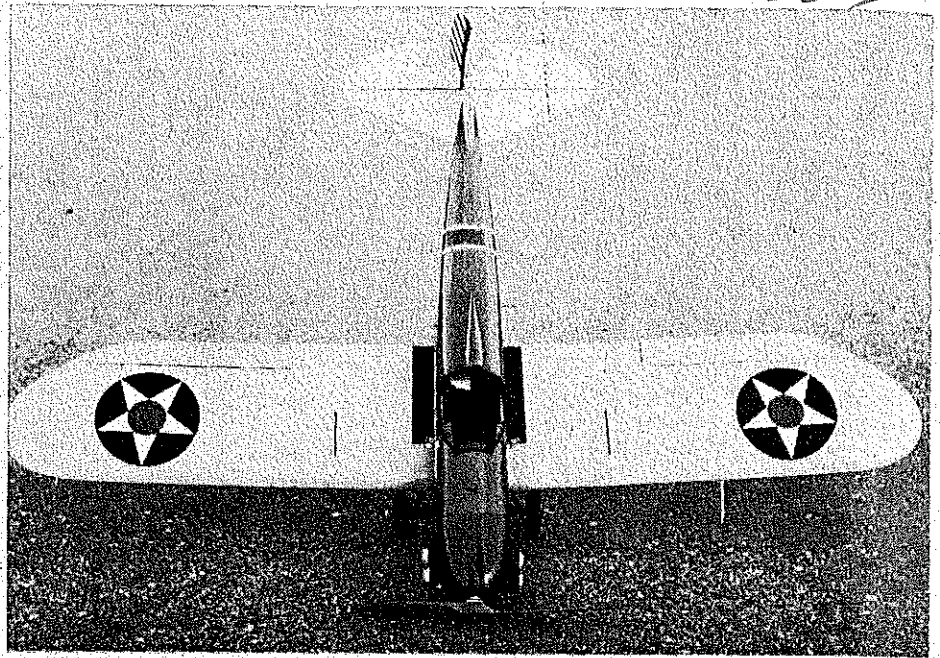


THE FLY BABY is a sporty homebuilt that needs no introduction to many. It was designed around the homebuilt criteria for a simple appealing, efficient, yet inexpensive aircraft. Being almost entirely constructed from easily available and worked materials, the Fly Baby caught on well among amateur aircraft builders. A few examples should be available at the local airfield. Not only popular in the stock form, many variations turn up. Cockpits under bubble canopies, clipped wings, and even a few biplane versions are quite popular.

As a modeler, the Fly Baby appealed to me in that it looks like a model project that grew out of hand. Typical of most homebuilt designs, the Fly Baby is a natural for scale modeling. The actual structure can be duplicated from the builder's content.

Construction is straightforward, and efforts were made to build the model as the real Fly Baby was built. Begin with the

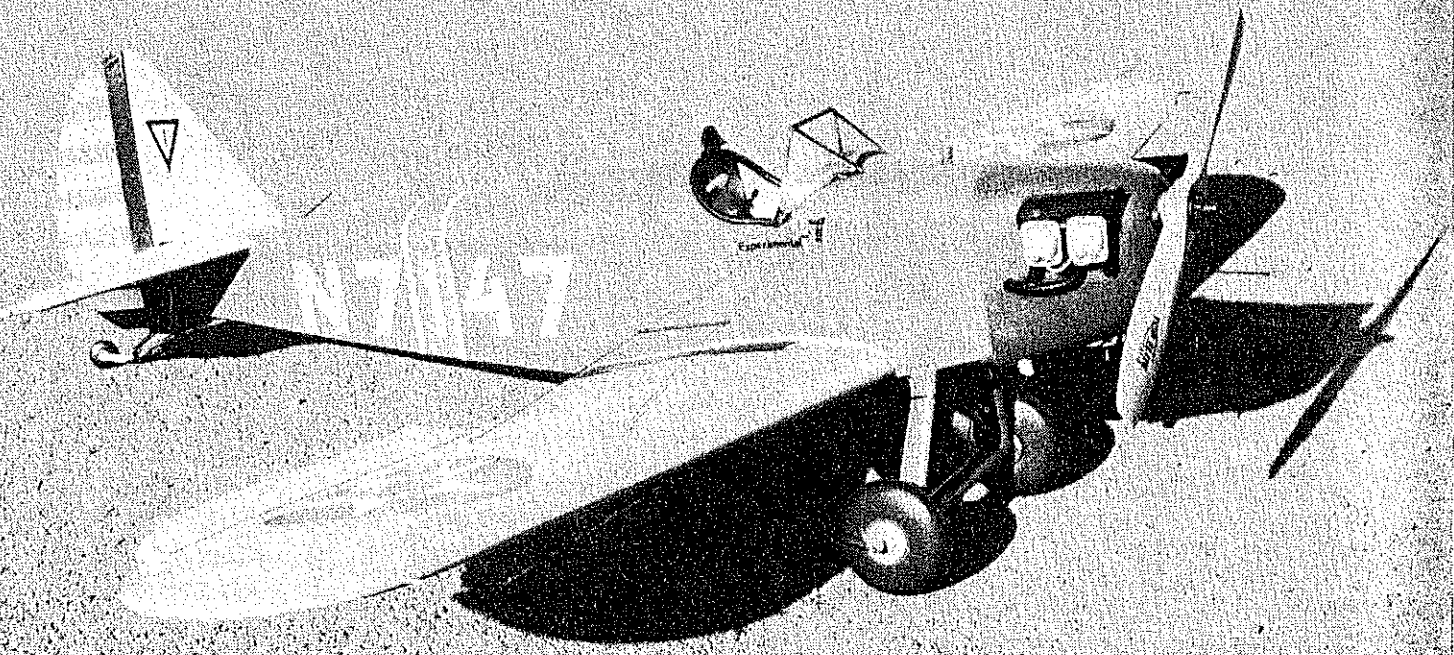


Planform view reveals the good moments and areas for a fine flying model. Note the open map compartment door, rigging, pitot tube (leading edge, right of picture), and scale engine placement.

Bower's FLY BABY

This famous homebuilt for 35 to 40 RC engines has 3-line control for throttle, and coordinated ailerons. ■ Dave Haught

The Fly Baby is one of the more popular homebuilts, making it relatively easy to find a big one to study. Designed by Pete Bowers, once a free-flyer of renown, the Fly Baby's plans have been advertised in *Sport Aviation*, house organ of the Experimental Aircraft Assoc.



wing. Take care to keep it square and the panels flat. I suggest building the two panels separately, then plugging them together with the plywood sub-spars. Use a good white glue or a 12-hour epoxy to insure a good bond. When all is dry, install the plywood bellcrank mount as it is shown on the plan. The bellcrank is mounted rather far outboard of the fuselage than is normal, but it works quite well and keeps the cockpit area clear for detailing. Build up the ailerons and install the linkages. Adjust them for easy operation. Add the hardwood blocks for the rigging points and add the bellcrank, lead-outs, guides, and tip weight. Finish sand, and fill any nicks and set the wing aside.

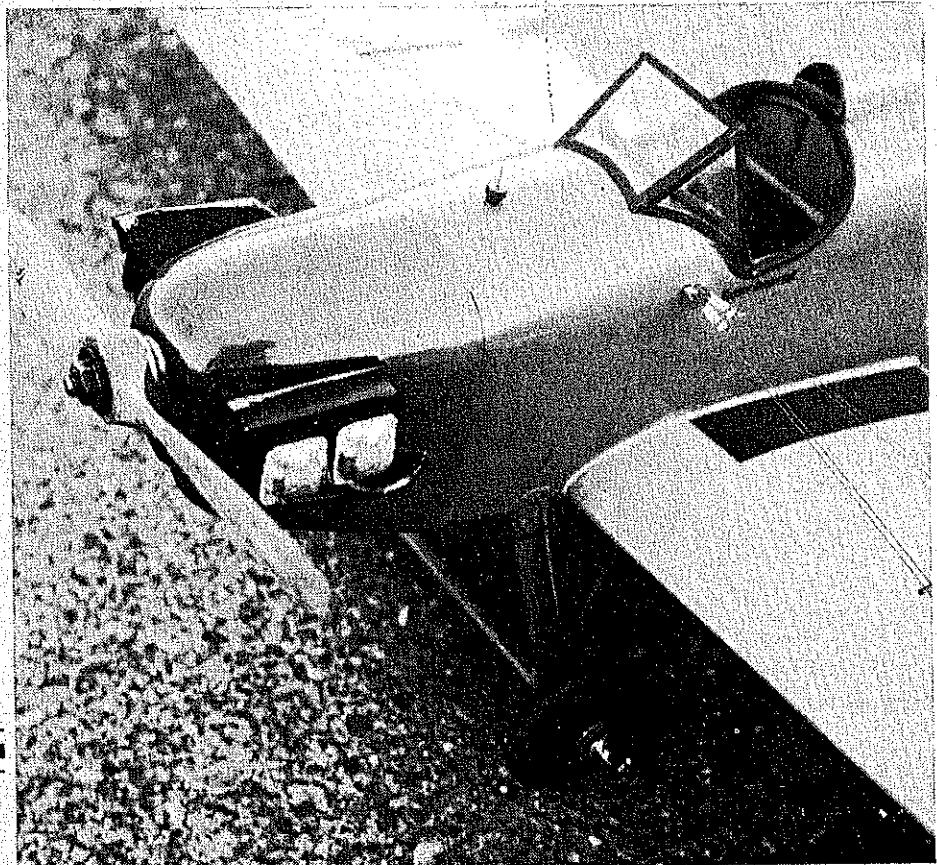
The stabilizer and rudder are built rather unconventionally, so study the drawing closely. Begin by cutting out a 1/16 sheet balsa core to the finished outline, then using an instant glue, begin gluing spars, doublers, ribs and tips in place. Then sand the ribs to an airfoil section and taper the spars as shown. Notch the leading edges for the 1/32 sheet planking and

glue it in place. Give the surfaces a final sanding, add the hinges, and you have a non-warping simulated built-up structure.

To build the fuselage, begin by cutting out the sides from sheet balsa, and contact-cement the plywood doublers in place. Fabricate and assemble the plywood formers and engine mounts into a unit and glue it to the two sides. Pull the rear of the fuselage together and begin adding the formers and the cockpit interior structure. Study the drawings and duplicate the scale details. Choosing a particular real Fly Baby to model is a good idea. Try to obtain some photographs of various details to duplicate. The builder of the real Fly Baby will probably be very helpful in this area.

The model shown featured full working cockpit controls down to a working throttle knob. These details easily can be built into the model at this point. The linkages I used are shown on the plan and have worked well. Be careful to keep the linkages simple, rugged, and free of binds.

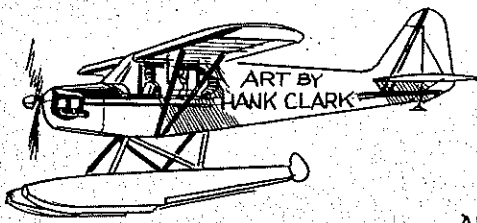
Join the wing and fuselage together, maintaining alignment and incidence. Likewise, glue the stabilizer and rudder in place using a slow-drying epoxy. Install the landing gear parts and solder them together after binding them with copper wire. When the assembly is well cured, install the flexible pushrods and link them respectively to the throttle and elevator horn. Be sure to anchor the pushrod well in several places to keep it from bending when under operation. Hook up the scale cockpit linkages now and make sure they work well without binding. When you're satisfied with the workings, add the top formers, stringers, and planking. The bot-



Homebuilts offer a lot of interesting detail, yet are encouragingly simple when compared with many scale subjects. Points to note: landing gear and wire fittings, engine covers, cooling baffles.



Flying (lift) wires attach to the landing gear axle as shown here. Note the exhaust manifolds and intake pipes, spark plugs and wires. A biplane Fly Baby homebuilt also is rather popular.



ART BY
FRANK CLARK

3/32" PLYWOOD
DOUBLERS IN
BETWEEN SPARS

STICK YOKE
FORMED ALUMINUM

AILERON BELLCRANK
DOWEL TORQUE TUBE

CENTER SECTION DETAILS

WINDSHIELD IS ACETATE
WITH BLACK TAPE FRAME

COAMING IS BLACK
FUELLINE TUBING

TURNBUCKLE
JOINS FLYING WIRE
FITTINGS

WIRES THRU BLOCK
- CLIP IS DUMMY

3/8" X 1/2" MAPLE
ENGINE MOUNTS

4-40 BOLTS THRU
CYLINDERS TO COWL
MOUNT NUTS

.35-40 R C
ENGINE

BEVEL TO
FIT COWL

THREADED
SPOKE

PLASTIC CYLINDERS
FROM ENGINE KIT

BICYCLE SPOKE NUTS
SECURE COWLING

COWLING CARVED FROM SOLID
BALSA BLOCKS AND HOLLOWED
TO FIT ENGINE

SCALE THROTTLE TIED
TO FLITE THROTTLE

3/32" MUSIC WIRE L.G.

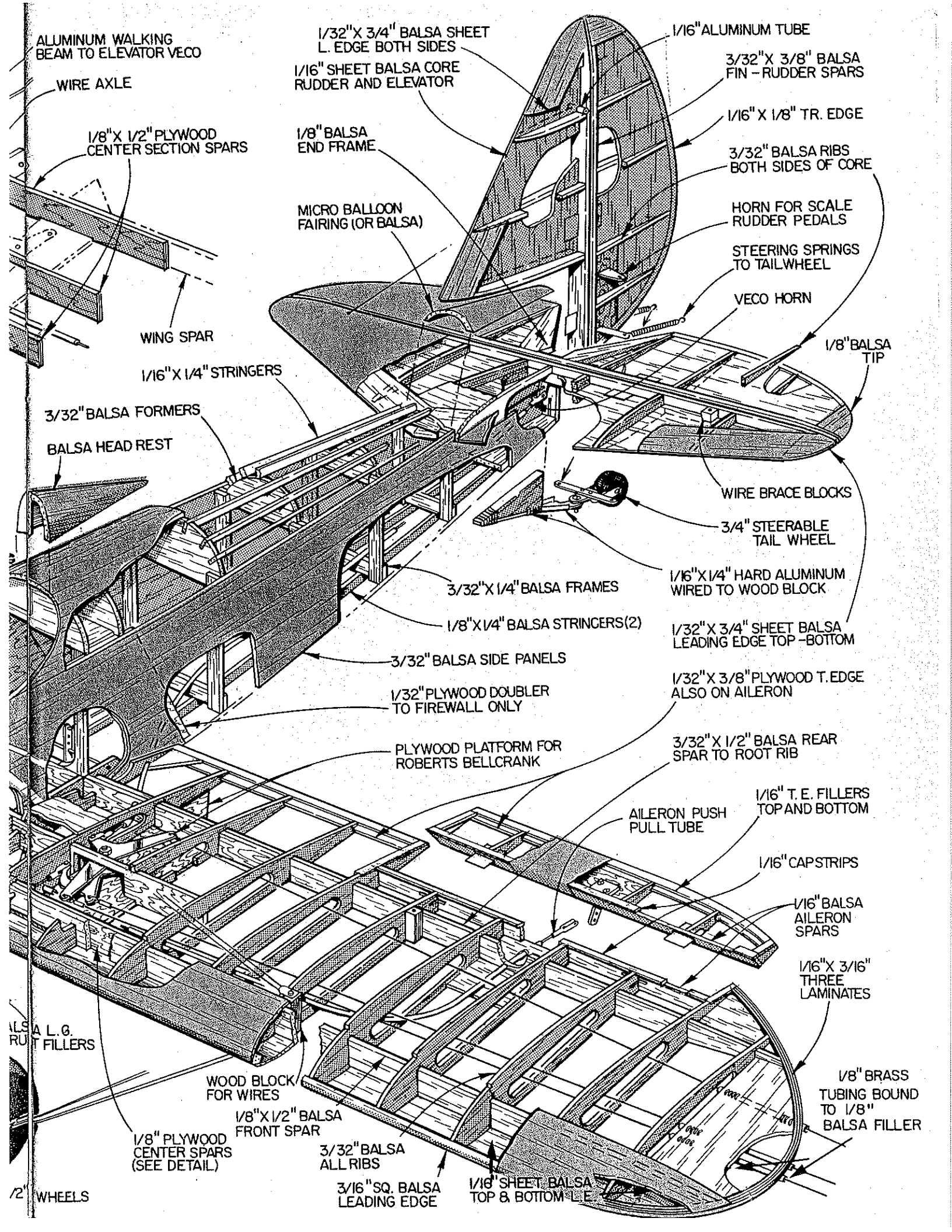
1/4" BALSA BOTTOM
FROM STA. 1 TO 2

3/32" PLYWOOD
DOUBLERS

J- BOLTS
SECURE
L.G. WIRE
TO 1/8" PLYWOOD

BALSA
STRUT

2 1/2"



ALUMINUM WALKING BEAM TO ELEVATOR VECO

WIRE AXLE

1/8" X 1/2" PLYWOOD CENTER SECTION SPARS

WING SPAR

1/16" X 1/4" STRINGERS

3/32" Balsa FORMERS

Balsa HEAD REST

1/32" X 3/4" Balsa SHEET L. EDGE BOTH SIDES

1/16" SHEET Balsa CORE RUDDER AND ELEVATOR

1/8" Balsa END FRAME

MICRO BALLOON FAIRING (OR Balsa)

3/32" X 1/4" Balsa FRAMES

1/8" X 1/4" Balsa STRINGERS (2)

3/32" Balsa SIDE PANELS

1/32" PLYWOOD DOUBLER TO FIREWALL ONLY

PLYWOOD PLATFORM FOR ROBERTS BELLCRANK

WOOD BLOCK FOR WIRES

1/8" X 1/2" Balsa FRONT SPAR

1/8" PLYWOOD CENTER SPARS (SEE DETAIL)

3/32" Balsa ALL RIBS

3/16" SQ. Balsa LEADING EDGE

1/16" SHEET Balsa TOP & BOTTOM L.E.

1/16" ALUMINUM TUBE

3/32" X 3/8" Balsa FIN - RUDDER SPARS

1/16" X 1/8" TR. EDGE

3/32" Balsa RIBS BOTH SIDES OF CORE

HORN FOR SCALE RUDDER PEDALS

STEERING SPRINGS TO TAILWHEEL

VECO HORN

1/8" Balsa TIP

WIRE BRACE BLOCKS

3/4" STEERABLE TAIL WHEEL

1/16" X 1/4" HARD ALUMINUM WIRED TO WOOD BLOCK

1/32" X 3/4" SHEET Balsa LEADING EDGE TOP - BOTTOM

1/32" X 3/8" PLYWOOD T. EDGE ALSO ON AILERON

3/32" X 1/2" Balsa REAR SPAR TO ROOT RIB

AILERON PUSH PULL TUBE

1/16" T. E. FILLERS TOP AND BOTTOM

1/16" CAPSTRIPS

1/16" Balsa AILERON SPARS

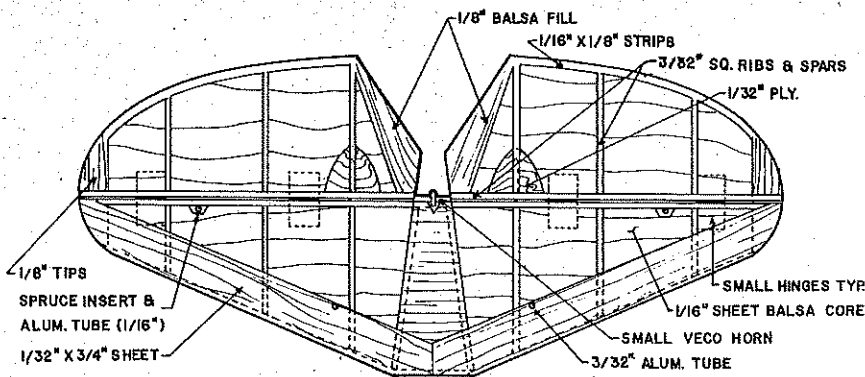
1/16" X 3/16" THREE LAMINATES

1/8" BRASS TUBING BOUND TO 1/8" Balsa FILLER

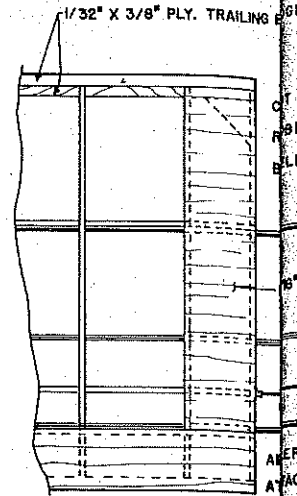
Balsa L.G. RIB FILLERS

1/2" WHEELS

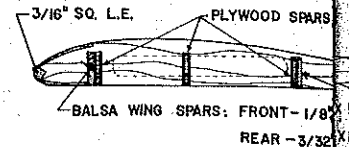
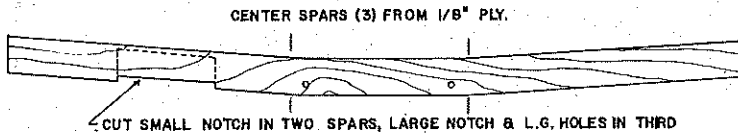
CONSTRUCTION OF STABILIZER & RUDDER ARE SIMILAR



RIGHT WING IS THE SAME AS THE LEFT

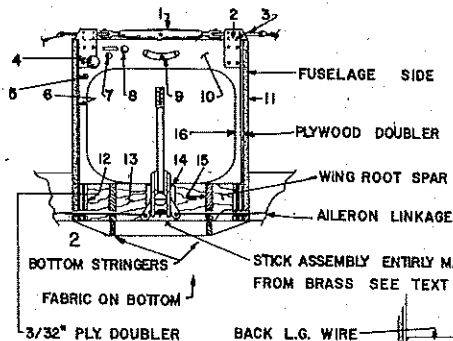
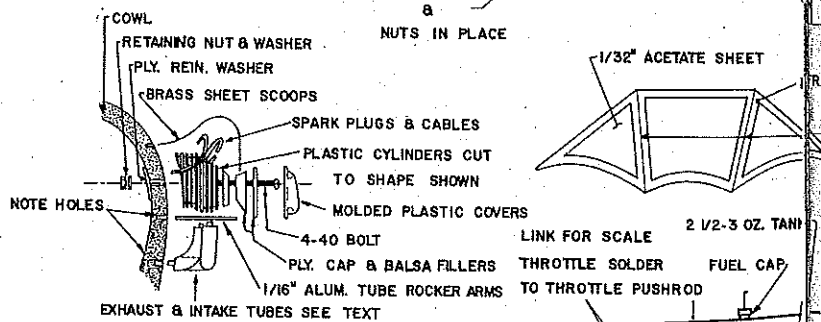
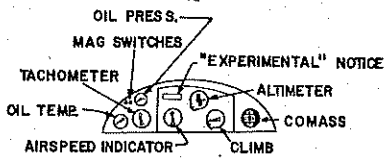
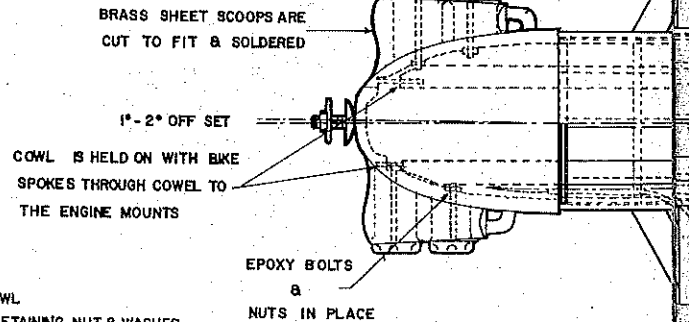
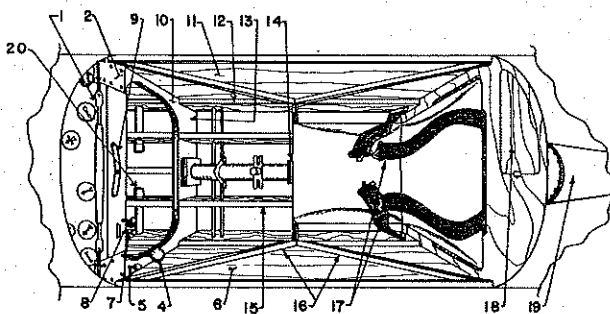
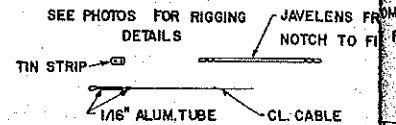


WING IS BUILT IN ONE PIECE THEN INSERTED INTO FUSELAGE



COCKPIT DETAILS - SIDE, TOP & SECTIONS FOR LOCATIONS

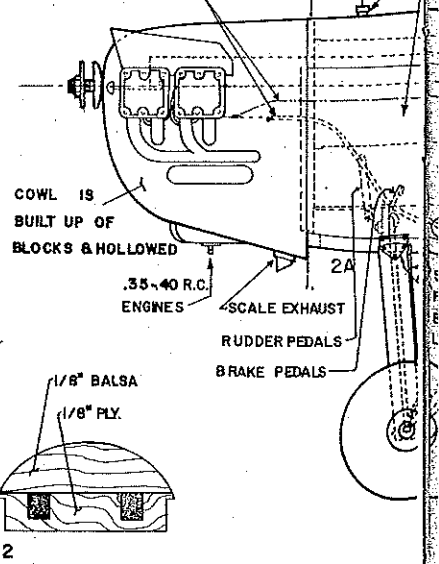
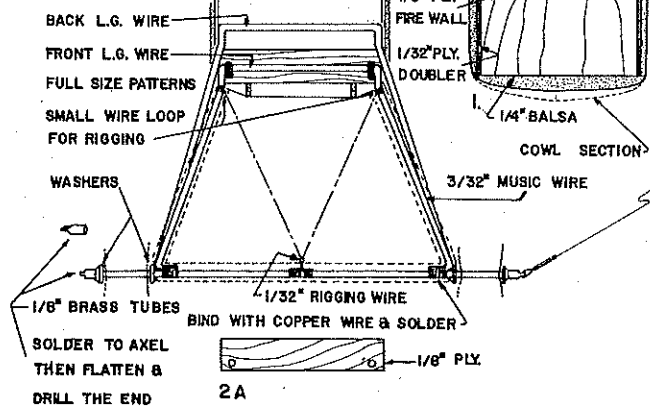
- | | | | |
|----------------------------|----------------------|-------------------------|-----------------------|
| 1. BRASS TURNBUCKLE | 6. 1/32" PLY DOUBLER | 11. 3/32" ST. SIDE | 16. SCALE STRUCTURE |
| 2. ALIGNMENT PLATES | 7. CARB. HEAT | 12. 3/32" PLY DOUBLER | 17. SEAT & SEAT BELTS |
| 3. FLYING WIRE ATTCH. FTG. | 8. PRIMER | 13. FRONT WING SPAR | 18. MAP COMP. DOOR |
| 4. THROTTLE | 9. SKID BALL | 14. PLY. SOCKET | 19. HEADREST |
| 5. MIXTURE | 10. FORMER NO. 2 | 15. FULL DEPTH STRINGER | 20. WING FOLD TUBE |

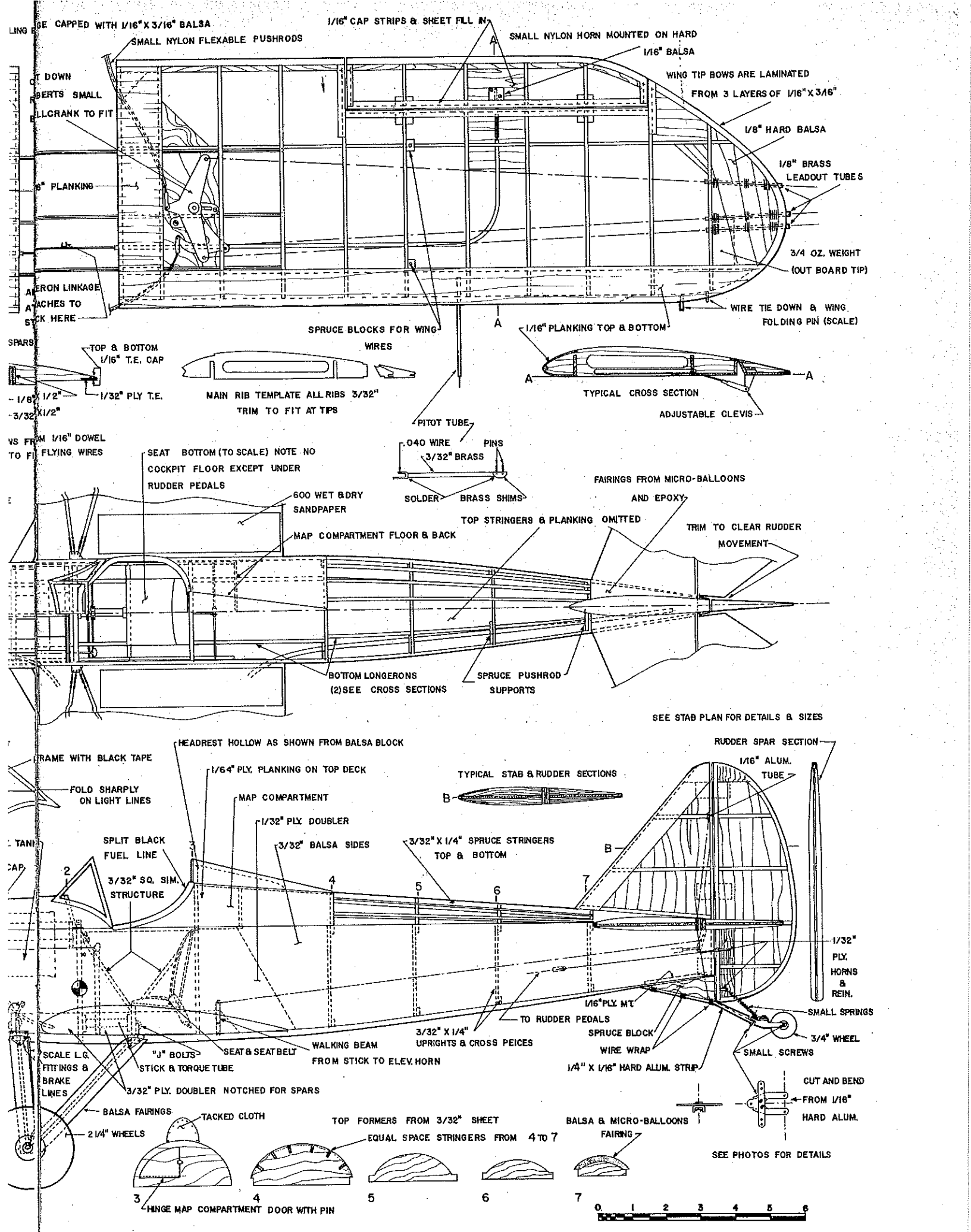


NOTE ON DOCUMENTATION:

THE SCALE DRAWINGS IN THE AUGUST/SEPTEMBER 1963 ISSUE OF AIR PROGRESS ARE A MUST !!

THE FLY BABY IN CONTROL-LINE
SCALE 1/2" = 1'
DESIGNED, DRAWN & INKED
By dave haught





WING STRUCTURE: PLYWOOD RIBS, SPRUCE SPARS
ALUM LEADING & TRAILING EDGE
SHEETING, SPRUCE LAMINATED TIPS.

WING TIP PINS FIT
INTO HOLES IN TOP
OF STABILIZER

LANDING WIRES
& JAVELIN

POSITION OF FOLDED WING

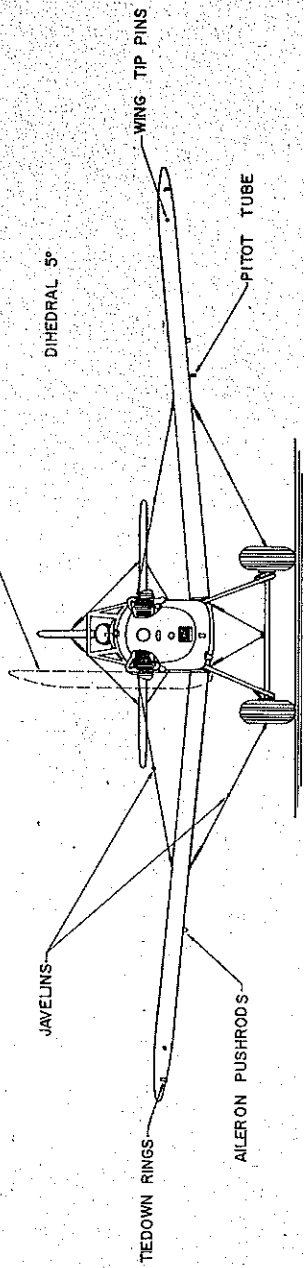
HOLES FOR
WING TIP PINS

PITOT TUBE

BLUE FIELD
WHITE STAR
RED CENTER

DIHEDRAL 5°

POSITION OF FOLDED WING

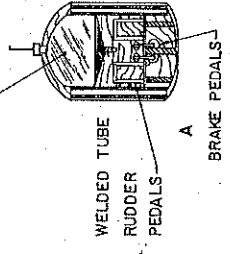


COCKPIT ARRANGEMENT:

- ① OIL PRESSURE
- ② SWITCHES
- ③ OIL TEMP.
- ④ TACH.
- ⑤ AIRSPEED
- ⑥ ALTIMETER
- ⑦ CLIMB
- ⑧ COMPASS
- ⑨ LANDING WIRE
- ⑩ CARB. HEAT
- ⑪ PRIMER
- ⑫ SKID BALL
- ⑬ STICK
- ⑭ TURNBUCKLE
- ⑮ THROTTLE
- ⑯ MIXTURE
- ⑰ AILERON PUSHROD
- ⑱ ELEVATOR PUSHROD

ALL WOOD RUDDER &
STABILIZER WITH ALUM.
LEADING EDGES

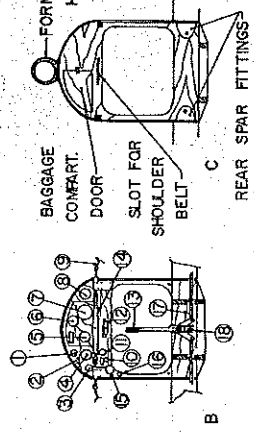
GAS TANK & GAUGE



WELDED TUBE
RUDDER
PEDALS

A

BRAKE PEDALS



BAGGAGE
COMPART.
DOOR

FORMED ALUM.
HEADREST

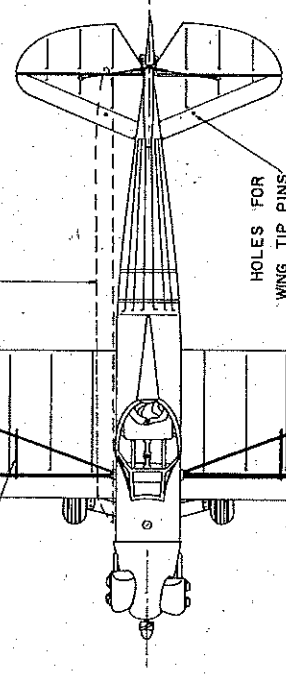
SLOT FOR
SHOULDER
BELT

C

REAR SPAR FITTINGS

D

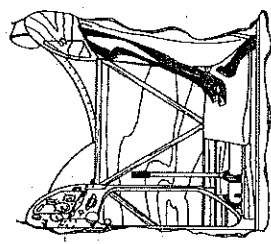
TYPICAL REAR SECTION



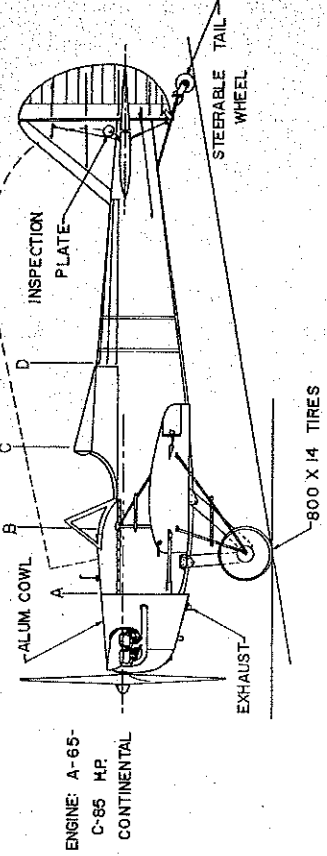
COLORS: FUSELAGE - TRUE BLUE
WING & STAB - BRIGHT YELLOW
FIN - YELLOW, RUDDER - BLUE VERTICAL
STRIPE WITH 7 RED & 6 WHITE STRIPES
FUSELAGE BAND - WHITE PNSTRIPES & RED BAND

ALL FUSELAGE SECTIONS ARE 1/2 SCALE

FUSELAGE STRUCTURE: PLYWOOD SIDES, SPRUCE LONGERONS &
STRINGERS, ALUM. SHEET TOP DECK.



COCKPIT DETAIL NOT TO
SCALE)



ENGINE: A-65-
C-65 HP
CONTINENTAL



REFERENCE: AIRPROGRESS AUG/SEPT 63

the FLY BABY designed by PETE BOWERS
drawn by DAVE HAUGHT

SPECIFICATIONS:
SPAN - 28"
CHORD - 4'6"
LENGTH - 19"
EMPTY WEIGHT - 605 lbs.
GROSS WEIGHT - 926 lbs.

PERFORMANCE:
CRUISE - 110
CLIMB - 900 FPM
LANDING - 4.6 MPH
RANGE - 300 MILES

tom of the fuselage is covered with silk or nylon to simulate the real fabric. This area gets continual abuse from prop blown sand so be sure it's well protected.

Mount the engine you plan to use and begin carving the cowl blocks to fit around it. Allow enough clearance around the engine for free air flow, yet retaining a good wall thickness. When the cowl is finished-sanded, fit the bike spoke anchors in place and then give the entire inside of the cowl a coat of epoxy to fuel-proof it.

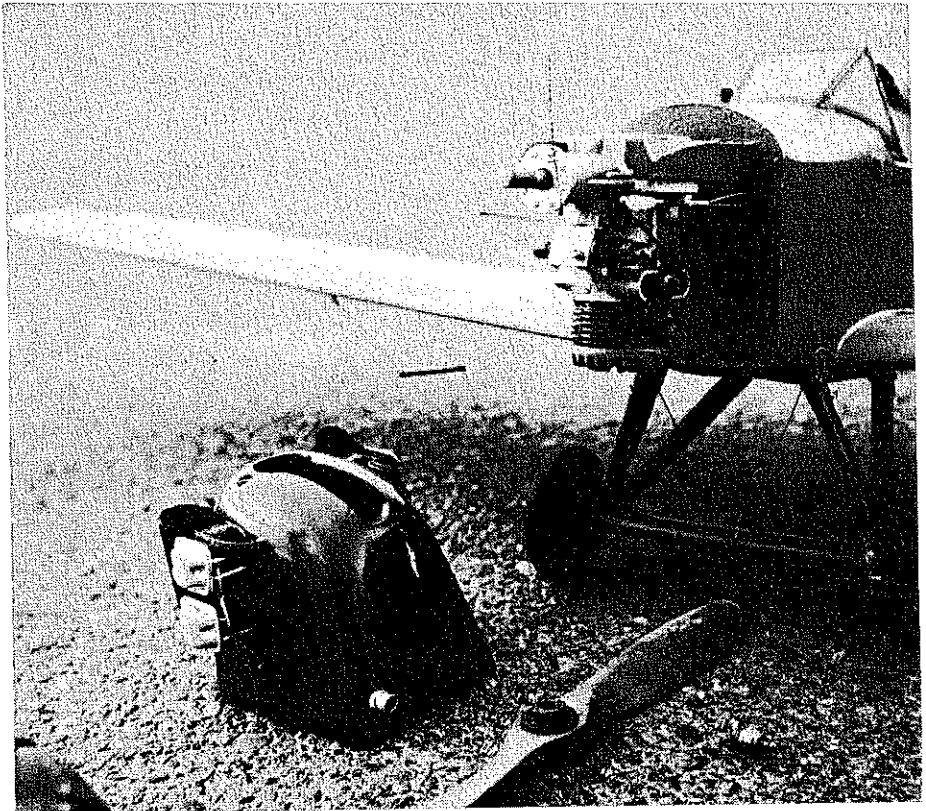
The model now is ready for finish. I recommend you use a technique you are most familiar with. Many homebuilts have hand-rubbed finishes and it would be best to match a real Fly Baby. The Fly Baby in the pictures was painted blue and yellow like a squadron of real Fly Babys out of Texas. Other colorful examples abound in homebuilder magazines.

Build the dummy engine as shown on the plan. You will find an extra amount of time here will really pay off. Begin with four Williams Brothers Le Rhone cylinders. Cut them down to the size on the drawing and fit the ends to match the contour of the cowling where they will mount. Make and glue the balsa and plywood heads and spacers to the ends of the cylinders, and drill a hole in each for the mounting screws. Mount the cylinders in the locations shown, using 4-40 screws and blind nuts. Add the rocker arms, spark plugs, and wires. Heat-form four plastic head covers ala canopy forming and glue them in place. The scoops are first cut from stiff paper and bent to the shapes shown. When satisfied with what you've created, repeat the process using thin brass shim stock. Paint the finished product black and epoxy it firmly in place.

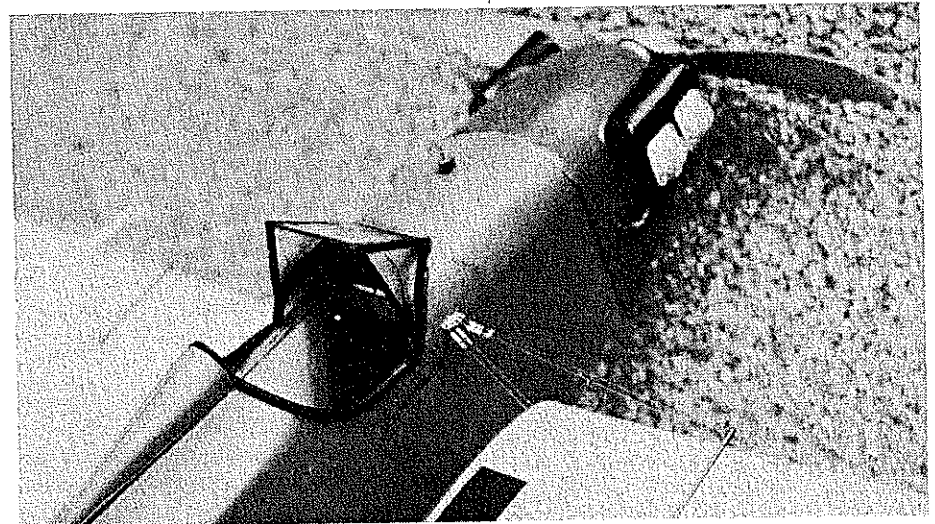
The dummy exhaust stacks are made from 3/32 diameter solder that is covered with black fuel tubing and then bent to the proper shapes. Drill the required holes and fit them securely in place and epoxy.

Rigging the model adds the final touch. Use solid control line wire throughout for the best scale effect. The plans show a simple trick for simulating the required

Continued on page 92

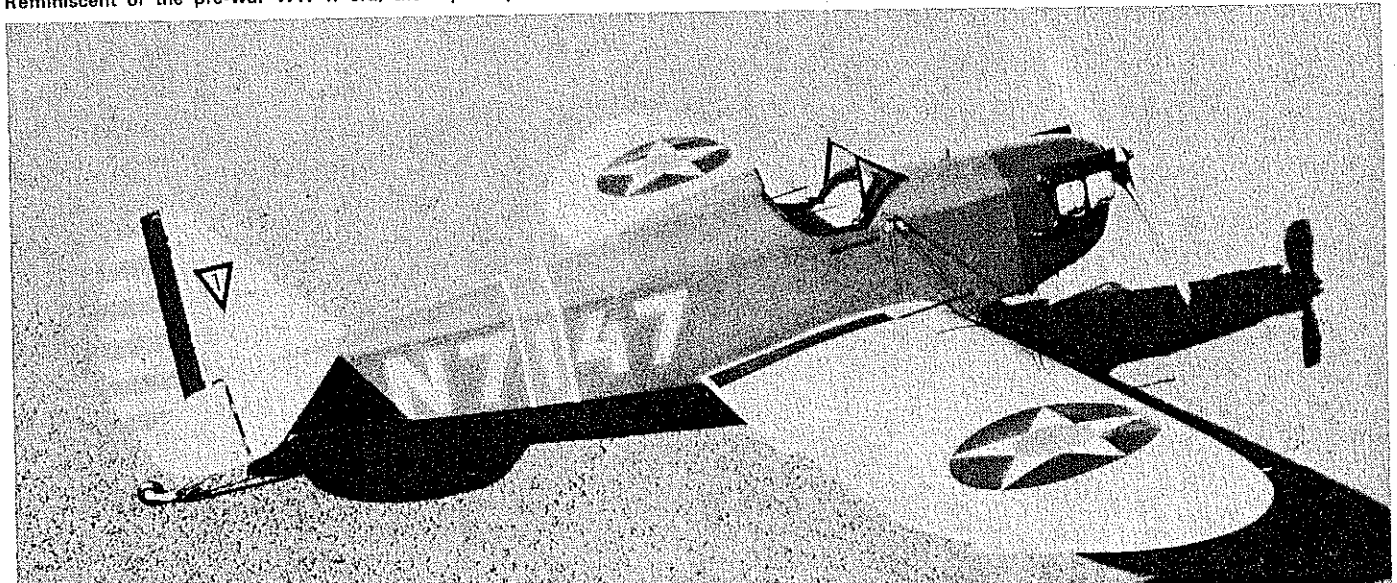


Two bicycle spokes hold on the cowling. Note the cooling and exit cutouts in the cowl, as well as the scale throttle link with engine pushrod. Simple gas tank cap adds a touch of realism.



Rigging must be neat—and scale. There are two of each wire which the javelins (the thin fore-and-aft braces) hold together in place. The cockpit and windscreen present no special problems.

Reminiscent of the pre-war WW II era, the Fly Baby sits awaiting a mission. Color scheme—typical of day—is similar to the real Fly Baby's.



GRISH AIRCRAFT TYPE PROPELLERS

Made from hardwood fully carved to true helical pitch and airfoil ready for sanding.

and
Tornado
PROPELLERS

ALL GRISH PROPELLERS ARE ENGINEERED TO TRUE HELICAL PITCH AND AIRFOIL FOR EFFICIENCY

5-3	2 Blade Tractor		each	5½-3	2 Blade Pusher	
5-4	5½-3	5½-4	30¢	5½-4	6-3	6-4
	6-3	6-4	35¢		8-6	85¢
7-4	7-6	7-8	50¢	9-6	10-6	\$1
8-4	8-6	8-8	65¢	3 Blade Tractor		
9-4	9-6	9-7		5-3	6-3	6-4
9-8	10-4	10-6	85¢	3 Blade Pusher		
11-4	11-6	11-8	\$1	6-3		50¢
12-4	12-5	12-6	\$1.50	Made of polyester, do not boil or color.		

AT YOUR DEALER

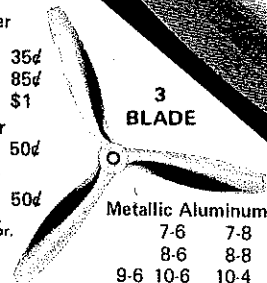
GRISH BROS.
ST. JOHN, INDIANA 46373

ALL SIZES IN 8 & 10 PITCH	18"	\$7.00
	20"	8.00
RIGHT HAND ROTATION	22"	10.00
	24"	13.00

3/8" BORE

AT YOUR DEALER

USE TO PROPEL AIR, CREATE THRUST AND BE PROPELLED BY AIR AT DISCRETION OF THE PURCHASER



3 BLADE

Metallic Aluminum Color			
7-6	7-8	\$1	
8-6	8-8	\$1.25	
9-6	10-6	10-4	\$1.50
Pusher		10-6	\$1.50

CL Scale/Gretz continued from page 34

pearance, but doesn't look as bad as the conventional model engine would. My plane was built entirely with Sig balsa and plywood. The wing and tail surfaces were covered with silk and then covered with light-weight Silkspan. The fuselage was covered with balsa and silk. The entire plane was then finished with Aero-Gloss dope mixed by myself to match the color of the original plane. I am presently building a Sig J-3 Cub with the same numbers on it as my own 1946 J-3 Cub (NC1464N). I have a set of plans for a scale RC model of a Piper Pawnee. Hope to build this plane next winter. I flew a Pawnee when I first started Ag flying and have 1,800 hours in a PA-25-235 Pawnee."

By way of Dick Ruckel, I've become aware of the Prop Busters Model Airplane Club of Cleveland, Ohio, which has a very active group of CL Scale fliers. Dick sent several good sketches of ideas which have been used by him and his peers. Coincidentally, one of the ideas was for building a spray dump mechanism in model crop dusters. The accompanying drawing is self-explanatory.

Dick also offered some constructive criticism of contest judging based on his experiences. With the competition season fast approaching, I think that his thoughts warrant some careful consideration.

From Dick's letter: "There's been a lot of comment about 'too much detail' on Sport Scale planes. At one local meet, all rules were discarded, and any model that had a cockpit (like Dick's Clip Wing Cub) went into AMA Scale! (At another contest) one of the judges protested (the Clip Wing being in AMA Scale)—he said it wasn't a scale enough model! The rules don't say I

Dave Cook, Secretary, Star Route, Granby, CO 80446. Stanley Pfof, DDS, NSS President, 1481 Howell Branch Road Winter Park, FL 32789.

League of Silent Flight, Box 39068, Chicago, IL 60639. Gordon Pearson, LSF President, 8232 Earhart Rd., South Lyon, MI 48178.

Dan Pruss, Rt. 2, Box 490, Plainfield, IL 60544.

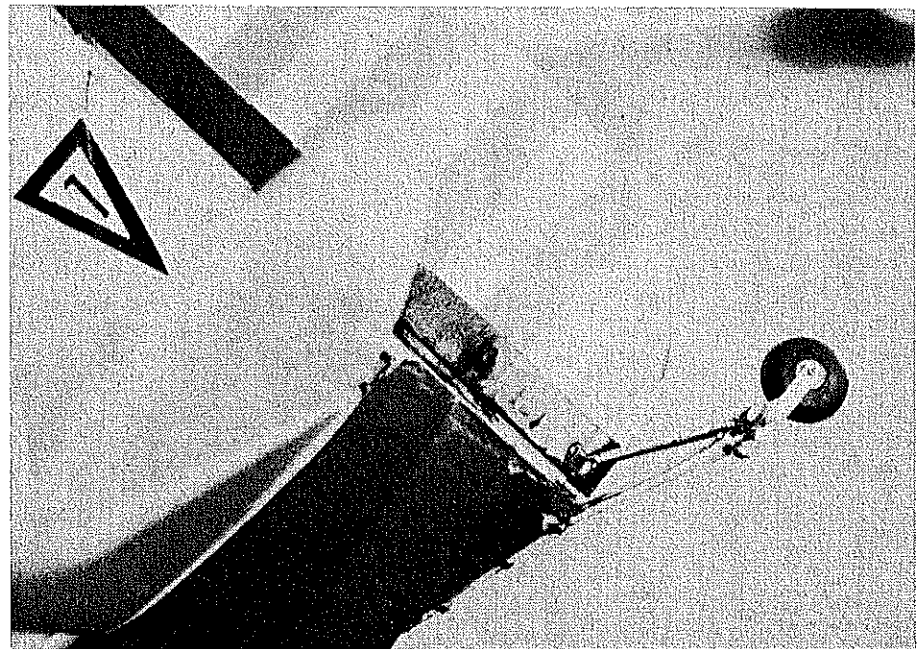
Fly Baby/Haught continued from page 33

turnbuckles and securing the wires at the same time. Cut the lengths of aluminum tubing shown and slip them over the ends of the wire, form a loop in the ends and feed it through the hole in the rigging tabs. Then slip the tubing over the end again and crimp the tubing to hold it all together. Refer to the pictures and plans for the rigging points and details. Don't forget to rig the rudder and stabilizer or the landing gear axle.

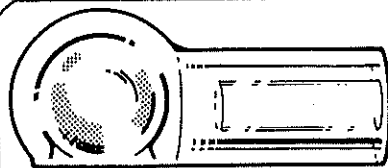
Fabricate the windshield, fuel cap, tie-downs, wing folding pins, and pitot tube, and epoxy in place. It's the little details that add to your final score, so don't overlook them. Well, does it look ready?

My experience in Control Line Scale competition has taught me the most valuable item you can take into the contest circle is experience. Practice flying your

Fly Baby in all kinds of conditions to become confident in the model and yourself. Put together an organized and thorough documentation booklet. Use the source on the plans for a good scale drawing and look through homebuilt magazines for pertinent photographs. Put the works into a nice binder and head for the next contest.



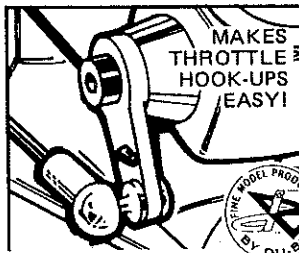
Close-up shot of the tail showing the scale steerable tailwheel linkage to the rudder by means of small-diameter stiff springs. (Also see Wischers' column.) All photographs by the author.



BOLT-ON LINK

This 3-piece ball link set (No. 180) is a must for all helicopters and is readily adaptable for rudder, elevator and servo linkage on R/C planes, boats or cars. Ball joint action eliminates binding and is neat and clean in appearance. Only 85¢

- TOUGH NYLON LINK SNAPS-ON AND HOLDS TIGHT



DU-BRO SNAP-ON BALL LINKS



TAKES CARE OF ANY MISALIGNMENT.

THREADED LINK

5-Piece ball link set (No. 181) is excellent for off-set steering, throttle and servo hookups. Includes steel ball assembly with 2-56 thread, washer, nut, threaded coupler and nylon ball link. Easily adjustable. Only 85¢



DU-BRO PRODUCTS INC.
480 BONNER ROAD
WAUCONDA, ILL. 60084

can't have cabin detail, they say the judges aren't to give points for it. If a guy wants to take a Nobler, and paint it like a Mustang, that's his business. But by the same token, if I want to take Sig's Cub kit, and end up with a model which looks like the original, and flies like it should—but does not conform to scale sizes, etc.—that's my business.

"We've spent months building our models to the rule book; it's imperative that it's used. If not, why bother building to it at all? We don't need more rules—just more competent judging! Besides, nobody ever said the idea of the event was to give away trophies to anybody who thinks they should have one. If you build by the rules, and fly by the rules, you'll probably win by the rules. If you're not ready to accept that, don't enter the event! One last thought, lest you think we're a bunch of 'screamers' down here, we take a punch and learn from it."

I think Dick stated very well several important points. Anyone who competes in any competitive event which is based on human subjective judging can relate to Dick's experiences. Perfect judging is an ideal we strive for but usually don't achieve. It's a simple fact of life that different people see things differently. A competitor must learn to accept that basic fact (and the winners know this), follow the rule book to the letter, and demand that others do the same. Only then will we see an improvement in judging. Luckily, singled out examples of questionable judging have seldom discouraged a true competitor. Thanks to Sport Scale, we are noticing a steady increase in participation in CL Scale flying at contests.

Scale Grapevine:...Don't forget! The deadline for submitting AMA rules change proposals for the next cycle is Sept. 1, 1978. The procedure for making a pro-

posal was noted in the Feb. '78 *Model Aviation*. . . Combined CL, FF, and RC Scale contests may be catching on. All three scale categories are being included at a St. Louis Scale Fly-In to be held July 2, 1978. The site will probably be Buder Park, according to Bob Underwood (4109 Concord Oaks, Dr.; St. Louis, MO 63128) who can furnish more details. . . The Cleveland Prop Busters are busy with a catchy idea that sounds like fun. Quoting Dick Ruckel again; "Take a scale drawing from any magazine (like a *Model Aviation* spread) and build a profile—to size! Mount a .010 and have a ball. We even have one with a carrier hook!"

Mike Gretz, Box 162, Montezuma, IA 50171.

CL Combat/Johnson

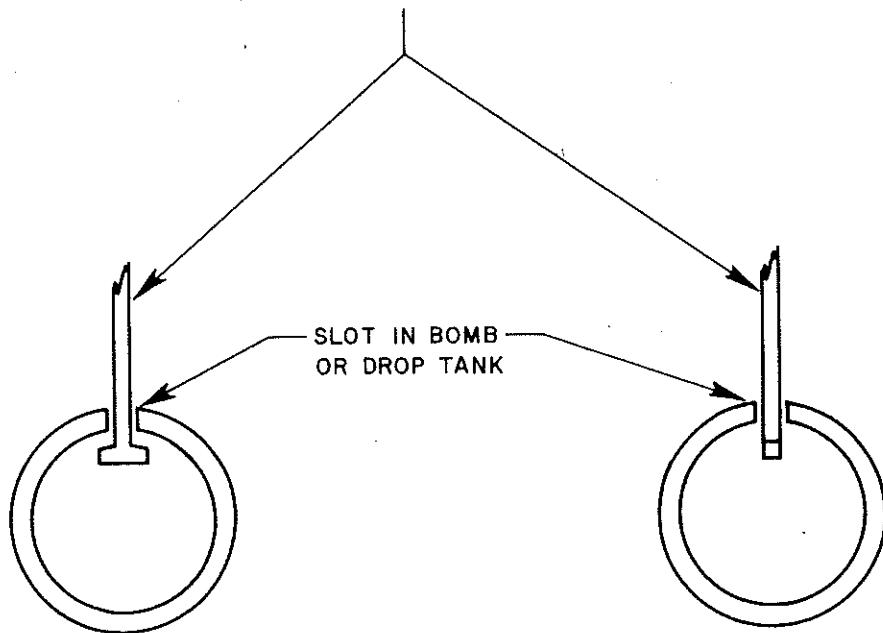
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made, or one or both planes hit the ground. I've had a lot of non-flying friends tell me how they like to watch combat, but remarked that it took so long to get a match ready only to have it end so quickly. I wonder how they'd like to have spent six hours building the plane that was destroyed or badly damaged in 35% of the matches.

Mick Tiernan had an excellent article in the January 1978 issue of *AeroModeller* commenting on the sad state of combat in Europe. If you're wondering who Mick Tiernan is, let me say that he's won the British Nationals, and is probably one of the four or five best FAI pilots in the world. Mick admits to being from the "old school" of combat, where planes went slower and lasted a long time, as did the matches. There's been a slow escalation here in the USA, but in Europe there was a radical change two years ago from 70-mph diesels to 90-100-mph glows. The current breed of horsepower motors has enabled even the rankest beginner to acquire the means for a 120-mph model held under control by his 60-mph skill and reflexes.

What to do for an easy to build Slow Combat ship? If you like to scratch-build a ship, I'd suggest a Cheater Slow by Dan

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