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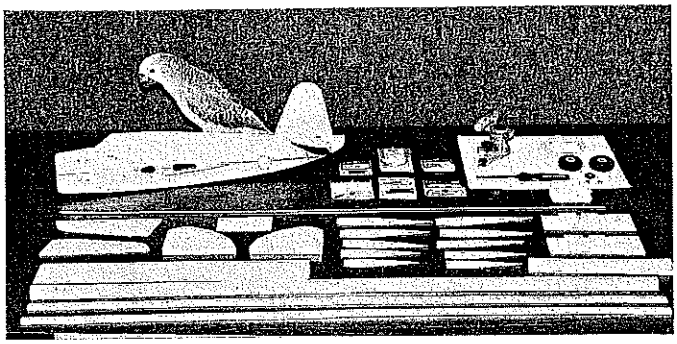
Vought more could you want in a Profile Carrier model? For reliable, competitive performance, the bird is the word!

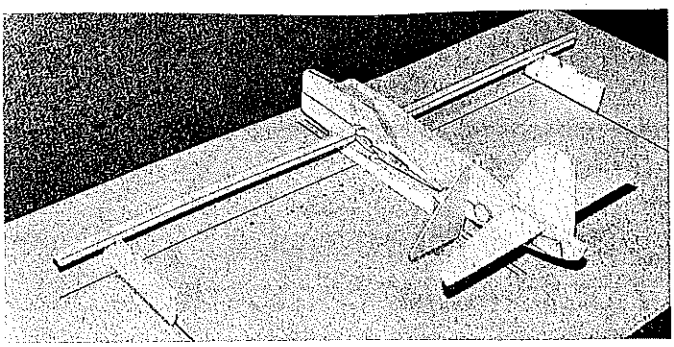
KINGFISHER

■ **Steven Baardsen**

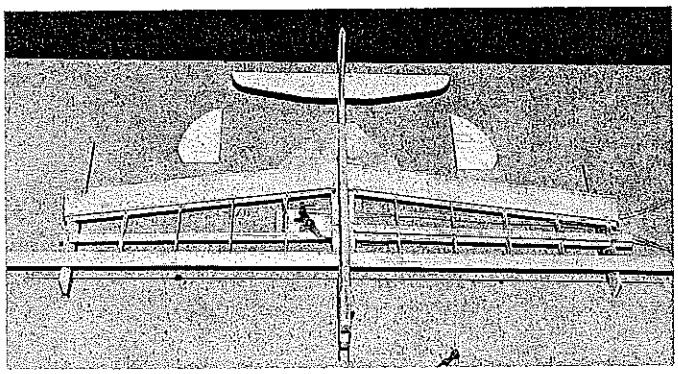
In 1937 the US Navy issued an invitation for bids on a new battleship-based observation scout aircraft to be based on land or water. The Chance Vought Kingfisher was chosen for production.The XOS2U-1 was the most radical of the submitted designs, being a monoplane instead of a biplane. This decision proved to be an excellent choice, as



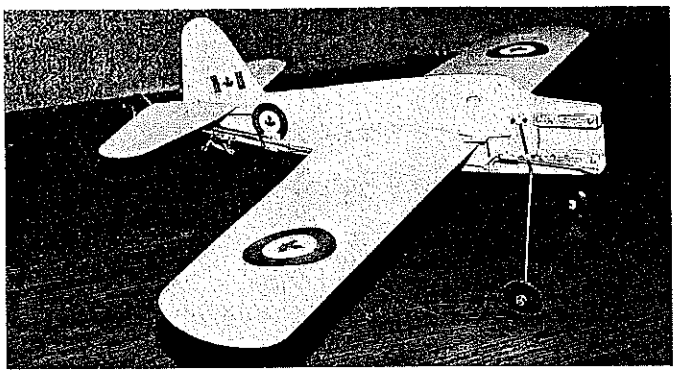
Barney, the author's Amazon parrot, checks to be sure that all parts are accounted for prior to construction.



Jigs are a quick and easy way to ensure a properly aligned model. Note wing stubs with holes for control wires.



Airframe is ready to be removed from the jigs. Wingtips are fitted and sheeting is added next. Bellcrank setup visible here.



The completed Kingfisher, less tank and engine. Hobbypoxy finish on fuselage; wings were covered with MonoKote.

the aircraft was easy to maintain at sea and handled well in the variety of roles it was assigned.

During its service, the Kingfisher was also exported to a number of Allied countries, where the aircraft's record was very good. Its best-known role was that of a rescue plane for downed WW II carrier-based airmen who had been shot down over the Pacific Ocean.

The Kingfisher has been a popular Navy Carrier subject for a number of years; my version is the first that I have seen developed particularly for the .15 Profile Carrier event.

My interest in this aircraft originated from the desire to build a legitimate Carrier aircraft for the .15 event with the lightest possible weight and the largest possible wing area without looking too distorted. Since the original Kingfisher was designed as a scout floatplane, it was optimized for high lift using a big wing area for its relatively small size—perfect for Carrier competition.

A number of other features of the full-size aircraft were attractive:

1) A midwing location allowed mounting the bellcrank at the center of gravity, and within the wing for less drag;
2) Fuselage-mounted gear for less weight and a stronger mounting arrangement;
3) A large scale tail group;
4) A small body relative to its wing area;
5) A fairly large user group of countries for different color schemes;
6) It was a Navy aircraft.

Kingfisher

Type: CL Profile Carrier

Wingspan: 35 inches

Engine size/type: .15 glow

Flying weight: 24 ounces

Construction: Built-up or foam wing

Covering/finish: Hobbypoxy on fuselage; MonoKote on wing

I wanted the best contest airplane that I could build, and everything was considered in that light. I used the lightest balsa that I could find, put on the lightest finish that was hot fuel proof, installed a reworked Conquest engine with an O.S. 2H helicopter carburetor, and used low-drag racing wheels. The only concession to performance is the stock muffler.

This model will exceed the 70 mph limit set by the event and will fly as slowly as the pilot can manage without going over the 60° angle rule. It has proven to be the competitive machine that I had hoped it would be.

Although the model is capable of higher performance with more horsepower, it is recommended that the average builder install a stock engine. Contests are won primarily with reliable, consistent equipment and good low-speed times. The high-speed times don't matter much, as long as the speed is close to the 70 mph limit, but you can't win if the engine doesn't run properly or you don't complete the flight.

CONSTRUCTION

Fuselage: The construction is no different than most profile models, except that I do not cut out the fuselage to slide on the wing. I prefer to build the wings and fuselage as an integral unit, so the usual profile fuselage cracking between the body and the wing doesn't occur.

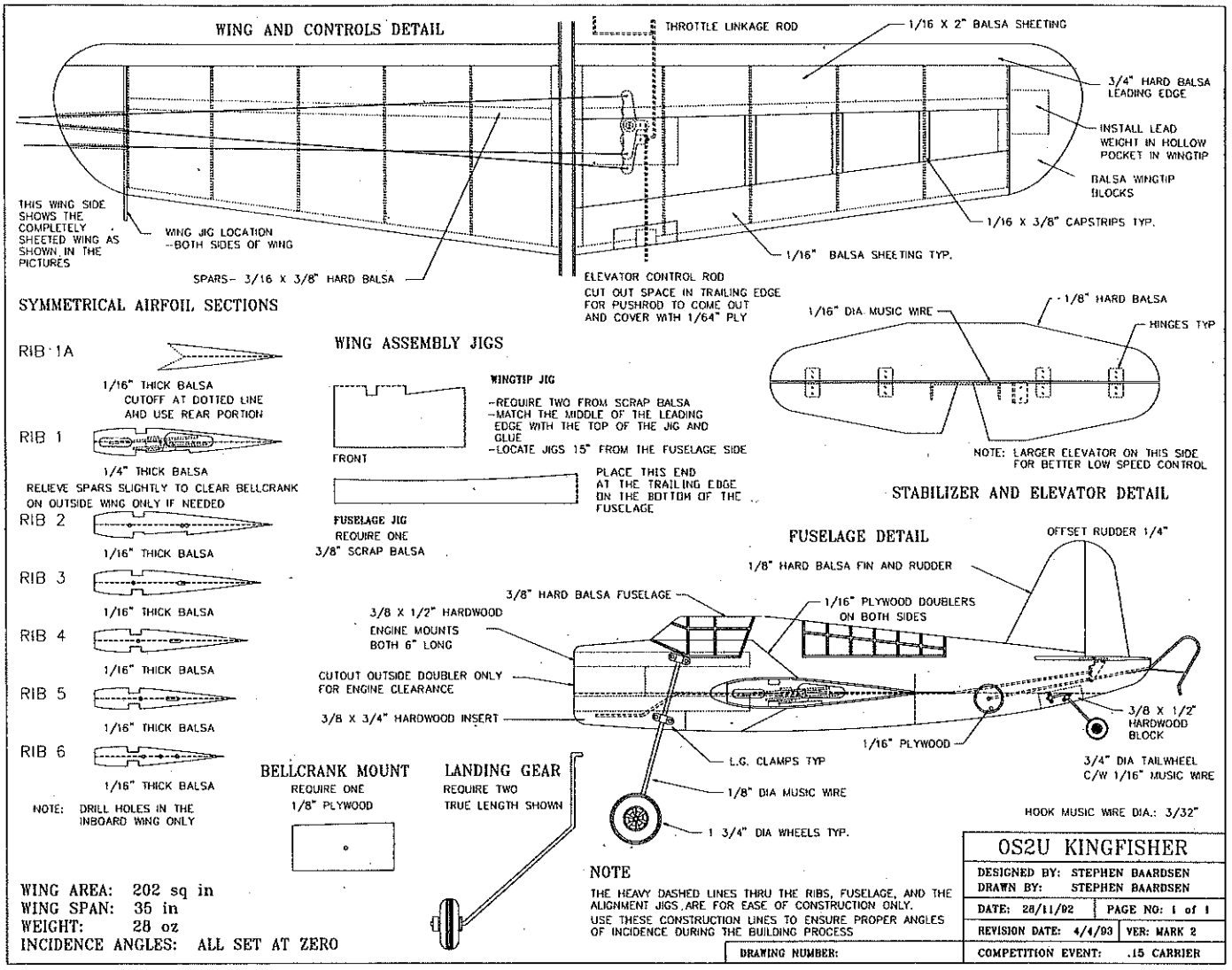
Cut the fuselage from a sheet of 3/8 x 4 hard balsa, and add the maple engine mounts and tail wheel block. Laminate the 1/16 plywood doublers using epoxy. After the epoxy has cured, drill the engine and landing gear strap mounting holes.

Join ribs 1 and rib 1A and glue these assemblies to both sides of the fuselage to form the stub used to support the wing. Rib 1A is only used as a spacer between rib 1 and the fuselage to compensate for the 1/16 plywood doubler. Take care to locate these stubs as shown on the plans; they control the incidence angle of the wings. I have drawn heavy dashed lines on the side view of the fuselage to help with alignment.

Notice that the plywood bellcrank mount is recessed into the bottom of the outside rib 1 only. This mount butts up against the plywood doubler and does not project into the fuselage. This is the strongest arrangement that a bellcrank can have; the aircraft would have to disintegrate before this bellcrank could pull loose.

Carefully cut the bellcrank clearance hole through the stubs and the body of the

Full-size plans available—See Page 160



fuselage, leaving as much material as possible, but making sure the bellcrank's operation is completely free and non-binding. There should be at least ⅛ inch of balsa left on the stubs for use in building the wings. Use the rib 1 detail on the drawing to cut the hole.

Sand the whole fuselage, install the fin and stabilizer, and set up the fuselage on the building board. The elevator can be fitted near the end of construction.

Fin and Stabilizer: Cut the parts from ⅛ hard balsa and sand to shape. The rudder should only be offset about ⅛ inch, as more offset doesn't help the low-speed flight times, and only slows down the high-speed segment.

The stabilizer and elevators should be slotted for Du-Bro hinges and the 1/16 music wire connecting rod. Notice that the outside elevator is bigger than the inside half; this helps give better slow-flight times. The control horn can be added later. Put a small triangular fillet of balsa alongside the fin on top of the fuselage to strengthen the fuselage-to-fin joint. The reinforcement sure helps when the model flips over on its back during a landing.

Wing: This is another area where my construction methods differ from the usual profile model designs. Since I build the wing and fuselage as a unit, I use jigs to ensure proper alignment of the wing's incidence and washout angles. On this model, everything is set at zero degrees.

Set up the fuselage on its jig and move it backward and forward until the heavy dashed chordline on the plans (drawn through the rib stub) is parallel to the building board. The best way to make sure is to draw the chordline on the fuselage side with a felt-tip pen and measure from this line to the board at the nose and the tail. If the measurement is the same, then the chordline is parallel.

Use braces alongside the fuselage to ensure that the fuselage is held square to the building board during this construction phase.

Put the wing jigs parallel to the fuselage 15 inches out on each side (just outside rib 6). Install both leading edges from the front of the rib stubs to the front of the wing jigs, making sure that they are square to the body. Look down the leading edges from side to side to check that they are properly lined up. The Kingfisher has a straight leading edge. Once the ribs and trailing edges are added, there will be no chance to correct a misalignment.

Add the bottom spar from the stubs to the jigs. The wing tapers in thickness toward the tips (when viewed from the front) but there is no dihedral built into the wing. The centerlines of the leading and trailing edges should be flat from wingtip to wingtip. I have drawn heavy dashed lines on the drawings through the ribs for alignment help. Draw a line down the center of the leading edge and glue the ribs to this leading edge centerline. This is the easiest way to ensure perfect alignment.

Add the trailing edges, ribs, and top spars while the model is in the jigs. Install the bellcrank mount, bellcrank, pushrods, and control wires. Glue on the wingtips, remembering to locate one ounce of lead in the outside wingtip.

Plank the top of the wing, then remove the model from the jig and plank the bottom of the wing. The model is just about finished.

Finish: I used MonoKote on the wing, and sprayed the fuselage and tail surfaces with Hobbypoxy paint to keep the weight down and protect the finish from high-nitro fuels. Since finishing is a personal choice, I will leave it at that, other than to say that this aircraft was used by a variety of countries, so paint schemes are numerous and colorful.

Hardware and Fuels: I have used Du-Bro two-ounce plastic tanks, set up to feed in a uniflow style, with perfect results and have had no feeding troubles. I very highly recommend this setup.

Any ball-bearing Schneurle-ported engine that will idle well will be competitive. That is the beauty of the 70-mph speed limit: it doesn't require expensive and exotic competition engines. Also, the carburetors available now will throttle better with low-nitro fuels than the old carbs I started out with. If you are using a Perry carb, just use high-nitro fuels, as they idle and throttle better without bogging.

Make sure that whatever fuel you use contains at least 15% pure castor oil. The synthetic oil that is being used appears to only serve as a lubricant, whereas the Carrier event also appears to need the castor oil's ability to remove heat from the engine as it is running—particularly during the low-speed run!

Bellcrank: I have been using a bellcrank setup that I first learned of in the early '70s but was reaquainted with when I built the first of Gerry Deneau's designs a few years ago.

It consists of two small Fox or Perfect bellcranks mounted on top of one another as in the drawings. Drill a hole approximately ½ inch from the center of one of them, and bolt the second through this hole, using washers as spacers to obtain the proper clearances. The plans show the proper setup

of the lines and pushrods. I have found this bellcrank arrangement to be superior in feel and control to the standard L-S/Roberts type, although I question its use in a larger model.

Foam Wings: John Hall has made foam wing cores available for $5 a set plus postage. His address is 10917 50 Ave. E., Tacoma, WA 98446-5301; Tel.: (206) 535-1034.

Flying and Trimming: My last two models flew right off the board, with the balance point about two inches back from the leading edge. This appears to be the right range for balancing this design, but experiment by shifting the CG back using weights until the model "hunts" during flight; then move the CG back until the hunting tendency stops.

The .15 Profile class of Navy Carrier was conceived by Gerry Deneau of Denver, Colorado as a low-tech, fun, inexpensive event for entry into Carrier competition. The drawings for the Kingfisher are shown with this philosophy in mind. Those that want more performance can write for more information (10580 Argentia Dr., Richmond, B.C. V7E 4K5 Canada) and I will gladly supply it.

I hope you enjoy flying my version of the Kingfisher! ✈