

# Profile Smoothie

Larry Kruse

TO THOSE of us who started out in this hobby in the mid-Fifties, the name Bob Palmer carries with it the same magic and fond remembrances we now reserve for 1955 Chevies, duck-tail haircuts, and black leather jackets.

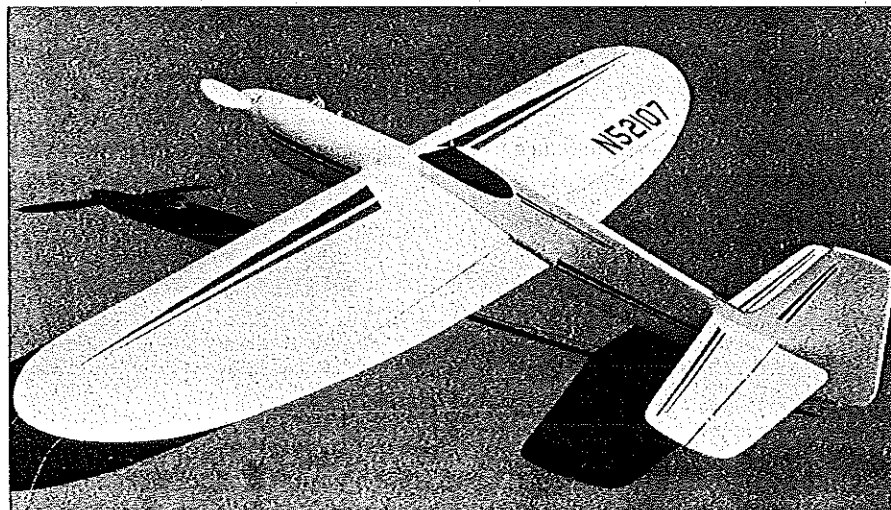
What Bob Palmer did for Control Line flying then is roughly equivalent to what Burt Rutan is doing for full-scale flying now. And Palmer did it with style. In contrast to the small, fast, and high-powered ships dominating Stunt at the time,

Palmer's planes were relatively large, designed with aesthetics in mind, and exceptionally maneuverable, thanks to the coupled flaps and elevator he helped pioneer. The flight of a Palmer plane was more like an aerial ballet than the sky-rending rip-snort we had come to accept as Stunt.

Several Palmer designs, including his beautiful Thunderbird, were kitted by Veco and later Dumas when Veco went away, giving the average modeler access to some of the finest designs, including the Smoothie, the inspiration for the profile ship presented here. All of them flew marvelously well and now reside firmly entrenched in my personal memory hall of fame.

Those memories came to life recently when I unearthed some photos I'd taken some 25 years ago and once again encountered my venerable Smoothie resplendent in a now-somewhat-faded green-and-white paint job.

I went immediately to my drafting table and set out to recapture a bit of the past by way of a profile version of the plane, one which would have the good looks of Palmer's ship, and yet not take too much



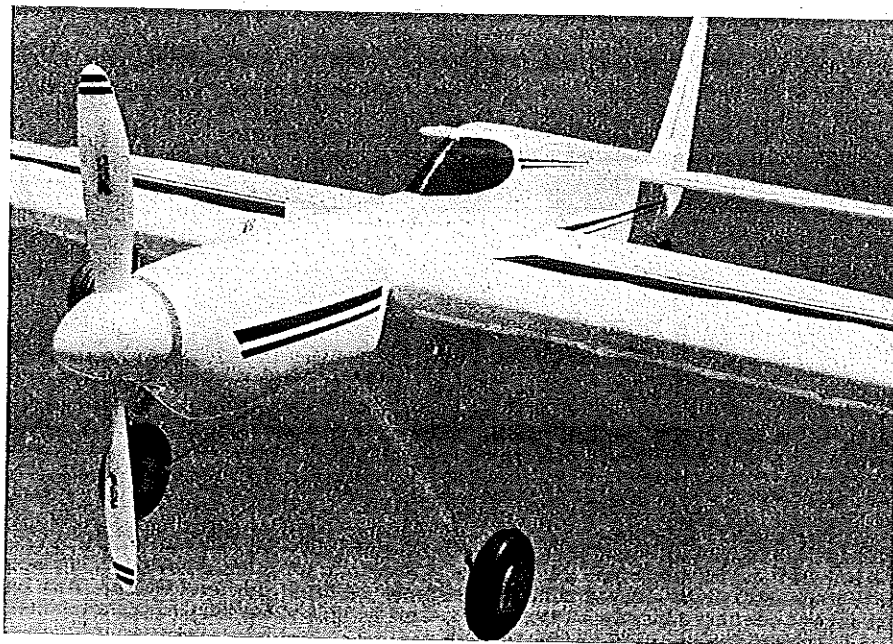
Either from the front (top picture) or the back (above), it is plain that the profile version retains the pleasing, classical lines and semi-elliptical wing planform typical of a Bob Palmer design. Cowling cheeks provide a "padded" nose area to dampen engine vibration and lessen the chance of stress cracks forming at the wing/fuselage joint.

The original Smoothie was an important milestone in CL Precision Aerobatics flying. This profile-fuselage version for a .35 engine retains the classic lines in an easy-to-build package that is fun to fly.

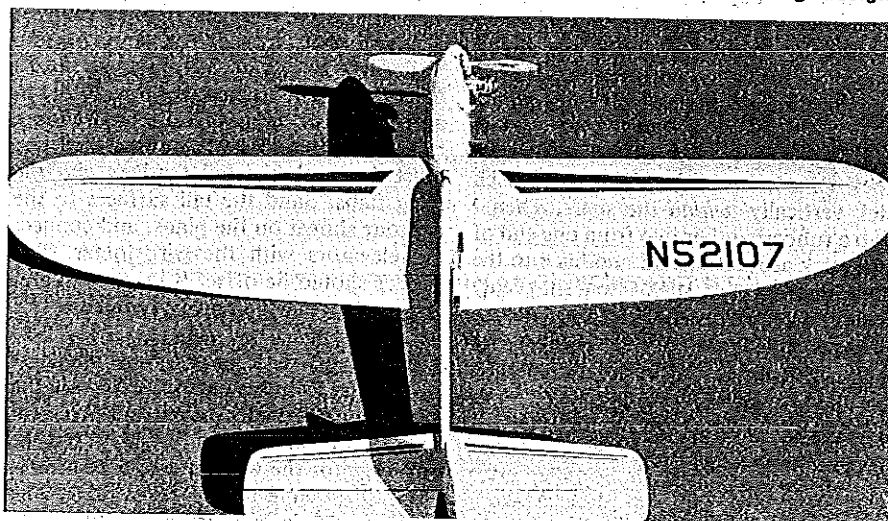
building time away from my current Scale projects. For the purists, be aware that there was no intention on my part to replicate the exact moments, dimensions, or construction techniques employed in the original Smoothie kit. My only purpose was to renew some pleasurable times of the past with a plane that looks a bit like the old Smoothie.

The wing builds quickly if you stack-saw the ribs and pre-form the tips prior to actual construction. Pin down the bottom trailing edge (TE) piece and glue the ribs to it. Use a small cardboard triangle to make sure the ribs are at 90° to the TE piece. Considerable time can be saved by using Goldberg's Super Jet or Hot Stuff's Super T rather than a slower-drying glue.

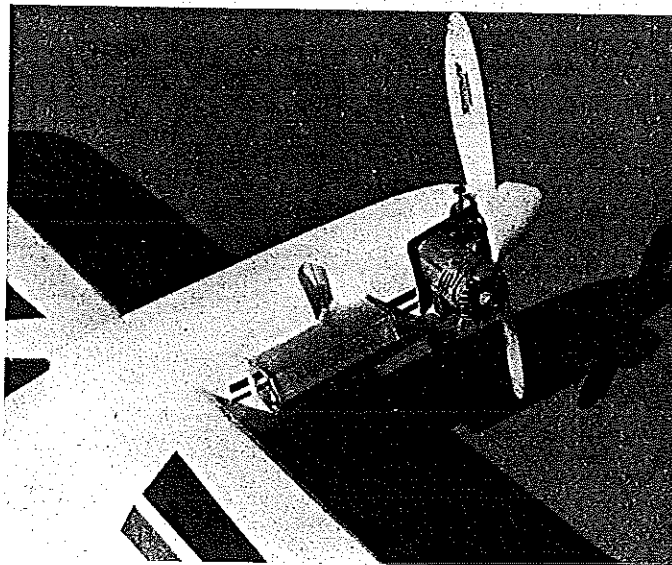
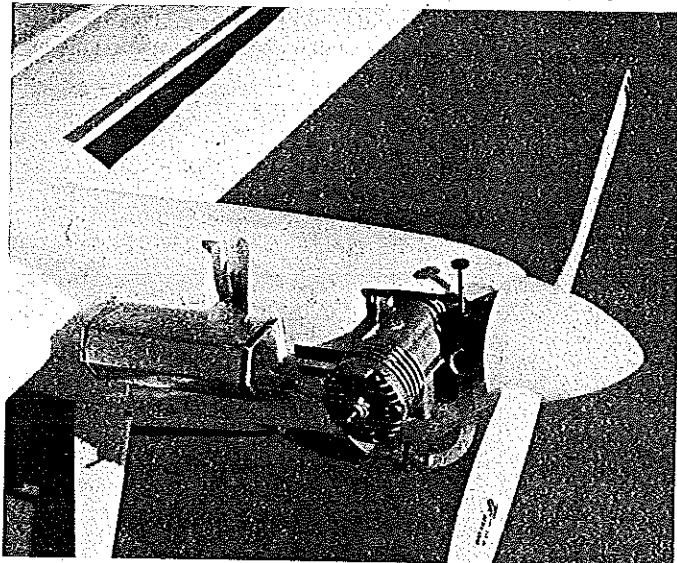
Glue on the top TE piece, and set the ribs in place over the pinned-down bottom spar. Don't glue them yet. Put the top spar in position, and glue it in place. Turn the wing over, pin down what was originally the top spar (now obviously on the bottom), and glue what was originally the



Distinctive nose area treatment and pronounced "chin" under the spinner set the Smoothie apart from most other designs. From this angle, the model looks like a full-fuselage design.



From dead behind, the generous wing area of the model is plain. Note how the nose fairings into the thin profile fuselage behind it. Rudder is offset 1/2 in. to the outside of the circle. bottom spar in place. Confused? Don't as to which spar is which as long as one of them is pinned down and the other one is



A trusty 12-year-old Fox .35 powers the author's prototype. The fuel tank is held in place with white GE silicone sealant. The rubber-like properties of this product help dampen vibration and lessen the possibility of fuel foaming while in flight. All photographs by the author.

# N52107

Decorations and AMA numbers were cut from Trim MonoKote sheets and sld into place after the surface was sprayed with a soapy water solution. Air bubbles can then be squeeged out from under the surface with a small flat piece of cardboard or sheet balsa.

glued into position. Add the TE cap strip and the leading edge (LE). Figure out some way to apply pressure evenly and consistently to the LE during the gluing process to make certain it remains butted into the rib notches at each rib location.

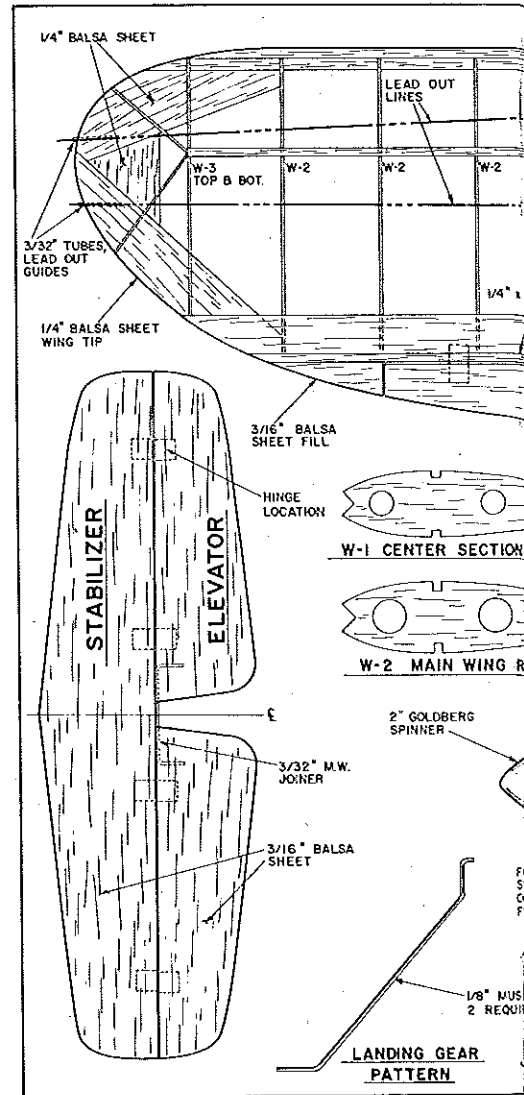
On a wing like this, I typically cut six or eight 4-in. sticks out of sturdy spruce stock ( $\frac{1}{4}$  x  $\frac{1}{4}$  or bigger) and place each stick vertically *behind* the spars. Then I loop a rubberband or two from one end of each stick around the LE and back to the other end of the stick. Spaced evenly along the span, this technique creates even pressure at each rib/LE juncture, keeping wood in contact with wood, rather than having to try to fill an air gap with glue or sawdust, or baking soda, or whatever.

The bellcrank mount, center sheeting and  $\frac{1}{4}$ -in. support rails can be added prior to gluing the wing tips in place. Make a real effort to fair the tips into the main wing panels. We want to emulate Palmer's semi-elliptical planform as much as possible without unsightly joint lines or abrupt changes in airfoil shape. The  $\frac{1}{4}$ -in. vertical tip fill pieces should be sanded to a rounded contour, blending with the edge

of the wing tip. The flaps can now be slotted for hinges, joined with the  $\frac{1}{8}$  wire joiner, and set aside for final assembly.

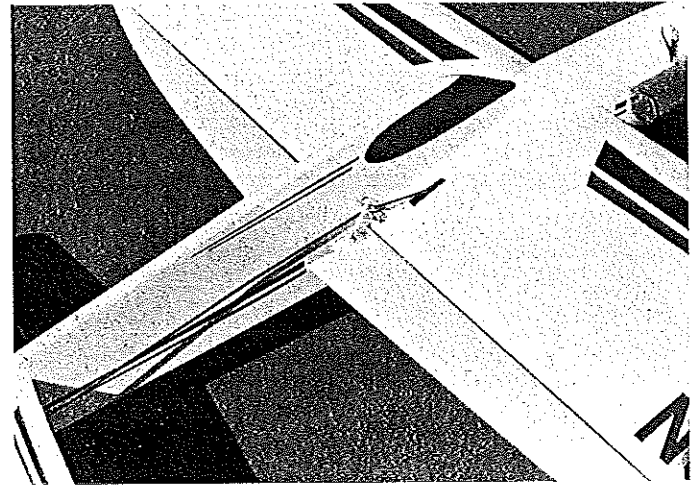
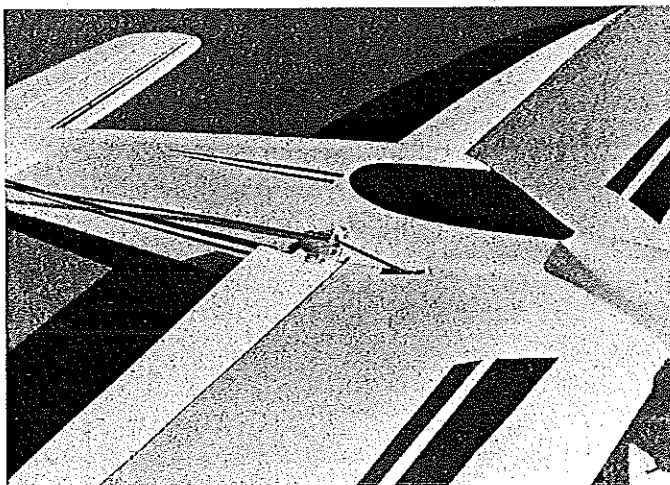
Tail surfaces are cut from medium  $\frac{1}{8}$  balsa, with the stab and elevator slotted to accept Du-Bro hinges before any sanding takes place. Goldberg's slotting tool is a must for both the tail feathers and the wing flaps. Sand the tail surfaces to the contour shown on the plans, and connect the elevators with the wire joiner. The rudder should be offset  $\frac{1}{2}$ -in. to the right as viewed from the rear of the plane.

The fuselage requires one 4-in. plank of  $\frac{1}{2}$ -in. balsa, some scrap  $\frac{1}{2}$ -in. fill for the canopy and turtledeck area, and two  $\frac{1}{4}$ -in. chunks for the nose doublers. Cut out the openings for the wing and stab very carefully to preserve their level settings. The landing gear is bent from two pieces of  $\frac{1}{8}$ -in. wire, plugged into the fuselage mounting tube, and held in place with Sig nylon straps. Maple engine mounts slipped into the slots shown and then faced with the balsa cheek cowlings give ample surface and strength for mounting any size engine

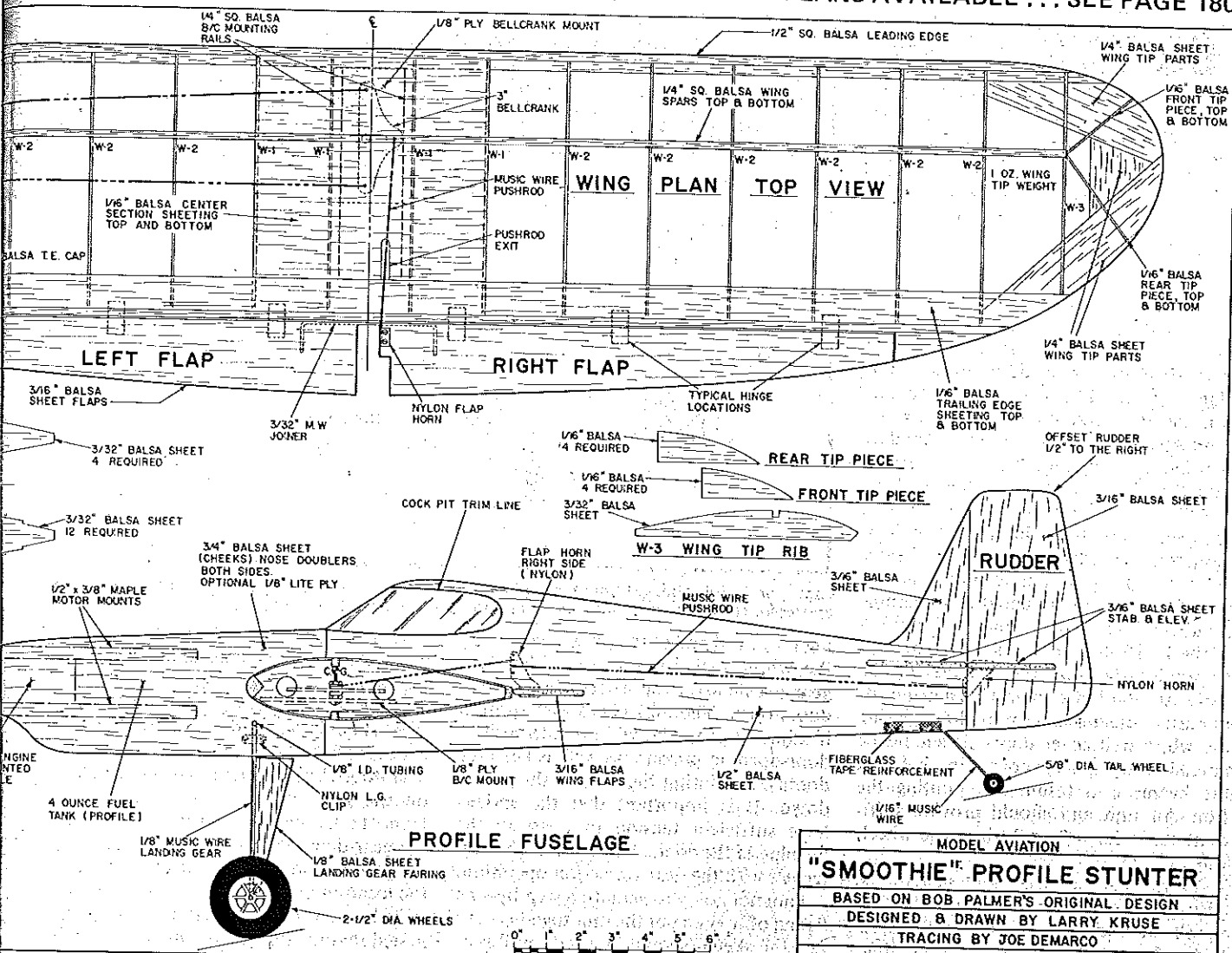


up to a .40. If you like, you could omit the  $\frac{1}{4}$ -in. balsa cheeks and use  $\frac{1}{8}$  Lite Ply if you're opposed to carving and gouging balsa. However, part of the Smoothie's charm is the shape of the nose area and the distinct "chin" under the spinner.

The prototype was powered by my faithful Fox .35 (now 12 years old), but the model could be powered by any other engine of similar displacement. You might



Control linkage uses RC horns and wheel collars. Controls must move smoothly without binding or hanging-up. Flap notch is for pushrod clearance when full-down elevator is applied. If you enjoy CL fun flying and are looking for a not-too-difficult-to-build ship, look no more.



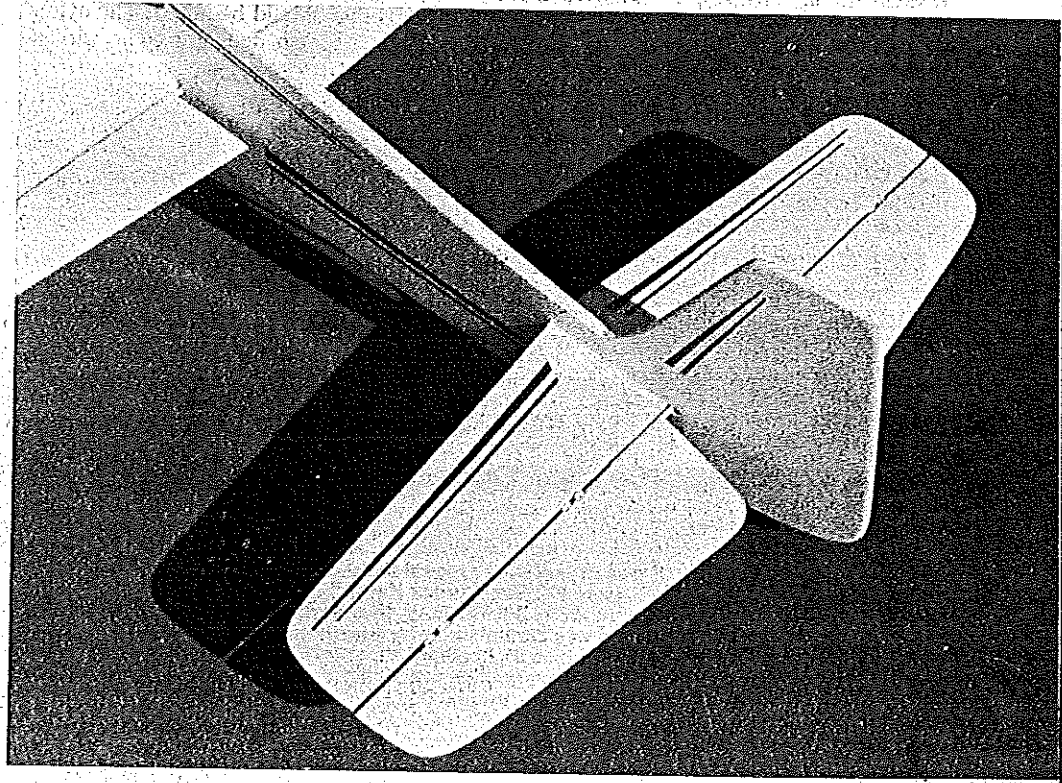
MODEL AVIATION  
**"SMOOTHIE" PROFILE STUNTER**  
 BASED ON BOB PALMER'S ORIGINAL DESIGN  
 DESIGNED & DRAWN BY LARRY KRUSE  
 TRACING BY JOE DEMARCO  
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want to shorten the nose about 1/2 in. if you're using a heavier engine than a Fox. Actually, anything down to a strong .25 will probably work well, too.

After the engine and fuel tank fit to your satisfaction, remove them and sand everything very carefully in preparation for finishing. Slip the wing flaps into the wing opening first, and then slide the wing through. Attach the flaps via their hinges, and then epoxy the wing in place. Using a small 90° triangle, set the rudder and stabilizer in position, and Hot Stuff them to the fuselage. Hold off on installing and hooking up the control horns and pushrods until after the final finish is applied to avoid painting around, over, and on them during the finishing process.

**Covering and finishing.** I used white MonoKote to cover the wings and two coats of white Hobbyoxy for the wood surfaces since. These two products are very comparable in terms of color match and luster. All solid surfaces were given two coats of Hobbyoxy Stuff as a filler and sanded thoroughly to remove grain marks. Large pits and dents were filled with DAP spackling compound, and the wing fillets were formed freehand with

*Continued on page 173*



Nylon RC-type hinges are slotted into the stabilizer and elevator for a neat and non-binding installation. The tall surfaces are cut from 3/16 balsa and sanded to shape.

gible loss in scale fidelity. The sketch is almost self-explanatory. The trick is to pivot the entire horizontal tail at about mid-chord. In the sketch, I show a round toothpick used as an axle. I used bamboo, carefully rounded and tapered. Music wire, say about .032, would probably work, also.

In the sketch, the thread and rubberbands are shown foreshortened; the fuse is actually up close to the CG. Use the smallest fuse you can obtain. Try the various twines down at the local hardware store. And where do you get those skinny rubberbands? You *make* them! Get a toy balloon, the long, thin type that is about an inch wide and straight, when deflated. Fold a piece of bond paper in half, stick the balloon inside, and cut through the whole sandwich using *sharp* scissors. In 10 minutes, you'll have a year's supply. All of the hooks are bent from glass-head pins. Be sure that the DT rubberband stands away from the snuffer tube by a good  $\frac{1}{16}$  in., else the fuse might get snuffed before the gummyband gets gummy enough to fracture.

Fringe benefit: See that thing called "stop" on the sketch? On my model, it is a piece of  $\frac{1}{2}$  x  $\frac{1}{4}$ -in. basswood—model railroad stock—poked through a slot whittled through the fuselage. Balsa pads are glued on the bottom to limit the leading-edge-up position of the stab. They can be whittled away or built up to adjust the angle of incidence. You'll probably want to add a stop of some sort to limit the DT position of the stab, too.

Bob Meuser, 4200 Gregory St., Oakland, CA 94619.

## Profile Smoothie/Kruse

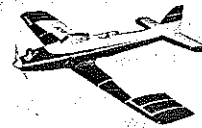
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Epox-o-Lite and a wet index finger.

This quick-and-dirty finishing method would be totally unacceptable on a full-blown competition Stunter, but it's a good way to go with an everyday fun-type ship like the Profile Smoothie. I have an Ag-Wagon nearly seven years old that still looks good and cleans up easily due to its epoxy/MonoKote finish.

Flying the Smoothie is just what you expected it to be. All maneuvers are slow and almost stately as you move through the pattern. The plane bobbles just a bit on the corners, but so did the original, as I recall. Some theorists attribute that to the wing tip shape, but I've never delved into it to find out the exact "why" of the peculiarity. Mostly, I'm just content to enjoy flying the Smoothie, knowing its history and place in the evolution of design. I hope you enjoy it, too.

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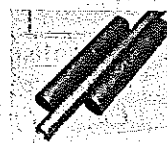
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## CL Scale/Boss

Continued from page 78

so that adjustments for best operation of the doors can be made to the .025 piano wire return springs or to the thickness of the hardwood block that the gear leg pushes against.

Contest report. The first contest of the season here in the Northeast featuring CL Scale has to be termed a great success on two accounts. First, the turnout of about 60 contestants can be considered good for an early date in May (May 20), and secondly, RC and CL Scale and Aerobatics events were brought together successfully for a great day of flying. The contest took place in the Anthony Wayne Recreation Area of Bear Mountain State Park, New York.

This annual contest, which is usually an RC-only affair run by the Interstate Model Flying Club, was turned into the combination meet in an effort to show the public the two types of flying side-by-side. John Caglione of the IMFC was the principal organizer of the meet, but he had the help of George Gaydos of the Garden State Circle Burners Club in getting the CL fliers out to the meet.

Scale events flown were Precision, Sport, and the GSCB Profile event. The scale entry, 23 models, was just great, with five in Precision, 10 in Sport, and eight in Profile. George Gaydos placed first in both Precision and Profile classes with his F7F Tigercat and Guardian, respectively; Steven Macbride took top honors in Junior Sport with a PT-19, and I had the pleasure of winning in the Open Sport category with my Airacobra.

It appears that the Profile event (outlined in the April 1984 issue of *MA*) shows

signs of having fair participation. The event, when first run by the GSCB Club in the Fall of '83, had only five contestants, and (as noted above) eight entered the IMFC meet. In addition to seeing this modest increase in entries, I heard considerable talk from non-Scalers about how they might try the Profile event. This is certainly an easy way to be introduced to Scale modeling.

This contest report can be closed on the thought that the meet was good, the public saw Aerobatic and Scale model flying in two different forms, and I'm sure the contestants learned something about the other guy's choice of modeling.

Pointers on finishing. Jack Patroliia (Marshfield, MA) says that his method of finishing model components will help the Scale modeler obtain a better overall model finish. While the telling of Jack's method can be termed a "Back to Basics" item geared for the beginner in Scale modeling, I'm sure there are some experienced builders who will also find it informative. The method described is used for models on which a *dope paint finish* is to be applied.

Jack points out that a very important part of his finishing method is that you *build, sand, cover, seal and fill* all major components *before* assembly.

After construction of all major components, such as vertical fin, rudder, and elevator is completed, they should be fully sanded. When sanding is complete, all surfaces of each part should be wet down with a very damp cloth or sponge and set aside to dry overnight. This procedure will raise any compressed areas of the balsa surface, and you will then be ready for a final sanding with a 220 grit (or finer) sandpaper. When sanding is complete, apply one coat of clear epoxy paint to seal and strengthen the surface. After the

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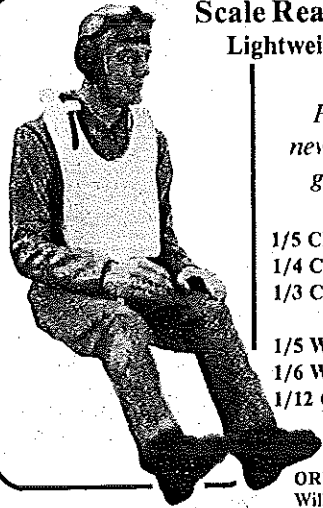
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epoxy paint has cured, sand lightly and apply two coats of clear dope, which will act as a filler as well as a base for the application of your choice of covering. Cover all open framework parts with silk or silkspan. You might also want to cover all exterior balsa surfaces with the same choice of material.

Covering all exterior balsa surfaces will add strength to the wood and help to prevent stress-cracking during the model's operation. You might also make note that silk is a better covering on open-framework components for simulating the fabric covering which was used on the full-scale plane.

When all parts are covered, apply dope and filler until all parts are once again completely filled and smooth. Then, assemble the components, except for hinged surfaces. When assembly is completed, construct any required fillets using the same basic procedure as outlined above. When all major components are prefinished and assembly complete, you are ready for application of the final paint finish and scale detailing. Final assembly of all hinged surfaces can be done when final finish painting is completed. John says that a little extra effort and patience pays off in a better-than-average finish.

Bill Boss, 77-06 269th St., New Hyde Park, NY 11040.

### CL Aerobatics/Fancher

Continued from page 79

lighter. Some question of them not making the trip. Sure hope they can come, we'd all miss Karen.

Bob ("Hollywood") Whitely, the '78 Nats champ, has the most ballyhooed approach to the problem. He's using the "900-pound gorilla" approach, with two

engines! Latest word has it that he is building a new twin different from the one with which he won the Southwest Regionals in that it's a push-pull, centerline-thrust setup. (Don't ask me: they've got funny stuff in the air in Los Angeles.) This concept is not unproven. Senior Stunt at the 1967 Nats was won with a similar configuration. I saw it, and it really did fly well.

Bob ("Smiles") Baron may or may not be able to attend, on account of commitments to the World Champs (plus I hear the lucky dog is going to China with Bob Gieseke... now there is a really odd couple... as part of an unofficial American team invited by the Chinese to participate in an international competition as guests of the Chinese fliers. Very nice!). The word is that he doesn't feel any major changes will be necessary for Reno. He has the same Avanti designs as before, although I heard he is building one of the LJ ships currently popular in the East for a backup.

For what it's worth, I predict Bob Baron will be our next World Champ. If Mike Rogers is able to be there and coach him, they will make a formidable team. Proof positive of the value of a coach with whom the flier has trust and rapport. A hearty good luck to Bob and the entire American Control Line team at the Chicopee World Champs!

Well, I'm back from Eugene now, and I was right. Winning wasn't everything! Paul Walker's new Bad News lives up to its billing. A dynamite airplane. And get this gossip, fans: he not only covered it with funny plastic stuff but was observed sneaking away from the merchandise awards table with an orange roll of this foreign substance hidden under his jacket eschewing more exotic treasure. In addi-

tion, the second-place (mine) and third place (Don McClave's) airplanes were similarly adorned. Could we be witnessing a revolution?

This meet was a real ego trip for this writer, as the Stunt circle looked like an Imitation/Excitation class reunion. Second, third, fourth, and I believe fifth in Expert and at least first in Advanced were taken by various combinations of these designs (both plans, No. 280 and No. 353, are available from Model Aviation plan service). Two particularly noteworthy examples were: Allen Resinger's Excitation II, with which he won first in Advanced on his first flight of the day and then, unfortunately, crashed in the gusty winds in the second round... a flight he didn't have to make. Maybe a lesson to be learned, these things are frangible. The second is a young man named Randy Schultz who flew a beautiful "...tation" derivative he calls Risky Business. I was very impressed with this man's talent and predict great success for him at any level of the game he is able to pursue. A year-and-a-half of Stunt, and he is building 15-16 point Nats-quality ships under 50 ounces and is flying some terrific stuff. A little experience and you'll be hearing his name well above fourth place at regional meets.

A Quick and esoteric trim lesson: The old "...tation" I flew in Eugene had always turned much quicker outside than inside, and I had made a handle biased to compensate for the problem. This camouflaged the problem but didn't cure it. The plane was still not a happy plane. In the years since I built and flew this ship, I've learned a great deal about trim and felt that to be remotely competitive with Paul I would have to make a quick attempt to correct this problem. Here's what I did.

A couple years ago, in an attempt to make my Intimidation easier to fly (It's a terrible airplane, by the way. Don't write asking for plans, I've burned them.), I sealed the hinge line of the elevator to make the tail more effective, thus allowing me to move the CG forward and still have an adequate rate of turn. This worked great and was largely responsible for the airplane flying well enough to win the '82 Nats. In addition, for reasons I can't explain, sealing the hingeline affected the unequal rate of turn. This airplane had an incredible 1/4 inch of down elevator cranked in to make it turn remotely as well outside as inside. Magically, upon sealing the hingeline, this turn bias disappeared and the elevators were trimmed back to neutral! Subsequent experiments on both my ill-fated World Champs Excitation II and Celebration proved this to be a repeatable phenomenon.

Armed with this knowledge, I attacked the old black bird immediately and sealed up its battle-worn tail feathers and went out to fly the night before the meet. Lo and behold, it had worked again! Instant and equal turns in both directions—and I