

KIT REVIEW

No. 198 by Alec Barber



Wayfarer

GLANCING THROUGH some back numbers of the American R/C Modeller Magazine, I discovered the construction article for a very attractive biplane called the 'Wayfarer'. I remembered seeing four of these fly as part of a demonstration put on by Nuneaton Aeromodellers about ten years ago. A very impressive sight.

Although not a new kit therefore, but one which has recently become more readily available.

First Impressions

"What a lot of balsawood" my daughter exclaimed as the lid came off. Could this be the sweet smell of success I wondered?

The amount of wood and accessories became more and more surprising as each item was removed from what was rapidly becoming too small a box to be re-packed.

Every accessory needed was included from two types of hinges, bellcranks, horns, up to a huge metal landing gear complete with 3½ in. diameter wheels, a very fancy steerable tail wheel assembly, 8oz. tank and engine mount.

Plans were on two sheets, one being solely devoted to the tailplane assembly and all four wing panels. The remainder of the model,

fuselage side and top views, top deck template and 17 assembly photographs are clearly shown on sheet 2. Building instructions are given on a smaller sheet in four languages in minute detail. A small scale copy of the balsa and ply die-cut parts is shown on this sheet, which proved helpful due to the fact that only some of the parts are numbered on the wood.

With this mountain of material spread out over the table I was left with little option but to put back into the box about half the kit and commence building the rest.

Top Wing construction

A very simple though light and strong structure is built up using the 'eggcrate' method. This comprises notched spars and ribs slotted together. The excellently cut ribs maintain a perfect warp-free alignment due to the bottom rear half of each rib being left square and not cut away until the wing is almost complete.

Construction is in fact very conventional in that balsa ribs fit on balsa spars followed by a balsa edge fitted into notches in the ribs. ¼ in. sheet balsa covering is applied to front and rear, top and bottom. Cap strips stiffen the ribs followed by huge wing tip blocks

which require a deal of planing and sanding to achieve the desired shape. The only items different than a conventional non-aileron wing is lack of dihedral and the inclusion of two plywood sockets in the bottom surface for the interplane struts.

This method of construction lends itself very readily to the use of 'super glue' although little time will be lost if white wood glue is used, as I chose to do.

Bottom Wing construction

An almost exact copy of the top wing with the exception of inset ailerons and some dihedral. The wing was built in two halves and the required amount of dihedral was set using a wing tip block on a piece of ¼ in. sheet as a prop. The aileron spars and tip ribs are all built into the wing and only finally cut away after the sheet is applied. I found it much easier to cut them out when only the bottom surface had been covered and when I was able to see that the saw blade did not cut into the ribs.

Another area where I deviated from the instructions slightly was to install the aileron push-rods and bellcrank prior to fitting the wing tips. This way the push-rods can be dropped in from the tip end rather than having to thread, and possibly bend them, from the centre section.

The last point to note is that the interplane strut sockets are located in the top surface of the wing this time.

Tailplane

Very simple. Following the instructions: glue S1 to S2, S2 to S3 through to S5 to S6. Let dry and sand. Connect the elevators with the hinges provided. Finished!

Well not quite. The plans show the metal connector which joins the two halves of the elevator but which is not mentioned in the instructions. I felt it wise to place heavy weights on the tailplane whilst it was setting in order to prevent warps.

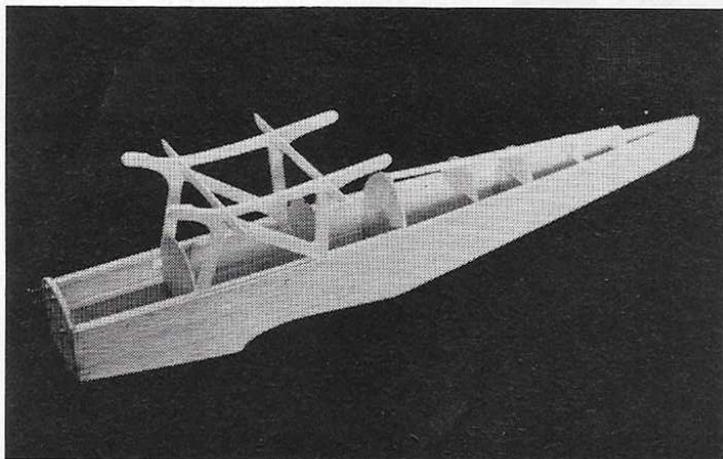
Fuselage

A conventional method of construction with interesting variations which add character and strength to the finished structure.

Two fuselage sides (left and right) are made up from balsa die-cut sheet, ¼ in. ply doublers, and balsa treblers over the lower wing seat. The next stage of construction is probably the hardest, physically, of the whole kit. Fret out the 'firewall' (front bulkhead) and the upper wing supports from the very hard plywood of indeterminate metric dimensions approximately ⅜ in. thick. Builders who own a Vibro-saw may wonder at all the fuss, those less fortunate souls who rely on muscle power may find themselves incapable of lifting the pint or two required as a reward for completing this task. Using epoxy, glue the upper wing supports to the fuselage sides. It is vital that these are symmetrical and that the feet of the struts are aligned exactly with the top of the fuselage sides. Any inaccuracies here will alter the angle of attack of the top wing.

Formers are made up from ply/balsa/ply sandwiches and are very strong although light. Care should be taken whilst assembling the fuselage sides onto these formers to maintain alignment, a task made slightly harder than usual due to the inward taper from top to bottom.

Next the spars are glued to the semi-circular top deck. The formers for the tank hatch are fitted dry and spars glued between them. Covering the tank hatch and top deck is simple, involving wetting the sheet balsa provided on one side causing it to curve, and pinning and glueing in position. The section incorporating the cockpit and which is fitted around the wing struts was a disappoint-



Left: simple ply cabane structure slots together to form an accurate seat for the top wing.

Below: receiver Alec Barber and son all set for another flight with the 'Wayfarer.'

ment. Not only was there no die-cut part, the instructions pointed to a template on the plan and left it to the builder to mark up a plain sheet of balsa. The two pieces which make up this part are quite complicated and I certainly would have appreciated the balsa being printed with the outline if not die-cut.

I fitted the tailplane and fin at this point, although the instructions leave this item until a little later.

Turn the model over, it should balance nicely on the top wing platform, and temporarily fit the engine. I fitted this inverted, and because of this modification had to build a totally different cowl. I like the cleaner front end this produces, other builders may disagree and prefer to follow the plan.

Temporarily fit radio, tank, battery and servos. Make up and fit all the linkages and plumbing. When satisfied that everything works and moves in the correct direction, take everything out again and complete the fuselage by glueing all the bottom sheeting in place and fixing the undercarriage.

Radio equipment fitting

R.C.M.&E. radio was used, mine having been built originally as a 27Mhz set and later converted to 35Mhz when this became legal. Touch wood, I have never yet had a transmitter or receiver fault and only once has a receiver battery let me down.

The receiver switch was mounted in the cockpit floor and the battery above the three servos to the rear of the fuselage in order to get the centre of gravity back to the position shown on the plan. The *Merco 61* and dumpy silencer coupled with a fairly long nose movement require this rather unusual battery position. The remaining aileron servo is fitted in a tailor-made box in the lower wing centre section held in place with a screwed down ply lid and polystyrene packing.



Servos are homebuilt *Fleet FPS-3* rotary/linear type and were all built new for this model. No problems with servo sense here, they are built to suit. At the last count I have 18 homebuilt servos, 12 being FPS-3's. They are the most versatile servo I know, offering both types of output, instructions on how to alter the throw, the deadband and the damping.

Radio installation really does not present a problem, there being enough space in the fuselage to carry two or three sets of modern equipment.

Covering and Finishing

My first real try with 'Solartex'. It really is fantastic stuff, especially the way it covers compound curves. The only problem I experienced was when covering the tailplane. I didn't stick it tight enough at first and the material developed a rather saggy look between the spars. This was easily solved by heating the edge and stretching the cloth by gently pulling at the softened surfaces.

Having covered the whole model in white 'Solartex' I opted for a spray paint finish using car enamels. Two coats of white primer were applied followed by a red, white and blue colour scheme on the wings, the fuselage and tail surfaces receiving one coat of 'household' white. This is an aerosol spray paint for touching in chipped areas on refrigerators, cookers, etc., and is much brighter white than the various off-whites used in the car industry. Transfers, cockpit trim, windscreen, pilot and headrest were all added at this stage, and then the complete model given one coat of 'Tuf-Kote'.

A word of warning — whichever paint system you use, after painting the fuselage, inspect it (it looks beautiful); when you turn your back the gremlins pour paint runs down the side of the model from behind the base of the wing supports!

Flying

Always a moment charged with electricity, the first flight of a new model, but one I wouldn't willingly miss. The in-flight pictures were therefore of the model's second flight which prove the model's ability to survive my rough treatment.

Checks complete, I placed the model at the end of the strip facing into a light wind, the engine ticking over smoothly. Long grass, so lots of up elevator to prevent a nose over. Steadily but firmly open the throttle and . . . woosh . . . away down the strip like an arrow for 30 feet, followed by a climb out that would have done credit to a skyrocket. Recovering, before the model completely disappeared heavenward, I closed the throttle to about 1/3 open and wound in the slightest amount of down trim to achieve hands off level flight at a more realistic speed. Even at this setting, loops (after a gentle dive) and rolls can be fairly crisply performed. A few high level flare outs were tried to assess the stall point, which is very very late and very predictable showing no tendency to drop a wing. Just to test Les Barton's reactions, the pilot for the photo session, I handed him the transmitter as the motor cut too late and too low to turn back into the wind. He made the landing perfectly, better in fact than many of my into winds efforts.

Les took the whole of the next flight whilst I took pictures. The low passes became lower and lower until I was taking shots from above the model. Les, obviously bored by all this straight and level stuff, suggested he should try the same circuits but inverted. I thought it better that he do aerobatics a bit higher up. What a show the model puts on performing full power aerobatics!

Conclusions

A real prince among model kits. A joy to build with all the parts fitting properly making construction interesting without being difficult. A very complete kit and excellent value for money. As well as being a builder's model it also has the distinction of being a flyer's model. All control responses are crisp right down to the stall point and low speed handling is excellent.

A sport type 40 should be ample power and anything more powerful than the *Merco 61* used would be totally out of character. An ideal power plant would be one of the new 61 size 4-stroke motors coupling adequate power with the 'old timer' sound.

Minor niggles were:

1. The metal undercarriage was fitted loose in the box and in transit this moved 2 or 3 inches leaving grooves in some of the soft balsa sheet.
2. Minute printing on the instruction sheet.
3. Lack of some of the part numbers on the wood, and the centre section top deck was not printed onto the wood provided.

Price: £40.00.
Available from: Jim Davis Models.

KIT REVIEW No.	KIT REVIEW																				
	FUSELAGE SIDES	FUSELAGE TOP	FUSELAGE BOTTOM	FUSELAGE DOUBLERS	FUSELAGE FORMERS	COWL	WING L.E.	WING SPARS	WING RIBS	WING TIPS	AILERONS	WING SUPPORTS	WING STRUTS	TAILPLANE & ELEVATOR	FIN & RUDDER	UNDERCARRIAGE	WHEELS	TANK	MOTOR MOUNT	LINKAGES	
SUPPLIED	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PRINTED																					
DIE-CUT				●	●			●	●			●									
READY SHAPED	●					●				●				●	●						
PRE-FORMED																●					
BALSA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
HARDWOOD																					
PLY				●	●							●	●								
PLASTIC MOULDING																	●	●	●		
G.R.P. MOULDING																					
DURAL																●					