KIT REVIEW

Gerard Feeney tests the DPR Models COSMO 25 SR — a Korean import

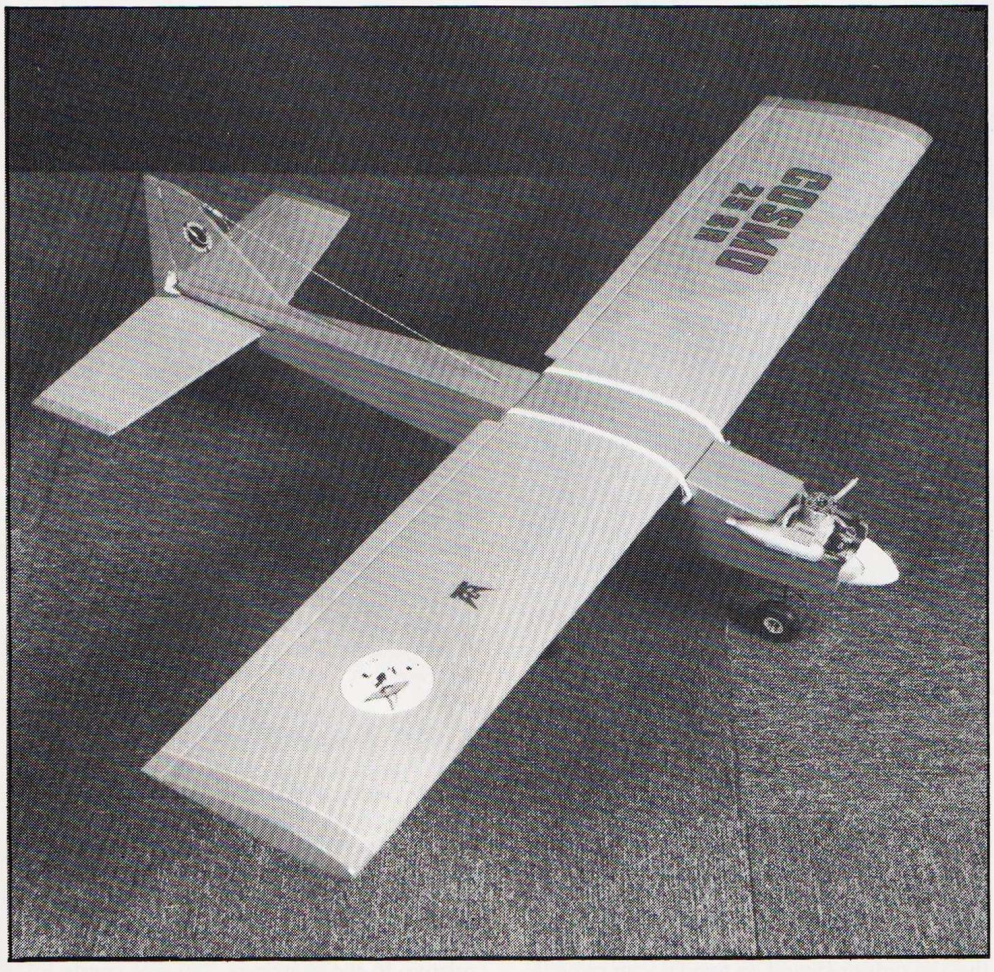
COSMO IS THE RATHER UNUSUAL brand name given to a new range of kits (made in Korea), being introduced into Britain by D.P.R. models of Shoeburyness, Essex. Subject of this review is the Cosmo 25SR, a 50-in. span high wing trainer and general sports model, which requires 3-4 ch. R/C and, as its name suggests, motors between 19-25cu.in. capacity. I was somewhat pleased to see this model features traditional, all built-up, construction due to the fact that, for the past three years or so, glass-fibre and foam materials have formed the mainstay of my modelling diet!

The Kit . . .

This arrives in a surprisingly small box (must be all those large A.R.T.F. model 'coffins' I've dealt with which gives me this impression!), a single colour photo of the completed aircraft on the lid being the only real decoration afforded. Presentation, while good, does lack the more glossy 'eye appeal' found nowadays on a large proportion of its European counterparts, but I understand that later kits have the full treatment.

First impressions, upon removing the lid, are of a lot of Balsa and ply parts all neatly packed. Some items such as die-cut wing rib sheets and balsa tail components being sealed inside separate polythene bags, a nice touch. Closer inspection reveals all materials to be of good quality, with one exception — the wing spars. These, in my opinion, are far too soft for their intended purpose. Fuselage sides and formers, ribs, ply doublers, etc. are all cleanly pre-cut, most components needing only slight assistance from the knife to break free.

Quite a comprehensive selection of hardware is also provided including hinges, control horns, engine mount, a nicely moulded white plastic spinner and a set of kwik-link rods. I mention the latter items in particular because they are listed as extras, according to the plan! Fuel tank, wheels, collets, wing seating tape and ¼in. square pushrod material does need to be furnished by the builder, however.



There is no instruction manual as such, instead all relevant information is carried on the full-size plan, which is well drawn if a little cluttered. On the bottom right-hand section appears a series of step-by-step assembly drawings, showing clearly each building stage. My best advice here is follow this constructional sequence and you can't go far wrong!

Also provided is a parts check-list plus an adhesive guide. My only real criticism of the plan concerns the very poor 'translated' English used, there being quite a few misspelt words and some *very* weird terminology indeed! Such errors are obvious, and should provide little difficulty for the more experienced modeller but *are* bad news for any first time, novice builder who is unfamiliar with 'R/C speak'. Improved wording and, possibly, a separate instruction book (to tie in with the plan) would greatly improve this situation. Oh yes! Almost forgot, also lurking in the box are a set of self-adhesive transfers. Right, that's the kit, let's build it.

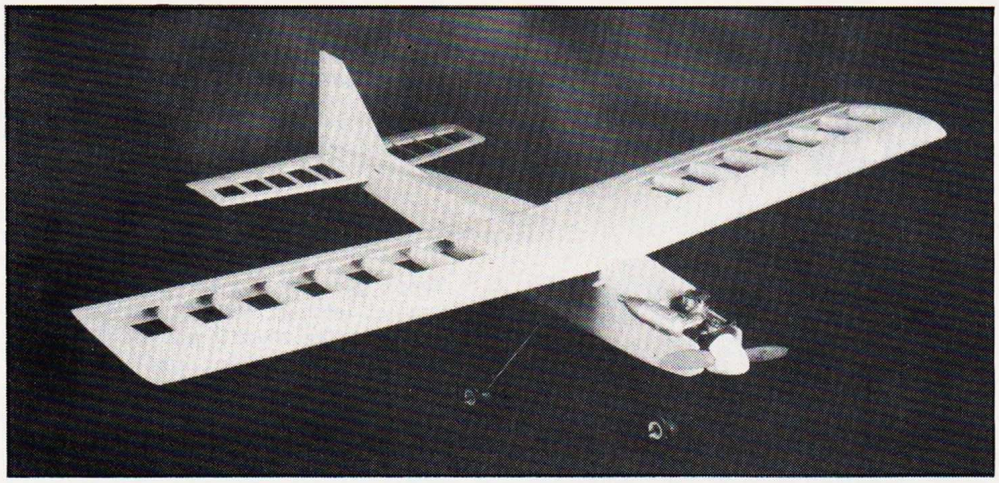
Before doing so, it is essential to rub all relevant areas of the plan with candle wax or, as I did, cover the whole thing with polythene sheet (film backing). Doing this, of course, prevents the structure adhering to the plan once the glue is dry.

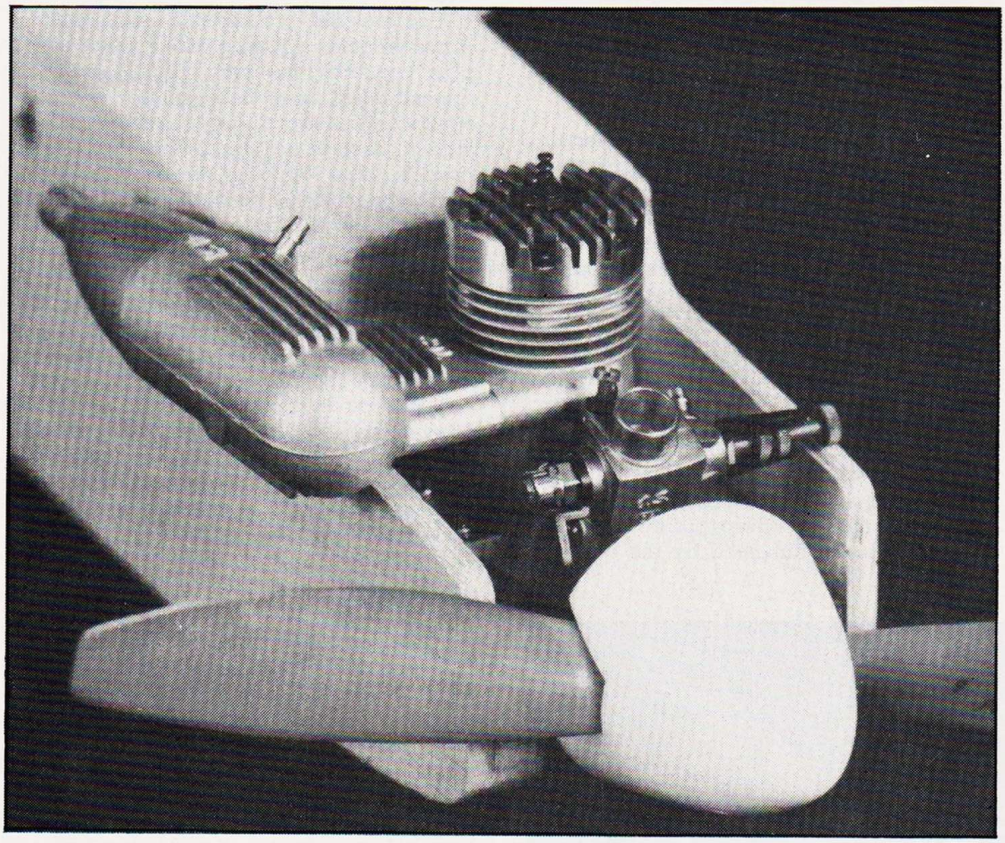
Wings

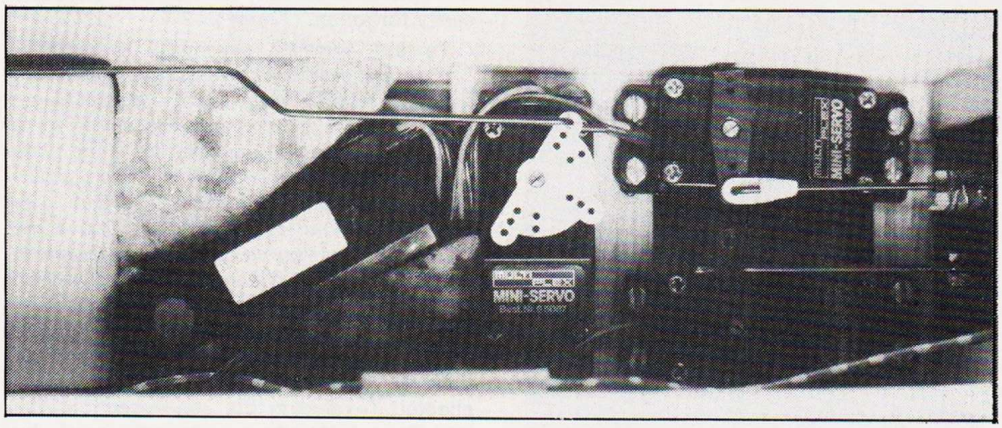
I commenced construction with the wing. This is a conventional, all built-up structure of semi-symmetrical section. First job is fit the spar doublers (part Nos. W2). A very simple procedure but remember, when doing this, the wing rib slots should be located on the *bottom* of the *top* spar and vice versa. Also don't forget to make up both a left and right hand pair, a seemingly obvious point, but one easily forgotten. (Ahem!).

To aid accurate assembly, prenotched L/E's, T/E's and mainspars are employed, thus ensuring the wing ribs fit snugly in place. I found the slots in the balsa stock were roughly 1/16in. out of line, relative to the plan, not a major problem really, but one I would like to see improved nevertheless! Due to its section the wing cannot be built flat on the board, jigging tabs on the ribs are therefore utilised. A point to watch here is every second rib does *not* have a tab — a dry run helps overcome potential problems. Same applies to the inter-rib webbing (supplied pre-cut, handy!), only every second bay is shown sheeted (excluding the centre-section, that is). Here I introduced my only mod. by webbing every single bay, due to heartfelt anxiety over those flimsy mainspars. Better safe than sorry, what? Remainder of the building is straightforward but at this stage, off the board, the basic framework is quite weak and flexible. Before work can start on the left wing, a reverse image must be obtained by greasing the plan and rendering it transparent. Once this task is complete, simply build as usual but on the back of the paper.

No less than five dihedral braces (4 ply, one balsa) are used to join the wing panels so, hopefully, there is little cause for concern regarding lack of strength in this area!







Gerard Feeney found the Cosmo 25 SR to be a well engineered kit and, with a few minor exceptions, easy to assemble. The O.S. 25 FSR engine produced adequate power for the 50in. span trainer/sports model - quite enough too for basic aerobatics. Kits are available from most model stockists at £35.00.

When all the glue has dried, ideally overnight, L/E, T/E and C/S sheeting is applied. I used Evo-stick impact adhesive for the majority of this work, the thought of hundreds of modelling pins stuck in a wing, while P.V.A. goes off, does not appeal to me, at all! It only remained now to fit ⅜in. sheet tips, cap strips, torque rods and their hardwood covers (which must be grooved by the builder) and the wing is, more or less, complete. The ply aileron servo mounting plate is best glued in position after final covering has taken place.

Although this model is intended for either 3 *or* 4-ch. no mention is made regarding differing dihedral angles. Ailerons are the primary turning control with a 3-ch. set-up. In fact a recommendation appears on the plan that the rudder should be fixed if your radio is 3-ch. The wing is now left aside until finishing takes place.

Fuselage

Nothing very unusual here! It's a very simple, boxy, affair. Full length ⅛in. balsa sides combined with ply doublers and ply formers make it very rugged indeed. Remember to both laminate and pre-drill (for nose leg J-bolts fitted later) formers F5 and 6 before joining the sides. Hardwood bearers (which support the alloy engine mount later on) are also epoxied in place at this stage. Once the fuse sides are joined, top and bottom sheeting, main U/C mounting blocks and nose cheek doublers are added, followed lastly, by the nicely produced, pre-grooved, piece of balsa into which the fin will eventually fit.

This component deserves special mention, in my opinion, providing as it does both an accurate and secure housing for the fin. Definitely a good idea and one which could be incorporated into other model kits!

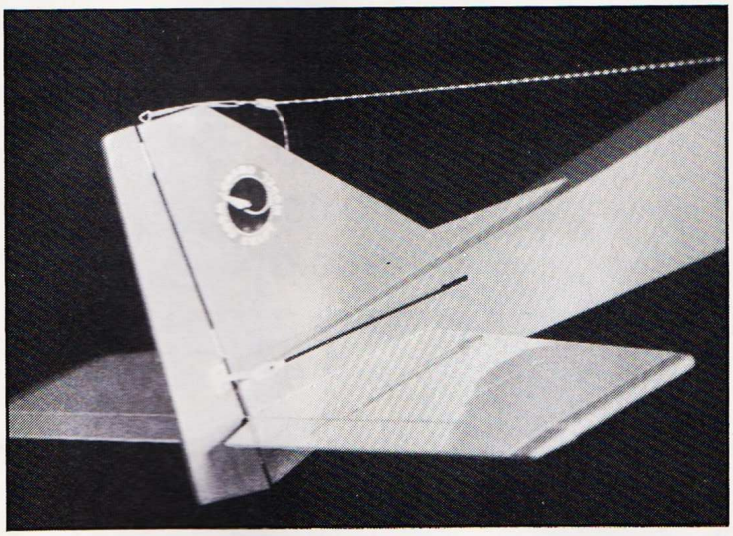
U/C is trial fitted next, a choice of steerable or fixed nose gear is offered, another novel touch. I chose the latter, mostly for simplicity, but also because it allows greater crash resistance. Our flying field is rough pasture, hence any less than perfect arrivals transmit shock waves right back to the servo — hardly a welcome occurence! As previously mentioned J-bolts hold the fixed nose leg in position, I found this task rather fiddly and would prefer plastic or metal clamps. It is best not to fit the tank hatch (part F18) until the J-bolts are tightened up securely and the interior of the tank bay fuel-proofed. Main U/C legs are simply held in place, upon the hard wood block, by the metal clamps provided. So far, so good, now for the engine installation.

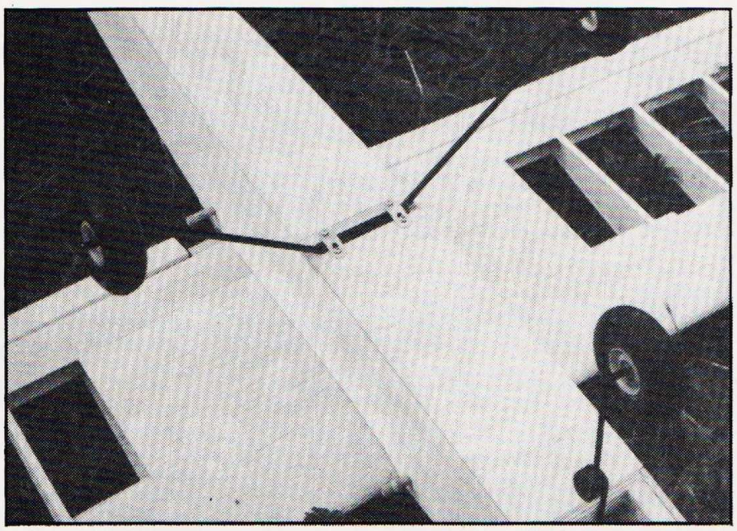
The mounting system provided in the kit is simple yet effective. Two separate, rectangular, alloy plates with (pre-drilled) elongated slots enable most 20 size motors to fit with ease. A brand new O.S.25FSR was acquired for the review and appeared tailor-made, popping in place with no trouble at all. Thanks to my flying colleague Harry Thompson for the loan of his (up to now!) boxed beauty, I'll try not to bend it! Usually I resort to 6BA lock-nuts and bolts when fixing an engine of this size to its mount. Not in this case however, instead the supplied bolts and double nuts were fitted, with adequate results. The complete unit was now screwed in place on the hardwood bearers — just to ensure everything fitted okay.

Following a break for something called food, some more finger twiddling exercise was indulged in by once more unscrewing the mount and main U/C, prior to final shaping of the fuselage.

Tail Feathers

Again, some very basic balsa bashing is employed to produce the rear end parts. The fin is simply three pieces of sheet, butt joined and sanded smooth (careful not to over-sand or a sloppy fit will result in the fuse), while the horizontal tail is built up from pre-cut sheet and strip directly over the plan. Here, like the wings, the notches were slightly out of line relative to the drawings. Tail ribs (parts H5-H8) required replacement from scrap balsa, being supplied about ⅛in. undersize. Only





Conventional in layout and construction, the Cosmo 25 SR is a well behaved and easy to fly aircraft. Absolute beginners are recommended to have an experienced pilot standing by for first flights. Lower photograph shows the aileron servo installation.

major jobs remaining now were to hinge and dry-fit all control surfaces before the final finishing process could take place. Speaking of which...

Finishing

Following a thorough overall sanding session (cough!) Solarfilm was used to cover the entire model. Yellow flying surfaces plus green fuse and fin produced a simple, yet attractive scheme — I believe at any rate! Engine bay was painted green to match, followed by Tuf-cote fuel-proofer on all important areas. The self-adhesive transfers supplied produced a couple of headaches, I'm afraid. First, the backing sheet is white, not clear as is usual. It is therefore necessary to trim each letter and number out separately, unless you don't mind a white background. Not such a bad job with the large letters but, for me, an impossible task on the smaller size.

Secondly, the colours ran when fuel-proofed, a problem which may be avoided by spraying, rather than brushing as I did. All I would advise is caution, the rest is up to you!

Bits 'n' Bobs

R/C installation proceeded smoothly, except for one thing. Due to the large size of my Multiplex aileron servo, it was impossible for the wing to sit in place without fouling its arm and torque rods on the (equally bulky) Rx. Try as I might that Rx could not sink any deeper within the fuse, nor could the Ni-Cad move forward due to lack of space in the tank bay. After much head-scratching, I placed the Rx sideways, immediately aft of the battery pack. This arrangement has worked pretty well, so far. Plugging in the aileron servo is a little tricky, though! Needless to say, such hassle will not take place if you possess gear with a physically small airborne pack! Before leaving the installation, let me mention the pre-cut pushrod outlet slots, located in the rear fuselage. Like the fin mounting block referred to earlier, these are a thoughtful inclusion, enabling the builder to get the holes in just the right place for a change!

Control movement was set as per plan as follows: Ailerons 5mm each way, elevator 8mm each way and rudder 10mm each way.

Final all-up weight (including 4ozs. of lead in the nose) came to 3lbs. 15ozs. less fuel.

Flying

The day chosen for initial flight testing dawned calm, but very overcast and damp. Later as conditions improved, the Cosmo was brought forth, ready for whatever its fate might be!

On reaching the field our usual pre-flight range checks were carried out. Everything proved okay, so no excuse left now but fire up. The O.S.25FSR started quite rapidly, much to my relief (or despair, depending how you view the prospect of a test flight!). I must admit my usual sense of pre-launch anxiety was heightened even further due to this being a review model so, without further delay, my assistant launched Cosmo.

First attempt proved something of an anti-climax, the model decending gently but progressively into the ground! Three factors caused this event: Those already mentioned review nerves, need for some up-elevator trim and slight lack of 'ooomph' from the O.S. (being new, it was running rich). Second launch (with a couple of turns of trim wound on) was a much more civilised event, the Cosmo gained height in a fairly slow but steady climb, all controls responding well, so far.

With the movement set as per plan I would describe response as fairly slow, but very controllable — certainly not twitchy. In addition to the up-elevator already wound on, some right aileron trim was also necessary to achieve hands-off, straight and level flight.

Once at a safe height left and right hand circuits were tried, no problems here at all. Interestingly, both aileron and rudder provided almost equal turning power, a couple of circuits without aileron being made to prove the point. My pulse rate had, by this time, returned to normal, time for a few manoeuvres ... loops were dead easy, a slight dive proved helpful due to the motor running rich. The left wing dropped slightly, despite a level entry. Addition of right-hand tip weight may help here. Rolls were fast either way. Surprising, considering the small amount of aileron throw. Some elevator was fed in during the inverted phase, to prevent barreling. Talking of inverted, I've never felt really at home performing this type of airborne antic, but managed a couple of inverted circuits, first time out with the Cosmo! Only a small amount of down was required *plus* a considerable amount of concentration. Immelmans were also very easy to perform, but spins could not take place with the model set up 'as per', a spiral dive resulting most of the time. Increased control surface movement and a slightly more rearward C.G. would, no doubt, change Cosmo's docile handling — if you like that sort of thing!

What next? Good question! Time to explore the slow speed handling. Throttle right back, apply more and more up-elevator and observe what happens, not a lot, really! The Cosmo does not stall as such, instead assumes a slow mushing flight path, during which control remained positive even with full back stick held on! A few circuits were completed in this mode. Interesting! When I tried the same thing again but *without* aileron to hold the aircraft level, the left wing *did* drop, tending to enter a spiral dive. This situation was very easy to get out of, however, simply by applying slight down and some aileron correction.

Having established the slow speed department as being safe, a landing approach followed. No problems here either, Cosmo remained fully controllable all the way to touch down. The aircraft tended to undershoot if power was reduced at too great a distance. Blipping the throttle rectified this easily.

Generally speaking a most satisfactory first flight, excuse me whilst I wipe my brow!

Subsequent flights were equally successful. Getting to know Cosmo revealed it to be a vice-free sports model, capable of most manoeuvres, but without the precision of a more advanced 'pattern ship'.

Handing the Tx around to my fellow R/C-ers confirmed this model to be well behaved and easy to fly machine, what more is necessary?

Conclusion . . .

From a kitting point of view, a very commendable first effort let down only by the points already mentioned in the text. Lack of more concise building instructions rule it out for a rank beginner without previous aero-modelling experience, though. Flying — wise, I personally rate Cosmo 25SR as a great little weekend sportster, suitable for the more experienced Sunday flyer. It *could* be used as a trainer, *providing* your local, friendly expert is standing by should any difficulty arise.

Anybody in search of a straightforward, purposeful, sports model could do a lot worse than the 25SR!