Amps Rapier

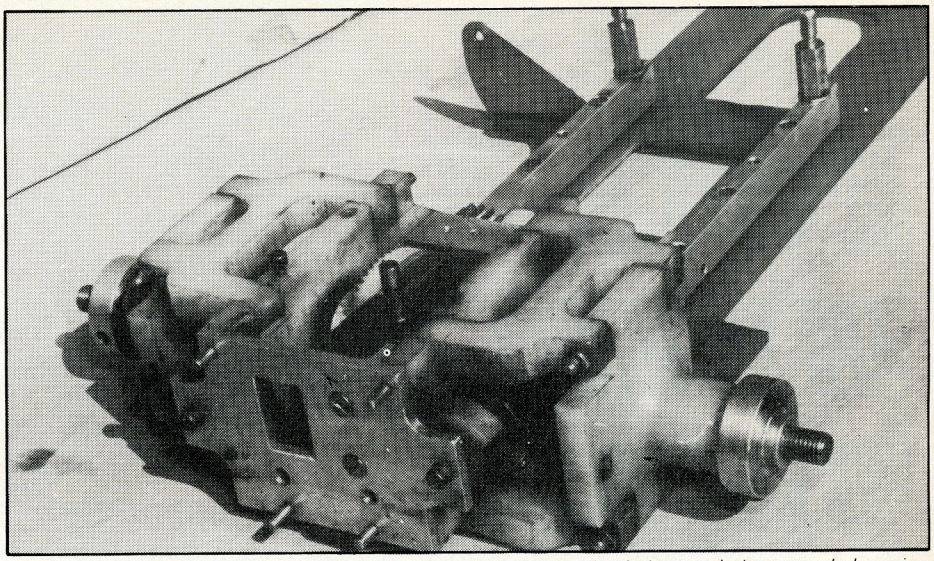
Dickie Laidlaw-Dickson interviews Ian Agnew

THERE'S ALWAYS SOMETHING new, and this season AMPS, who surprised the model car world with a highly effective differential two seasons ago, came up again with another novelty in the shape of a fully sprung car. This is a notion that was toyed with in the early days of r/c model cars (remember the Heathkit and PB's Racing Double?) but abandoned in favour of adding more simplicity. Well here it was again, developed from a notion of that inventive driver Ted Booker, and taken up by AMPS. The AMPS of Dave Martin and Gary Culver have been racing steadily through the season; with early successes and hopes at Bournemouth, FTD and tenth place for Gary at Monaco against the world's best, a double win at the first Aldershot Open for Dave Martin with Gary in close attendance, and a repeat first and second in the Sports/GT Final at the British Nats.

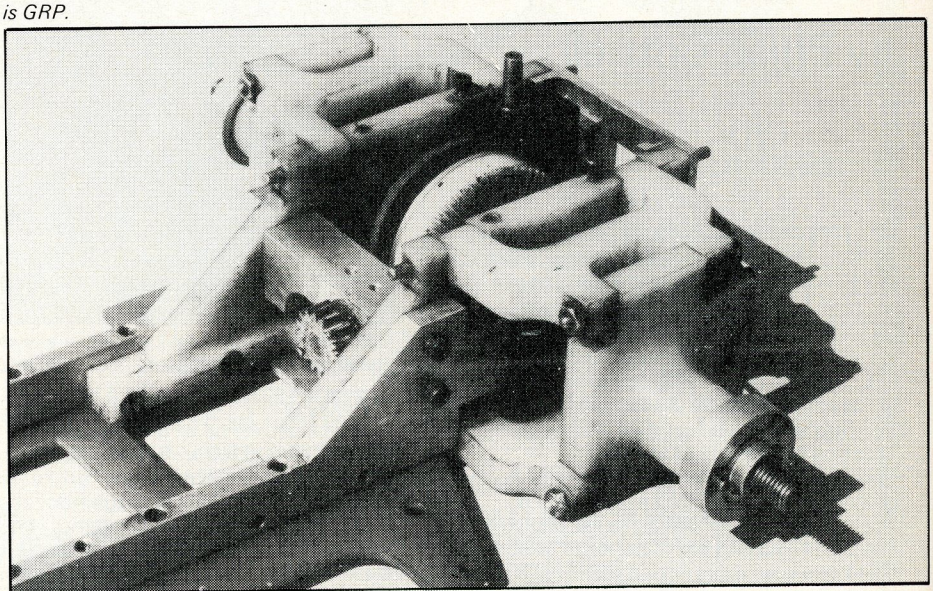
Basically the car is sprung at the front with a conventional wishbone layout in stout nylon mouldings. Double failsafes assist in preserving steering reliability and geometry.

At the rear we have an in-line engine supported on extended mountings to ensure central immobility. Spur gears from the crankshaft lead to a bevel gear which in turn drives the crown wheel.

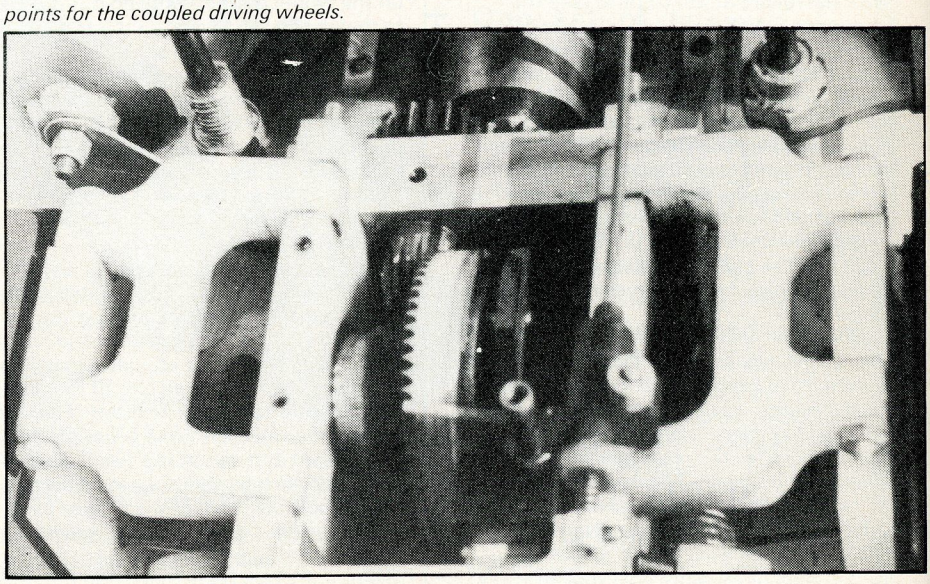
From this rigid centrally placed engine universal couplings connect to the driving wheels which enjoy maximum ground contact on the most uneven surfaces. Happily, although I have seen only an early marque in operation, it ran on the Tubary Park circuit at Bournemouth (regarded as a somewhat bumpy circuit) and gave the impression of being glued to the ground.



Rear end of Gary Culver's car. This shows the stout metal backplate and the extended engine bearers. The bracket forward left is one of the two holding and AMPS silencer in place. Chassis here is GRP.



Another shot of the engine bearing block, gear train, crown wheel assembly. Note the three hinge points for the coupled driving wheels.



Above and opposite page: A selection of shots of Dave Martin's car. These serve to show adjustments in detail.

A certain amount of re-positioning of other components has been necessary. The AMPS silencer locates amidships (where a lot of USA and Continental silencers are now to be found) and the fuel tank is well up forward. Although at first sight a rather complicated layout, the whole engine mounting unit can be unbolted and slid out for inspection in a few minutes and replaced without any loss of precision.

I have now had a chat with prime mover Ian Agnew of AMPS during a photo session and this is the question and answer interview:

Dickie: *How many years have you been developing this fully sprung car?*

Ian: *The project started as I was talking to Walt Bailey when we went to Florida in 1979. He mentioned that Ted Booker was playing with rear suspension. I had spoken to Ted on previous occasions for building him a diff. so we all got together and when we returned from Florida Ted presented us with his back end. I was so impressed by the robust nature of that that I said all right we'll take this up.*

The first thing we did was to put a diff. in Ted's car with boat couplings which we thought would be all right. The car had terrible understeer and the only way to get the grip all round was to go for a fully independently suspended car which we tested up at Lilford on the club circuit.

That's when Bill Burkinshaw caught us and got thos photographs of his. We went to Lilford on that day specifically to avoid everyone; unfortunately Mr Burkinshaw had the same idea! The car has of course come a long way since then.

It doesn't bear too much difference from Ted's back end but has a lot of minor changes to make it handle better. January this year we felt we weren't getting the right performance figures we were expecting; the car had several niggling faults, so we took on a fullsize car designer.

Dickie: *So some of it relates to fullsize design which you have adapted in miniature?*

Ian: *Well actually the suspension geometry has been designed specially for us. To fill in the brackets it was done on a computer for a fullsize racing programme. We thought if we were to miniaturise fullsize, the suspension travels we would expect to get would be impractical and it wouldn't work. I have always had this theory that basically we're not racing on fullsize racing circuits we are really doing a sort of special stage rally type of thing. The bumps are so large!*

Dickie: *And you of course are profiting from your own rally experience ...*

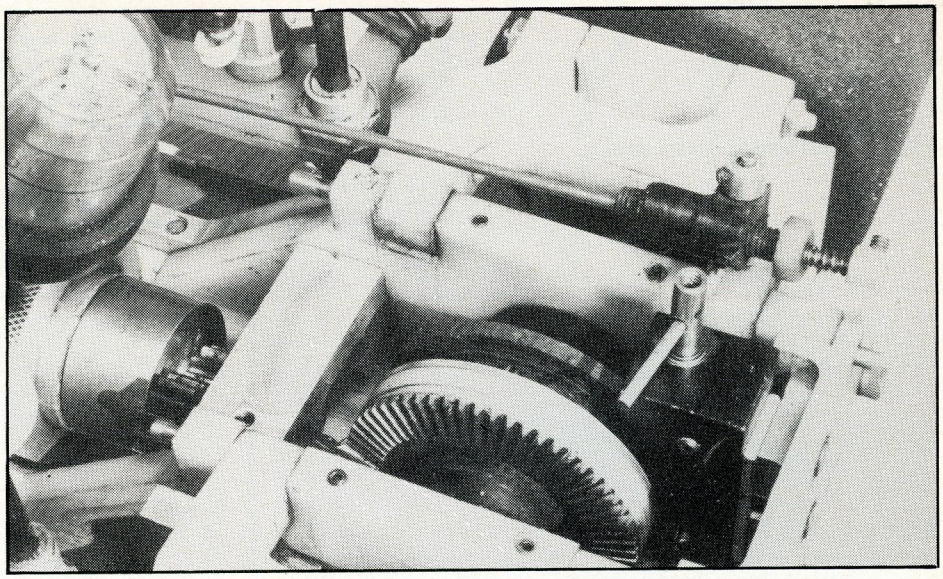
Ian: *To a degree, yes. I spent a long time developing front suspension on my Cortina — a London to Sydney V6 Cortina — and I learned a lot, expecting that when you do so and so this should happen ....*

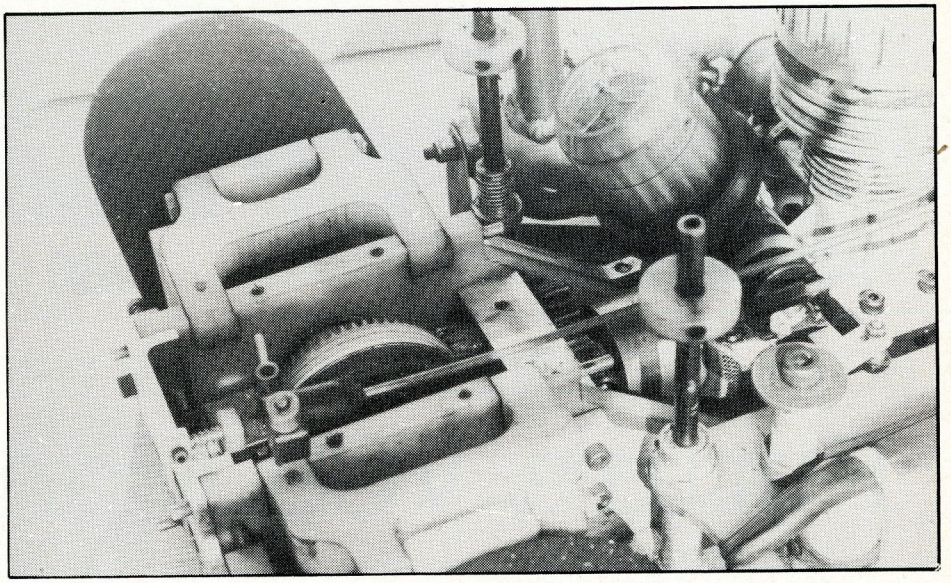
Dickie: *And on the whole it did happen?*

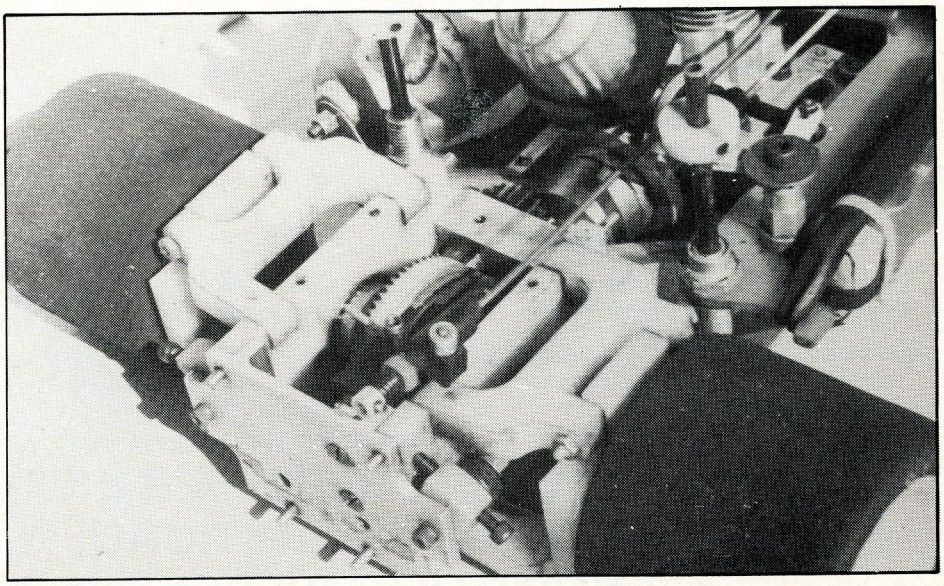
Ian: *The person who has done the design of our suspension geometry runs his own company and is quite successful with his cars. He has been up to Lilford on several occasions and to our surprise when he suggests: Try this, it performs exactly like a real car.*

Dickie: *Well, that's very, very exciting.*

Ian: *It has indeed been that ... we've got several people from fullsize interested who would like to come and have a look at it. Our designer is Michael Pilbeam of Pilbeam Racing Designs, an ex-Lotus designer and has also designed for BRMs. He did all the BRM cars.*

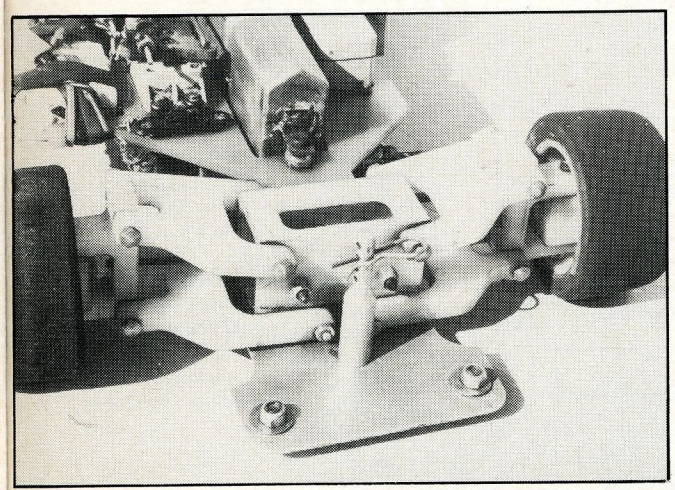


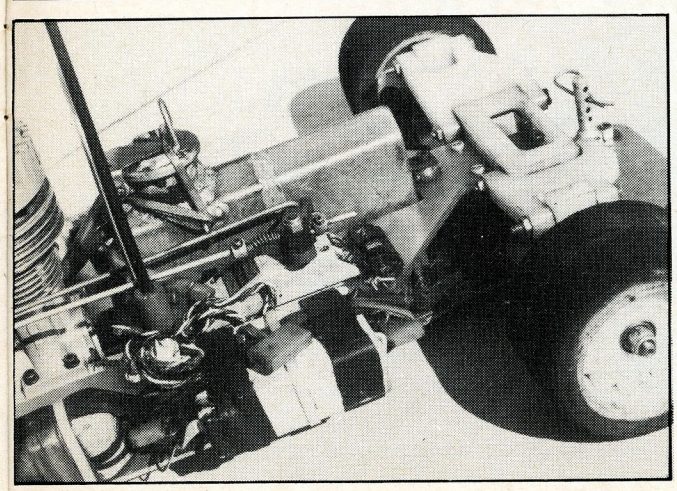




Dickie: *So we are bringing in — not only you but other model car people are bringing in — the fullsize designers?*
Ian: *My knowledge isn't sufficient ... you can read all you want in the text books but that doesn't tell you how ....*
Dickie: *You know what you want but are not quite certain how you achieve it?*
Ian: *Mike has been working more from his experience than from textbooks.*
Dickie: *Textbooks are all very well. It's like swimming, the book 'll tell you how to swim but you don't dive in the water clutching a text book in one hand.*
Ian: *We've not only had my experience in model cars for a couple of years but Mike's 15 to 20 years experience in fullsize racing.*
Dickie: *Of course you are in the happy position that if you've got an idea on Sunday night you can start making it on Monday morning.*
Ian: *Yes, we do have the advantage of quick production; we also practiced regularly once or twice a week all through the winter.*
Dickie: *And your team now comprises?*
Ian: *Dave Martin and Gary Culver at the moment. We don't regard either as the Number One driver, they are in it together and beginning to make up some good wins.*
Dickie: *Are you ready to market the AMPS Special yet?*
Ian: *We had originally thought of selling it as add-on parts but it began to involve so much of the car that a complete kit seemed the answer. First thoughts were to have stiffening bars all down the chassis, then with more experience we realised we wanted the ends to be separate for ease of servicing but to maintain as rigid a chassis as possible. This is the reason for the radio plate, apart from making a clean radio layout, it gives us a very stiff chassis by forming a box, ie in (true) monocoque.*
Dickie: *Do you think you will be able to get rid of the extra weight without other problems?*
Ian: *Yes! When the nylon parts are moulded they will be lighter without loss of strength. Hopefully, we expect to lose at least 8 ozs. in the production car which will certainly help on our engine consumption. Dave has stuck to the OPS all along; Gary has been running with an OS Max. Dave has favoured a metal chassis but Gary has been running with a GRP chassis. There is not a lot between them. The kit will have an epoxy chassis but there is still a lot to be done ... we haven't even decided on the name yet. (STOP PRESS: Rapier.)*
Dickie: *Do you think you have any more power loss having one extra train of gears than the standard car?*
Ian: *I have had the point raised by one or two top modellers but the amount is negligible. To quote the gear manufacturers design handbook: "When correctly set up both spur gears and bevel gears are 98 per cent efficient!" So a second train only loses two per cent more. Also, in our car the gears are all rigidly held and machine cut whilst the standard cars are moulded gears which are rarely round.*
Dickie: *What about the price?*
Ian: *That should be somewhere in the region of £150 plus, perhaps about £175. But we do hope to be getting them on sale around September/October as the ultimate quality car.*

The winning team. Left and right Gary Culver and Dave Martin with their cars: in the middle is Ian Agnew prime mover in the 'wobbly wheels' development. Miller ("Dad") Agnew should also be in the picture to complete the foursome.





Two general views of the front of Dave's car. Note the use of radio plate and its fixing to rigid part of the steering assembly.