

#519



Designed for the .19 to .35 engine range, this CL sport model uses a unique "crutch structure" to provide a strong, lightweight fuselage. The snappy scheme and lines of this classic are sure to turn many heads.

■ Joseph M. Nunes

Profile GEEBEE R-1



The outboard side features a neat and orderly fuel tank/filter/engine installation. Plenty of room for the .25 engine shown without detracting from the model's overall appeal. The lead-out side shows the model's clean lines and snappy finish. Note the difference in the engine cowling on this side.

DO YOU GET a bit excited while watching a Gee Bee model or when discussing the flashy, eye-catching, red-and-white color scheme? During my early modeling years when I first saw pictures of this aircraft, I was immediately intrigued by its formidable shape and color appeal. "I've got to build one of those some day," I thought to myself while kit Control Line projects were built and my interest also turned toward RC.

Frankly, I did not want to construct the bumblebee-like body during the earlier years. Some day, I thought, when the old building techniques are honed . . . Lo and behold, while rereading an issue of *Model Aviation* (February 1983), my eyes fell upon the super two-page photo of Henry Haffke's Gee Bee R-1 Super Sportster. I could not help but notice the possibility of satisfying the long lost desire to construct a profile-fuselage Gee Bee R-1 model for the .19-.35 engine range. This article and plan are the result of my idea for a model which is fun to build and looks great both on the ground and in the air. Your building techniques are enhanced a bit by the Gee Bee's utilization of a center "crutch" within the profile body. This allows for a lighter airframe while maintaining the required strength and design integrity.

This construction experience is more

advanced than a one-piece profile CL model, yet it is well within the building capability of many modelers. The use of a built-up wing, lead-out side cowl projection, rounded fuselage edges, built-up rudder, non-flat wheel pants, full tail wheel enclosure, and the snappy-looking finish all contribute to your flying enjoyment as you face the model and go round and round. This little package provides a lot of fun both in show and go.

Construction. Study the plan to become familiar with the various parts and construction techniques. Refer to the text and photos for additional information. You might want to put together a "kit" of parts first, as I did, before you commence assembly. Be careful when using the plan, as it will be used during the finishing procedure.

Keep your model light. Remove all excess weight from it by sanding well, especially the fuselage and wing. I used both thick and thin types of cyanoacrylate (CyA) glue during construction (except as noted in the text). Wipe all excess glue from the model as you build. Work on a flat surface, and take your time.

Fuselage. It is 1/2-in. thick, but it is *not* made from solid 1/2-in. sheet stock. This is to keep

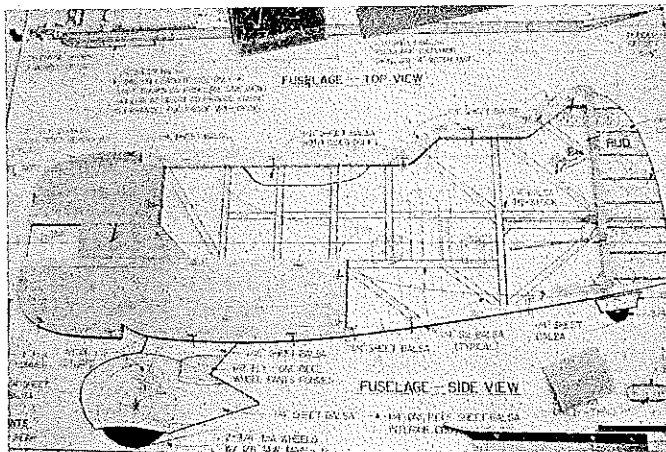
the overall weight down and to provide strength where needed. This involves the use of a 1/4-in. fuselage inner "crutch" which is covered by 1/2 x 4-in.-wide sheet balsa.

Cut out all the 1/4-in. crutch perimeter pieces as per the plan. Do not cut out the wing opening at this time. Follow the diamond-shaped plan notation to achieve the actual frontal crutch piece outlines.

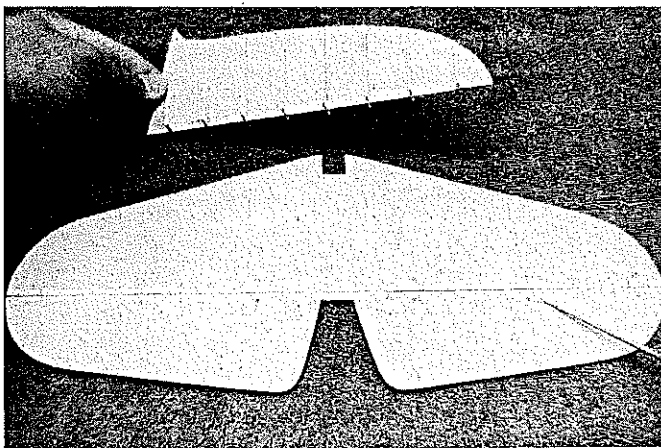
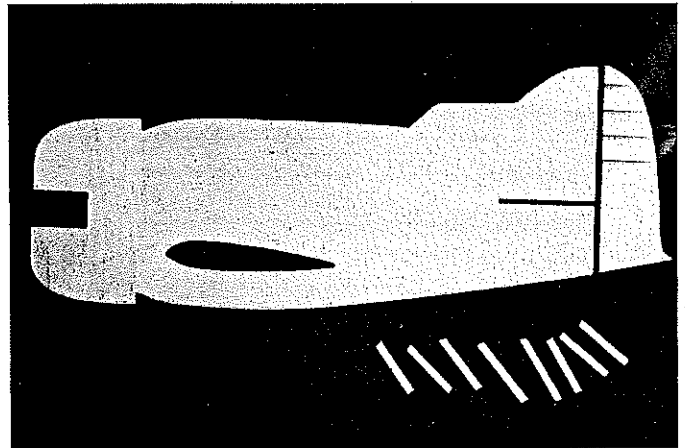
When framing the engine bearer area of the crutch, modify the engine bearer 1/16-in. dimension as needed to suit your particular choice of engine. Make this dimension larger or smaller, as required, at this time.

Trial-fit everything by placing the parts on your wax-paper-covered plan. When satisfied, glue and pin the pieces into place. Use thick CyA glue for balsa-to-balsa joints and epoxy for joining the plywood engine bearers to balsa. Poke holes in the mating ends of all parts to add a rivet-like bonding effect to the crutch assembly. As the inner crutch is actually the framework of this model, be sure all the pieces fit together without gaps.

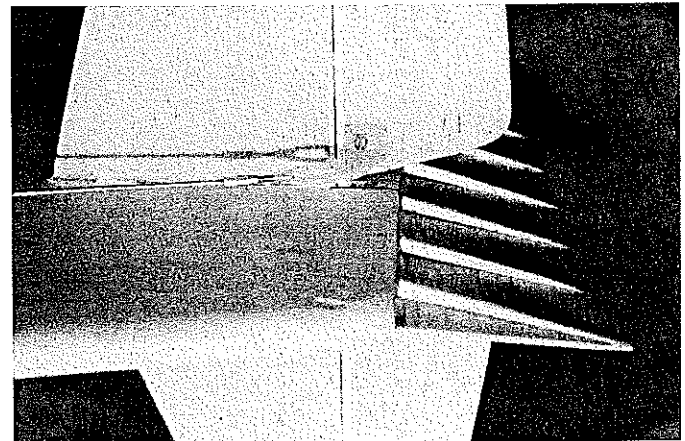
Add the 1/4-in.-sq. balsa inner pieces to the balsa crutch. Cut these parts one at a time as you install them, and strive for very tight fits with no gaps. Add the 1/4-in. tri-stock gussets where shown. Use CyA glue for adding these parts to the outward crutch perimeter.

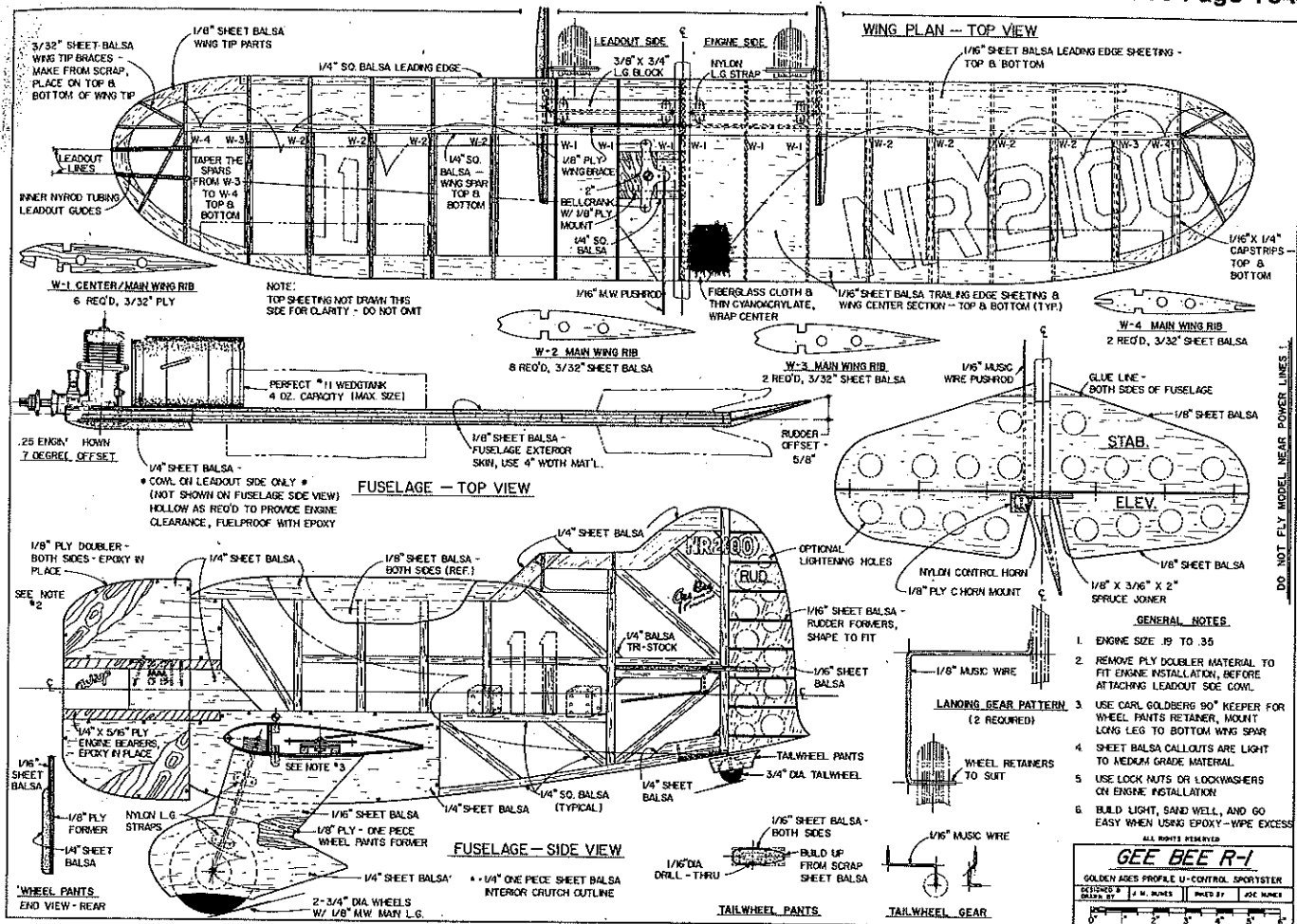


Left: The inner primary crutch pieces are assembled and glued over the wax-paper-covered plan. Ensure a tight fit between parts and use plenty of plns. This assembly not only forms the basic shape but is the model's backbone. Right: Fuselage with all exterior sheathing after being sanded to a rounded shape. The stab and wing slots are both completely cut out. Built-up strips are added to the rudder for effect.



Left: Completed rudder with all strips attached and sanded to shape. Stab and elevator are flat-sanded together for uniform thickness. The hinge line is pre-covered, and then the hinges are installed and "toothpicked" for security. Round off the spruce joiner between the elevator halves. Right: Tail parts are then glued into the fuselage. Note the use of an RC-type adjustable clevis attached to the control horn.





When completed, sand the inner crutch smooth on both sides. Remove all high spots so that the 1/8 x 4-in. outer balsa skin covering will lay flat when glued in place. I used Ambroid cement for attaching the outer skins to the crutch; this allows the glue joints to be sanded smooth and avoids the hard glue line that is common when using CyA. You will need two pieces of 4-in.-wide sheet stock per side and one small scrap piece per side to skin the fuselage; this will produce just one long and one small seam per side.

The 1/8-in. plywood fuselage doublers are now added to the engine area. As an option, you may want to cut lightening holes on the

lead-out side only; these holes subsequently will be concealed by the 1/4-in. sheet balsa cowl piece.

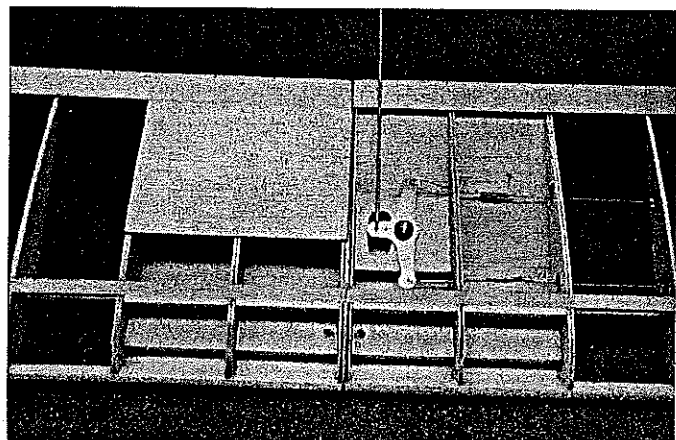
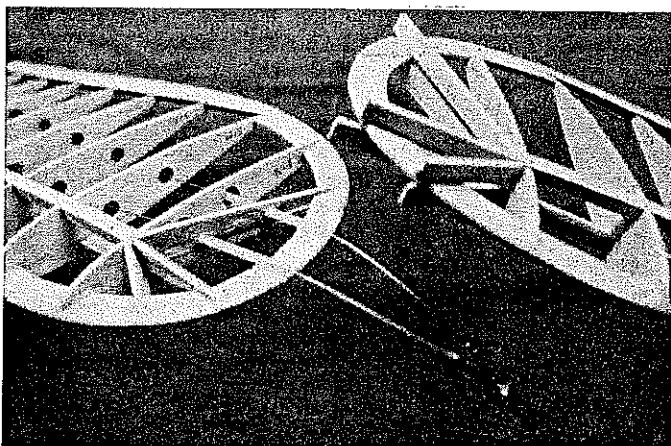
Use an awl to indent the mating plywood/balsa surfaces for a better glue grip in the engine area. Glue with epoxy, placing one doubler onto the balsa crutch and weighting it until the epoxy has cured. Repeat this process for the other doubler. Remove any excess epoxy which may ooze out onto the airframe. Don't attach the cowl just yet.

To make the wing cutout, start by placing the plan over the fuselage and carefully trace the wing opening. I use T-pins to keep the plan from moving in this step and a

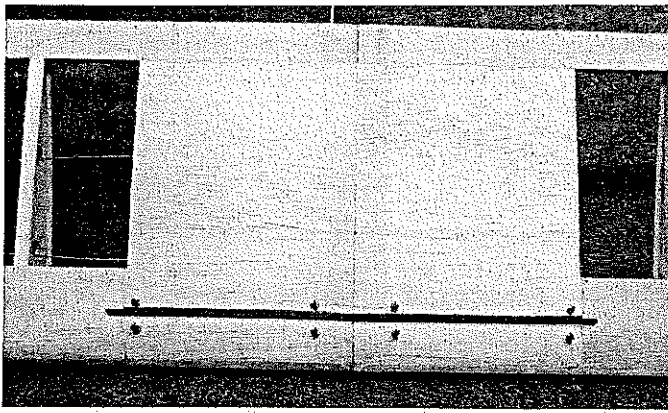
dressmaker's pattern wheel to trace the covered airfoil shape. Work carefully on this step; it takes a bit of time, but the work is easier than it sounds.

Drill 1/32-in. holes at the inside front and rear of the wing cutout area. Using a Dremel saw (for best results), simply follow the traced outline to remove this area. Go slowly in your sawing to assure a good wing-to-fuselage fit.

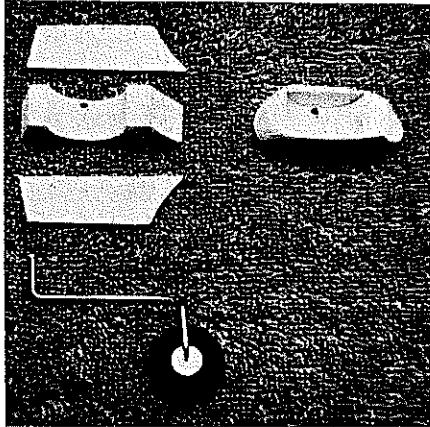
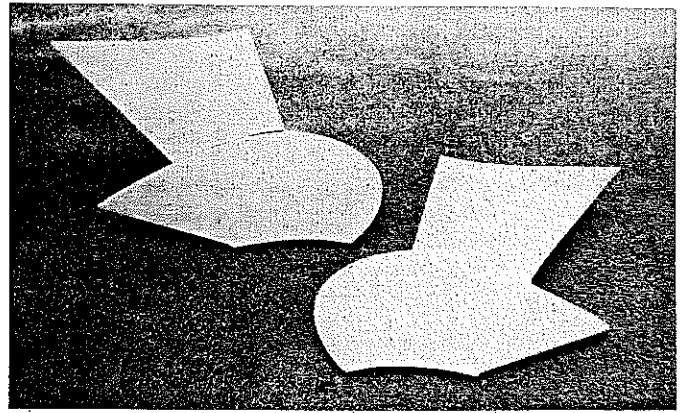
Sand the fuselage assembly, filling and sanding any seams as required. Don't forget to round the fuselage top and bottom edges, leaving the frontal area and rudder post flat. Work for a very smooth surface on which to apply your finish.



Left: The two wing tips showing braces as they first appear when attached and after they have been shaped. Use a small razor plane and sanding block to shape as required for a smooth transition to the wing tip. Right: Install the bellcrank as shown, and sheet the wing bottom first.

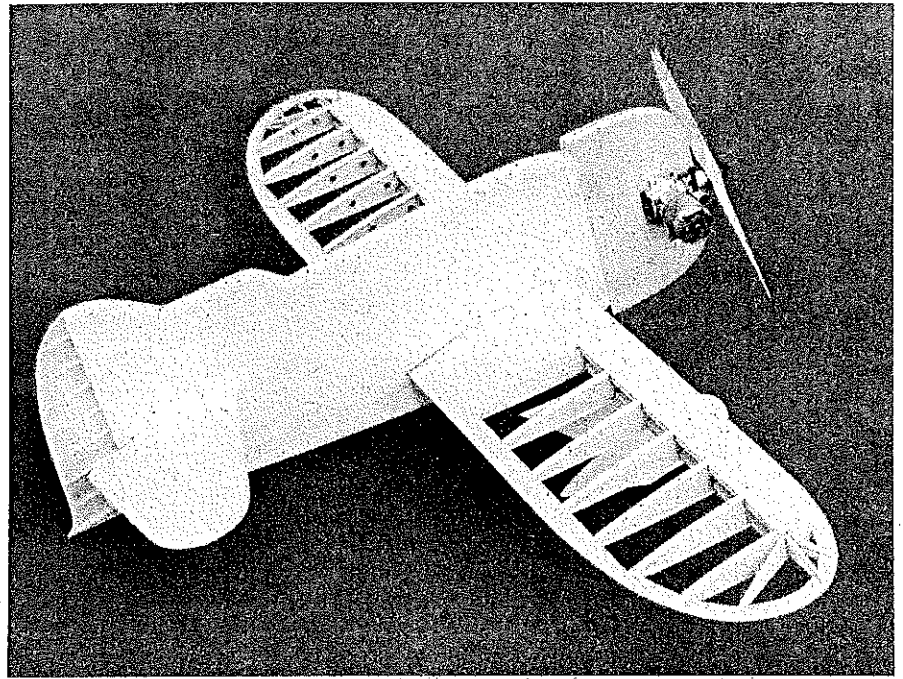


Left: Glass cloth is applied to the wing center section with cyanoacrylate (CyA). The leading edge sheeting and cap-strips have also been added and the landing gear strap screws are pre-located. Right: Wheel pants on the left has just been assembled and is ready to be sanded to the smooth transitions and rounded edges shown on the one on the right. These are simple to make and add a lot of spice to the model.



The tail-wheel enclosure is built up using thin CyA and then sanded to its final shape.

Place your engine on the model, and drill the mounting holes through both plywood doublers. Using blind nuts, install the heads on the lead-out-side doubler with the threads toward the engine side. Check the fit of the engine; when satisfied, use epoxy to secure the blind nuts (with a bit of petroleum jelly inside the threads to keep out the epoxy). When the epoxy has cured, check the engine fit one more time to make sure everything lines up and is attached securely. This is the time to correct any



The business side of the model has plenty of room for the tank and engine without detracting from the model's overall classic appearance. A larger engine could be used.

mistakes.

Provide clearance on the inside of the 1/4-in. sheet balsa cowl for your engine bottom and the blind nuts. Remember only to remove material from what will be the inside of the cowl.

Before you attach the cowl, check the blind nuts, and fill the thread area with petroleum jelly to keep out the epoxy. Check the plan top view to be sure that your cowl looks like it should before gluing it in place. Now you can glue on the cowl with epoxy—and fuel-proof the engine cutout area with the excess epoxy.

Trial-fit the fuel tank to establish all mounting holes prior to finishing the model. Look everything over, round off the 1/4-in. balsa cowl, and (when satisfied) set the fuselage aside in a safe place.

Stabilizer/Elevator. Again using a dress-maker's pattern wheel, transfer the outlines to 1/8-in. medium balsa sheet. Assemble the two elevator halves to the 1/2 x 3/16 x 2-in. spruce joiner with epoxy glue. The

assembly should be flat, and the 1/8-in. joiner should match the elevator thickness. Add the 1/8-in. plywood control horn mount to the elevator assembly. Wipe all excess glue from the assembly, and pin it to the plan, making sure everything is true and flat. Allow the glue to cure thoroughly before handling, then remove from your building board and sand the spruce joiner round where it is exposed between the elevator halves.

Add the two forward stabilizer pieces (see plan); made from scrap balsa, to the main stabilizer piece.

Place the stabilizer and elevator assembly flat on your building board, in their respective positions, and sand them as a unit. This will help assure a uniform thickness in the final assembly. Sand both sides, and round all the edges (except the stabilizer rear edge).

Locate and mark the hinge line on both the stabilizer and elevator. I used flat Mylar hinge material cut to 1/2 x 1 in. There will be

Continued on page 151



Our author's charming wife, Joyce Ann, holds the model to give an idea of its actual size.

FF Scale/Warner

Continued from page 147

"Easy," said the Frenchman. "Your information is typical... totally accurate and absolutely useless."

The accountant replied, "And you are typical of all balloonists... whilst in charge of a vehicle you can't control and having no idea of the likely effect of your actions, you expect a previously-uninvolved bystander to understand your predicament and *real* problem!"

Well, Gang, that bit of nonsense via *Buoyant Flight* of the LTA Society will have to do it. Persevere, and don't glue yourself to your model.

Bill Warner, 423-C San Vicente Blvd., Santa Monica, CA 90402.

FF Duration/Meuser

Continued from page 63

the latter under the influence of the former.

If the publication of such things were a competitive activity, it would seem as if those blokes were trying to give us in the colonies a run for our money. The price, however, isn't all that tough: £5.50 airmail or £4.75 surface, which at today's exchange rate amounts to \$8.36 and \$7.22 in real money, respectively.

The books are 8½ x 12 inches, 75 pages, and have soft covers. You can get a check made out in British funny-money from your bank. Make said checks payable to SMAE F/F Team Travel Fund and send to Martin Dilly, 20 Links Road, West Wickham, Kent BR4 0QW, England.

And oh, bye the bye, while I have you on the line... There was also a 1985 report of a similar nature with articles by Ian Kaynes, Martin Gregorie, Stafford Screen, Mike Fantham, and Ron Pollard. Prices for this one are £5.00 airmail, £4.25 surface; same source. I haven't seen it, but I'll wager it's pretty good.

So, That's it. Farewell, friends. Remember to treat my successor as well as you've treated me (maybe better!) and to keep him snowed under with photos, sketches, comments, ideas, and general gas. Just remember that I'm not dead, and I'd still love to hear from you folks—but I may not still have time to answer. Harry Murphy will continue next month (and every other month for eternities to come), as he's been doing for some time, now. Don't forget to send him photos, news items, etc., too.

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

Bill Hartill will be in the "Free Flight Duration" chair in September. Watch for it.

FF Old-Timers/Haught

Continued from page 64

easy. Check for proper CG location and proceed with hand gliding. Trim for a gentle glide with no stall and with a built-in 200-ft. glide circle. Remember your towhook offset or tow rudder will have to compensate for glide-turn trim, so a wide circle is ideal.

Flying a Towline Glider requires two people—one to launch and one to tow. The launcher merely holds the model over his head with the nose up slightly (say 15°). The model is pulled from the launcher's hand when the

tow starts. The launcher must not throw the model. The tow-person moves forward into the wind while watching the model over his shoulder and regulating his speed to control the climb. The flier should watch carefully for any signs of erratic climb or veering sideways. Releasing tension on the line will usually release the model, but don't be afraid to release the towline if things aren't going well.

A good tow should have the model climbing at an angle of around 40° and tracking straight. As the model climbs overhead, stop towing and ease off line tension. The model should float off the line and glide on its own. I've noticed a few contests featuring Towline Glider events coming across my desk lately. Local interest helps. Give Towline a try—it's a fun event. Happy chasing!

Phantom Flash: The Illinois Model Aero Club is celebrating its 75th year with a postal contest for the Comet Phantom Flash ROG. Flights must be posted between April 1 and September 1, 1986 to be eligible. No modifications to the design are permitted except beefing up structure and the use of any desired propeller. Plans and rules can be had by contacting Paul Helman, 1411 Judson Ave., Evanston, IL 60201.

Clarence Haught, 3226 Honeysuckle Dr., Coeur d'Alene, ID 83814.

Gee Bee R-1/Nunes

Continued from page 68

three hinge locations per side. Pre-cover the hinge line (I used MonoKote). Open the hinge slots with a #11 hobby blade (only one centered slot per hinge location). Apply glue, and insert the hinges. Check for ease of movement; when satisfied, drill a small hole through the balsa and hinge at each end for gluing in small pieces of round toothpick which will afterward be cut off and sanded flush with the surface.

Remove the small piece of material aft of the stab slot with a Zona saw (but keep the piece). When the stab/elevator assembly is dry, slide it into the stabilizer slot, making sure it is square to the model as per the plan; glue it in this position. Slide the previously-removed small piece of material back into position, and glue it.

Rudder. Shape it from medium-hard ¼ sheet balsa, and cut out the lightening holes if desired. Be extra careful to avoid breaking off the lower rudder "tail," as it adds to the model's overall appeal. You can apply thin CyA to this area to stiffen the "tail."

Cut strips for the built-up sides. The best way to accomplish this is to cut the strips a bit oversize and attach them this way to the rudder; use thin CyA and a small triangle for straightness. When dry, taper the formers from front to back with a small razor plane or a sanding block.

When all the formers have been added and shaped, sand the back of the rudder round. Again, be careful around the "tail." Sand the rudder front edge to allow for ⅜-in. of rudder offset. Strive for a good, uniform contact between the rudder and the rudder post. When satisfied, glue it to the fuselage, letting it dry thoroughly. This addition really adds that "special touch" to

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10	6W*,8W*	2.09
10	6EW*	2.19
11	4,6,7,7½,7¾,8	2.29
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11	6EW*	2.39
11½	6,7	2.39
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9	7	2.89

*W WIDE BLADE

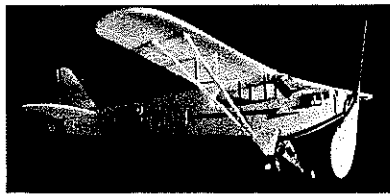
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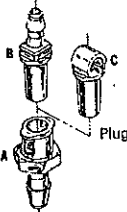
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the fuselage.

Wing. Built it in two halves, then join the halves at the center section. Cut all the major components (except for the cap strips) prior to beginning assembly. After the ribs are cut out roughly, block-sand the ones that are alike in a stack to achieve uniformity. Locate and drill the lead-out holes in the ribs, referring to the plan for locations. I applied thin CyA to the perimeter of the lead-out holes for strengthening.

Cover the plan with wax paper, and pin it to your flat building board. I will describe building the left wing panel (lead-out side) first. Position the bottom trailing edge (TE) onto the plan, and pin it in place. Glue Ribs W-1 through W-3 to the TE. Glue the 1/4-in.-sq. balsa leading edge (LE) to the ribs, making sure all the ribs are aligned to the plan. Add the top spar, and glue it in place. Position and attach the top TE; leave unglued between W-3 and W-4. Turn over the wing panel, and glue the bottom spar into place.

Add (but do not glue) W-4 in its position between the top and bottom spars, W-4 spar notches are cut undersized to allow for tapering the spar later. Glue the three tip pieces together to form one unit. Place over the plan and assure the mating edge to W-3 is precise. Carefully fit the tip in place—through W-4 and to the LE and W-3. Make sure W-4 is properly positioned, and glue the tip to the LE, then to W-3, and finally to W-4; thick CyA is used. Glue the TE, between W-3 and W-4, to the wing tip.

Taper the top and bottom spars between W-3 and W-4—flush with the edge of W-4. Add the 3/2 sheet balsa wing tip braces.

Add the 1/2-in. plywood wing braces and the landing gear block. On the lead-out side only, add the bellcrank mounting parts, the bellcrank, the 1/16 music wire pushrod, and the Nyrod tubing lead-out guides.

Construct the right wing panel in a similar manner. Use epoxy glue to join the panels together, and clamp in this position until the glue has thoroughly cured. Sand the wing in preparation for sheeting. Add the bottom center-section sheeting, the top center-section sheeting (making the pushrod cutout as you proceed), bottom LE sheeting, and the top LE sheeting. Add the cap strips, cutting to size as you go, to the top and bottom of the ribs. I prefer to wrap all my two-piece wings at the center section with fiberglass cloth applied with thin CyA—and would suggest that you do this. Sand everything smooth.

You can attach the wing to the fuselage now, or you can wait until after you have covered it. In either case, use your favorite method of attachment. The joint must be strong, so use an epoxy glue or thick CyA. Take your time, and align the wing squarely with the fuselage as per the plan.

Wheel pants. They are comprised of three pieces: a plywood former inside and two balsa pieces outside. I built up the wheel pants a bit to avoid the total "flat" appearance, and I liked the result.

First, cut out the 1/8-in. plywood former. This piece is cut to the full outline and is the "meat" of the unit. Cut the 1/16 piece which will be glued to the outside upper half of the wheel pant. Glue this onto the plywood former. Cut out the 1/4-in. sheet balsa piece which is the teardrop-shaped outside lower half. Glue this onto the plywood former, and allow the assembly to dry.

Final-sand the assembly, and round all edges (except the top, which should match the wing contour). Sand the intersection of the top and bottom wheel pant "skins," and fill as required for a nice transition.

Construct the other wheel pant in a similar manner, taking care to built a right and a left (not two identical ones). At this time, form both landing gear struts as per the plan.

In installing the wheel pants, it is much easier to secure them to the landing gear struts without the wheels. As we want to locate the mounting holes and check the fit prior to covering the model, I'll provide a few helpful hints.

Pre-locate the landing gear clips to the wheel pants, and start the screws into the plywood. Run the screws through the clips and wheel pants, taking care to file off or cut any protruding screw length.

Place the model upside down within a cradle (the Robart stand works fine) for support while attaching the wheel pants to the landing gear struts. Use a short-style screwdriver to secure the upper clip (the one closest to the wing). Rotate the wheel pant as required to make this task easier. Attach the lower clip in a similar manner. When both clips are almost tightened into place, turn the wheel pant so it is parallel with the fuselage, and tighten it into final position.

Position and screw into place the Goldberg 90° keeper as per the plan. Place the long leg to the wing spar and the short leg to the plywood side of the wheel pant. This will help keep the pant from rotating about the strut. After your model is finished, you'll want to place a drop of thick CyA on each wheel pant screw prior to final installation.

Tail wheel enclosure. Shape the inner "former" section as per the two views on the plan. Cut out the wheel area, being careful not to break the balsa piece. Cut out

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the two outer "skins" from $\frac{1}{16}$ sheet balsa as per the fuselage side view. Glue the outer "skins" to the inner "former." Bend the tail wheel wire gear to form.

Sand the assembly to shape, following the contours shown on the plan. As you sand the front and rear areas to shape, don't remove too much from the sides.

Drill the $\frac{1}{16}$ -in.-dia. hole for the tail wheel gear, and check to make sure your tail wheel and wire gear will fit correctly. I used a Perfect #61 $\frac{3}{4}$ -in. balloon wheel.

Finish. The choice of finish for this fun-type model is entirely up to the builder. I used white Super MonoKote and red Solarfilm for mine. The cockpit area was simply done in chrome MonoKote, and black MonoKote was cut into narrow trim lines and ironed into place. Though I was not

trying for anything real fancy, these materials provided a simple, effective, and relatively easy-to-apply finish.

The easiest way to duplicate the scallops, numerals, dice, etc., is to simply place the plan over your covering material and cut them out. Use a sharp #11 hobby knife blade and a metal straightedge for this job. I worked over a backing of scrap plywood, and by working carefully, I was able to produce crisp-looking detail trim. Of course, you can add as much detail as you like in the form of panel lines, flying wires, etc. As I wanted only a simple, eye-catching model to take to the flying circle, I liked mine just fine.

Flying. Prior to heading for your local flying circle, check to see that everything is attached securely—engine, tank, wheel pants, etc. Check also to make sure the lead-out lines and pushrod function properly with no binding. Did you double-check the balance position on your model with everything attached? You'll want to final-balance your model in a slight nose-down attitude with no fuel in the tank. Make sure your model tracks straight and true to avoid those "coming at you" takeoffs. In short, be safe and double-check everything while your model is in one piece at home. You'll be glad you did.

All set? Grab your flight box, best pal or gal, and head for your favorite circle. Select a nice, sun-filled day for your initial flights, 'cause this model sure looks nice against a

bright blue sky. The model behaves well and is quite responsive to your control input, so take it easy for the first couple of laps. Sure looks nice when executing a wingover and showing off those red and white colors.

As I was watching the model and enjoying the speed while in level flight, I couldn't help but notice the background blur. My thoughts turned toward the appeal of airplane racing during the early Thirties, and I imagined myself at the races. This is what modeling is all about, folks; we can enjoy the aircraft from days gone by and let our imaginations provide the excitement.

I truly hope you enjoy constructing and flying your Gee Bee R-1 profile Control Line model as much as I did. Take care, fly safely, and tell someone new about model aircraft building and flying.

Bill of Materials

- Five $\frac{1}{4}$ x $\frac{1}{4}$ x 36 balsa sticks (fuselage crutch, wing)
- Two $\frac{1}{4}$ x $\frac{3}{16}$ x 5 plywood (engine bearers)
- Three $\frac{1}{16}$ x $\frac{1}{4}$ x 36 balsa sticks (cap strips)
- One $\frac{1}{8}$ x $\frac{3}{16}$ x 2 spruce joiner (elevator)
- Two $\frac{3}{8}$ x $\frac{3}{4}$ x $4\frac{1}{16}$ landing gear block w/ $\frac{1}{16}$ -in. groove
- Three $\frac{1}{16}$ x 3 x 36 balsa sheet (rudder, wing sheeting)
- Two $\frac{1}{8}$ x 4 x 36 balsa sheet (fuselage exterior)
- One $\frac{1}{4}$ x 3 x 36 balsa sheet (fuselage crutch, wheel pants)
- One $\frac{1}{4}$ x 4 x $7\frac{1}{4}$ balsa sheet (cowl)
- One $\frac{1}{8}$ x 12 x 12 plywood sheet (cowl dou-

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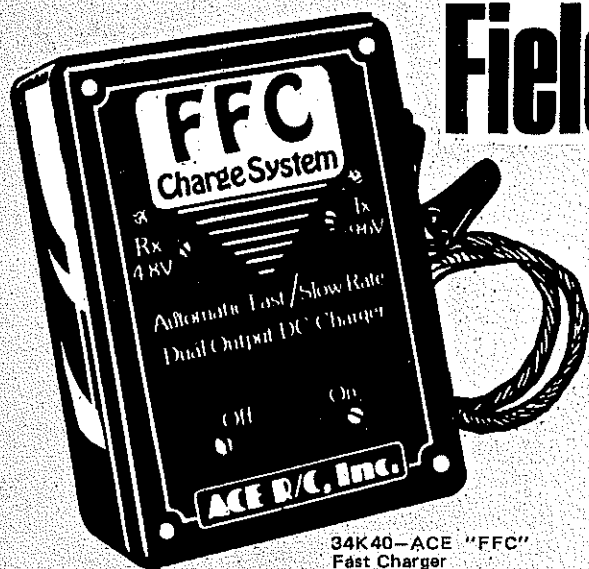
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blers, wheel pants, etc.)

One 1/2 x 3 x 36 balsa sheet (stabilizer, elevator, wing tips)

One 1/2 x 12 x 12 plywood sheet (W-1 ribs)

Two 1/2 x 3 x 36 balsa sheet (ribs)

Two 1/8-in.-dia. music wire 10 in. long (landing gear struts)

One 1/8 dia. music wire 18 in. long (pushrod, tail wheel gear)

One 3/4-in. tail wheel

Two 2 1/4-in. main wheels

Four landing gear struts—flat

Two Carl Goldberg 90° keepers w/screws

One nylon control horn

One 2-in. bellcrank

Two Nyrod inner tubing 2 1/4-in. long (lead-out guides)

One Sullivan control line lead-outs (per your engine size)

One fuel tank and mounting hardware

One engine and blind nut mounting hardware

One prop

Four 1/8-in. wheel retainers (two per wheel)

Fuel tubing

Control line handle w/cables

Glue (assorted types as per text)

Covering and finishing materials

Fiberglass cloth (for wing center section)

Fuel, battery, etc.

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Continued from page 69

most difficult for the judge to detect.

OK, the generic suggestions are out of the way. Let's get down to specifics. I'm going to assume you know and understand the maneuver descriptions in the rule book, and my comments will be based on that assumption. One hint: get out the rule book for reference. I did it while I wrote this. More than one expert has embarrassed himself by quoting rules that simply don't exist.

Don't make the mistake of giving the Takeoff short shrift. It is a possible 40 points, and some of the competition is going to be putting up big numbers...you'd better match them.

I recommend launching directly in front of the judges. This accomplishes several things: Your actual point of liftoff will be difficult to establish since they'll be looking down on the rear view of your ship and won't be able to see the lift-off. Also, since the judges position themselves upwind, your liftoff will be downwind and will thus have less of a tendency to balloon and climb too quickly. Lastly, if you've planned your climb just right (one lap from launch to level flight altitude), you'll be able to give that little blip of Down elevator just as you pass them to emphasize the completion of the climb and the start of level flight.

Concentrate on the two laps of level flight while you determine whether the engine run is acceptable. If so, after the two level laps give a signal with hand held high for a full lap (or until the judges signal back). No signal, no official flight!

If the wind is blowing so hard that merely getting into the air is a concern, launch directly into the wind with neutral elevator. The airplane will be airborne almost immediately, so plan for it and try to make the climb gradual to salvage the best score possible. Downwind or crosswind launches in high winds are replete with hazards...weathercocking, flip-overs, etc., and the risks aren't balanced by a chance for a significantly better score.

The rule book allows a "warm up period" immediately after Takeoff and Level Flight. Forget it! It looks bush-league, and if you ain't learned the pattern yet, you ain't gonna do it between Takeoff and the Wingover. The Wingover is one of the toughest maneuvers to do well, yet do it well we must, because it sets the tone for the whole flight. The major difficulty arises from the lack of a reference as we pass overhead. I suggest using your body as a reference. Just before entering the Wingover, turn your body so that your shoulders and feet are directly upwind and downwind. Fly directly overhead, starting from your upwind foot to your downwind foot and make a positive inverted pullout at four to six feet. If you miss

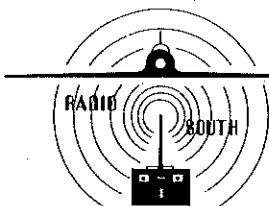
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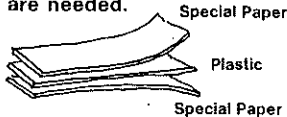
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