131 Laps
3rd	Dave Dixon	PB Phoenix	N. Rossi	122 Laps
4th	Chris White	PB Phoenix	N. Rossi	120 Laps
5th	Nigel Sayles	SG Space	N. Rossi	118 Laps
6th	Dave Swift	PB Phoenix	N. Rossi	103 Laps
7th	Bhajan Panasar	Serpent Quattro	S. Power	93 Laps
8th	Jim Strain	Serpent Quattro	S. Power	72 Laps
9th	Mark Stockford	Serpent Quattro	S. Power	48 Laps
10th	Gary Culver —	Did Not Start		

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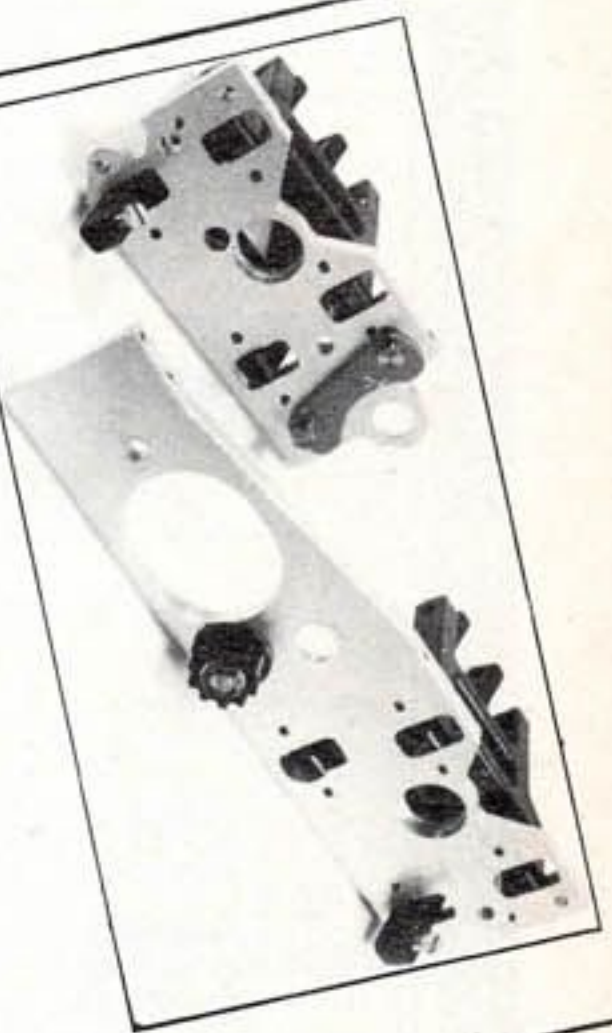
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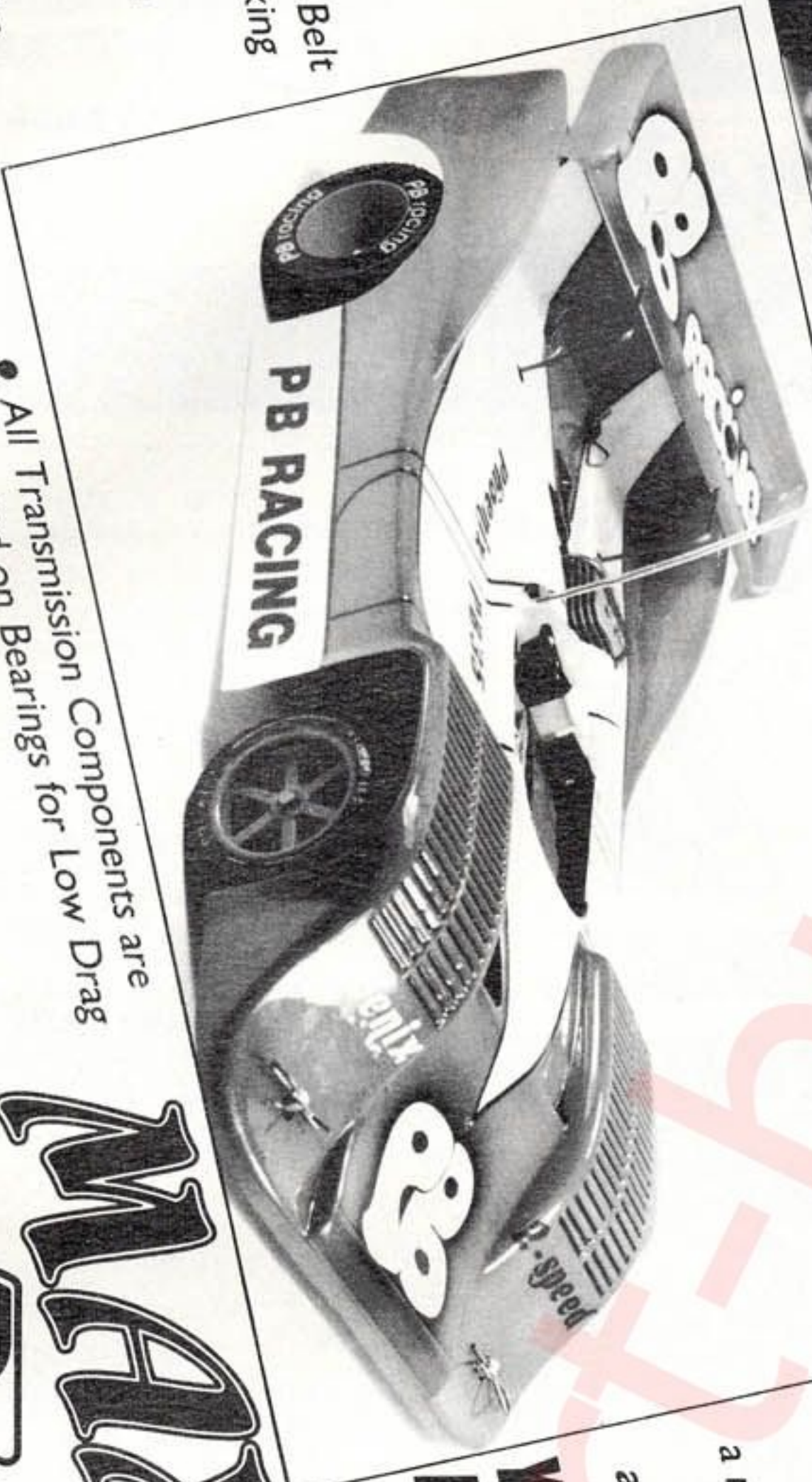
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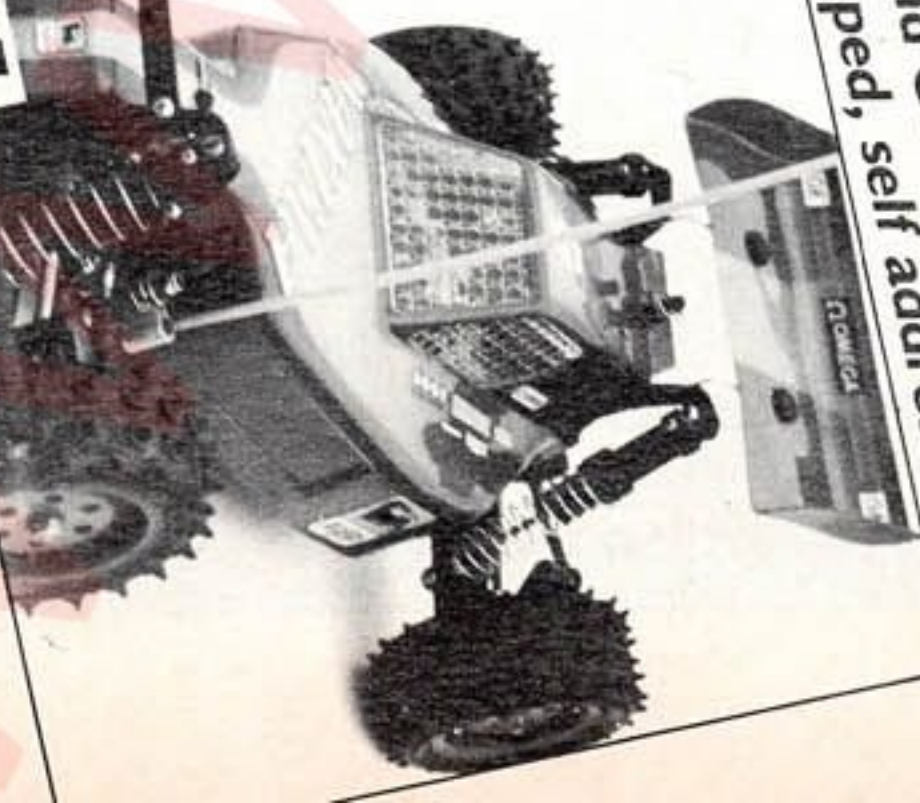
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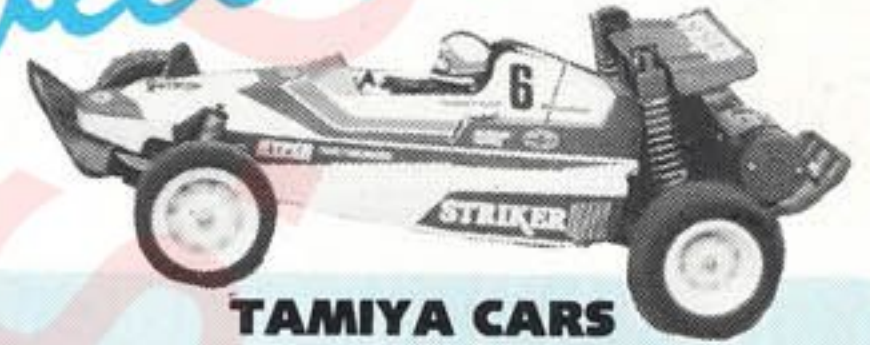
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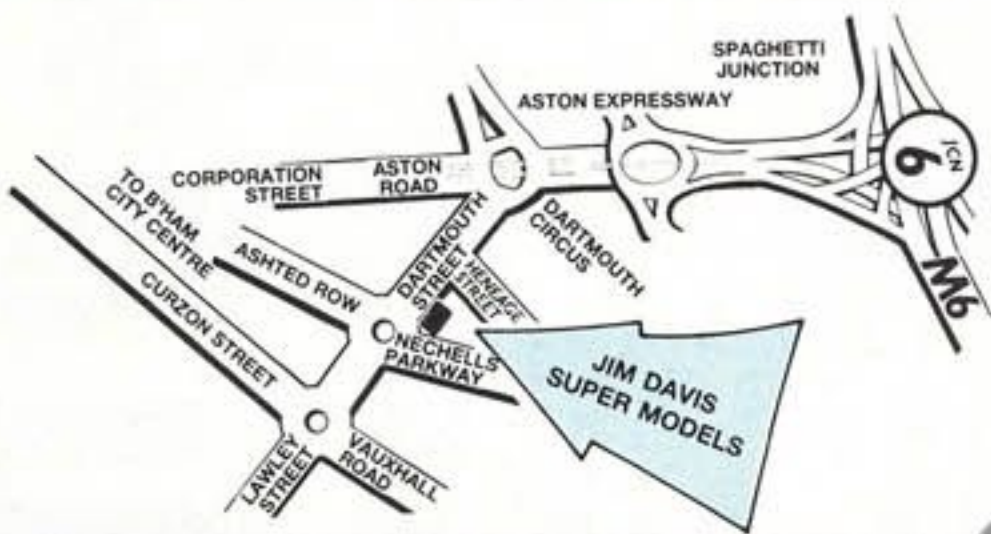
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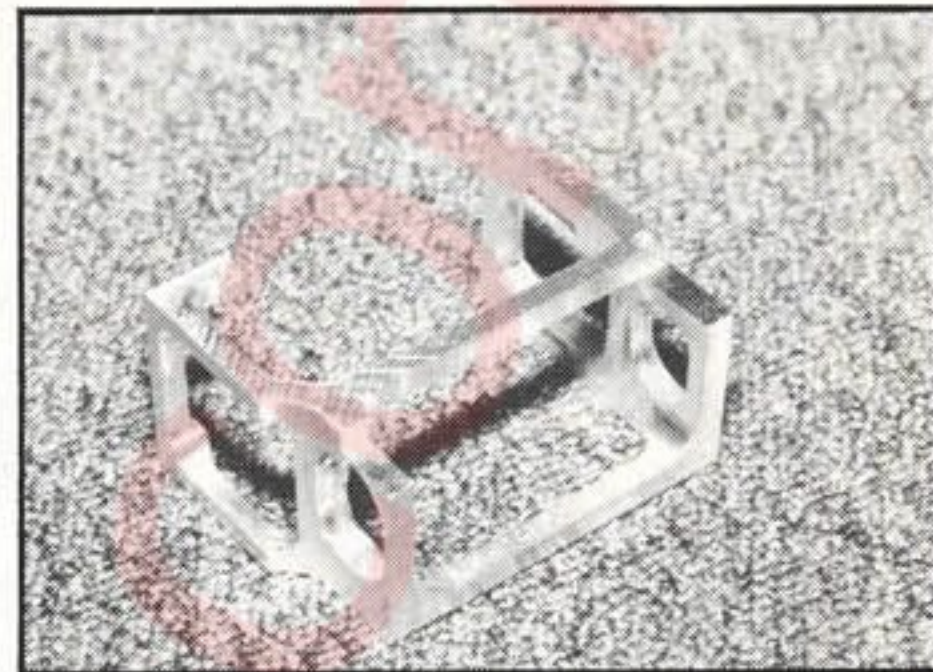
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# TRACK TALK

by Chris Evans



Oberle rear end for the 12L car.

Tel (091) 2583367.

Moving on, the last few months have seen stacks of new equipment hitting the market.

The Barracuda Smart Charger finally made its debut and it certainly is an impressive piece of kit. The only thing I wasn't too keen on was the fact it took 30 minutes to fully discharge a set of cells, which is not too cool when you're trying to keep them conditioned for an eight minute race, but Chris Hardisty informs me this discharge time is being changed. Also seen at the Nantwich National, along with the Smart Charger were the latest Team Parma Cars. The car, called the Panther Pro 12 is basically similar to the Panther's seen around for the last few years, although our own Andy Dobson has made some subtle changes. The car now has a pivoting 'T' bar system similar to the RC12L, with the roll stiffness altered by varying the pressure on

Firstly this month, it is now definite that the Gateshead meeting on the 24th/25th of September will be an EFRA Grand Prix. The final decision to go ahead with the meeting was made at a BRCA committee meeting (1/12 section) at the Washington National and the organisers are also aiming to hold the European Championships in 1989, or 1990. As the National last year, the racing will take place at the Gateshead Athletic Stadium, but this time to EFRA rules.

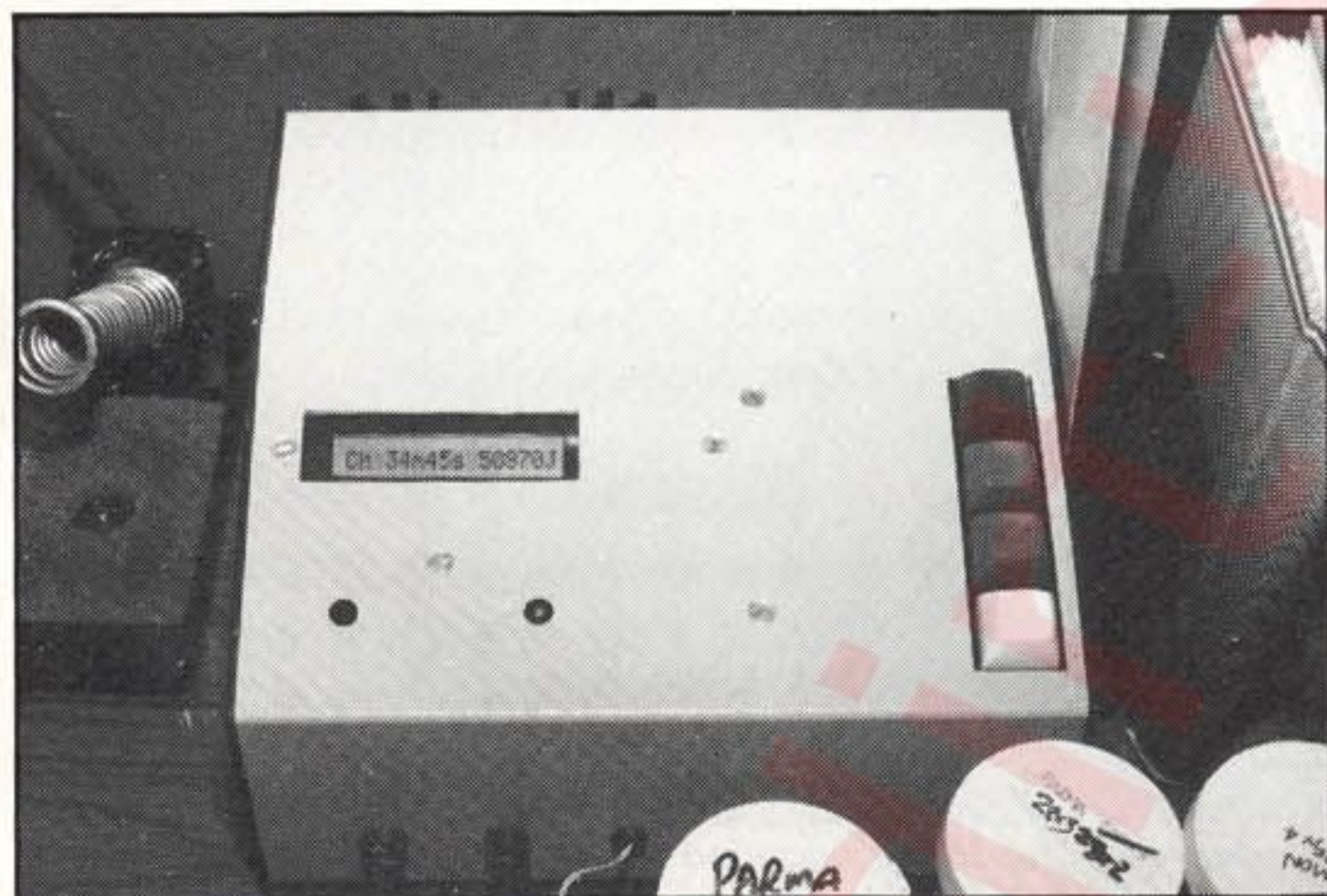
The Swallow Hotel is once again recommended with Bed and Breakfast for a twin room working out at £17.50 per person per night and this time lads, try and leave the towels behind.

The entry fee for racing is £15 with the closing date for EFRA licence holders being August 1st and August 15th for anyone else and no late entries will be accepted.

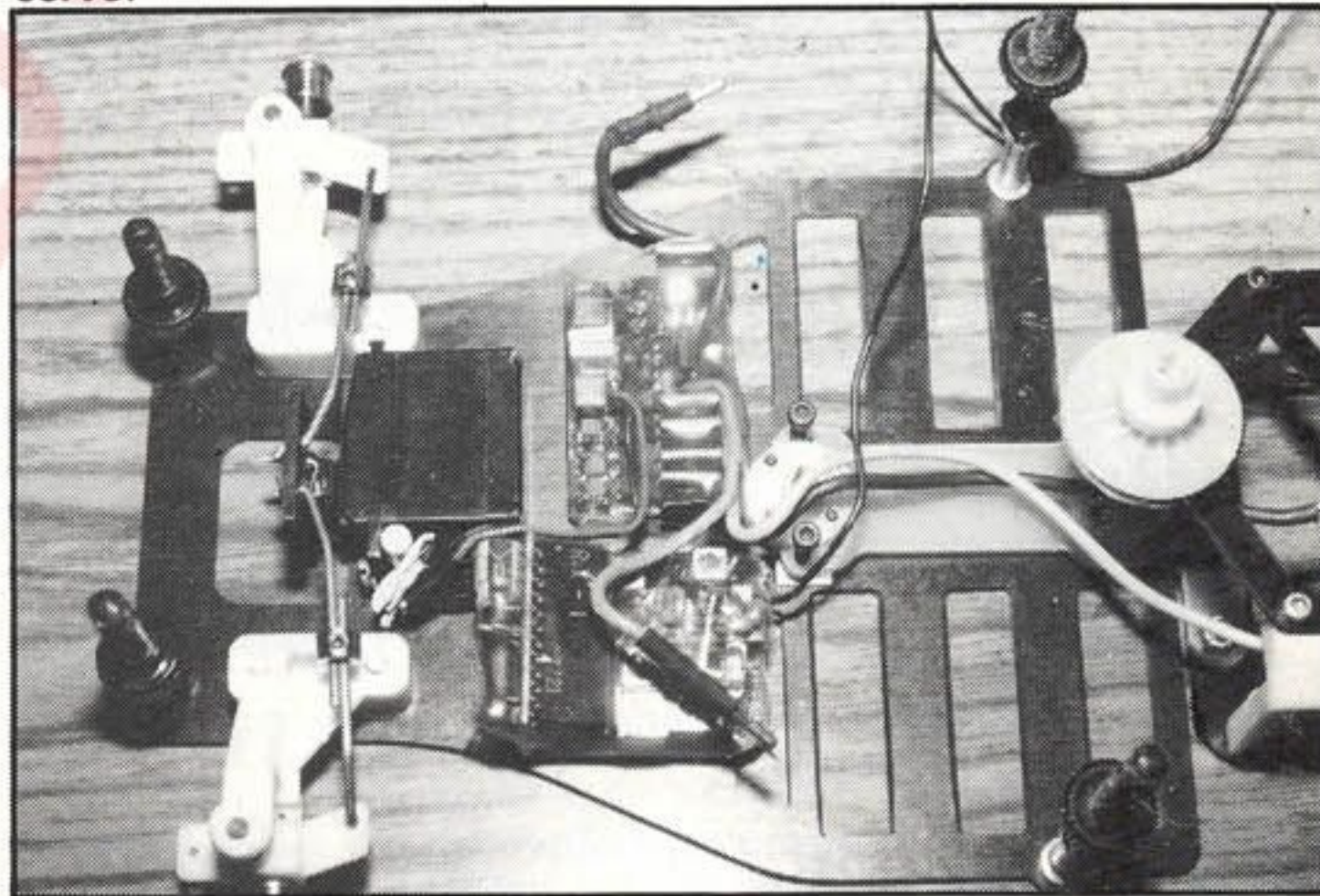
Further information can be obtained from Vince Formosa at 2 Bottermere Road, North Shields, Tyne and Wear, NE30 3AS.

Rob Roy's 12L car fitted with a prototype speed control for Laser, but designed and built by David Gale and also the Futaba FD 135S servo.

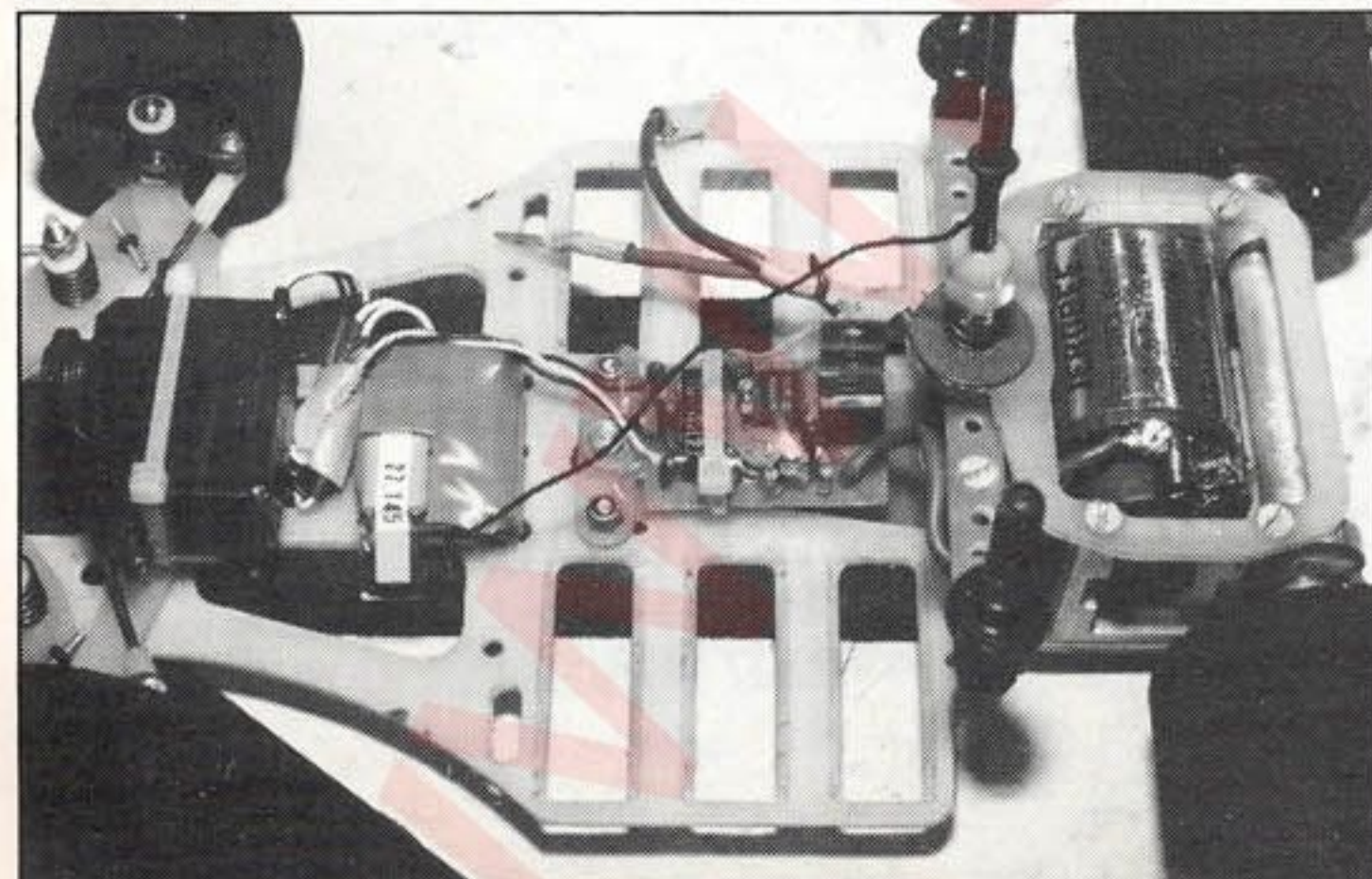
Impressive, multifunction SMART charger from Barracuda.



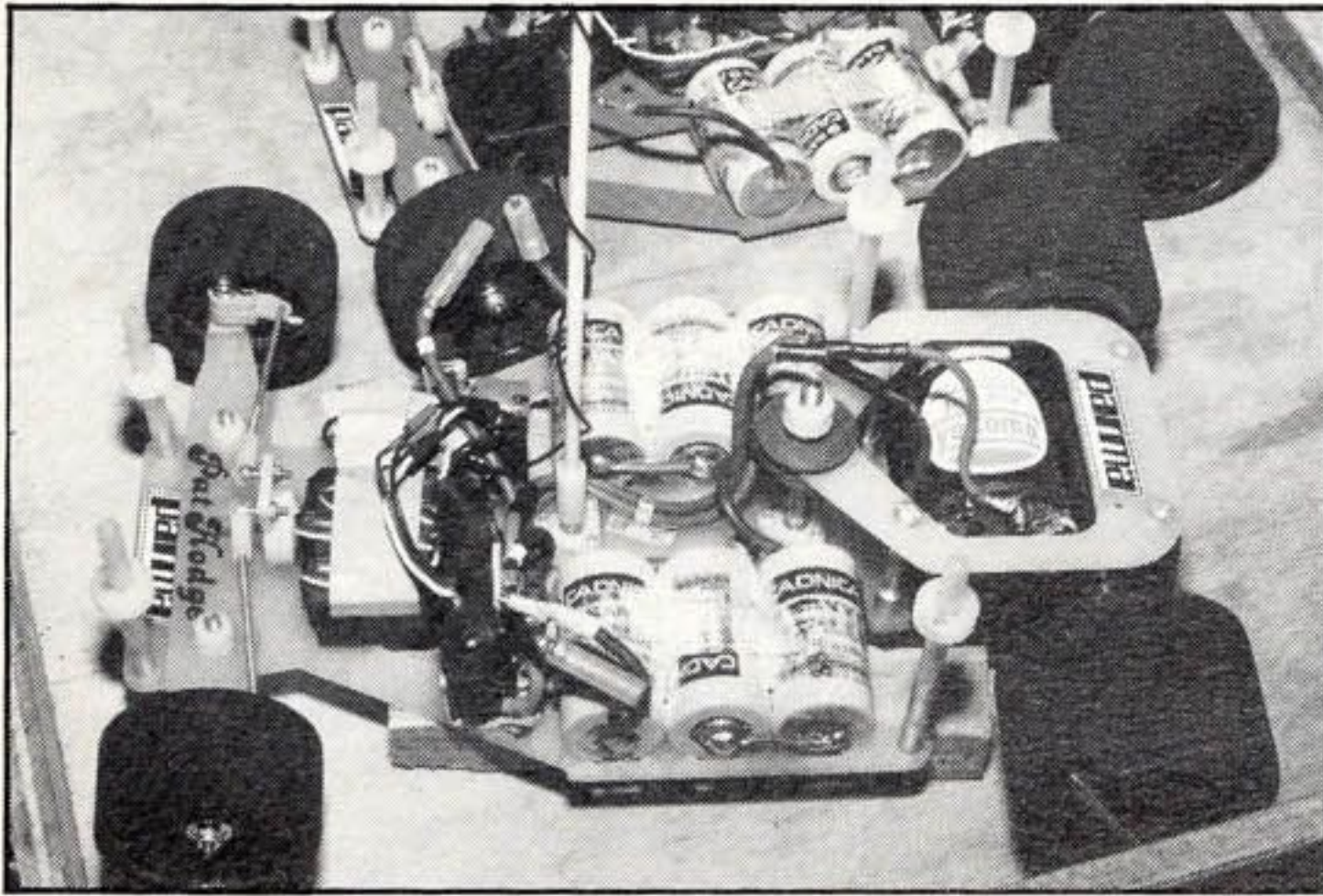
A speed controller or a voltage regulator circuit? Ian Carroll's latest speed control, no problems in finding a place to fit this one.



The cars of Team Parma, Bill Boldison, Keith Helmke and Pat Hodge.

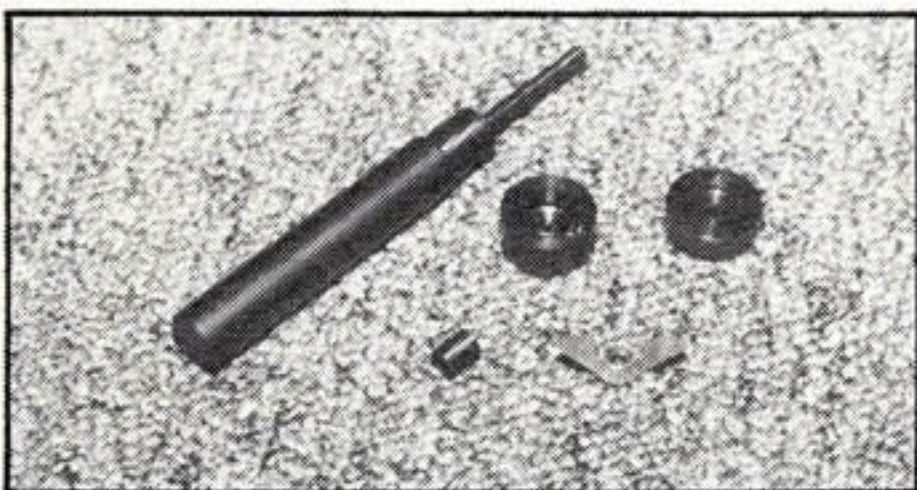






Close up at Pat Hodge's Parma car.

two pieces of silicone fuel tubing either side of the 'T' bar. The car also utilises a rear anti-roll bar. Unfortunately, not having a car for review, I can't give you anymore in depth information but the Team Parma drivers of Keith Helmke, Pat Hodge and Bill Boldison don't seem to be experiencing



Corally bearing remover and body hole punch, called the "Trick Tool".

any problems with the car.

The new Futaba servo, the FP135-5 is now freely available and Rob Roy is using one on his RC12L. These use a coreless motor and although are not as fast as the FP132H, they are the same speed as the FP132S, but generate more torque, probably their most interesting feature to a 1/2 driver is their reduced size. Also on Rob's car, behind the servo is one of the prototype Laser speed controllers, presently being designed and built by David Gale.

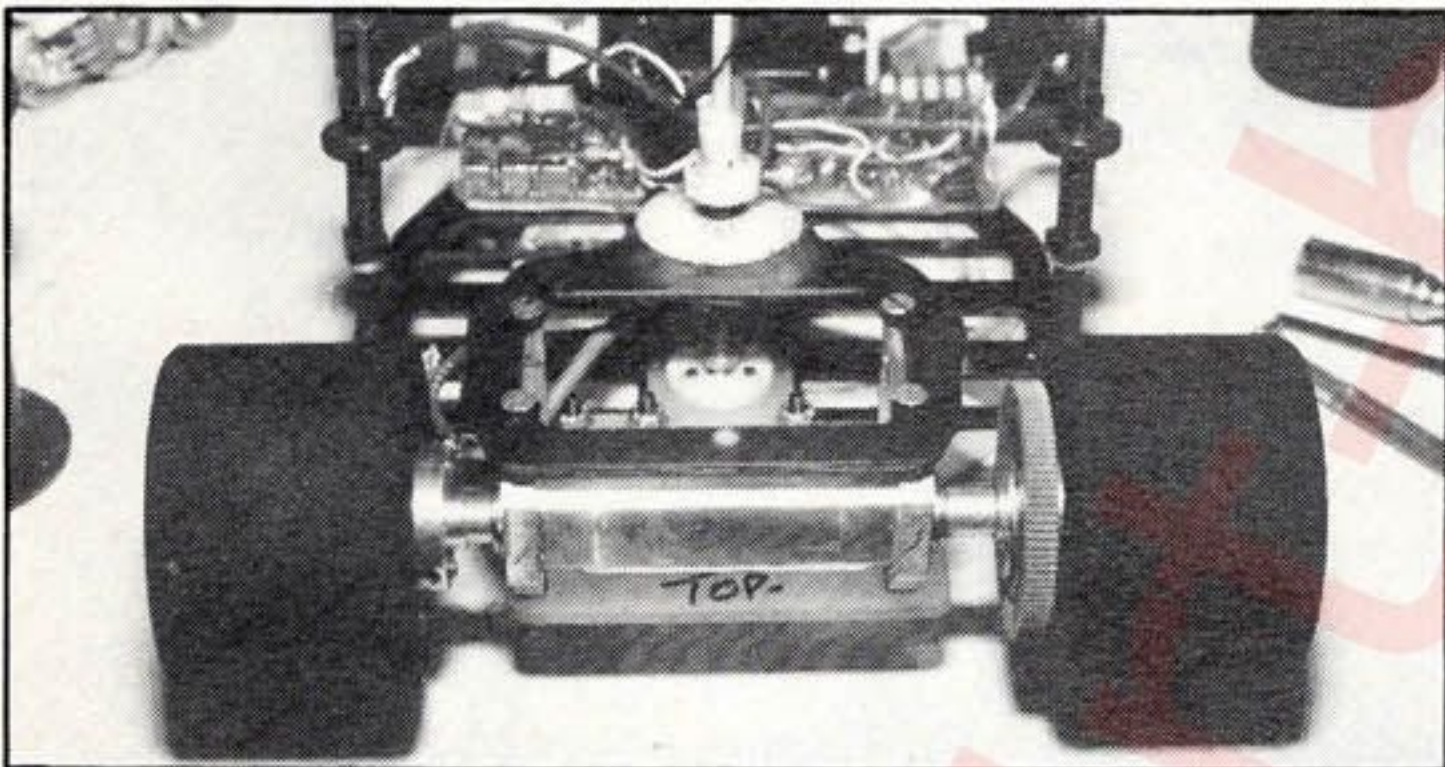
While on the subject of speed controllers, the smallest one I've ever seen was on show at the Washington National, built by Ian Carroll. Their size is 26 mm x 39 mm and weigh in at 12 grams. The controller has full voltage, doubling circuitry to

switch on the FET's and although it is a forwards only unit, it also has no brakes, so its no good pulling the stick back at the last minute because nothings going to stop you.

From Corally this month we have a couple of interesting items. Firstly we have the PK "Trick Tool". This is a very simple, but yet quite a necessary item with three functions. You can take the bearings out of your modified motor without hammering them and then replace them with confidence that they are sitting squarely in the can. The tool can also be used to punch a perfectly round hole in your body shells for body posts. The hole diameter is 8 mm which means you can use it for Schumacher posts and RC12L front posts,

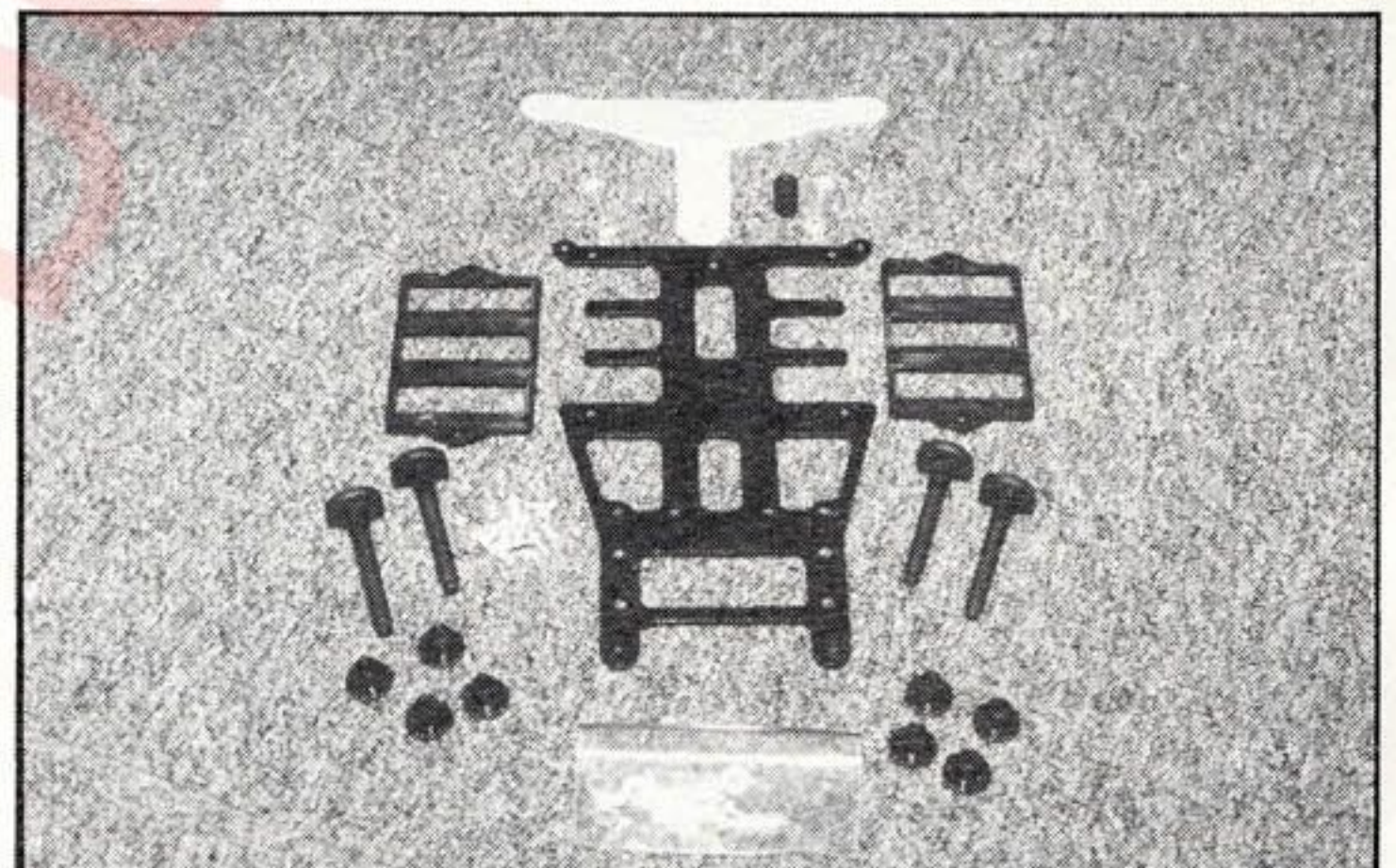


SRM modification for the 12L differential.



Oberle rear end, this time for a Schumacher, on Glyn Pegler's car.

12L Corally conversion in a semi built state. You can see how the D 'n' D graphite rolover mast helps support the front of the radio tray. A nylon spacer does come with the kit to support the tray.

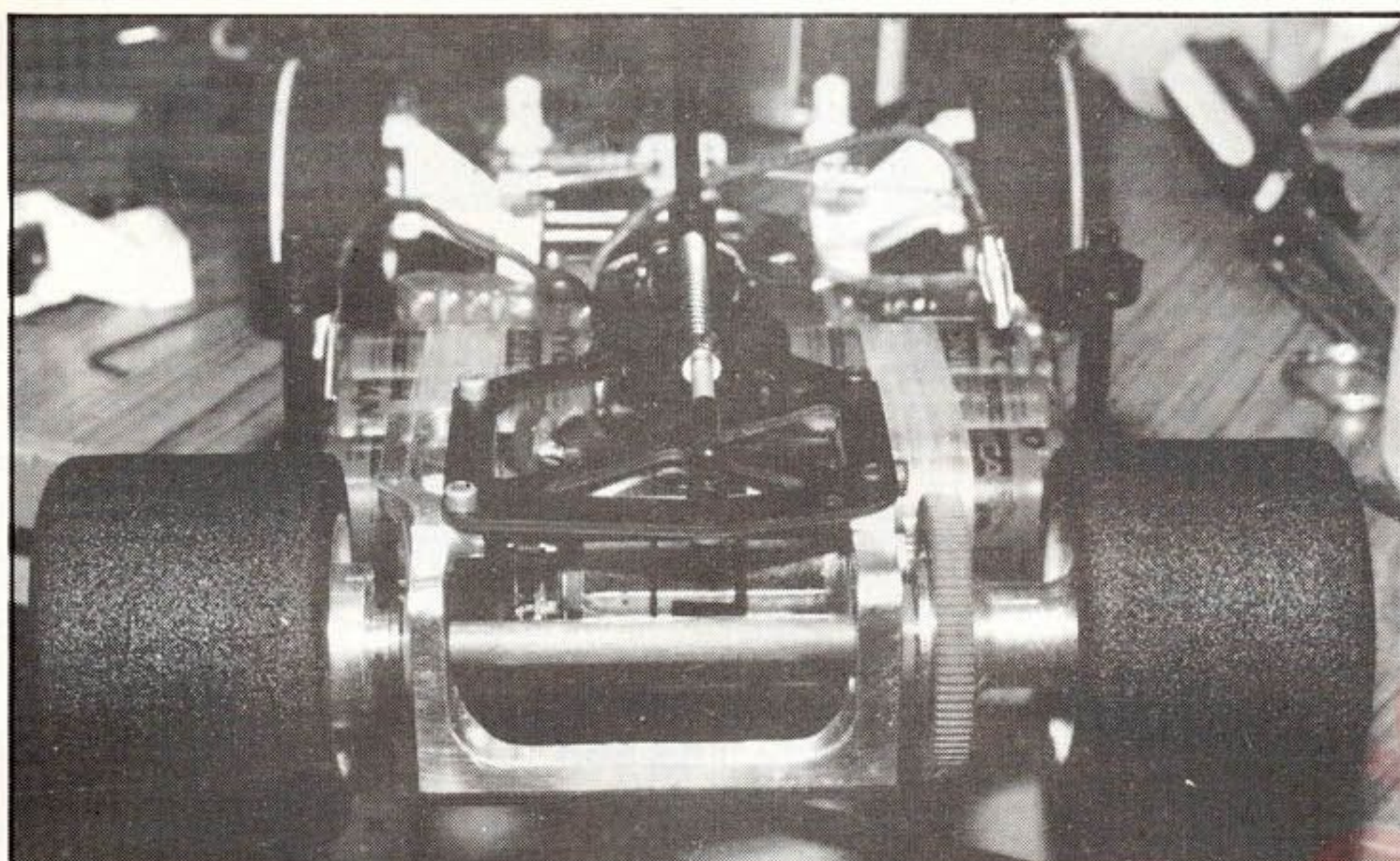


Breakdown of the items supplied for the Corally/RC12L conversion.

All together, the Corally/RC12 conversion.





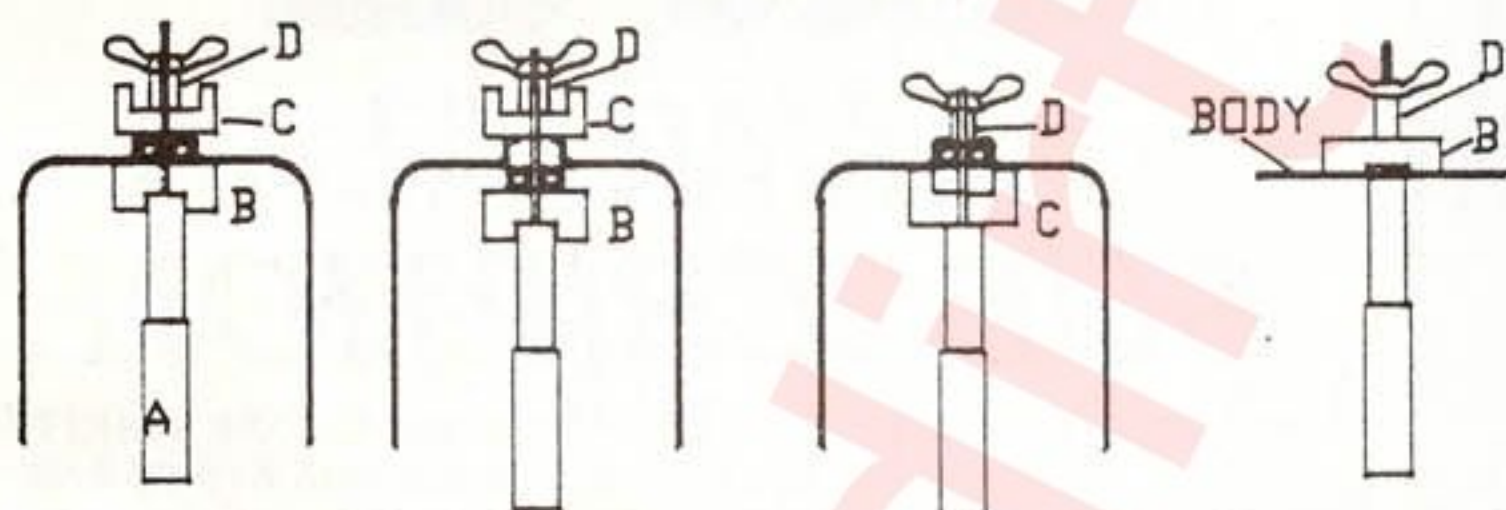


Oberle rear end fitted to Chris Evans's RC12L.

but the holes are a bit too big for the 12L rear posts. Available for £12 from Intronics.

I suppose it was only a matter of time as well before Corally brought out an "update" for the RC12L. Obviously we have the well proved Coral chassis utilising the same battery holder arrangement as is used on the saddle pack SP11, Corally's. The update also uses a shakerplate which not only supports the aluminium posts which the rear damper unit is fixed to, but also extends forward to above the front pivot ball to also support an anti roll mast such as the D 'n' D graphite unit on my car. All body posts are provided and also post to mount the steering servo. Although this conversion will add about an ounce to your car, the bit I like best is with the mounting of the front suspension arms. The drilling and countersinking of these holes for the front arms is far more accurate than on the kit graphite version. No doubt many RC12L

owners are having the problems of the front suspension arms getting angled back slightly after a collision as the screws move in the countersink. This makes me feel that maybe we were all a little too fast to remove the crosslink bar which connects across the top of the fronts of the suspension arms. On my 12L I have fitted an aluminium bracket which runs under the servo saver and holds the rear of the suspension arms apart, as any movement during a race gives a noticeable difference in handling as your car starts to pull to one side. The bar is bolted to the chassis with some 6BA countersunk screws and is an easy modification well worth carrying out



The set-up as used by Phil Davies on his SP'C' car on the T piece clamp to win the European Championships, 2 silicone 'O' rings either side of the pivot.



RC12L, with the supplied front suspension block support back in place with also an aluminium bracket in an attempt to keep the rear of the blocks apart.



especially if your chassis is a bit old and the holes worn badly.

The last couple of offerings this month come from SRM racing. The first one is the modification for the RC12L diff. The area of the axle which supports the spur gear and wheel has been machined down and sleeved with a 1/4 inch steel shaft. This means a 1/4 inch ID flangeless bearing, similar to the ones used in the Schumacher differential can be used in the spur gear for perfect running when in place, so no more dodgy gear meshes. The two drive rings have a small cut in them which "locks" them on to two tiny pins which protrude from their mounts (these pins have to be glued into the mounts first by yourself), to save the rings slipping, with the final modification being a small section of threaded rod added to the spacer hub which locates into one of the unused screw holes on the differential wheel to stop it from also slipping under heavy acceleration. The differential modification costs £15 plus your differential or £25 for a new unit, although in both, your bearing is not supplied.

SRM are also importing the machined alloy rear ends for the RC12L and Schumacher cars seen at last months European championships, produced by Stefan Oberle. The RC12L version is £55 but I think the Schumacher one is a bit dearer. If you have a bit of weight to spare they are well worth the money as they keep the whole of the rear end square and act as a very good heat sink.

The weight unmodified is 31.4 g, compared to 17.9 g for the corresponding alloy and plastic kit parts, although there is room for lightening such as rounding of corners, lengthening of motor slots and machining a couple of areas of excess material which brought the weight of mine down a further 3 grams to 28.4 g, in all adding about 1/3 of an ounce to the cars weight.

As a final note, in the Schumacher SP'C' car review last month I made reference to the extremely flexible chassis. Attacking it with a micrometer showed it to 0.075 inch thick. I am assured this thin GRP was noticed at an early date and the replacement chassis I received was 0.088 inch which stiffens the car considerable and reduces the tweak threat.



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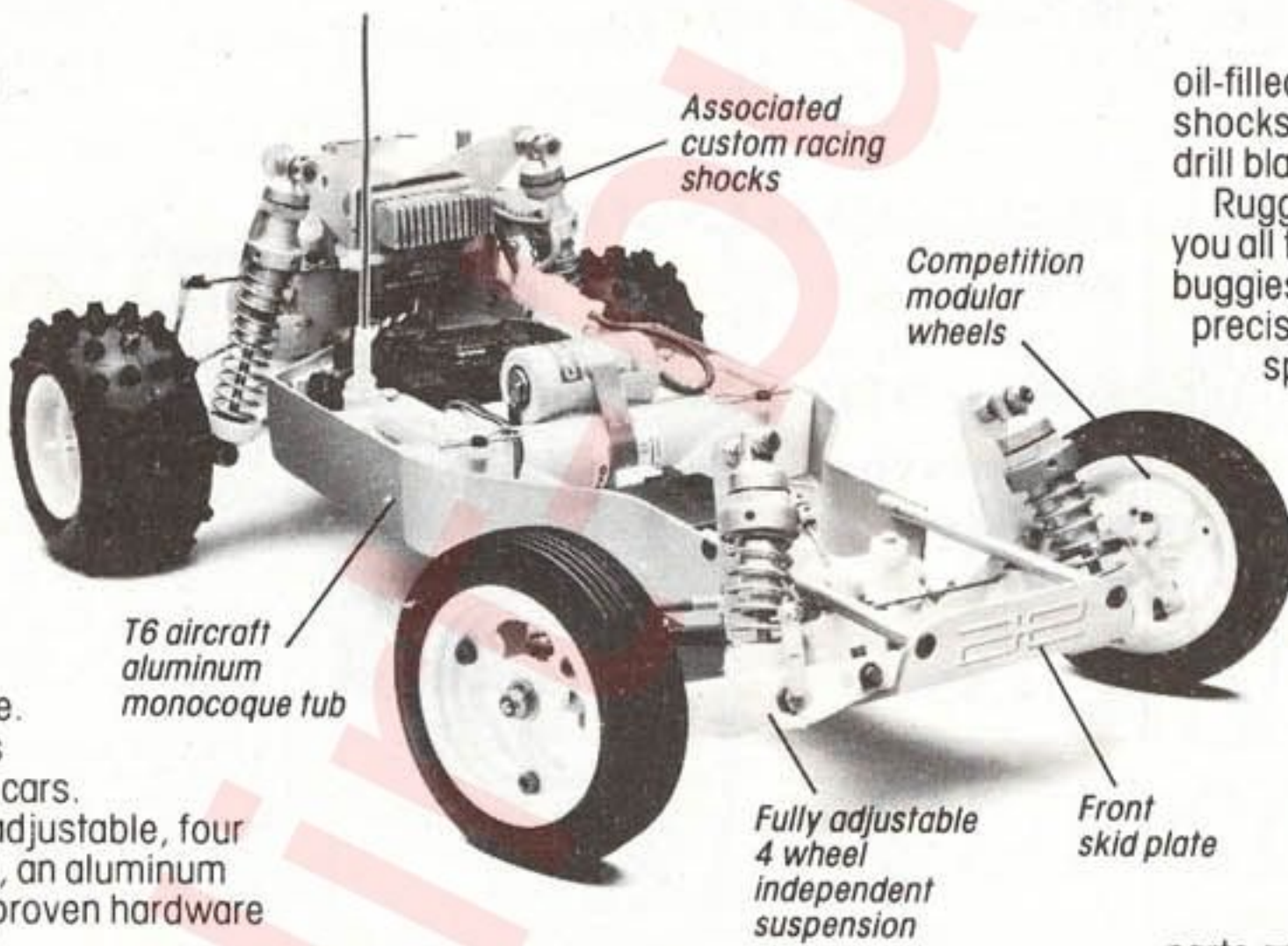
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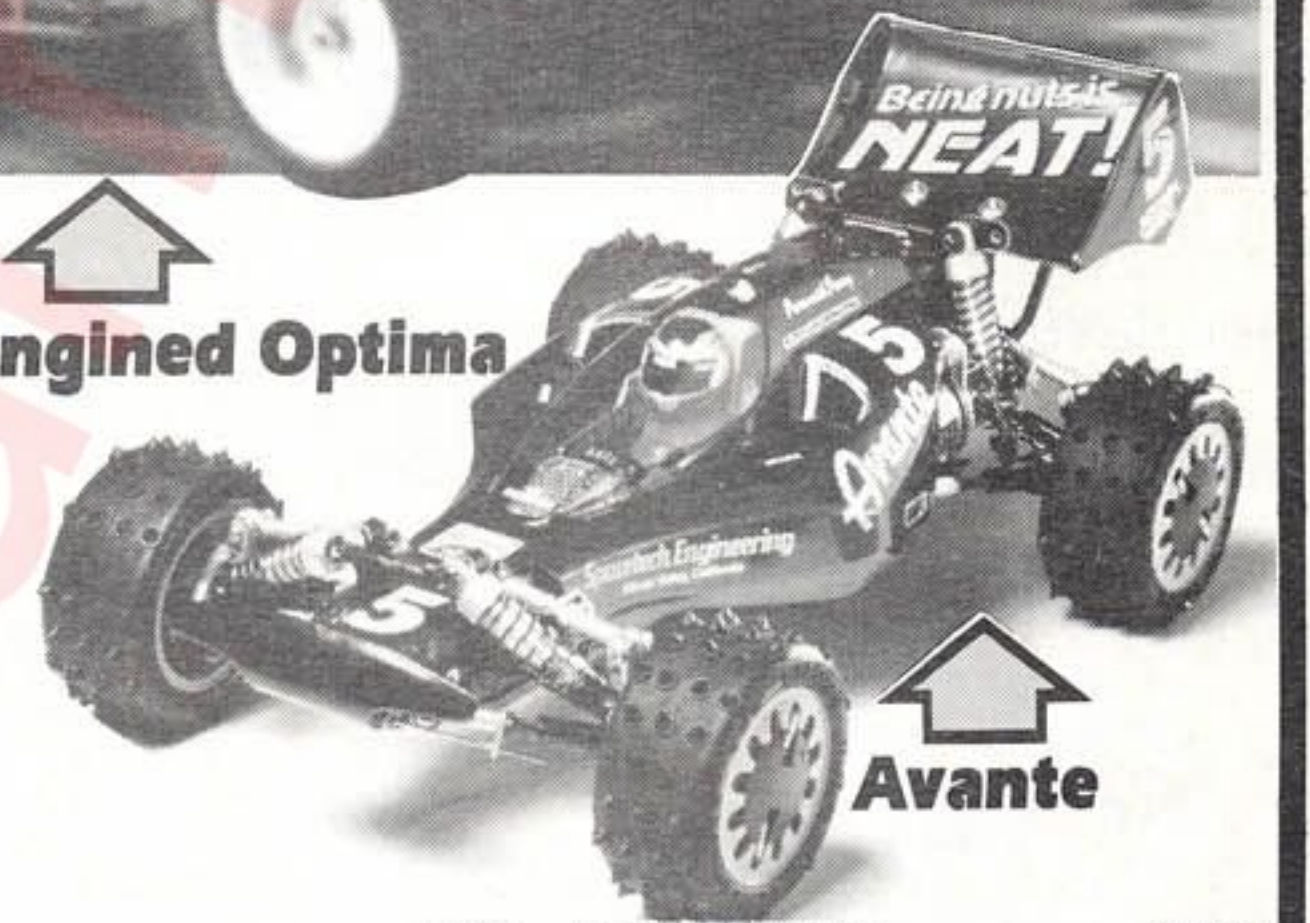
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P&P £1.00  
 NB Motors must be stripped if you don't want to be charged £4.00

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**1987**  
**IFMAR 4WD**  
**WORLD CHAMPIONS**  
 \*EUROPEAN CHAMPIONS\*  
 \*AUSTRALIAN CHAMPIONS\*  
 \*U.S. A ROAR NATIONAL CHAMPIONS\*  
 \*BRITISH CHAMPIONS\* JAPANESE CHAMPIONS\*

# SCHUMACHER



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1/10 SCALE OFF-ROAD RACER

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**1988**  
**IMPROVEMENTS**

Front Differential  
 Shock Absorbers  
 New Low Friction Seals

Chrome Wheels

Rear Tyres - new internal ribbing

Front Suspension - extra rake, width and modified geometry

One Way drive shafts

Rear Suspension - extra width and modified geometry

The 1988 kit now available includes various parts developed during 1987 to further improve the performance and reliability of the Cat.



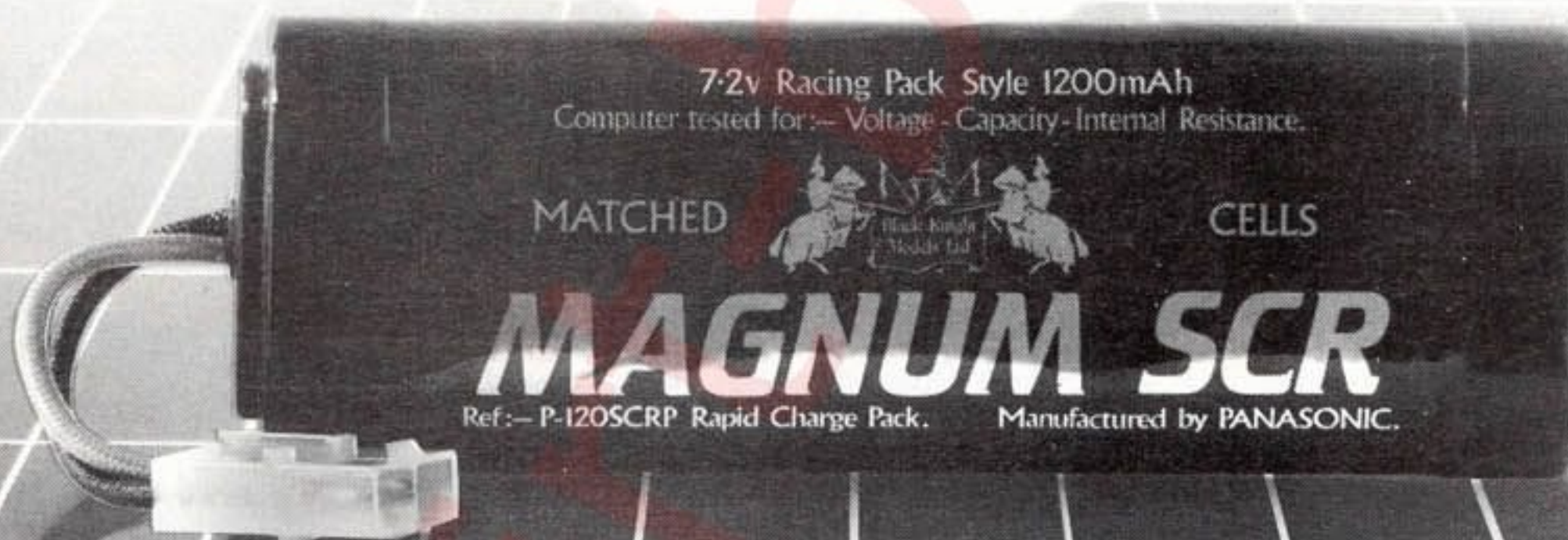
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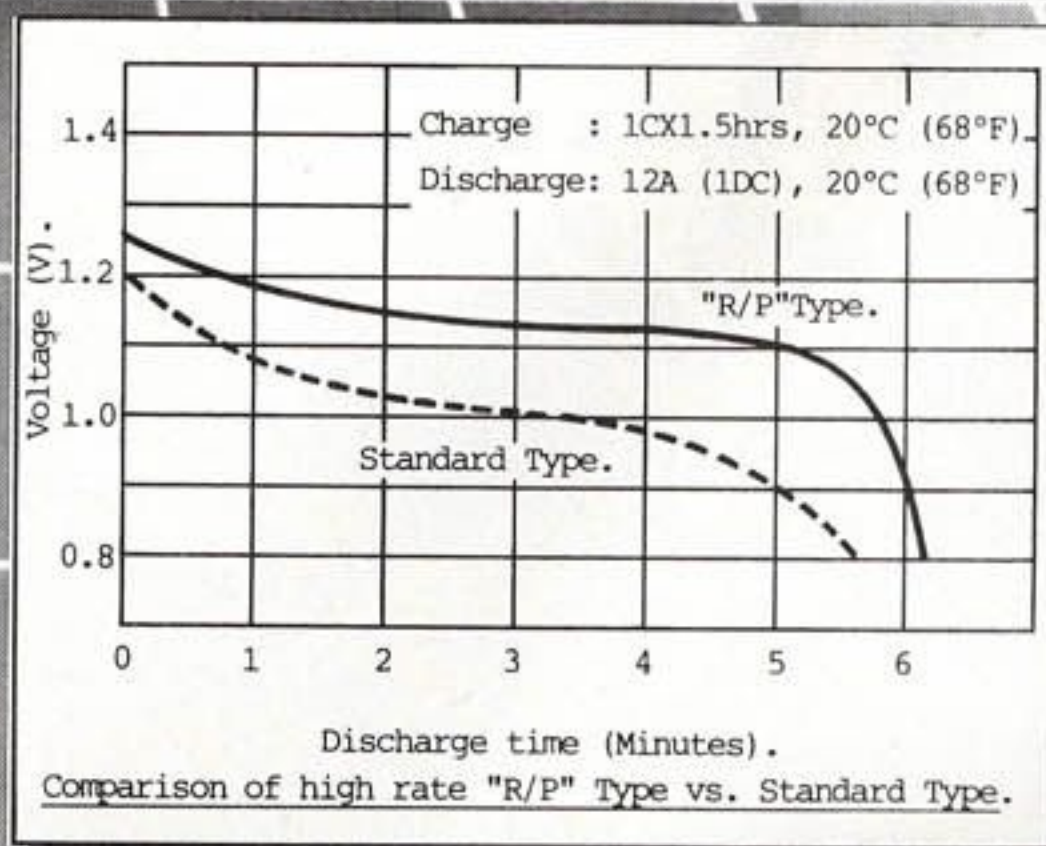


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batteries  
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nicad, 7.2v  
mains trickle  
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also with  
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PRICES  
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Ninja	£89.95
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Le Mans H-240-S	£22.95
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(Add 50p for p&p)

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Special Shock Stay (Mid Opt)	£6.25
One Way Clutch (Rocky/Turbo)	£17.50
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Motor Guard (Ultima)	£4.75
Special Shock Stay (Opt)	£3.25

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# certezze



OP8755 (OP8750)

## "CERTEZZE" IN ITALIAN MEANS CERTITUDE

Since 1968 we have produced competition engines with the enviable reputation of being "top performers out of the box". For this reason we do not change for change's sake, we only change for real improvements in performance and reliability.

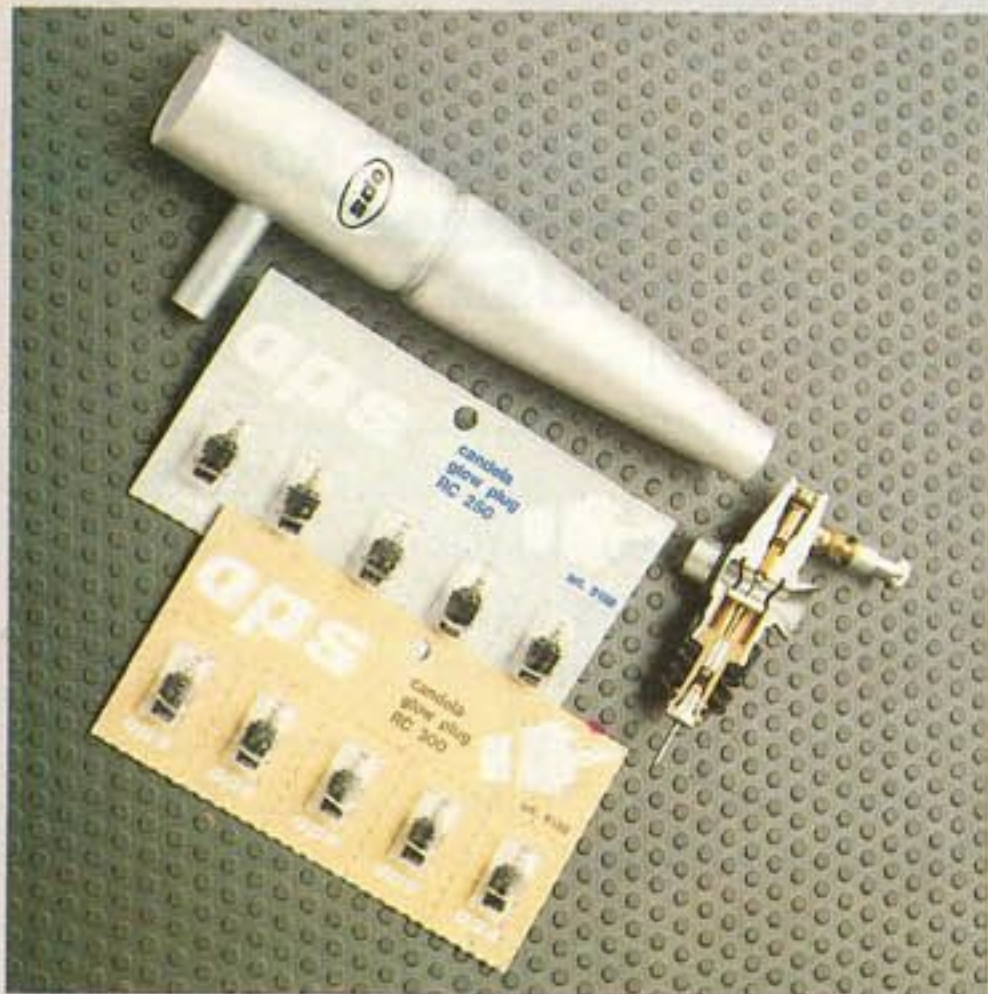
In 1979 OPS were the first engine manufacturer to introduce five port engines. All our 10cc engines have five ports, the first being the 67/11cc followed by the 90/15cc, 80/13cc, 60/10cc, 180/30cc and the 360/60cc.

With the smaller engines our tests have proved that 3 ports are better, especially with our new piston/liner which has 2 by-pass ports through the piston (OPS 3037).

The new "Pro-car 88" (OPS 8757) incorporates



OP8847 (OP8842)



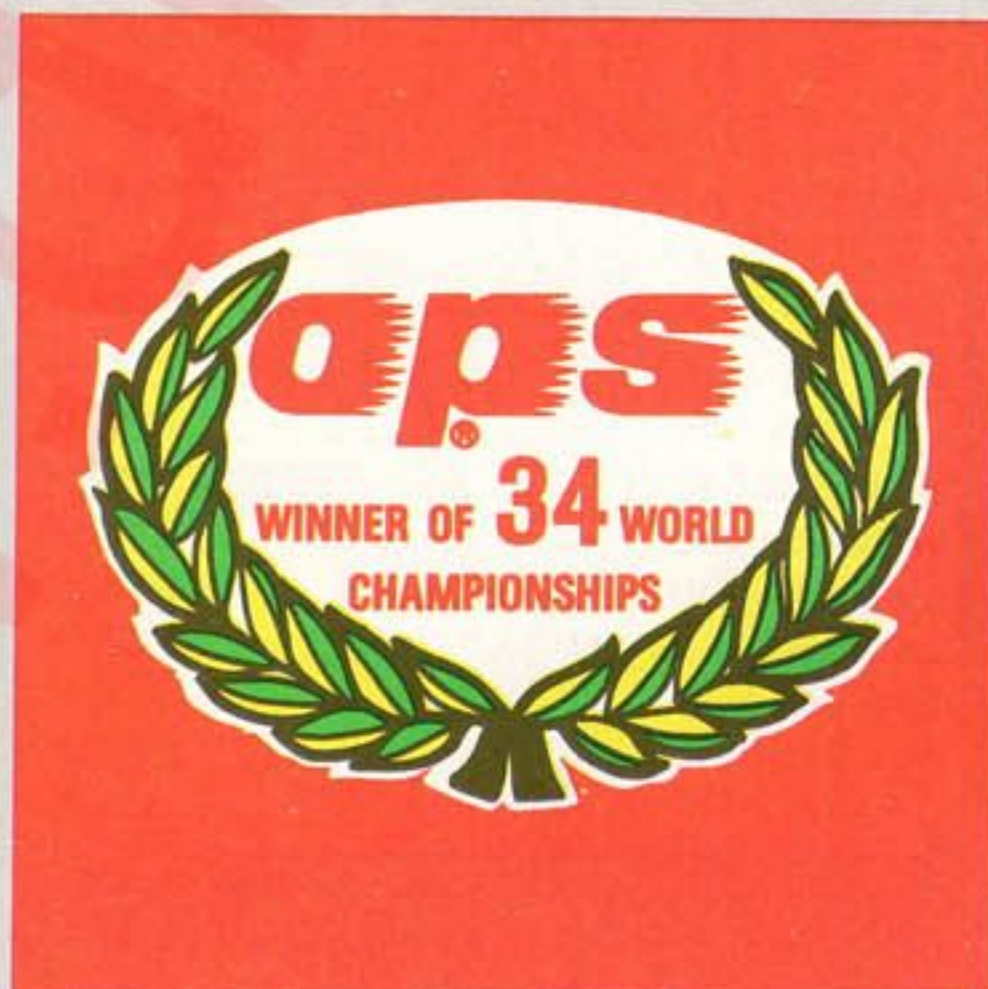
this technique with the latest piston/liner (OPS 3037) and also a new crankshaft (OPS 3856) to suit the new 1988 Serpent clutch. These parts can also be installed on the earlier competition engines. This new motor, with other small improvements, will also prove to be a consistent winner on the racing circuits in 1988.

In addition to the Pro-car 88, we are pleased to announce the following new products: 1) Rear exhaust Buggy motors standard version (OPS 8841 and OPS 8846). 2) Rear exhaust Buggy motors Pro version (OPS 8842 and OPS 8847). 3) Buggy side exhaust Eurochamp OFF-ROAD 1987 CHAMPIONSHIP (OPS 8833 and 8838).

Carburetors OPS 3894 and OPS 3942, glow-plugs OPS 9180 and OPS 9190, and the OPS 3782 tuned exhaust now approved by EFRA. This completes our programme for 1988.



OP8838 (OP8833)



OP8757

**ops**

OPS - Casella postale 129  
20052 MONZA MI  
tel. 039/652555

**MacGregor**

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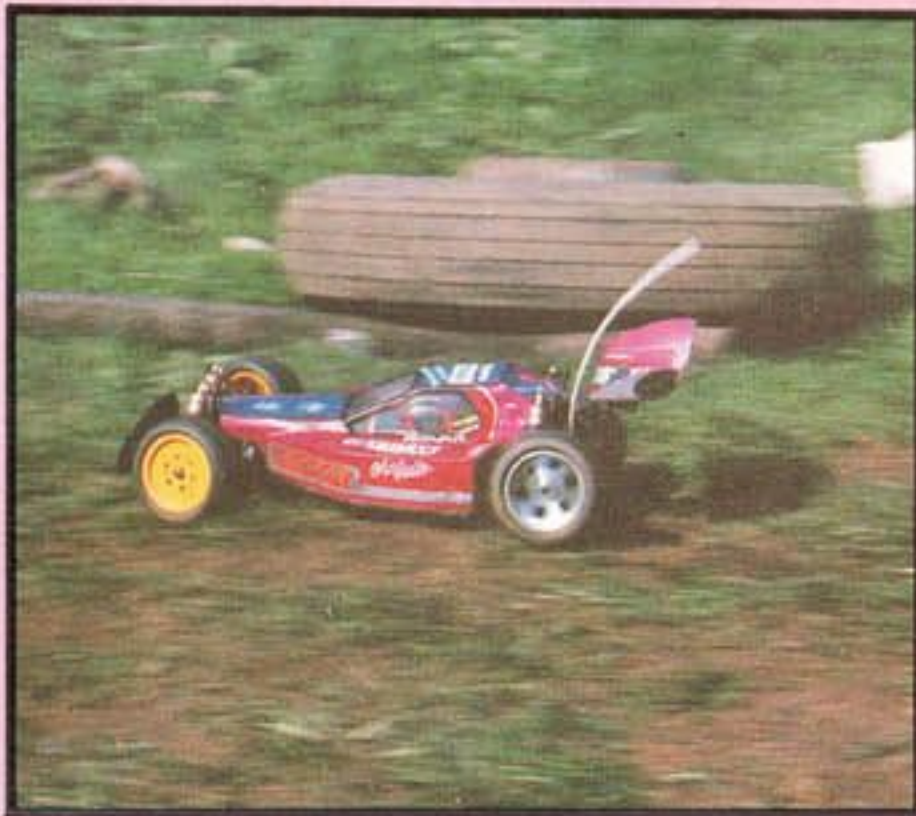




Central Models RC10 bodyshell, an Andys product.



The Worcester circuit was testing and fast.



Fast into the infield.

April 24 saw seventy drivers make their way northwards to Chesterfield to compete in round two of the Radio Race Car 2WD series. Chesterfield club has its track in the grounds of the White Hart Inn, a great plus for any venue as the organiser Derek Bailey pointed out. Derek also arranged the five heat, yes you did read it correctly, five heat, day so that a lunch hour was included, most people took advantage of this to sample the White Harts great food.

Racing began promptly and straight away the testing Chesterfield track showed how unforgiving it was going to be. The track was tight with a very bumpy surface, giving the drivers an all round challenge to face, both driving and setting up skills were tested to the limit. Just to test everyone a little further the surface conditions altered throughout the long, hot day.

# RADIO RACE CAR SERIES 1988 BRITAINS BIGGEST R/C SERIES

Several top drivers were there fresh from the Romsey International and were really showing their form driving around the track as if their cars were on rails, in fact one driver was wandering around the track looking for it after Jason Varley, Rory Cull and Andy Langdon had finished, these three do make it look easy! One car to watch out for is the prototype currently being developed by Jasons dad, John. The



car is handling superbly and going like a train. John commented that the last time he drove 2WD was over two years ago, considering the time gap we consider he and the prototype did extremely well to finish very high in the modified B final, congratulations, we look forward to the release of the new car, after Chesterfield so do many more! One comment that must be made is the generally poor standard of marshalling, we all know it was a warm day but please don't sleep on watch, some cars were left for as long as twenty seconds. Thats one lap!

All in all though a great day and one that will be remembered by all who attended.

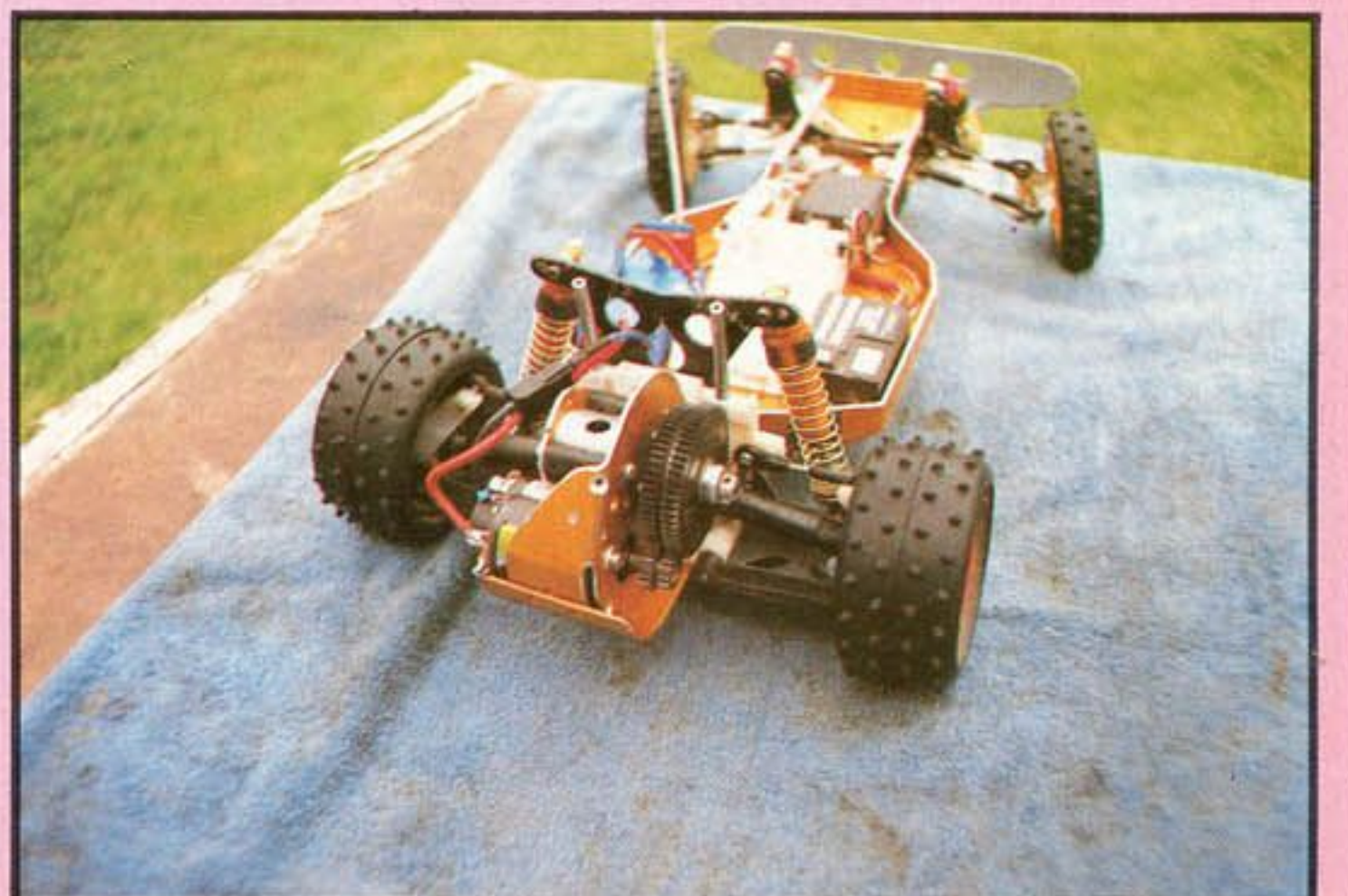
### Worcester

What promised to be a lousy day, if the weather forecast was to be believed,

John Varley's own design 2WD car and what a beast it is too.



Seen at Worcester Rory cull's 2 speed RC10.





**A Final Modified/Worcester**

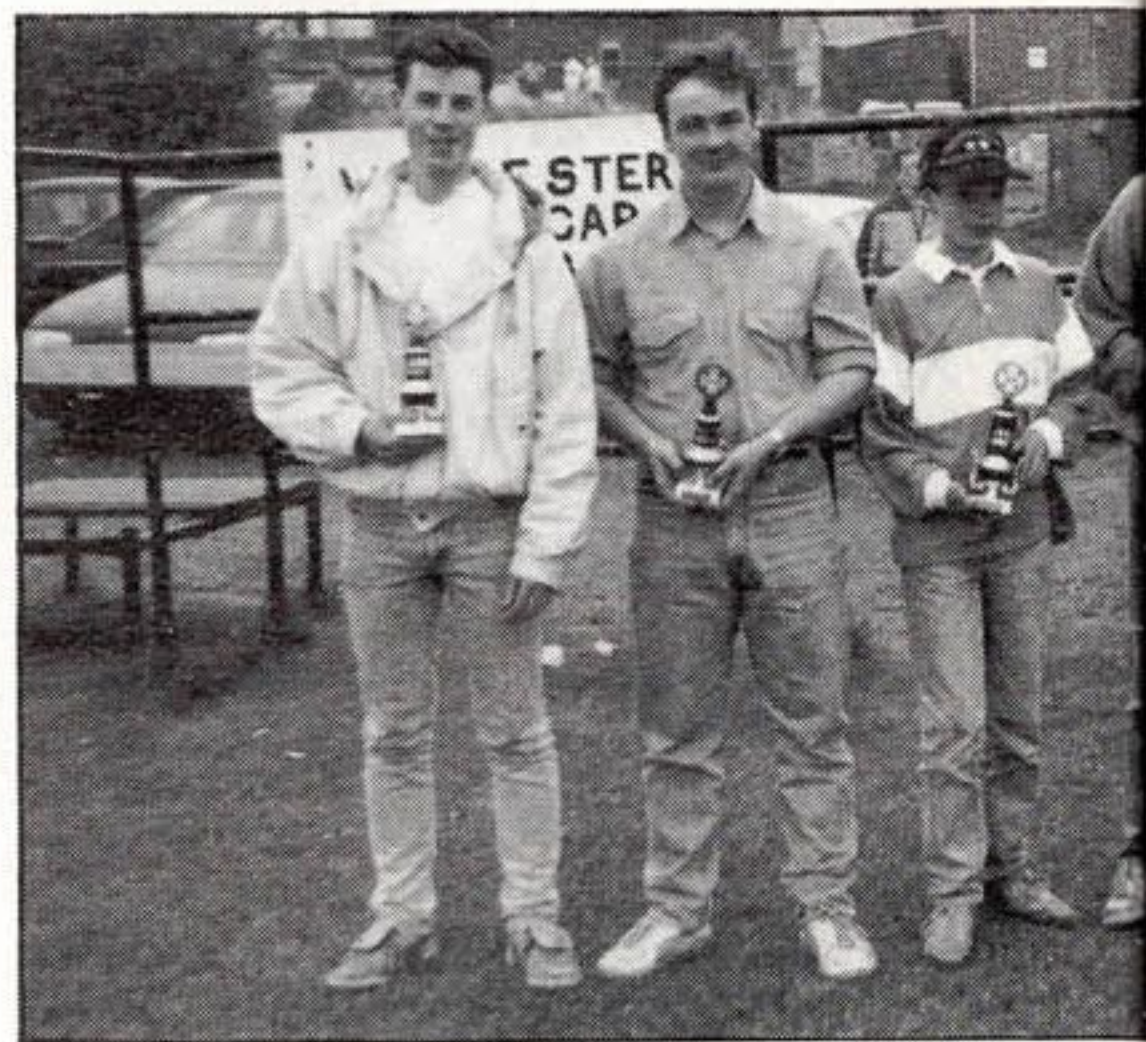
Driver	Car	Cells	Motor	Speedo	Servo	Tyres F	Tyres R	Pos
Rory Cull	RC10/CAT 2 Speed	Nos	Reedy Silver	Demon Fonly	131 SH	CAT 2 Row	CAT	4
Jason Varley	RC 10	Prime Time	Rev 11	Novak	131 S	Proline	Yokomo Hot Laps	2
William Mitcham	RC 10	Laser	Technogold Plus	Nos	Multiphase Nano B5	Supershot	CAT	7
Mark Mainey	RC 10	Prime Time	Rev Wet Mag 4	Nos Int	131 SH	Proline	Hot Laps	5
Darren Samsun	RC10	Prime Time	Rev Wet Mag 4	Laser	131 S	Supershot	CAT	6
Hayden Spreadborough	RC 10	Demon Cells	Demon Illiminator	F Demon	131 SH	Proline	CAT	8
Andrew Langdon	RC 10	Nos	MG 150	Nos	131 SH	CAT	Hot Laps	8
Jimmy Davis	Ultima	Overlander	MG	Intronics	131 SH	CAT	CAT	1

**A Final Standard/Worcester**

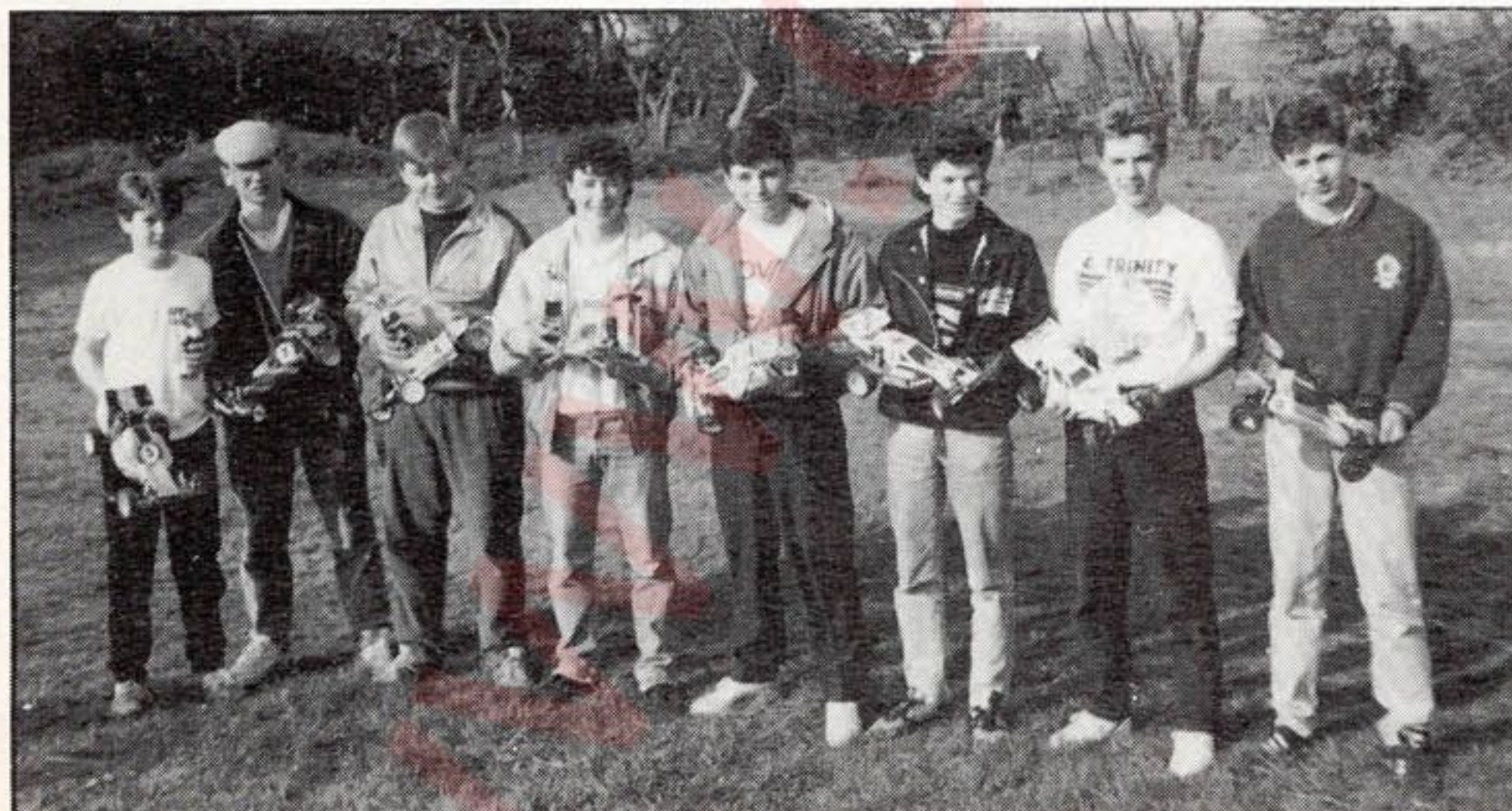
Driver	Car	Cells	Motor	Speedo	Servo	Tyres F	Tyres R	Pos
Paul Lisseter	RC 10	Overlander	MG	Star	JR 4051	CAT mini's	CAT	1
Wayne Irish	RC 10	Nos	Parma Yokomo	VF6	131 S	CAT	CAT	8
Robert Hopkins	RC 10	Magnum	Per	VF5	130 SH	CAT	CAT	4
Richard Adams	Ultima	Trinity SC	Trinity	Novak	135	Proline	CAT	7
Oliver Cornell	RC 10	Overlander	MG	Demon f	131 S	Taming (Spikes)	Pin (Spikes)	2
Ken Rieth	RC10	Nos	MG	VF6	131 S	CAT	CAT	6
Mark Glover	Ultima	Overlander	MG	Intronics	131 S	CAT mini's	CAT	5
Martyn Prince	Ultima	Overlander	MG	Intronics	132	CAT mini's	CAT	3



Above, modified A finalists Worcester.



Below, modified A finalists Chesterfield





turned out another scorcher. Result of the meeting happened in round one, heat four as Paul Lisseter put in an amazing twelve laps straight off. So what, you ask? Well, Paul was using a standard motor and racing in a standard heat, nevertheless his time was good enough to place him fourth in the A final modified, amazing, for the record Paul was using an MG 88 Brown dot, nice one Mr. Goddard!

One hundred and ten drivers competed for the superb trophies on offer around a very tight, testing circuit, which included a number of very tricky adverse camber bends and one adverse camber straight. It must be said that Dave Randford, event organiser, ran a superb, tight, meeting which even managed one extra round of heats. This type of professionalism is only shown by a handful of club chairmen, but it is the one element that will stop our sport going forward!

At the end of a hot and sticky day, the A final std winner was Paul Lisseter, he had driven superbly all day long showing the rest of us exactly how it should be done.

A final modified went to Jimmy Davis, again showing superb form against the likes of Rory Cull, Jason Varley, Mark Mainey and Andy Langdon. Both Andy and Mark are showing great form at the moment, they are two drivers to watch in the next Radio Race Car event.

Below, standard A finalists Worcester.



Below, standard A finalists Chesterfield.



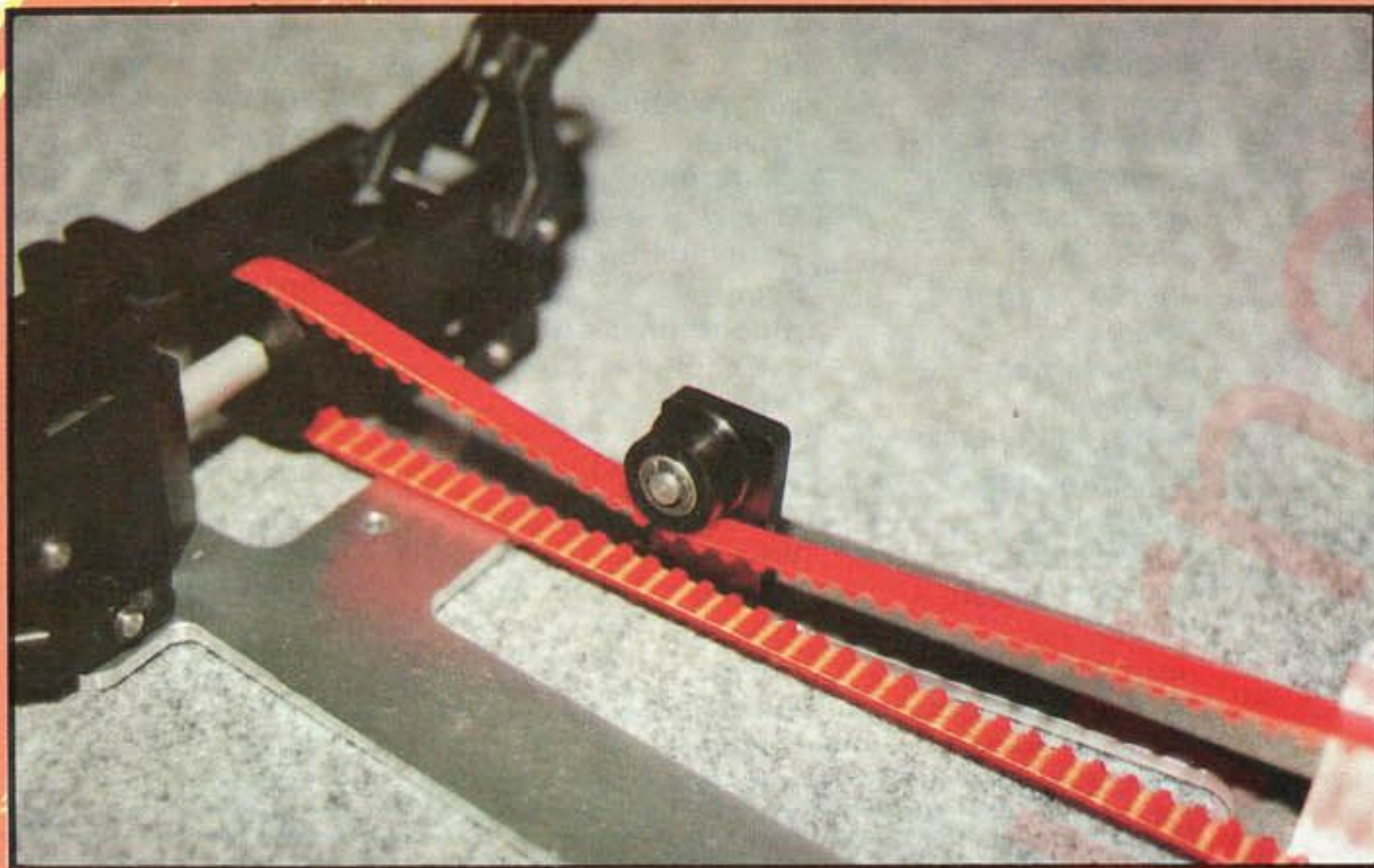
**2WD Standard Postition Table After Round 3.**

Pos	Name		RRC No	Points
1	Paul Lisseter	Team F.T.D.	2005	300
2	Mark Glover	Team F.T.D.	2068	293
3	Ollie Carnell	Team F.T.D.	2028	289
4	Robert Hopkins	Private	2039	286
4	Ken Reith	Donisthorpe	2047	286
6	John Broadhurst	Kidderminster M.C.C.	2018	275
7	James Brewer	SAndwell Can Am	2014	263
8	Warren Dawson	Radio Race Car	2075	227
9	Roy Rogers	Ludlow Radio Car	2066	256
10	Kevin Griffin	Macartney's Models	2002	254
11	Hugh Davies	Private	2070	251
12	Dave Pearson	Radio Race Car	2075	227
13	James Dore	Rotherham Buggy Club	2034	217
14	Richard Adams	J.S. Racing	2081	198
15	Wayne Irish	Kidderminster M.C.C.	2056	191
16	Martyn Prince	Stafford	2038	183
17	Andy Pierce	R.C.P.	2003	176
18	Peter E. Smith	Lichfield Buggy Club	2054	175
19	Tony Brace	Private	2072	169
20	Richard Brookes	Kidderminster M.C.C.	2052	167
21	Jason Bolton	Private	2073	162
22	Ian D. Smith	Lichfield Buggy Club	2055	161
22	John A. Coram	Poynton	2032	161
24	Brian Pierce	Kidderminster M.C.C.	2004	160
25	Chris Harrison	G.E.C. Stychfields	2041	155
26	Geoff Hind	Private	2006	150
27	Chris Davidson	Racestore	2012	98
28	Phil Edmonds	Private	2069	96
29	David Hall	Private	2082	92
30	Simon Hunt	Private	2083	91
30	Alan Boothman	Private	2088	91
32	John Fryer	Private	2089	90
33	Jonathon Tucker	Private	2090	89
34	Matthew Williams	Oakdale R.C.C.C.	2009	87
35	Malcolm Harris	Private	2071	86
36	David Sanders	Private	2060	82
37	David Ward	Private	2074	81
38	Ian Watkins	Worcester Model C.C.	2058	80
39	R. Hollingsworth	Private	2084	76
39	Richard Dalby	Private	2100	76
41	Gordon Orr	R.C.P.	2040	74
41	Neil Cross	Private	2101	74
43	Ian Williams	Private	2102	73
44	Terry Hopley	Private	2085	72
45	Stephen Fidgeon	Dudley Radio Car	2053	71
46	Geoff Hopley	Private	2086	70
46	Miss Nikki Barratt	Private	2045	70
48	Gary Hopley	Private	2087	69
48	Andrew Clough	Private	2103	69
50	Robert Brandwood	Private	2104	68
51	Clive Taylor	Swindon Off Road	2105	67

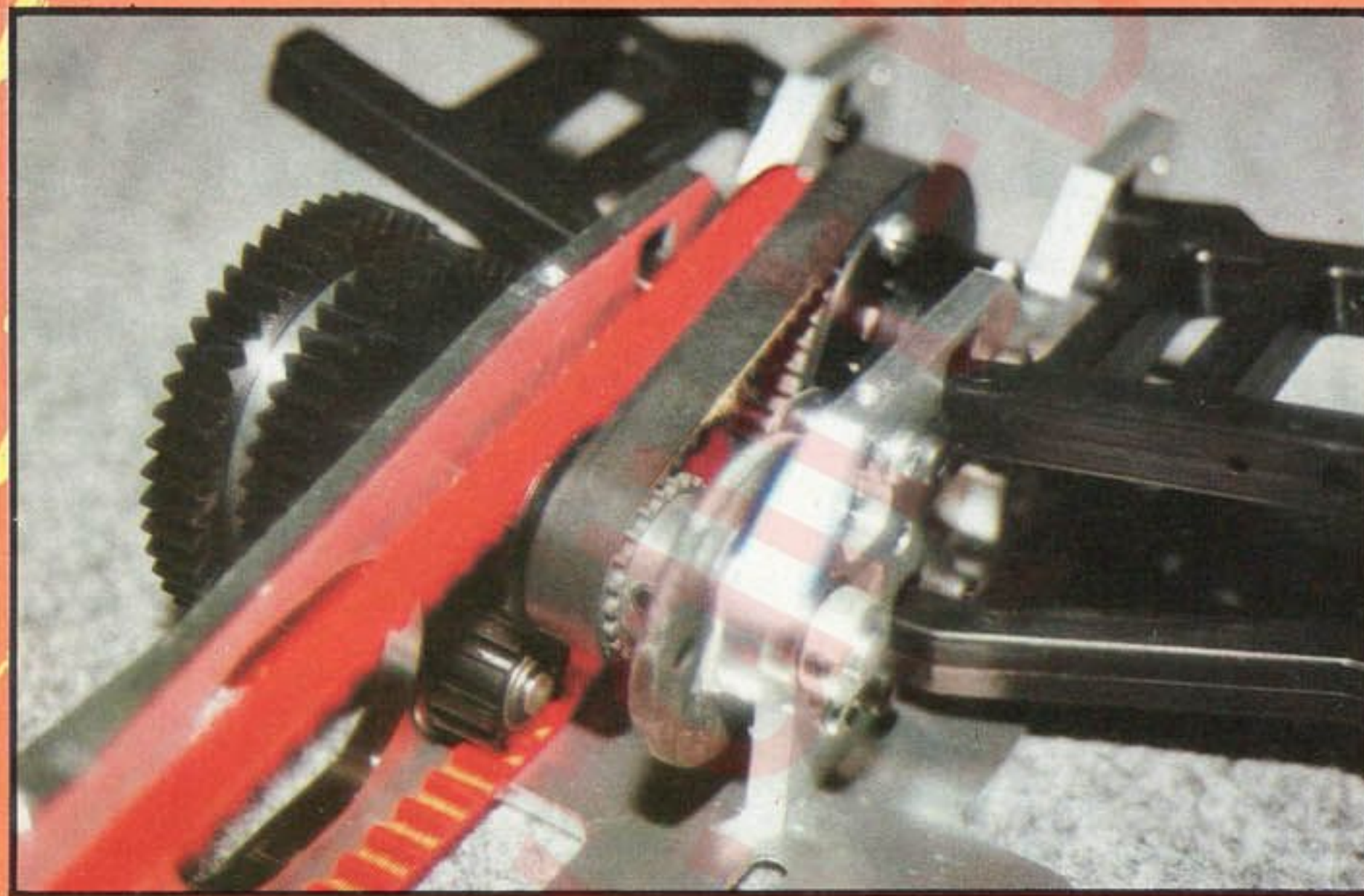


Continued on page 52.





The round tooth, steel strengthened drive belt and the simple, effective tensioner.



All the noisy interesting bits are contained within the beautifully milled aluminium side plates.

*Dave Pearson looks at P.B.'s new Phoenix and tries to sort fact from fiction and the reasons why more of us should try circuit racing.*

Before this review begins it is necessary to make one or two explanations. Question one. Why am I, a complete novice to circuit racing, willing to undertake this quantum leap into the unknown? Answer. For a long time now it has been stated by those already driving, or actively involved in circuit racing that it is not as expensive as those not involved would have you be-



# Pho

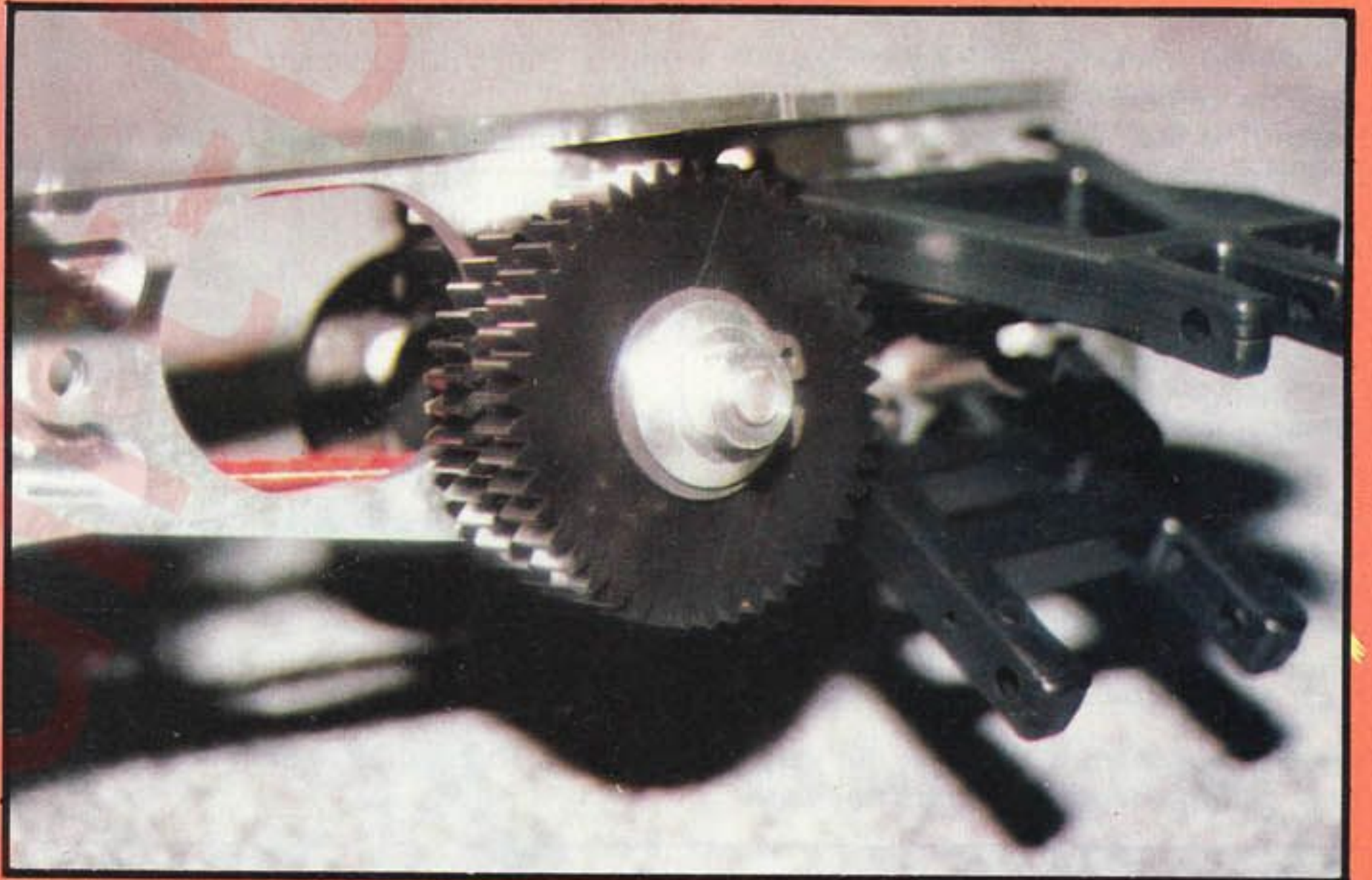
lieve. Amongst other things we aim to count the cost of our venture into one eighth racing and let you know exactly how much cash is involved.

Question two. Is a one eighth car difficult to build? Again another objection that is voiced regularly by drivers of other types of radio controlled cars, is that circuit cars can only be built by people who possess a





The rear end of the Phoenix showing the size of those huge sponge tyres and the strong engineering of the rest of the car to good effect.



PB's two speed gearbox in place and ready to go.

# Phoenix

masters degree in engineering. At this stage we don't think so, after all a car is a car, is a car, no doubt we are about to find out. One thing is for certain and that is that one eighth racing does not enjoy the current popularity of one tenth. Maybe we can by first building the new P.B. Phoenix, secondly by driving it ourselves and then having the car driven by recognised experts in

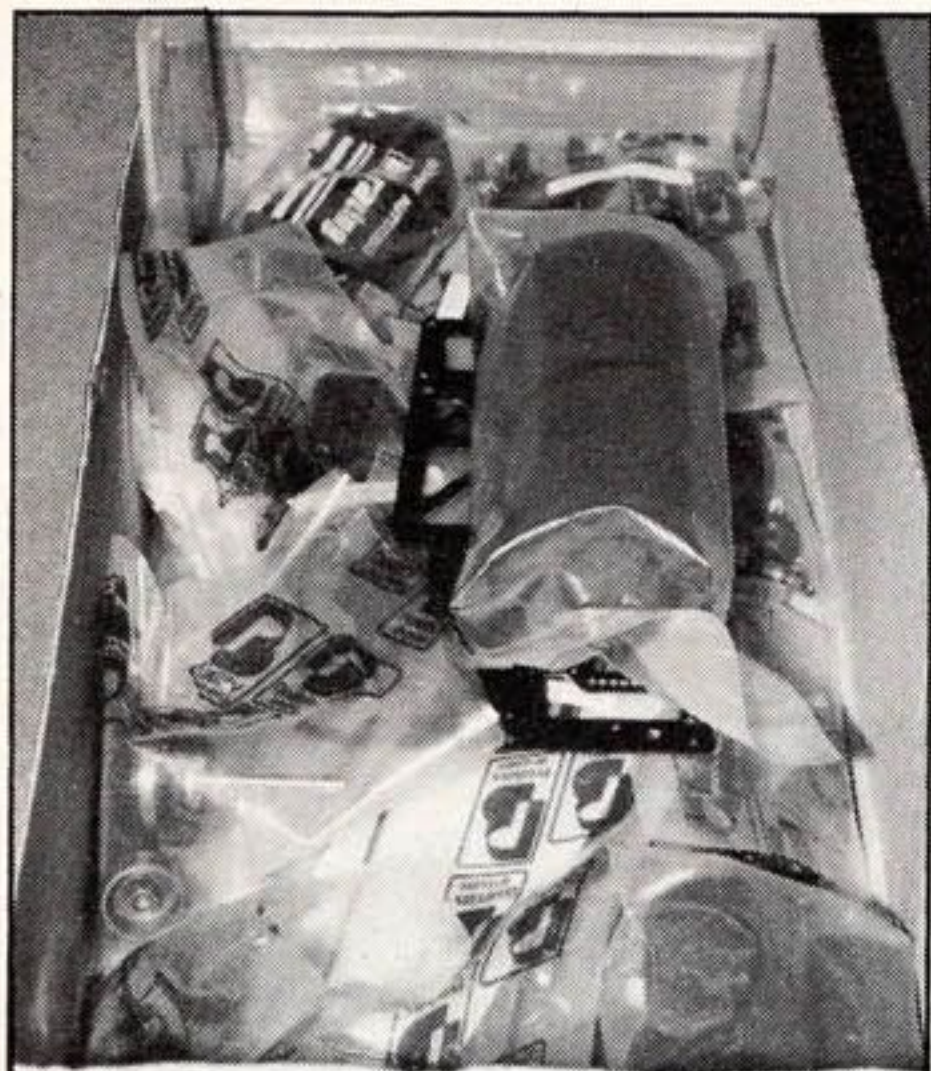
the field, get to the bottom line in one eighth racing so that you can make your own mind up.

### The Car

At the same time that our leap into this new world was being conceived we learned from Bob Errington, our regular correspondent, that P.B. were about to release their

new car, the Phoenix, onto the market. What better place to start, a British car manufactured by a company with a long pedigree in this field. The Phoenix arrived and the lid was lifted, inside the different components are neatly contained in their own plastic bags, this turned out to be a definite plus to a beginner like myself, as it meant that you were not surrounded by a





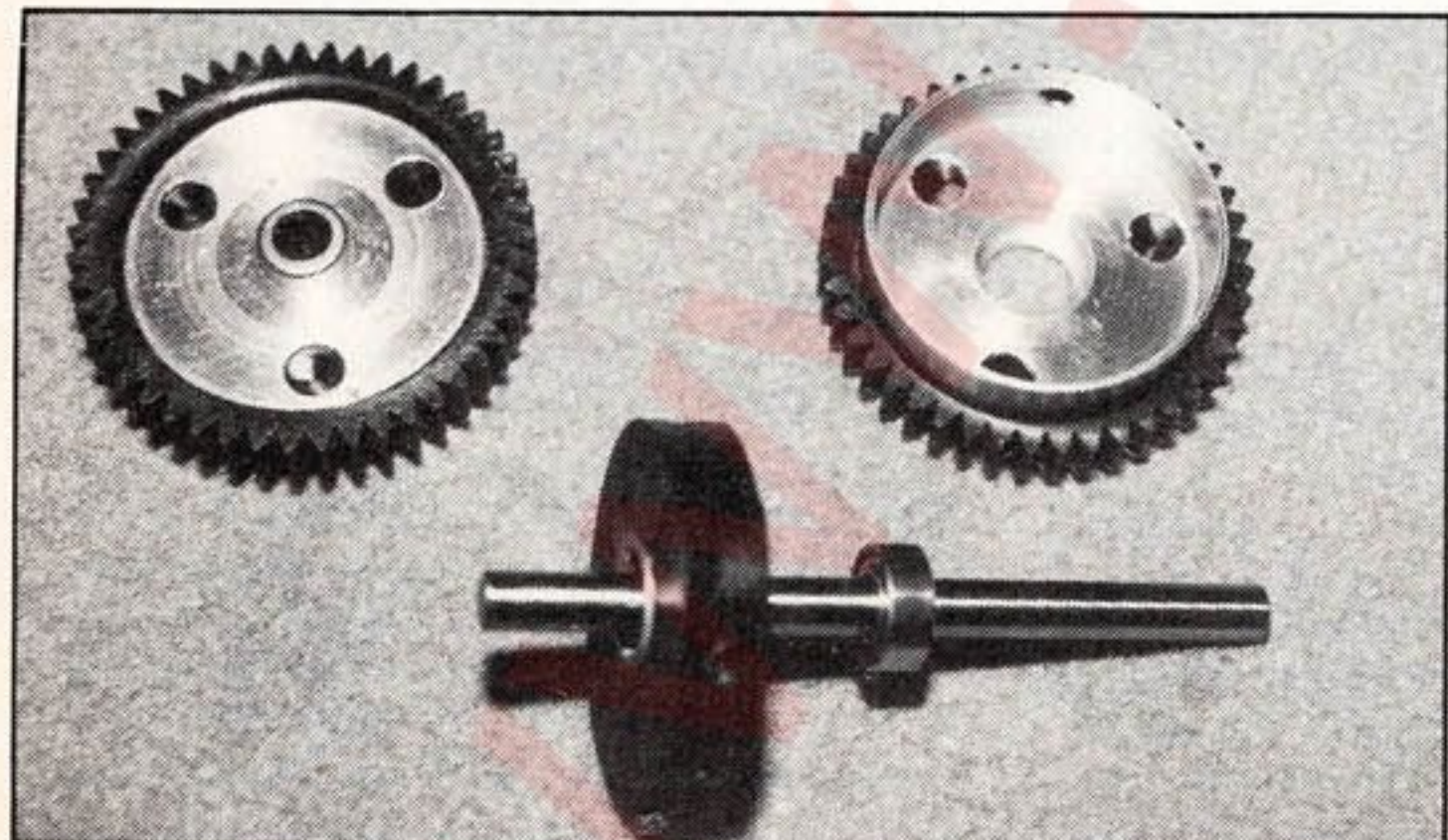
**All components are bagged separately and wherever possible, in individual stages.**

sea of parts that you didn't need at that moment. Have you ever noticed that whenever situations like that occur and you are searching for the last 'e' clip, that you know is in the bottom of the box somewhere, you've normally got hold of something vitally important to the well being of the car, that vital something has just been liberally laced with superglue, your wife's out of earshot, the kids are about to do something very detrimental to the health of the dog and it's Sunday, so that whatever happens you're not going to let go of that vital part because you know that if you do there's no way of obtaining another. Well to a large extent that shouldn't, because of the way the Phoenix is packaged, happen.

**The Instructions**

At first glance the P.B. instructions can look a little confusing. However do exactly as the first instruction tells you to do, sit down and read them thoroughly, all will then fall into place. The first two pages are devoted to identifying the individual parts, both visually and by number, a very good idea. The second very sound piece of information is also included in the introduction, P.B. recommend that this is the right stage to despatch one of the more unpleasant tasks, that of gluing tyres to wheels, this does save time at the end of the building phase when you just can't wait to get the wheels onto the car and then have a quick blast in Tesco's car park! At this stage I cannot stress enough the importance that raw beginners do not go testing in public places even if they are closed, the damage a one eighth car can do to itself and more impor-

**PB's two speed gearbox, a simple but very effective unit. This is how the Phoenix's top deck starts life, you must cut and file the body/roll bar stay and the damper mounts to shape.**



tantly other people is terrifying. Always have an expert check your car over before you start up for the first time and always make that first time at your local club, there you will be properly supervised, you won't be allowed to hurt yourself, others, or your rather nice new car.

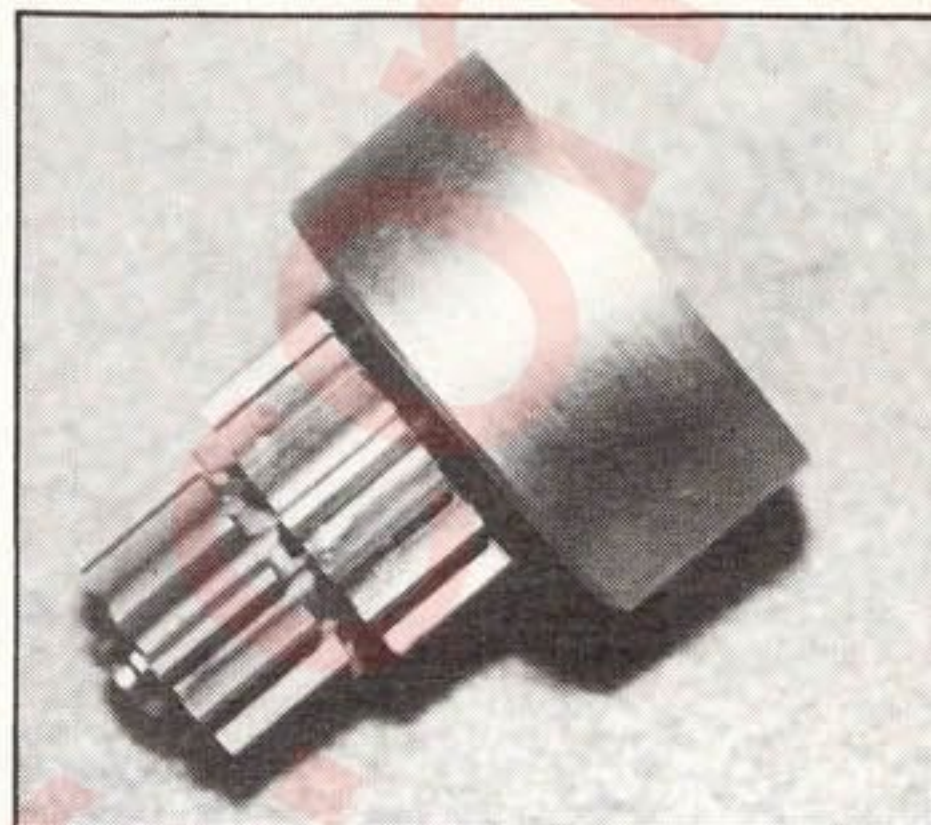
**We Begin To Build**

Armed with only the tools that I would normally use to either build or go racing one tenth cars building began. First thing to do is don't panic and don't be rattled by the sheer size of all the bits, first timers will have a distinct advantage here as you will have nothing to use as a comparison. The Phoenix differential is made up of 28 separate parts, that is if you count the drive cups and omit the 12 bearings that actually make the differential action work, assembly takes around half an hour, that includes inspection, initial adjustment and any filing that needs to be done to the drive cup grub screws, don't as I did, omit the filing on the grounds that it is only done for aesthetic purposes, it is essential as you will not be able to seat the diff in the sideplates without removing the excess grub screw shaft.

Maintenance and adjustment notes are included in the instructions and at this stage you should follow both to the letter, we will be setting the car up initially from the adjustment notes and then including any extra comments that our expert drivers may suggest later.

**Gearbox, sideplates and Preliminary Assembly**

The gearbox is again bagged separately which helps greatly as next to the diff it is the second most difficult assembly, again all you have to do is follow the instructions to the letter and you will not go wrong. The gearbox is constructed around the centrifugal clutch principal and is a very clever



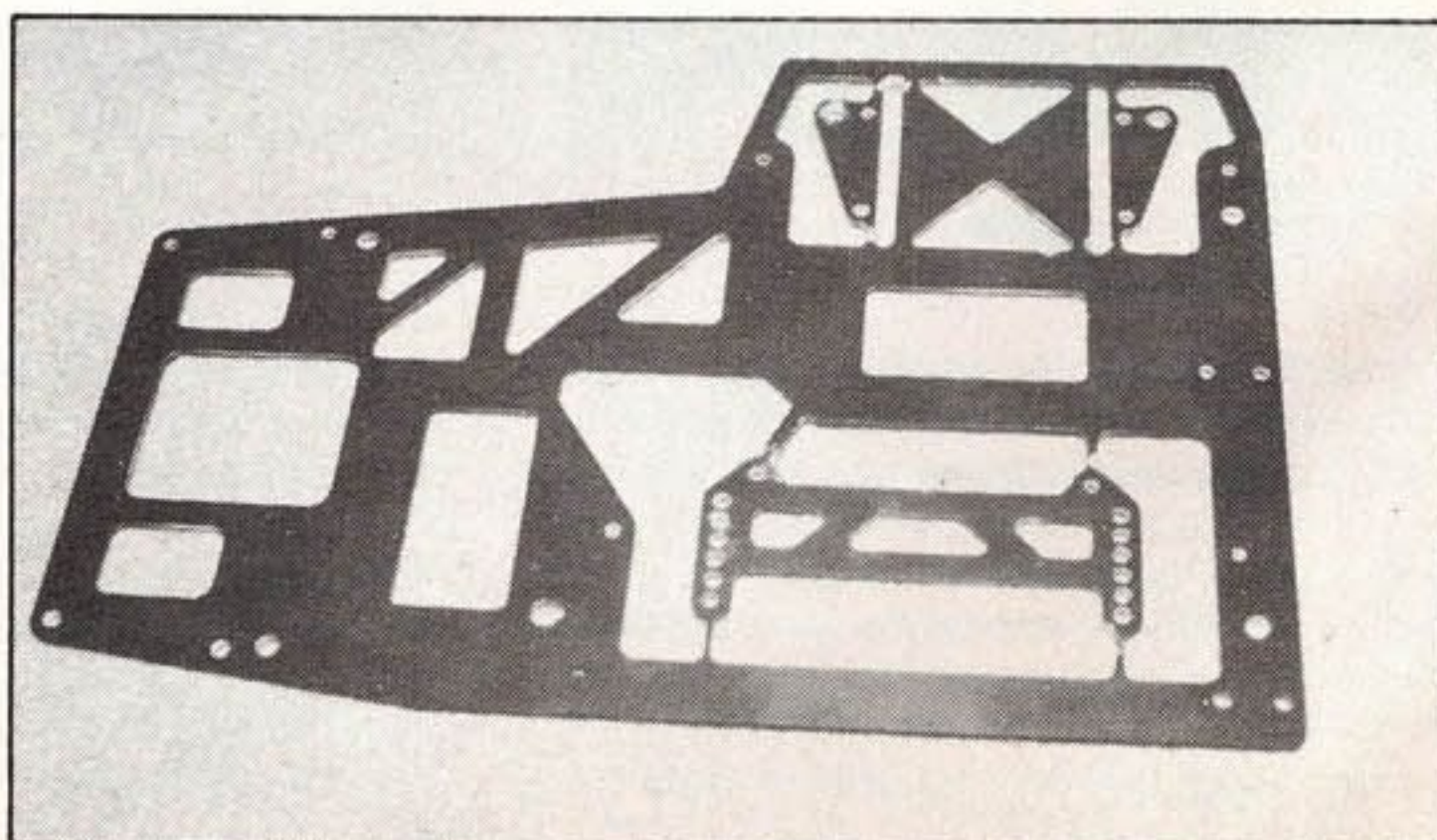
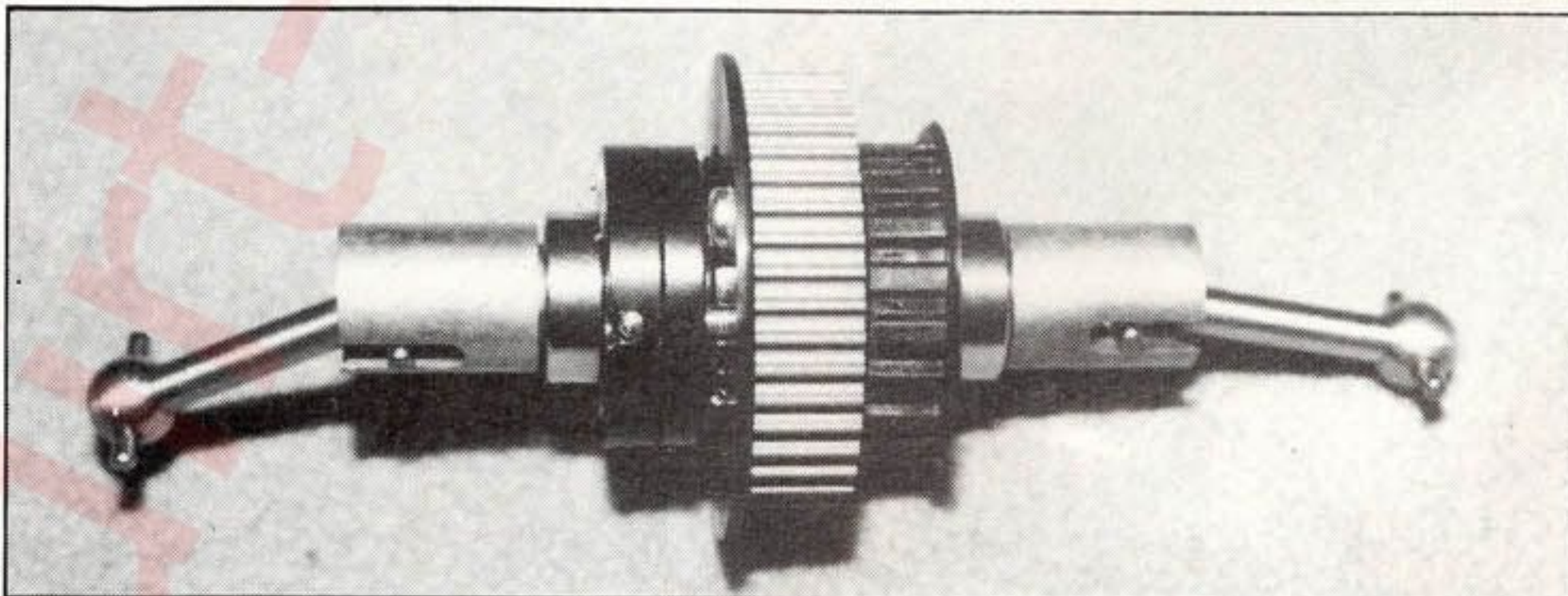
**Two speed pinion and clutch housing.**

piece of engineering, like all engineering though it has to be adjusted correctly to avoid damage and get the best results, again P.B.s adjustment notes were precise and followed to the letter. Sideplates for those who don't know are the two beautifully milled out pieces of aluminium that all the noisy, rotating and or generally interesting bits are fixed to. First of these bits are the rear upper and lower wishbones, these are both located on pins and kept firmly in place by cap head bolts, a clever arrangement that allows both quick and easy removal for maintenance or inspection. Brake pads and idler pulley are next to be fitted, again no problems were encountered.

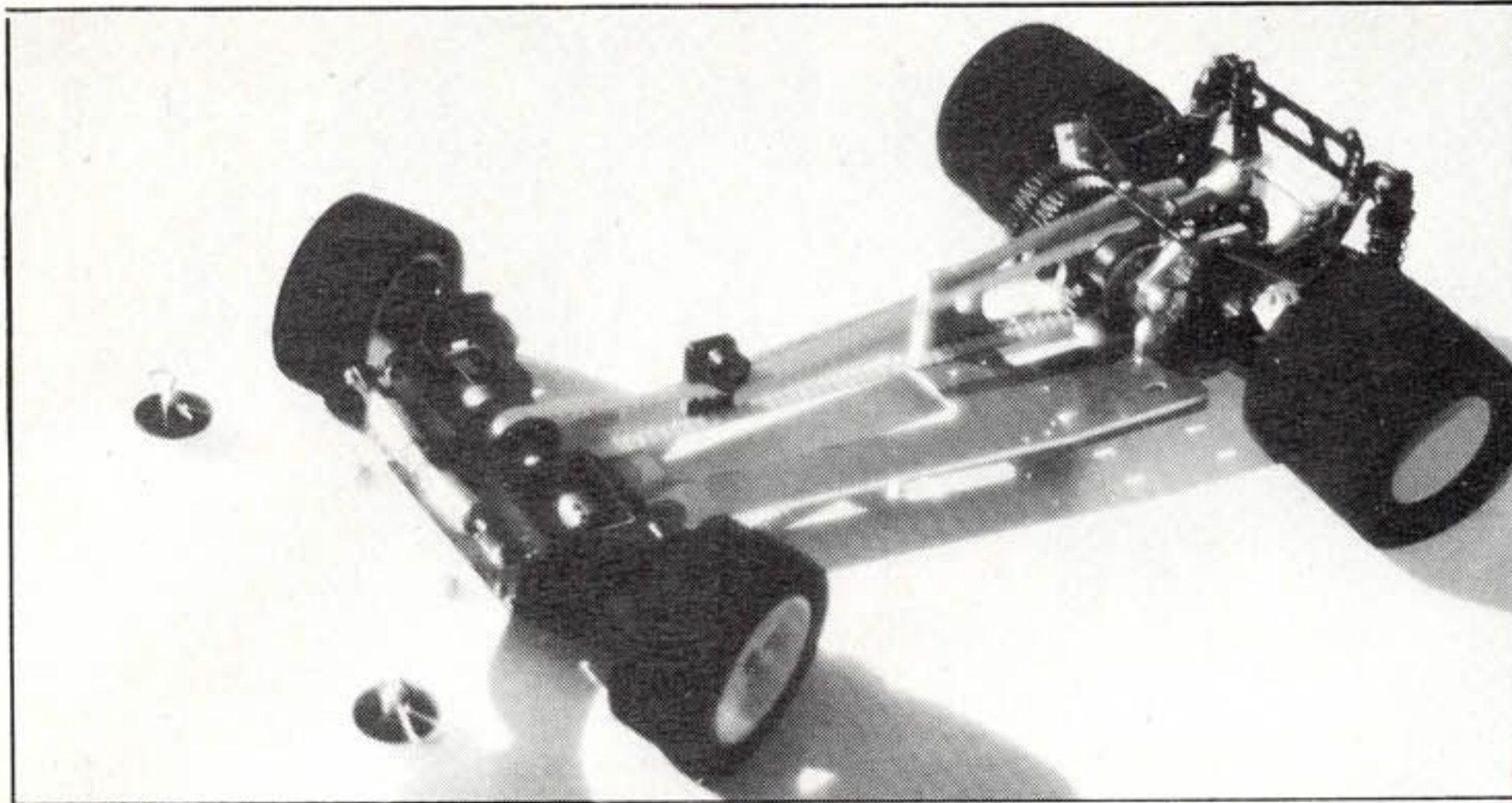
**Front Suspension And Transaxle**

Here we found the first trouble spot, please note the words, they were chosen carefully so that no-one could misinterpret them. It is not a major disaster or a catastrophic apocolypse, just something that is worth mentioning to speed the builder on his way. The front wishbone brackets are moulded to take both upper and lower

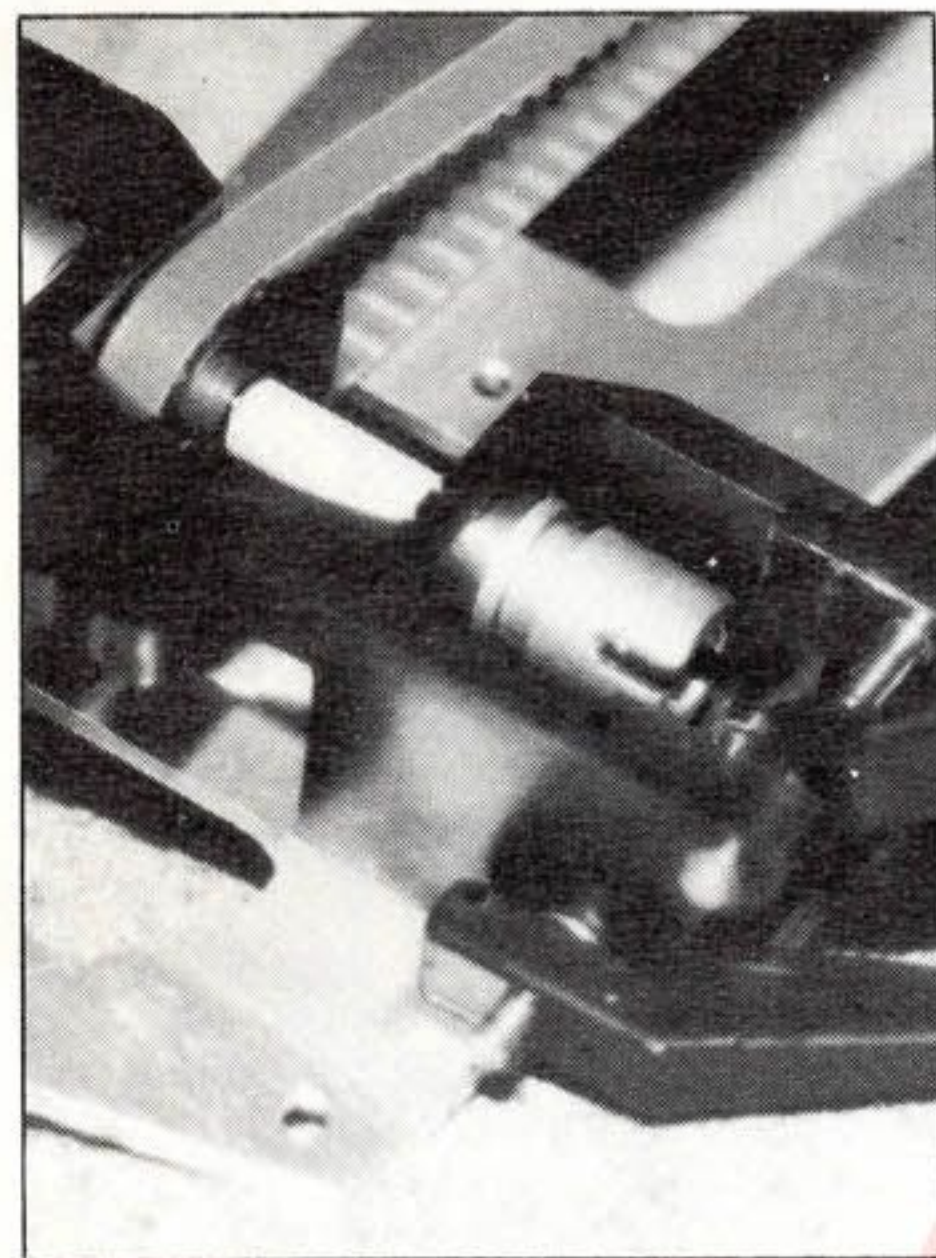
**The assembled differential before fitting in the Phoenix.**



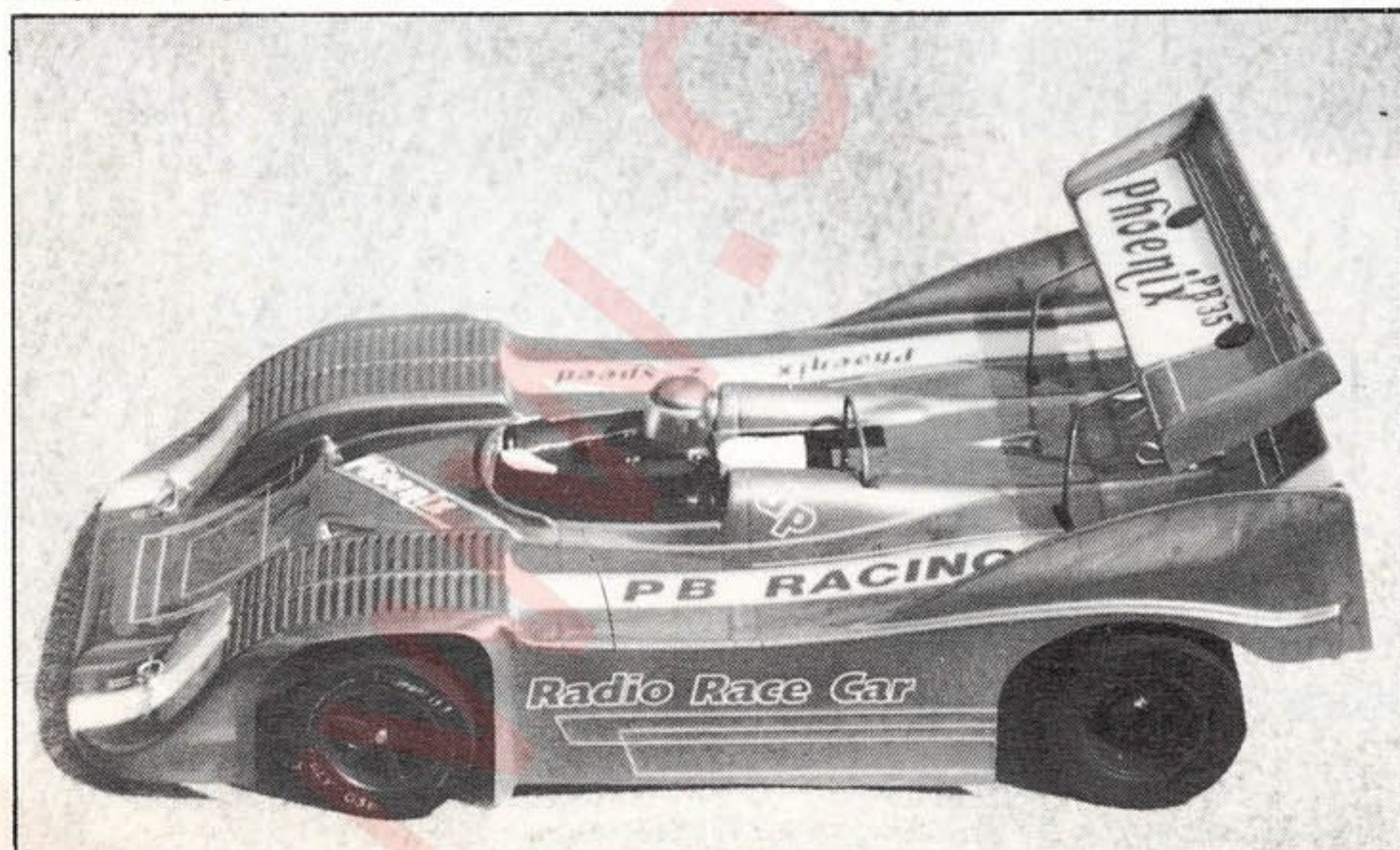




The rolling chassis, almost ready for that first blast around the circuit. Below, roller clutches provide differential action for the front wheels, added straight line and cornering ability.



Below, only the engine left to bolt in now and then off to the circuit to give PB's new baby an airing.



**Chassis**

Everything can now be fitted to the chassis, again this is one of those no problem areas that are enjoyable, up until now all you have in front of you is a pile of parts, now the parts begin to take shape into a recognisable form.

At this stage there are two things that we discovered that could catch out the unwary and would certainly fox the beginner. Again may I state quite categorically that these are not complaints, the only reason that we mention them at all is to help the beginner and aid the seasoned driver, as we said at the start of this review our aim is twofold, first a detailed look at P.B.s new Phoenix and secondly to encourage newcomers into the world of one eighth racing.

As you may remember the front drive pulley is fitted before the transaxle is attached to the car, this in effect fixes the point where the transaxle exits the drive cups and stops. When we reached the point where the drive shafts were fitted, the P.B. was found to have no lock on the left hand side, after inspection the transaxle was found to be fouling the drive shaft and thereby reducing the axle blocks travel. Solution, grind away three sixteenths of an inch from the end of the transaxle, furthest away from the drive pulley, problem cured. This may have been a problem solely associated with our review car, however it would be worthwhile checking yours before final assembly.

Secondly, whilst building the front wishbones, two springs were noticed, we say springs, actually they were L shaped with a coil in the middle, searching the instructions we found photographs but no mention as to where they should be placed, before you suggest a final resting place the answer was found when the front shock absorbers were built and fitted. In my ignorance of all things on eighth, it had been supposed that the shock absorbers worked a la one tenth, wrong. In fact what I had mistaken as shockers would be better described as dampers, at least on the front end. What kept the P.B.s nose in the air? Yes you've guessed it the two springs. When this discovery was made all fell into place and so did the springs. Finally it must be reiterated that the above are not winges, merely guiding notes for the prospective builder.

hinge pins, our example was found to be overtight to the point where the pivot pins could not be fitted, if you find this problem don't, I repeat don't try to force the pins through, one or two of two things will happen if you do, either the pivot pins will bend or the plastic will deform or tear. Simply take a fine rat file and gently enlarge the mounting hole check your progress often, the pivot pin should not be a loose fit and should still need some pressure exerted to push into place. One final thought be sure that all 'e' clips and spacer washers are in place.

The transaxle should now be built and fitted, there are two things to watch out for here, the first is to make sure the pulley is fitted the right way round, don't laugh mine wasn't. The second is to be absolutely certain that the front drive cups are fitted to the correct end of the axle, the seasoned one eighth driver will know why, as far as the rest of us are concerned this has to be done because the front drive cups contain roller clutches and only work one way, roller clutches are a simple, effective, low maintenance way of providing differential action for the front of the car. The instructions contain clear directions on how this can be done in a no tears way. One thing worth mentioning before we move on is, before fitting the transaxle make sure the drive belt is in place, the instructions don't tell you to do this, for once ignore the instructions.

**Conclusion**

So here we are at the end of stage one, I do not presume to tell you how to fit the radio gear, next month we continue with engine choice, fitting, initial running and adjustment and finally track tests by yours truly and at least one recognised expert.

Before finally wishing you farewell for this month, how many of our opening questions have we answered? Well we can answer the question about one eighth cars being difficult to build, they aren't, sure they take a little longer especially if it is your first, but never again let anyone tell you that they are difficult, in fact I would like to bet that an experienced hand could assemble the P.B. faster than you or I can assemble a one tenth car.

So far the Phoenix has been an enjoyable experience let's hope she's as forgiving on the track as on the workbench, find out next month in Radio Race Car.

P.B. Phoenix is available from all P.B. stockists, in case of difficulty, phone direct on (0705) 492310 or 492111.



# Futaba ATTACK-R

## BE RIGHT AT THE START !

- 2 Function
- Servo Reversers
- BEC Receiver  
+ Battery Box
- 12 Frequency Options
- Charging Jack
- New Hi-Resolution  
Hi-Torque  
Mini S148 Servos
- Twin Position  
Throttle Neutral
- Carry Handle



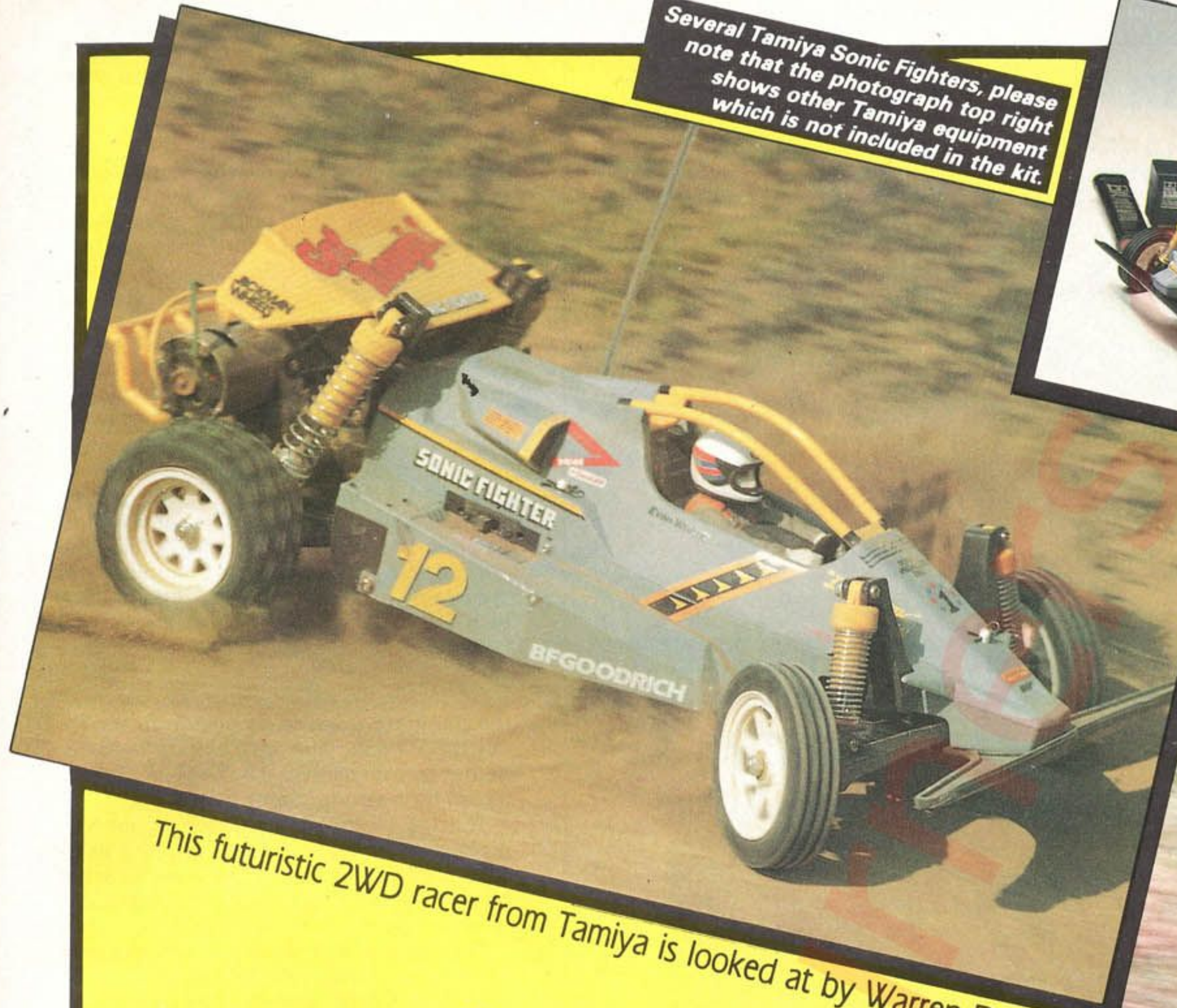
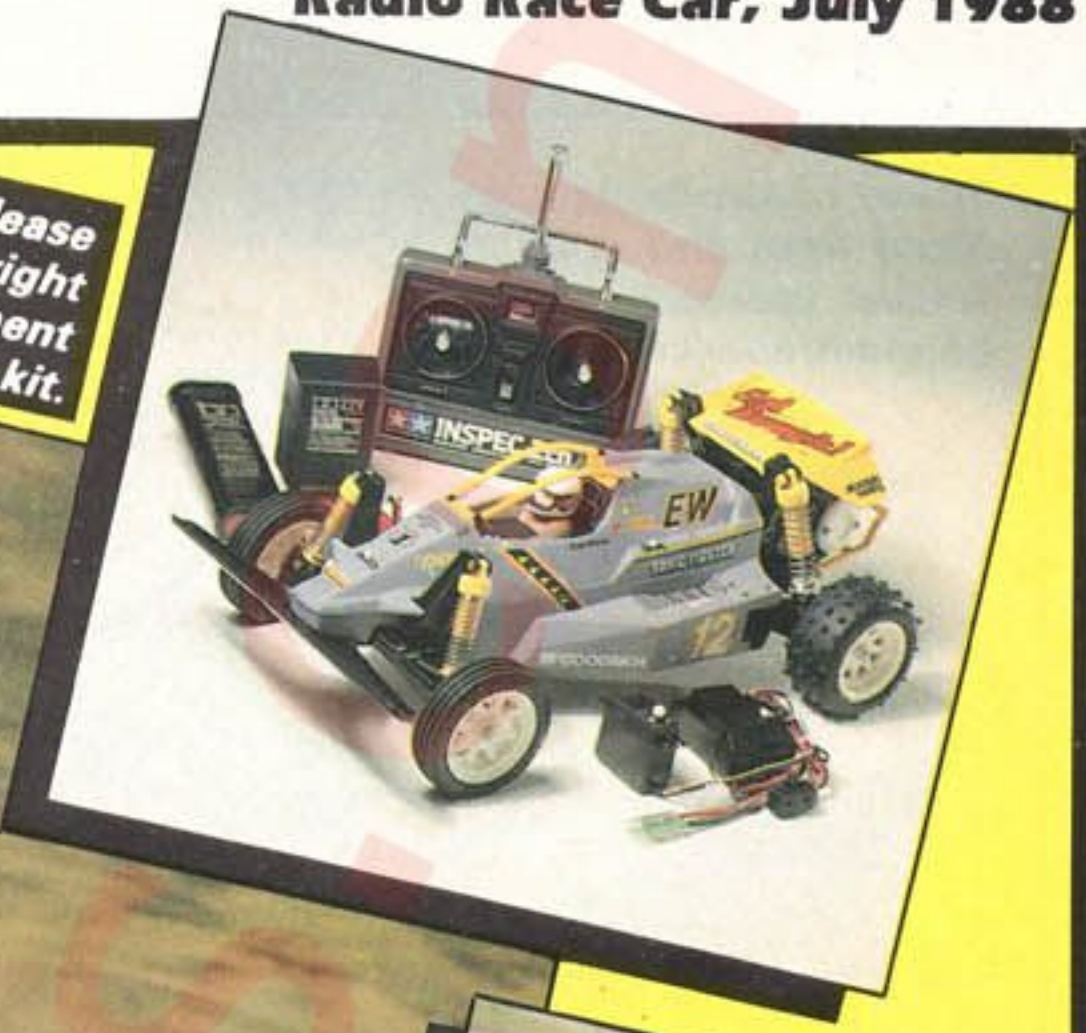
Futaba are the World's Largest Manufacturers of Radio Control. Futaba produce systems from 2 Function to sophisticated 8 Channel sets. Futaba offer a range of 20 different servos and 5 speed controllers.

## FUTABA ATTACK - THE LOGICAL CHOICE

Futaba Products. Distributed by Ripmax Models.



Several Tamiya Sonic Fighters, please note that the photograph top right shows other Tamiya equipment which is not included in the kit.



This futuristic 2WD racer from Tamiya is looked at by Warren Dawson



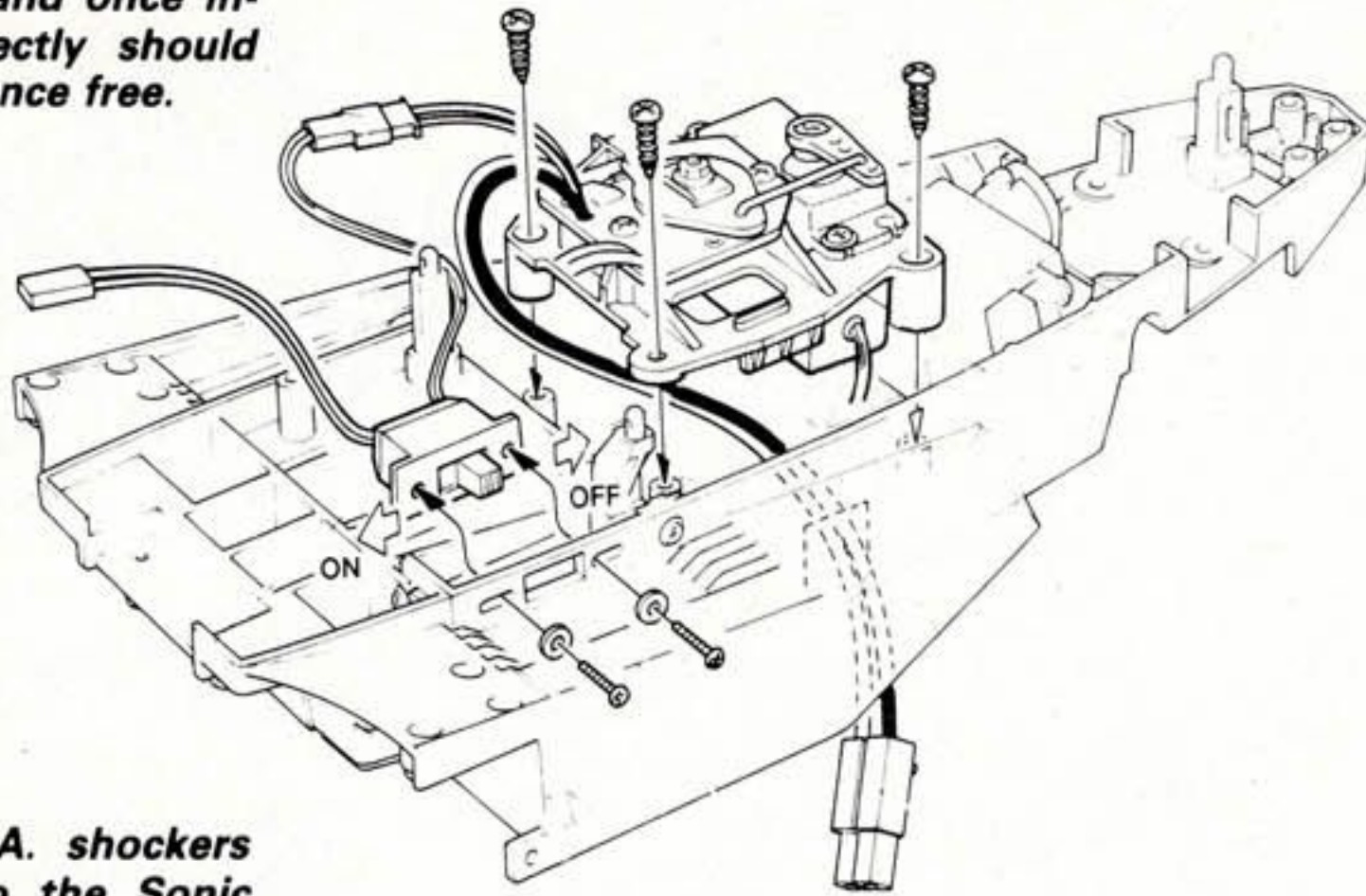
# SONIC FIGHTER

Tamiyas policy has always been one of development, steadily improving both their new and existing range of radio controlled cars, allowing a gradual up grade by their owners to the very latest spec. One point worthy of note is that Tamiya have seemed to spread this development across the complete range of radio cars, the Sonic Fighter is no exception, its parentage is obvious yet here again we are presented with another fine example of Tamiyas product.

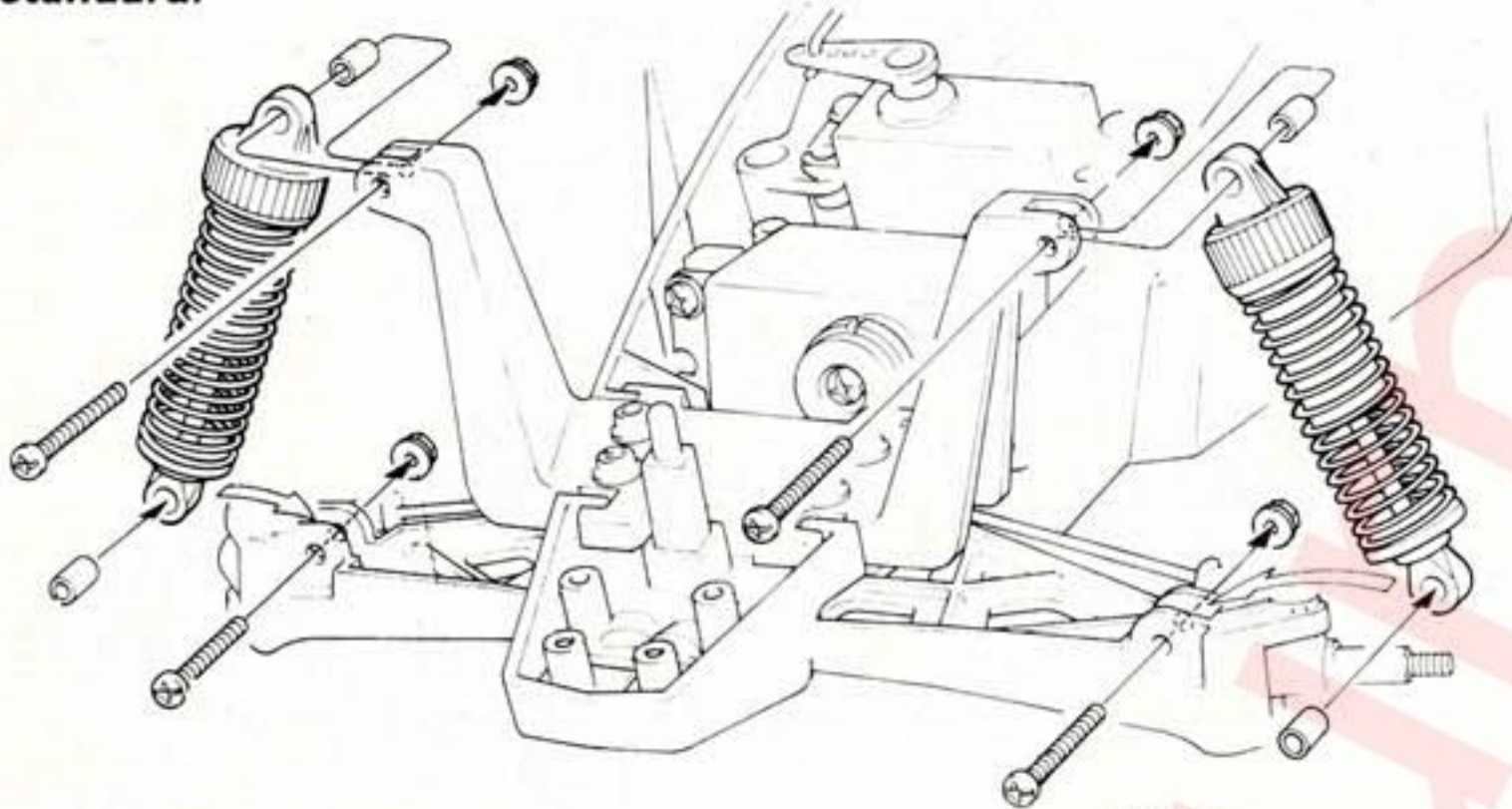
**Open The Box**  
Yet again the presentation and packaging of the Sonic Fighter is first rate, this defi-



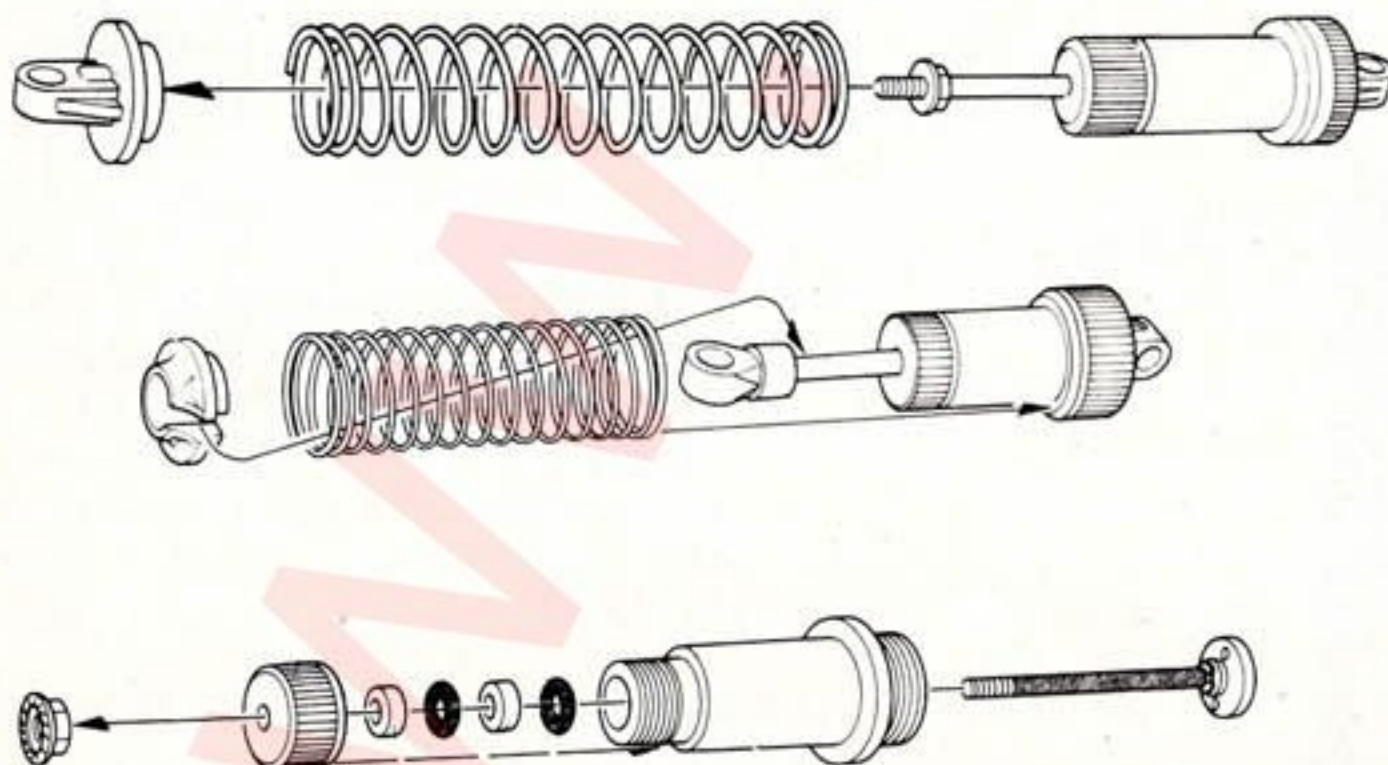
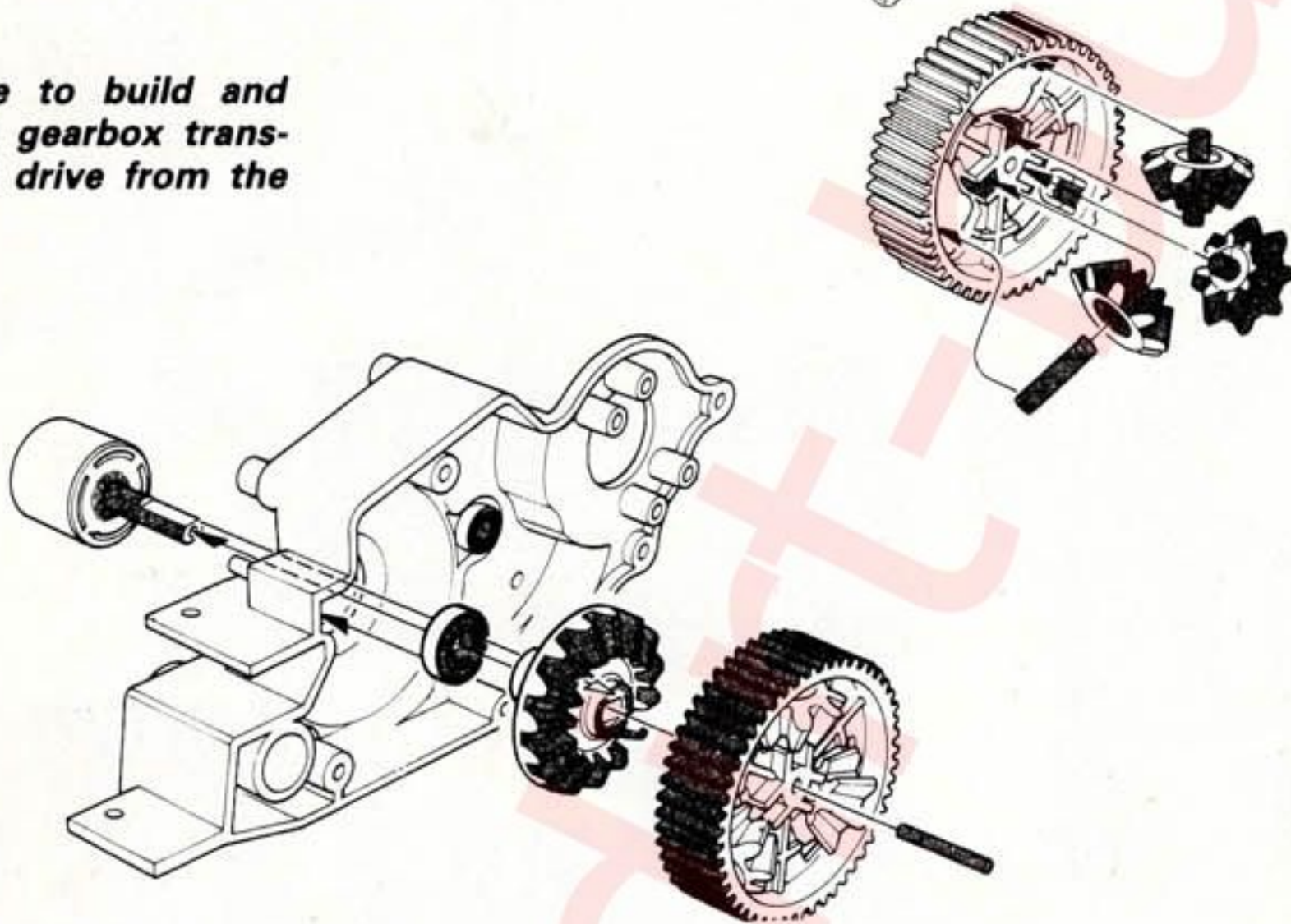
Speed controller is a un-  
itized item and once in-  
stalled correctly should  
be maintenance free.



Tamiya C.V.A. shockers  
are fitted to the Sonic  
Fighter and are up to the  
usual high standard.



A simple to build and  
maintain gearbox trans-  
mits the drive from the  
motor.



nately helps the first time builder come to grips with his car. Instructions are as ever, first class.

**Ready, Set, Go**

The first stage of building the Sonic Fighter is assembly of the six point speed controller, three forward and three reverse speeds are used. Always make sure the servo is in the neutral position before connecting it to the speedo, it's then fixed into the cars bath-tub chassis.

The servo saver is placed on the steering servo, the track rods are hooked in place, make sure the rods are the length stated in the book (75 mm for the right and 59 m for the left), making sure you have a fraction of toe-in on the front wheels.

Next the very popular C.V.A. shocks which are also in kit form. The sonic fighter has four independent shocks unlike the striker. The shocks run very smooth and are simple to construct. Three different pistons are included to set the damping rate for the type of surface you wish to run your car on.

When building the gearbox be sure all the parts are greased as shown in the instruction book. The gearbox is held together by four screws. The back end is protected by a strong motor guard.

The (16 tooth) motor pinion is put into place and the motor placed into the gearbox, with a small amount of grease on the pinion, be sure to use the correct holes when screwing the motor in place.

The rear end is put into place on the back of the bath-tub chassis and held in place by four self-tapping screws. The receiver is placed on top of the chassis for an easy crystal change, this is held in place by a urethane band.

The rear shock and wing stay is put in place by four more self-tapping screws. The rear trailing arm, drive shaft and side plate have to be entered all at once which can prove annoying and tricky for the first time builder, but patience will out. The back shocks are constructed and put into place.

The tyres are put on to the hubs which is fairly easy. If you have problems soak the tyres in warm water to soften them up, then try.

The body is put together, a side panel is screwed on and a roll cage is put in place. Tamiya also supply a colourful array of stickers to put on the white plastic body. I found this car very easy to build and great fun to race.

**Conclusion**

This car was raced at Kidderminster indoor track and Chesterfield:-

The indoor track at Kidderminster was carpet and very tight and twisty and I did not expect to do well, when competing with 4WD cars. But I am pleased to say I was proved wrong and the Sonic Fighter holds its own and proved very nippy and easy to handle. In fact in a very private race with team mate Kevin Griffin who raced a 4WD mid, the Sonic Fighter was not disgraced at all.

Outdoors at Chesterfield in the RRC series, the Sonic Fighter attracted a lot of interesting comments and qualified for the 'C' Final, not bad at all.

Overall a strong, robust club level car which should suit new and intermediate drivers admirably.

Available from Tamiya Dealers everywhere.



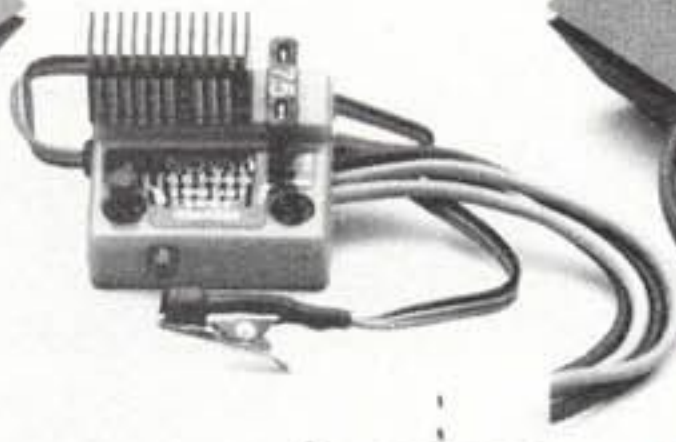
## CHARGERS

**NEC-2**  
PEAK CHARGER



**NEW**

**NEC-1**  
TEMPERATURE CHARGER



**NEC-3**  
PEAK PLUS



**NEW**

## SPEED CONTROLS

**NESC-1X**



**NEW**

ELIMINATOR

**NESC-4**



ECONO - II

**NESC-1**



PRO - II

## RECEIVER

**NER-2S**



## SERVO

**NES-1A**



**NEC-1** TEMPERATURE SENSING FOR ACCURATE CHARGING • ADJ. CONSTANT CURRENT OUTPUT (1.5 TO 5.5 AMPS) • 1.50"L X 1.35"W X 1.15"H (1.5 OZ) • CHARGES 6 TO 7 CELL PACKS FROM 12 VDC CAR BATTERY OR 12 VDC POWER SUPPLY

**NEC-2** PEAK DETECTION SYSTEM FULLY CHARGES 4 TO 7 CELL PAKCS FROM A 12 TO 16 VDC POWER SOURCE. 2 CONSTANT CURRENT CHARGING RATES: ONE RATE ADJUSTABLE 0 TO 3.5 AMPS, ONE FACTORY SET AT 4.5 AMPS. SWITCHES TO 180 MA TRICKLE RATE CHARGE. BUILT-IN CIRCUIT BREAKER PROTECTION AND TWO VOLT METER JACKS.

**NEC-3** ALL NEC-2 FEATURES PLUS: • BUILT-IN DIGITAL VOLT-AMMETER • VOLT-METER CAN BE USED SEPARATELY (e.g. SET UP ESC'S) • INTERNAL 9 VOLT BATTERY TO POWER VOLT/AMP METER.

**NER-2S** FUT.G, FUT.J, KO, AIRTRONICS PLUGS • USE WITH ALL 2 OR 3 CHANNEL AM TRANSMITTERS • OPERATES DOWN TO 3.0 VOLT INPUT • OFFERED ON 27, AND 75, MHZ BANDS • 1.45"L X 1.30"W X 0.70"H (0.75 OZ)

**NES-1A** FASTEST TRANSIT TIME, 0.27 SEC/90° • TESTED FOR UP TO 6 CELL USE • STRONG, GLASS-FILLED NYLON GEARS • 21 OUNCE INCHES TORQUE • 1.50"L X 0.75"W X 1.18"H (0.98 OZ)

## SPEED CONTROLS

	NESC-1X	NESC-1	NESC-4
MAX. CONTINUOUS CURRENT	360A	180A	120A
VOLTAGE DROP W/ 12 AMP LOAD	0.015V	0.03V	0.06V
VOLTAGE INPUT	4-10 CELLS	4-10 CELLS	4-10 CELLS
POWER CONSUMPTION	20mA at 7.2V	20mA at 7.2V	20mA at 7.2V
PLUGS INSTALLED	FUT.G, FUT.J, KO, AIRTR.	FUT.G, FUT.J, KO, AIRTR.	FUT.G, FUT.J, KO, AIRTR.

**NOVAK**  
ELECTRONICS INC.

For more information contact NOVAK ELECTRONICS, INC., 128-C E. Dyer Rd., Santa Ana, Ca 92707

Sold and distributed by  
Central Models Ltd., Unit 11, 16/20 George Street, Birmingham B2 9RG, England. Tel: 021 440 2677



# MARKET PLACE

PINIONS



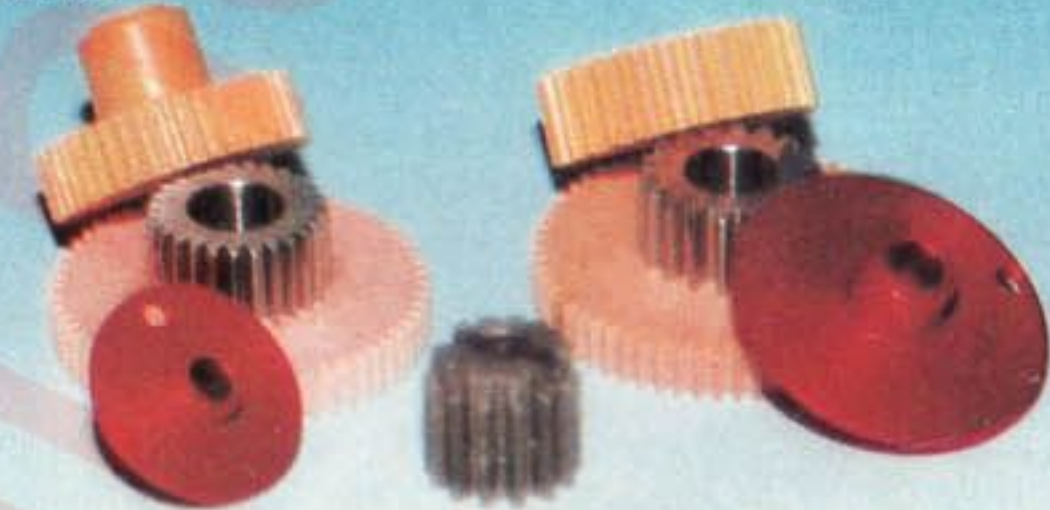
MOTOR HEATSINK



SPUR GEAR



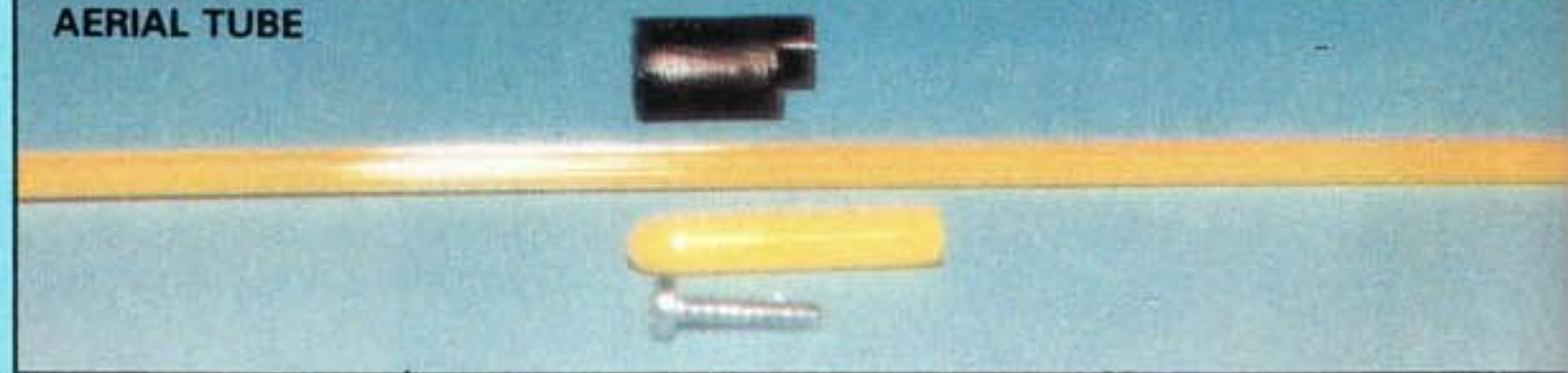
SPUR GEARS



UPRIGHTS



AERIAL TUBE



### Lesro Models

Lesro, as most of you are by now aware, are the Trinity agent for the UK. What you may not know is that Trinity also produce some first class decals for use with radio control cars of all scales. The examples below are part of a range of superb quality decals, each decal appears to be air brushed giving that soft custom car look. A definite plus for your car, Trinity stickers are available from Lesro Models Ltd., Stony Lane, Christchurch, BH23 7LQ.

### Puma Shockers

Puma have just released their new shockers onto the market and very good they are to, gold anodised bodies, two sets of springs, hard and soft, choice of piston, damper oil and all for under £17.00. Front and rear sets are available direct from Puma racing, The Barn, Moat House Works, Kings Coughton, Alcester, Warks.





**S.R.M. Spectacular**

A complete new range of beef up and generally improved parts for the CAT, Mid Four and RC-10 are now available from S.R.M., the racers source. The Mid Four is very well catered for having a selection of cross matched spur gears allowing standard gears to be run in conjunction with 32 DP pinions. Machine steel steering uprights are a great idea and one which is welcomed by all Mid drivers. 48 DP pinions are also available from S.R.M., the pinions have been specially hardened to cope with the stresses that todays racing imposes. Talking of stresses and strains how many of you are fed up because your aerial tube keeps breaking, well now you don't have to be, because S.R.M. are selling this almost unbreakable aerial tube, try one you wont be dissapointed. Finally from S.R.M. this month, a motor heat sink that really works, the heat sink is finned and contoured to efficiently remove excess heat from the motor, this ensures that your motor runs more efficiently and prolongs it's life at the same time.

S.R.M. Racing, 140 West Street, Fareham, PO16 0EL, (0329) 234262.



**Mick Ward Models**

First item in Market Place this month is this Nitro speed controller. The Nitro has been specially developed for one tenth scale electric racing. The Nitro features full power and proportional forward and reverse, as well as proportional braking. Battery elimination circuitry is also provided to supply power to both your servo and receiver. Full setting up and running instructions are supplied with the Nitro and cover any initial setting up problems you are likely to encounter.

**Specification**

Battery Voltage Nominal — 7.2 volts.  
 Input From Receiver — Positive Pulse.  
 Input Pulse Width Centre — 1.5 ms.  
 Output Current Continuous — 20 amps.  
 Output Current Peak — 62.5 amps.  
 Maximum Output Power — 450 watts.  
 Maximum Output Current — 600 amps.  
 Weight — 2.5 ozs.

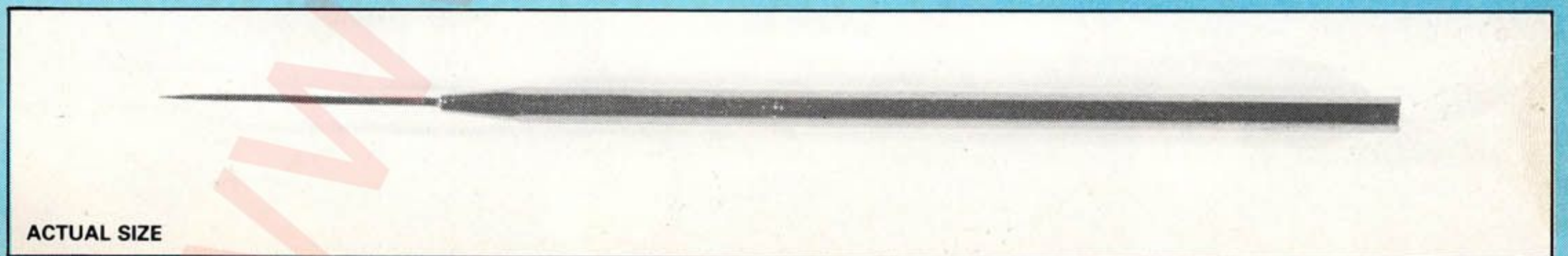
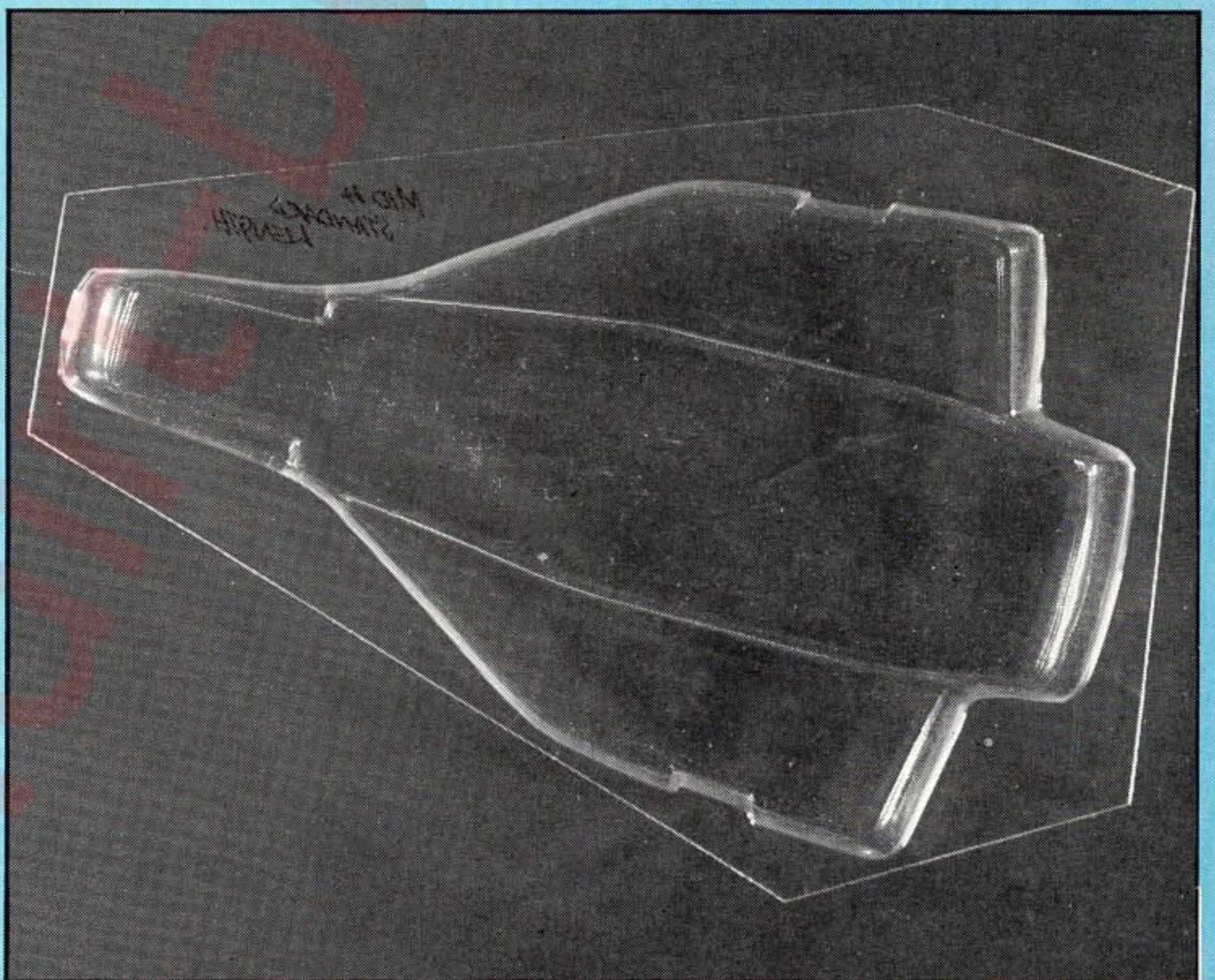
Available from Mick Ward Models, 56 Main Street, Kimberley, Notts, NG16 2LY. Telephone Notts (0602) 389628.

**Wasp Products**

Yet again those industrious people from Wasp Products have released just the right product at just the right time, that product is? The Optima Mid Four undertray. All joking aside, most drivers would not consider running their car without an undertray, especially in the wet, well as we didn't get that much wet last winter we must expect a drop or two this summer! The Wasp Mid Four undertray fits the standard mid perfectly and provides all round protection from stones, dirt, grit and of course water.

Wasp are also marketing this very handy commutator slot cleaner which comes with it's own protective sheath, don't throw this away, the cleaner is very sharp!

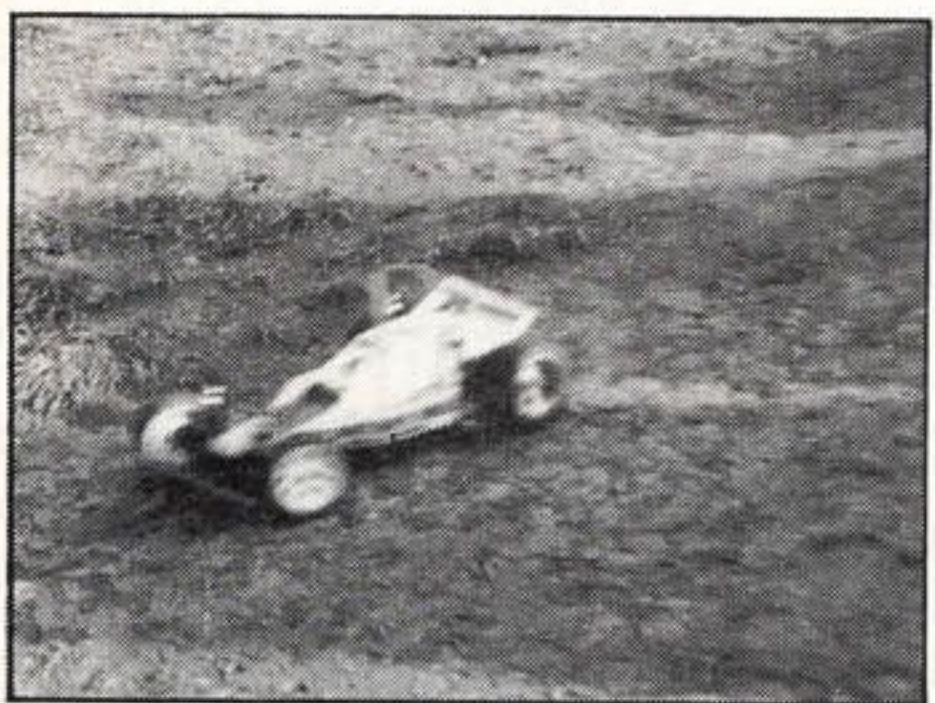
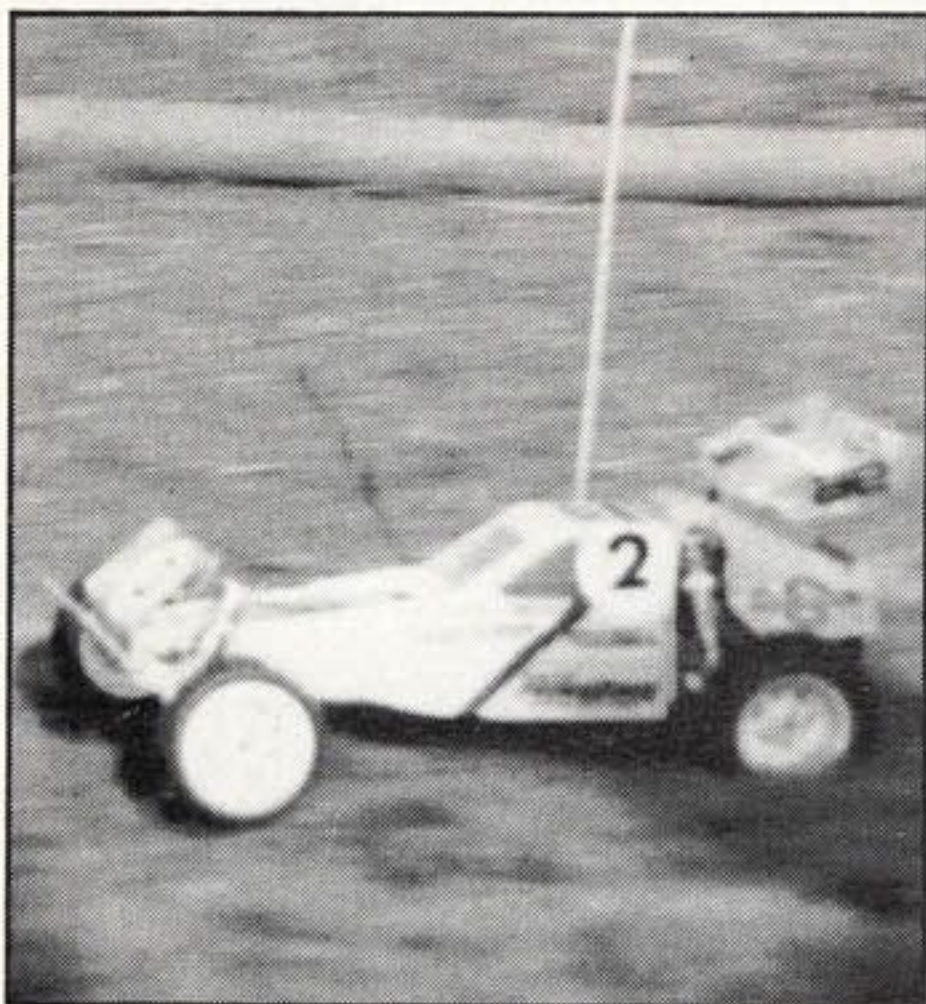
All wasp products are available from your local Wasp dealer or direct from; Wasp Products, 13 Morningside Road, Surrey, KT4 8LQ.



ACTUAL SIZE



Continued from page 41.



**2WD Modified Position Table After Round 3.**

Pos	Name	Team	RRC No	Points
1	Rory Cull	Team Reedy	3088	298
2	Jason Varley	Central Models	3093	289
3	William Mitcham	Bury Buggy Club	3010	279
4	Jonathon Howells	Team F.T.D.	3029	278
5	Darren Sansum	Bury St. Edmonds	3073	277
6	Haydon Spreadborough	Aylesbury	3016	275
6	Andrew Langdon	Swindon Off Road	3012	275
8	Scott Rayner	Private	3099	250
9	Marc Neal	Private	3096	249
10	Alexander Page	Puma Racing	3087	248
11	David Lowe	Donisthorpe	3050	244
12	Wayne Jones	Dudley Radio Car	3008	233
13	Matthew Harrison	G.E.C. Stychhfields	3047	215
14	Chris Jenkins	Trans-Am Electronics	3074	211
15	Mark Mainey	Dowty Radio C.M.C.	3037	186
16	Nick Cochrane	Private	3092	183
17	Steve West	M.G.N.	3019	176
17	Marcus Taylor	Team F.T.D.	3031	176
17	Greg Lane	Private	3095	176
20	Richard Heath	T.N.T. Publicity	3041	175
21	Alan Blakeman	Private	3100	166
22	Gary Cutler	West Mids Buggy Club	3123	165
23	Simon Evans	Private	3097	164
24	Dave Pugh	R.C.P.	3046	161
25	Nick Elliott	Private	3038	159
26	Martin Webster	Rotherham Buggy Club	3072	149
27	Mick Doughty	Private	3103	146
28	Pete Jenks	West Mids Buggy Club	3126	135
28	Adrian Bird	Malvern Models	3134	135
30	Carl Sambrook	Penn Models	3105	129
31	Steve Chapman	Private	3107	127
32	Allan Sambrook	Penn Models	3106	120
33	Alan Cox	Private	3133	117
34	Ben Sturnham	Racestore	3066	99
35	Craig Drescher	Penn Models	3089	98
36	Craig Boakes	Private	3090	97
36	Jim Davis	Team F.T.D.	3026	97
38	James Barker	Private	3091	96
39	Jason Green	Private	3122	95
40	Duncan Wood	Dowty Radio C.M.C.	3042	90
41	Mike Bridges	M.G.N.	3017	89
42	Stephen Boyd	Private	3138	87
43	Nick Marson	M.G.N.	3021	86
44	Greg Cutler	West Mids Buggy Club	3094	85
45	Darrell Taylor	Private	3124	83
46	Simon Tooley	Chesham Off Road	3040	82
46	John Varley	Central Models	3125	82
48	Bob Morris	Private	3098	80
49	Neil Stringfellow	M.G.N.	3020	79
50	David Bailey	Private	3127	76
50	Mark Cave	Private	3139	76
52	Wes Raynor	Mardave Models	3128	75
53	Richard Adams	J.S. Racing	3082	74
53	A. Neale	Private	3129	74
55	Martyn Prince	C.E.G. Stychfields	3101	73
56	Jason Fowler	Team F.T.D.	3027	72
56	David Rodgers	Hereford Radio C.C.	3057	72
56	Chris Doughty	Private	3130	72
59	Paul Hardy	Private	3131	71
60	Ian Littley	Penn Models	3102	70
60	J. Cochbaine	Private	3132	70
60	Andrew Griffiths	Dowty Radio C.M.C.	3083	70

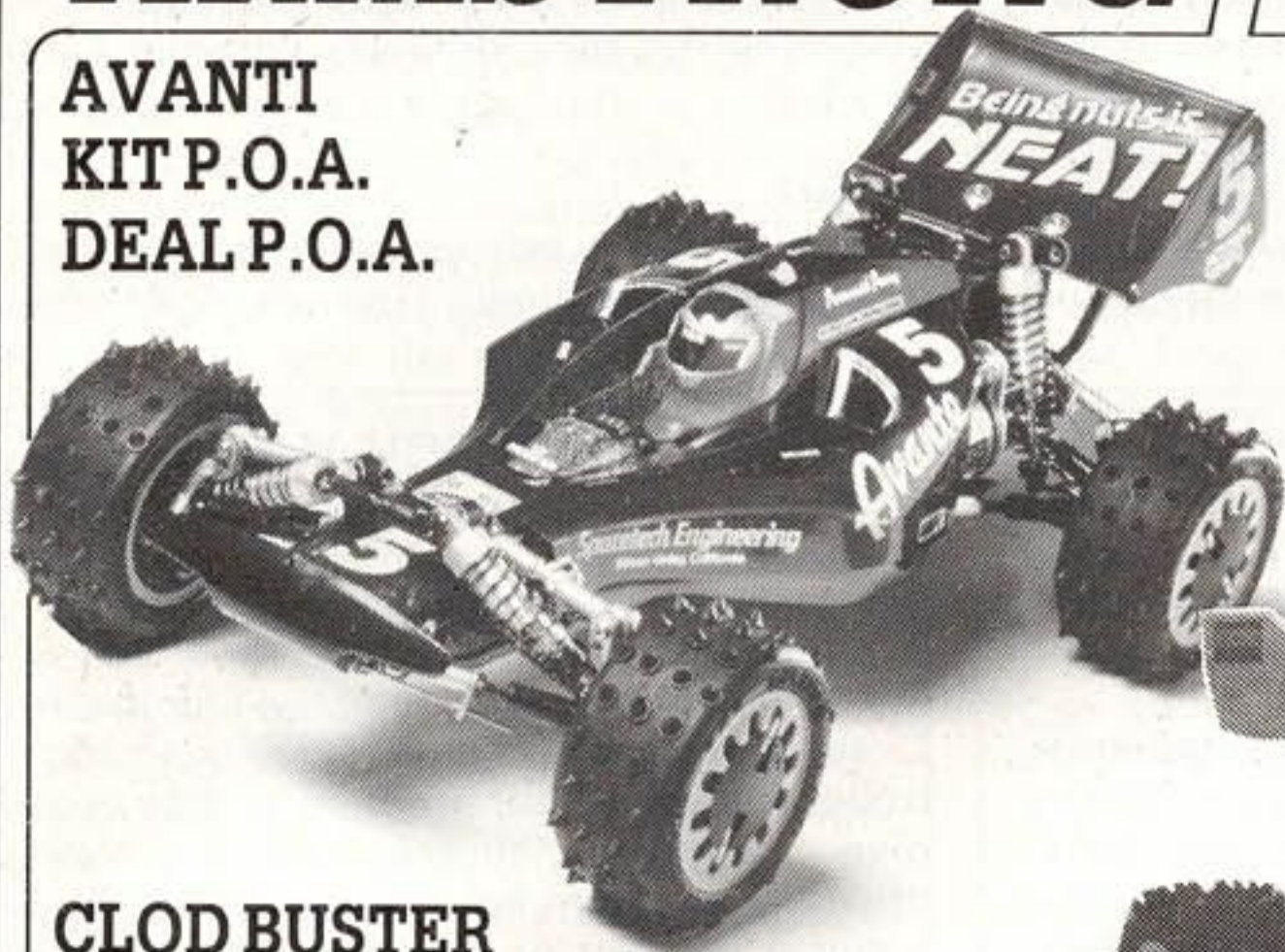




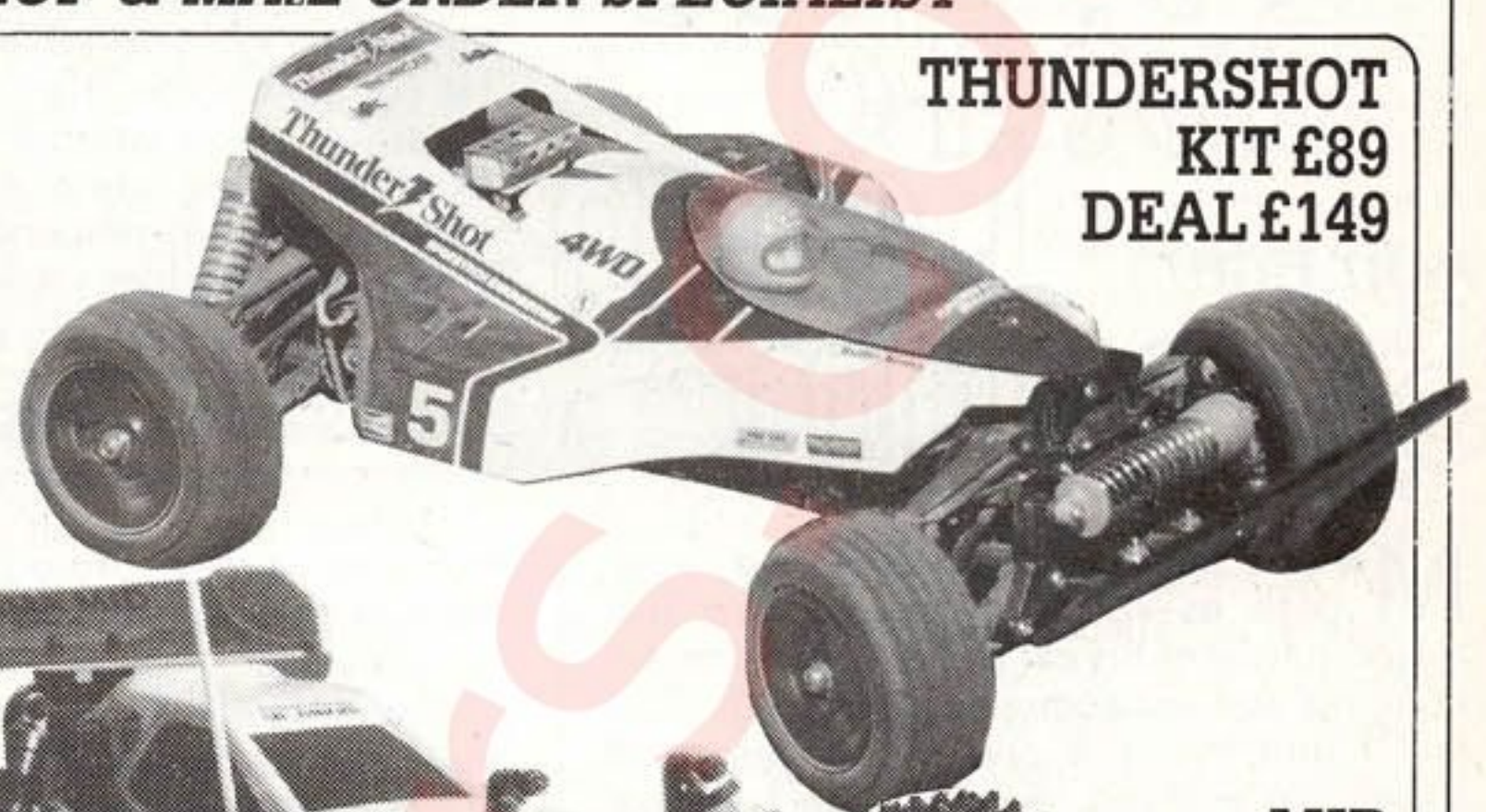
# ARMSTRONG

SCOTLAND'S LEADING MODEL  
SHOP & MAIL ORDER SPECIALIST

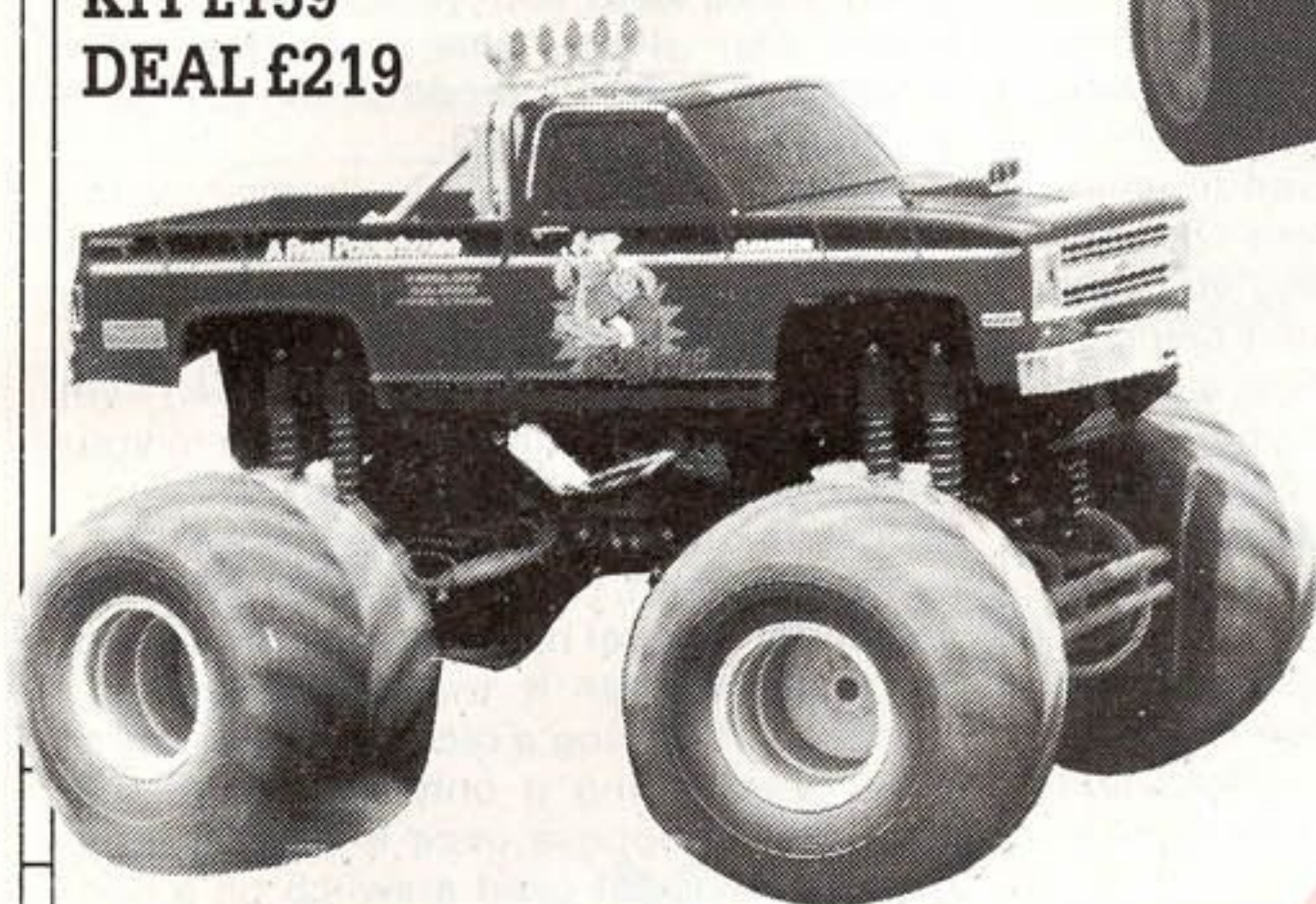
AVANTI  
KIT P.O.A.  
DEAL P.O.A.



THUNDERSHOT  
KIT £89  
DEAL £149



CLOD BUSTER  
KIT £159  
DEAL £219



MID  
OPTIMA  
KIT £139  
DEAL £199



RAIDER  
KIT £53  
DEAL £113



### TAMIYA KITS

Super Sabre ..... £89.00  
Lunch Box ..... £66.00  
Grasshopper ..... £45.00  
Hornet ..... £53.00  
Falcon ..... £64.00  
Boomerang ..... £89.00  
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Ultima ..... £94.00  
Rocky ..... £94.00  
Optima ..... £109.00  
Salute ..... £169.00  
Optima Turbo .. £179.00  
Turbo Optima Mid £165.00  
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# Everybody's Got To Learn Sometime

PART EIGHT

going for it and one bad point.

The good point is, provided the four batteries are charged you will always have control of your car. When you run off the main battery it is possible to lose control of the car when the main Ni-cads start to dump. You know when this happens as the car slowly goes round in a circle and the steering will not respond to your signal. This is not a problem if you are driving on

chargeable pen cells it will cost approximately £1.12 each time you replace them. The weight saving is considerable, about 3 oz if you do away with the battery box, so if you intend to race, do away with the battery box.

**How?**

Quite simply buy a dropping diode or a battery eliminating circuit (Tamiya make one

Jim Crabb looks at 1/10 electrics and how they work!

Many a beginner and seasoned racer gets as much pleasure from the maintenance of his car as he does from the building and subsequent racing of it. The initial building is a one off process and should be enjoyed, even though I always breath a sigh of relief when the car actually goes for the first time. It's simple to explain because you can see if the suspension is working OK, you can feel if the transmission is free, but it is not until you move those sticks or turn your wheel that you finally know it will work.

In most cars these days there is only one electrical source and that is the Ni-cad pack, it not only supplies the drive motor but also the electrical supply via a dropping diode or simple circuit for the receiver and servo's. This is usually either a set of four small rechargeable Ni-cads or a battery box which takes four pen cells. The reason for the dropping diode or battery box is that the receiver and servos operate at a lower voltage (6V) than the main battery pack which can be either 7.2 V or 8.4 V. The separate power supply has one good point

your own as there are no other cars about and it is easy to run over and get your car out of danger.

When you are racing and this happens it can cause havoc, not only to yourself but to other drivers who are racing in your heat. On the otherhand, if you have a fully charged drive Ni-cad pack and a set of batteries in the battery box just about on their last legs, you could lose control of your car when it is in top speed, as the servo's with the loss of operating power would stay in the last position they were driven to when there was sufficient power from the batteries in the battery box. Seeing your car charging off at full speed without being in control is not a pleasant feeling and the end result can be disastrous. If you use an alternative supply in the form of a battery box, make sure the pen cells are changed regularly, especially if the output voltage is below 5.6 volts.

If you use rechargeables, charge after each meeting. The disadvantage of an alternative supply is primarily weight and secondly expense, if you use four non-re-

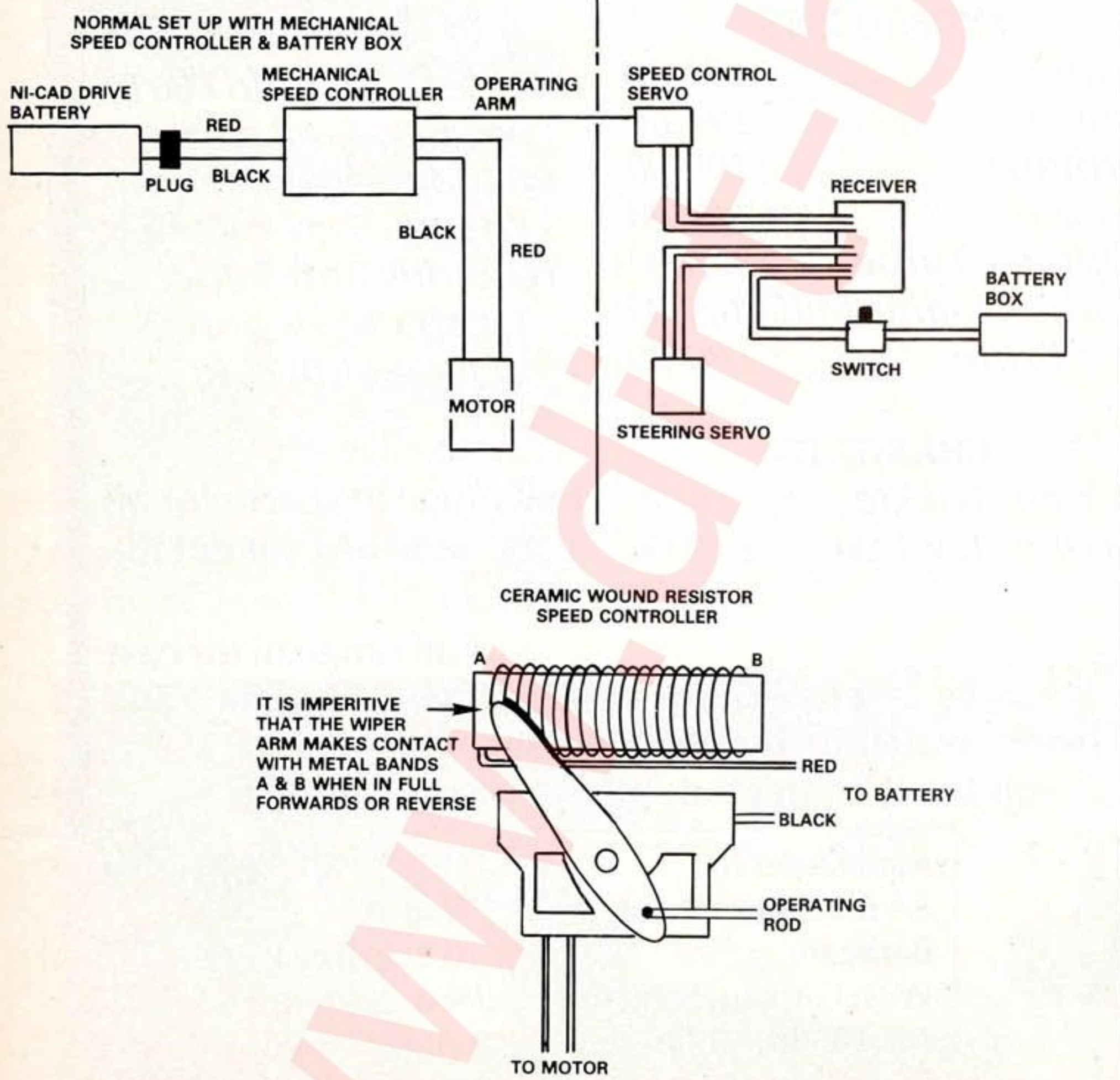
especially for their cars). If you have money to spare and need a new receiver or speed controller then a BEC (Battery Eliminator Circuitry) receiver or electronic speed controller will solve your problem as they both give a regulated supply from the main drive battery. I am not suggesting you buy either a receiver or electronic speed controller to do away with your battery box as these two items cost a considerable amount, a dropping diode is pence and an eliminating circuit £3-£4.

Installation of a diode is simple, cut the red and black wires near to the battery box and solder the diode in the positive (red) wire supply to the switch. You then need to pick up a positive (+ve) and negative (-ve) supply from the battery supply side of your speed controller (see diagrams).

Just to confuse the beginner even more, most seasoned racers do away with the switch for several reasons, weight, reliability and the fear it may get accidently switched off during a race. In all the years I have been racing it only ever happened once, but I suppose once is one time too many. I have not used a switch on a car I race for some time now and have not experienced any problem as long as there has been easy access to the battery connection.

**Speed Controllers**

There are two main types, electronic and mechanical and they both achieve the same result (to alter the speed of your car), but by different means. The beginner will most probably have the kit supplied controller in his car and that will be a mechanical one. The mechanical controller needs a servo to drive it and once again there are two main types, the ceramic resistor or the wound resistor. The ceramic resistor type is more common and each manufacturer has a variation on a theme. For example Kyosho, Tamiya and Hirobo all use a board with a wiper arm and a circular movement. Each company uses slightly different value resistors and therefore one gets a different voltage value for 1st and 2nd speed, top speed is always full Ni-cad battery volts. Some controllers have full speed reverse and some approximately half speed. Marui use the same principle of ceramic resistors but the controller has a linear action. This type of controller is good value for money and if looked after can last for twelve months or more. Being mechanical in operation and bearing in mind the wiper arm contacts have to cope with high currents, especially if you use a modified motor, they wear out and will not last forever. Maintenance is simple, clean regularly with a cotton bud soaked in motor cleaner or lighter fuel and then use a little electrical contact lubricant. If you do not have any protection over the board you may need to





do this every two heats. Tamiya make a square rubber balloon to cover theirs and Marui's is totally enclosed and therefore not subjected to the ingress of debris.

The wound resistor type should also be kept clean and lubricated, but it may require to be cleaned by using very fine wet and dry on the wound resistor contact surface once it becomes pitted and discoloured. Do not be over enthusiastic with the cleaning, as once the wire on which the wiper arm runs is worn through, the speed controller is finished and is only fit for the scrap heap. This type of controller gives proportional forwards and reverse control. It is imperative with this type of controller that the wiper arm reaches the end of the winding and touches the metal ends when in full forwards or full reverse. If your controller does not do this, adjust the linkage so that it does because if not, severe overheating of the resistor will take place (See diagram).

I have seen a poorly adjusted controller of this type cause part of a car to melt. The mechanical controller has a very big plus

point and that is its reliability and being mechanical, if you have any problems, most of them can be overcome at the trackside. It can also tolerate being wet, a situation which the electronic will not operate in. Clean water at the voltages a model car operates is surprisingly a poor conductor of electricity, but the contaminants it carries ie. copper dust, carbon dust and plain dirt can cause tracking and on a printed circuit board that means you are in severe trouble.

The mechanical speed controller for the club level racer gives a considerable advantage over the electronic in terms of capital cost and ruggedness. The cost will be £10-£18 as against £45+ and if you incorrectly connect a mechanical controller, most probably the worst that can happen is that your car will run in reverse at three different speeds with only one speed in forwards. Give an electronic the same treatment and it will be damaged beyond economic repair. So why do drivers use electronic controllers? There are several reasons, they are very responsive, giving

proportional control, they are light weight (remember they do not need a servo to operate them) and they supply a regulated voltage for the receiver and the steering servo. There are many types, some are completely electronic and some have a relay to bypass the electrics for full speed.

It's very much "you pay the money so you make the choice". The Japanese controllers tend to be smaller than the British ones and several are exactly the same size as a servo so they can be positioned where the servo for a mechanical controller would go. Two very good examples of this type of controller are the Acoms AT-1 and the Futaba 112B, both priced at about £49. The British controllers tend to be larger and enclosed in heat shrink. Be it British or Japanese they must be kept dry, the easy way is to put the controller (after setting it up) in a balloon and seal off the opening with a tie wrap, the same treatment can be applied using a small plastic bag. Both the balloon and bag must be taken off at the end of a days racing as condensation could be present. The same method of waterproofing applies to receivers. It is always good practice to put your car in a dry warm atmosphere such as an airing cupboard after a days racing.

Servos can be protected by a smear of rubber sealant around the two body joints and also the grommet where the wires come out. This waterproofing applies to most servo's at the bottom end of the market. The expensive £50 servos are all waterproofed. By far the best method of water protecting is to fit an undertray and have a close fitting body although it is not possible on all cars.

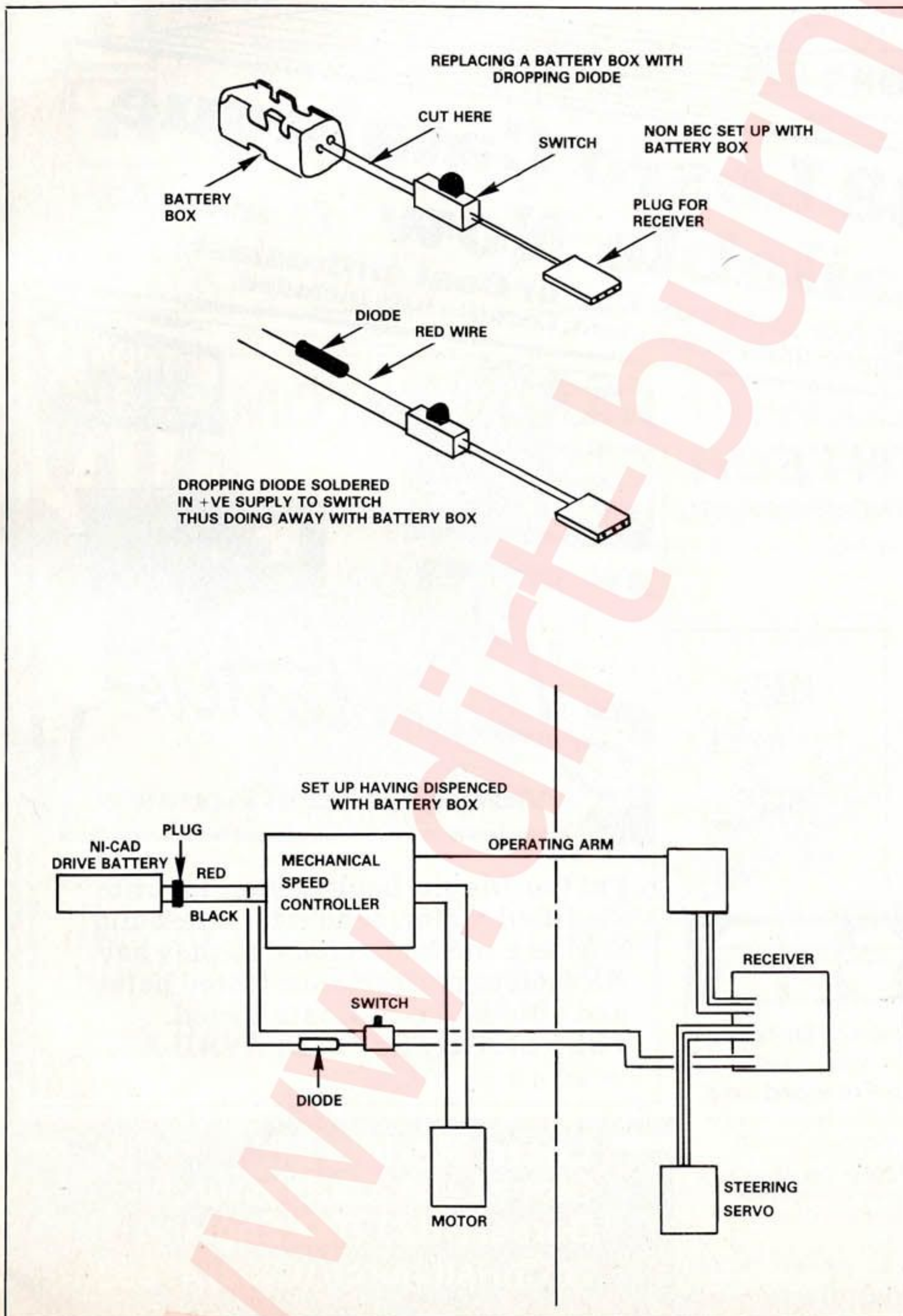
Transmitters are often forgotten and a polythene bag is slipped over, the aerial pushed through and that is thought good enough. Water tends to run down the aerial then into the case and onto the printed circuit board. A simple cure is to use a rubber band around the polythene and the aerial to prevent the water ingress.

Some drivers waterproof their receivers and servos by spraying the printed circuit boards with aerosol silicone grease. It does work but if either item needs repair it complicates it. Under no circumstances should WD40 be used on printed circuit boards in your radio gear.

To sum up, it is surprising how wet the battery pack, motor, mechanical speed controller and switch can get without affecting the component, the same does not apply to transmitters, receivers, servos and electronic speed controllers. Keep the mechanical type controller clean, do not have similar plugs on the electronic for the battery and motor and ensure there is no possibility of applying reverse polarity to the component. I am always amused by the driver who pays £50 for a controller and then chops the plugs off so it is compatible with those already in his car, for the sake of £1.75 he could well destroy his new item of equipment.

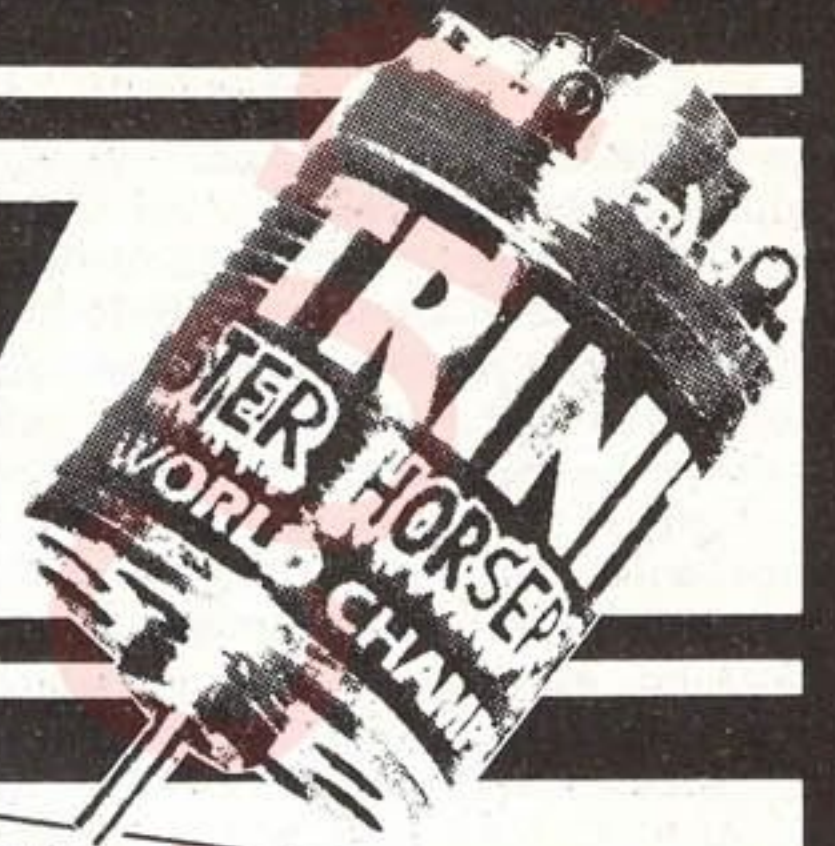
After every wet meeting dry your car out and certainly do not leave it in a cold damp place where condensation could form.

Final advice for the driver in the rain, try and keep warm and dry and if you wear glasses like me pull the peak of your cap down and pray it stops raining!!!





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Sunday 12th sees an open meeting at the same venue. For further details contact; Malcolm Webb, 33 Beech Hill Drive, Mansfield, Notts. Tel (0623) 653346.

**R/C Wheels Car Club Wembley**

Anyone living in or around the Wembley area wishing to enter the 1/10 club scene should contact Steve Burgess (089582) 2023. Steve is secretary of the R/C Wheels Club who meet most Monday evenings at St. Andrews Church Hall, Sudbury.

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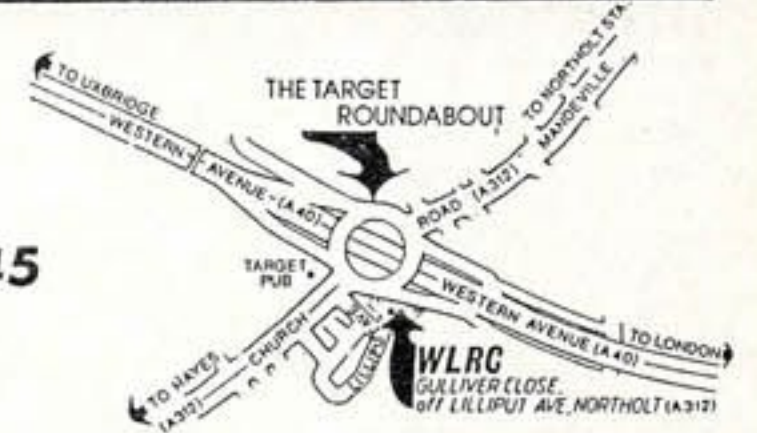
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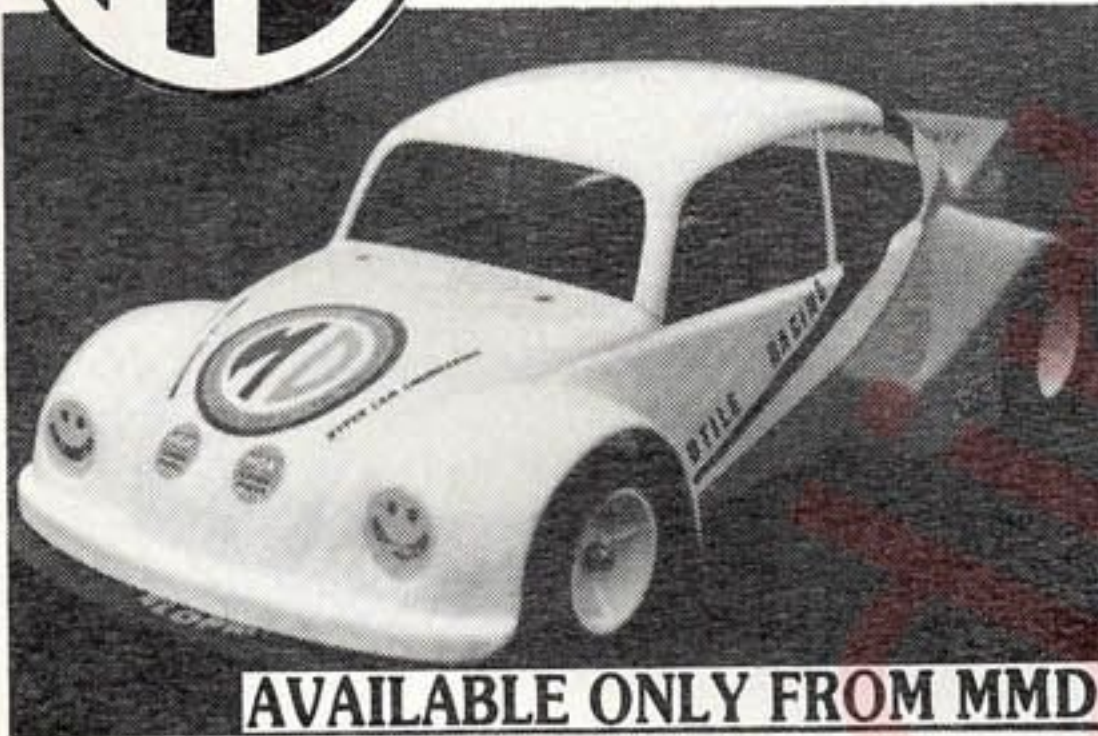
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# STOCK AND OVAL

by Mike Smith

Welcome once again to Stock and Oval, as promised this issue we have the O.P.S. engine report, also some interesting developments from Mardave with connection to their Stockmaster I.C. Stock Car Kit, we also see how Kev Straw tackled the over heated problem with his O.S. without the expense of a new Buggy head. We mustn't forget the meeting of the month which has to be the Radio Race Car British Championships at Nottingham and of course the latest development around the Stock and Oval World.

## Mardave Mods

Mardave are to make some interesting changes to their I.C. Stockmaster, the developments are due to the scope for improvement created by the B.R.C.A. rule change, which has increased the overall maximum width of the 1/8 I.C. stockcar to 240 mm.

There are those who are quick off the mark, it didn't take Kingsway Kar Komponenten Leicester long to produce a new length rear axle, anticipating the demand perfectly, in the past Mardave would have taken ages to make a move on a new development, due in many cases to the fickle

**The Motile Fun Beetle gets a modified shell, the new style will allow six cells cross ways, there is also a spoiler with the body.**

nature of rules that can often be one thing one year and back the way they were the next, but the demand is high and Mardave's Stew Busby, the Stockmasters designer and developer, is on the ball with a series of developments that will improve the cars reliability as well as performance.

First off there is a new rear axle which will be 238 mm in length, just 2 mm short of maximum permitted width, the chassis bumpers will increase in length to protect the wheels and tyres, but the bumpers will still let the wheels protrude slightly from the outer edge of the chassis so as not to infringe the BRCA construction rules.

The wheels will have an increased width, but the increase will be on the inside, towards the chassis rails, this will help with wider tyres such as the MRC which tend to either foul the rear springs, or get you in trouble with the scrutineer, with the new wider axle there will be enough room to fit a wheel locking device, one either side of the radius arms, this hub lock will have two pins that locate into the hubs, the axle fitting will be with a grub screw which will locate in the axle to prevent it spinning or moving, this will replace the key fit on the now standard axle.

This new rear set up will stop the distortion of the wheel due to over tightening the wheel nuts and make for a more positive drive.

Up front, the stub axles will be increased,

at the moment the front track is some 1/8 inch narrower than the rear, this will be maintained with the mouldings or steering arms being wider.

The nerf rails will also have a noticeable design change to ensure the rear wheels are protected from the contact of other cars, it is also on the cards to use thicker gauge steel for the front, to add even more strength to the recent re-designed bow fronted chassis.

It is hoped to have these new mods for the next issue so as we can take a first hand look at the Mardave update, it would seem that Mardave are on the right track with these modifications that in true Mardave tradition will improve the car, of course all these items will fit the cars already on the circuits at little cost, so the development is of the bolt-on variety and not one of making your car obsolete.

## In Stock

Only one item this month, which is a re-designed body shell for the Motile Beetle, this now has a wider skirt to enable a six cell battery pack to be fitted width ways, there is also a bi-plane rear spoiler similar to the Ford XR4i, this has been accommodated by flattening the rear wing.

When the Beetle was first launched due to limited supply it was difficult to obtain a body on it's own, but Motile are now supplying chassis and shells as separate items. The new Body is £4.00 plus P & P, the Chassis Plate £3.50.

## The RRC British Champs

The Radio Race Car British Championship for 1/8 IC stock cars is on the weekend of July 30th/31st at the new oval circuit at Nottingham.

Organisation of this year's premiere event is the Nottingham Radio Controlled Stock Car Club who have really gone to town to make the Championship a great success, the new circuit is of course now complete and provides some of the best facilities in the country, a fitting spot for this great meeting, if you think I sound a little biased then you are right.

The entry for the event is as one would expect is going to be very high and if the name Radio Race Car isn't enough to get you along there then the new circuit must.

Practise is on the Saturday July 30th and starts at 8 am until 9.45 pm, so make a weekend of it, if you want to take in all the excitement in one day then practise on race day will be from 8 am to 9.45 am, during the morning practise scrutineering will be carried out, all cars to conform to the BRCA construction rules, racing will commence at 10 am.

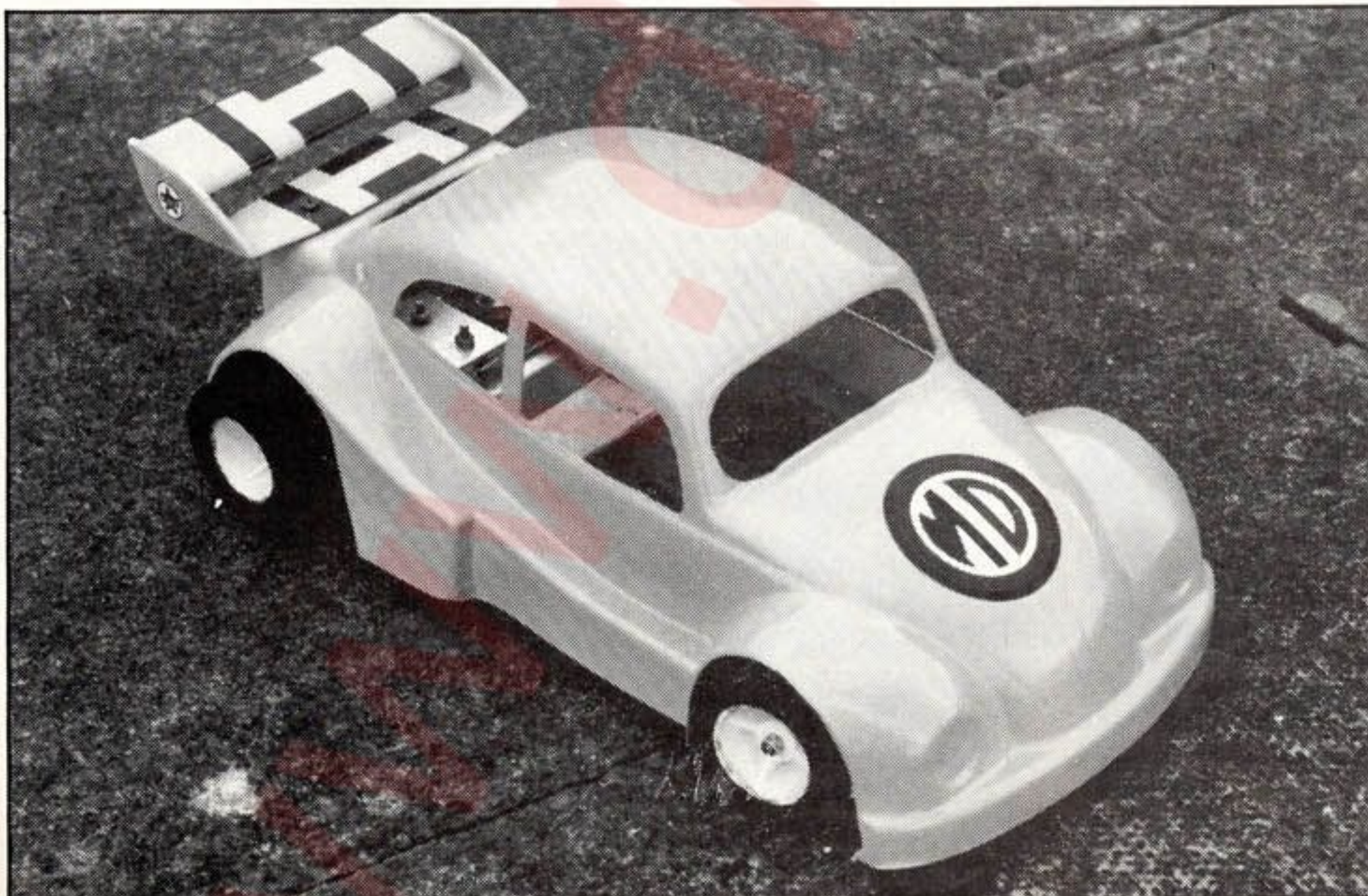
There is of course camping facilities track side at a minimal cost of £1.00, the entry fee for the race is £4.00, closing date is the 30th June.

All entries to be sent to Robert Thorpe, 10 Devonshire Drive, Eastwood, Notts, NG16 3BE, all cheques, etc. made payable to the Nottingham Radio Controlled Stock Car Club.

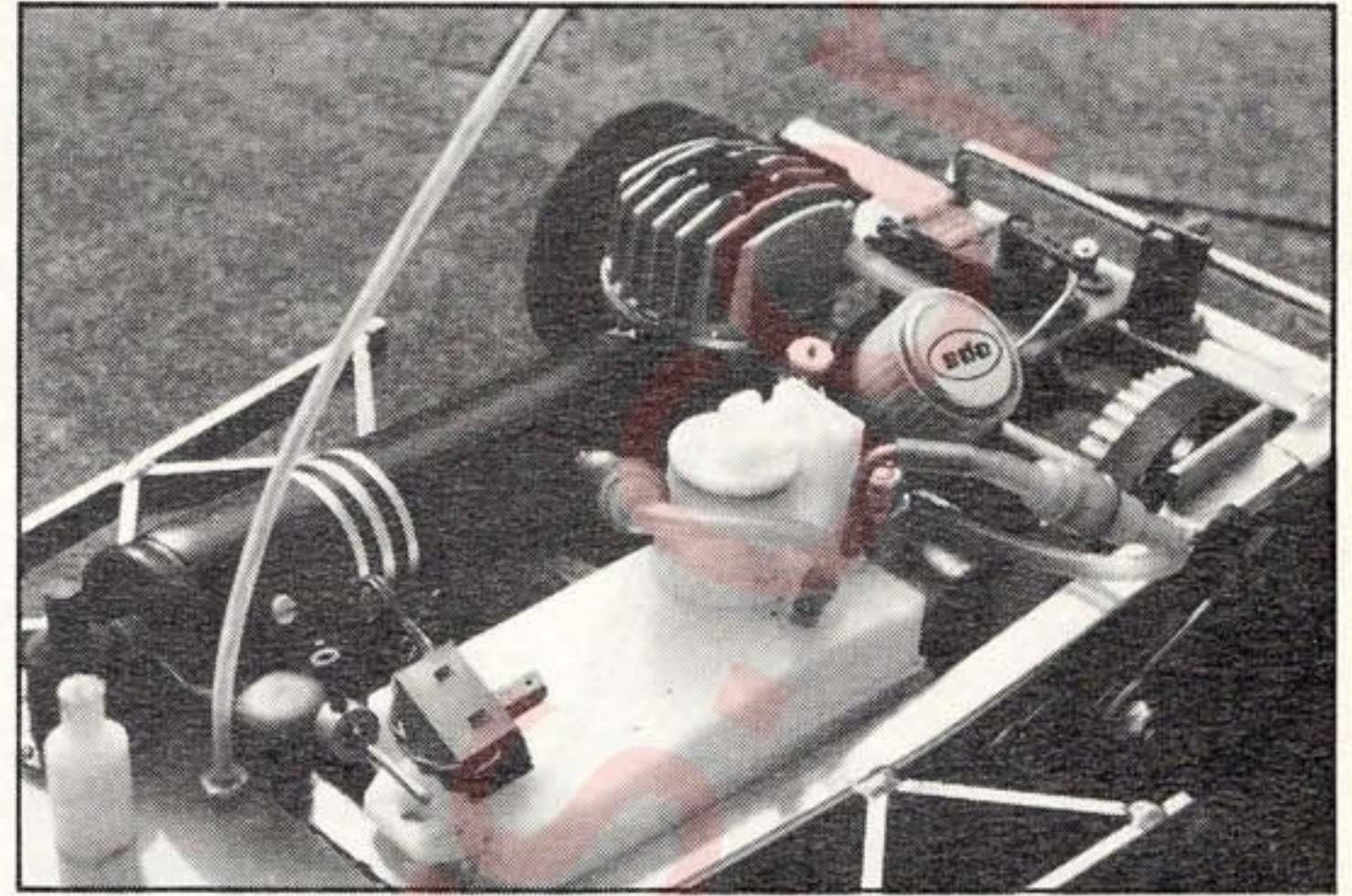
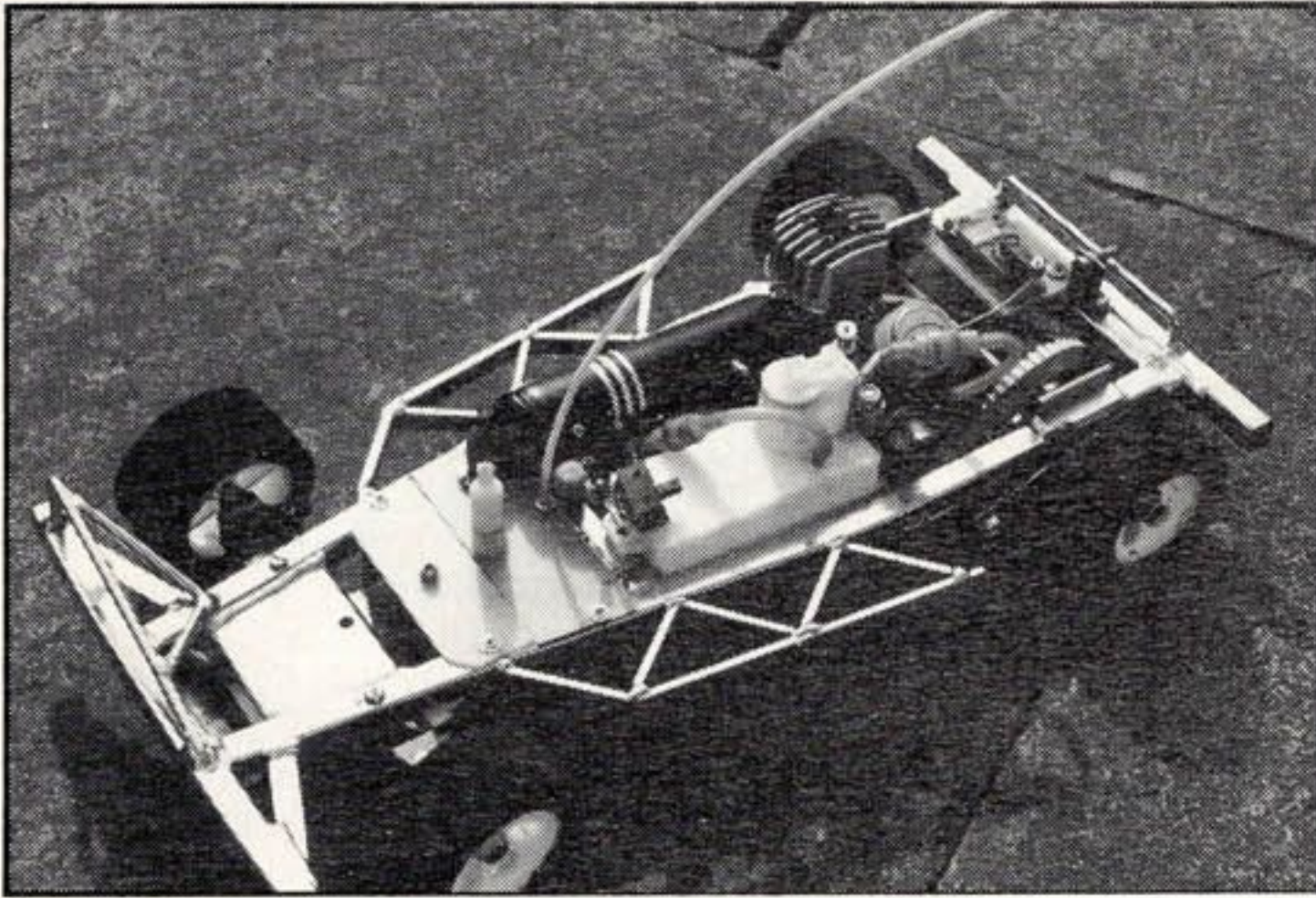
We have included an entry form in this issue, if you don't wish to cut you mag, then make sure you send the correct details to Rob Thorpe.

## OPS In Stock

With the BRCA regulations on the permitted engines for the use in the IC stock car, being anything, as long as it retails under







*It wasn't necessary to fit a PB pipe and fuel tank as the engine fits the standard car with a conventional silencer, the change around was more in the way of experimentation, having the fuel tank in the centre of the car helps with fuel flow and also gives better weight distribution, it also made working on the car easy especially the rear suspension and carburettor.*

£150, the choice is wide open, this issue we take a look at the OPS Buggy. Our appraisal is more on a "will it fit" principal rather than a diagnostic assessment, the main problem with the stock car is its style of application and it's rather unforgiving design that doesn't lend itself to major changes in internal layout.

There are three OPS side exhaust Buggy engines that were thought suitable for use in the IC Stockcar, we decided to try the Competition buggy engine, which retails at £114.25, this is smack in the middle of the price band with the Sport at below £100 and the Pro at £120 plus.

McGregor Industries Limited are the engines importer and they kindly sent a competition engine promptly to meet Race Cars copy deadline. The engine arrived in it's protective bright red box, reds a sporty colour and a suitable choice for a performance engine. What's in a box! I hear you say, well in this was a rather tidy looking piece of engineering.

First examination of this famed Italian Stallion was undertaken, but unlike Silvester this was for pumping power and not iron, not being used to handling engines of this price, I remember thinking £114, I could buy two and a bit Irvines for that, it better be worth it. I also remember not too long ago an argument or should I say a dif-

*The finished car, the pipe silencer fits neatly along the length of the chassis and doesn't protrude in any way, a small cut out in the body allows the exhaust gasses to escape.*

ference of opinion at what was then the RSCA, AGM, where everyone seemed to beg to differ but never begged your pardon, the debate in question was whether to increase the engines top price limit to £45 to let the good old Veco .21 remain, it was allowed but comments like "you can tell the ones with the money" were shouted from the floor, I bet those who voiced that opinion are having kittens now.

But back to the OPS, I was impressed with the quality of the crankcase, the slide carburettor accompanying the OPS was also very impressive, it attaches to the crankcase with a pinch bolt which makes a perfect seal, with the engine was an air filter, this was a paper element type with the letters OPS displayed on it's top, in the past I have found difficulty with air filters never having the one that was made to measure.

I was pleased to see how well the filter fitted snugly onto the carburettor in a way that instilled confidence, that it would stay in place no matter how many 360's I did.

As they say, first impressions are lasting ones, so far so good which for £114 was just as well.

Metafix industries are recommended engine tuners by MacGregor so it was to them I turned to see which silencer would suit the purpose remembering that the Stockcar is a little unforgiving if you cram it full of tuned pipe plumbing.

I knew that Kingsway Kar Komponenten could rustle me up a silencer but the OPS is an engine which appreciates a tuned pipe, although engine pipe and comfy slippers may suit the OPS. Would the stock car oval circuit dampen the style of this noted performer and have me carrying excess baggage.

Metafix once again suggested the PB Universal Pipe Silencer, part number 14/110, along with an engine manifold grommet set PB 14/237, to secure this pipe to the engine an exhaust manifold from MacGregor was obtained, part number OPS

*A close look at the engine shows the neat air filter supplied, the PB fuel tank has a spring loaded flip top sealed filler cap, the tank capacity is much greater than that of the standard Mardave.*

3110.

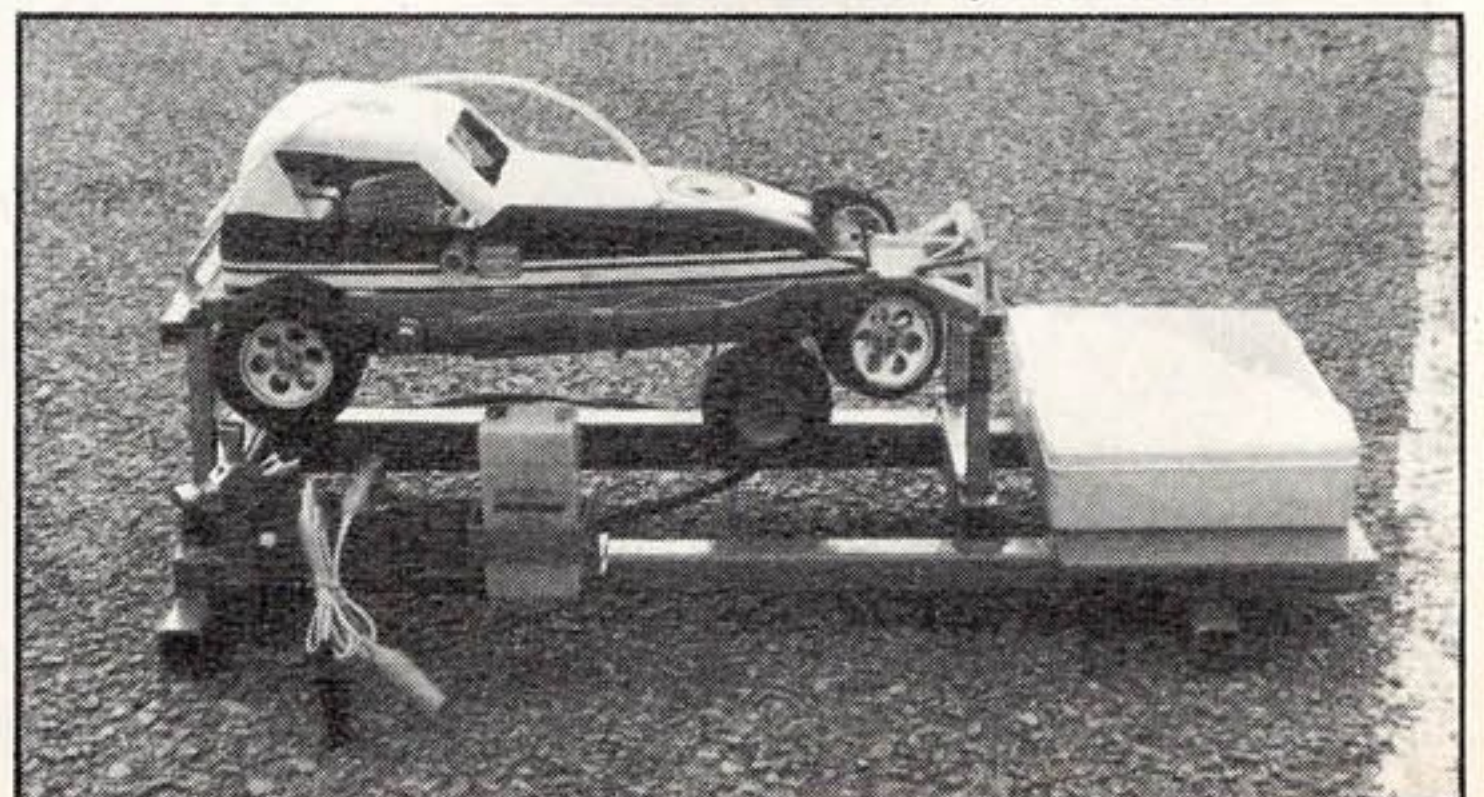
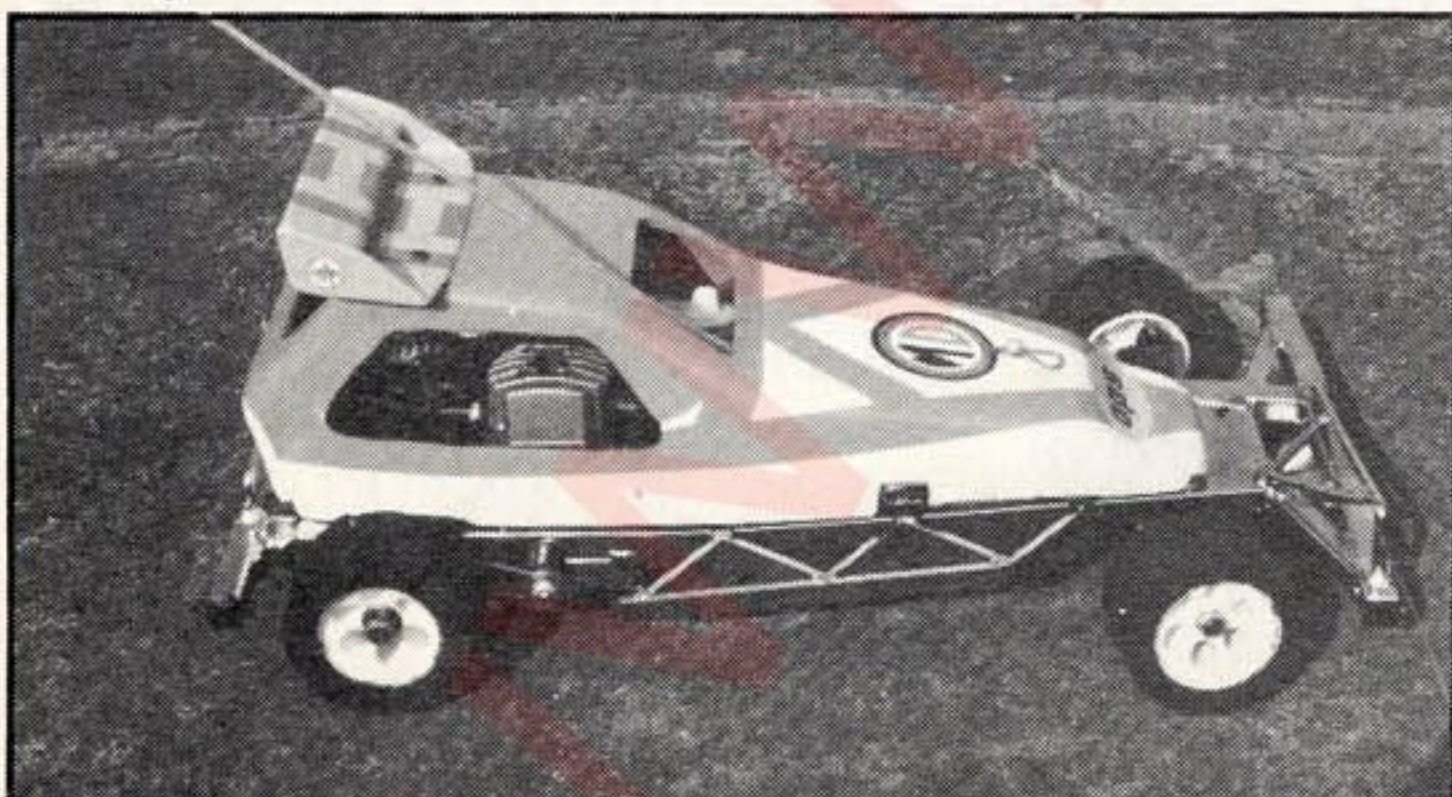
This set up would mean a move from the conventional layout of the IC stock car, it didn't mean altering the chassis but I had to dispense with the radio crate and reposition the fuel tank.

The clutch unit chosen was the twin bearing Kingsway Kar Komponenten, the quality of the unit seemed to match that of the engine so it was an obvious choice, fitment was not difficult but as the engine did not have a prop pulley, a few threads were removed from the crankshaft. The KKK clutch flywheel is very narrow compared to the standard Mardave, I have yet to try the Mardave but would guess that due to it's wider flywheel, no modification would be necessary.

The layout of the car to accomodate the pipe silencer would as stated earlier have to be re-thought with the engine and pipe dictating where the rest of the gear would have to go, if you settled for a normal twin pipe silencer from KKK then the conventional layout would not need to be altered.

First off, the throttle servo was mounted at the rear of the car in the place were one would normally find the fuel tank, this needed protection from rear attack, an angled rear guard was hung from underneath the rear chassis rail. As the electric circuit connection wire would have to be passed close to the engine to bring it to the re-

*Bernard Holmes has constructed this Porta Stock starting frame that houses all the necessary items for a day at the races, the sprung car stands bring the car fly wheel in contact with the frame mounted hand started, the glo pack and lead are neatly placed at hand with room at the top of the frame for the tool/spares box.*







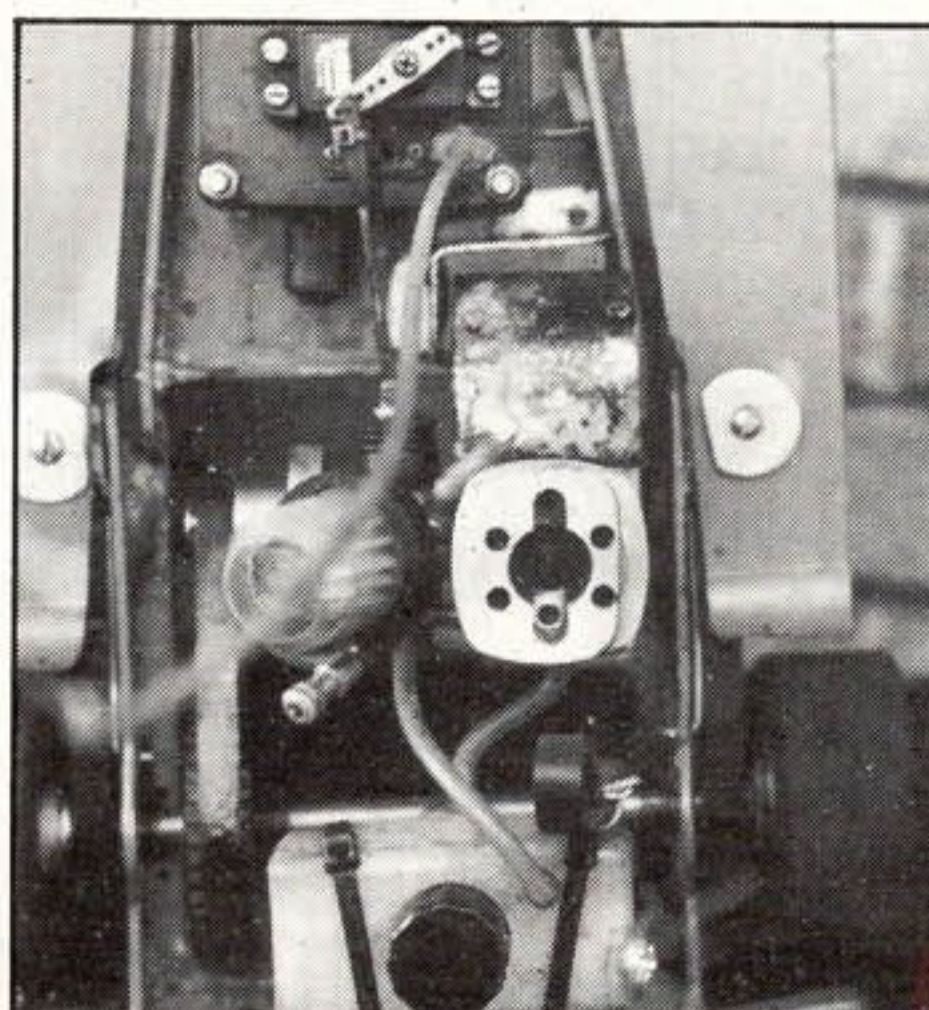
A Mondial spotted in the pit box, the more powerful motors are certainly in evidence around the circuits.

A very interesting Stocker from the chairman of the BRCA's 1/8 oval section, Terry Dickinson. As can be seen, the car incorporates the fashionable off set construction with as much weight as possible being transferred to the near side of the car.

Terry who has always beefed up the chassis by using one inch steel for the main rails in a split chassis make up, the weight of the car is still well under the maximum allowed, well it would have to be if you can't trust the chairman, who can you.

The front off set axle beam is one of Paul Dexters, which we featured in the 'In Stock' section some month's back.

The throttle servo is a very quick action mini type with a direct link to the carburettor so as not to lose any precious time when you hit the gas pedal, the fuel tank just holds enough fuel for a five minute final and is protected from rear attack with an aluminium shield.

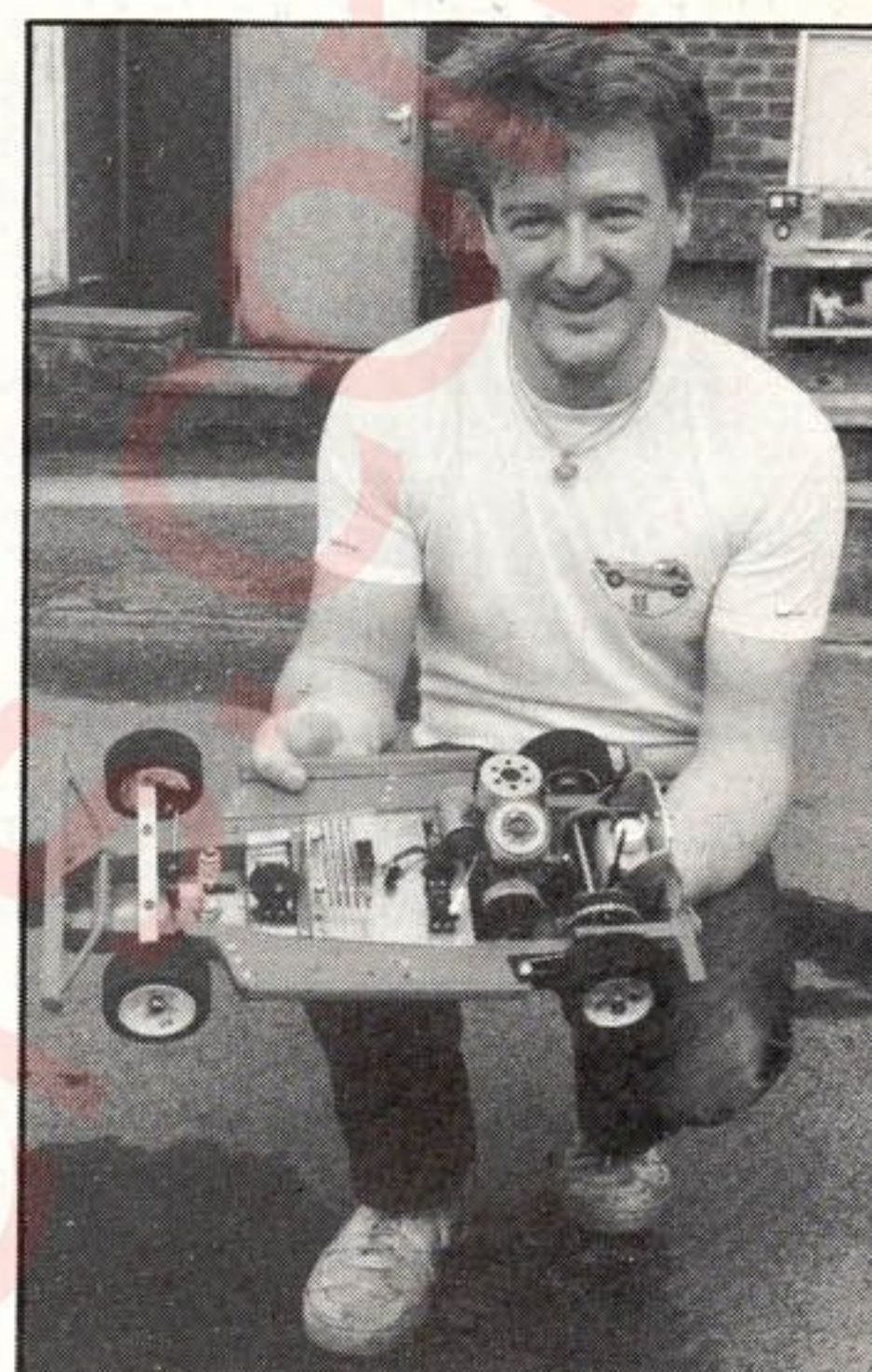


Kev Straw from the Yorkshire Club has drilled away part of the heatsink head on his OS to improve cooling, this now allows better air flow which according to Kev has greatly improved performance.

ceiver, which would be mounted in the normal place, it was felt necessary to insulate from heat by passing the wire through a length of blue fuel tube.

The fuel tank chosen was a PB flip top as this fits nicely in the remaining half of the centre compartment, the rest of the radio equipment was nestled under the silencer.

The standard stock car engine mountings were perfect for the job and were used, of course the steering servo and the rest of the car was as standard stock car engine mountings were perfect for the job and were used, of course the steering servo and the rest of the car was as standard Mardave. I also used a set of MMD bushed radius arms and crystal extension.

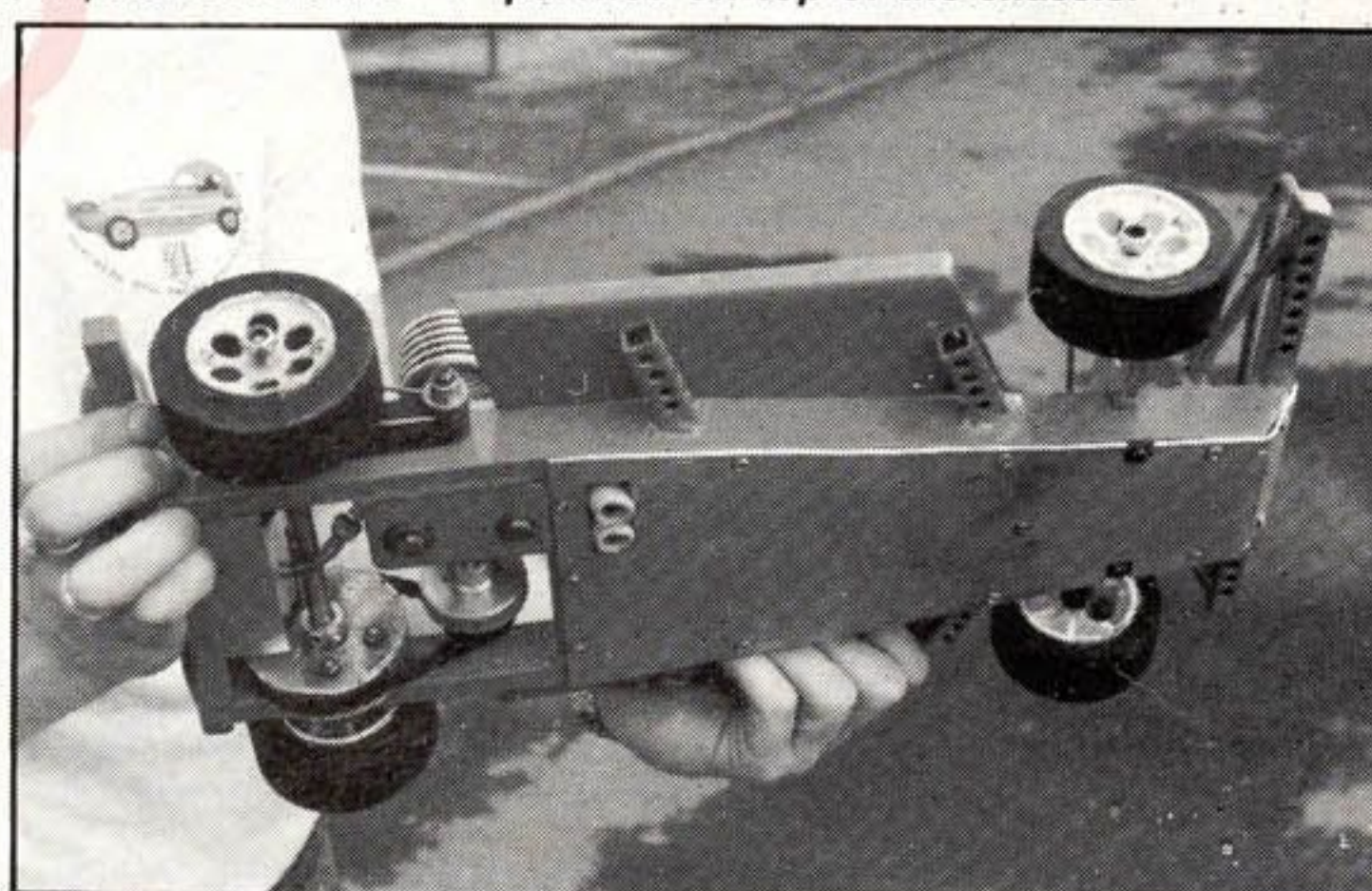
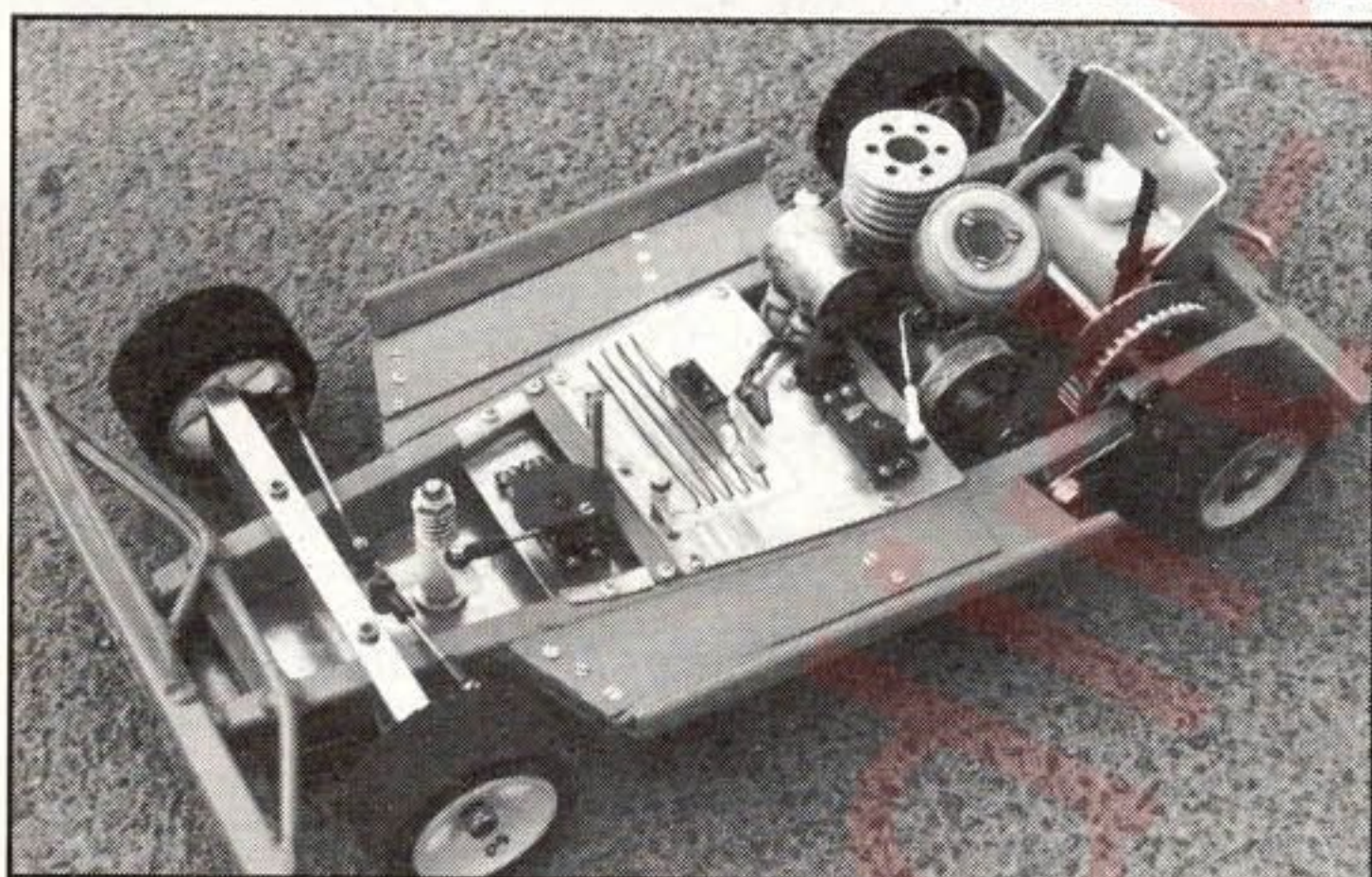


Terry Dickinson with car, you can see from this photo just how much the car is off set, it hasn't just slipped to one side due to the angle.

### Ready To Go

The carburettor on the OPS was very neat with all the fuel controls in the right place. The main fuel control needle is very large and allows for good grip without burning

The under side gives a good view of the clean lines, with the nerf rails being swept up at the ends to conform with the regulations, the front bumper can be seen perched on top of the chassis.



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your fingers, should accidental contact with the engine occur, the throttle linkage was supplied with the engine making life that much easier, I found no difficulty in starting the engine track side, the engine had been previously bench run with the mixture rather rich, this was the first time the engine had been used in race trim and sounded very meaningful, there were a number of sharp rough edges on the PB silencer which cut into the grommet that sealed the pipe to the manifold, these had to be smoothed off and a new grommet fitted.


The power from the engine on the circuit was unbelievable, too much throttle down the straight resulted in rear end slide, this was thought to be mainly due to the circuit not having it's normal grip, as the circuit came to so did the OPS but one still felt that you could only use about half the power on thumb, switching to a standard eight tooth clutch drum from the seven I was using, just took the edge off the savage response from the throttle, making this power plant tamer.

**Conclusion**

The OPS is worth the money, although two and a half Irvines are still tempting. The engine delivers the goods, is smooth running very reliable and worthy of it's reputation, I could not fault the engine in any way, the driver was the only weak link, I felt like increasing the circuit length so that I would not have to stop, Run Baby Run took on a new meaning.

In the right hands the engine is a lethal performer, for the novice or the board banger it could be destructive.

Distributor for OPS, MacGreagor Ind., Canal Est, Langley, Berks, SL3 6EQ.

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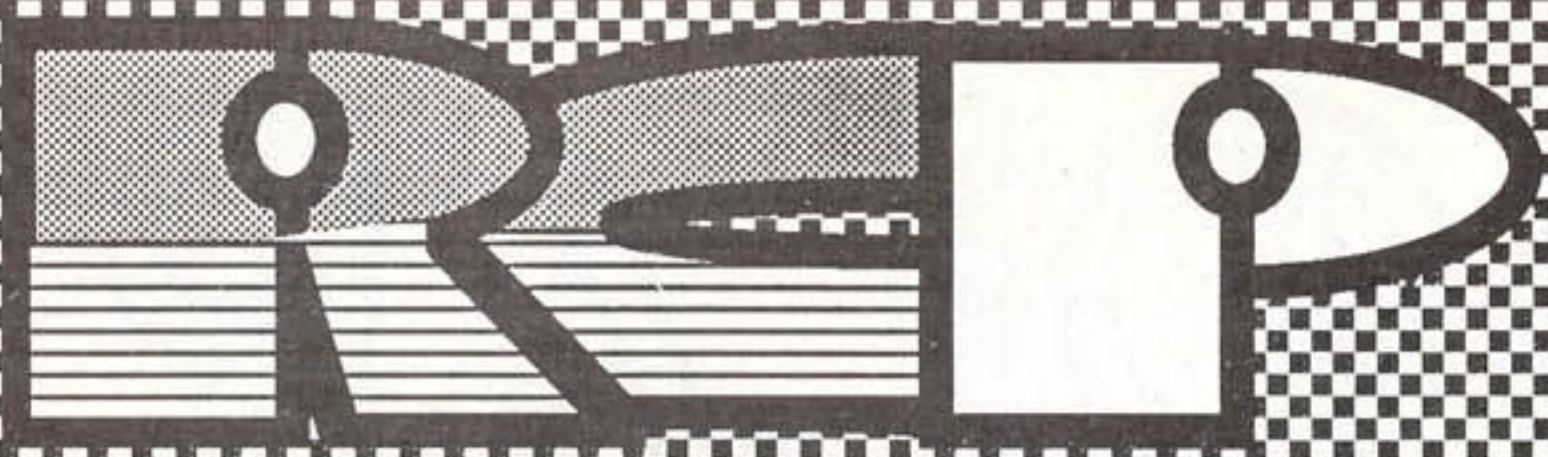
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Radio Race Car looks at solar power and invites you to participate.

There is a line made famous by the ever-green Monty Python team, that line is, Now For Something Completely Different. Well thats what this is, completely different. The International Solar Energy Society has issued a challenge. That challenge is open to anyone, but is aimed especially at school pupils studying C.D.T.

So what is that challenge? Build a solar powered car, easy eh. Well not as easy as you might first imagine.

**The Sun**

Before we can understand anything about solar energy we must know something about where it comes from, namely the sun. In reality the sun is only a mass of gas. Nevertheless, the shining part that we see has a diameter of 1,392,000 km. At the centre of this mass of gas, there is a small nucleus. It produces 99% of the energy produced by the sun and its temperature reaches 15,000,000 degrees C. Solar energy and heat are the result of atomic fusion of hydrogen into helium. This process consumes five billion tons of hydrogen per second, even at this alarming rate the sun will still shine for another ten billion years.

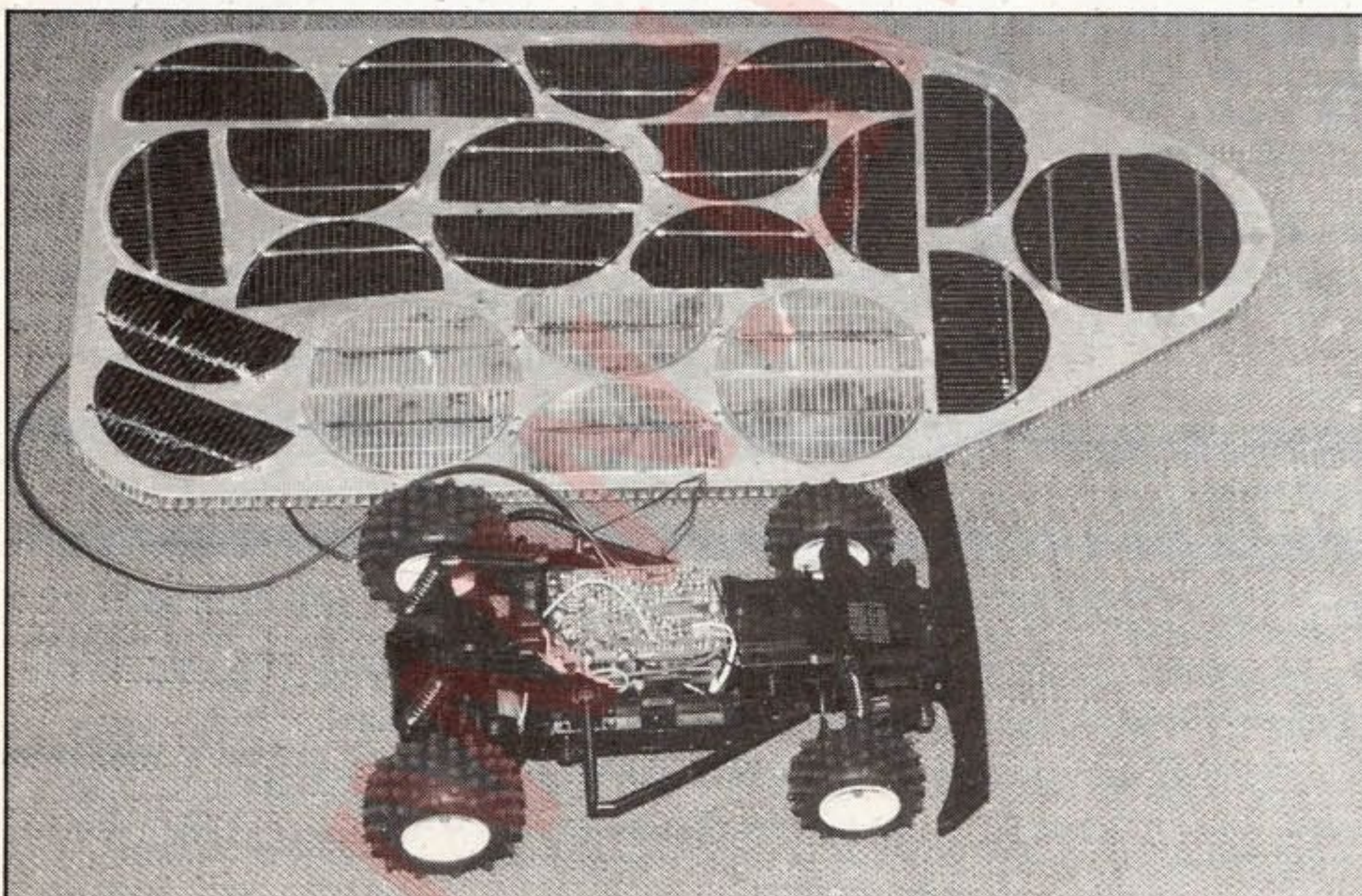
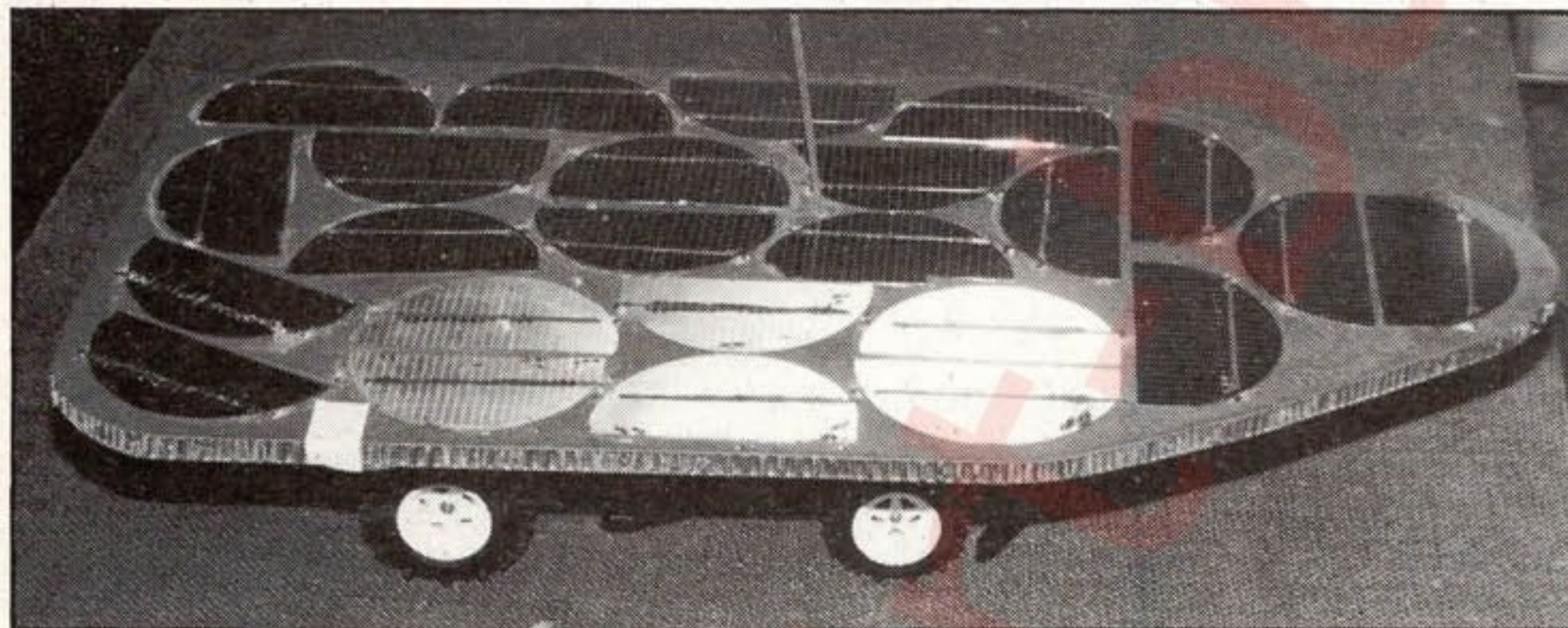
**Solar Cells**

The solar cell provides the means to make this challenge possible. The solar cell is a

# SOLAR RACING



Above, On the move just to show it actually works.



device which turns sunlight into electricity. This type of cell was developed for use in space aboard satallites and space capsules.

A commercial solar cell consists of a wafer of silicon about 0.25 mm thick and about 10 cm in diameter and has electrical contacts on each face. In bright sunlight a 10 cm diameter cell will give a maximum output of about half a volt and 2 Amps or about 1 Watt.

**Sunrider Solar Powered Car**

Sunrider is a three-wheeled car built on an aluminium tubular chassis, with a Glass fibre honeycomb bodyshell covered with solar cells.

The chassis design is based on the human powered vehicles made by Mike Burrows of Norwich. An aluminium tubular cruciform links two front wheels on one driven rear wheel. A simple 'Swinging arm' suspension system was used for the rear wheel but none at all for the front wheels.

The relatively aerodynamic bodyshell is constructed from 'fibrelam' an impregnated paper honeycomb, glass fibre skinned laminate made by Ciba-Geigy for the aircraft industry. The body is fabricated in three sections, the centre hinging at its front to allow driver access. Three hundred four inch diameter solar cells are glued to the surface of the body and encapsulated under a clear silicone rubber.

The driver is in a supine, reclining position, only his head being outside the bodyshell. He has a 'go-cart' steering wheel and three pedals as in a car. Accelerator and

Left and above, A prototype solar powered, car not the nicest looking buggy, infact it rather resembles a mirrored skateboard, but it does work.



*Sunrider, the bare bones and proudly displayed for the camera showing the amount of work that has to be done to produce this type of vehicle.*

brake are orthodox but the third pedal operates the regenerator.

Wheels are 17 in. high pressure Moulton cycle rims and tyres built onto modified Peugeot tandem hubs at the front and a five speed Sturmey-Archer hub at the rear. The rear wheel is driven by a two stage toothed belt (Davall Gear Co) and cycle chain transmission from a 180 W DC permanent magnet motor (Tuscan Engineering).

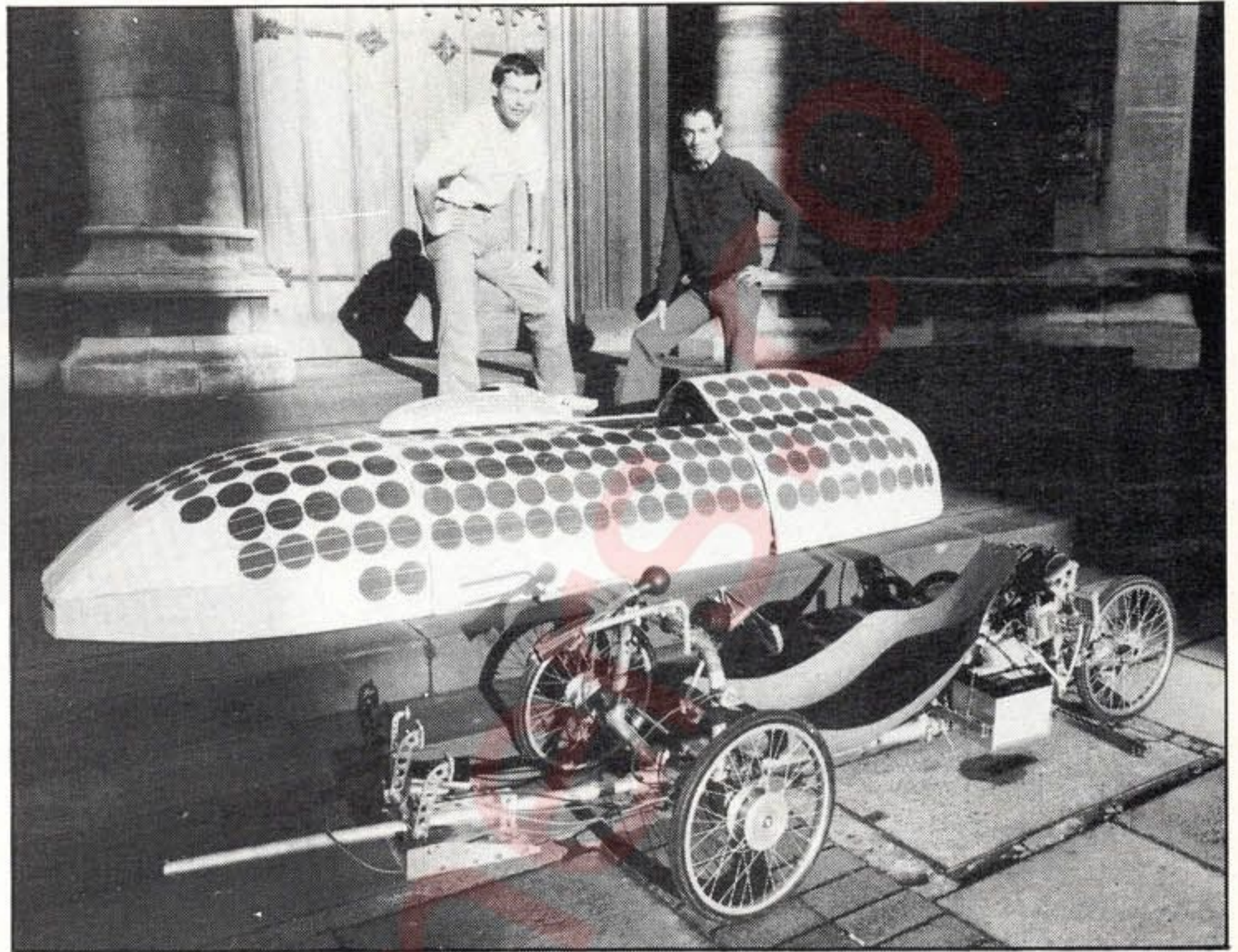
Two lead acid batteries are fitted to provide short term storage for hill-climbing, tunnels and shady roads. These may be changed for different terrains but generally are two 32 Ah 12 V batteries weighing 20 kg.

The car without batteries weighs 60 kg, with driver and batteries the running weight is around 140 kg.

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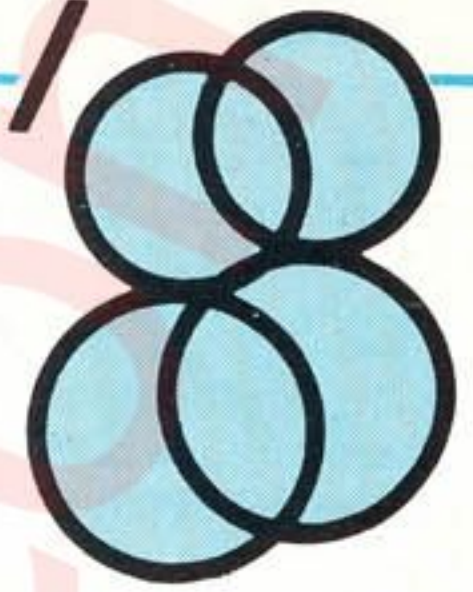
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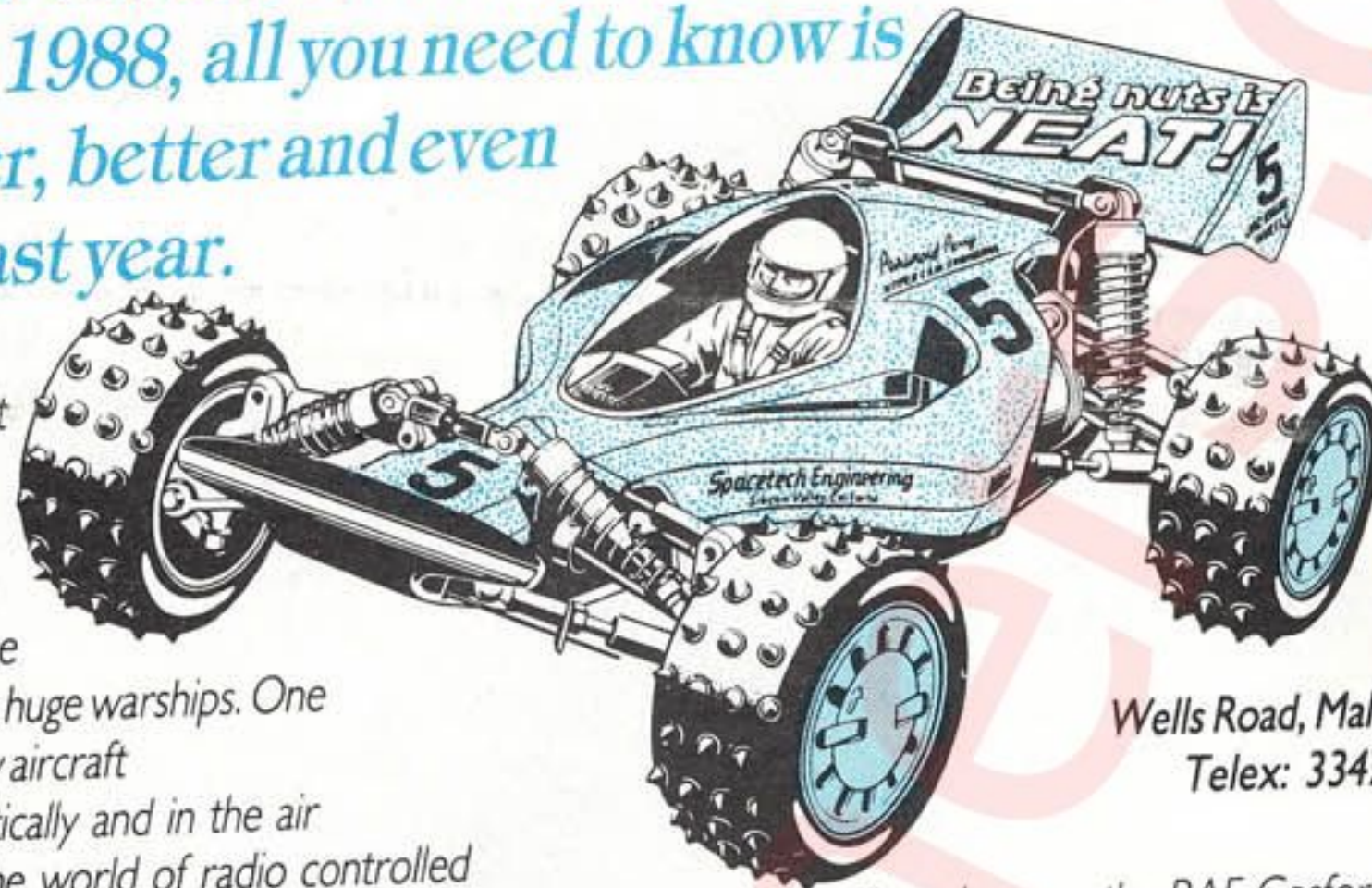
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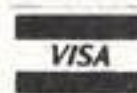
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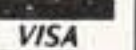
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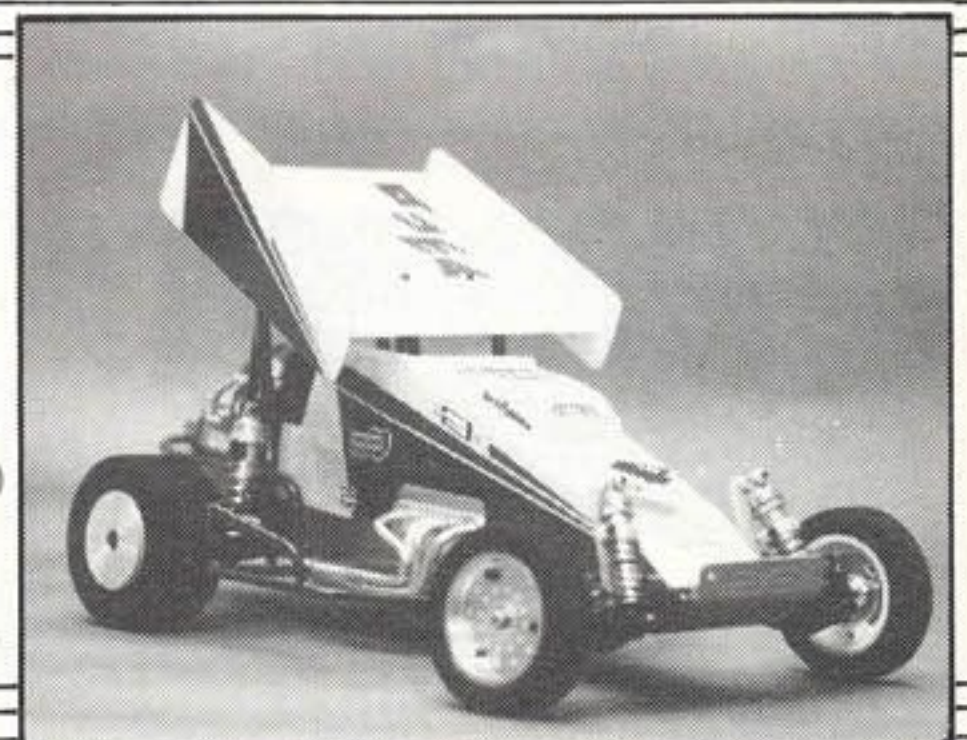
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# RALLY CROSS

by Paul Leach

Round Two of the 1988 Championship took us to the east of England and the Ipswich circuit. This was to be a different venue from last year, so no-one knew just what to expect, but we needn't be worried. On arrival the track was even better than last year, comprising of a basically flat grass racing surface with a good mixture of both fast and slow corners, but no particularly long straights. Some of the track markers looked rather sturdy and were to prove to be the downfall of quite a few cars during the day. The organisers had not sent out any maps of where the new circuit was and a few drivers arrived late due to going to the old venue.

A total of 48 drivers attended the meeting, this was a little disappointing after such a good entry at the first round of the Championship, those drivers who didn't make the trip missed out on an excellent meeting.

As practice began, the track showed up as being very wet and slippery and was in fact to stay damp in some places right through the day. There was not a lot new at this meeting other than a couple more drivers with the new Kyosho Burns, which is starting to prove quite popular, mainly due to its ease of maintenance and reliability. Some of the PB drivers were trying a new Nova Rossi Gold Top engine which had been specially developed by Nova Rossi for the PBX13. It is said to be the most pow-

erful rallycross engine thus far, power it certainly has, but most of the people trying the engine had trouble with it not shutting down and decided to stick with their more tried and tested units except your scribe and Robin Ellis, who used it for the actual racing. Even during practice it became obvious that we were going to see some fast, furious racing.

Practice ceased at 10.00 am and after the usual drivers briefing the heats got underway at about 10.15 am. The qualifying was proving to be very competitive, the top times being separated by mere seconds. At the end of the first round of heats a new name topped the list, that of Justin Mackey who had driven a splendid heat and underlined his recent turn of speed with a score of 16 laps. Also on 16 laps and only 0.8 of a second behind was Alan Harman, winner of the meeting at Slough and James Weedon, on form as ever. Other drivers producing good first round scores were Ralph Allum and Tommy Chung, who is this season showing to be consistently quick. David Hull, who after missing the latter part of last season, is now rapidly coming to grips with his new PBX13. Just outside the top ten were Roger Giles, Adrian Fulcher and David Chung, all showing good form.

At the end of the second round of qualifying heats the top three positions remained the same, no-one bettering their

times, but coming up into fourth place was Richard Stitson moving into the 16 lap scores. Also now moving into the top ten was Tony Miller with his new Kyosho and yours truly recovering after a poor first run. The pace in qualifying was such that drivers of the calibre of John Chamberlain, Mick Harney and David Allison were just outside the top ten at this point.

Round Three brought about a change in the fight for FTD with your scribe putting in a clean trouble free run which resulted in being 6 seconds faster than Justin's time. Everyone else stayed in the same order, moving down 1 place except John Chamberlain and Michael Allison who improved with John moving into the top ten. Unlucky in this round was Stuart Wilcox, who after some good driving, was pushed out just outside top ten. However both David and Paul Hill improved to secure their places in the B final. They were joined by Mike Brinkworth who, with a steady run improved his position 7 places. Mark Stitson now got in a reasonable run after being dogged with problems. R. Pull and young Tommy Griffiths put in better times to take them into the 'C' final. Going into the last round, the track was holding up well, as was the glorious weather, what was therefore peculiar was that the top 12 drivers remained in exactly the same places with no-one improving their times, so we had to look lower to find the position battles. Roger Giles again improved to move up 4 places to 14th, Ken Ledger had obviously come to grips with the track and improved 18 places to gain his place in the 'B' final, nice to see him regaining the driving we saw at Bicester last season.

## 'D' Final

James Dyson led nearly all the way through with a good steady run showing good driving manners, a good example for any driver coming from one of our youngest competitors. He was followed by George Hanson, always a cheerful competitor on and off track. Paul Winter came third after a slight detour off the track slightly rearranging the leg on Richard Stitson's bench and caused Richards' box and contents to be spread out slightly, much to the surprise of JC who was sat behind the bench quietly tweeking his car. Dennis Stewart was 4th in the 30 lappers. Unfortunately 4 drivers had to drop out within 5 laps.

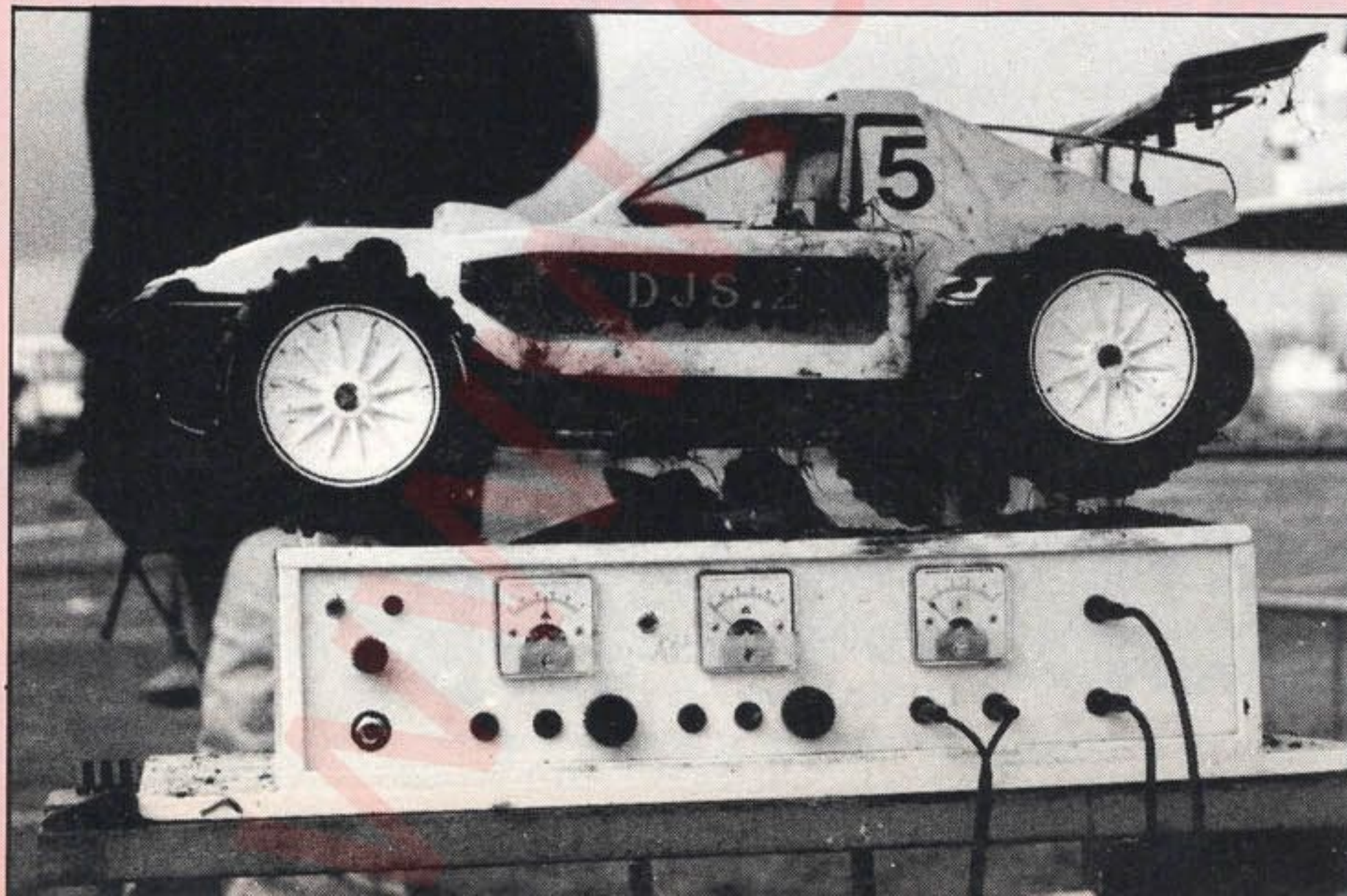
## 'C' Final

At the start, Robin Ellis got away well then Mark Stitson took the lead from him. By a third of the way through, Mark was on 22 laps, followed by George Weston with 20 laps, then J. Green and Steve Taylor. Ian Piggott was back on the track after a stall at 7 minutes showing promise with his new Kyosho Burns. At 10 minutes, Mark was still in the lead and was to hold this to the finish. G. Weston was still second, J. Green was just in front of David Chung, although David was to take third place at the finish. Ian Piggott and Steve Taylor were to finish 5th and 6th. The other four had dropped out earlier.

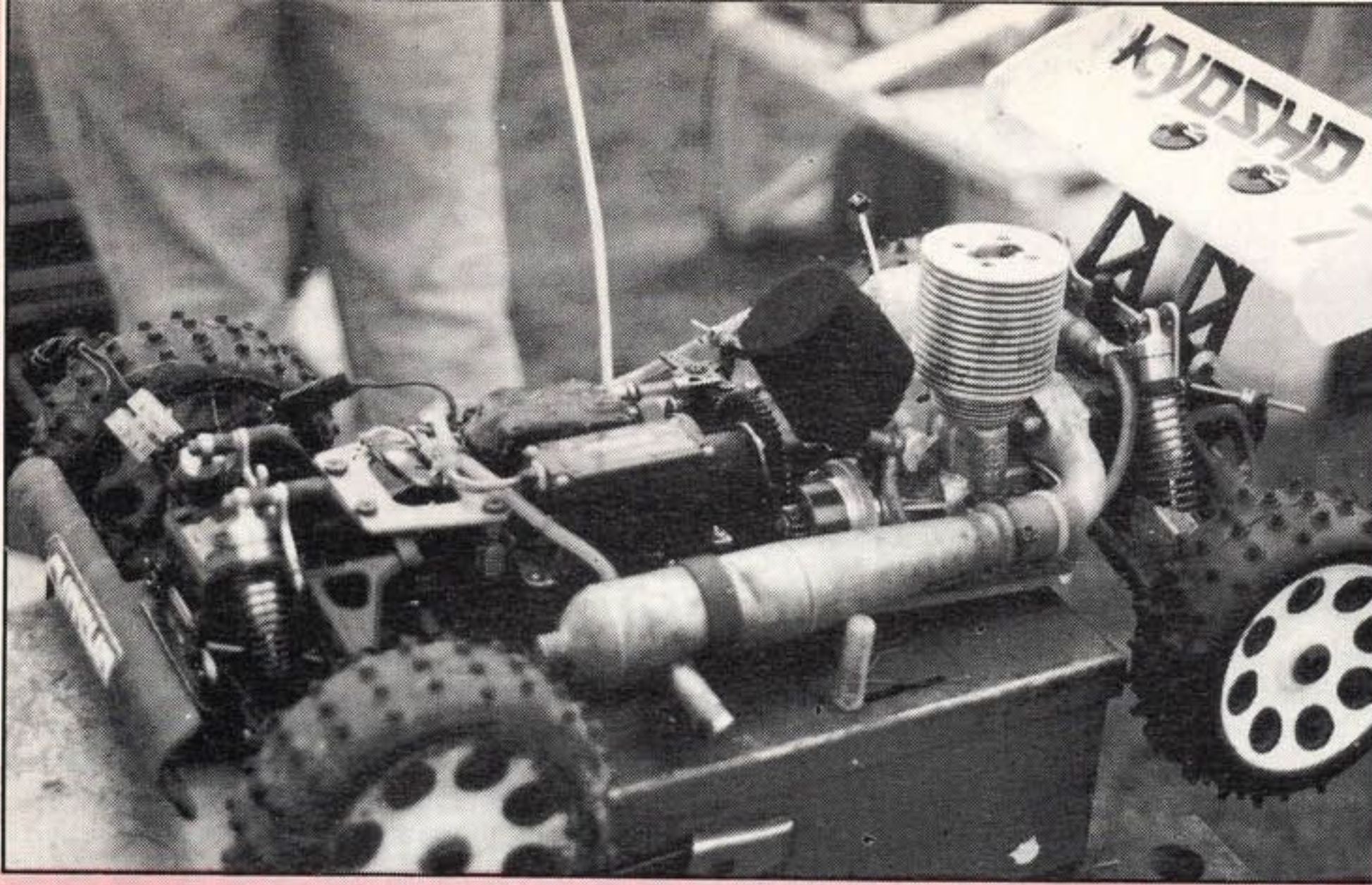
## 'B' Final

After 5 minutes Roger Giles dropped out after his carburettor disintegrated. Stuart Wilcox was in the lead after a good start. Mike Brinkworth was having a good run about 1/2 lap behind him. On the same lap

Another type of starter box made by Dennis Stewart, all mod cons even a throttle blip knob.







Stuart Wilcox's new Kyosho Burns.

was Mick Harney and following these on 14 laps Keith Ledger, David Hill and David Allison. With half the final gone, Stuart was still in the lead by one lap from the Two M's, Mike and Mick. Fourth was Ken Ledger on 26 laps followed by Adrian Fulcher, David Hill and Darren Wharburton. The top three remained in the same positions at 15 minutes, still very close together. Then after a gap of 6 laps was Ken Ledger with David Hill pulling away a lap on Darren Wharburton. At 20 minutes, the positions were exactly the same with Stuart winning from Mike Brinkworth by a lap after Mike had an excellent, steady run although he admitted "I could have gone faster". A lap behind him was Mick Harney now doing well with his "Burns". Fourth was taken by Ken Ledger, again showing the form we saw last year, the three D's came next David, Darren and David. Eighth after a good run and showing that even a PBX12 is still competitive was Adrian Fulcher.

**'A' Final**

As they lined up for the 'A' Final, the order was 1. Paul Leach, 2. Justin Mackey, 3. Alan Harman, 4. James Weedon, 5. Richard Stitson, 6. Ralph Allum, 7. Tony Miller, 8. John Chamberlain, 9. Tommy Chung, 10. Michael Allison.

After 5 minutes, your scribe was on 15 laps with Justin Jackey, Alan Harman,

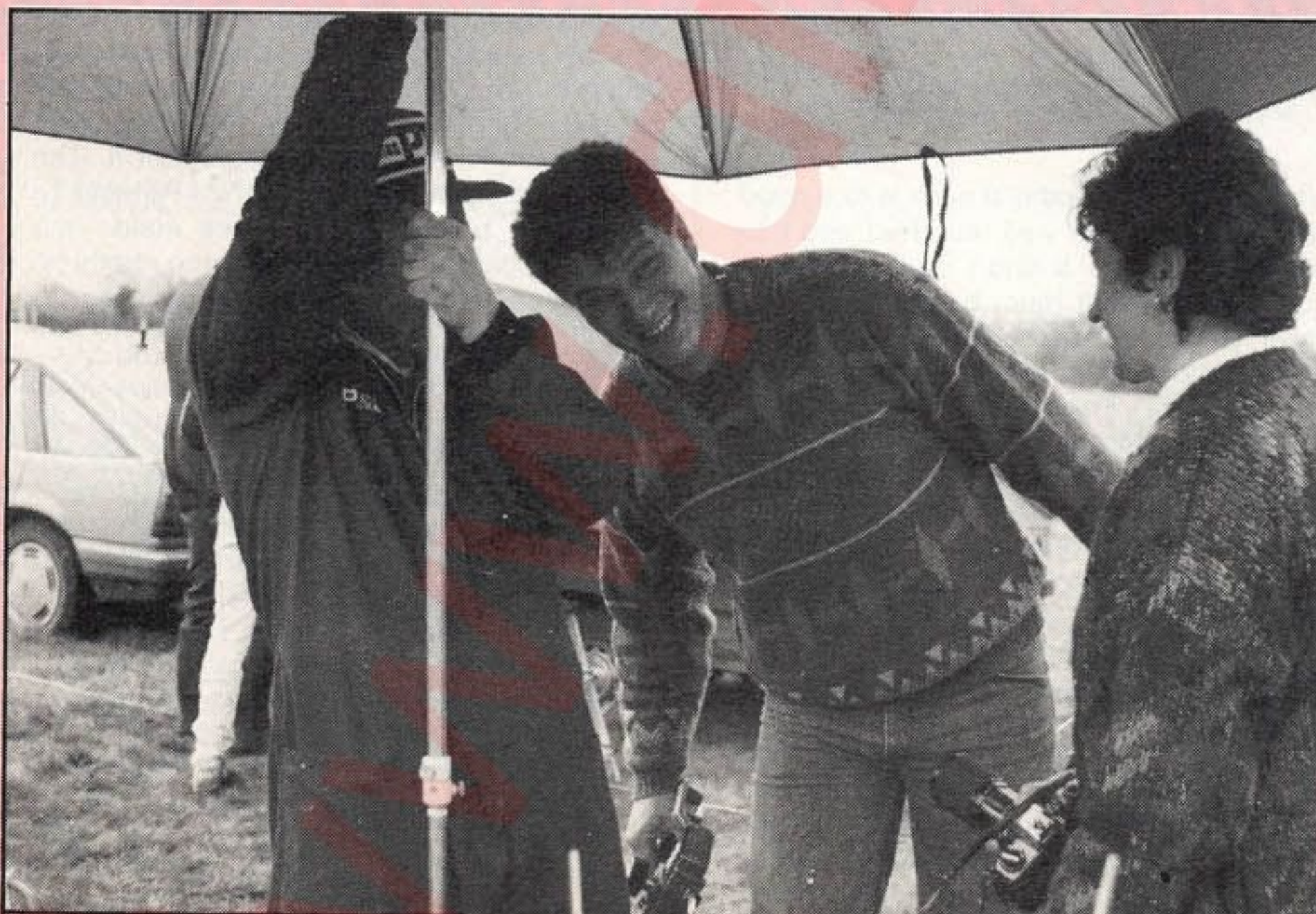
Richard Stitson, Ralph Allum, J.C. So running was very close and very fast with everyone driving on the limits. Two laps behind was Tommy Chung, showing great form, on the same lap was Michael Allison. At 6 minutes yours truly fuelled and JC took the lead with James Weedon close on his heels, then at 7½ minutes they fuelled and let your scribe back in the lead, until the next fuel stop. After this the experimen-

tal carbon-fibre discs on the brakes of your scribe deteriorated and this made the car difficult to drive, so JC got back the lead and led with a good consistant run to the finish. At 10 minutes Justin was still holding third place from Alan Harman. Ralph Allum and Michael Allison were one lap behind and Richard Stitson and James Weedon, after a touch of bad luck with a stall, were following closely. At 15 minutes John Chamberlain had pulled out a lap and by now it was obviously due to shorter fuel stops and difficulty of handling, your scribe would have to settle for a position. Only 2 laps off the pace was Justin, Alan Harman and James Weedon on 44 laps. James was driving brilliantly and pulling back the places by now. These were being closely followed by Ralph and Richard on 43 laps. Tommy Chung had fit problems and retired as had Michael Allison, the Allison's had been dogged with problems all day, so were unable to show their usual form. By 25 minutes James Weedon was just a lap off J.C. with your scribe on the same lap. Things were still close with Alan Harman and Justin Mackey just one lap off these and Richard close behind. T. Miller had been forced to drop out by now. One Minute later yours truly had a suspension breakage and had to struggle round with

The Stotfold Camp obviously enjoying themselves.



Who can give us a funny caption for this photo? Mr. & Mrs. Allison and Shaun Armstrong.



one wheel on a 45° angle and this meant dropping to 7th position which showed how close the running was. So after a well driven race J.C. came out the winner, although he was almost caught by James Weedon only 5 seconds behind, after what must have been the drive of his life on 90 laps. Two laps behind with a good tidy run was Justin Mackey who likes these fast tracks. Alan Harman came 4th "Burning" up the track! Then on 86 laps came Ralph Allum, Richard Stitson and your scribe, 8th Tony Miller, 9th Michael Allison, 10th Tommy Chung.

**Results**

F.T.D.	Paul Leach	Car	Engine
1st	John Chamberlain	Siccom Force	OPS
2nd	James Weedon	PBX13	Nova Rossi Gold
3rd	Justin Mackey	PBX13	OPS
4th	Alan Harman	Kyosho Burns	OPS
5th	Ralph Allum	Siccom Force	Rossi
6th	Richard Stitson	Siccom Force	OPS Pro
7th	Paul Leach	PBX13	Nova Rossi Gold
8th	Tony Miller	Kyosho Burns	OPS
9th	Michael Allison	PBX13	Nova Rossi Gold
10th	Tommy Chung	PBX13	OPS

Many thanks go to the lads at Ipswich for a thoroughly enjoyable day's racing and a well organised meeting.



# PRECIOUS JOULES

Ian Stewart describes the why's and wherefores of cell care and matching.



## 'NICK-AD' MEETS THE CELL DOCTOR

"What's these Killer Jewels everyone's on about?" he asked, "Do you mean KiloJoules by any chance?" I replied, "Yeh, that's them, where can I get some?"

Good question eh...? What are these KiloJoules? Well, unless you have bought a set of Matched Nicads supplied with their own graph quoting the KiloJoules content of that pack, or had a set of your own Nicads Matched or Mapped, you may not have come across them before.

The Kjoule reading of a Nicad pack is a guide to the amount of useable energy stored within that pack, but that doesn't simply mean that the more Kjoules in a given pack the better, unfortunately it goes a little bit deeper than that.

To help explain I will start with the technical description:- A Joule is a measurement of energy, ie. 1 Joule is the amount of energy required to produce 1 Watt for 1 second and 1 KiloJoule or Kjoule, is 1000 Joules... enough energy to produce 1000 Watts for 1 second or 1 Watt for 1000 seconds and in that little statement lies the catch to the whole thing.

So how do we interpret our Kjoule reading into something more meaningful? Well from the above description, you will see that it's all tied up with time. It's all well and good stating that your Nicad Pack has got X number of Kjoules, but on the face of it, that statement means absolutely nothing. What we need is something else to guide us in the interpretation of that figure, which in most cases is the Graph or Map of the discharge curves of that Nicad Pack.

Let me explain using a different method:- If you had a barrel (Nicad Pack) with 35 Gallons of water in it (35 KJoules), the rate at which you can use water (energy) depends on the size of the hole in it (voltage). For instance a small hole (low voltage) means the water (energy) can only be used slowly, but with a large hole (high voltage) it can be used quickly. The amount of water (energy) is still the same but the rate at which it is

used is totally different. Does that make sense or have I made it even worse? If it still isn't clear, read that bit again and if you are still with me, read on!

With that bit under our belts, we can now look at our Kjoule figure together with our graph's and have some idea what we are looking for.

Unfortunately, there are no hard and fast rules to say what is and what isn't a good pack of cells. If a pack of cells meets your particular requirements then they are good enough for you, but when racing with modified motors, with the constant search for more power, speed and duration then your Nicads play a very big part indeed. The need may arise to know which is your best pack of Nicads, so they can be kept for use in the finals. In some cases this may be perfectly obvious, but in others there may be little difference between your packs, but that difference may be all that's needed for that extra bit of speed and/or acceleration and that in turn can mean winning or coming second.



## Well Matched?

What we ideally need is a pack with a good Kjoule figure, that is well matched and can use that energy in a short space of time, which means that it must have a good voltage (if you're not sure what is meant by "Well Matched Pack" see the April Edition of Radio Race Car). For example if we compare a perfectly matched pack with 38 Kjoules that dumped at 11 minutes, with another 'perfectly' matched pack with the same energy figure that dumped at 10 minutes, then the second pack would be the better one (remember the earlier example about the size of the hole in the barrel?).

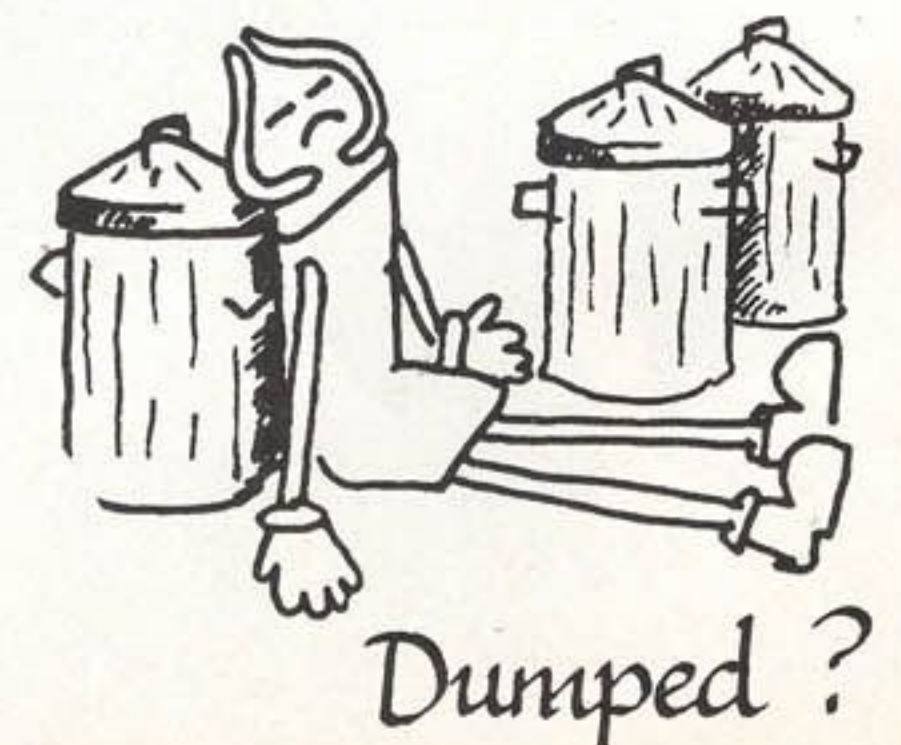
Now given that as an example, you can see that it is not so easy to say which is the better of two packs when they have different energy figures, different times and different degrees of Matching. In a large percentage of cases, it will be perfectly obvious from the Nicad Maps, which are the better packs,

whereas on the track it is very difficult to drive two, five minute races under exactly the same conditions to produce definite results as to which pack is better. In fact 99% of us mortals would find it hard to notice 2 or 3 Kjoules difference between packs when racing with them.



The energy content of a pack cannot be improved without changing some of the individual cells with that pack, but the pack can be either maintained at its best or returned to tip top condition, provided that no permanent damage has been done to it.

The energy value of a Nicad pack can vary by one or two Kjoules, depending on temperature or variations in charging methods, but any downward trend in the energy value will probably be due to a loss of electrolyte from within the cell. This loss may be due to high temperatures occurring during charge or discharge and causing the pressure relief valve to open, allowing the electrolyte past the cell seals. This seepage can also be accelerated by higher temperatures. Any loss of electrolyte is irreversible and only good care of the Nicads will help prevent it. The electrolyte is usually a solution of Potassium Hydroxide between the plates inside the cell, this solution is essential to the chemical processes in the cell that enable it to do its job efficiently. Any loss of electrolyte will cause a loss of capacity.







### Leaky Electrolyte?

Much has been written about the Do's and Don'ts of looking after your Nicads and how to get the best out of them and I don't intend to repeat them all here, but probably the most important one is to always fully discharge your Nicads before you recharge them. The fact that they may have dumped at the end of your heat does not mean that you can put them straight back on the charger. The majority of us do not have enough good packs to be able to have one for each heat, so fully discharge them by connecting a car headlamp bulb across them or whatever else you may use and wait until you are sure they are completely flat, then let them cool down until they are comfortable to hold in your hand, about 25°, then they are ready to be recharged. The actual process of charging them will help to cool them down until they are approaching full charge, but don't expect them to cool by more than a few degrees.



### Knocked about?

Another potential threat to your Nicads health is physical abuse. How many times have you seen drivers just chuck their packs into the bottom of the pit box at the end of the day and then throw the whole thing into the boot of the car. The cells may look and feel tough but they can easily be damaged by even the slightest knock or dent, causing internal shorting and/or allowing the seal to leak, the damage may not be immediately obvious but it all serves to shorten the useful life of your precious batteries. Keep the heatshrink in good condition, that will help to keep them clean and most importantly, dry. Water and Nicads don't mix, so if they do get wet when racing, dry them thoroughly after every heat or the dreaded rust will take its toll.



### Wet?

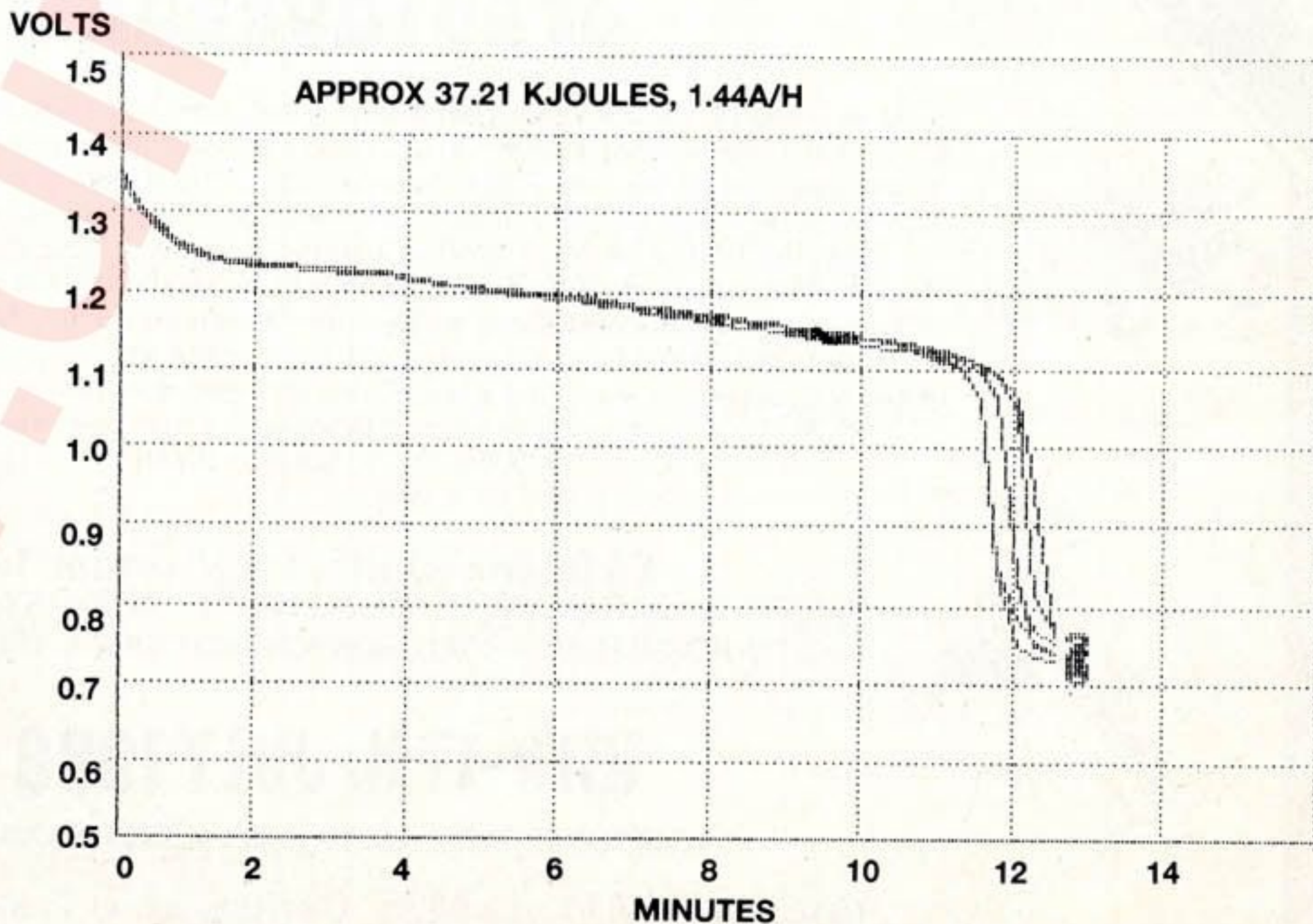
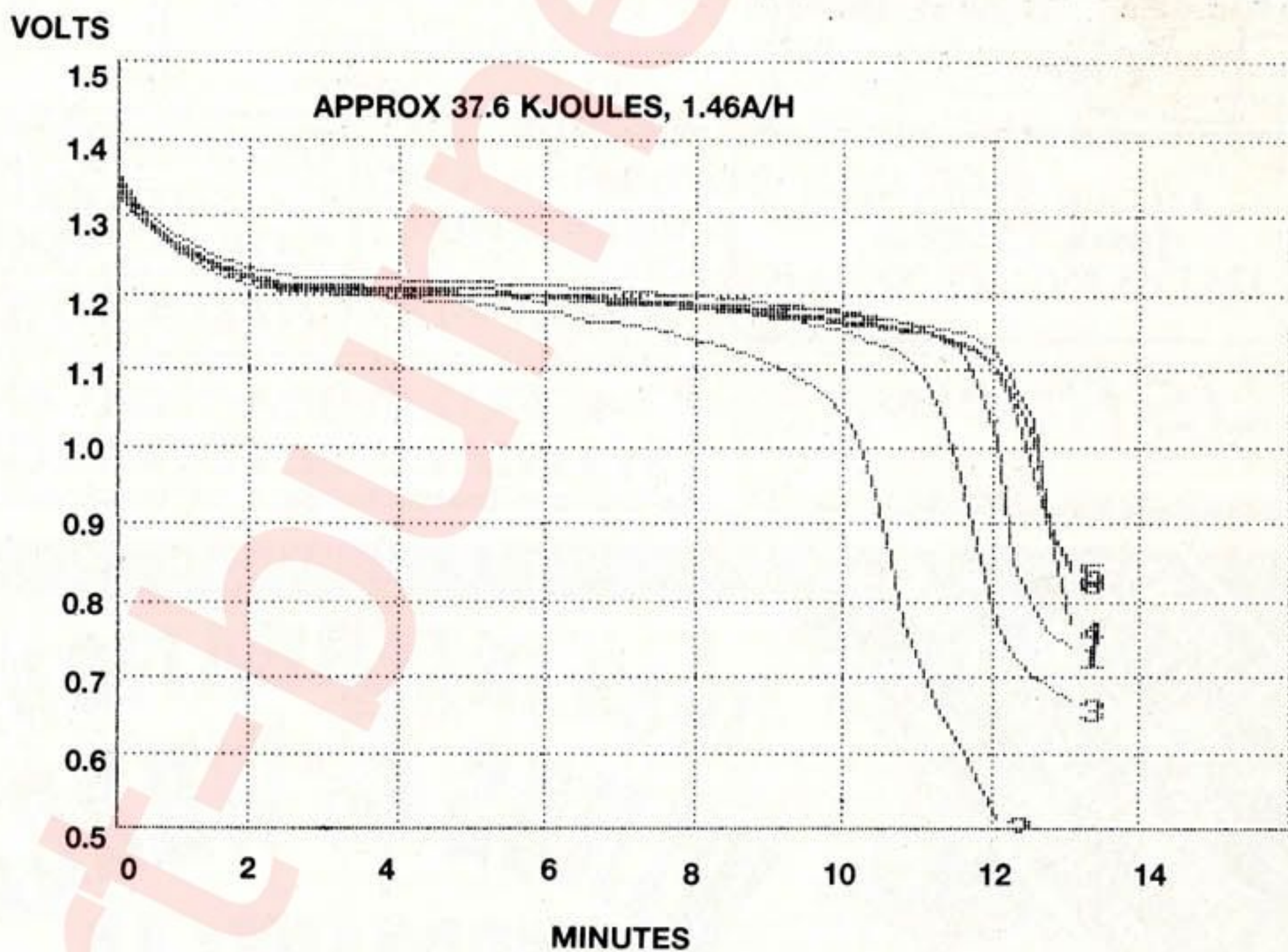
So look after them and they will in-turn repay you with long and reliable service and that will pay dividends in your racing.

The next time someone talks to you about "Killer Jewels" I hope you will have a better idea of what they mean and how they can be interpreted, but remember that the Kjoule figure by itself does not mean a lot, you still need to know more about the discharge characteristics before their meaning can be fully understood.

Good racing!

*Below, a faulty pack showing 37.6 Kjoules. Note how cell 2 starts dumping well before the others, yet still has a higher Kjoule figure than the well matched pack.*

*Bottom, a well matched pack of nicads showing a figure of 37.2 Kjoules which is lower than the other two packs shown here, but would out-perform both of them.*






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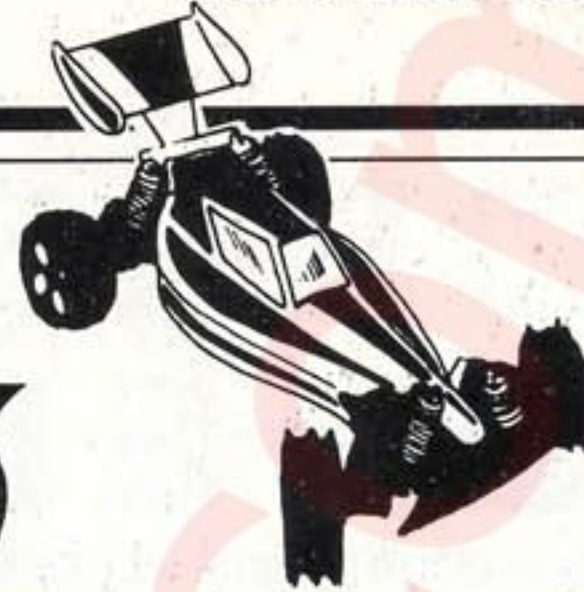








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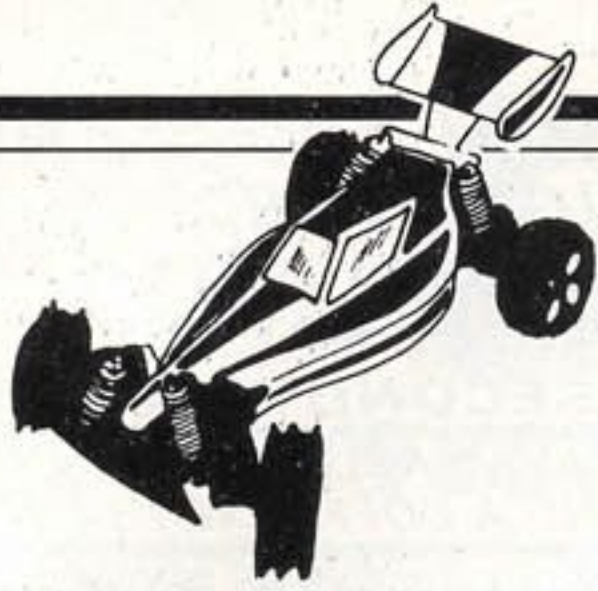
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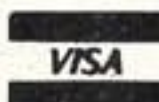
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**YOKOMO'S ALL NEW 4WD DOGFIGHTER**

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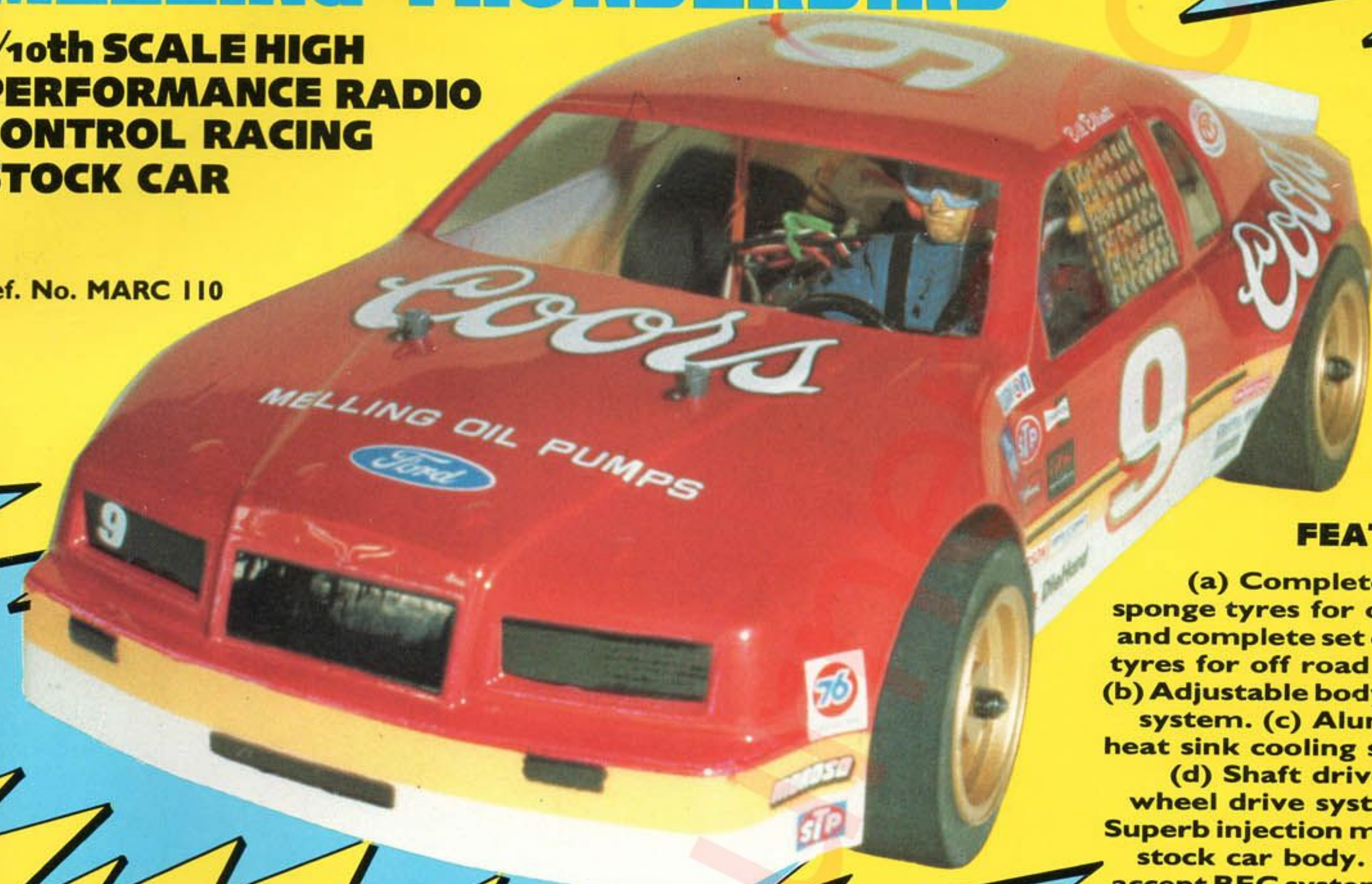


# Coors

## MELLING THUNDERBIRD

**1/10th SCALE HIGH PERFORMANCE RADIO CONTROL RACING STOCK CAR**

Ref. No. MARC 110



### FEATURES

- (a) Complete set of sponge tyres for on road and complete set of spike tyres for off road racing.
- (b) Adjustable bodyheight system.
- (c) Aluminium heat sink cooling system.
- (d) Shaft driven four wheel drive system.
- (e) Superb injection moulded stock car body.
- (f) Will accept BEC systems, uses 7.2 or 8.4 volt battery.



## SHOGUN

**1/10th SCALE HIGH PERFORMANCE RC OFF ROAD RACER**

Ref. No. MARC 120



### FEATURES

- (a) Rear Anti Roll Bars.
- (b) High traction desert master tyres with sporty RS Wheel hubs.
- (c) Ultra light total body weight 3lbs 50zs to give extra speed and acceleration.
- (e) Shaft driven four wheel drive system.
- (f) Will accept BEC systems, uses 7.2 or 8.4 volt battery.

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# THUNDER DRAGON

## 1/10th SCALE R/C HIGH PERFORMANCE 4WD OFF ROAD RACER

- READY TO ASSEMBLE R/C MODEL KIT • SHAFT DRIVEN 4WD
- ADJUSTABLE OIL DAMPERS FRONT AND REAR
- RUBBER LIKE SEMI-PNEUMATIC TYRES
- POWERFUL ELECTRIC MOTOR
- POLYCARBONATE BODY • STURDY BATHTUB TYPE FRAME
- REQUIRES: TAMIYA R/C RADIO SYSTEM; BEC RADIO; OR STANDARD 2CH. R/C EQUIPMENT WITH TAMIYA BATTERY ELIMINATOR AND 7.2V NiCd RACING PACK (AVAILABLE SEPARATELY)

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