

PROPHET

This .02-sized craft that can be flown almost anywhere foreshadows the future of radio control. For multi aerobatics, it extracts all the performance available in the Simpro I system.

By DAVE ROBELEN



With the dual-proportional control system, the Prophet will perform all the AMA pattern maneuvers not requiring rudder function.

The Prophet is a look into the not-too-distant future, when multi-aerobatic models can be flown almost anywhere. It is not a warmed-over single-channel, rudder-only design, not a scale copy of some larger model. It is an airplane designed to extract the most performance from the new Simpro control system. And it only uses an .020 for power! That it was a success is an illustration of what the future holds—hence the name Prophet.

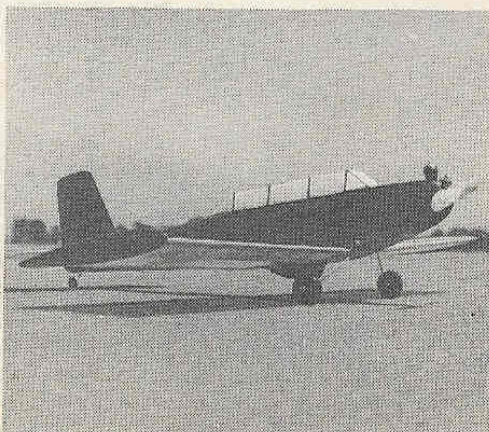
The Prophet is capable of any AMA RC stunt maneuvers that does not require a pure yaw force. A few of its specialties are: consecutive outside loops; 4-point rolls; lovely, slow, axial rolls; and, in general, all aerobatic maneuvers that are based on looping and rolling. It should be abundantly clear that it is no trainer.

If you have flown other high-performance miniature planes with proportional control, you are in good shape for the Prophet, otherwise build something tamer to practice on with your Simpro—such as the Schoolboy or Schoolgirl by Top Flite, either of which make excellent trainers for miniature dual-propo. The Prophet trims out at about 40-45 mph. It is not highly affected by wind, so you do not have to hide it in the car if a breeze comes up. This makes it poor as a trainer.

The greatest factor in any small RC

model is *light weight!* Every effort should be made to keep weight down. The Prophet should weigh approximately 10 ounces. If it is much heavier, performance will suffer greatly. Materials need not be as strong because light weight keeps impact damage low. A heavy model of the same size is more damage prone, and will not fly nearly as well.

Because I did not want a tricky linkage, as would be required for C.A.R. (coupled aileron and rudder) I used only aileron and elevator control. This has worked well and probably is best for the low-wing layout. With a low-



Since the airfoil is symmetrical, inverted flight and outside stunts are possible.

wing design the roll maneuvers seem better.

With ailerons as the only directional control, the airplane must have a very true-tracking landing gear. This, plus a large fin to insure weathervaning, will almost guarantee good ROG's every time. Do not omit the plywood panels shown on the plan in the wing center-section bottom, unless you enjoy repairing torn covering. This is not shown on the original model, and the wheels punched a few holes in the wing covering during rough landings. The tail-wheel is also important as it keeps the model tracking until the tail comes up. The small spring loop shown allows a lot of flexing and bending without breaking the strut loose. The main wheels called for on the plan are important; they are true rolling and low drag. They are the correct weight to position the CG vertically.

The engine choice is limited and the T.D. .020 shown is tops for the job. The airplane is not designed to accept an .049. Brute power is not the only road to good performance.

There are a number of propellers that work well on this model and engine, but I think you should experiment for best results. A Top Flite 5 1/4-3 nylon gives good all-around pep with excellent fuel economy, while the T.D. high thrust 4 1/2-2 is tops (Continued on page 52)



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various bomber squadrons, and the evaluation of the raid. Illustrated with maps and photographs "The Thousand Plane Raid" is the story of a momentous event in the history of World War II air combat.

Heroes and Aeroplanes of the Great War 1914-1918: is a striking pictorial representation of the first war in the air. Joseph A. Phelan, who wrote designed and illustrated the book, has created more than 400 excellent paintings and drawings of the planes and the aces who flew them. Here we find the English Sopwiths, Avros, and Bristols; the French Nieuports, Spads and Morane-Saulniers; the Italian Capronis; the Russian Sikorsky; the German Albatros, Fokkers, Gothas and Zeppelins. These aircraft are shown in detail with top and side views, camouflage, national markings and pilots' decorations, engines, armaments and structure. Also shown are superb drawings of the planes in action.

The exploits of some of those now legendary aces of World War I—Immelman, von Richthofen, Voss and Boelcke; Bishop, Collishaw, McCudden, Ball; Rick-enbacker; Guynemer, Nungesser and Garros—are brought to life in this colorful volume. Phelan's illustrations make the accounts of the "Lafayette Escadrille," the "Storks," the "Flying Circus" and the Fokker scourges more vivid and exciting.

Also included is a page of drawings of the Military Orders and Decorations from the Allied and Central Powers; a page on the Rotary engines; and a listing of the scores of the Aces of World War I—a most valuable reference.

"Heroes & Aeroplanes of the Great War 1914-1918," published by Grosset & Dunlap, is a large book, approximately 9x12", 130 pages, and is listed at \$7.95. It belongs in the library of the aviation buff.

The Royal Aircraft Factory S.E.5a by Charles L. Bouget is Number 6 in a series published by World War I Aero Publishers Inc. Like the others in the series, this booklet is an authoritative study. Bouget has done extensive research in gathering the material for it. Besides an account of the background history, early development and construction features of the S.F.5a, this 26-page booklet contains several photographs of the different models, the fuselage, the wings, the cockpit, the instrument panel and the landing gear. It also has detailed scale drawings concerning which, Robert McGrath, the publisher, has this to say: "This honestly contains the best drawings ever done on the S.E.5a—many, many compounded errors are now corrected . . . for the modeler and historian I would say it is a must."

Others in this series are: #1—Pfalz by P. Grosz, #2—The First Day Bombardment Group by T. Miller, #3—U.S.S. Shenandoah by C. Keller, #4—Japanese Code Names by R. Bueschel, #5—Japanese Aircraft Insignia, Camouflage and Markings by R. Bueschel.

The booklets are priced at \$1.95 each. Uniforms of the Sea Services is a handsome volume by the United States Naval Institute. Written by Colonel Robert H. Rankin, U.S. Marine Corps, this fine 325-book is filled with illustrations, both in full color and black and white.

It is probably the first attempt to tell the whole story of the uniforms of the U.S. Navy, Marine Corps, and Coast Guard from the Revolutionary War to the present.

Well covered are the uniforms of the Naval Aviators, including Marine and Coast Guard flyers, from World War I to date, and their insignia and medals. This handy reference book which measures a big 8½ x 11¼ can be ordered from the U.S. Naval Institute at Annapolis, Md., or from bookstores, for \$24.50.

Prophet

(Continued from page 20)

for power but very poor on fuel economy. Try others to find the one best suited to individual requirements.

The fuselage design is largely dictated by the volume and shape of equipment needed. An attempt was made to improve appearance, but the fuselage is still a simple sheet balsa box. I must also admit that I borrowed heavily from Bill Winter's excellent Rookie design as I am very fond of that appearance. (Editor—It flew like a hearse!)

The wing design is an attempt to gain some efficiency and still keep easy building in the picture. The tip plates seem quite important in keeping the model stable during a landing approach, and should not be omitted.

A fairly thin airfoil was chosen (on the Prophet) to keep drag to a minimum, and a low wing loading (9-10 ounces/ft²) for good maneuverability. Strip ailerons were used because of simplicity—they do a good job. Dihedral is low to enhance rolling characteristics, and it rolls prettily. The aileron servo and linkage are easy to install. But be sure the servo is mounted on a foam pad. The pushrods from servo to horns have a V-bend to facilitate adjustment. This replaces the threaded clevis so common on larger models. The horns are tilted forward to get the necessary differential of surface movement.

The tubing-and-wire horns are easy to make, and are very free working. I have had good success using a blob of model cement as a keeper on the pushrods. This can be chipped off in the field for adjustment and a fresh blob will dry in just a few minutes. Small cloth hinges work well on all control surfaces. The fabric is the type Top Flite puts in their small RC kits for hinging. Whatever you use, keep it snug but free.

There is not a lot to be said about the tail surfaces except that the elevator should have 20°-30° of throw up and down. This large throw with a narrow control surface gives smooth control over a wide range of speed.

Make certain that with the wing in place, and the plane upright on the wheels, the receiver cannot touch the aileron servo even after plenty of bouncing and vibrating. This one detail alone may save the plane. A small block of soft foam may be rubber cemented to the receiver to rest on the wing and prevent the servo from fouling. Be sure to use a wooden pushrod on the elevator. This, combined with a whip antenna, will eliminate the signal dead spots that cause glitching in flight. Believe me, you don't want glitches with the Prophet.

Construction: Rather than give a very complete detailed construction article, I will try to clear up points that might give trouble and stress again that this model must be built light to fly well.

Let's start with the tail surfaces. Use the lightest stiff C-grained wood you can find. Do not use warped or twisted wood because this will never straighten out. If you will carefully cut the hinge line on the stab with a straight edge, and keep it straight while sanding, the elevators will work much more freely. Do not sand an airfoil into the tail surfaces—simply round the edges neatly. The elevators can have a slight taper to improve control action—do not round the T.E. of the elevator, leave it square for best control response. When joining and hinging the elevators, constantly check for good alignment and free hinges; this is important.

The fuselage can be built next. Again, use the lightest, stiffest wood obtainable.

The best procedure is to cut out all basic parts as if making a kit and then begin assembly. I like to install the 2-56 blind-nuts in the firewall now, to prevent goofing later. The $\frac{1}{8}$ " doublers are cut in one piece and glued in place, along with all the $\frac{1}{8}$ " square framing on each side before proceeding too far. This is a good time to bend the landing gear. Make sure that the gear is accurate and the axles line up well with each other. I prefer to use model cement to sandwich the plywood and wire gear assembly. Epoxy glues are too brittle to do well here. Preglue, assemble, and then rub in another coat after assembly and it will be plenty tough.

Now back to the side assemblies. The $\frac{1}{8}$ " doublers can now be notched to fit the landing gear sandwich. Make this a good fit. The gear assembly can be cemented to F2 now also. When assembling the sides and bulkheads, score the sides on the outside surface where bends are shown—this will avoid stressing the fuselage and causing warping. Also, if there is no pressure needed to hold the sides and bulkheads together during assembly, there will be less tendency to split apart in a crash. A very shallow cut is all that's necessary—do not go half-way through. You can then bend the side until you hear a slight cracking sound and the side should hold the shape shown in the top view without forcing. Use this same technique when bending the cabin sides to match the bulkheads. After assembly, a little cement can be rubbed into the cracks on the outside to restore full strength and a little sanding will smooth them nicely.

When assembling the fuselage, check it over the top view while the cement is still fresh to insure proper alignment. Also slip the stabilizer into its slot and sight for good alignment with wing seat. Adjust now if necessary. All important joints should be preglued for strength. The stab can now be glued in place and the top and bottom planked. All planking should be grain across the fuselage and use very light wood except for the bottom of the nose; use hard balsa here. When all this is dry, sand completely, rounding corners well and generally cutting off as much weight as possible. Install the wing dowels, tail wheel and fin. You might put a generous skin of cement around the tailwheel strut and also where the main gear comes out of the fuselage. Now for the wing.

Again, cut out all parts in advance. To insure a warp-free wing, spend some time choosing very straight sticks for all spars, etc. The T.E. is cut from tapered T.E. stock; just trim $\frac{1}{4}$ " off the back of a 3/16" x $\frac{3}{4}$ " piece of T.E. stock. The notches in the T.E. for the ribs are important, so do not omit them. The wing airfoil is designed to allow building the wing flat on a board without special jigs. Simply pin down the bottom spars and T.E. and insert all ribs. The L.E. may be propped or shimmed in place. When the two wing halves are dry remove from board and install all center-section planking. The dihedral angle is sanded into the two center ribs and the wing halves glued together. With good fitting, this gives a very strong wing without special bracing. Care must be taken to avoid sanding in sweep back or other misalignments.

The tip plates can be cut and shaped; do not install until after covering. However, they should be glued in place before any doping is done on the covering to prevent the tip rib from bowing in. For the aileron servo just cut a hole completely through the wing to clear the Micro-Mo without touching and cement the servo in place. (With a foam pad of course). A dummy air scoop may be added to conceal

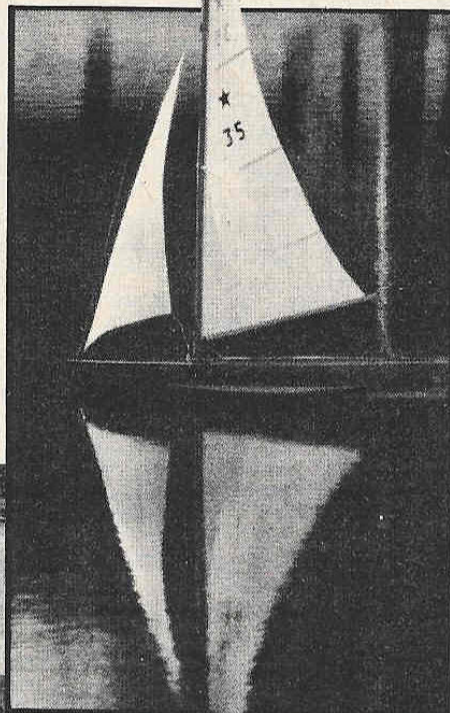
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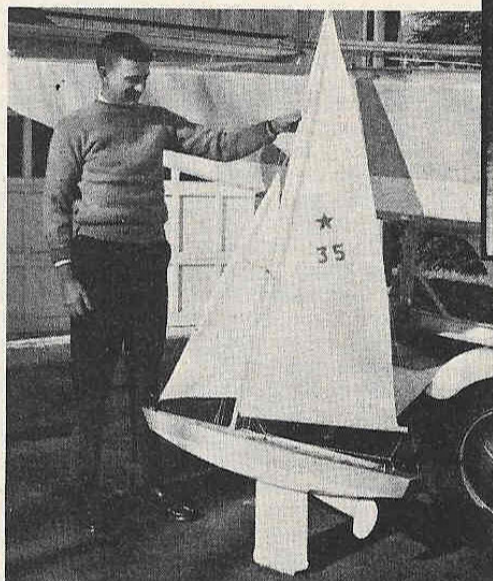
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