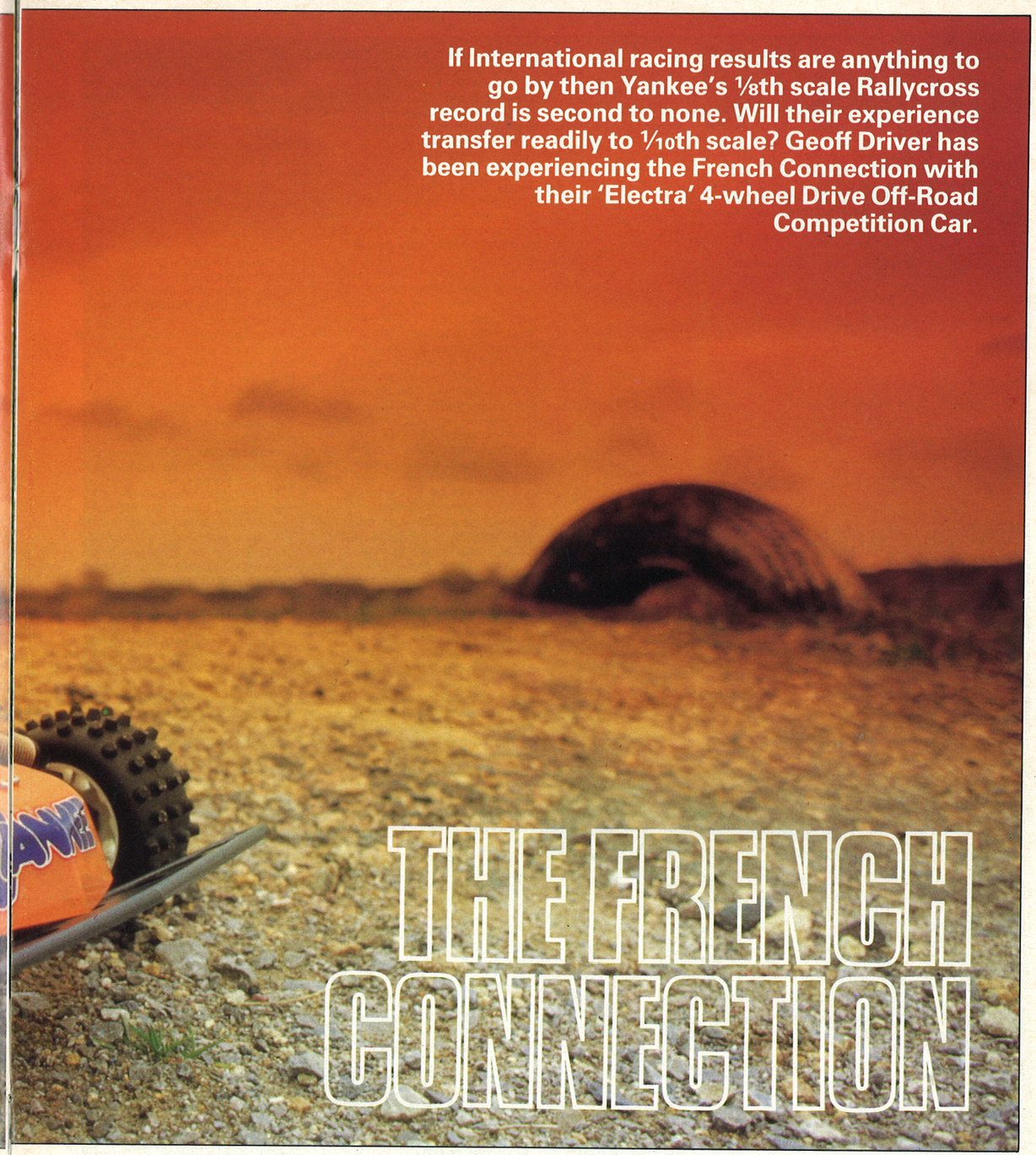

THE FRENCH CONNECTION

If International racing results are anything to go by then Yankee's 1/8th scale Rallycross record is second to none. Will their experience transfer readily to 1/10th scale? Geoff Driver has been experiencing the French Connection with their 'Electra' 4-wheel Drive Off-Road Competition Car.

FOR a country that has given the world edible snails, frogs legs and the *Citroen* 2CV it would have been something of a disappointment if the French entry into the 1/10th market was anything less than unusual.

The French *Yankee* 1/10th Off-Roader is certainly different, and although not totally unique the makers have incorporated features that have not (to the best of my knowledge) been seen on other racing buggy's sold in the UK.

Although the review kit was supplied without electrics, the car is designed to accept the usual range of 1/10th class motors. The importers are still experimenting with alternative types and can offer a few suggestions.

A cursory glance at the excellent box illustration does not reveal anything particularly different about the car. It is when the lid of the box is lifted, and, if like me, you rummage around in an attempt to recognise various parts of the kit that you realise that something here is perhaps a little unusual.

For example, where did they put the chassis — and what are all of those gears for? At this stage you come to the conclusion that intuition must be abandoned and the instructions should take over.

The instructions themselves appear to be photocopies. Nevertheless the drawings and accompanying text is quite adequate and fortunately in English.

Chassis

The reason I did not immediately spot the chassis is because it was in kit form. In fact the main components of the chassis are four alloy rods. No need to panic, all is very straightforward. These four rods when laid parallel to one another make up the corners of a rectangle. Various spacers and gearbox mouldings are slipped onto the rods and are located by circlips fitting into machined grooves. This is a case where a picture must be worth a thousand words.

My initial thought was that this assembly would be about as rigid as the Tacoma Suspension Bridge (that's the one that buckled and fell down)! I must admit to being quite surprised, with all the spacers and gearbox mouldings in place the chassis frame, whilst being slightly flexible, was as rigid as I could wish.

At the rear of the chassis is the rear axle gearbox and differential unit. A similar unit is at the front. A third gearbox is in the centre of the car and this is where the mechanics start to get interesting.

The centre gearbox provides the mounting and main reduction gearing of the motor, the motor itself being fitted lengthwise on the left-hand side of the car. The centre gearbox also includes a front to rear differential. Drive between the centre gearbox and two axle differential units are by plastic shafts with ball and pin joints at either end. To gain access to the moving bits inside the gearbox there is a very nice opening cowling. This flips back to allow the depth of engagement of motor gear to be checked and of course the occasional squirt of oil to be injected. All the internal gears and shafts run on plain bearings.

By mounting the motor longitudinally the designers have accepted the risk of motor torque affecting the cars performance. The argument is that with a longitudinally mounted motor there is a tendency for the car to twist around the motor shaft. It may be that the force of a 1/10th electric motor is not significant, but it cannot be ignored. In full-size cars, some manufacturers fit stronger springs on one side of the vehicle. In the case of the

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THE FRENCH CONNECTION

continued . . .

wartime Jeep they even fitted an additional spring on the left-hand side of the vehicle to overcome the torque reaction. We will have to wait for the track test to see if the motor position has any effect on car performance.

As far as static out-of-balance forces are concerned the designer has chosen to equal up the weight distribution by having the main drive batteries located on the opposite side of the motor.

This, in practice does make the car reasonably balanced. This problem does not occur with most other 1/10th racers as the motor is usually fitted across the car. The location of the batteries is by a novel sliding bracket which is held in place by ...more circlips! The battery bracket is good, but the use of circlips to keep it in position is likely to lead to frustration, irritation and finally lost circlips. It would be a much better idea to use standard style body clips to locate the battery clamps.

The three differential assemblies are all of a similar two-gear differential design using a white plastic which could be nylon, although I have no information to confirm this. The assembly of the differentials presented no problem and they rotated freely when built. I thought the completed differential to be a particularly neat unit. The only observation I can make about it is that as the sides of the surrounding gearbox case are screwed together with no locating dowels or mouldings for alignment, it may be possible to finish up with misaligned side plates.

The manufacturers have identified a potential problem with some test cars where the differential gears are too closely meshed, creating excessive friction which has led to battery duration problems. Whether the non-positive location of the side plates and the gear mesh are related I do not know. The problem can be cured by fitting shims of around 0.015 inch to separate the differential gears. New kits will be equipped with shims and existing customers will also be able to get hold of them. As the differential units are virtually self-contained, it is possible to remove them from the car for maintenance purposes. The six differential output shafts run in ball-races (supplied as standard) and drive the plastic drive-shafts through ball and pin joints.

Suspension

Independent double wishbones carry the stub-axle blocks on non-captive ball-joints which are popped together. The wishbones pivot on the chassis rods and are held in place by yet more circlips. Front and rear wishbone assemblies are identical. The rear wishbones are accurately anchored to prevent rear wheel steering and at the same time give virtually no bump-steering (or RISE). Camber angle can be adjusted by screwing the bottom ball-joint in or out, the only disadvantage with the adjustment is that the ball-joint must be popped off the ball to do this.

The coil-over damper units are mounted almost horizontally on top of the upper wishbone and have a fairly small amount of travel due to the geometry caused by the position of the damper. The dampers are made from aluminium alloy and have a thread cut on the outside of the barrel allowing the threaded collett to provide an infinite range of spring tension. The damper design is quite standard with a piston moving in an enclosed space. Whether it is the design of the damper or its position, but there was a small noticeable leakage of oil from the dampers. Whatever the reason the result was that the damper was not completely full. This combined with the angle of the damper seemed to make the damper stiff to move after the car had been stood for some time.

One suggestion may be that the oil level being low did not completely cover the bottom of the damper around the piston shaft, so on the first couple of movements the damper shaft was comparatively dry, and hence stiff. However after a few movements of the dampers, everything freed up. The problem is unlikely to have an effect during a race as the tracks I have seen are certainly not like billiard tables.

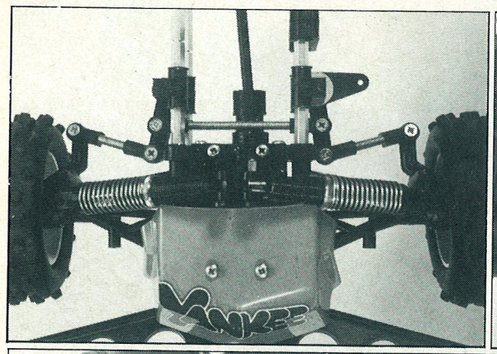
A drawback of the front suspension was with the track-rods which limited the movement of the suspension. A bit of reshaping of the track-rods may well cure the problem.

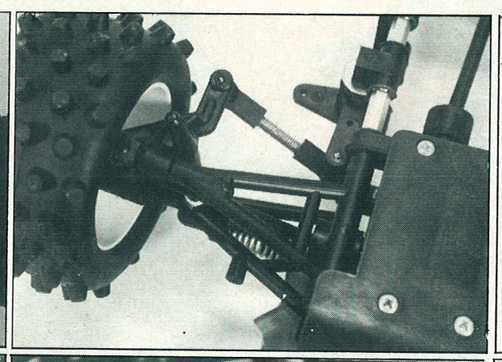
Interestingly the steering blocks incorporated some massive pillars which acted as limit stops restricting steering movement. The aim of restricting steering movement must be to prevent the drive-shafts falling out, and the idea seems to work, at the expense of steering lock.

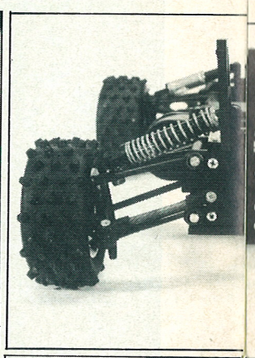
The wishbones look deceptively fragile, in fact I was assured by the importers that you could almost tie knots in them before the break. Not that this test is to be recommended, but the point has been made that they are tough. The tyres are of standard dimensions (not low profile) and seemed a bit on the heavy side. The last comment may seem a little vague, but I was unable to weigh the tyres as the editor wanted the car back again in a hurry (he said for photographs, but I have my doubts).

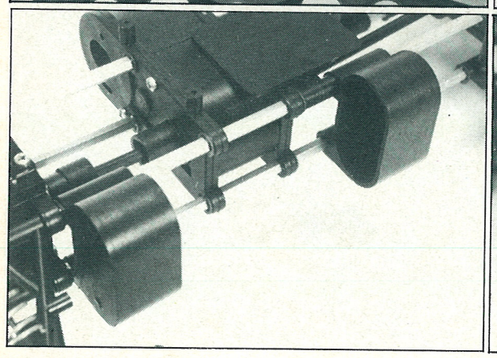
Contruction

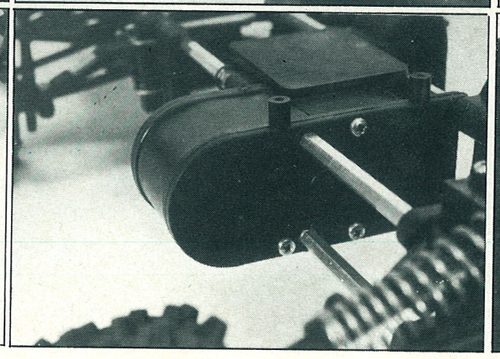
I have already made mention that the makers of the *Yankee* must have found all the last known stocks of circlips. In fact use of circlips in this design is not at all bad, it is just different. When it comes to screws, the majority of those provided in the kit are described as *Parker* screws. I have not heard this term used for years, so for those who do not know, the makers

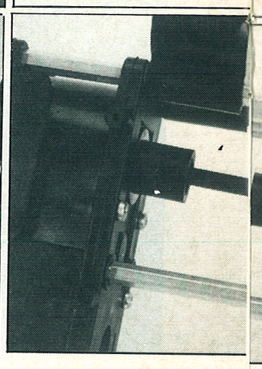












are referring to cross-head, self-tapping screws.

Under normal circumstances I would not normally mention about the correct size of hole to screw into, but on a number of recent kits I have noticed that the holes were definitely on the small side, making kit assembly less than easy. I must report no such problem with the *Yankee*. The only problem occurred with the mounting of the wing support. In fact the screw holes were immediately below a strengthening brace and the only way to screw the support into position was to twist the support clear. I suppose if nothing else this does illustrate that the plastic used in the kit will take a certain amount of abuse.

One idea I liked which has found favour with a few other manufacturers is that the contents of the small plastic bags contain enough screws and small parts to assemble just one section. I found assembly quite straightforward with no hidden problems, and although not accurately measured, took around three hours to build the rolling chassis.

Although not strictly a criticism, it seems a shame that the designers have provided a substantial space frame chassis with the *Yankee* and then found it necessary to mount all the major components on the outside. It is difficult to say that this is a basic design flaw or perhaps a design feature for easier access and maintenance. Whatever the reason it certainly shows some original thinking.

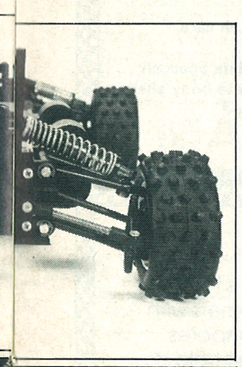
In my opinion the engineering of the car is good, with only one or two small question marks. The quality of moulding is entirely adequate and if my experience of bending the wing mounts around is anything to go by the choice of materials should be OK. The fact that the makers have discovered a problem with the differentials so early in the car's life should not put off prospective purchasers, better to admit to a problem and find a cure than just simply brush it off and say that all is well. Overall I found the car a pleasure to build, novel with some interesting ideas and typically-French.

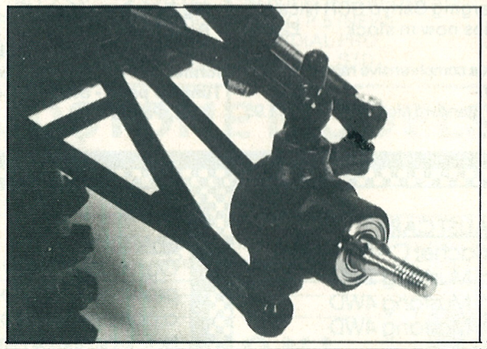
Importers: J&P Turner, Orchard Corner, Augustine Road, St. Paul's Bay, Orpington, Kent.

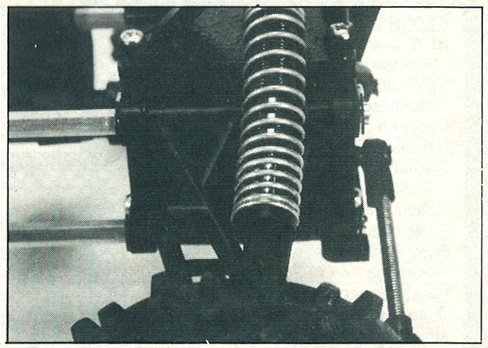
Available through most good model shops.

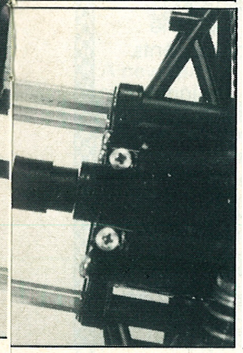
Price: £190.00 (approx.) with ball races.

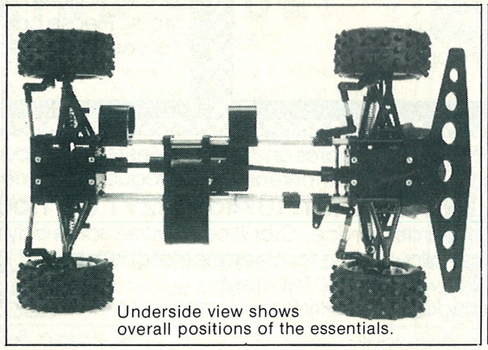
STARTING TOP LEFT & CONTINUING CLOCKWISE
Yankee front end showing steering assembly. Front uprights also include the steering lock stops. Rear view showing the 'Electra's' steady stance. Rear end uses identical suspension parts as the front. Rear shocks lay down at a steep angle with progressive springs. Battery clamping device, (may prove tricky in the field!). Centre gearbox shows motor housing. A stubby drive-shaft transmits power to the rear.



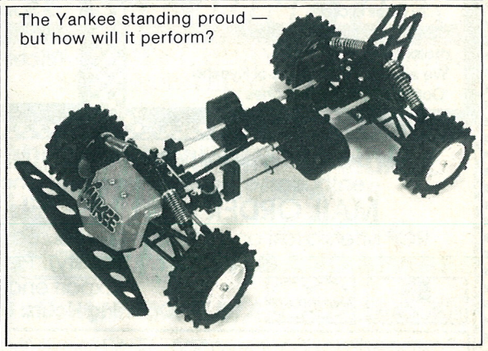








Underside view shows overall positions of the essentials.



The Yankee standing proud — but how will it perform?