

# KIT REVIEW

By the Editor and Mike Haswell

This review of Hyperdrive's H10RS Oval car came about purely by chance as a result of a conversation with Alan Lunn, a British ex-pat now living in Washington. Alan and some of his friends run a club aimed primarily at giving young kids, who otherwise wouldn't have the opportunity to race model cars, the chance to have some fun. When I mentioned to Alan that RRC was to have a three round Oval Series at the TEMAC oval at Basildon, he suggested that we reviewed the car you see here in the two versions available, the H10RS narrow Super Speedway and the H10RSQC (the QC stands for quick change). In America they have Enduro races over 200 laps or more, so these call for lightning fast battery changing in a second or so!



## Enough of the background, lets see what the Hyperdrive cars are all about!

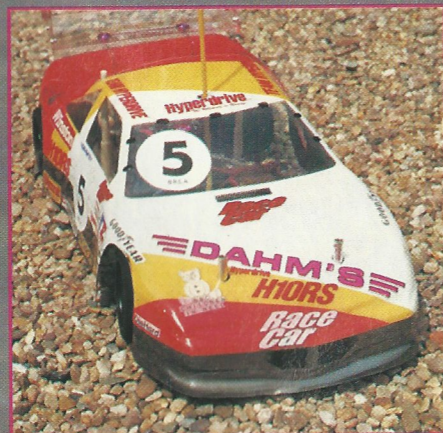
The idea behind a narrow tracked car is that a slim bodyshell presents a smaller area to the air as it blasts around the track, therefore offering less wind resistance or drag, plus on the American high banked ovals the cars tend to push themselves onto the track through the sheer G force exerted on the car when cornering at over 50mph on the banking. A comparison can be drawn with a Fairground 'Wall of Death'. When the drum rotates fast enough, everybody is pinned to the wall by the centrifugal force, and the same principle applies to a narrow track oval racer. These cars aren't designed for normal road course (circuit) racing with tight bends and sharp acceleration and braking, but for a gradual build up of speed and hence the centrifugal force.

The kits provided for review were both very complete, with everything needed to build a rolling chassis supplied, only the usual radio gear, speed controller, batteries, motor and pinion and Nascar bodyshell required to get the cars on the track. The instruction booklet is well illustrated, but some points do become a little confusing because the booklet deals with the construction of no less than five cars, from the H10SC circuit car, through the two oval cars, the H10RS and the H10RSQC, to the top line circuit car (as driven by Ralph Burch at the '92 World Championships and also soon to be reviewed in RRC) the H10LX. One thing I liked about the instructions is that they do give some hints on how to set the car up, with various remedies recommended if the handling characteristics need to be changed.

### The Chassis

The chassis plate and its associated bracing bars are very nicely routed from 2mm thick carbon fibre (graphite). The chassis plate itself is quite flexible until the braces are added during the construction, at which point the complete assembly becomes very rigid indeed. The carbon braces mount upon nylon spacer blocks as seen in the photos, with the rear pod's rocking Tee bar mounted from the braces that cross the chassis at 90° above the Tee bar's cut out. The cells are mounted along the left side of

the chassis in true oval car fashion, and little needs to be done to the chassis plate to make it ready for the build up, apart from the usual chamfering of the cell slots, and radiusing the narrow slots from where the fibreglass battery tape is strapped down across the cells to keep them in place, the removal of the sharp corners helping the tape's life expectancy during a crash at over 40mph!



### The Rear Pod

The motor pod follows the normal design of carbon top and bottom plates, with alloy uprights that allow the motor to be mounted on either side, both Mike Haswell and myself opting to mount the motor on the left side. The common method of ride height adjustment is used, three nylon mouldings providing five different heights dependent upon which way round they are inserted.

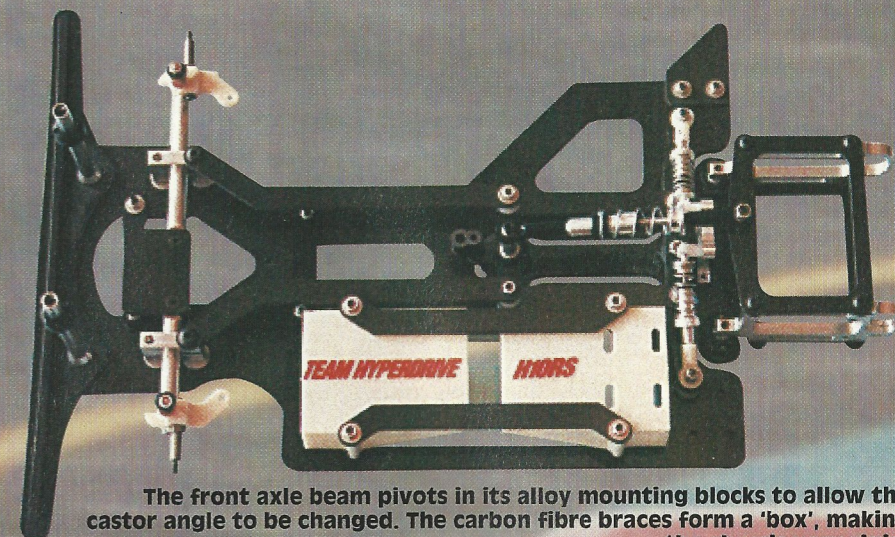
The carbon axle is nicely produced, with the

complete drive end made from alloy, which tends to give a longer life to the axle thanks to the diff bearings running on the alloy rather than carbon. The wheel hubs are made from Delrin, which appears to be a composite material. These are very light indeed, and are available in both narrow and wide track versions. The kit features a StarForce 120 tooth 64dp spur gear and some very high quality bearings, so the differential action once built was very smooth and free indeed (it still is, and that's after having run the car quite a few times now).

The rear pod's suspension is provided by ball and socket joints mounted to the lugs that project forward from the alloy uprights. These then mount to the rear of the rocking Tee bar. This is a departure from depending on the Tee bar flexing to provide the suspension, so the large volume longitudinal 'coil over oil' shock absorber provides both the springing and damping medium.

The side shocks are of the smaller 'Delta' type, and are supplied with a choice of two springs, as is the top shock, to allow the driver to set his car up for different tracks and conditions.

The H10RS was initially set up with the softer

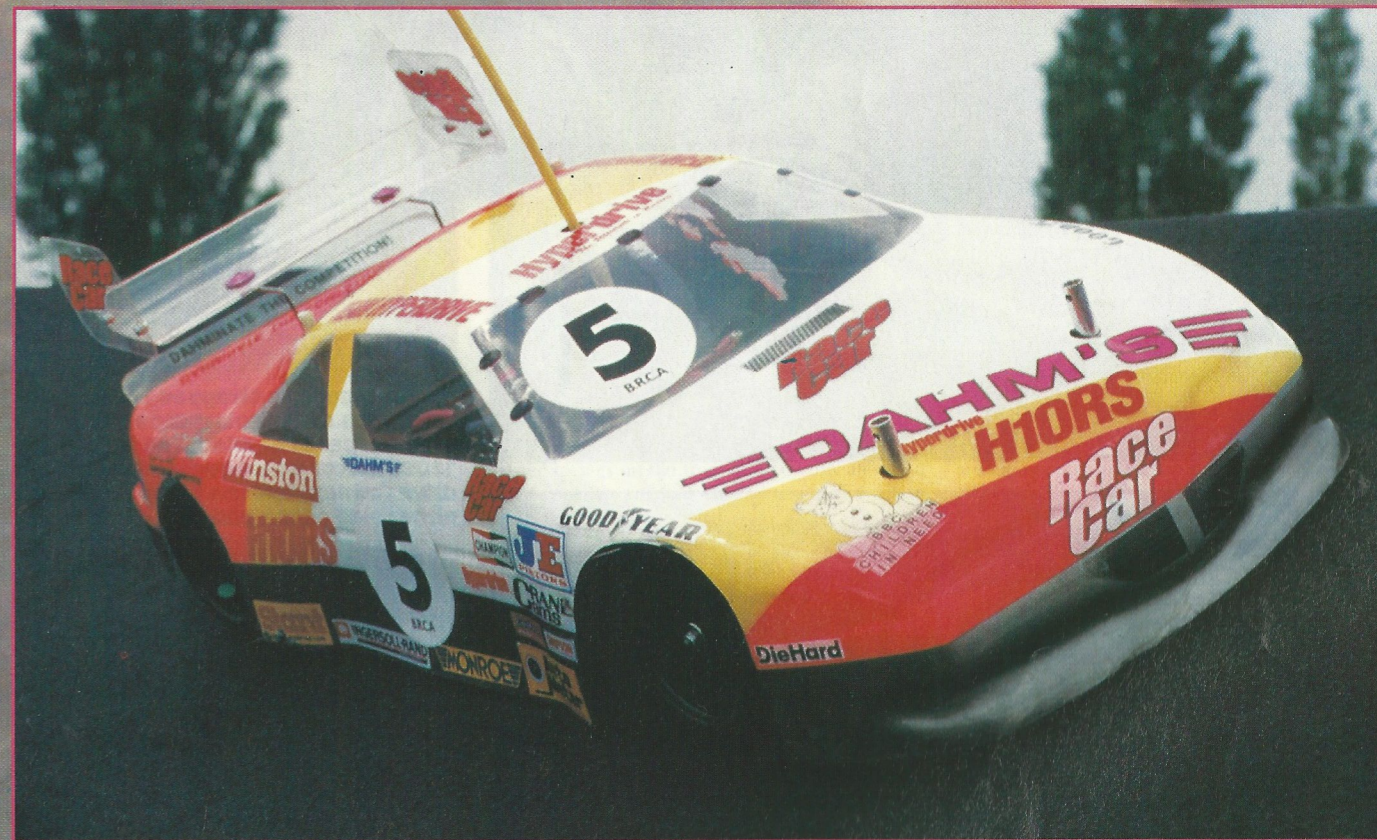


The front axle beam pivots in its alloy mounting blocks to allow the castor angle to be changed. The carbon fibre braces form a 'box', making the chassis very rigid.

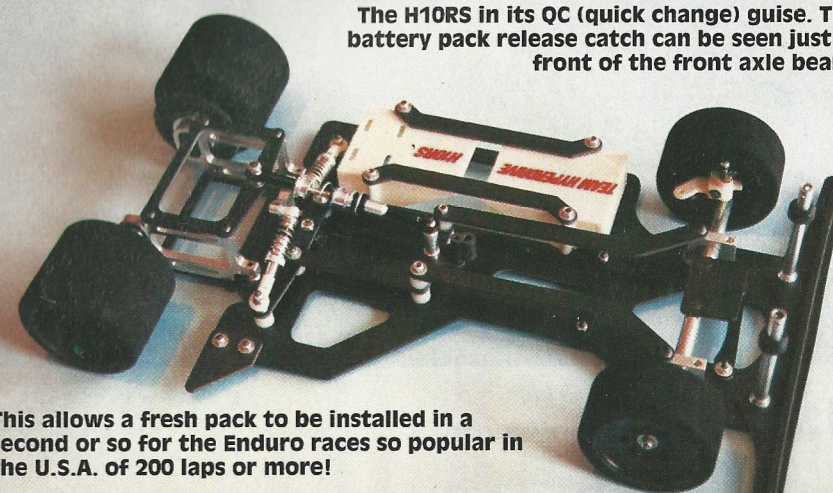
of the top and side shock springs, with 40 wt oil in the large shock and 20 wt in the smaller side ones. The spring collars were wound up to give plenty of preload, with the 'tweak' basically neutral to give equal weight on both back tyres with the chassis fully loaded.

### The Front End

The front suspension is provided by sprung kingpins, the offside (right) kingpin having a camber angle of -2°, with the inside (left) angle being +1.5. This sounds peculiar, but due to the

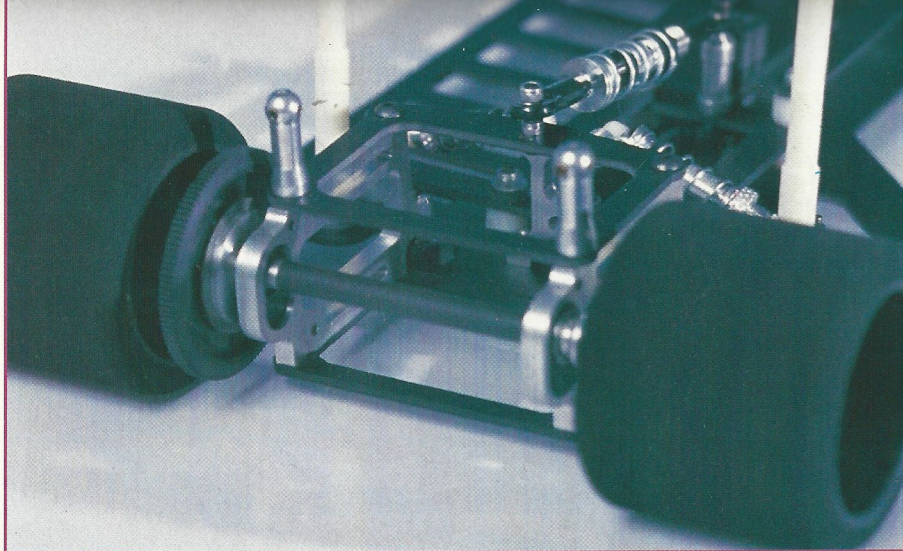


The H10RS in its QC (quick change) guise. The battery pack release catch can be seen just in front of the front axle beam.



This allows a fresh pack to be installed in a second or so for the Enduro races so popular in the U.S.A. of 200 laps or more!

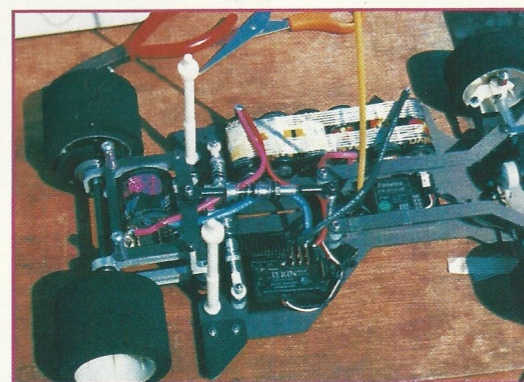
# Hyperdrive's H10RS Oval Racer



The rigid rear pod allows the motor to be mounted on either side to give different handling dependent upon track conditions, degree of banking and radius of corners etc. The design permits a large range of adjustment to be made in the motor's position, making it easy to arrive at the gear ratio desired. The neat alloy wing mounts are supplied in the kit, as is the StarForce 120 tooth 64 D.P. spur gear



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The H10RS about to undergo a bit of strength testing on the Basildon Oval! Despite this the car survived the day relatively unscathed, with just a little paint missing from the Dahm's Pontiac bodyshell!

### The Final Touches...

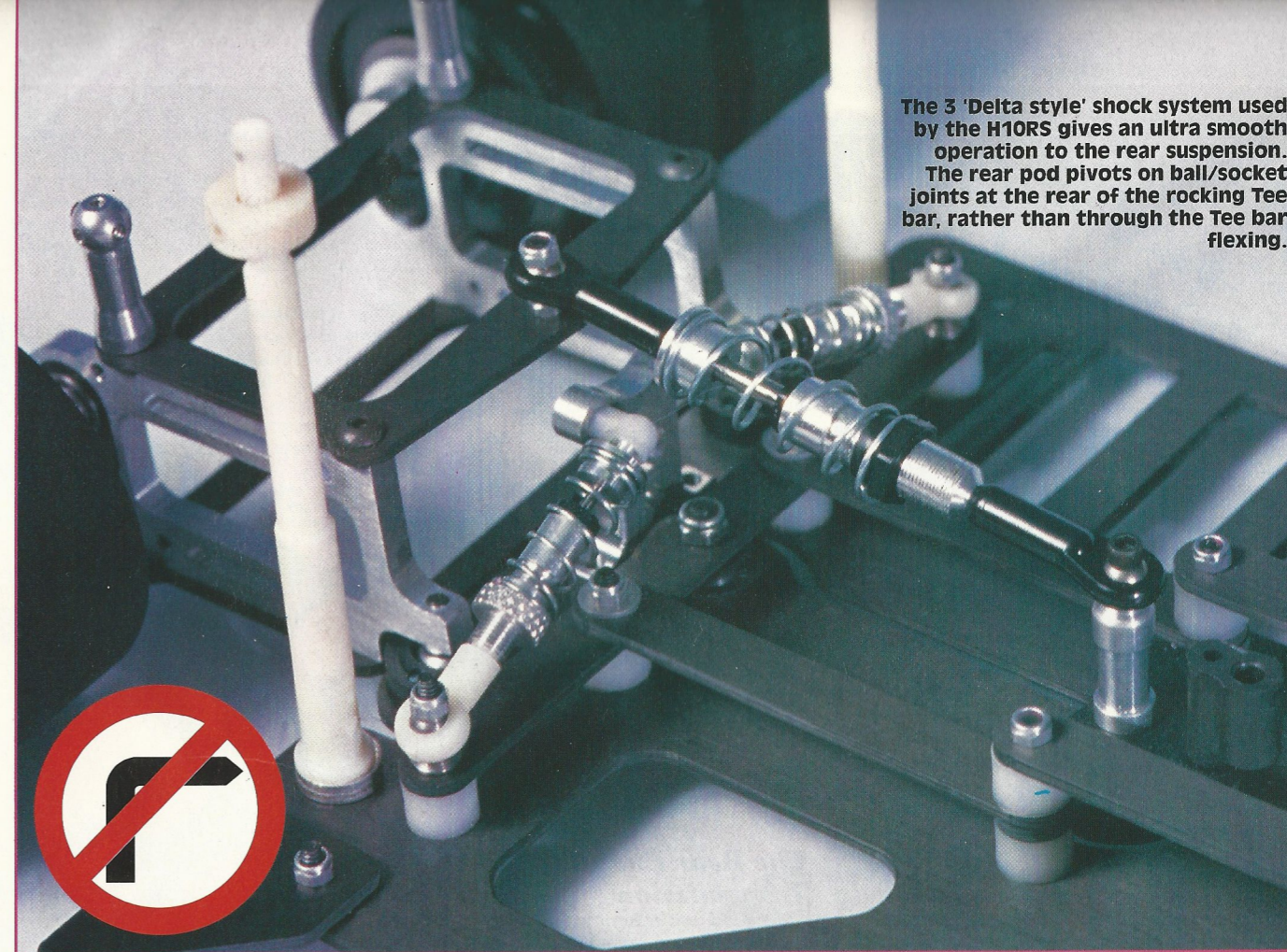
A Dahm's narrow Pontiac bodyshell fitted snugly around the car, fitted with the neat little spoiler that bolts to the rear of the shell. A RaceCraft Cavalier wing looked about the right

*Hyperdrive's*  
**H10RS Oval Racer**

car being designed for only going round left hand corners, these angles should result in the tyres wearing flat, as the geometry results in a tyre's contact patch being presented to the track correctly.

The alloy beam can be rotated in its alloy mounting blocks to adjust the castor angle, and to avoid the need for constant adjustments to the length of the track rods when making alterations to the castor angle, the servo mounts to a small plate screwed to the beam. I did have my doubts about the ability of the clamping screws to squeeze the alloy beam mounting blocks tightly enough to prevent a clip with the wall or another car rotating the beam just when it wasn't wanted (this unfortunately proved to be the case when the car was raced), but this was the method supplied so the car was built unmodified. A grub screw through the top of each alloy block to clamp the beam is the obvious remedy. It was interesting to see in the latest edition of America's R/C Car Action magazine that the very latest car from Hyperdrive uses the Associated Dynamic Strut front suspension, so I think that this set up will soon find its way onto the H10RS!

The car simply fell together, being just an easy assembly job. The interesting bit was soon to follow!



The 3 'Delta style' shock system used by the H10RS gives an ultra smooth operation to the rear suspension. The rear pod pivots on ball/socket joints at the rear of the rocking Tee bar, rather than through the Tee bar flexing.

size, so was trimmed up then fitted with some large side dams to hopefully increase the car's stability. After Paul Leach had sprayed the shell (thanks Paul), it was decorated in Nascar fashion with Parma decals.

The radio installation was a doddle, the Sanwa 141HS servo fitting nicely on its mounting plate using servo tape, assisted by some fibreglass battery tape, whilst the Futaba 40mhz receiver slotted in well under the front bracing bars on the chassis, out of harm's way. A Tekin 411G-11 speed controller and a new spec Corally 12 DBL geared on 42mm/rev (well, it was 4 minute racing!) provided the power chain.

### The Test...

RRC Oval Series Round 1 was the scene for the track test, and it soon became apparent that there is more to travelling at high speed around an oval than meets the eye, just as Joel said in his article last month!

Having missed practice (well it is a long way to Basildon, especially when I finished putting the radio in at 2.30am!), the first Heat was going to be interesting.

Running on home made capped tyres (using Tamiya caps) the car had plenty of grip, but tended to wander, which I put down to the steering linkage which was devoid of slop altogether. A slight wander to the right on the far straight saw the board on the outside given a good clip, the result being that the servo saver popped off the servo due to the screw coming out. A change to a Corally centre point steering linkage allowed the car to track straighter, but the fact the car was now faster brought to light the fact that the car was now tramping around the bends because I'd changed the tyres for largish diameter Jap mediums. The Hyperdrive's rear suspension was so good on the TEMAC oval that

the simple front suspension was having trouble balancing the car, and the softish front springs allowed the front of the car to bottom easily over the TEMAC bumps with the small diameter tyres I had available.

David Gale, the winner of the meeting and present lap record holder, drove the car after the meeting and was quite impressed with the way it put the power down coming off the bankings onto the straights. Dave also thought that it needed harder springs on the front and possibly all round to prevent it squirming due to the high traction the rear suspension generates, so I'm looking

forward to my next venture onto the oval armed with a selection of springs and shock oils, plus a body brace to prevent the shell blowing down at the front!

Mike Haswell was running the H10RSQC on TRC Gold compound radial tyres with a much greater ride height, tending to suggest that I was running the RS version too low. His much better result bears this out.

The Hyperdrive H10 Series of Oval racing cars are manufacturer in the U.S.A. by Hyperdrive, P.O.Box 950, Pilot Mountain, NC 27041. Tel (919) 368-1375. Fax (919) 368-1380.

## Over to Mike...

### Running the Hyperdrive H10RSQC Oval Car

First I must say that I didn't build the car exactly as suggested, because I turned the quick release cell boxes upside down to drop the cells in from the top, rather than inserting them from below the chassis. I think it might be a while yet before Enduro racing takes place in the UK!

Having not run on a banked Oval before, I decided to stick with the kit springs on the front along with some Corally dampening syrup on the kingpins, and the softer set of springs on the rear to cope with the bumps. For traction I'd decided to fit TRC Gold Radials, with a small amount of stagger (smaller diameter on the left) to help the car turn left better. Trinity's Nuclear Waste treatment for radial tyres is really good, and after the Concours judging I nearly needed a crowbar to prise the car off the track. The motor, a Trinity 12 double, was fitted to give left-side drive, and was initially geared on 26/120 (40.8 mpr) on SCRCs, but I went up to 27/120 (42.4mpr) later. I used a narrow Protoform Pontiac Grand Prix bodyshell in Michael Waltrip's Pennzoil livery, with a 5" wide Bolink wing.

After practice I raised the body slightly to stop it from catching the bumps and making the car nervous. The first qualifying round went well enough to see us lying third overall. A faulty servo saw a splat-attack into the boards in the second round, after which the handling became a bit odd and I brought it in. The problem was that the rear axle had split, soon fixed with superglue and tie-wraps though! In the third round the car felt as though it was bogging down until halfway through the race, which was probably due to re-treating the tyres and making them too sticky! The final round saw a spin onto the infield which meant the B Final for the first time out.

Overall the car performed very well, but given the nature of the TEMAC circuit, a normal width car would, I think, prove to be more suitable than a narrow car. That aside, I feel that with a change to stiffer springs and more ride-height on the front that the car would perform better. One minor criticism of the kit was that the countersinks for the screws at the front of the chassis weren't deep enough, which let the heads protrude below the chassis, but that was easily remedied. As for the meeting, everybody enjoyed their day's Oval racing, and I am looking forward to the next meeting when I can experiment a little more with the car's set-up.