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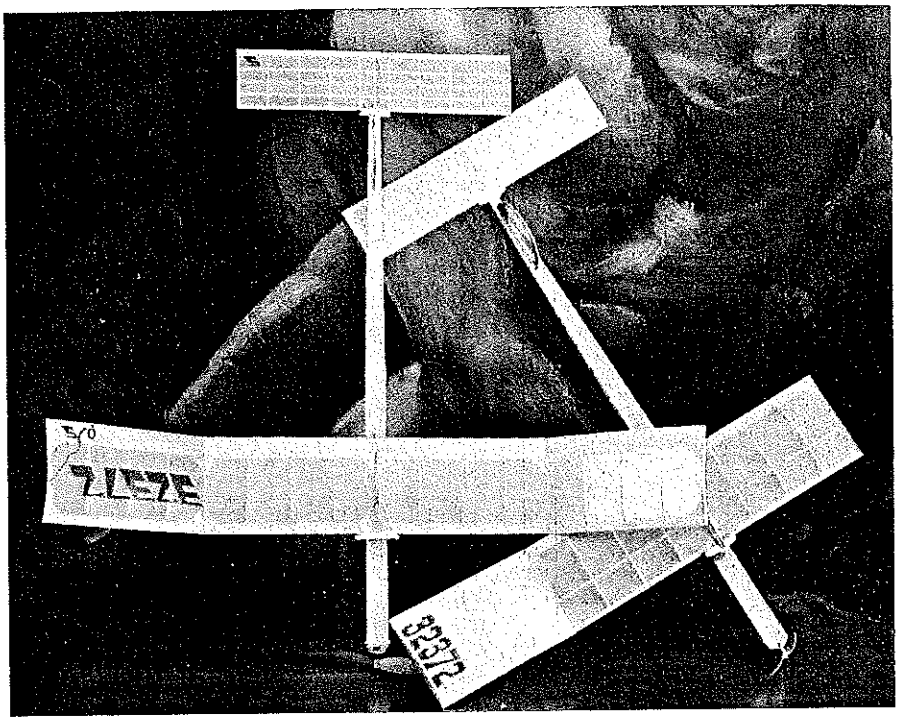
Quick One P-30

The beauty of this Rubber power class is that models are inexpensive and quick to build. Requiring a stock plastic prop puts everyone on a more equal footing. This model meets these conditions in fine style while providing alternate wing designs for calm and windy weather.

■Ross Jahnke



The windy weather Quick One with flat-bottom airfoil (author's #4 model) is at right, the calm weather variant (#5) with highly undercambered wing at left. Difference in the wing structures is evident. The models were photographed in front of one of the author's large paintings.

THE IMPETUS for this model came when I needed a quickie replacement for a Hot Box I, lost test flying two days before the P-30 event at the 1981 Nationals. That was the first and only Nationals I have attended, and it spawned not only the Quick One P-30 prototype and its progeny but also a Hand-Launched Glider called the Roscoe, published in the May 1986 *Model Aviation*.

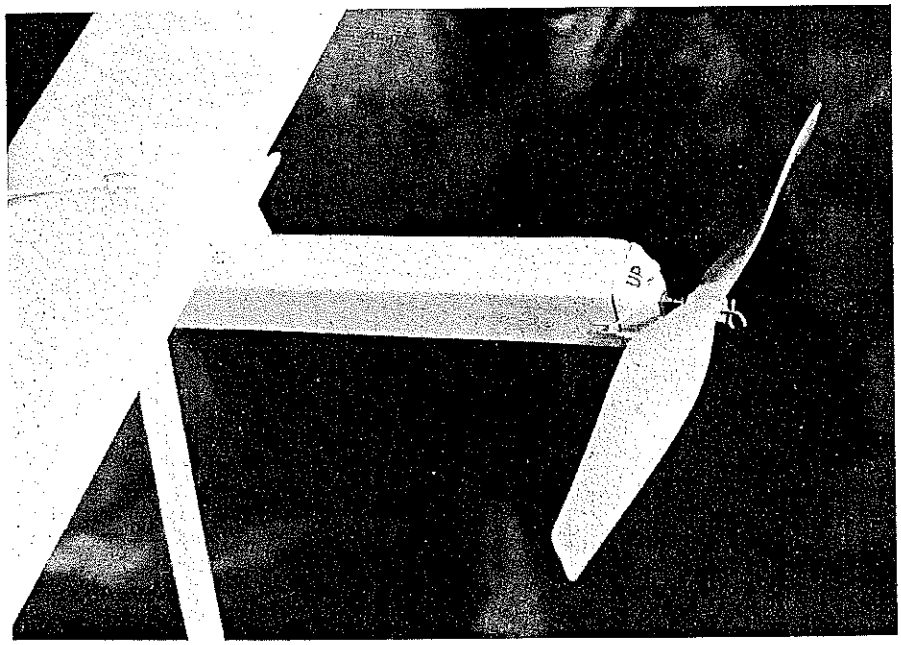
The original Quick One built at the Nationals was an unsophisticated airplane with an all-sheet fuselage and a shorter stabilizer, wing, and tail moment. Its flight characteristics were mediocre, although sufficient to place second in Senior. Four revisions have spiraled out of that first improvised effort, each with modifications developed by looking at other models and other events.

Many of these refinements came from my subsequent experience with Wakefield and Coupe d'Hiver. While much thought and innovation has gone into the large Rubber events, little has found its way into P-30 as yet. Not so with the Quick One. Not only are this model's proportions influenced by Wakefield designs, but I've incorporated recent advances in airfoil theory ("Design of Free Flight Airfoils for Minimum Sink," Barnaby Wainfan, *NFFS Symposium Report*, 1984).

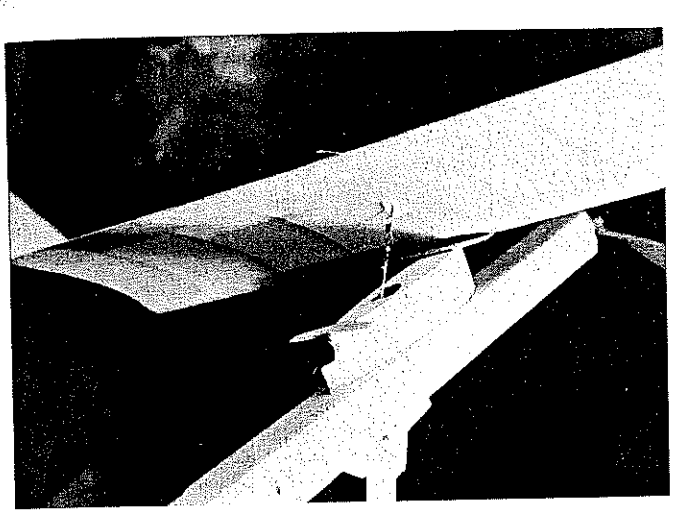
P-30 models frequently exhibit performance characteristics akin to Embryo models which climb slowly on long motors, performance that has proven unsatisfactory in all but ideal flying conditions. The Quick One, on the other hand, is designed to perform like larger models. It's important to note, however, that the straightforward simplicity of P-30 models and of the event itself have not been compromised for the sake of innovation. The Quick One is easily and simply constructed of commonly available, traditional materials.

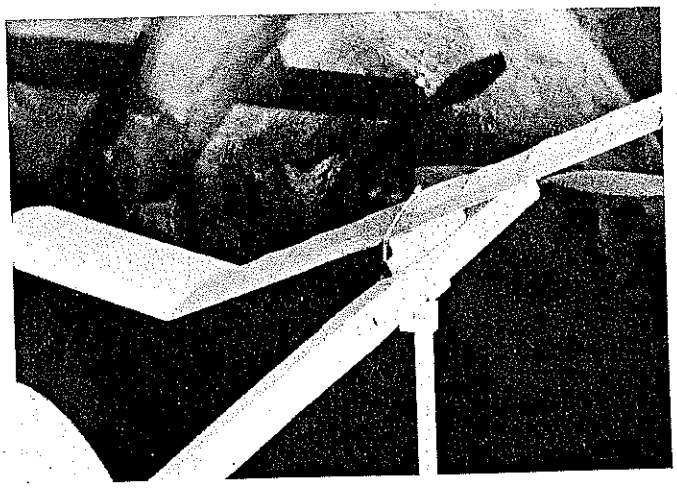
Construction. On the assumption that the builder is familiar with basic stick-and-tissue construction, I'll limit discussion to points which I believe bear notation.

Wood selection is critical to producing a light, strong model. The Quick One is designed to be built entirely of C-grain balsa in the 4-to-6-lb. range. The only possible exceptions are the nose block material and the fuselage longerons, which can be heavier if



Examination of this picture will show the heavy prop shaft with a loop at the front for the winder, rubberband which secures the nose block, and the clear "up" marking on the block.





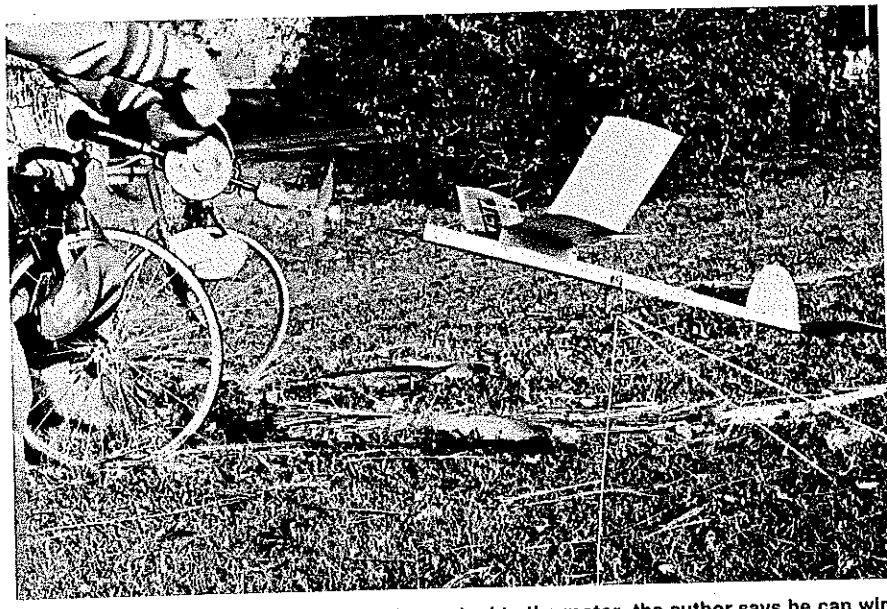
Left: The wing pops up from the rear for dethermalizing, providing a greater rate of descent than a pop-up tail. With it up we can see the limit line with small swivel clip. Clip allows detachment for easy transportation while also securely holding the wing while in flight. Right: Wing dethermalizer set in the flying position. Note how the hook in the center of the wing holds the main hold-down rubberband and the DT band.

desired. I recommend Sig balsa for those who are inexperienced or insecure in selecting wood. Sig accurately grades its balsa according to density.

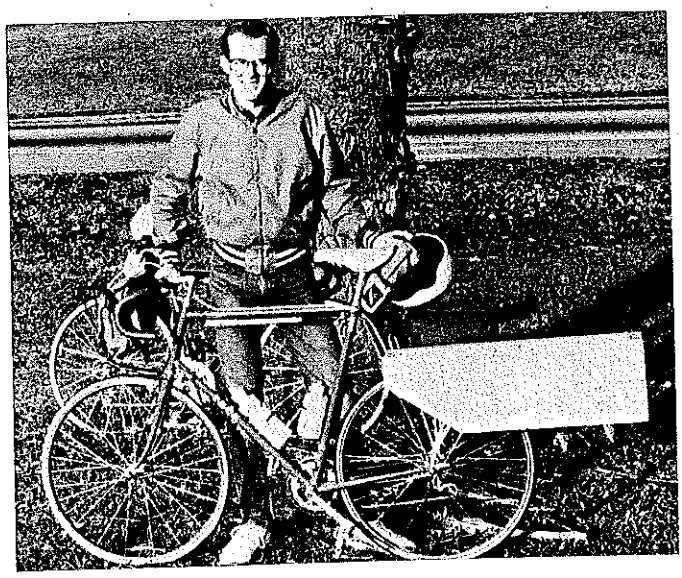
The particular airfoil section used is this model's most distinguishing feature. It's adapted specifically for P-30s using the design parameters outlined in the Barnaby Wainfan article mentioned earlier. I've incorporated such airfoils into models in the Coupe, Bostonian, and Embryo size categories and seen improved glide performance in each case.

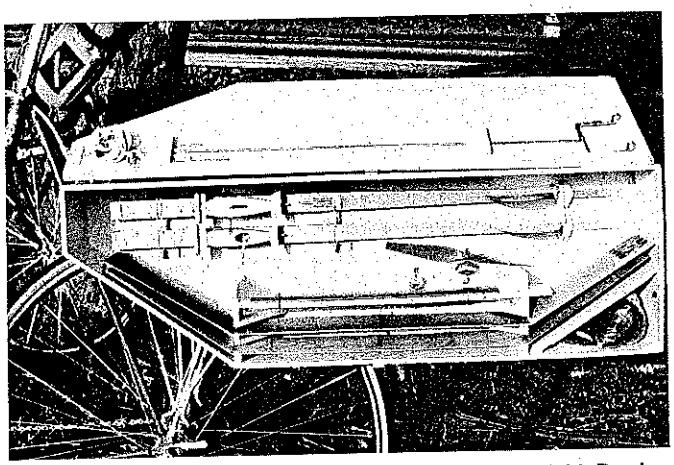
The most crucial features of this airfoil are the leading edge (LE) radius, upper camber, and lower camber. Increasing the leading edge radius will significantly increase the drag of the wing. Sand the leading edge to a nearly sharp contour. Overlapping the tissue will provide the proper radius of approximately ½mm.

The upper camber is designed to provide maximum lift without inducing the separation of the boundary layer of air which causes drag. The lower camber also helps to retard separation, but is less critical. The compromise in structural integrity is an obvious defect of this wing, yet the sparless construction has performed flawlessly in 15-20 mph winds. For beginners or for a backup model, I recommend the flat-bottomed airfoil. With the latter, the leading edge and upper camber are the same as on the thin airfoil.



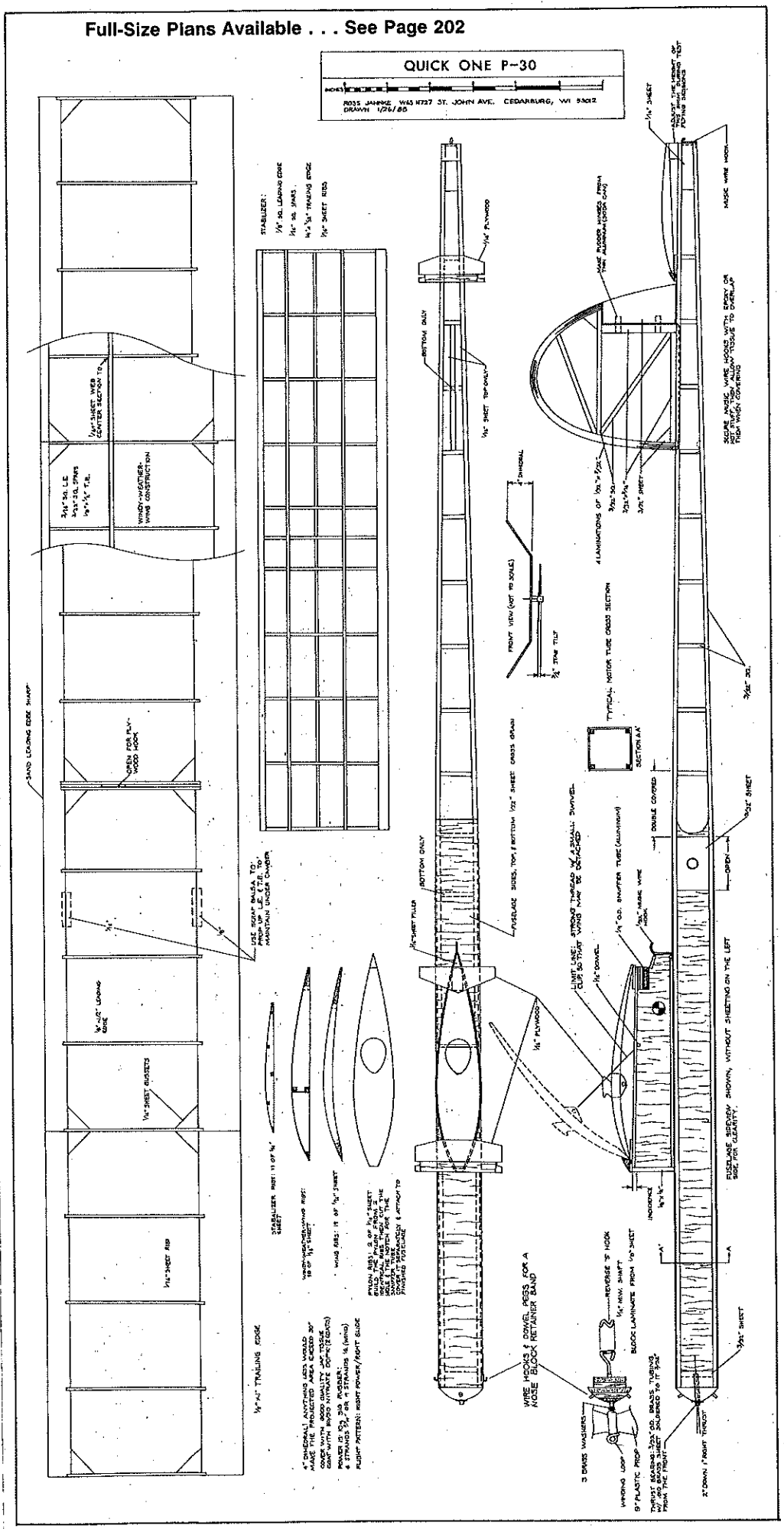
By winding with the prop and nose block attached to the motor, the author says he can wind the rubber all the way into the fuselage, put the block in place, and unhook the winder—all the while never touching the rubber motor. A winding stooge is a handy thing to have, too.





Without a car this may be the only way to get to a flying field. Box is made of foam core board. It attaches to the bike rack with hooks and #64 rubberbands. Author's box can carry two Quick Ones with extra rubber motors and winding stooge made of 3/16 music wire. Additional bag carries winder, rubber lube, glue, etc.—another has lunch.

Full-Size Plans Available . . . See Page 202



Building the wing is quite simple. Be sure to notch the leading and trailing edges prior to construction. Doing so greatly increases the contact area of the glue joints, adding considerable strength. When you cut off the wing tips at the dihedral break, carefully sand the LE and TE so that they fit together to form the proper dihedral angle. Since the wing is 32 in. long, at least 4 in. of dihedral is required under each tip to bring the projected span down to 30 in.

Fuselage. In my judgment a good fuselage must satisfy four criteria. First, it must be sufficiently durable that both the structure and its components—nose, dethermalizer (DT), wing mounts, etc.—perform reliably and predictably for several seasons. Second, its weight must be distributed well to eliminate the need for ballast. Third, the fuselage must have a tough motor tube, able to withstand motor breakage and torque. Fourth, it must have a trustworthy dethermalizer that will work 100% of the time and bring the model down (my first official flight in P-30 at the Nats lasted over seven minutes with the stab DTed).

The fuselage in this model was designed to be nose heavy to allow the wing to be positioned farther forward and the center-of-gravity to be near the center of the rubber motor. The cross-grained sheeting on the motor tube helps to shift the weight forward; it's also rigid and resistant to breakage, if the motor should blow. This type of construction was standard for Wakefields before rolled tubes came into use.

To make the sheeting, cut a sheet of 1/32 x 3-in. balsa into 4-in. lengths, and glue them side to side. After drying, carefully cut this assembly into four strips, two each of 15/16- and 1-in. widths. Make some extra sheeting from which to build the pylon.

The nose block is critical to the mechanical soundness of the model. Too often, insufficient attention is paid to construction of the nose block, resulting in inconsistent flights and constant readjustment. To forestall these problems, use harder wood for the block to minimize wear. I chose 1/16 music wire to prevent bent prop shafts. A brass wire is soldered to the front of the bearing to keep it from pushing out of the block. The model comes down nose first when DTed, so a stout front end is warranted.

Since winding the model is often an awkward chore, particularly in the heat of competition, I used a winding loop on the front of the shaft. I also suggest clearly marking or keying the top of the nose block, to ensure that it's always inserted right-side-up.

The dethermalizer might strike you as inappropriate at first, but it's 100% effective in bringing the model down. Having the wing dethermalize promotes a more positive reaction of the model during landing, and the weight of the mechanism is over the center-of-gravity rather than way out at the end of the tail moment. To make the DT even more positive, the wing pops forward,

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John doesn't know who (or where) he is, but I know that for most of the last quarter century or more, he has been in a very real sense the "father" of the Old-Timer movement and of SAM, and he has maintained an excellent column in *Model Builder* magazine on Old-Timer subjects called "Plug Sparks," in which he covers FF, RC, and Control Line matters.

John has had for years an Engine of the Month feature in his column with detailed, scaled drawings of old engines, along with a paragraph or two of the interesting history and personalities involved in the design and production of the engine.

"Gee," you say, "I wish all of those were collected and published separately, so I don't have to have a 20-year magazine collection." Have I got good news for you! John has collected these articles on the Engine of the Month and printed them with the drawings full size, and they are now for sale in two volumes (would you believe he called them Vol. 1 and Vol. 2?) for a mere $25 each. Same address for these as for the catalogs of plans: John Pond, P.O. Box 90310, San Jose, CA 95109-3310.

Also, I think John still has a few of Paul Plecan's large (24 x 35 in.) drawings of famous Free Flight models at prices of $3 folded or $5 in a tube "until all are gone." These are works of art you will want to put on your workshop wall if your wife won't let you put them up in the bedroom. (My wife won't let me hang Gas models over the bed any more, since the McCoy .60 *did* tend to drip oil.)

I enjoy hearing from you. My address is in the logo at the head of my column (if you want a reply, please include a SASE), and the magazine will pay $5 for photos submitted to me that I use, and you will get your original back if you send me postage or SASE for that purpose.

Quick One/Jahnke

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not backward. The model falls nose first so that none of the flying surfaces are able to generate lift. This would be a disaster for a larger, heavier model, which would fall quite fast in this attitude, but the P-30's lightness prevents a rapid descent. Though it may be disconcerting the first time it works, you'll soon recognize this dethermalizer's advantages over a pop-up stab.

The stabilizer and rudder are of standard construction. Keeping them lightweight is critical to the balance of the model. You may change the shape of the rudder for aesthetic reasons if desired. The stabilizer from an old Poly HLG served as the original template for the rudder shown.

Covering greatly enhances the structural integrity of a model. Do it well and with quality materials. The Quick One should be covered with good-quality lightweight Japanese tissue. I use Kyosho tissue from Old Timer Models, but many manufacturers of Indoor supplies sell good Japanese tissue.

Use your favorite method of covering the model, but note these four suggestions: 1) In my experience nitrate dope is the best covering adhesive because it won't cause warps as water-based glues will. 2) When covering the wing, cover the bottom first. It's important to adhere the tissue to each rib to maintain the contour of the lower cam-

ber. Before covering the top of the wing, run dope along each side of the ribs at the juncture with the bottom covering from the inside (top). This will ensure that the tissue is well adhered and won't pull away when it is shrunk. 3) Double cover the first open bay in the tail boom to provide a strong transition between the sheeting and the open structure. 4) Lap excess tissue over the wire hooks to prevent them from pulling out.

Finishing. After water shrinking the covering, assemble the glued-together parts, and give the model three coats of nitrate dope that has been mixed in a ratio of 1:2 with thinner. Protect the finish of the frequently handled nose block against wear by giving it three additional coats. Finally, dump some unthinned dope down the motor tube to protect it from rubber lube.

Flying. Before heading to the flying field, make sure that, except for $\frac{1}{16}$ in. of washout in both wing tips, the model is warp free. Begin test flying the Quick One by gliding her over grass. Play with the tilt and incidence of the stabilizer to achieve a long, flat glide to the right. Next, begin short power flights. Aim for a strong right-hand climb that is as steep as possible without stalling. Downthrust will control the stall. Use right thrust and rudder to control the turn, keeping in mind that rudder movement will also affect turn in the glide. As the pattern improves, add power and make adjustments to compensate.

At full power the model should climb rapidly and make two to three circles before the prop begins to freewheel. The transition at the apex from power to glide should be almost undetectable. With practice a javelin-style launch is possible, using the rubber access hole in the fuselage as a finger rest.

After the model is well trimmed, it's advisable to continue practice flying to familiarize yourself with the airplane and pertinent field procedures. By flying at least one night a week during summer vacation, I'm able to set up efficiently and concentrate on finding thermal air when I go to a contest. Even if you aren't much interested in contests, being prepared will make flying more enjoyable.

I know you're going to like this model's outstanding performance envelope. Above all, the Quick One should be fun. Your questions or comments are welcome. Send them to Ross Jahnke, W65 N727 St. John Ave., Cedarburg, WI 53012.

Milwaukee/Noonan

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school building in the background (today's University of Wisconsin—Milwaukee) shows their models equipped with ROG gear. Numbers on the wings are for flying order. The picture was taken at a practice session when team members were chosen. It was snapped by Clarence Bates, whose model can be seen on the ground to the lower left.

The long-ago members recalled the trip to Chicago. Instead of the train, Lynn chose a lake steamer with side paddle wheels. Being totally inexperienced in lake travel, he chose a cabin next to a paddle wheel housing, resulting in a noisy, sleepless night for all concerned. Upon arrival in Chicago the club members were guests of the IMAC at a special meeting honoring them, and then they were guests at a theater party given by the IMAC sponsors. Next day they enjoyed a sightseeing tour of Chicago, followed by the contest on Sunday, August 15, 1915.

Results were mixed. Milwaukee won best average duration 72 sec. to Chicago's 71.1