

infant vagabond



June 1949 Flying Models

● Attempting to solve the long existing problem of a lightplane for the average man's pocketbook, Bill Piper has created the Vagabond. The Vagabond is a light plane of very conventional configuration but a little on the small side. However the Vagabond is big in all other respects except

price. Listed at \$1,990, F.A.F., Lock Haven, Pa., this ship is one of the lowest priced production lightplanes on the market today.

With a Lycoming 65 horsepower engine in the nose, the performance is comparable to much higher priced airplanes. Cruising speed with 75% of power is 90

m.p.h. Top speed is 102 m.p.h. with a very safe 45 m.p.h. landing speed. Range is over 285 miles, with gas consumption a mere 3 gallons per hour. The plane can carry two persons with 40 pounds of baggage.

As our scale control-line feature this issue, we are wrapping the Vagabond design around the new K & B Infant Torpedo engine. The simplicity of the Vagabond lines makes it an ideal subject for the Infant. Employing a scale of $\frac{5}{8}$ " to the foot, our model has a mere $18\frac{1}{2}$ " wing span with about 56 square inches area. Really a cute little bug!

And, to boot, the entire model is constructed completely from sheet balsa stock. So even the rank amateur should not hesitate to tackle this job. All plans are presented full-size. So gather your glue stick and razor, and let's go!

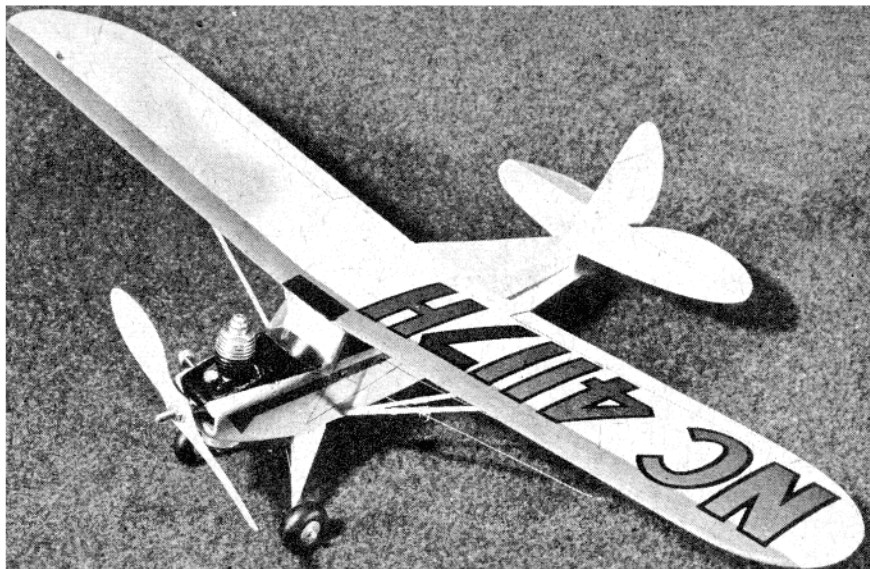
CONSTRUCTION: Since the



This midget flying-scale model is ideal for indoor flying on rainy spring days. Full-size plans speed up its construction.

Designed for the new Infant engine, this realistic flyer can be assembled quickly from sheet balsa by expert or tyro

by Dick Struhl



This three-quarter front view shows off the model to good advantage. Note the wire guide attached to the wing struts. Controls should work freely for smooth performance.

fuselage is the most complicated part, let's start with that. Cut two fuselage sides from quarter-grained 1/16" sheet medium grade balsa. As you will note in the sketches, the fuselage side sheet is the complete profile of the fuselage, with the exception that the windshield portion is cut out.

Cut fuselage bulkheads B and C from 1/16" sheet. Note the small hole in C to allow the push rod passage. A is cut from 1/16" plywood and acts as the firewall. The dotted line in the drawing shows the engine mounting position.

Now connect the two sides by cementing the bulkheads in their proper locations. Bend the landing gear to shape from 1/16" steel wire and cement in place to the front surface of bulkhead B. Apply several coats of cement around the firewall and around the landing gear mount.

Clamp and cement the tail end of the two sides together next. Before adding the top and bottom fuselage covering, make and install the control system. The original had a small 1/32" sheet aluminum bell crank mounted on a piece of 1/16" plywood.

Drill two holes in the left side of the fuselage to allow passage of the lead-out wires. The push

rod exits from the right side of the fuselage, about 2 1/2" from the rear end. Now cover the bottom of the fuselage between bulkhead B and the tail with 1/32" sheet balsa. Note that the grain runs crosswise, so several pieces will be necessary. Don't cover the top of the fuselage until the stabilizer is mounted in place.

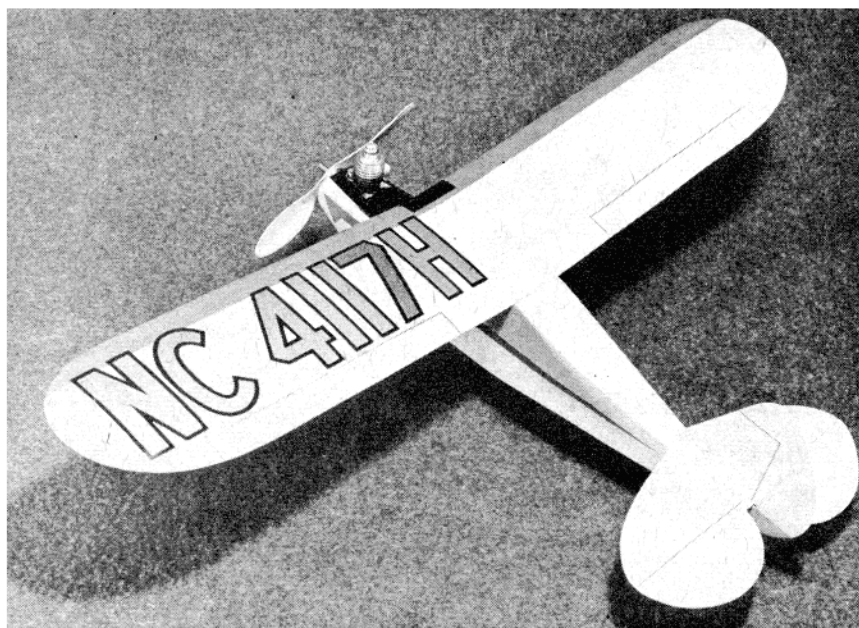
Inlay three soft balsa blocks between the two fuselage side sheets to form the rounded nose. When the cement has set, carve the top part to conform with the top of bulkhead A and round the bottom part as shown in the plans.

It will be necessary to hollow these blocks to allow the engine to

fit. To do this, break the blocks out of the fuselage and bolt the Infant engine in place. Now, by trial and error, hollow the nose blocks to fit the engine, then reinsert in place. Add a piece of neoprene tubing to the gas tank filler and extend it out the side of the fuselage.

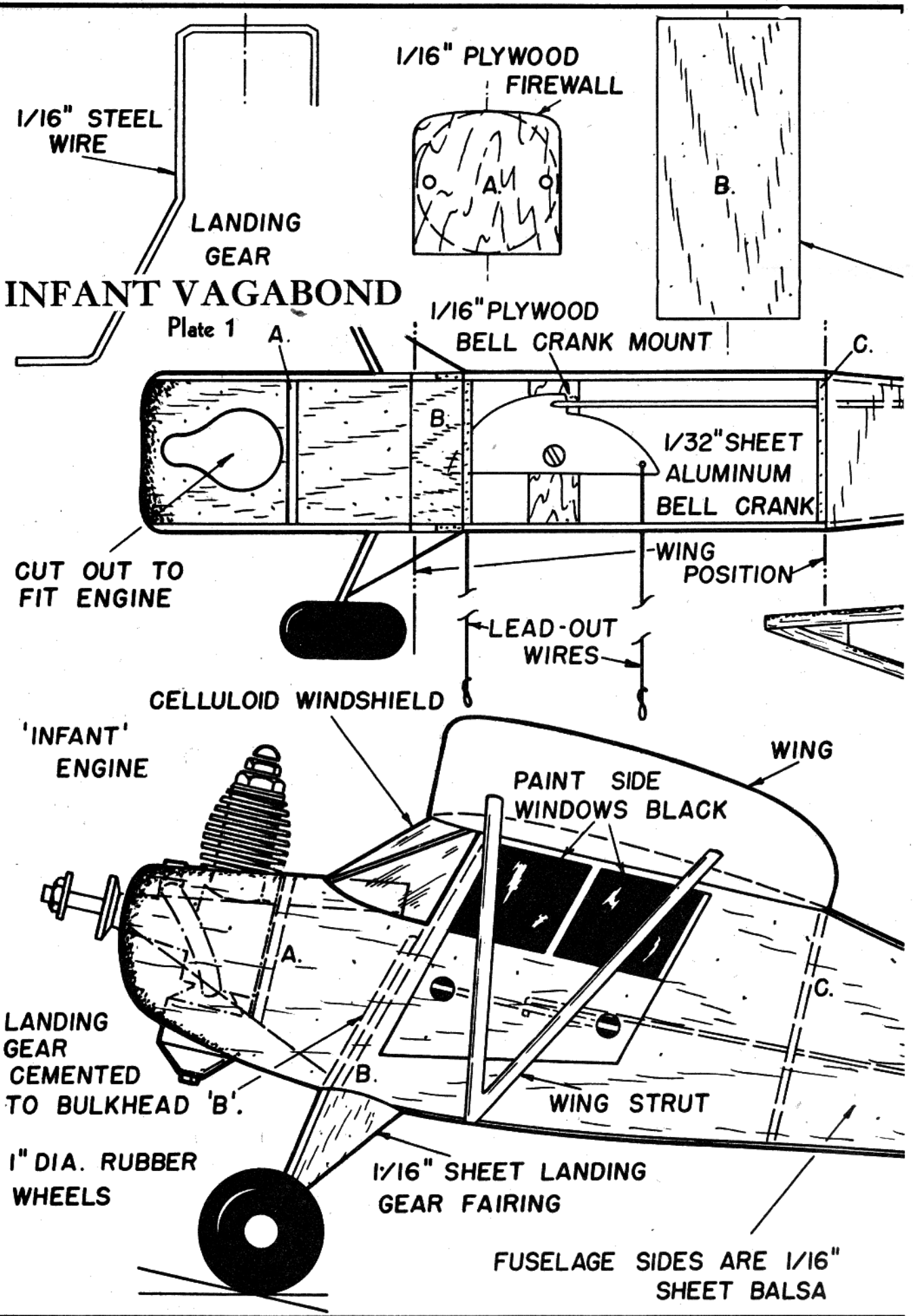
Now, add the 1/16" sheet landing gear fairing and cover the joint with a small piece of silk for extra strength. The main wheels are 1" in diameter, rubber-tired, with aluminum hubs. Tail wheel is 3/8" diameter, mounted on a piece of .038 wire.

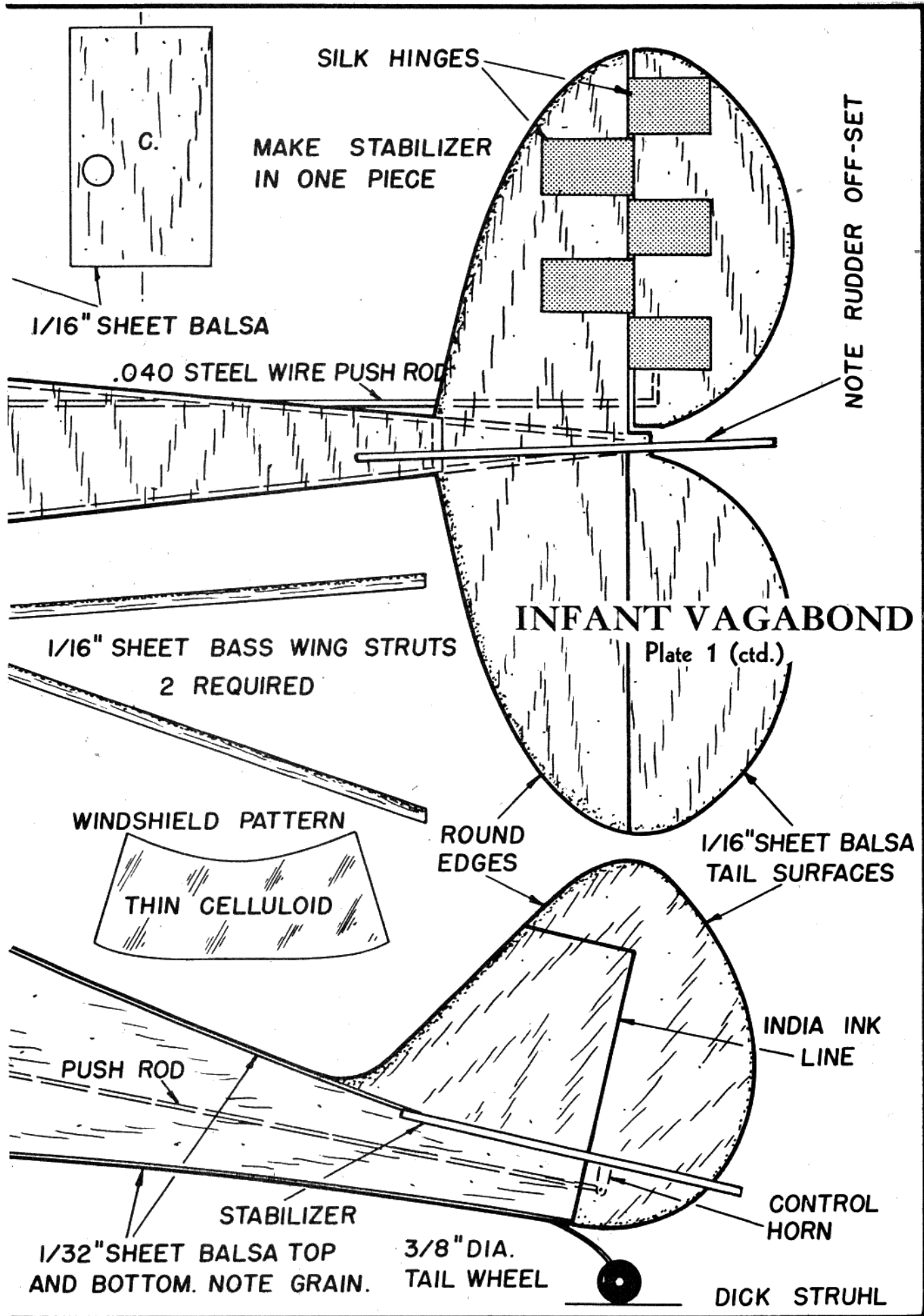
Cut the stabilizer from firm 1/16" sheet (Turn to Page 60)



Dull black trimming and two-tone license numbers dress up the Vagabond. It's a worthwhile addition to your collection!

INFANT VAGABOND





CEMENT 3/32" X 1/8" ROCK HARD BALSA STRIP TO LEADING EDGE OF SOFT 'JASCO' 3" GLIDER WING STOCK.

RIGHT WING PANEL

AILERON POSITION

DIHEDRAL BREAK

1" DIHEDRAL AT EACH WING TIP

FUSELAGE CONSTRUCTION

1. CONNECT FUSELAGE SIDES WITH THE THREE BULKHEADS & NOSE BLOCKS. ADD THE CONTROL SYSTEM.

2. SHAPE NOSE BLOCKS AND HOLLOW TO FIT ENGINE. INSTALL TOP AND BOTTOM COVERING. ADD LANDING GEAR FAIRING OF 1/16" SHEET.

SOFT BALSA NOSE BLOCKS

Infant Vagabond

Plate 2

DESIGNED & DRAWN BY DICK STRUHL

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OF
INFLATION



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TANDEM TWISTER

(Continued from Page 56)

the ribs are cut out, assemble them on the rear center spar.

Add the leading edge and set the entire wing on four chordwise blocks so that the wing will be true. When dry, cement on the two strips of 1/16" sheet which form the trailing edge. Next, put a little dihedral into the wing so that the top spar can be applied straight across. This adds to the appearance by taking that droopy look out of the wings.

The leading edge is covered with 1/32" sheet and the whole center section on top of the wing is covered with 1/16" sheet for strength. This must be done to reinforce the center section, because part of the leading and trailing edge must be cut away to allow clearance for the motor and the gas tank.

The center section of the wing is open on the bottom so that it fits over the lower fuselage half. The sheet balsa directly over the cylinder head is replaced with soft sheet aluminum to aid cooling and to reduce the fire hazard. Note on the plans that the section of aluminum on the lower surface has one edge crimped around wire so that it can be swung open for access to the glow plug. This is also necessary to allow for removal of the top half of the fuselage.

A cut-out is made in the top half of the fuselage so that it fits over the wing. Then these two parts are cemented together and the fillets added.

The rear wing has a flat airfoil and is a snap to construct, as are the elevators and rudder. The rear wing is cemented to the bottom fuselage-half after the control horn and push rod have been installed. Make sure that it is parallel to the forward wing in all respects.

Apply one coat of clear dope throughout. Sand lightly, then apply several coats of wood filler to the fuselage, sanding between each coat. Remember that a good finish depends on allowing each coat to dry thoroughly before sanding. If you have done a good job on the undercoats, the colored dope will go on smoothly. Wet-sand the last two coats with 400A sandpaper for a super finish. Lastly, apply a coat of clear fuel-proofer.

FLYING: Before flying, cut a hole in the bottom of the fuselage for choking. The model should balance almost at the

trailing edge of the wing. If you have done a careful job on the controls, and have placed the tank in the position shown, your model will be ready for its first trial. The Tandem Twister is easy to fly and can be recommended to beginners, but it would be advisable to check yourself out on inverted flight with an expendable crutch job before you try it with this ship.

For contests, remember that those extra points for appearance count, so try to do a good job. Whether you are a contest flyer or not, you will find there is real sport in stunting a realistic-looking airplane. And, if you try this one, we're sure you will agree it lives up to its name, the Tandem Twister!

BILL OF MATERIALS

(Balsa unless otherwise specified)

2-3/16" x 3/16" x 36" (medium)	Wing leading edge, spar
1-1/4" x 1/4" x 36" (medium)	Stabilizer leading edge
1-1/16" x 2" x 36" (medium)	Wing trailing edge
1-1/4" x 3" x 36" (medium soft)	Stabilizer trailing edge, elevators
1-1/4" x 1/4" x 36" (hard)	Elevator cross piece
1-1/4" x 1/4" x 6" (pine)	Elevator cross piece brace
1-3/16" x 1/4" x 36" (medium)	Wing spar
2-3/32" x 3" x 36" (medium)	Wing ribs
1-1/32" x 3" x 36" (medium)	Wing sheet planking
1-1/4" x 2" x 12" (soft)	Wing and stabilizer tips
1-3/16" x 3" x 12" (soft)	Rudder
1-2" x 2 1/4" x 19 1/2" (soft)	Fuselage top
1-1/2" x 2 1/4" x 17" (soft)	Fuselage bottom
1-1/4" x 1" x 36" (soft)	Fuselage sides
1-1/4" x 1 3/4" x 2" (plywood)	Firewall
1 3/4" From needle nose spinner; Macofuel tank; .064 aluminum bellcrank; .030 brass control horn; length of 1/16" wire for pushrod, tail skid, etc.; 18" length of 3/32" wire for landing gear; .010 soft aluminum for cowl, rudder hinges; standard bubble canopy; 2 1/4" semi-pneumatic wheels; J-bolts; assorted scrap balsa and plywood; bolts; nuts; washers; .19 to .29 engine.	

INFANT VAGABOND

(Continued from Page 26)

balsa Note that only the right elevator is movable. This was found to give more than ample sensitivity to the flight path. Use silk for hinges. Make a small control horn from sheet brass or aluminum and install in place on the elevator.

Although the plans show the stabilizer set at zero incidence, we recommend that it be set 2" negative incidence, with the wing remaining at zero incidence. Cement the stabilizer in place and hook up the control horn with the push rod. Check for freedom of elevator travel.

Now cover the top of the fuselage, from the wing trailing edge position to the stabilizer, with 1/32" sheet balsa. Cut the rudder from 1/16" sheet stock and install in place. Note how the rud-

Coming Next Issue!

The August issue of **FLYING MODELS**, on sale July 10th, will include: LET'S BUILD GASSIES—first in a new series of articles for beginners on gas-powered model planes, by Walter Schroder; CANARDS—a discussion of successful experiments with tail-first gliders by Paul Del Gatto; LAMINATE THOSE CURVES by Paul Jessup; plus how-to-

build-it information and full-size plans for building Cal Smith's FUNSTER, a .29-powered stunt controliner—Roland Mayer's gull-wing Buzz CO₂-powered free-fighter—and Walter Musciano's scale CURTISS XF15C-1 controliner—as well as construction data for the 23 SPORTSTER by Bill Winter, The Drifter 54 by H. T. Smiley, and other models.

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der is off-set in the top view. This is to keep the model flying away from the control lines to insure tight lines.

The wing is very simple to construct. Select 3" Jasco glider wing stock of very soft and light balsa, 18½" long. To this, cement a rock-hard strip of 3/32" x ¼" balsa, along the leading edge. This gives us a 3¾" chord wing. Trace the wing tip from the plans onto the balsa and cut to shape. Sandpaper the wing to the airfoil shape and smooth the wing tips down.

Slice half-way through the wing at the dihedral joints and block up each wing tip 1" for the necessary dihedral. Apply a cement skin of at least three coats at the dihedral breaks. Now install the wing in its proper location.

To achieve maximum performance, the model must be as light as possible, so exercise caution when painting the model as it adds a lot of dead weight. We recommend applying one coat of clear dope plasticized with a little castor oil. If the dope is not made plastic, it will warp the thin flying surfaces. Sandpaper the doped surfaces lightly to remove the fuzz.

For color we recommend one thin coat of bright yellow dope. Use dope thin enough so that the one coat just about gives you a solid coloring.

Add the details you may wish. The windshield pattern is shown full-size. Mask and paint the side windows a dull black. The wing struts are optional with the builder. You don't need them for wing strength but they do dress up the model. Mark ailerons and control

surfaces with India ink and a ruling pen. Ordinary decals are used to form the license.

When you have added all the details and trim that you want, the model must then be given one thin coat of hot-fuel proofer. This is necessary as the Infant runs best on hot-fuels that soften aircraft dope.

FLYING: The original model flew best with the balance point about ¼" back from the leading edge of the wing. This point will vary with the individual model, but may be used as a guide. Nylon thread acts very well as control lines on this little model. The pull is not too great and we feel that the conventional wire lines are too heavy.

If at all possible, try to make the first few test flights indoors. Your school gym is ideal for this. Otherwise, select a day when there is very little wind, as a sudden gust can prove very disastrous until the model is in perfect trim and balance.

The metal propeller that comes with the engine is adequate, but a more efficient one may be carved from hardwood or purchased from your hobby dealer.

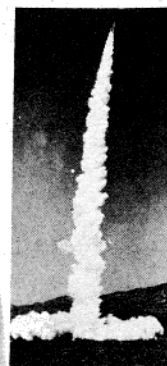
BILL OF MATERIALS

(Balsa unless otherwise indicated)

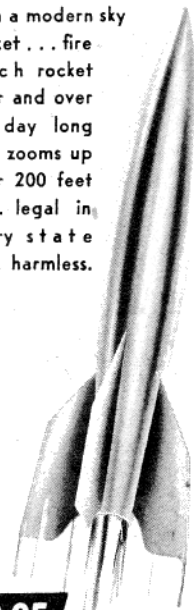
1—3" x 19" Jasco glider wing stock... Wing
1—3/32" x 1/8" x 19" (very hard)... Leading edge
1—1/32" x 3" x 12"... Fuselage top & bottom
1—1/16" x 3" x 36"... Fuselage sides and tail surfaces

Scrap ½" sheet for nose blocks; scrap aluminum for control units; 1/16" landing gear wire; 1/16" plywood for firewall and bell crank mount; celluloid; hardwood for wing struts; pair 1" diameter wheels; one ¾" diameter tail wheel; dope; cement; scrap silk; K & B Infant Torpedo engine.

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CONTEST CUES

(Continued from Page 58)

mended for the contest beginner. After you have built a few of them, you will have learned how to make good joints, and how to adjust for flight. Then you will be better equipped to tackle the more powerful and complicated gas jobs. Furthermore, the free-flight experience gained will aid you in the control-line field as well.

The best thing that has happened in the gas-powered game in many years is the advent of the glow-plug. This simple gadget has eliminated about 90% of engine trouble, as well as simplifying the building of models—there being no coil or batteries to mount and no wires to solder. I use a glow-plug in all my gas jobs and recommend it highly. With a good fuel especially compounded for glow-plug operation, an engine can be run slow for test flying by opening the needle valve to a rich setting.

When model flying was in its infancy, contests used to be won by the lad who spent the night before on a new model—but this is rarely the case now. The "know-how" for high performance is generally known today, and perfect adjustment is so critical that it takes days, and sometimes weeks, to get a model ready for a contest.

You will have the contest half won if you can get out the day before and find that your model flies just the same as

it did the last time you flew it, without any further adjustments necessary. If this is your good fortune, then the only thing left to do is to check the model over thoroughly for minor flaws.

If it is a rubber-powered model, make up a new motor or two for emergency use, oil the prop bearing, and be sure the blades will fold the same way every time. In the case of a gas model, use gasoline or solvent to wipe the engine clean, and flush out the fuel system and tank to remove any excess oil which might restrict the fuel flow the next day. Put in a new glow plug or, if it is an ignition job, insert a new spark plug and batteries and check the wiring. Check the engine-run timer to be sure it is cutting off two or three seconds less than the allowed engine run as stated in the rules. It is much better to have a short engine run than to have an out-of-sight flight disqualified.

When all this last-minute preparation has been completed, and you're sure everything is ready to go, the next thing in order is a good night's sleep. This will come in very handy the next day when you're chasing those long flights!

If you follow our procedure, and get all your flights in without any trouble, you can consider your airplane a contest machine. Don't be discouraged if you fail to win the first time. There is a certain amount of luck involved with free-flight, but if your model went up like the others, and glided just as well, you are bound to win sooner or later.



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