

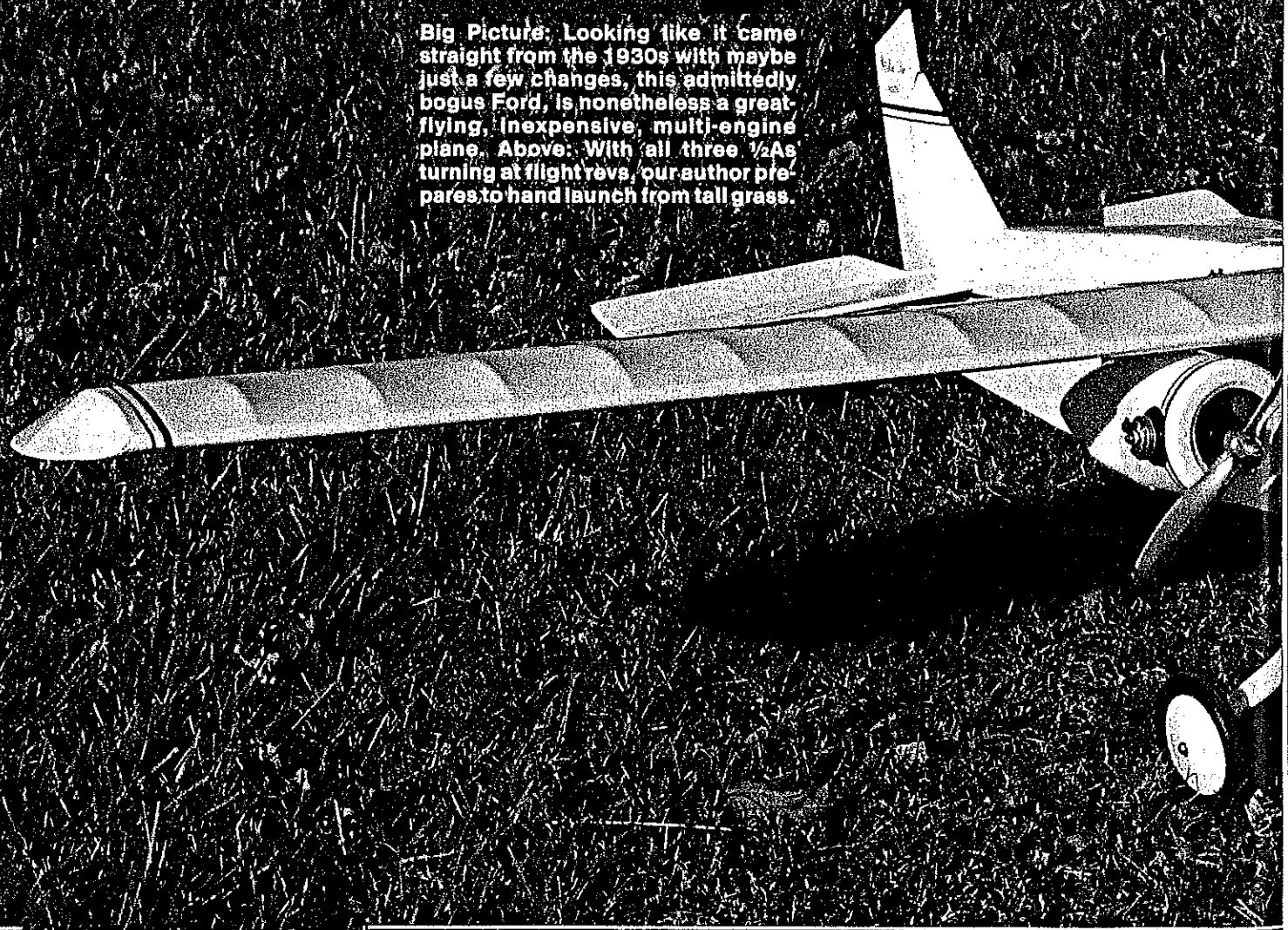
"OUTSTANDING! That's wild. I wouldn't have believed it if I hadn't seen it. Sounds like a swarm of bees. Really glad I was here." Those words were uttered by my flying buddy, Gary Wild, as he witnessed the first flight of the Fake Ford.

For quite a while I had been infatuated with multi-engine RC, but the thought of asym-



metrical thrust problems which would be encountered with the flameout of an engine (not to mention the financial loss of a kit-built model from a crash) had put me off. I took it upon myself to rectify this situation by designing and building a low-cost multi. I used the trimotor concept because it has fewer asymmetrical thrust

Big Picture: Looking like it came straight from the 1930s with maybe just a few changes, this admittedly bogus Ford, is nonetheless a great flying, inexpensive, multi-engine plane. Above: With all three 1/2As turning at flight revs, our author prepares to hand launch from tall grass.



■ Frank Roales

FAKE FORD

problems with an engine loss. Since the most recognizable tri-motor plane was the Ford, I dubbed mine as the quasi-scale 1/2A Fake Ford.

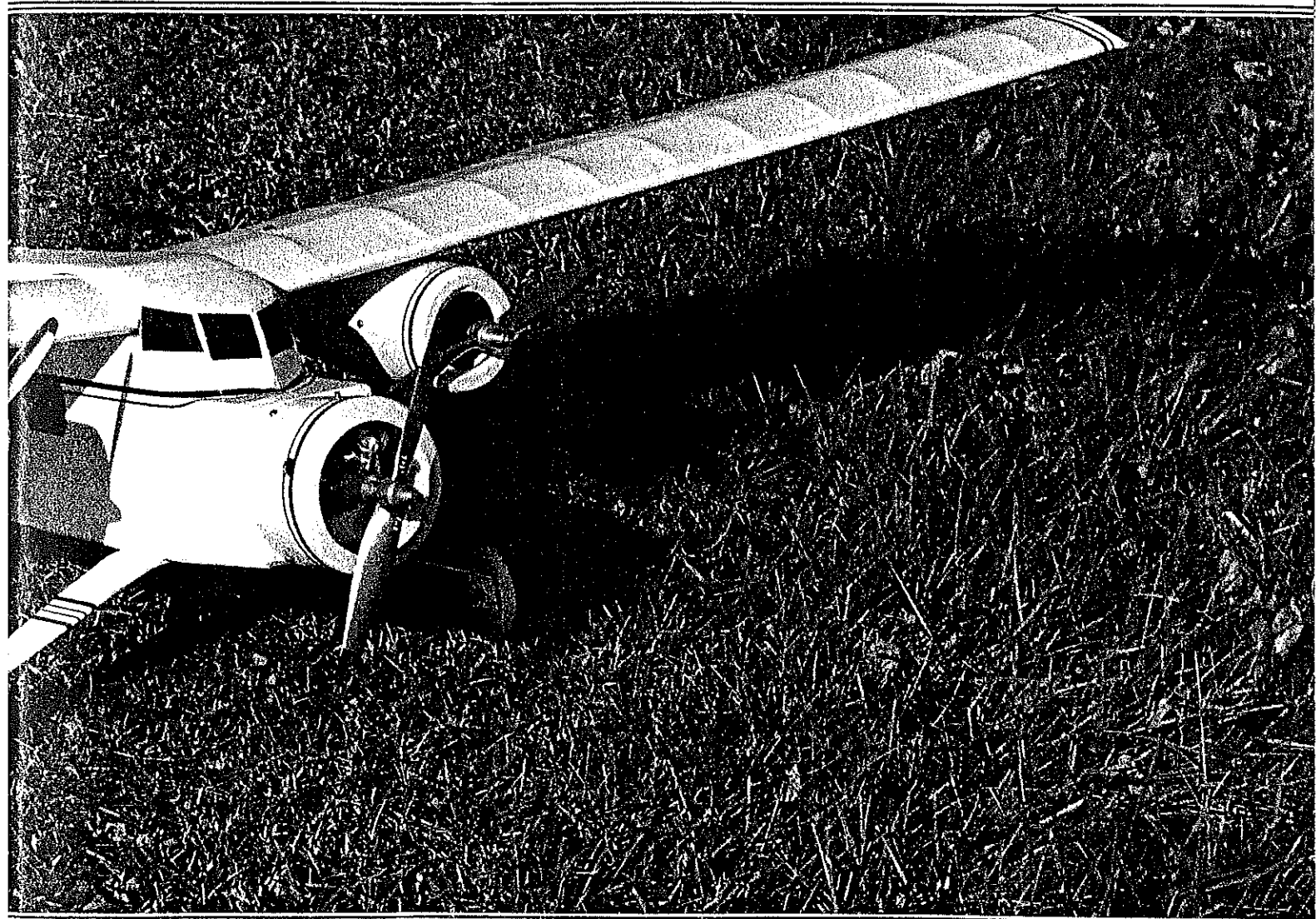
If these factors interest you, read on. But don't get me wrong; this aircraft is not for a beginner or the faint of heart. However, if you yearn for that multi-engine sound and are willing

to risk some time and a few 1/2A engines, you can join the ranks of those who get thrilled with multi-engine flying.

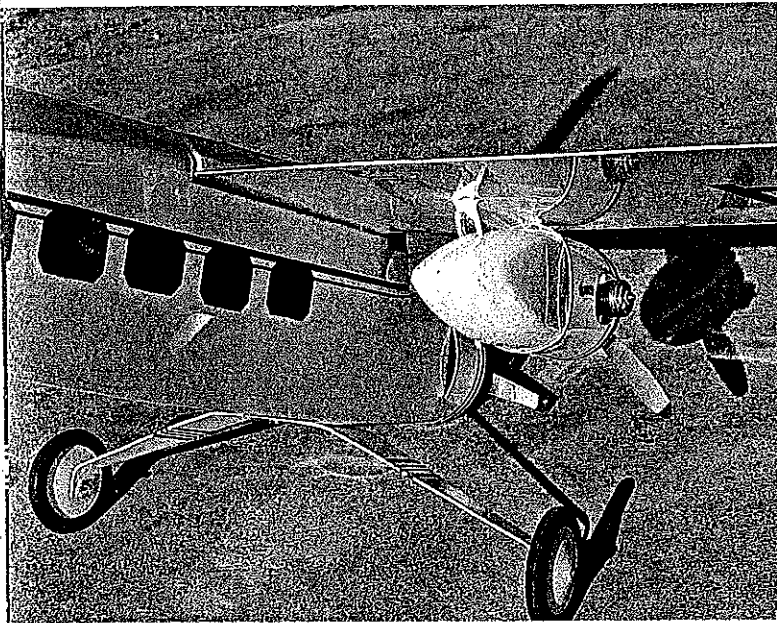
This aircraft is not difficult to fly for an experienced sport flier, but it does require attention and the ability to recognize unusual situations and adjust for them. By the same token, it's a good vehicle for

learning how to handle engine-out situations and for sharpening your flying skills.

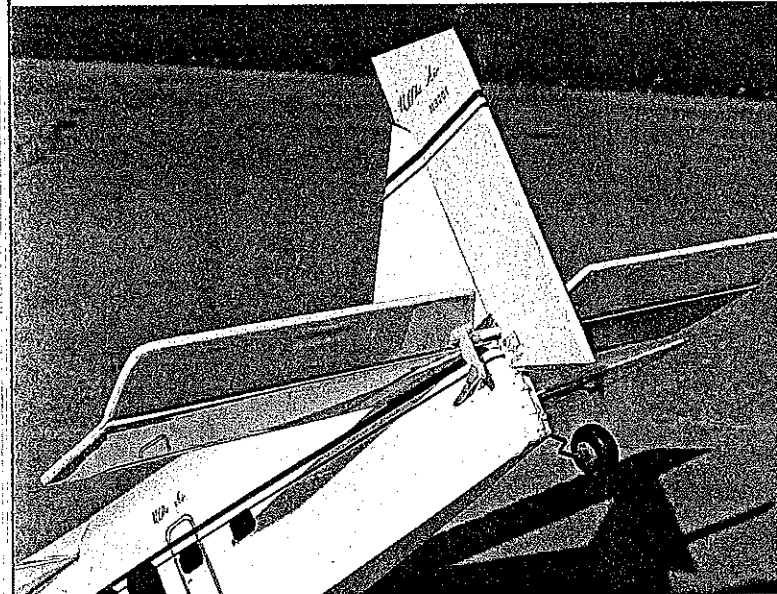
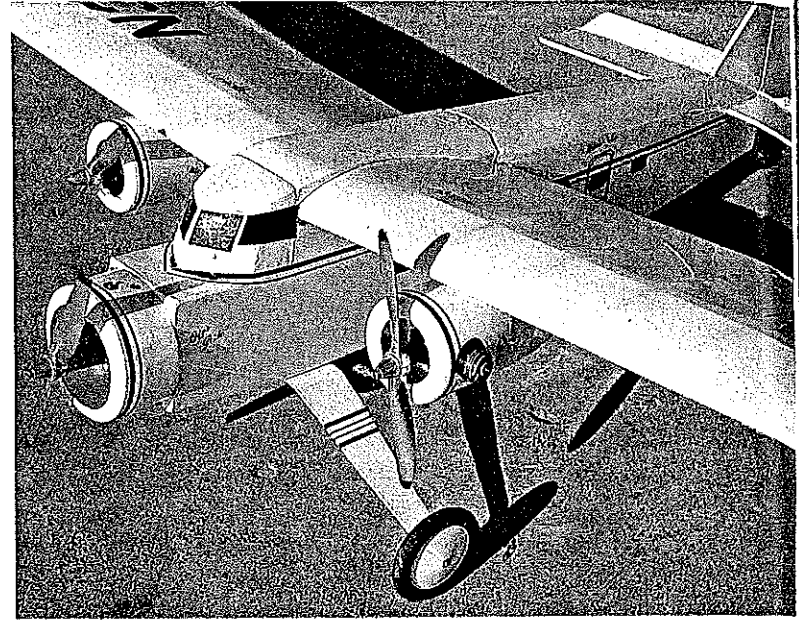
Before any building takes place, let's look at the heart of any multi, the engines. The ones I used were two Cox Black Widows and a Tee Dee. The most important thing is that they be well broken in and extremely reliable. The Tee Dee



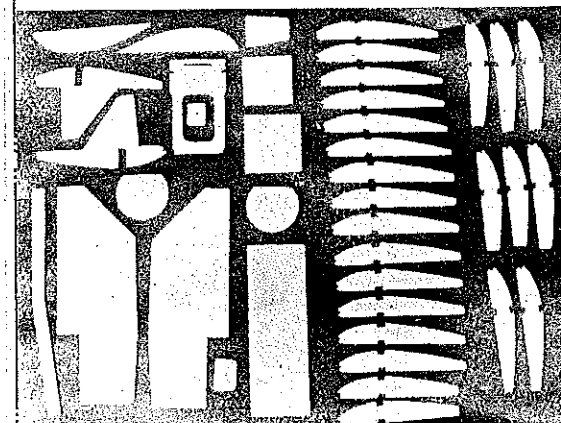
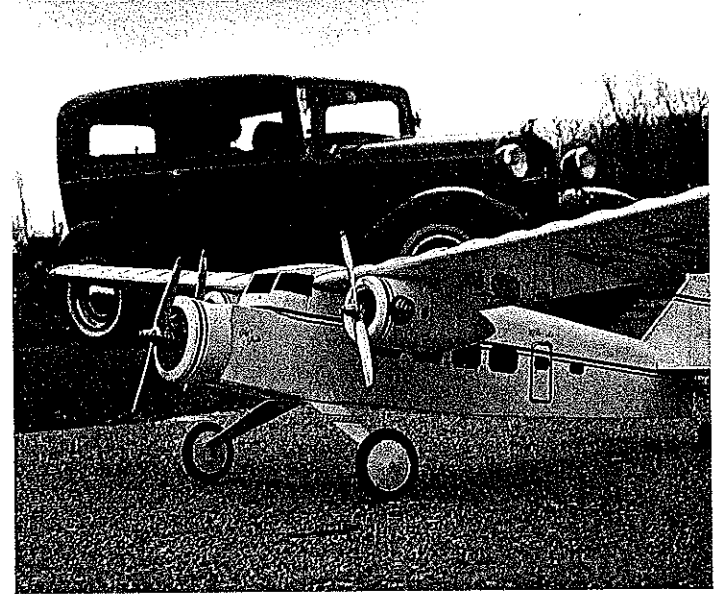
Most of us associate multi-engine planes with mega-problems, but we all love the sound they produce and the awe they inspire. Our author's RC sport design for three 1/2A engines minimizes the risks and maximizes the enjoyment.



Left: This view of the right nacelle shows the fuel lines that run up to the wing tank. Notice the cooling air outlets at the rear of the cowl. Right: See the text for minor changes that must be made with the reed-valve .049s. The left engine must run backward and use a pusher prop.



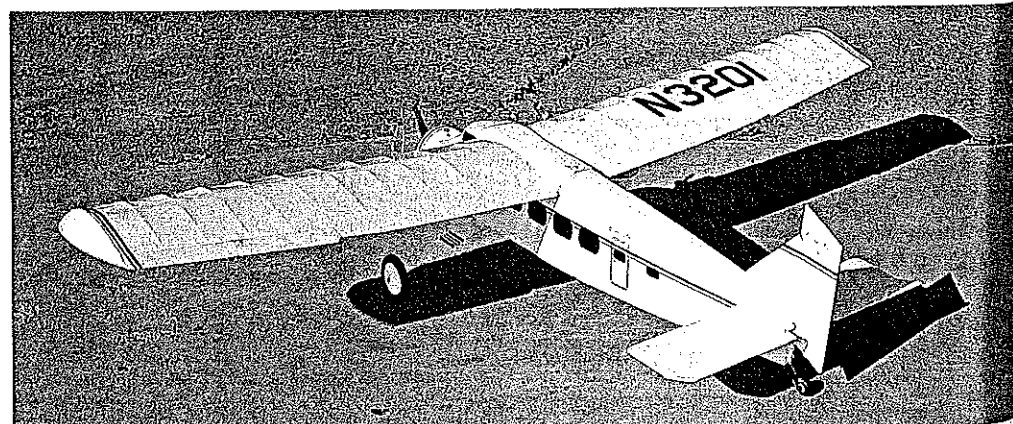
Left: The straightforward setup of the steerable tail wheel and elevator linkages. Wrinkles in MonoKote were removed with heat, and striping was done with rub-on transfers. Right: Backed up by a real 1932 Ford belonging to Peter Peterson, some of the "fake" seems to fade away.



Cut out all the parts before beginning any of the assembly. It will speed construction time considerably if the piece is already waiting when it comes time to install it in the plane.

requires no special care after the break-in. The Black Widows, however, will work better with slight modifications for best accessibility and performance. Here's how:

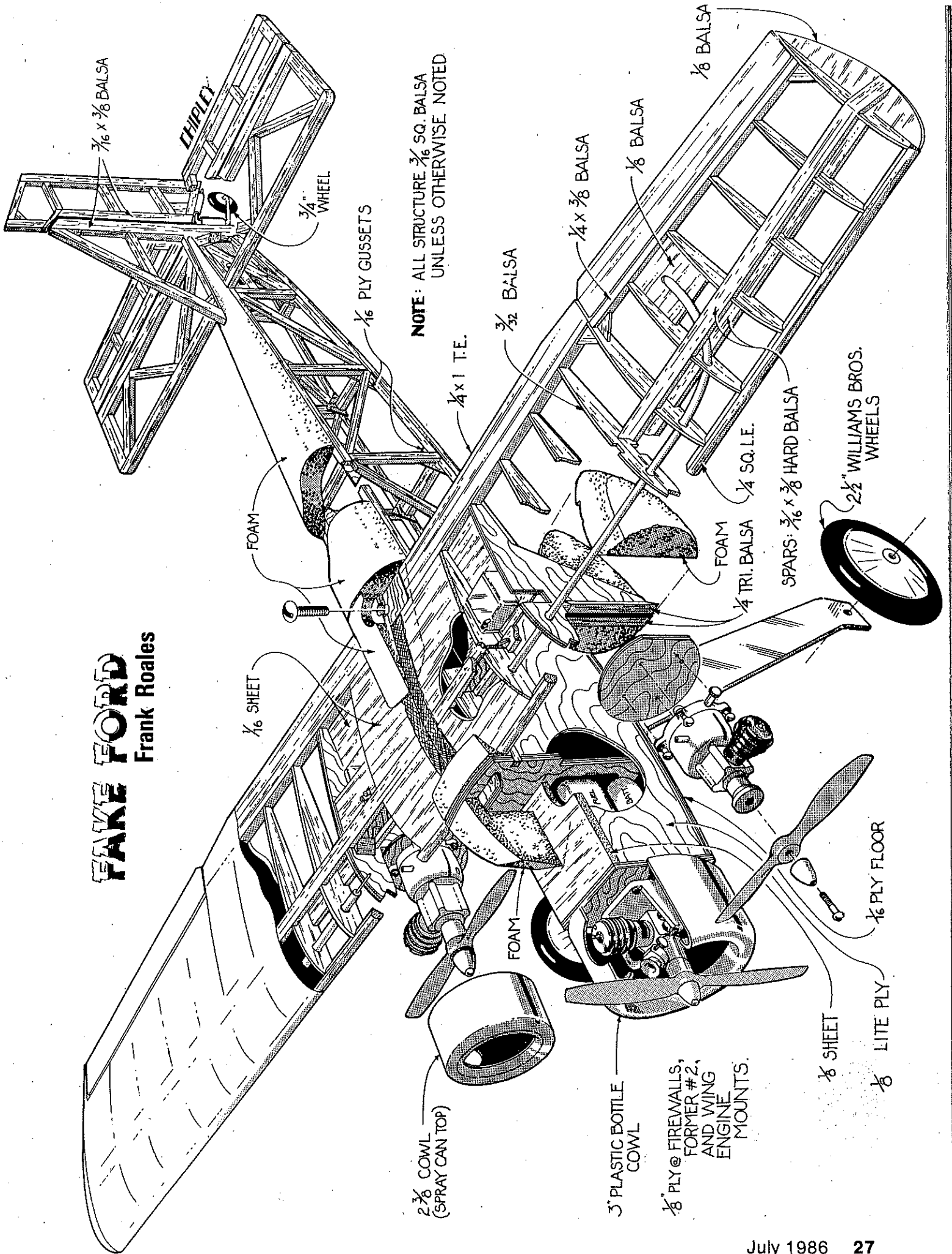
First, disassemble the tank at the rear, then move the fuel pickup tube in the rear plate from the side to the bottom. This should be done only on the engine to be



Waiting on the ramp, this picture gives a good view of the markings. Outline for side doors was done with a Sharpie marker, windows and "N" number with MonoKote trim sheets.

FAKE FORD

Frank Roales



2 3/8 COWL
(SPRAY CAN TOP)

3" PLASTIC BOTTLE
COWL

3/8 PLY @ FIREWALLS,
FORMER #2,
AND WING
ENGINE
MOUNTS.

3/8 SHEET

3/8 LITE PLY

1/16 PLY FLOOR

1/16 SHEET

FOAM

3/4" WHEEL

1/16 PLY GUSSETS

1/4 x 1 T.E.

FOAM

FOAM

1/4 TRI. BALSAL 1/4 SQ. L.E.

SPARS: 3/16 x 3/8 HARD BALSAL

2 1/2" WILLIAMS BROS.
WHEELS

NOTE: ALL STRUCTURE 3/16 SQ. BALSAL
UNLESS OTHERWISE NOTED

3/16 x 3/8 BALSAL

CHIPLET

3/32 BALSAL

1/4 x 3/8 BALSAL

1/8 BALSAL

1/8 BALSAL

1/4 SQ. L.E.

1/4 TRI. BALSAL

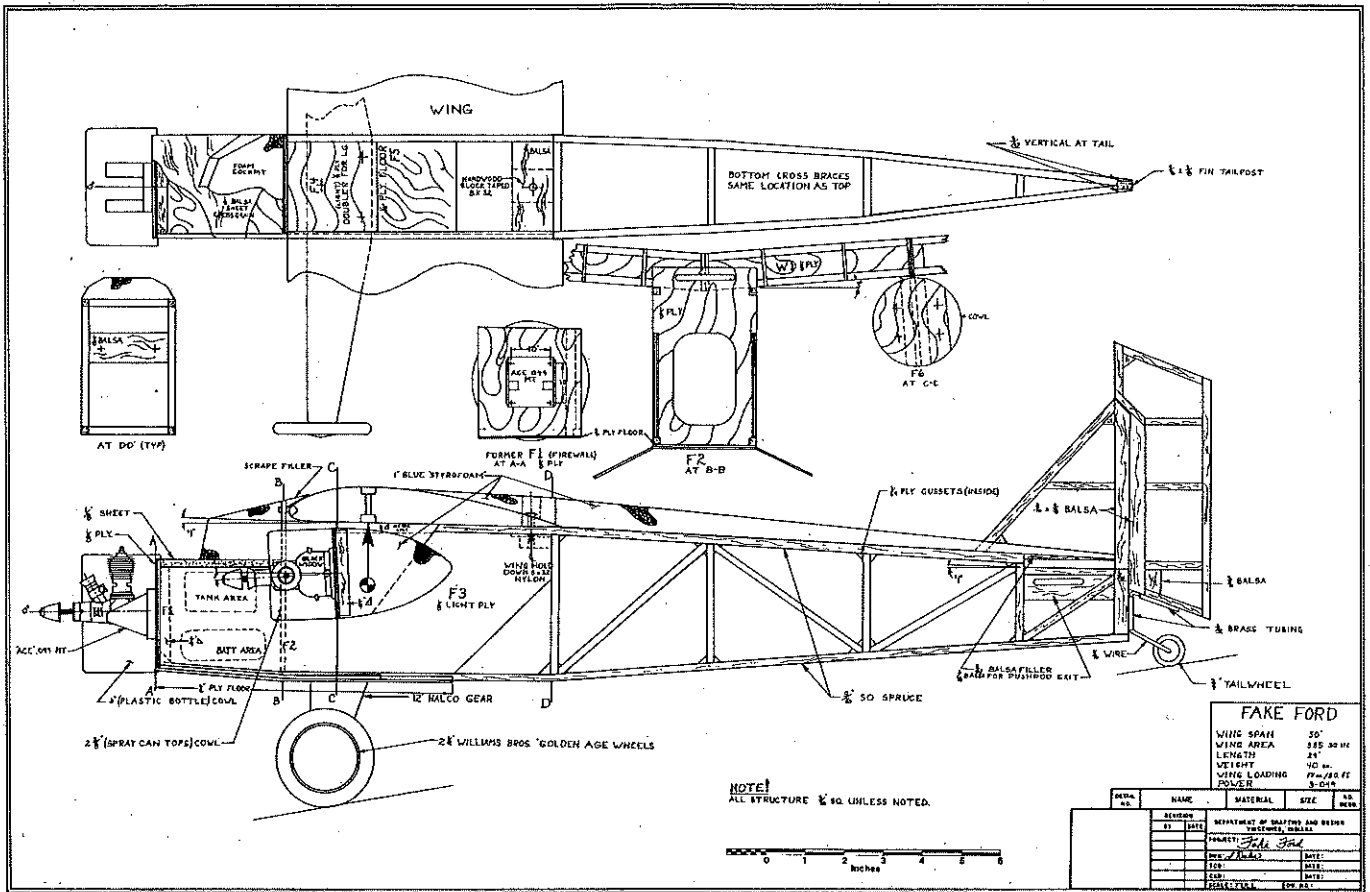
SPARS: 3/16 x 3/8 HARD BALSAL

2 1/2" WILLIAMS BROS.
WHEELS

1/16 PLY FLOOR

3/8 SHEET

3/8 LITE PLY



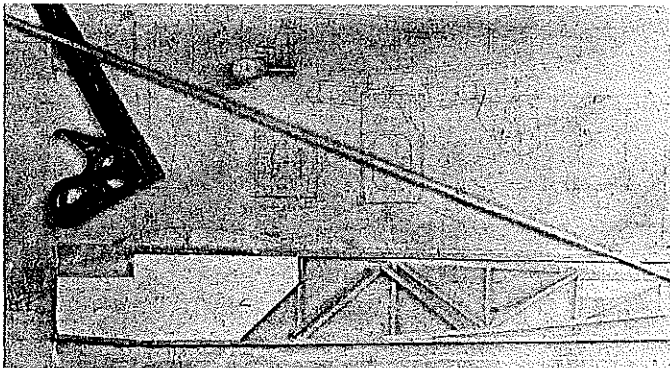
used on the left side; the right one will be OK as is when the engine is rotated. Lap both tank surfaces for a good fit, and rotate the tank center section so that the cylinder and needle valve are to the outside when the fill tube is up. Do one to the left and the

other to the right so both engines will have the cylinders and needle valves outboard when they are mounted.

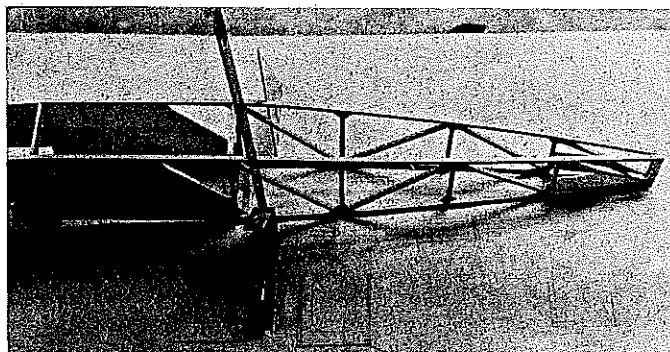
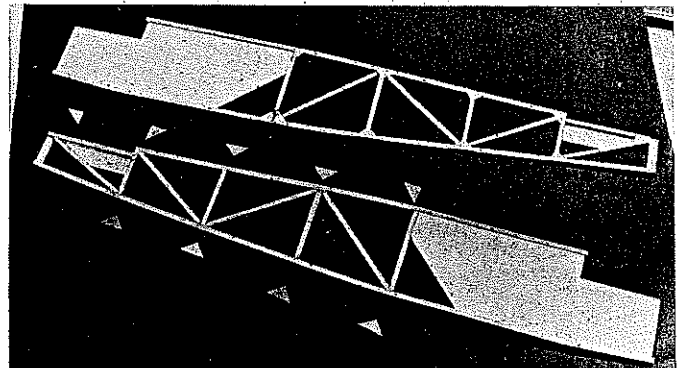
Remove the needle valve spring and replace it with a piece of small fuel line over the whole lower part of the needle valve and

tank top. This will keep the needle from turning when it shouldn't and also keep air from bleeding into the fuel supply, causing erratic runs.

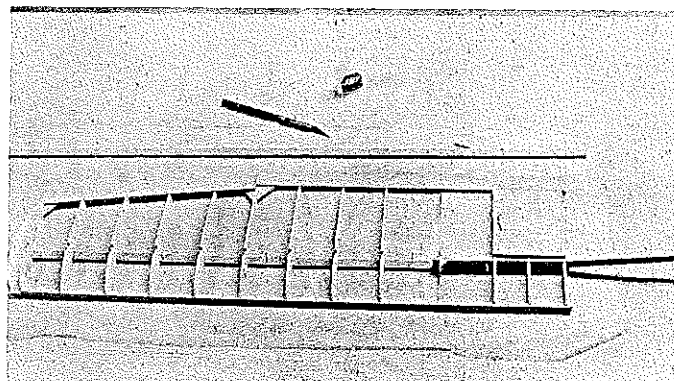
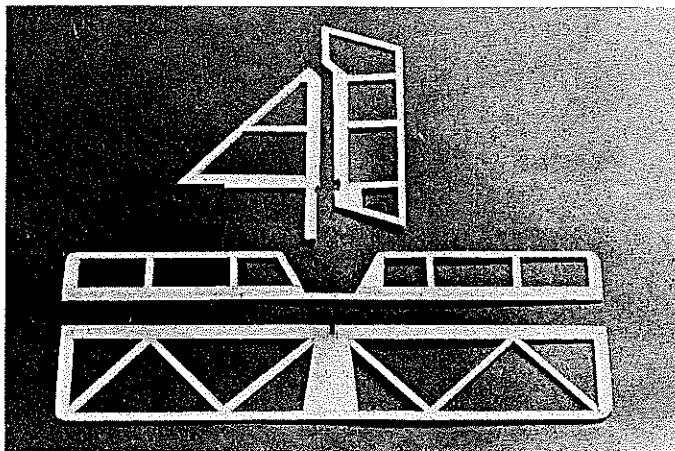
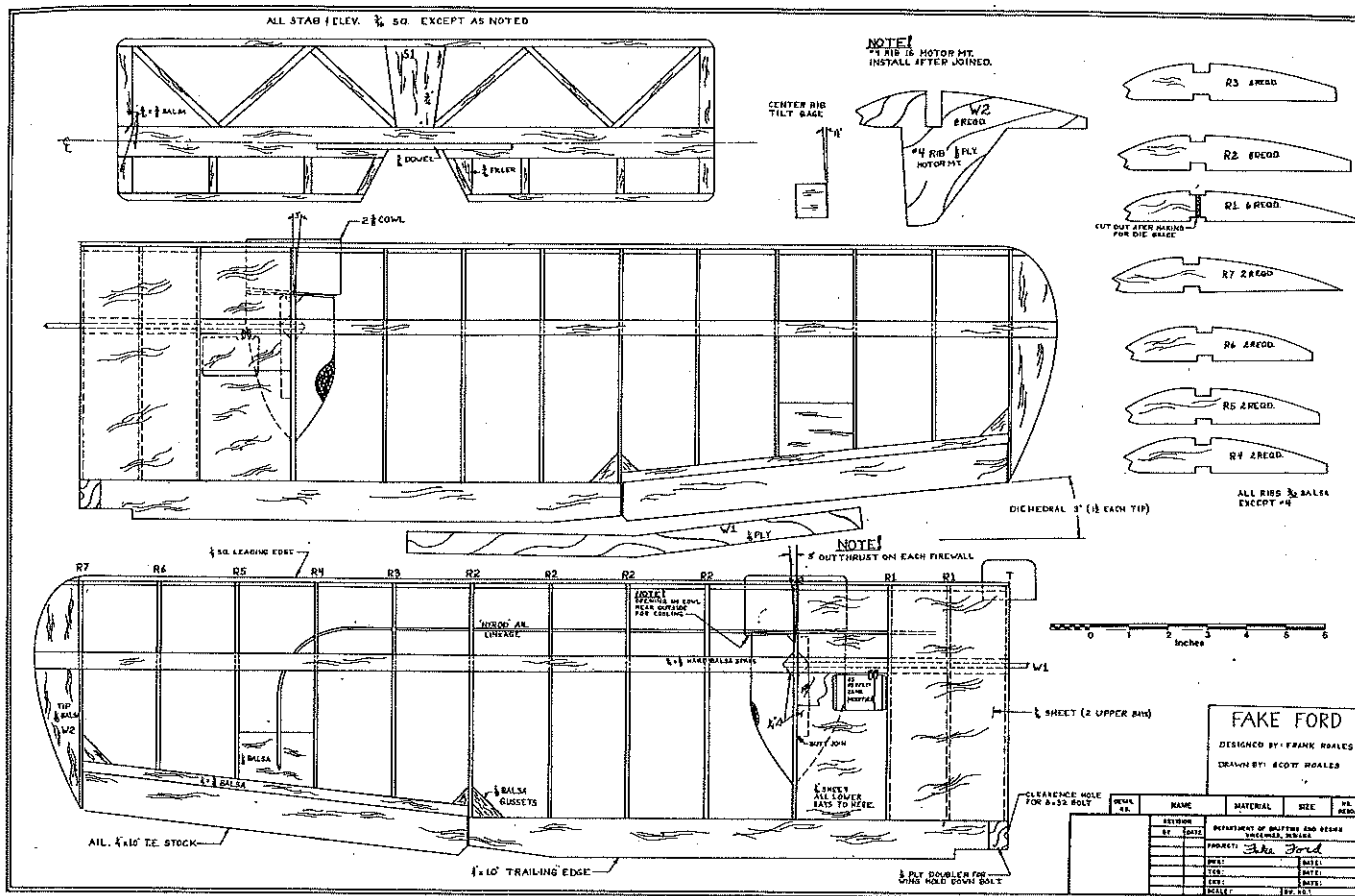
Be sure to use a good fuel such as that put out by Cox—or at least some kind with



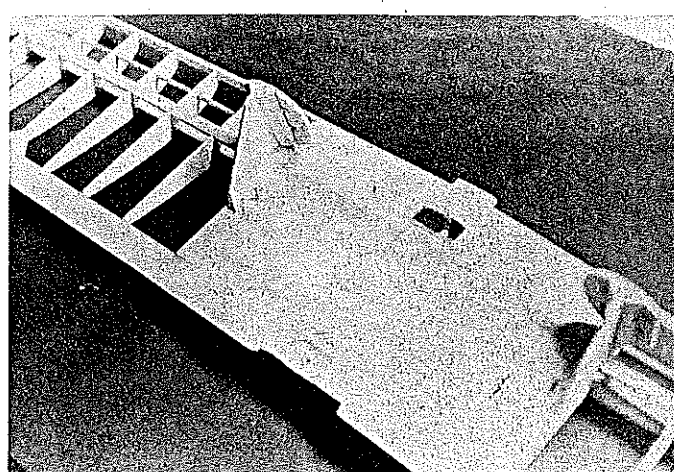
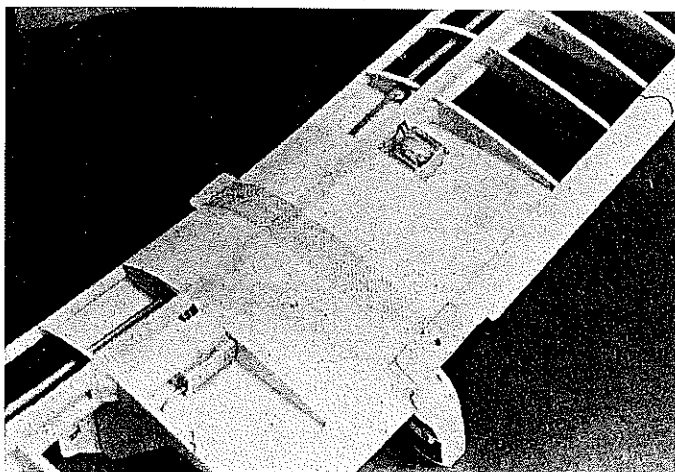
Left: The second fuselage side is constructed directly over the first (with wax paper between) to assure uniformity. Right: Positioned around the left half of the fuselage are the strength-adding gussets. The right half (upper one) shows how they should look after installation.



Left: Fuselage is built directly over the plans; keep sides straight during construction with a square or triangle. Right: Antenna, pushrod exit, and tail wheel assembly converge neatly at the rear. If receiver antenna is installed in the fuselage, be sure to range-check the radio.



Left: Tail components built, sanded, and ready for control horns, hinges, and covering. Above: Right wing panel before adding top spar and front planking. Note that W2 is not installed at this point.



Left: The wing center section is reinforced with fiberglass cloth and CyA. Take note of the wing tank installation shown here. Tank construction details are in the text. Right: A look at the underside of the wing reveals the W2s and the triangular stock bracing at the firewall.

20% or more nitro (these little fellows don't like regular RC sport fuel). However, since fuel consumption is very low, you won't be out an arm and leg for this more-expensive, high-nitro fuel.

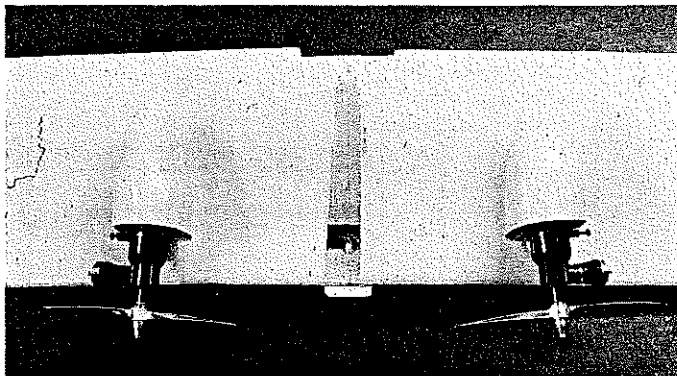
Please note that the outboard engines on the Fake Ford are counter-rotating (one runs clockwise and the other counterclockwise). In this way the torque of the outboard engines is cancelled out. On the reed-valve Black Widow engines, all that is required is to mount a pusher prop on one, and run it backwards. It won't know the difference. I used 6-3 props on all three engines (do keep remembering that one of them is a pusher prop).

Construction. Start by cutting out all the parts. You can trace these onto balsa or plywood (as required, shown on the plans) by placing carbon paper between the plans and wood and tracing right from the plan sheet. Be sure to note whether more than one of each part is required. Keep everything as light as possible, and use cyanoacrylate glue (CyA) throughout.

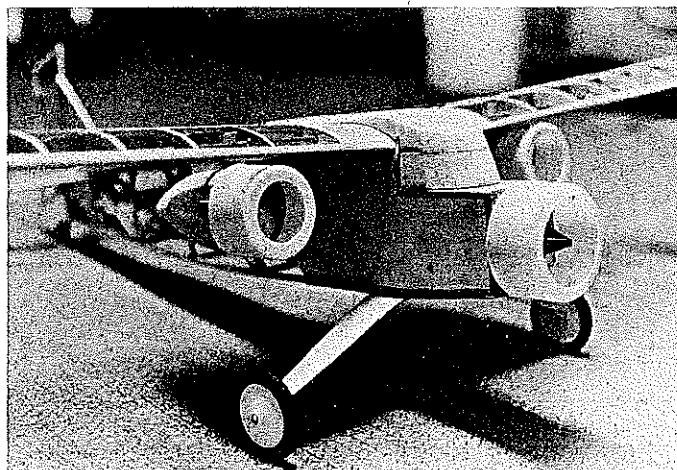
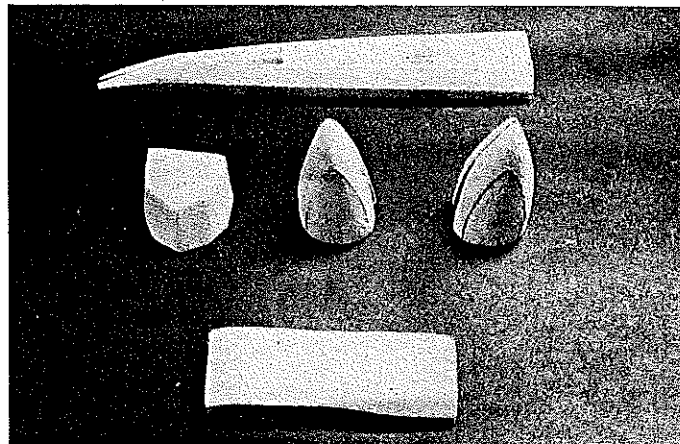
Fuselage. Lay the plans on a flat building board, and cover them with wax paper. Using F3 as a starting point, build the right side of the fuselage directly over the plans using $\frac{3}{16}$ sq. spruce for the longerons and $\frac{1}{16}$ sq. balsa for all other bracing. Be sure that

F3, the $\frac{1}{16}$ balsa pushrod exits, and the $\frac{3}{32}$ balsa end post are flat on the plans. After this side is finished and while it is still flat on the plans, run a sanding block over it to true up the surface. Without removing this side, place another layer of wax paper over the already-built side, and place some $\frac{1}{8}$ -in. spacers on F3, a $\frac{1}{4}$ -in. spacer on the $\frac{1}{16}$ -in. pushrod exit, and a $\frac{1}{16}$ -in. spacer on the $\frac{3}{32}$ -in. end post. This will set these parts to the proper height for building the left fuselage side. One side is built over the other to assure that each is identical. Again, run a sanding block over the second side for trueness.

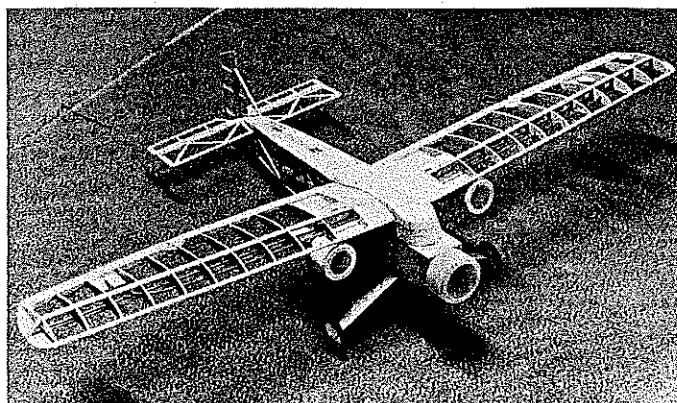
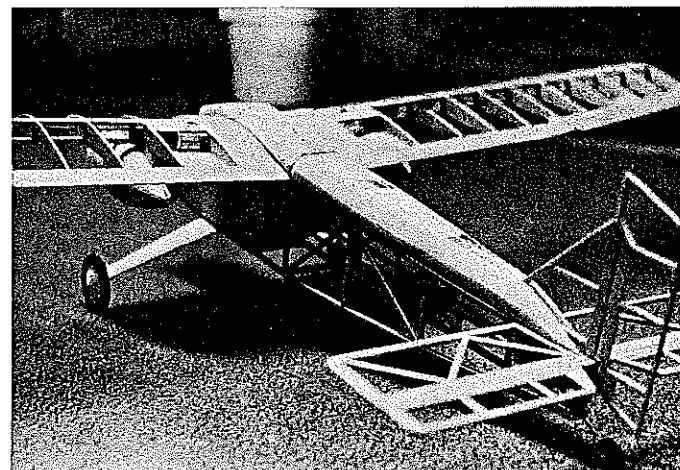
Continued on page 32



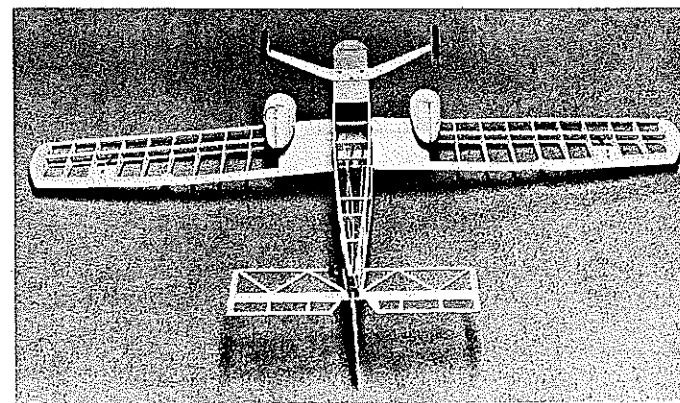
Above: The finished wing bottom clearly shows the outward thrust and orientation of the engines. Right: Foam parts used in our author's model: top block, wing center cover, cabin, and nacelle.



Left: Mock-up showing location of front-end parts. Note flat surface on outside of the nacelle for cooling air exit. Right: Rear view of mock-up shows the foam top block and the wing center cover. Also shown are both wing tank locations; note author's fuelling instructions.



Left: The bare bones beauty. Smaller cowls are spray can tops, and the larger one is a plastic 3-in. drink bottle bottom. Right: This underside look at the skeleton shows off the lightweight structure and control tube locations. Take a good look at the landing gear attachment shown.

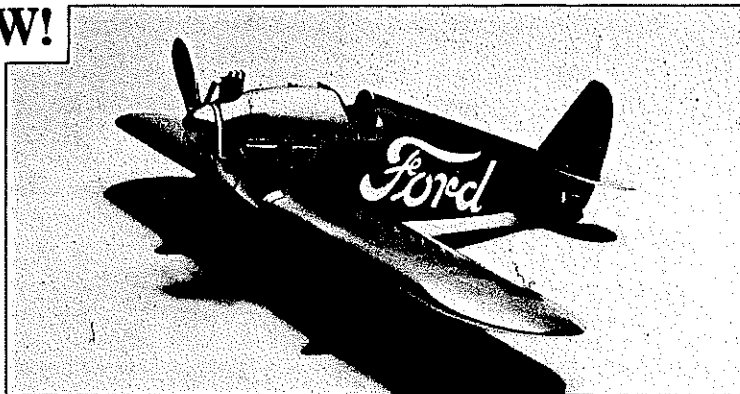


FORD FLIVVER!

NEW!

1
48
SCALE

PLASTIC
MODEL
KIT



Henry Ford's "Model T of the Air" 1926 FORD FLIVVER was powered by a French three-cylinder Anzani engine and was capable of 85 miles per hour. The aircraft exists today in the Dearborn, Michigan, Ford Museum.

KIT FEATURES: INJECTION-MOLDED PARTS • COMPREHENSIVE INSTRUCTIONS • DECALS FOR MARKINGS



GOLDEN AGE SERIES

SEND \$2 FOR COMPLETE CATALOG DEPT. MA

181 PAWNEE STREET, SAN MARCOS, CALIFORNIA 92069

HOBBY ★ WOODS

CATALOG SAVINGS on BALSA

Send for our FREE catalog and see for yourself —
We supply over 2,700 sizes and grades at Low, Low Prices.
Density Graded, Color-Coded Quality Balsa.
Satisfaction 100% guaranteed.

For a Full Catalog, call or send stamped self-addressed envelope to:
HOBBY ★ WOODS — P. O. Box 48, Linden, CA 95236 • (209) 887-3974

Electric Flight Technology is Now.

Astro Challenger Cobalt motor technology delivers unmatched flight performance. Pylon racers fly at 100 mph, Sailplanes climb over 1000 feet in one minute, and Quarter scale aircraft fly realistically. The age of electrics has come — easy, clean, simple and economical flying for SPORT AND COMPETITION in 05, 15, 25, and 40 sizes. Ask your Astro Flight Dealer for motors and complete systems or Order Direct — and join the QUIET REVOLUTION!

Cobalt 05 . . . \$75.00, 15 . . . \$100, 25 . . . \$125, 40 . . . \$150.

Flash! Astro cobalt 05 in "Fast Eddy" and flown by Larry Jolly sets electric speed record — 92.85 mph two-way average (Subject to FAI confirmation.)

ASTRO FLIGHT INC.

13311 Beach Ave. • Marina Del Rey, CA • 90292 • (213) 821-6242

Remove the sides from the building board, and place them so the flush sides are down and you have one left and one right. Using $\frac{1}{4}$ ply, cut the gussets for the joints on the rear sides as shown on the plans. These are made by cutting $\frac{3}{4}$ -in. squares of $\frac{1}{4}$ in two diagonally. Glue them to the insides of all joints from F3 to the rear. Do not omit these gussets; they add no perceptible weight but add immensely to the strength and rigidity of the aft fuselage.

Mark and drill F1 as shown on the plans to suit the engine mount you are using. Lay down one fuselage side, making sure the flush side is down. Glue on F1 using the $\frac{1}{4}$ -in. triangular stock as shown, then glue F2 in the proper location. Use a square or triangle to keep them true until the adhesive dries. The other side is then added to these formers; be sure to check again for squareness.

Finish the fuselage assembly by building it over the top view, adding the cross braces as required to maintain the correct shape — while keeping it square. Be sure to note the cutout at the rear for the fin post. Next, add the landing gear doubler, $\frac{1}{8}$ -in. top block, wing hold-down block, and outer tubes for the rear pushrods and antenna exit.

You may wish to install the main engine tank now before gluing the $\frac{1}{16}$ ply fuselage floor in place. The prototype used an R1 Sullivan tank siliconed to the fuselage side and top block. Drill the fuselage floor and gear doubler for your landing gear, and install the blind nuts.

Finally, cut out the rear fuselage top and cabin from 1-in. foam as shown. (The cabin is laminated from two pieces.) I used blue Styrofoam building insulation material cut with an X-Acto knife and coping saw; I then shaped it using a sanding block. This works well, and the foam can be sanded quite smooth. Also, Dap spackling compound can be used to fill any dents or gouges; it doesn't attack the foam. Be sure to use a low-temperature Mylar when covering any of the foam parts (Ekonokote, Solarfilm, etc.). Use white glue for attaching the Styrofoam. The rest of the fuselage is covered and trimmed with your favorite iron-on covering. I used Super MonoKote on my model.

Tail surfaces. Build the fin and rudder directly over the plans with $\frac{3}{16}$ sq. and $\frac{3}{16}$ x $\frac{3}{8}$ -in. balsa as shown. Note that the fin post extends down into the fuselage. Be sure to choose light, firm wood for all of the tail assembly.

Build the stab and elevator in a like manner. Don't forget the cutout at the rear center of the stab for the fin post.

When all of these parts are finished, sand each one on both sides by laying the piece flat and using a sanding block. Then round all the edges. Cover, hinge, and add control horns to these parts before assembly.

Wing. This one is rather easy to build. Both sides are shown on the plans so you can build directly over them. Start by pinning down the $\frac{1}{16}$ x $\frac{3}{8}$ -in. hard balsa spar. Add

the lower $\frac{1}{16}$ balsa sheet to W2 and the R1 ribs on top of this sheet, being sure to keep all ribs vertical (except the one that will be at the center of the wing). Use the rib tilt gauge on the plans to position the center one. Continue by adding the rest of the ribs. Note that Rib W2 (engine mount rib) is *not* installed at this time.

Add the $\frac{1}{4}$ -in. sq. hard balsa leading edge, the $\frac{1}{4}$ x 1-in. trailing edge, and the $\frac{1}{4}$ x $\frac{1}{2}$ -in. balsa aileron. Cut out the spar and wing tip. Add the $\frac{1}{8}$ -in. plywood dihedral brace and the $\frac{1}{4}$ -in. triangular stock at the inside of W2, and glue in the upper spar.

Build the other panel in the same manner up to the point of installing the dihedral brace. Assemble the two wing halves by laying the panel with the installed dihedral brace flat on your building board and slipping the other up to it, raising the outer end to the angle of the dihedral brace. This should give you 3 in. of dihedral at the wing tip. Keeping the joint of the two panels square and flat, glue them together.

Add the $\frac{1}{4}$ -in. balsa triangle at W2 and the top spar to the final panel. The aileron linkage is now added, and the wing upper center is sheeted. The center joint should then be wrapped once around with a 1-in.-wide piece of fiberglass cloth attached with CyA. Add the wing hold-down doubler. The locating tongue is added using the cutout in F2 to get the proper incidence in the wing. Block-sand the entire wing to a smooth surface; use a long block.

Add the W2 engine mount ribs, using a square or triangle to be sure the lower part is 90° to the bottom sheeting. Add the $\frac{1}{4}$ -in. triangular pieces to the outer rib dihedral brace joint and at the inner bottom sheeting. Next, locate the holes in the outer firewalls for the engines you are using, drill them, and install blind nuts. Mount these on the W2s, making absolutely sure to put in 3° of out-thrust on each. Use $\frac{1}{4}$ -in. triangle stock sanded to the correct angle to reinforce the joint on both sides of W2.

Mount the auxiliary tanks for the wing engines as shown on the plans. They are #5 Perfect rectanks modified by removing the pickup from the center top and relocating it to the outboard end so it will come through the lower $\frac{1}{16}$ sheet just inside of W2. A fuel line is then run to the engine. The tanks are held in place with silicone caulk with a small sheet of $\frac{1}{16}$ balsa placed over them.

The wing is now fine-sanded, the ailerons hinged and covered, and the control horns added.

The nacelles for the engines are made from foam sanded to a pleasing shape, covered with a low-temperature Mylar film, and attached to the rear of the firewalls by simply gluing them to W2 with a white glue.

Final assembly. Glue on the tail surfaces with the stab/elevator flat and the rudder/fin perpendicular. Make the tail wheel as shown on the plans, and attach it to the rear of the fuselage; let the upper part that goes to the tube on the rudder remain free to prevent binding. Place the wing on the

Continued on page 34



TAKE IT NOW...JOIN EAA

Whether you're interested in model airplanes or full-sized aircraft, EAA is for you. For more than 30 years, EAA has promoted sport aviation in all its forms and helped preserve its rich heritage. As an EAA member, you'll receive 12 monthly issues of *Sport Aviation* magazine, which contains subjects ranging from in-depth "how to" articles to photography. EAA has something for everyone.

Join EAA. We share the air.

YES, I want to join today. Enclosed is my check for \$30 to cover my first-year membership dues.

NAME: _____

I'd like more information. I'm enclosing \$2.50 for a sample *Sport Aviation* and Information pack.

ADDRESS: _____

I would like to receive EAA's Video Catalog. Enclosed is \$2.60 for the catalog, which includes a coupon for \$2 off my first purchase.

CITY: _____

STATE: _____ ZIP: _____

MAIL TO: EAA, WITTMAN AIRFIELD, OSHKOSH, WI 54903-3086.
PHONE (414) 426-4800

TATONE
MODEL SPECIALTY
ENGINE MOUNTS · MUFFLERS · ENGINE TESTING EQUIPMENT · SMOKE KITS · SCAL

TATONE offers you the Most Complete Line of
4 cycle engine mounts
Cast Aluminum
Drilled & Tapped

AT MOST HOBBY SHOPS OR
Send 1.00 for 13 page illustrated catalog

ACCESSORIES · TUBING · ENGINE MOUNTS · MUFFLERS · TEST STANDS
1209 Geneva Ave. San Francisco, Ca 94112
(415) 334-7189

VIDEO PROGRAMS

HEDGE HOPPIN VOL. II. Another volume of exciting aviation topics beginning with a great club fun fly, featuring all type models and streamer combat with 4 stroke powered Piper Cubs. Toledo interviews, a close examination of a full size Japanese Kate torpedo bomber. More how to's from the Work Shop, wrapped up with a tremendous scale model warbird reenactment of Pearl Harbor & the Battle of Midway with Zeros, Kates, P-40s and more. 40 min. \$41.95



**LEARN TO BUILD
LEARN TO FLY...**

HEDGE HOPPIN VOL. II.

VHS & BETA

RENT BUY

1. BASIC CONSTRUCTION FOR BEGINNERS IN R/C 107 Min. 49.95
2. BASIC FLIGHT TRAINING FOR BEGINNERS IN R/C 65 Min. 44.95
3. THE WORLD OF MODEL AVIATION 90 Min. 44.95
4. OSHKOSH OVERVIEW 55 Min. 39.95
5. "AIRPLANE FUNNIES" 30 Min. 39.95
6. U.S. SCALE MASTERS CHAMPIONSHIPS 60 Min. 41.95
7. WARBIRDS IN ACTION* (Full Scale Air Shows & More) 75 Min. 49.95
8. HEDGE HOPPIN (Variety) Model & Full Scale VOL. 1: 45 Min. 41.95
9. WHICH WAY IS UP (Aerobatics) 70 Min. 47.95

*All sales final, prices subject to change, please check current ads for rates.

ORDERING INFORMATION - Please Read Carefully To Avoid Delays

- **RENTAL DEPOSIT:** The full purchase price of EACH program ordered, the difference is refunded.
- **RENTAL DURATION:** is 1 week after delivery. Reserved dates require a 15 day notice.
- **PAYMENT:** Check (10 day clearance) or money order. **Charge Orders Include Card #** Expiration Date and Phone #. CODs available by phone.
- **SHIPPING:** \$3.75 Foreign; Canada add 10% of TOTAL; all others add 15%. IL res add 7% tax.

**SEND ORDERS TO: ACADEMY OF AVIATION RESEARCH & DEVELOPMENT • P.O. BOX 277
HAZEL CREST, ILLINOIS 60429-0277
(312) 335-0776 10 a.m.-8 p.m. Mon.-Sat.**



**SPECIAL FEATURE INCLUDED:
TORA TORA TORA, EXPLOSIVE
ACTION WITH FIGHTER AIR COM-
BAT & BOMBINGS, FEATURING
FULL SOUNDS OF MACHINE GUN
FIRE, COMMANDS, AND FIRERY
BOMBINGS GUARANTEED TO
KEEP YOU ON THE EDGE OF
YOUR SEAT.**

CHARGE IT!



All Rentals \$14.95

WILSHIRE is the One Place for Sailplanes in the U.S. . .
foreign and domestic in stock from \$29 to \$1200 . . . and, if you're
into Electric Flight, WILSHIRE carries the most complete line
anywhere in North America. Call us or write for our Catalogs . . .

SAILPLANE CATALOG . . . \$2.50
ELECTRIC FLIGHT CATALOG . . . \$2.50

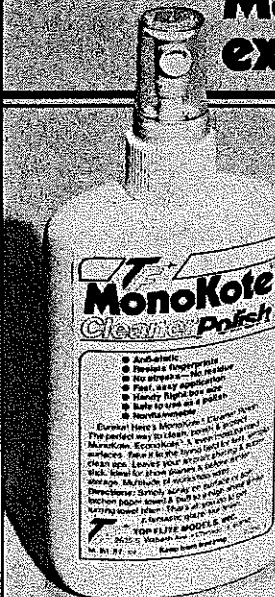
Catalogs are updated continuously . . . more items, all with photos.
Get the latest, with "Shirley" the cat, on the cover!

wilshire model center

RC Sailplane and Electric Power specialists for the U.S.A.
Stop in and see our new store at 2836-S Santa Monica Blvd.
Santa Monica, CA 90404 (213) 828-9362



**Make your plane a shining
example... with**



**MonoKote®
Cleaner/Polish**

- Nonflammable
- Anti-static
- Handy flight box size
- Resists fingerprints
- Fast, easy application
- Safe to use as a polish

MonoKote® Cleaner/Polish is the perfect way to clean, polish and protect MonoKote, EconoKote® and even most painted surfaces. Fast, simple cleaning at the flying field... anywhere. Leaves your aircraft shining and super slick. Use it on show planes and before winter storage. Super for all plastic surfaces and a multitude of workshop uses.

MonoKote Cleaner/Polish... only from Top Flite!



TOP FLITE MODELS, INC.
2635 S. Wabash Ave.
Chicago, IL 60616

8 oz. bottle
with built-in sprayer

fuselage, and check the incidence to be sure it is as shown on the plans and that it is on squarely.

Make the wing seals using silicone caulk. Just lay a small bead of silicone on the upper fuselage, wrap the contact area of the wing with wax paper, and bring the two together in proper alignment; let the silicone dry in this position. This will create a perfect fit. If you have not already done so, add the main gear and wheels. Mount all the engines, and hook up the fuel tanks.

Mount the cowls with use of small hardwood blocks. On the prototype they were spray-can tops for the outboard engines and the bottom of a 3-in.-dia. plastic bottle for the center one. Mount the radio gear, shifting it forward or backward to get the proper balance (C.G.). If necessary, add weight to get the correct balance position; this shouldn't be necessary if you were careful in your selection of wood. Do not try to fly the model until it balances in the designated position.

Flying. Check all the controls to make sure they are operating in the correct direction, are free moving, and have the proper throws. For first flights the throws should be as follows: aileron and elevator, 3/8 in. up and the same (or a bit less) down; rudder, 1 in. each side of center. Also be sure you have your maximum amount of trim available, especially for the rudder.

Just a few words about the filling procedure for the outside tanks. Place the tube from the wing tank to the fill tube on the engine and an extension on the overflow tubes on the engine. Then fill through the wing tank until fuel comes out the engine overflow. Then plug the engine overflow, and finish filling the wing tank in the normal manner. It can then be topped off by simply filling the wing tank.

Start each engine, allow it to warm up, and set the needle valve. Then shut it down and top off the tank. Finally, start the outboard engines first; when both are running, top them off. Then start the center engine, and launch the model (I recommend hand-launching for the first flights). If this starting procedure is used, the outboard engines will die first and nearly at the same time, leaving the center engine running for more positive landing control. In the event you lose an engine, determine which one it is, and *think rudder* for your trim corrections. Do not attempt to turn into the dead engine, but make all turns very shallow and away from the dead engine.

This airplane flies well on any two of the engines, but don't get too far from the landing strip if you have just one engine going; it will just stretch the glide if it is an outboard one and it will do only slightly better if it is the center one. When one engine quits, use the rudder—and *think*.

Happy flying! I think you will enjoy the sound of three unsynchronized engines in full flight. If you have any comments or questions, please write me (enclosing a pre-addressed, stamped reply envelope): Frank Roales, R.R. #3 Box 49B, Vincennes, IN 47591.