



Little Corker

A 60" span vintage style sports model designed by Alan Wooster for 3-function R/C and .26 four-stroke engines

How Did this Sports Model Evolve?

Several years ago I built a little similar-sized model that was downloaded from some extremely basic sketches emailed time by a friend in the USA. It turned out to be a little Mud Duck, loosely based on details from an old 'Model Aviation' magazine. That model was an absolute hoot to fly and several models were produced by other club members from my plans, prepared at that time.

While horsing-around some months ago my model was involved in a midair collision with another Mud Duck. Mike's model exploded into a shower of confetti but, strangely, my model was virtually undamaged. A sliver of Mike's 1/4" framing was stuck through one wing and my alloy spinner back plate was badly distorted. I felt sorry for Mike, who is not the world's most prolific builder, and in a rash moment donated my tired airframe to him. He still flies it from time to time.

I missed that fun little 'plane and later promised to replace it with a similar performing model. Corker is that model. The name? My good friend and fellow R/C flyer, Graham Corkill, a devout vintage model fan, monitored this model's early development. We all knew that Graham was suffering a terminal illness and I hurried the model along for him to see it fly. Unfortunately it was not to be. However, I did manage to get it test flown and showed him some photos of it taken that day. He passed away a few days

later, and so I named it for him, and it really is a corker of a little model!

Construction

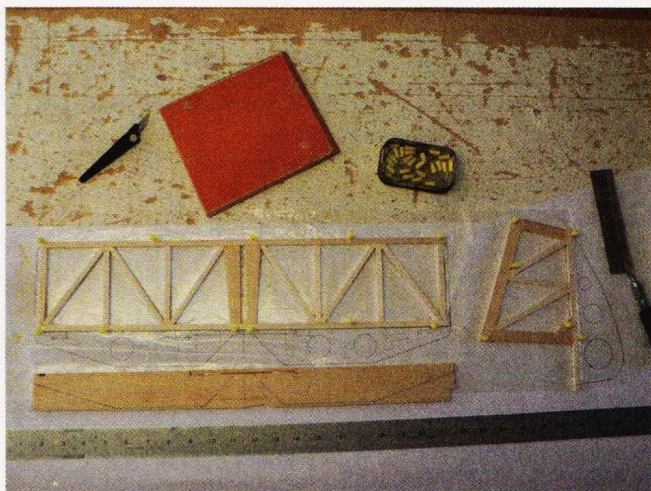
This is a simple model to build and fly, it may therefore appeal as a first time build for a novice, or someone just looking for a change from today's mundane ARTFs, so I will endeavour to provide reasonably comprehensive construction notes.

Construction involves regular materials, generally stick and sheet balsa, with a small amount of plywood and piano wire, and follows tried and true construction methods from way back. I generally use aliphatic glue as my main adhesive, with some 30-minute epoxy and cyano in strategic places. This model has a very short nose moment and so do make a conscious effort to build the aft end of the model light. With the Rx, tank, batteries, etc. installed where shown on the plan my model balanced on the wing main spar as required without the addition of additional weight. When building a new model I generally commence with the tailplane as you get something tangible to play with for little initial effort, so we'll start with that.

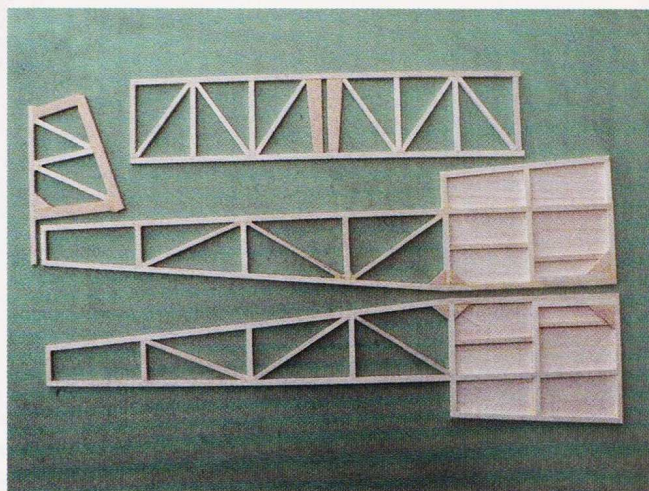
Tailplane

This group is built over the plan in conventional manner. Ensure that your building board is flat and cover the plan with a transparent greaseproof membrane.

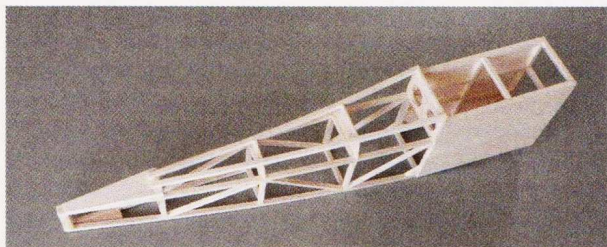
TOP TIP: I'm still using plastic backing from previously used covering film for this.



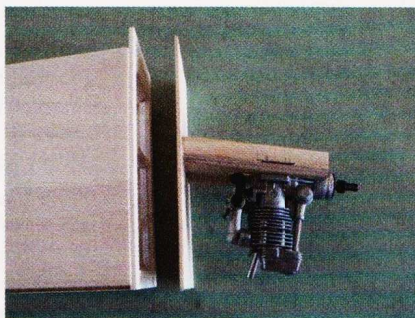
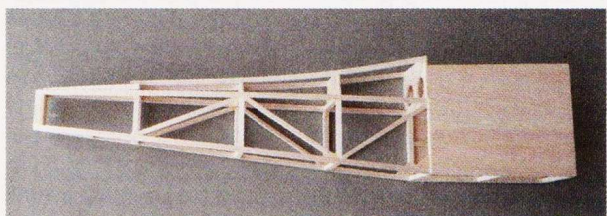
LEFT:
Construction
of the tail
components
can't get
easier than
this



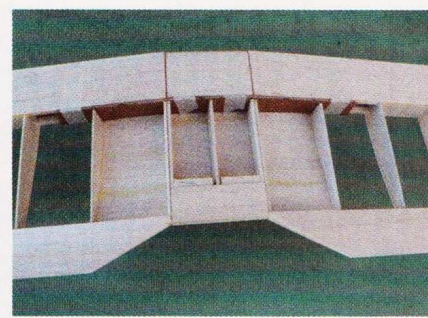
RIGHT: Two
fuselage side
frames with
tailplane and
fin above



Part built fuselage in no time



The engine assembly is constructed separately (see text)



Dihedral brace is taped to hold in place while glue dries

LEFT: With the top two longerons added you can see how the shape is curved

Cut the components from medium/soft 1/4" balsa and pin and glue them in place. Lift them from the plan when properly dry and thoroughly sand both sides, initially with coarse (100 grit) sandpaper to remove all glue flash. The two elevators are joined to a 1/4" diameter hardwood dowel joiner using epoxy resin. These are planed to the basic flat wedge shape after lifting from the board and then sanded to finish. The hinge slots can be cut now, but do not permanently install the hinges at this stage.

Fuselage

Construction for this varies from conventional in that the main box from F1A aft is assembled as one unit and the basic nose component is assembled separately and glued in place later. Pin and glue the 1/4" square balsa framing over the plan (and grease proof membrane) with aliphatic glue as was done for the tailplane. When properly dry remove the pins and thoroughly sand the assembly both sides with 100 grit sanding block. Clear away the dust and debris and replace the now well-sanded side back over the plan, place another membrane over this assembly and proceed to lay out the second fuselage side directly over it. When dry, lift and repeat the sanding operation. Both sides should be identical at this stage. Now apply the fuselage side sheeting. Edge-glue the oversize side panel sheets together ex 3/32" soft balsa. Select which sides will be right and left and glue the side panels in place and pin the two assemblies to the board to dry flat. Ensure you prepare the two sides as a PAIR! Trim the excess side sheeting when the glue is dry. The 3/32" balsa rear panels can also be fitted. Place flush with the outer face of the framing.

Next join the two sides to form the basic box. If you have a fuselage jig you can do this as one operation. Cut six cross members to the same length to join the two fuselage sides top and bottom at stations F1 and F2 and also at the mid wing chord position as a parallel box. The overall width of the fuselage box inside the sheet side panels is 3 1/2". An acceptable compromise to

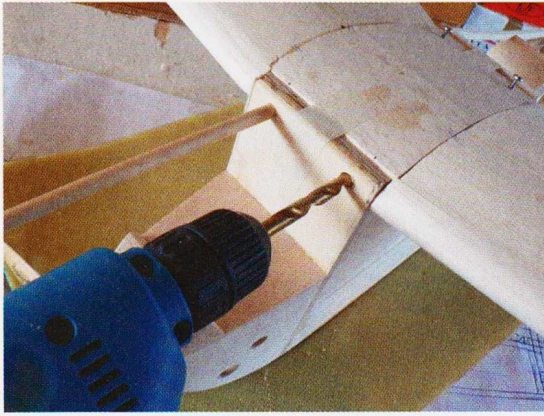
join the fuselage sides is to jig them between two 8" concrete blocks or similar.

When thoroughly dry the fuselage sides are drawn together and glued at the tail. Clamp the tail with a bulldog clamp and install all the other 1/4" sq. balsa cross members, also the 1/8" plywood undercarriage seating and the sheet balsa panel behind that.

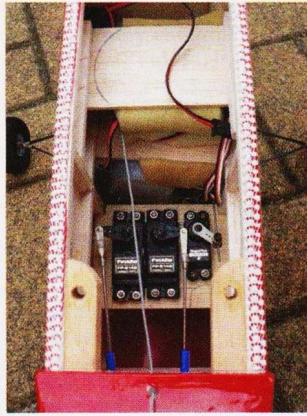
Next fit the tapered stabiliser seat. This is cut from 1/4" sheet balsa and tapers from 1/4" at the front to nothing at the rear, and is important to provide the correct angle of attack for the finished tailplane. Formers F1A thru F5 are now glued in place. Note that both F1 and F1A are 3 1/2" wide and not full width of the fuselage. The two 1/4" sq. balsa turtle deck stringers are now fitted. Note that these are glued to the top of the tapered stabiliser seat at the rear. Let them overrun approximately 3/4" to be trimmed back later. Ensure there is a 1/4" gap between them here to accept the front of the fin at final assembly. The sides of formers F4 and F5 are hollowed out after assembly so as to not interfere with the later applied film covering in this area. Temporarily locate the stabiliser and apply a fairing ex scrap balsa to the fuselage here as a seat for the later film covering.

Fit the 3/32" soft balsa fairing strips to the fuselage sides and bottom where indicated. Also fit the 1/4" wedge at the rear to accept the later applied wire tailskid.

Next assemble the separate nose assembly. Cut the plywood engine plate and ensure the front slot neatly accepts your selected engine. The 1/2" sq. hardwood engine bearers are now epoxied in place flush with the edge of the engine slot. The engine hold down bolts/straps are now fitted. Leave the bearers slightly protruding over the rear of the engine plate. When dry the rear edge of this assembly is planed/sanded to a taper to neatly abut plywood former F1. Ensure the angle as shown is attained as this governs the final critical engine downthrust. Now epoxy this assembly to F1A at the front of the fuselage. The 1/8" balsa cockpit floor is now glued in place followed by the 1/2" thick soft



With the wing in place, drill through the F1



Radio installation in the spacious fuselage



The short nose of a vintage model is typical for this type



Standard pushrod connection to the tail surface controls



OS26 four-stroke in place

balsa sidecheeks to each side. Now temporarily install the engine with the 2" spinner backplate fitted and use that to locate the 2" dia. plywood nose ring in place. Maintain gap approximately 1/8" between the spinner backplate and fuselage and wedge in place with scrap balsa while the glue dries.

Note that you may require to lightly hollow the inside of the sidecheeks to enable nut-driver access to the engine hold down nuts. The top cowling block is now glued in place and the whole front end carved, planed, and sanded to an acceptable shape. Do not fit the clear plastic windscreen at this stage.

Next fit the 1/8" plywood servo tray, also the 'Gold 'n Rod' plastic pushrods for both elevator and rudder. Install both hardwood wing hold down blocks, liberally glued with 30-minute epoxy.

Wings

These are simple flat bottom items fabricated over the plan as three items; left and right wing panels and a separate centre section. I built approximately 3/16" washout under each wing tip during fabrication. My prototype model performs extremely well but in retrospect I don't believe the washout is critical. If you choose to leave it out, do ensure the resultant wings are built flat and free of any warps. I cut all wing ribs from 2 mm balsa. If an imperial equivalent is not available, I would suggest that medium 3/32" (2.4 mm) balsa may be a better choice than 1/16" in this instance. I cut all similar size ribs as rough blanks, and bolt them together for final shaping as a block (sandwich method). I cut the mainspar slots into the final-shaped block as one operation using my X-Acto saw. I prefer to build both wings as a pair at the same time rather than one after the other.

Pre-shape and glue the lower TE item with the tapered tip and then pin this and the lower LE sheeting in place over the plan. Note that the LE sheeting extends between the front edge of the sub-LE at the front and the rear edge of the main spar to the rear. Glue the 1/14" sq. hard balsa mainspar in place on top of the LE sheeting. Pin the 1/8" slotted 'egg crate' rear spar in place, but don't glue it down until the location is set via the slots towards

the rear of ribs R2. Glue ribs R2 thru R5 in place when all is properly aligned. Note that root rib R1 is canted over to accommodate the specified 4" dihedral at the wing tip; use the dihedral template shown on the plan to set the angle.

Now fit the 1/8" hard balsa sub-LE across the front of the wing. This is glued down on top of the lower LE sheeting. When dry, plane the top of this item at the same angle as, and flush with the top of the ribs. Now glue the 1/4" sq. hard balsa top spar in place and when dry glue the top LE sheeting in place. Repeat this process for the top LE sheeting; i.e. plane the top of the eggcrate spar assembly flush with the top of the ribs. Place and shape the 1/2" soft balsa packer at the angled root area first. Now install all the 3/32" vertical grain shear webs between ribs. Leave the two inner bays at the root end open to accept the 1/8" plywood spar doubler later. Fit the 1/4" balsa wingroot gusset now followed by the top sheeting between the two spars. Now fit all the upper 1/16" x 1/4" rib caps.

Lift the wing panels from the building when thoroughly dry. The lower rib caps are now fitted, as is the soft 3/8" balsa LE. I generally rip this material from balsa sheet and plane it to shape after it is glued in place. The soft balsa wing tips can be glued in place now. Do NOT glue the lower balsa sheeting between the spars in place yet – that is done after the wings are joined. Shape and sand each panel to finish.

The wing centre-section is fabricated separately. The lower 1/16" balsa LE sheeting is pinned down and 1/4" spar placed on top. A piece of 1/16" balsa approximately 2" wide is pinned down at the rear and the three 1/8" balsa ribs are glued in place. Note that R1A varies from R1 in that it is shortened front and rear. Glue the 1/14" plywood dowel plate across the front and also the two hardwood hold-down wedges towards the rear, also the 1/2" balsa TE. The 1/16" balsa top sheeting is now glued in place. Lift from plan when dry and sand in readiness for the wings to be joined.

To join the wings, the centre section is pinned down firmly over a plastic membrane. Both wing root ribs are liberally coated with epoxy and butted and pinned to the centre-section. The outer ends are raised to provide 4" dihedral at the tip. Prop the wings up on parallel blocks – a 12" piece of dressed 4" x 2" timber is ideal for this, and hold them in place with weights on top while the glue dries. Ensure that the wings are joined properly aligned and true. This is most important!

When dry the assembly is lifted from the board and prepared for the full depth 1/8" plywood spar doubler to be installed. A full depth x 1/8" wide slot is cut in the ribs hard against the rear faces of the upper and lower mainspars for the span of the spar. Use the X-Acto saw or a hacksaw blade for this.

TOP TIP: A little trick here; make the rear cut first while the rib is rigid, and then follow up with the secondary cut against the spars.

Clear the slots and using trial and error cut and fit a fullsize template for this doubler, which is offered up from the underside of the assembly. Cut the doubler from birch or similar 1/8" plywood, not liteply, and glue it in place with a liberal amount of 30-minute epoxy. When dry fit the three lower 1/16" balsa cross-grain sheet panels. Also glue the 1/16" plywood reinforcing strip across the front of the centre section LE where the wing dowels will be fitted. Sand everything in readiness for fitting to the fuselage.

Initial Model Assembly

The sequence to arrive at a true model here is to first fit the wing to the fuselage and then offer the tailplane group to the fuselage to align square and true to the wing assembly. Place the wing on the wing seating hard forward against F2. Hold it in place with masking tape and measure the distance from each tip back to the fuselage sternpost. Adjust so that the dimensions are equal, the wing is then squarely located. Apply more tape to hold the assembly firmly square and drill an initial hole, approximately 1/8" dia. down through the wing at the rear hold down bolt position, through the wing and right through the hardwood hold down block at each side of the fuselage. Drive a suitable self-tapping screw into each location to hold the wing in place while the front dowel holes are drilled. These are drilled from the front of the fuselage in the positions shown. Drill a pilot hole of approximately 1/8" dia. first and then follow up with final holes to accept dowels of around 1/4" dia. (6 mm). Remove one of the rear self-tapper screws and then drill and tap for the final 1/4" dia wing hold down bolt.

Repeat for the second bolt. There may well be a gap between the wing TE and the rear of the fuselage wing seat area at this stage. This gap can be closed with a transverse piece of 1/2" balsa and blended in.

Check the tailplane for fit with the fuselage prior to any covering. The stabiliser is seated on the tapered seating. The fin is located in the 1/4" wide slot on the stabiliser centre line and the rudder post should locate squarely into the 1/4" sq. slot cut vertically into the rear of the fuselage.

Film Covering

I used lightweight Solarfilm Polyester for covering this model - it is easy to apply and has a very good shrink rate. I also reckon that translucent covering

seems easier to apply than opaque colours, maybe because you can see what is underneath?

You may notice the photos show that my model has opaque wingtips. In this instance the reason was covering economy. The covering material isn't wide enough to cover one wing from the width of the roll. Rather than apply the covering lengthwise and create waste, I elected to cover as much of the wing span from the roll width, and then cover the shortfall with material leftover from the fuselage covering as a secondary operation.

The cockpit area is finished before the main fuselage is covered. In this instance I cut three small panels ex 1/16" balsa to form a false cockpit lining. Each panel was cut approximately 1/16" short of the cockpit width and covered with black film. These were glued into the cockpit area as a finish; the short width created a small rebate to neatly house the edge of the plastic windscreen material. The fuselage is then covered in logical sequence. Start with the underside and commence from the rear. Follow with the main sides, then the turtledeck sides, and then the turtledeck top. Lastly cover around the nose area.

Hardware

The undercarriage is formed from two lengths of piano wire. I used 1/8" wire for the main undercarriage, as detailed on the plan. The secondary bracing was cut and bent from 3/32" wire. The assembly was nailed to a block of wood and soldered together to form the finished unit. Feel free to use a commercially available alloy or composite item if you prefer. Mine was fixed to the

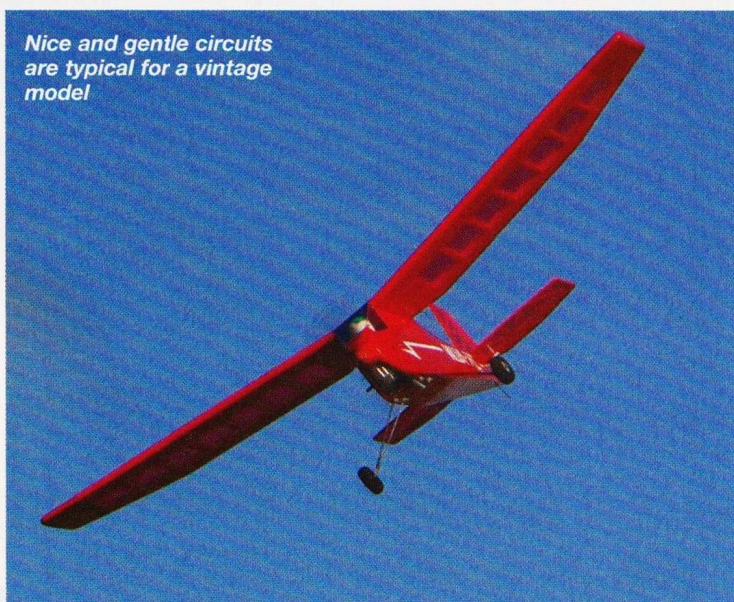


Up and away; what a Little Corker!

*Low banked turn
for camera*



*Nice and gentle circuits
are typical for a vintage
model*



plywood mounting plate via small plastic saddles. The tail skid was bent up from a scrap of 1/16" piano wire and epoxied into a slot in the balsa wedge as detailed.

Note the locations indicated for the tank and radio gear. Because this model has an unusually short nose-moment, it was necessary to keep the weight as far forward as possible and plan to build the rear end light. As it turned out, my model balanced on the mainspar as planned without the addition of any extra weight. It tipped the scales at 3 lb 3/8 oz all-up dry weight and ready to fly. The rudder was set up to throw a little over 1-inch each direction and the elevator 5/8" both up and down. These settings

have proved to be quite adequate and will not be altered.

Flying

I got tired of waiting for an ideal calm day to test fly the finished model and rashly decided to set it away first time in quite gusty conditions at our local park. The little OS 26 engine was almost new and had had very little running. However, it fired up promptly and the model leapt into the gusty conditions with almost no takeoff run. It climbed away wildly and skittered all around the sky. I applied full down trim and although it bobbed all around the park, it was quite manageable. That wasn't really a fair trial and so we terminated that flight right there for another day.

The following Sunday was regular club day and this time conditions were almost calm, where there were no dramas and the model flew extremely well. In no time it was whizzing around in low-level figure eights.

It will loop and roll with ease in either direction although rolls are mostly barrelly efforts when left to the rudder only. It will also maintain inverted flight surprisingly well although I did keep to a practical altitude to try that. I was initially a little dubious about the rather small rudder, but as it has turned out, both rudder and elevator controls are spot-on. The model still flies on full down-trim with just a hint of added 'down' stick, but I probably won't change that. With any hint of trouble while horsing around at low level I merely release the elevator and it climbs away to safety all by itself.

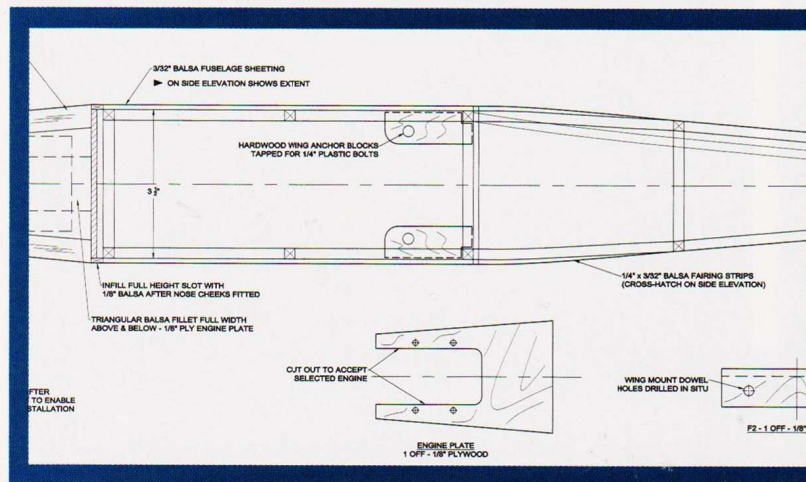
The little .26 four-stroke produces ample power and the speed is surprisingly fast at full throttle. I'm sure a .19 or .20 engine up front would be eminently suitable.

All in all, I'm delighted with this little model; it might not be the prettiest to look at, but it sure is a hoot to fly. **RCMW**



Time to relax with a high overhead flypast

Contact
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Plan Details

Build category Beginner/Intermediate/Advanced
Plan number MW3462
Plan price £16.00
Laser Wood Pack (WP3462) £POA
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