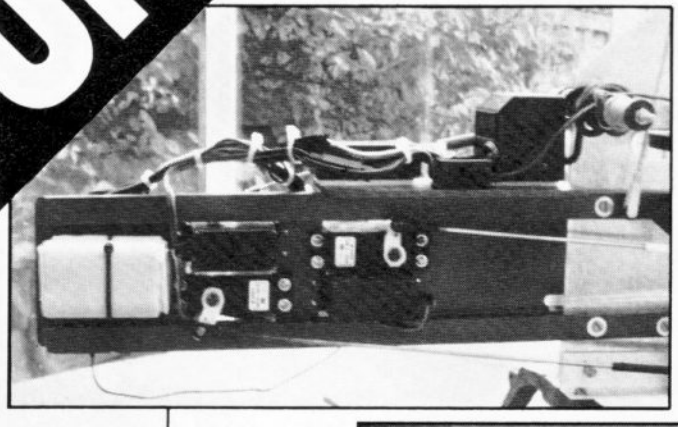
Lots of Fun for UNDER A TON

M.B. tests the Rotaire Tyke — the latest contender in the entry level market



The radio compartment is spacious and uncluttered (the authors estate agent training is beginning to show here), the unusually long throttle pushrod hasn't given any problems.

Kit contents won't take too many hours to assemble but are sufficient to make the exercise interesting and satisfying.

I've built one or two model helicopters in my time and though it would be all too easy to take short cuts when building a kit while wearing my editor's hat, so to speak, I do try to stick to the recommended guidelines. Practice what you preach, being one of my well worn phrases.

Reading the instruction manual thoroughly before attempting to start building is one of the best ways to get to grips with the job. But it's the little bit at the end of the manual that I find offputting. You know, the part that explains that model helicopters are dangerous but the kit manufacturer cannot take responsibility for the inevitable.

I suppose with the current state of the law covering product liability these disclaimers really are necessary, to protect the makers from clients with lightweight brains, but these warnings could be worded in a more sincere way.

Rotaire have in fact done something towards putting this situation to rights. When one reads the Tyke instructions one feels that the designer is genuinely concerned and is making a sincere attempt to warn the builder of the possible pitfalls which could confront him. This is good because it will encourage the builder to adopt a more responsible attitude without filling him with unnecessary anxieties.

This rather pleasant aspect of the Rotaire building manual seemed to set my mood for the whole exercise, which (apart from one rather silly mistake on my part) was very enjoyable to say the least.

Kit Contents

Although the Tyke is presently the cheapest model helicopter on the market, as can be seen from the photographs, the box contents don't reflect this.

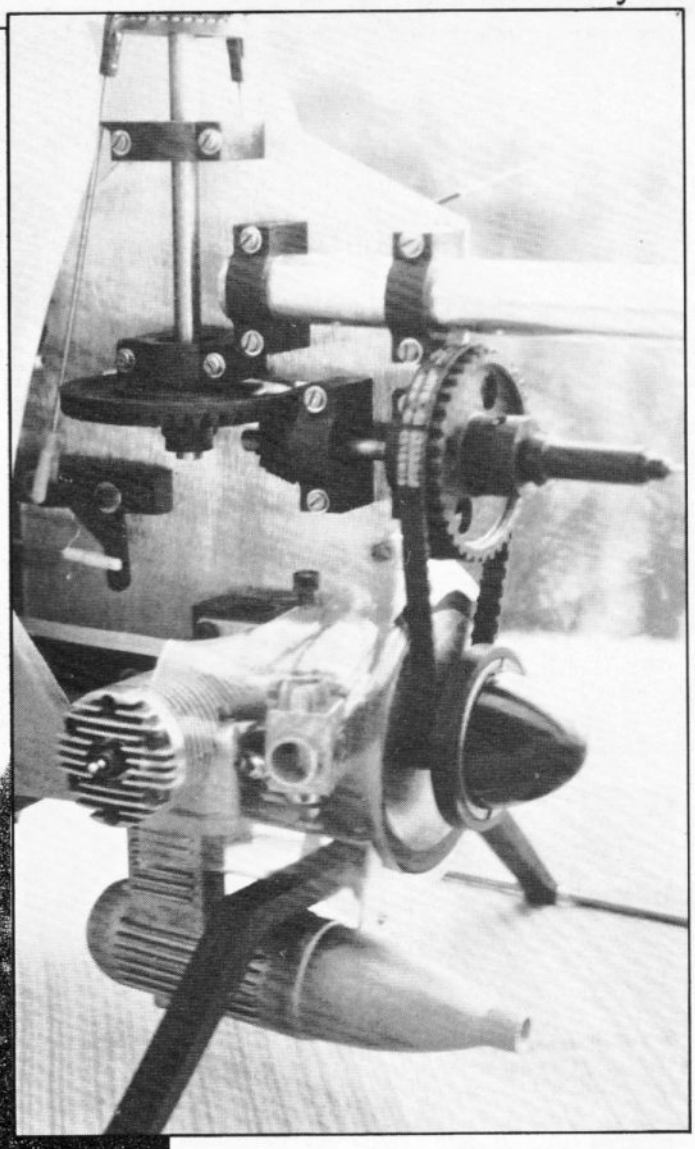
The number of parts involved make it an interesting project, (this is no almost ready to fly deal) and the finished quality and presentation of the parts is such that no work other than assembly is required, except for mounting the engine, which I will come to later.

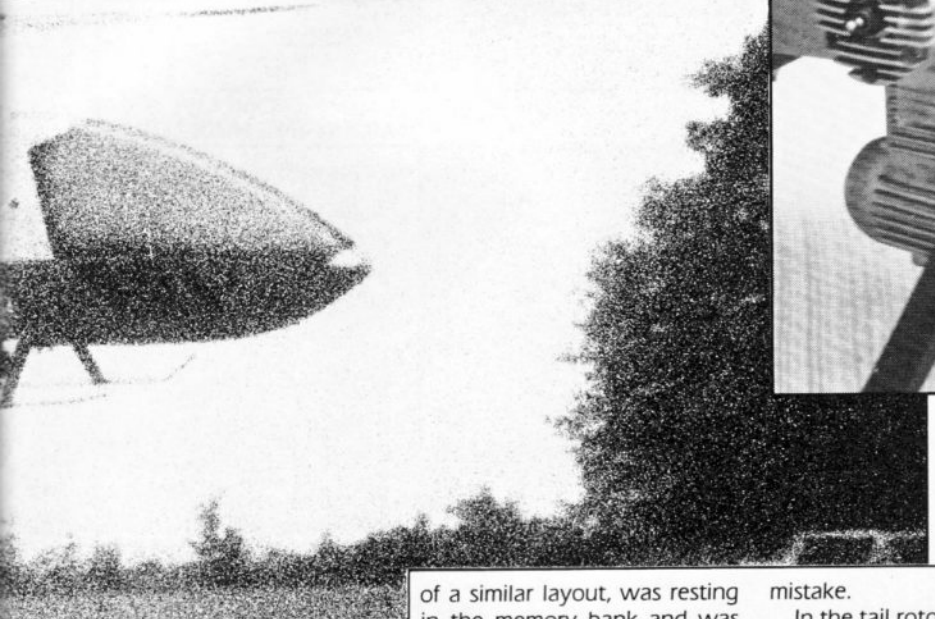
The plastic components are nicely moulded, the wooden parts are cleanly bandsawn except for the blades which are a perfect example of the spindle-moulders art and the metal parts are all accurately machined.

Apart from the radio, engine and the paint and glue for the canopy everything that's required can be found in the box. Right down to the silicone fuel tube and even a pitch gauge.

A nice touch in the hardware

Very simple and familiar layout with a toothed belt for the primary drive to the tail drive on one side and the crown wheel and pinion driving the main shaft on the other side. Both transmission shafts are supported on ballraced blocks. Note the cone start, a feature normally found on more expensive models. The A.S.P. engine is sure to find favour with owners of medium size helicopters.





bags is the provision of a flat steel washer to go with every nut and bolt. A feature often omitted from much more expensive kits but one I like to see.

Construction

This is quite simple and straightforward. Starting with the central chassis member and the main transmission (fully ballraced I might add). After the addition of two right angle chassis members, the next step is to assemble the clutch and flywheel to the engine and bolt that lot to the chassis. This is the only tricky part of the whole building sequence but also unfortunately the only rather vague part of the instructions.

Luckily, past experience (many years ago) with models of a similar layout, was resting in the memory bank and was quickly recalled for this instance.

Prospective builders will find it easier if they study sketch 'A'.

The rest of the assembly was virtually as per book. The advice on gear mesh was heeded. The instructions say that the gears should be meshed a little on the tight side and then greased. This proved to be sound advice, since after a dozen or so flights the whole mechanics now run smooth, free and quiet. That goes for the tail box as well. The latter is not ball-raced but utilises quite substantial Oil-ite bearings which should outlast the model.

Confessional

It was with the tail rotor gearbox (if you can call an open assembly a box) that I made my mistake.

In the tail rotor hub there are four holes other than the axle hole. Two are used to mount the tail rotor blade hubs using 4ba bolts and the other two receive the 4mm grub screws that lock the hub on to the shaft. Since 4ba is somewhat smaller than 4mm it is important tthat the correct holes are selected for their proper purpose. Even though it states quite clearly in the instructions that the hub bolts must go in the holes identified with moulded in markers, I still managed to get it wrong. As you will read later.

Radio Department

This has been designed to accommodate virtually any size of servos and there is more than ample space for the receiver, gyro and nicad etc.

Using only 4 servos (JR 505) which demand very little power in this application, plus the obligatory gyro, I felt that a 1200 Ma nicad was probably unnecessary so I fitted the only alternative available at the time, a set of Sanyo 800 cells. A 500 Ma pack would possibly be adequate but preferably with an on board nicad checker for peace of mind. The only benefit of the 1200 would be as extra nose weight, if required.

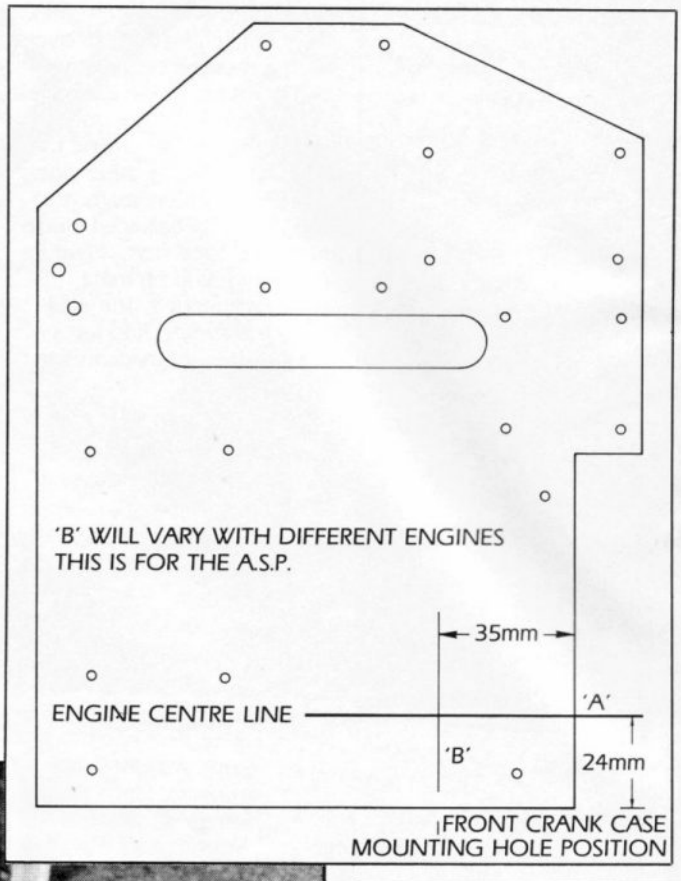
Control Linkages

These were assembled as per book except for the lateral cyclic bellcrank. This was mounted on a 20mm stand-off, (see photos) in order to dispense with the bridge bend to clear the crown wheel, that would otherwise have been required.

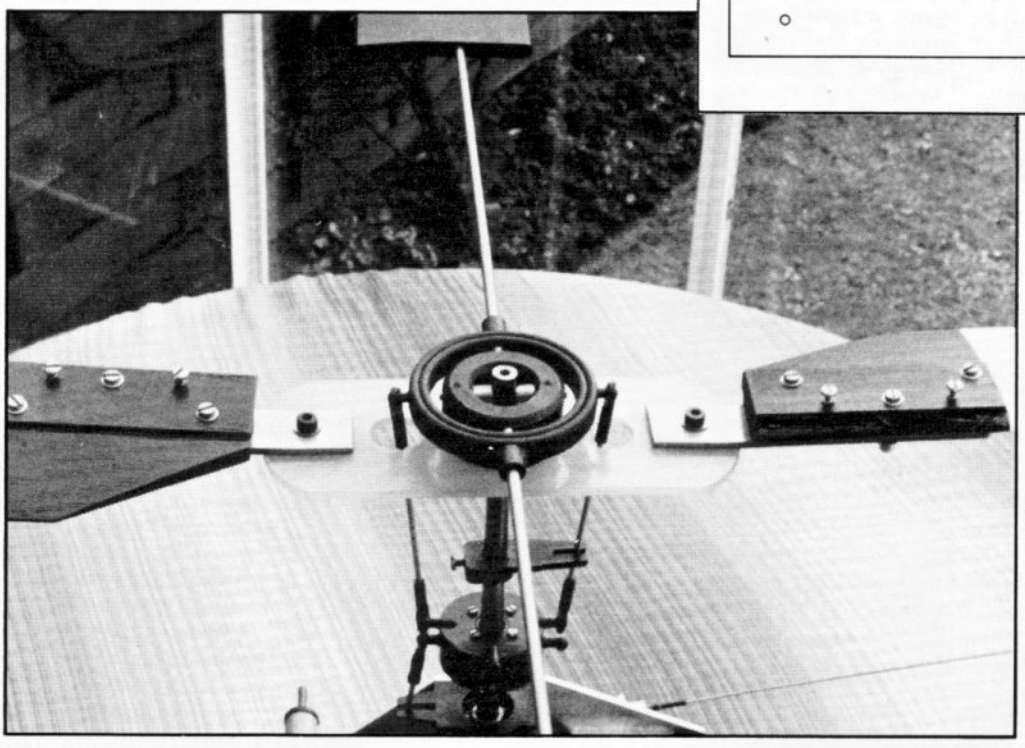
Engine Choice

MacGregor Industries, best known to helicopter fliers as importers of JR radios, now have

No one would claim that the Tyke is pretty but it has a very neat and tidy appearance, certainly not unattractive.



Main rotorhead centre beam is made from GRP sheet providing teeter and a virtual flapping hinge. Note pitch jacking screws which allow very fine adjustments to be made — much better than the usual method (two pairs of pliers). A. G. Products whip aerial can be seen in bottom right hand corner.



available a range of engines that they import from mainland China. A.S.P. Engines, as they are known, are quickly getting a reputation of offering high quality and performance at an economy price. Mike Billinton tested the A.S.P. 40 in our sister magazine which caters for fixed wing fliers, R/C Model World. His test report exhibited his high regard for the engine and I think I can see why.

MacGregor's very kindly gave us the larger .46 version to use in the Tyke — an aero version but by now the helicopter type should be available.

Right from new this engine has started very readily and seems quite happy to operate in a fixed pitch model — not all engines will tolerate this particular environment without complaining.

It has to be said however that the available power from the .46 is far more than will ever be required in the Tyke. We would recommend the .40 as more than ample for the job.

The Tyke features a cone start as standard, this combined with a good engine like the A.S.P. makes life very much easier, especially for the beginner.

Rotor Head

This was built and set exactly as instructed. One of the steel blade mounts had to be tweaked in a vice to achieve even static tracking and a small adjustment to the two jacking screws in the blade root of one blade was sufficient to correct the in-flight tracking discrepancy.

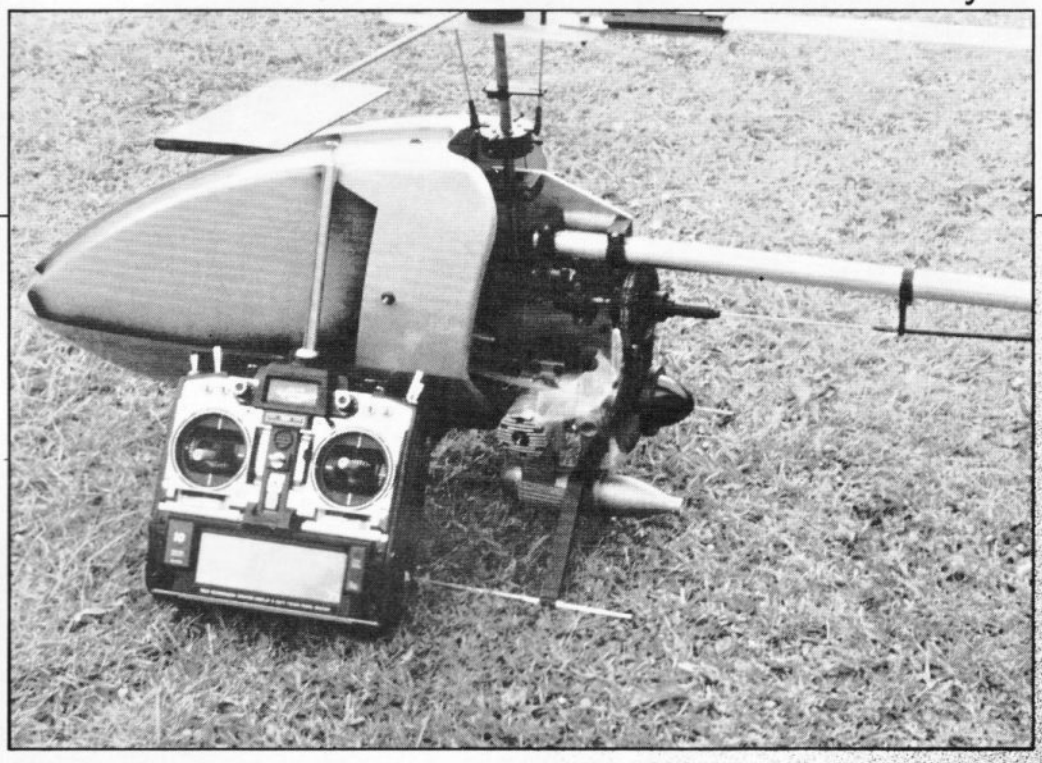
Both blades had been preset to the prescribed 7 degrees, using the pitch gauge provided in the kit. Both main and tail blades needed a small amount of tape weight to correct their static balance but very little work was required.

Finishing

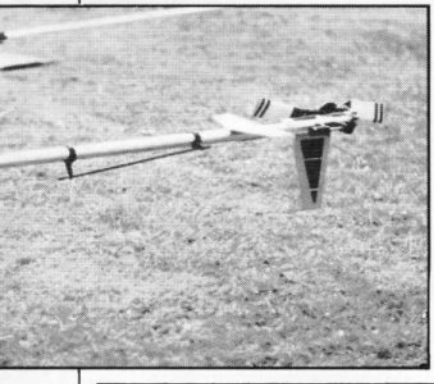
The canopy was airbrushed with Solarlac while the tail feathers were covered in a matching shade of Solarfilm. The decal trim was made up from scraps left over from material used in the G-Ranger that we reviewed in the last issue.

Test Flights

As usual with a new model, initial test hops were carried out on my lawn. The reason for this is that any changes or adjustments can easily be done with all facilities close at hand. Much better than going to the flying field only to find that the necessary tools are not available,



JR PCM 10 is admittedly a bit much but it's the writers only transmitter now.



which means one can't fly or worse still, yields to the temptation to "cobble it up".

Test hops proved all was OK and that the kit presentation promised to be as good as the prototypes that designer Tim Angel had allowed me to fly. So it was a case of off to the field for flight evaluation.

Because the engine was new and unfamiliar to me, I hovered out a couple of tanks of fuel with the mixture verging on a 4-stroke. This makes fixed-pitch flying a bit dodgy, remember height control is determined by varying the rotor speed and when the motor is alternating from 2 to 4-stroke the rotor speed control is far from predictable.

From then on the mixture was leaned out a little at a time but always maintaining a smokey exhaust. This smoothed things out and it also increased the rotor speed if anything over ½ throttle was used — at which point disaster struck.

Remember me mentioning that I got the tail hub assembly wrong? I had put the 4ba bolts into the larger (wrong) holes that were moulded to take the 4mm grub screws. With the increase in tail rotor speed, one of the bolt/hub/blade assemblies departed from the hub, leaving me with no tail rotor control. Without the option of the throttle hold switch and autorotation (as one has with a collective pitch model) all I could do was let the model flutter to the ground and close the throttle just before striking the ground, in order to minimise damage caused by kinetic energy.

Second Wind

The next day I called Tim and admitted my awful mistake. I gave him a lengthy list of parts for replacement and within a week the Tyke was back in the air again — this time with the tail rotor assembled correctly.

Air time with this model is now building up and as I've said the mechanical assembly is running freely now, allowing even more power to get to the rotor blades. Since this model was designed primarily as a trainer it comes as no surprise to find that stability in the hover is one of its strong points.

However when overpowered — as ours is — the cyclic controls respond much quicker and with more power. So much so that I managed to loop the model with ease. Of all the fixed-pitch models that I have flown, only the GMP Cricket responded better to aerobatic demands.

No other aerobatics have been attempted, this model was not designed for that purpose and I don't want to spoil its hovering qualities for that end.

Summarising

The uncanny hover stability of the Tyke with its relatively low rotor speed can only be attributable to the clever design and careful matching of blade weight paddle size and teeter control. While most are gaining stability from high rotor speeds, Rotaire are proving it can be achieved the other way.

And finally. Not only do you get a lot of fun for less than £100.00 you also get a lot of helicopter, it's almost as big as some .60 size models. □