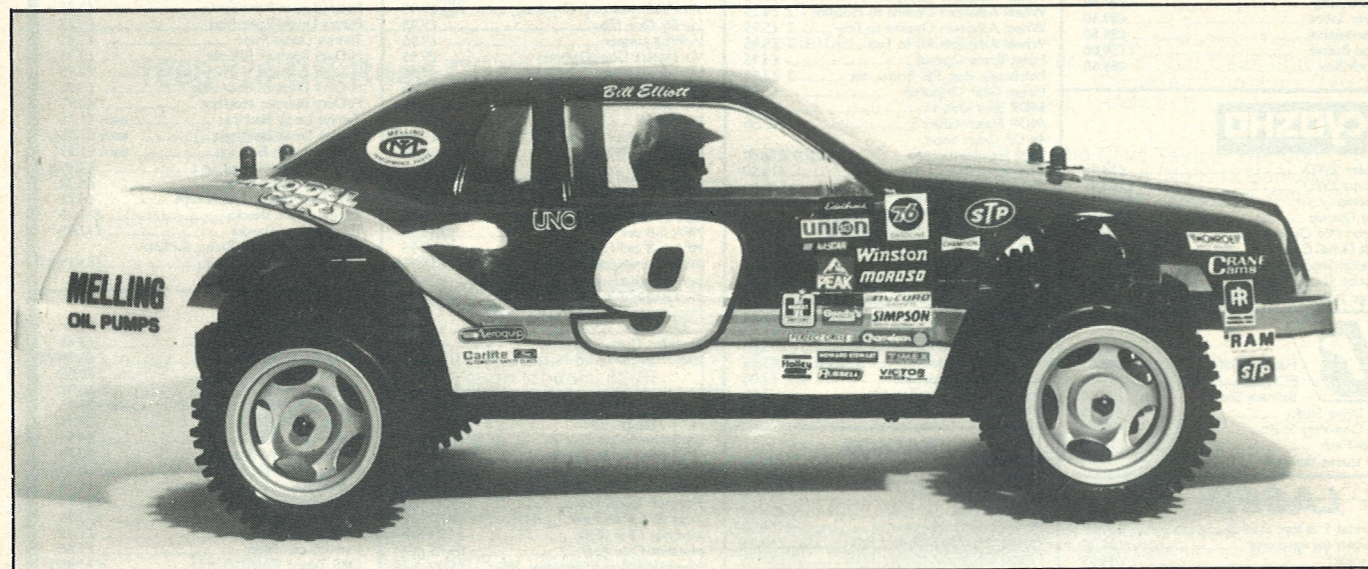


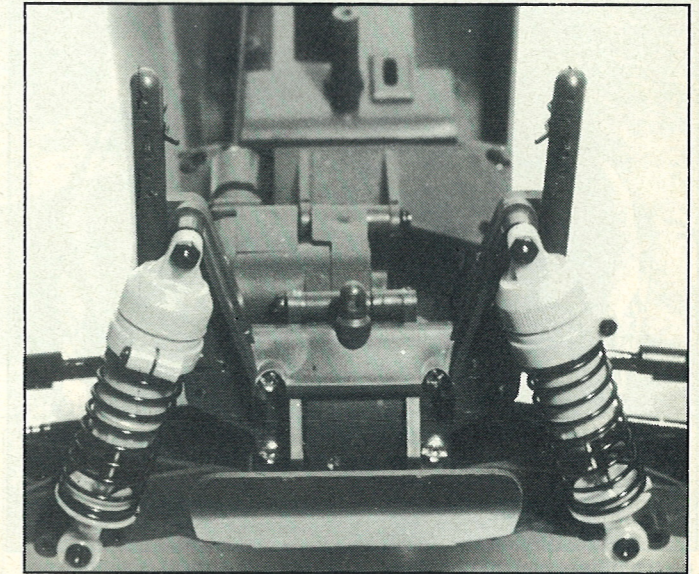
THUNDERBIRDS ARE GO!

Geoff Driver has gone on-
and off-road with Marvi's
latest creation



difficulty in building the kit other than the time taken to put all the bits together. It took me a couple of evenings to build, a total of around six hours. A rear-mounted Mabuchi 540 motor of the latest style with metal end bell drives a gear reduction to the three gear differential. Although the change to the Mabuchi motor may appear to be superficial, I think it is in fact quite important. The Mabuchi 540 series of motor is probably more common throughout the model industry than any other single motor. It is relatively simple in design yet robust and delivers good performance. It is often abused, misused and ignored. Many RC enthusiasts simply take the Mabuchi 540 from the kit, put it to one side and forget about it. Over the years I have developed a great

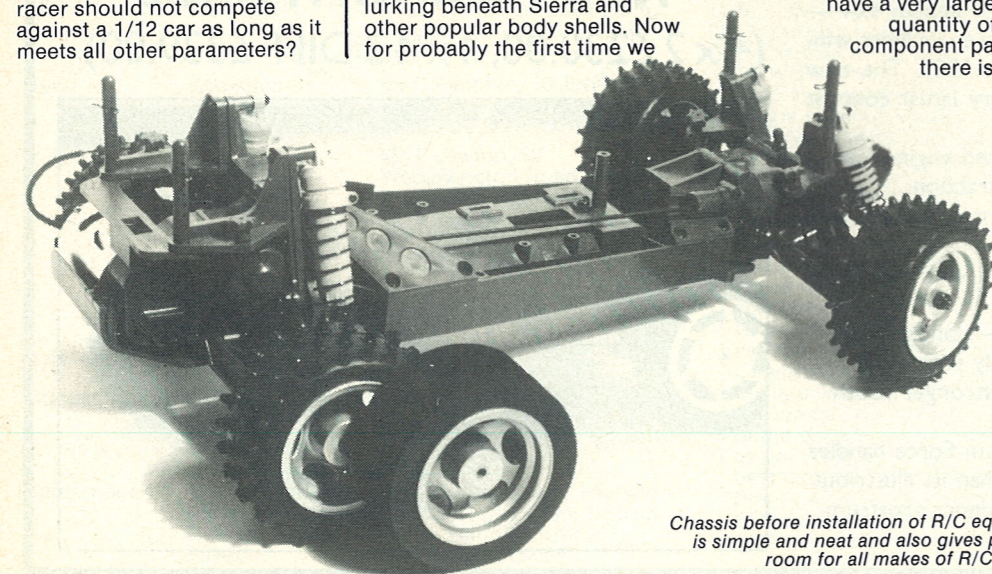
admiration for this unsung hero, and now Mabuchi have taken the trouble to upgrade it. The move to a metal end bell is interesting for two reasons. Firstly the problem I have occasionally encountered when I have overloaded motors for an excessive amount of time, namely endbell melting will now be a thing of the past. Heat dissipated from around the brush gear should be better although heavy overheating will probably lead to total armature melt down. Secondly, although I have yet to test this out I suspect that performance should be improved. This will be due to the better magnetic circuit achieved with the metal end bell. Back to the gearbox. All gears in the gearbox are plastic, with the exception of the final bevel gears that pick



With over half a decade of 1/10 racing and an even longer period of 1/12 racing now behind us the RC scene is slowly beginning to show some signs of change. Up to now the differences in the type of racing, namely on- or off-road has been one of scale. 1/12 on road and 1/10 off road. This grouping owes more to convenient labelling than to good technical argument. Instances occur when manufacturers ignore convention such as Tamiya producing the 1/10 'Road Wizard', as close a model as you are likely to get to a Formula 1 racing car. Is there any good reason why a 1/10 racer should not compete against a 1/12 car as long as it meets all other parameters?

When it comes to off road there is little to commend the use of the title of 1/10 scale. Consider just the size of wheels and tyres used on a 1/10 model and scaled up to a full size off roader. The tyres would be around four feet in diameter. All this leads me to the fact that manufacturers are likely to deviate from conventions we have all accepted in the past. They can see that new markets will open up for new classes and types of racing. Drivers will respond to the challenge as long as pockets are deep enough and the sport is good. One of the latest variations likely to hit the RC market will be saloon car racing. Already we have 'CATs' and 'PB' chassis lurking beneath Sierra and other popular body shells. Now for probably the first time we

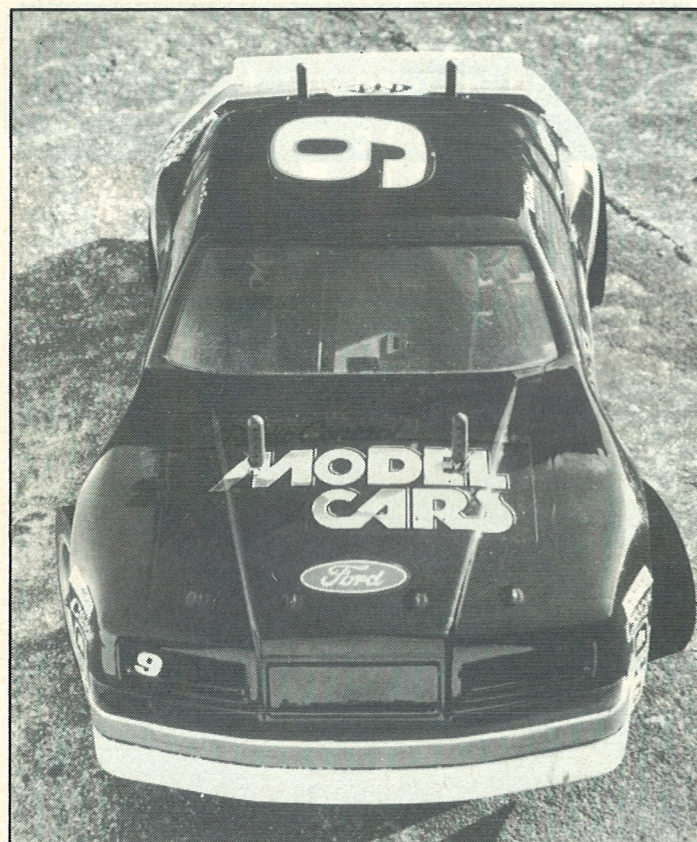
have a kit designed for both on- and off-road racing. The Marvi 'Melling Thunderbird' is a copy of an American NASCAR racer. In real life these loosely-matched racers are to be found at circuits all over the USA with their own stars and enthusiastic supporters. The all-plastic injection moulded chassis is constructed from three main sections. Front suspension unit, rear suspension unit with motor and main reduction gearing and finally the centre section that houses RC gear and batteries. All the injection moulded parts are extremely well engineered and fit precisely together. Although the car appears to have a very large quantity of component parts there is no



Chassis before installation of R/C equipment is simple and neat and also gives plenty of room for all makes of R/C system.



The 'Melling' bodysell is nicely produced and comes complete with an excellent set of decals.

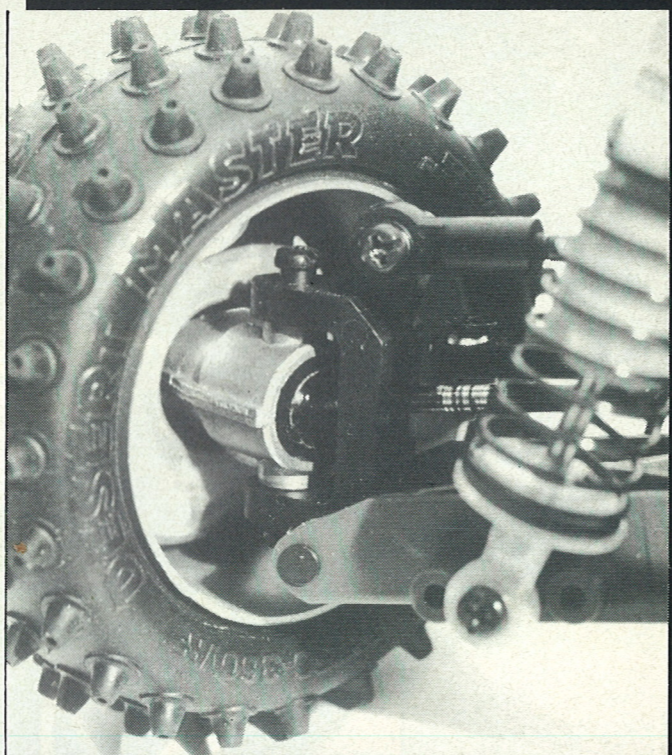
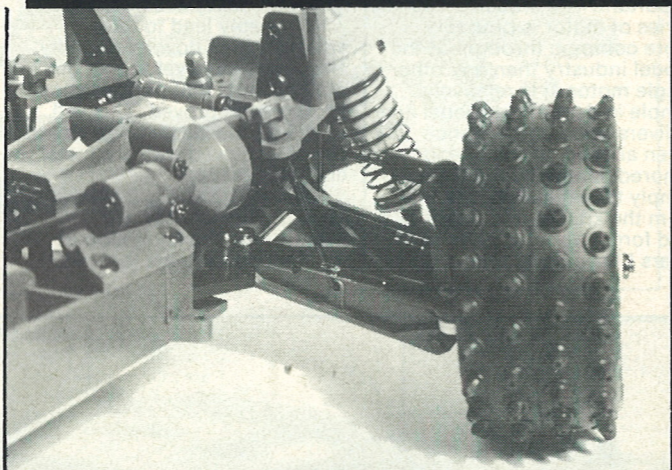
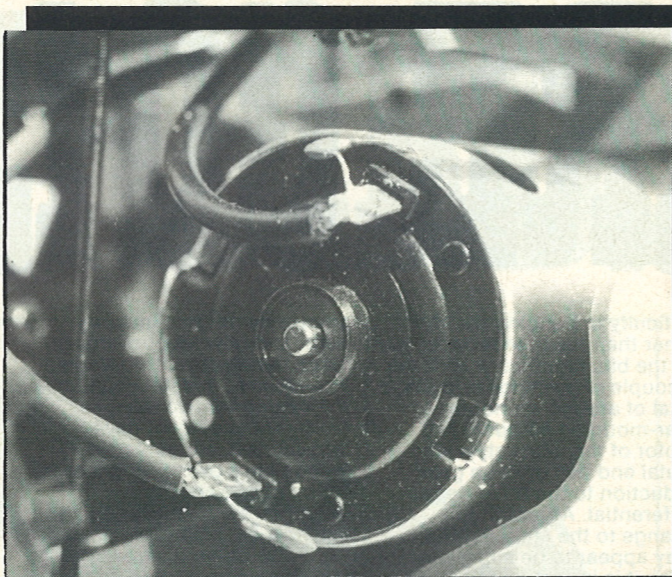


up the differential output, these are metal. The drive to the front wheels is by a bevel gear taken off from the main gearbox via a thin shaft to the front axle. The joints at both ends of the front to rear shaft are nothing more than wire loops fitted into slotted output shafts. Front differential assembly is similar to the rear. Open ball and pin drive shafts complete the drive line to the wheels. The inboard drive cups must have rubber O rings fitted inside them. In the case of the front drive shafts these pass through the front wheel steering uprights. These uprights are some of the few metal components to be found in the car and look very similar to uprights used on the 'Optimas'. Steering is by track rods coupled to twin steering bell cranks, one for each wheel which will keep bump steer to a minimum. Steering lock does not appear to be very great when looking at the stationary vehicle but on the move it should be quite adequate. Bearings throughout the car are plastic (they look like nylon) and can of course be replaced by ball races to reduce frictional losses. The Marui 'Melling' vacuum-formed body is superbly styled and beautifully finished. The shell sits on body posts which allow a range of body heights to be selected for whatever conditions prevail. To complement the body height adjustment the maximum ride height can also be varied. This adjustment is very simple to achieve by winding an adjusting nut along each of the threaded rods (one for each wheel) so reducing spring travel. This method of ride

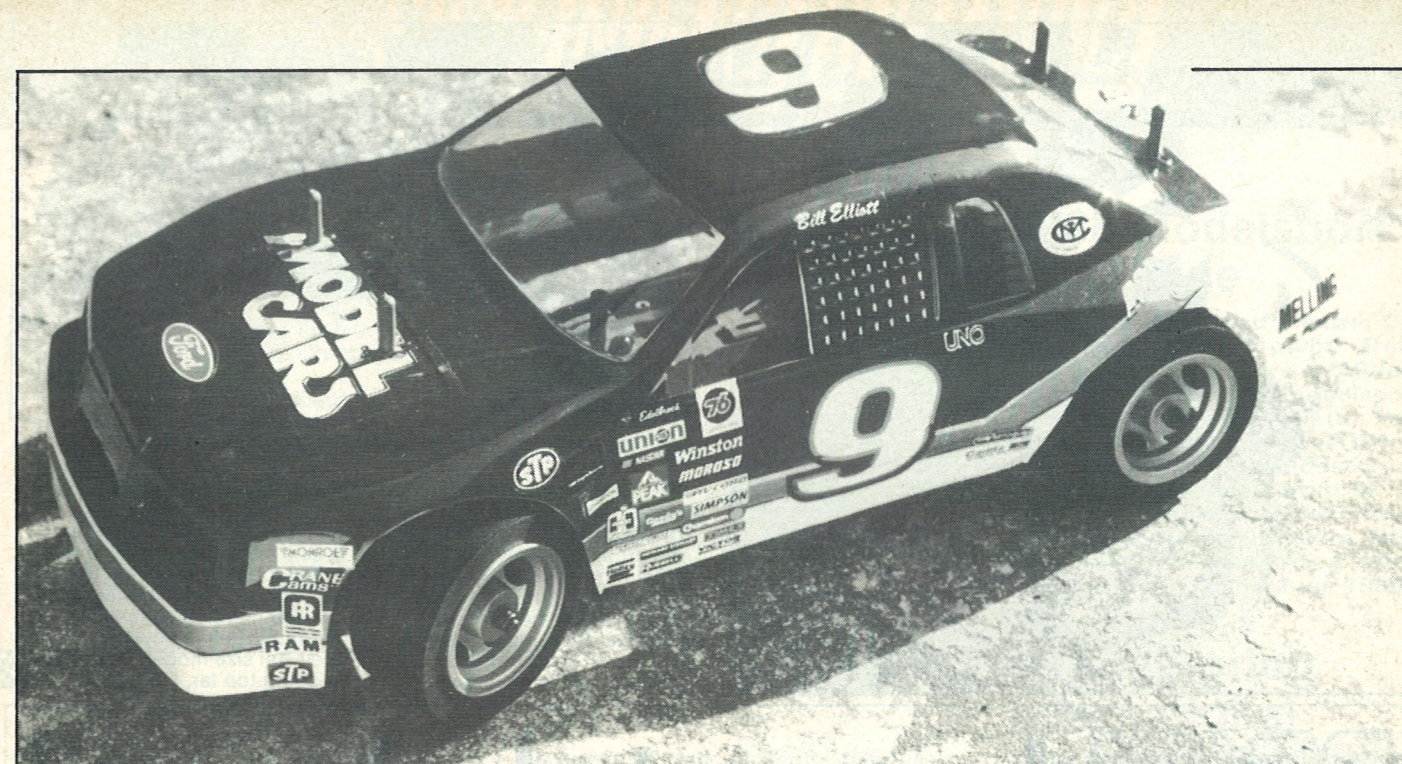
height adjustment is simple, but effective. By having non-progressive springs the spring rate is not affected, other than to make the spring a little harder to compress at the start of its stroke. This should make fairly good on road performance.

Yellow all-plastic dampers are the same as fitted to the 'Ninja' and, although not of the volume compensating type they are very well sealed with 'O' rings. The kit includes an additional set of damper pistons. By selecting different pistons or using the different bottom damper positions on the lower wishbone arms a complete range of suspension characteristics can be selected to suit on- or off-road conditions. Remember, the further away the damper is from the chassis - the harder the ride becomes. Suspension geometry can be modified by varying either the length of the suspension top arms or by using the three alternative fixing points for the top suspension arms which will affect camber changes with suspension movement. To complete the dual function, the kit comes with two sets of wheels and tyres. Sponge slicks for on-road and spike knobbles for off-road. The wheels are single-piece mouldings so it is essential to glue both the on and of road tyres in place.

Looking at the centre section of the car there is plenty of room to house servos and radio gear. The unique Marui enclosed speed controller switches in the usual type of ceramic resistors mounted at



Top: New motor installed. Centre: Centre drive shaft - note also height adjustment screw on rod. Above: Aluminium uprights house plastic bearings which can be replaced by ball bearings.



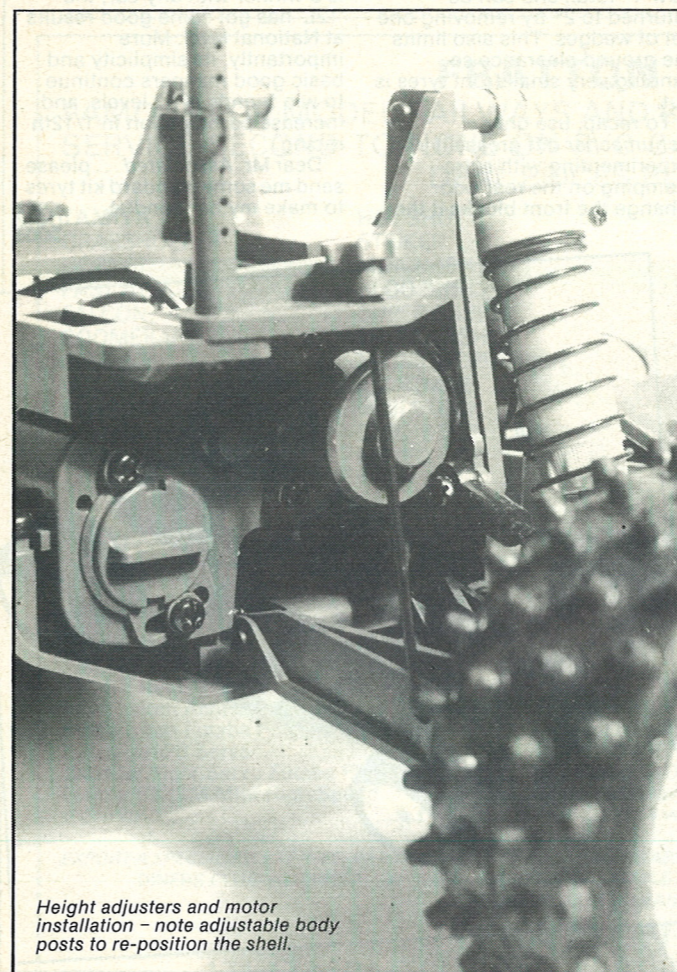
the rear of the chassis out of harm's way. Batteries are accessible through a removable panel in the base of the chassis. As the batteries are mounted longitudinally the rolling moment along the car's centre line is kept low. This, coupled to the low battery position in the chassis between the front and rear wheels

should help front-to-rear weight distribution problems often encountered with a rear-mounted motor. Provision is made for either six or seven cell operation. The lid of the battery enclosure is not easy to remove and requires three hands and very strong finger nails or the careful use of a screwdriver to prise it open. On

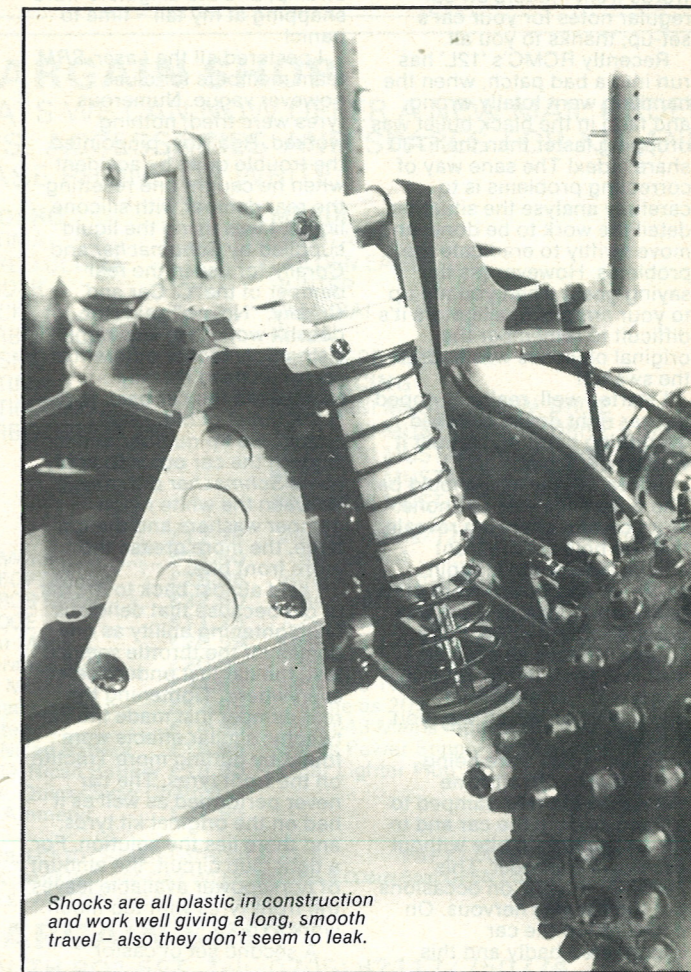
the credit side it is unlikely to accidentally open during a race. The design of the underside of the car gives a remarkable smooth surface, although abrasions will inevitably occur.

Building the car is quite straightforward and presented no difficulties. The instructions were easy to follow and well

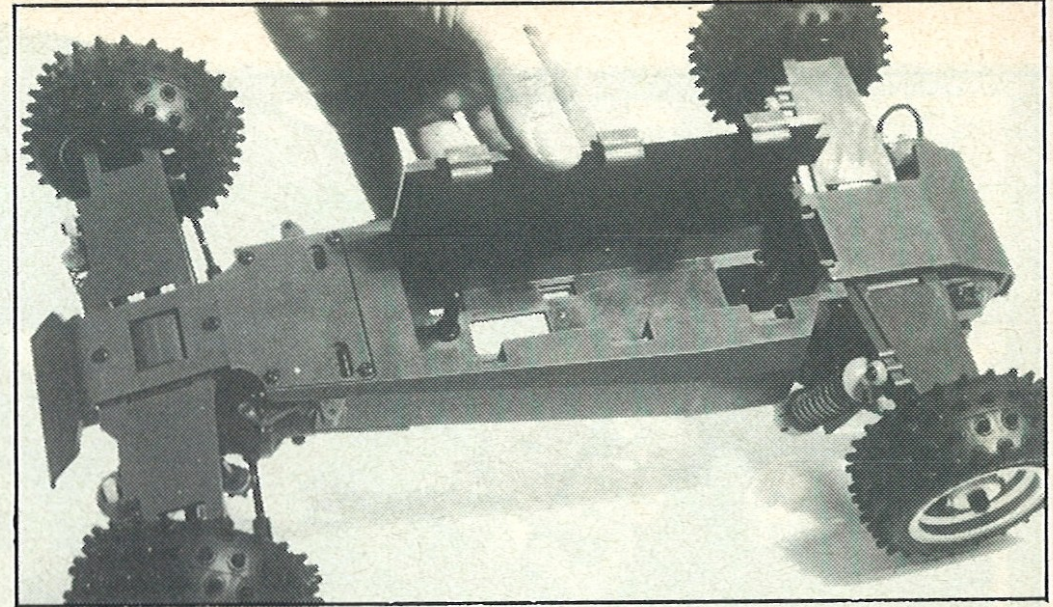
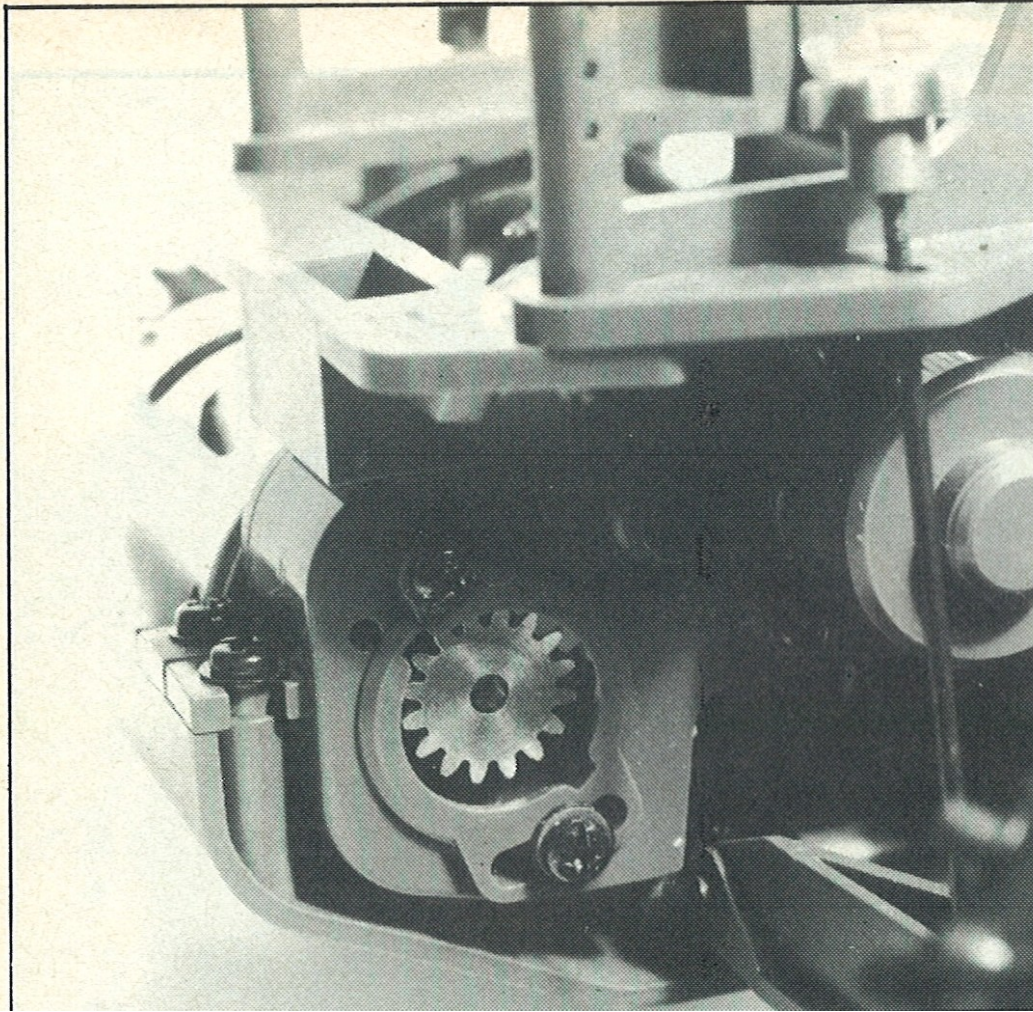
illustrated. The kit includes damper oil and lubricating grease for the transmission. The only criticism I had was with one badly-fitting wheel adaptor and a misaligned centre drive shaft. Both of these problems were quickly and easily rectified by drilling and bending the respective parts.



Height adjusters and motor installation - note adjustable body posts to re-position the shell.



Shocks are all plastic in construction and work well giving a long, smooth travel - also they don't seem to leak.



Left: Spy hole allows inspection of motor pinion meshing. Above: underside showing battery position.

The 'Thunderbird' kit is based on the rolling chassis of the *Marui* 'Ninja'. Together with one other car yet to reach Britain the *Marui* 'Shogun', this will give the company three cars on the same chassis/driveline. It seems to me that electric on-road production car racing is still in its infancy.

Marui have backed two horses with this car in making it suitable for on- and off-road. I would not be surprised to see more sophisticated ride height adjustments being developed. *Subaru* managed to use a hydraulic jacking system on their full size models, but that is going too far, isn't it.

