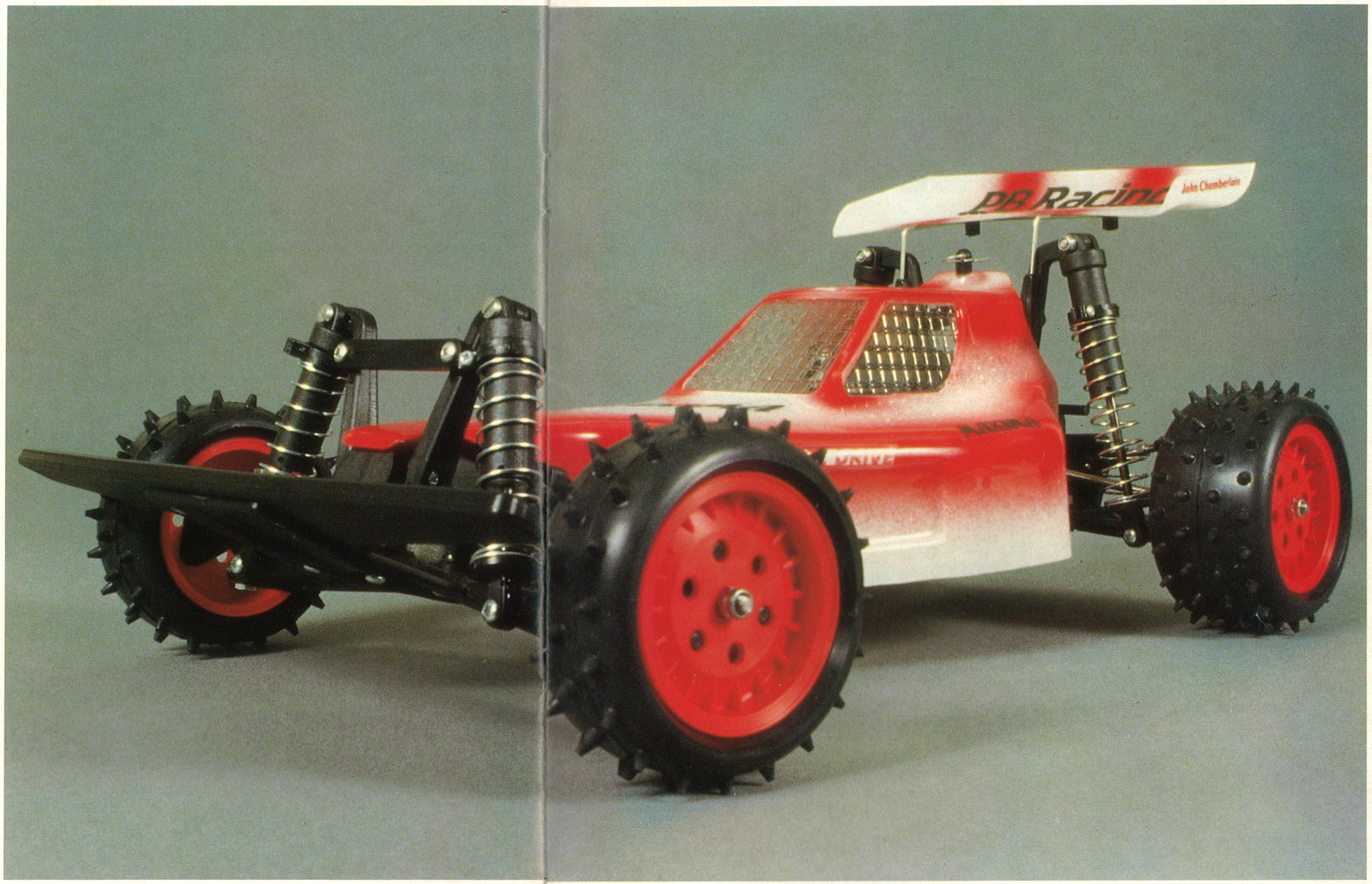
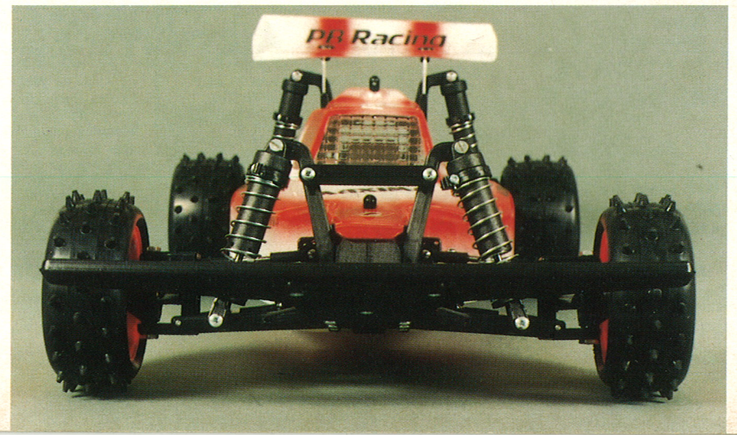
PB MAXIMA

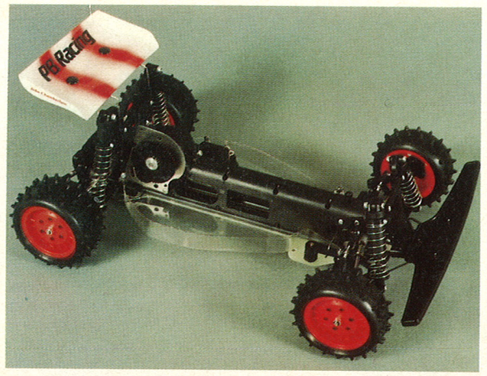


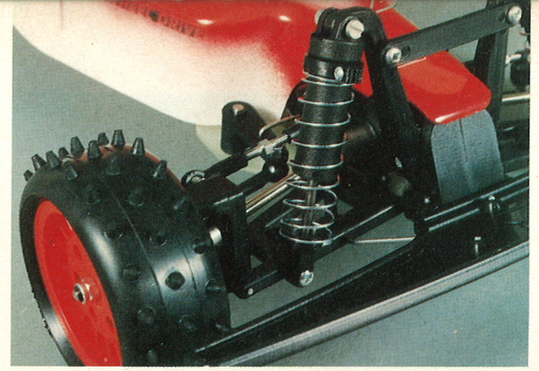


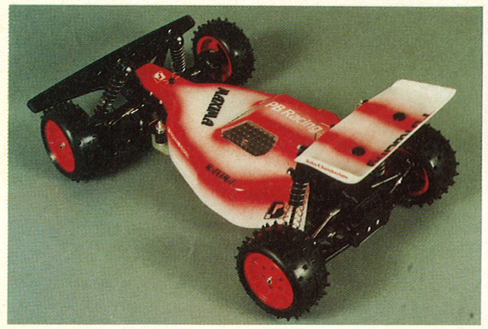
John Chamberlain gets his hands on the first Maxima off the production line.

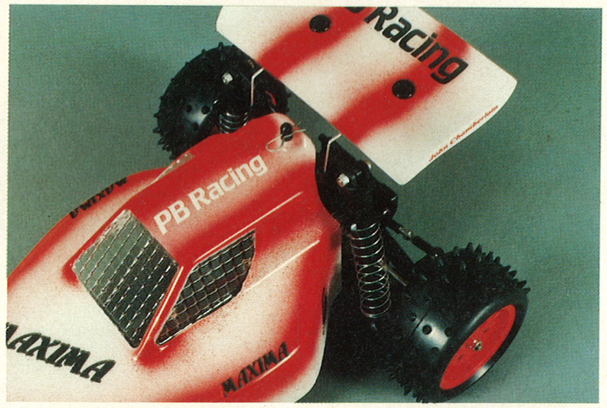
All progressive and successful manufacturers continually develop and refine their products to suit the changing market they operate in. The 1/10th off road market is a particularly tough one to succeed in, and no more so than in the top notch 4 wheel drive sector where fashion and the latest set of National Race Meeting Results seems able to trigger off yet another change of "wheels" for many drivers. Whilst the vast majority of 1/10th car kits are sold to the club racer or newcomers to the sport, manufacturers of serious and competitive 1/10th off road cars, know that they ignore the demands of the top competition drivers at their peril. Racing success generates the right image for their products and with correct marketing, sell more cars.

PB racing products understand this only too well and following the tremendously successful launch of their first 1/10th Off Road car, the 'Mini Mustang' the guvnor Keith Plested has lost no time in evaluating the dynamics of the 'Mustang' compared with the other leading competitors in the market place and through intense involvement in the sport and the feedback that has been obtained from direct racing experience, the new *P.B.* 'Maxima' has been launched to restore the *P.B.* Marque to the top of the tree. The 'Mini Mustang' had fallen from favour at the top level of National racing, seeming to

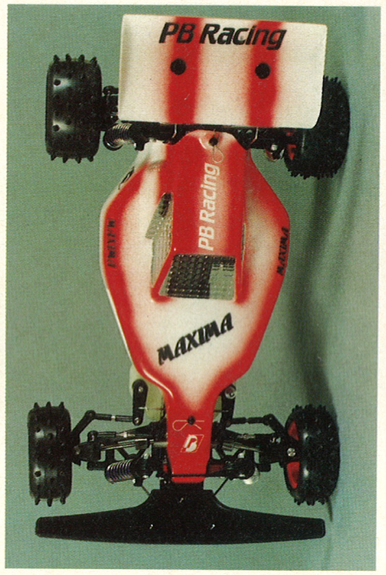


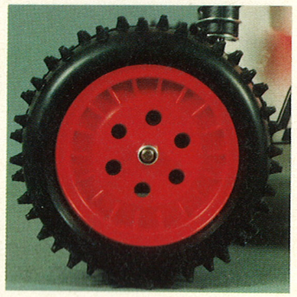


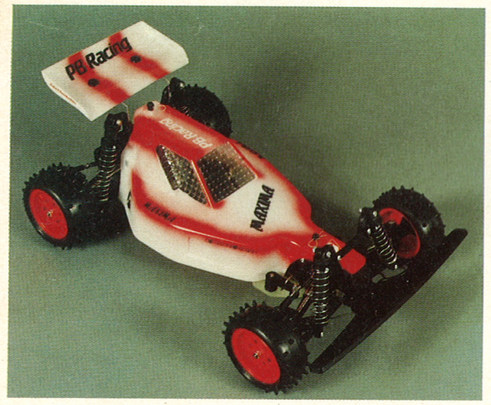




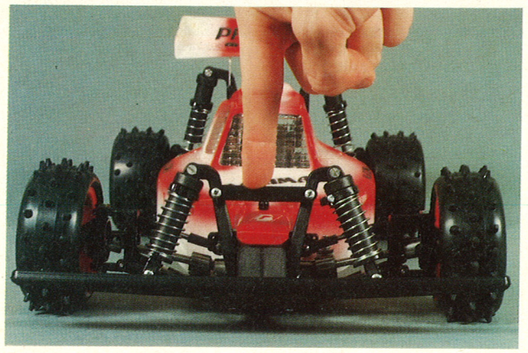
Above: The 'Maxima' comes with a moulded lexan undertray which keeps the mud out by sealing to the bodyshell. Top right: shockers locate to strong towers and onto the arms via self-tapping screws. Right: The car comes complete with a wing and wing mounting kit which works well and does not need to be removed to remove bodyshell.

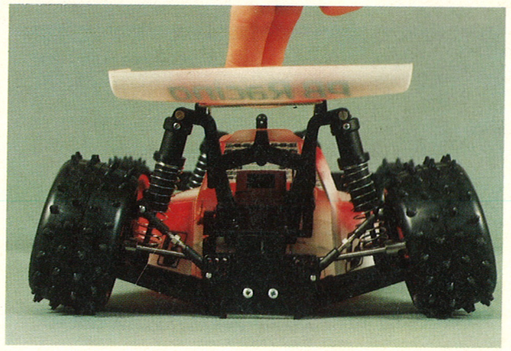






Above: PB Racing's well-known red wheels are standard, and the kit comes with 'CAT' tyres as standard. Bottom: The front suspension remains upright with no camber change whereas the rear employs a large angle of camber change – although this is adjustable.





have lost the edge that it had held so convincingly earlier in it's life, although still remaining popular with the clubmen for it's manners and tough reliability. However, several areas of the 'old' car seemed ripe for development, particularly the drive shafts which were prone to become dislodged at the front, the drive belt system which appeared to consume perhaps too much power, and the double wishbone suspension insufficiently adjustable to suit all drivers and track requirements.
answers all these criticisms and goes even further.

Building on the real strength of design of the 'Mini Mustang' and adding some unique features that enable the cars suspension geometry to be set to a bewildering number of settings. With the offer of the very first pre-production kit to evaluate for Model Cars, no time was lost to take the opportunity to make the journey to Havant, collect the kit and discuss the design philosophy with Mr. *P.B.* himself, Keith Plested. The main criteria in developing the 'Maxima' were to retain the rugged and easy to drive nature of the 'Mini Mustang', but to improve the efficiency of the drive train, and improve the manner in which the chassis could handle the worst bumps that a track could offer. Intensive racing had demonstrated the benefits that universal joints on the outboard end of the drive shafts could offer namely no more "dropped" driveshafts. However, incredibly when tested in controlled conditions back in the development workshop at *PB*, fitting universal joints to all 4 driveshafts immediately showed a consistent 8% improvement in reduced current draw for a given load to the wheels. Turning their attention to the drive belt system, a new Mini pitch belt with new drive gears, and ball raced belt tensioner pulley, consistently showed a further 20% improvement in drive line efficiency. Keith's knowledge of physics is obviously deeper than mine because he assures me that this in fact adds up to an actual improvement in efficiency of some 26% over the outgoing 'Mini Mustang'. Very worthwhile improvements indeed – and apparent where it counts on the track. Incidently *P.B.* continue to use glass filled belts rather than the Kevlar Reinforced variety, as the glass filled belts are more flexible and are less prone to stripping of the belt teeth. Apparently the smooth Kevlar strands do not allow rubber to bond easily to them, necessitating a thicker rubber belt which results in a less flexible product.

With the drive train dramatically improved, attention was turned to the chassis. The central moulded spine, unique to the *P.B.* was retained as it had proved itself to be a very neat and practical method of containing the drive system and providing a rigid platform to attach the "four corners".

PB Ups and Downs

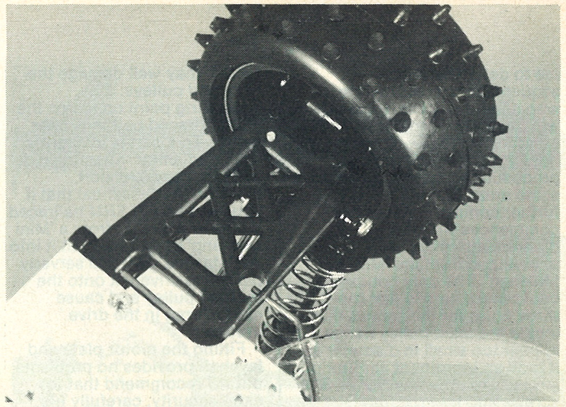
The old 'Mini Mustang' suspension system has been totally replaced by all new lower wishbones, new axle blocks, and new fully adjustable top links incorporating very neat left and right handed threaded joiners to make that adjustment very easy. The wheel base has been slightly lengthened, and the track been increased to the maximum allowed. The beautifully made metal universal joints allow for more steering lock than was available on the old 'Mini Mustang', and incorporate one way bearings on the inboard end of the front drive shafts. The shock absorbers themselves are carried over from the previous model but the springs are a new, heavier grade than was favoured previously. Interestingly the recommended suspension geometry settings are identical to those used in the big brother 1/8th scale 'Mustang X3' Rallycross car, providing no camber change in bump at the front, yet offering maximum possible camber change as the rear suspension is depressed, resulting in an amazing degree of negative camber at the rear wheels.

Having discussed the main design parameters of the new 'Maxima' with Keith Plested, we reluctantly dragged ourselves away from the factory, but clutching our box of goodies we eagerly drove home to begin construction of this exciting new product and to find out just how well it would go on the track.

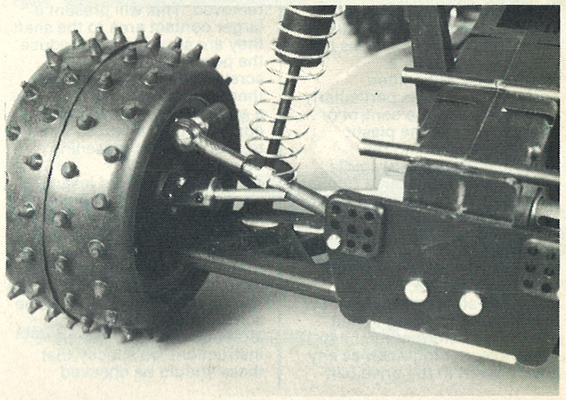
Building the P.B. Maxima

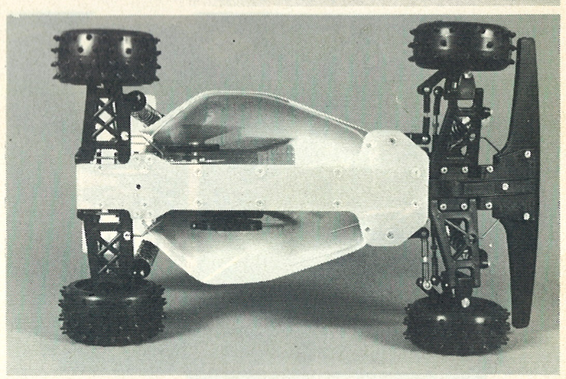
Anyone spending nearly £200 on a 1/10th off road car will rightfully expect something a little bit special. On opening the box and studying the parts neatly packed and labelled and complimented by a truly comprehensive and well photographed instruction and building guide, I am certain our prospective purchaser will not be disappointed. At last we are able to buy a truly well engineered and designed British kit supported by a first class instruction manual that would lead even a relative novice clearly through the complexities of constructing the latest generation four wheel drive car. Well done *PB!*

With such thorough and detailed instructions supplied in the kit, it is unnecessary for

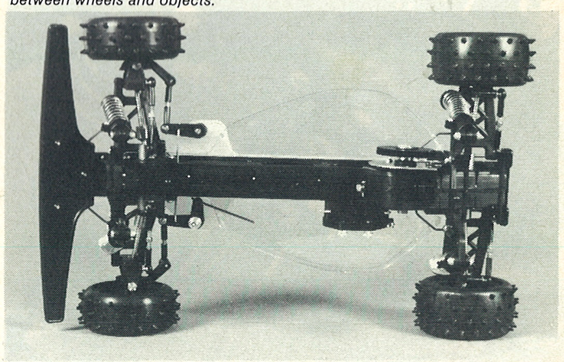


Above: The new rear swing arms have braces across the centre and are very tough – Note simple anti-roll bar connection. Below: The adjustable top link with left and right hand threads for simple adjustment.





Above: The quick release battery system is still used on the 'Maxima'. These can be obtained separately to set up various sets of batteries. Below: A nice large bumper is joined directly onto the spine which gives a solid obstacle between wheels and objects.



me to detail the build sequences here, as anyone who should buy the 'Maxima' will find *PB's* instructions truly comprehensive. I will however briefly run through the build procedure because their are some areas that are worthy of further comment. Assembly commences with the differentials which are unchanged from the 'Mini Mustang'. The only criticism I could make here is that the three holes for the screws that locate the main pulley flange, appear too small in diameter as it took an inordinant amount of strength to drive the No. 2x ¼ screws into them. It may appear a nitpicking criticism, but to be honest it is about the only problem I encountered in the whole build sequence!

Next, the front axle blocks axles and suspension arms are assembled as per the instructions. Mine fitted perfectly, and I was particularly impressed with the control of tolerances in all the plastic mouldings, enabling the assembly to proceed rapidly with no fettling required other than to de flash the mouldings. The chassis mouldings and belt drive assembly fitted together easily and I would re-emphasise the instruction books recommendation on fitting the steering servo. Cut the chassis moulding to suit your servo before assembling the whole unit together, as any plastic swarf in the drive belt system may well damage the belts and pulleys. One interesting point concerns the new ballraced belt tensioner pulley. This part is of slightly smaller diameter than the old 'Mini Mustang' version, therefore it is essential that if you have an old *SRM* ballraced pulley or a similar from a 'Mini Mustang' do not try to fit it into the 'Maxima' as it will serverly pinch the drivebelt onto the toothed pulley and cause excess drag in the drive system.

Fitting the motor plate and layshaft provides no problems but *PB* recommend that for extra security, carefully file dow3n the end of all grub screws used in the drive train so that the conical end is removed. This will present a larger contact area to the shaft they are securing, and reduce the possibility of the grub screw fretting the shaft and then becoming loose. Also use a good quality threadlocking compound on all these screws to prevent them loosening during use.

The new moulded lexan undertray and epoxy glass chassis spine are fitted and this provided no problems at all. The undertray can be trimmed to the moulding lines and fits exactly, although on my kit, the markings for the chassis spine screw holes did not line up – although to be fair the instructions do specify that these should be checked against the chassis spine before drilling. The front suspension assembly fitted in to the chassis as detailed, along with the front bumper and anti roll bar.

The rear suspension is assembled next and once again every step was clearly detailed and all the parts fitted together exactly as the instruction had said. To fit the steel ball ended screws to the plastic axle block moulding I found it easier to first part thread the hole with a 3mm tap, otherwise no problems. These assemblies are then fitted to the chassis in the new 'Maxima' position using new forward mounting blocks for the wishbone pivot pins and a new rear bulkhead with various holes in which to attach the upper suspension links.

The servo saver and idler arm are assembled and fitted to the chassis as detailed, although I would recommend threadlock being applied to the screw securing the steel idler arm pivot pin, and to the thin nut locking the servo saver pivot bolt to the chassis. The track rods are fitted and again as stated in the instructions ensure the track rod ends are squeezed gently with a pair of grips until they swivel freely on the steel ball end screws.

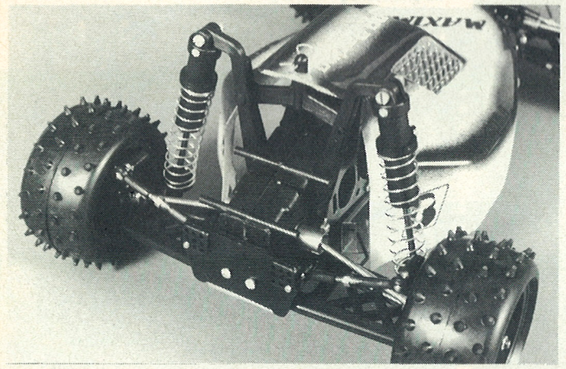
The only messy part of 1/10th scale off road racing is the building and filling of the shock absorbers, and although I followed the instructions, it appeared a more messy job than usual. The actual assembly process is clearly detailed and when filled as per instructions with the recommended ST 90 grade oil (or if you can get it *Robbe 70* silicone oil). They certainly feed smooth and if they can stand James Weedon's punishment on a *Mustang* 'X3' they can't be bad! Somehow, perhaps I am just old fasioned, but I would prefer a screw on end cap rather than the current roll pin located method, The front and rear shocks with their appropriate springs are fitted to the chassis, and now we are on the home straight!

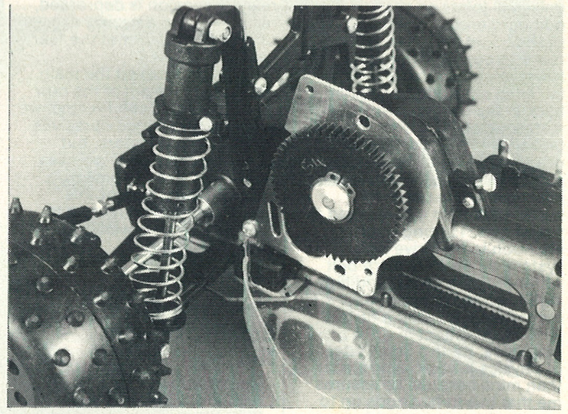
The tyres are easily fitted to the attractive plastic hubs but what's this?

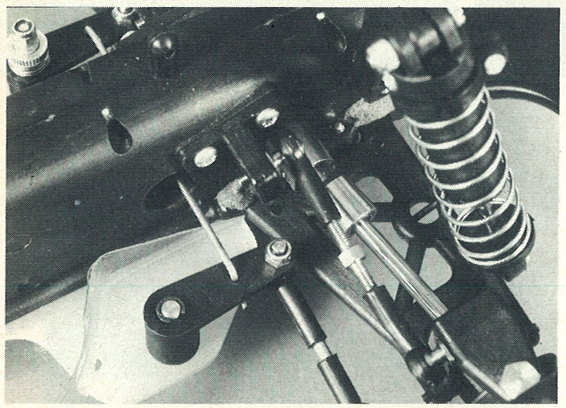
Sch . . . You know who – moulded all over the tyres sidewalls! These damn 'CATS' get everywhere, apparently even into the Guvnors' stores at Havant where they are now supplied as original equipment on all 'Maxima's nice one eh!

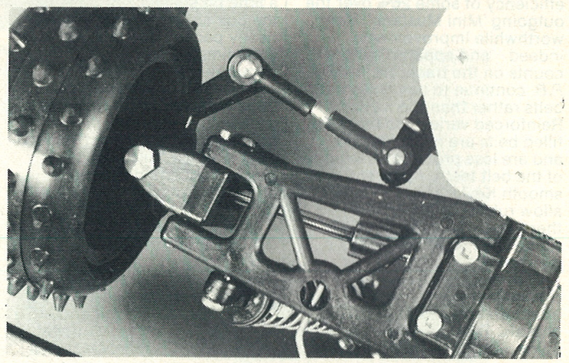
Seriously though, the tyres are renowned to be a good choice and it's good to see *P.B.* supplying the best as standard. With the wheels and tyres fitted to the axles, the car is

Top left, Clockwise: The rear shock towers set the dampers nicely upright. 54 tooth standard gear is included although different ratios are available. Steering links are tough and almost impossible to pull off. The steering bellcranks are now further apart than on the 'Mini Mustang' to give smoother steering.









supported, under the chassis with the wheels and suspension in full drop and clear of the worksurface, the suspension top link is adjusted so each wheel is vertical

The top links are then detached and the drive shafts fitted front and rear exactly according to instructions refitting the top links proves for the first time a fully rolling chassis – great!

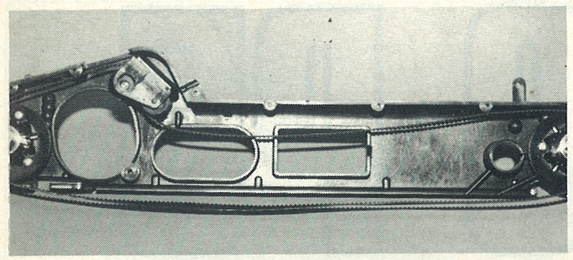
The battery clamps and connectors follow the 'Mini Mustang' setup and of course this is still unique to *PB*. I am surprised other manufacturers have not adopted this excellent system and even more surprised that some *PB* drivers apparently run without them fitted. Clear pictures show recommended radio layouts and steering linkages enabling even a novice to complete this part of the proceedings without problems – yet I managed as well!

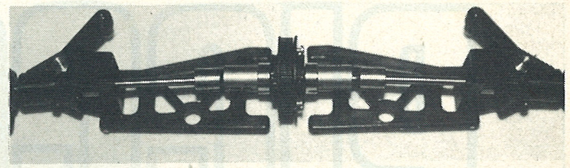
Finally the new 'Bee Jay' body and wing is painted and fitted to the rolling chassis and the car is ready to roll. With assembly completed without a hitch I must congratulate *PB* on the quality of the 'Maxima'. It proved a real pleasure to build and now finished looks really purposeful. With the tremendous adjustability built into the suspension it would seem inconceivable that the handling is anything but superb – once set up. I am sure it will be another roaring sales success and return *PB* to the winners rostrum.

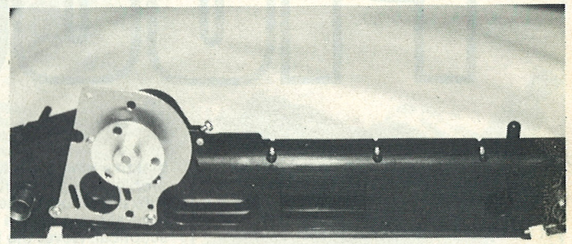
In next months issue, we will bring you the full update on the performance where it counts on the track. And with an entry booked for the model Engineer Exhibition in January, we will be able to pit the 'Maxima' against the best. Watch this space!

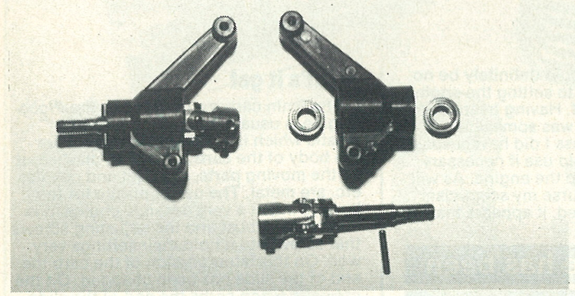
Price £199.

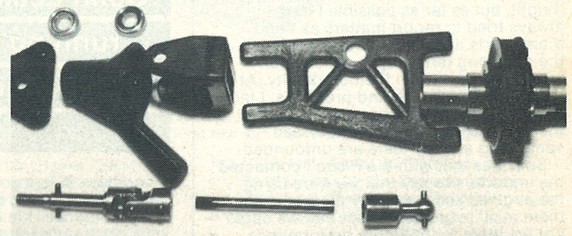
Available through all PB Racing stockists.

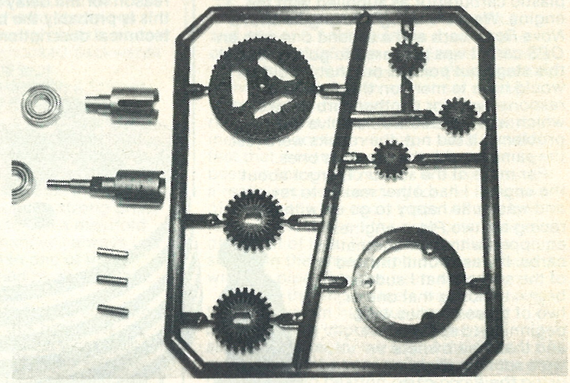












Above, clockwise: The spine sealed up with aluminium gear carrier in place. Front hubs with 'UJs' ready to be fitted. The open spine showing the fine tooth belt in place. The front end with new fine tooth gear on the differential. The spine showing servo location. The front suspension before assembly. The differential pack on the sprue needs cleaning up. The new ballrace-held idler which works very smoothly.