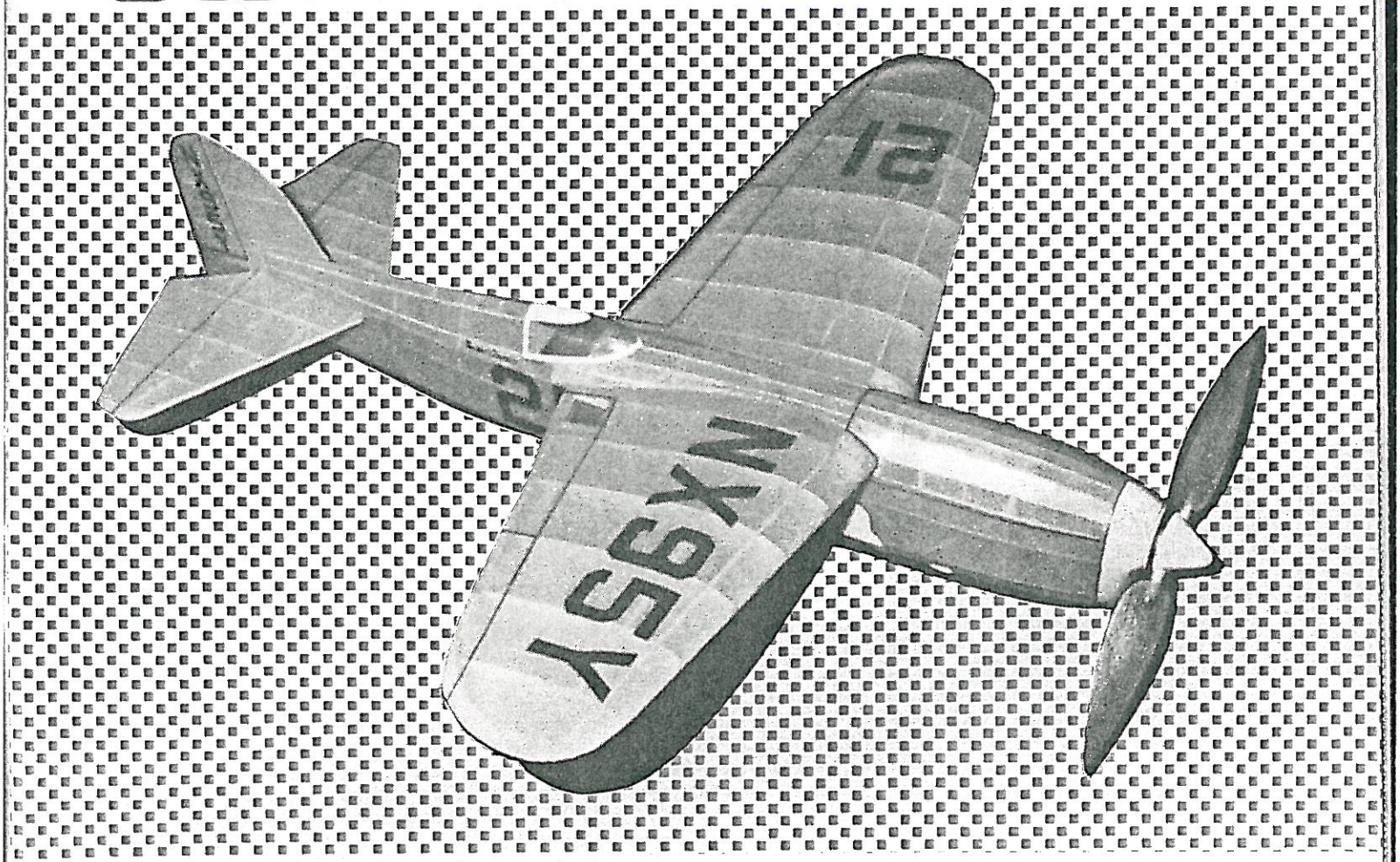
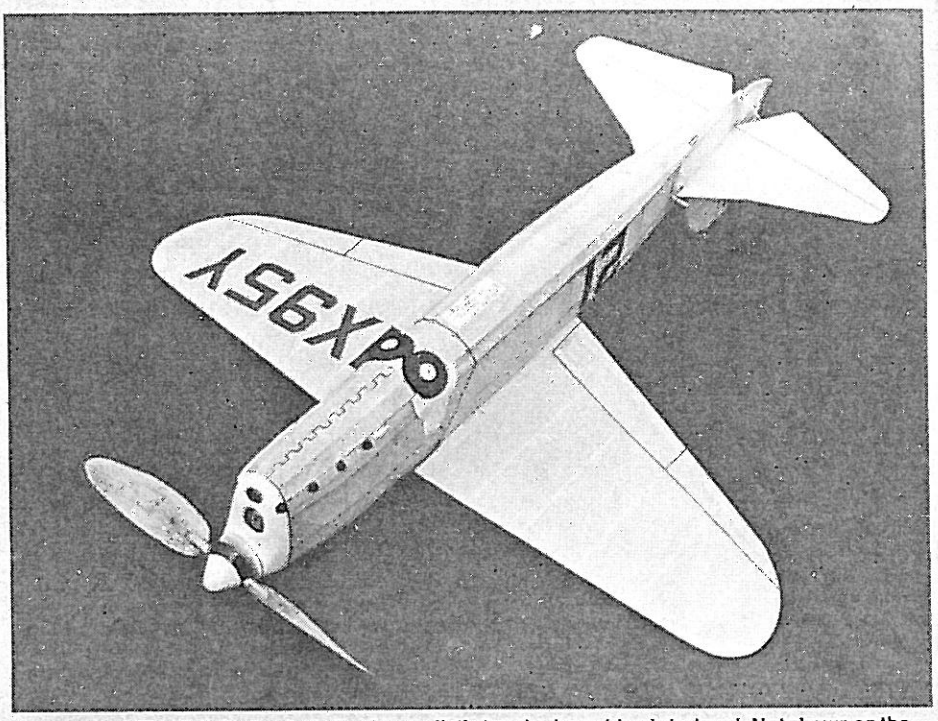
One of the most highly respected rubber scale models in the country—two firsts and a third at the FAC Scale Model Nats, for example—this prewar racing plane offers a naturally efficient layout—long fuselage, long nose, and shoulder wing. For the sport/scale fan that ensures long, pretty flights. ■ Bill Henn

During a race—first man down is out—Bill, at left, gets off smooth launch. Note parallel inclination of arm and ship in flight. The other ships appear to be Firecrackers. Final round of two survivors is tension filled—how many turns do you risk to top the other man? #259

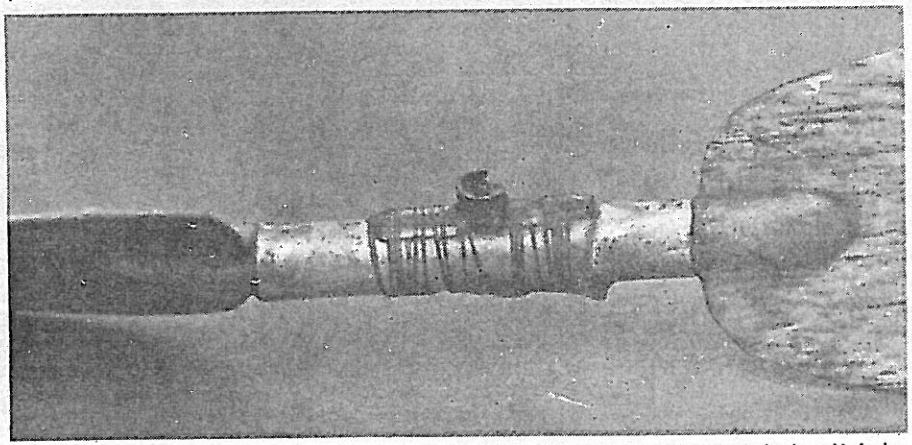
The Chambermaid



Made to order for our purposes, the full-scale machine has a long body and nose moment and a huge stab. The shoulder-wing configuration allows joining the wing and fuselage structures, with plenty of room underneath for rubber. Bill, who switched to this event in 1976, displays the bird that went out of sight on its third test flight, on 400 turns—4 minutes.



Bottoms up! Simulated retracted wheels a realistic touch—launching is by hand. Not shown on the plans is the triangular block between the wheels. Plenty of nice, not difficult, detailing.



Bill favors 1/64 plywood prop blade laminated with 1/32 balsa on top (see form on plan) and tubular aluminum hub. Note simple free-wheeling device epoxied and wrapped on hub. The 10–14 prop is driven by four strands of 3/16 x 30 FAI rubber—¼ in. Sig is OK. Although this motor will take at least 1250 turns before blowing, he finds 950 turns max gave comfortable win margin.

THE Connecticut Flying Aces Club, originators of the P-Nut Scale, can also be credited with starting a raceplane movement which has been gaining in popularity over the last few years. The raceplane events are divided into three categories, the Shell Speed Dash, the Greve, and Thompson Trophy Races. The Shell Race is strictly an endurance event but models competing in the Greve and Thompson are mass launched and fly against each other instead of a stop watch. Repeated heats are flown with the first model down eliminated each time until finally only the winner remains. There is no static scoring but the models must be reasonably accurate replicas of actual aircraft that were flown in, or designed for, the pre-WW II Thompson or Greve races. High-wing monoplanes are not allowed and wing span is limited to 24 inches. Models of racers which had retractable landing gear can be built with wheels in the retracted position. A complete set of rules for these raceplane events appeared in the 3/77 issue of *Model Builder* magazine.

My interest in this fascinating scale category was aroused early in 1976 and I began giving a lot of thought to what type of model would be most competitive. Since high-wing planes were out, the next best bet seemed to be a shoulder-wing job with a low thrust line. Mr. Smoothie, an obscure racer designed for the 1938 Thompson Trophy Race, seemed to fit the bill perfectly. I obtained a set of plans for a 24-in. Smoothie from Art Hall, P.O.Box 485, Winter Park, Florida 32789 and finished the model in time for the Fall FAC Meet. Even though the craft came out quite heavy it placed third in the Shell and second in the Thompson. Mr. Smoothie was stable under power and capable of flights of over a minute. What really impressed me were its excellent glide characteristics. Most of the other racers I had observed at the FAC meet, generally smaller low-wing types, practically fell out of the sky once the prop run was over. This convinced me that a large shoulder wing model was the way to go.

The following winter I built another simplified 24-in. Smoothie, which was almost ½ ounce lighter than its predecessor. The performance of this model was startling and flights of 85–90 seconds were not unusual.

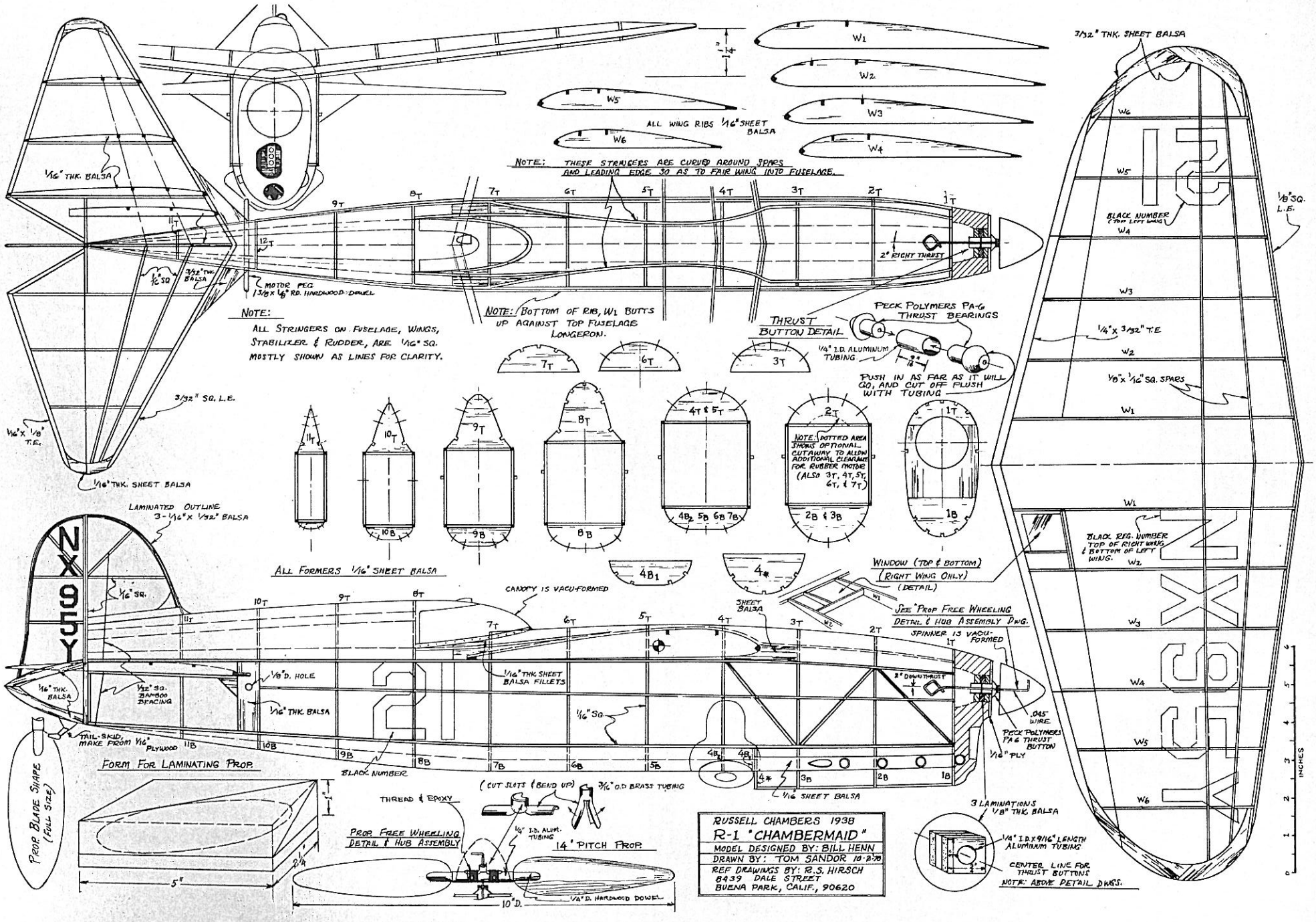
Dissatisfaction with the small wing area of the Smoothie led me on a search for an even better subject. The Chambermaid, another 1938 shoulder-wing racer, appeared to have great potential. At the FAC meet I had seen a well detailed P-Nut version of this aircraft (racewings plan by Pres Bruning) fly very well.

The Chambermaid has a long body and nose movement, plenty of wing area and a huge stab. Furthermore, the wing is mounted in such a position that the spars, leading and trailing edges can be joined within the fuselage and still have enough room underneath for the rubber motor. This adds a significant amount of strength with little addition of weight. My final, and equally important, reason for choosing the Chambermaid was that I found its streamlined, uncluttered appearance very pleasing. Experience has taught me that I cannot exert a sincere effort into building a model of an airplane which does not turn me on.

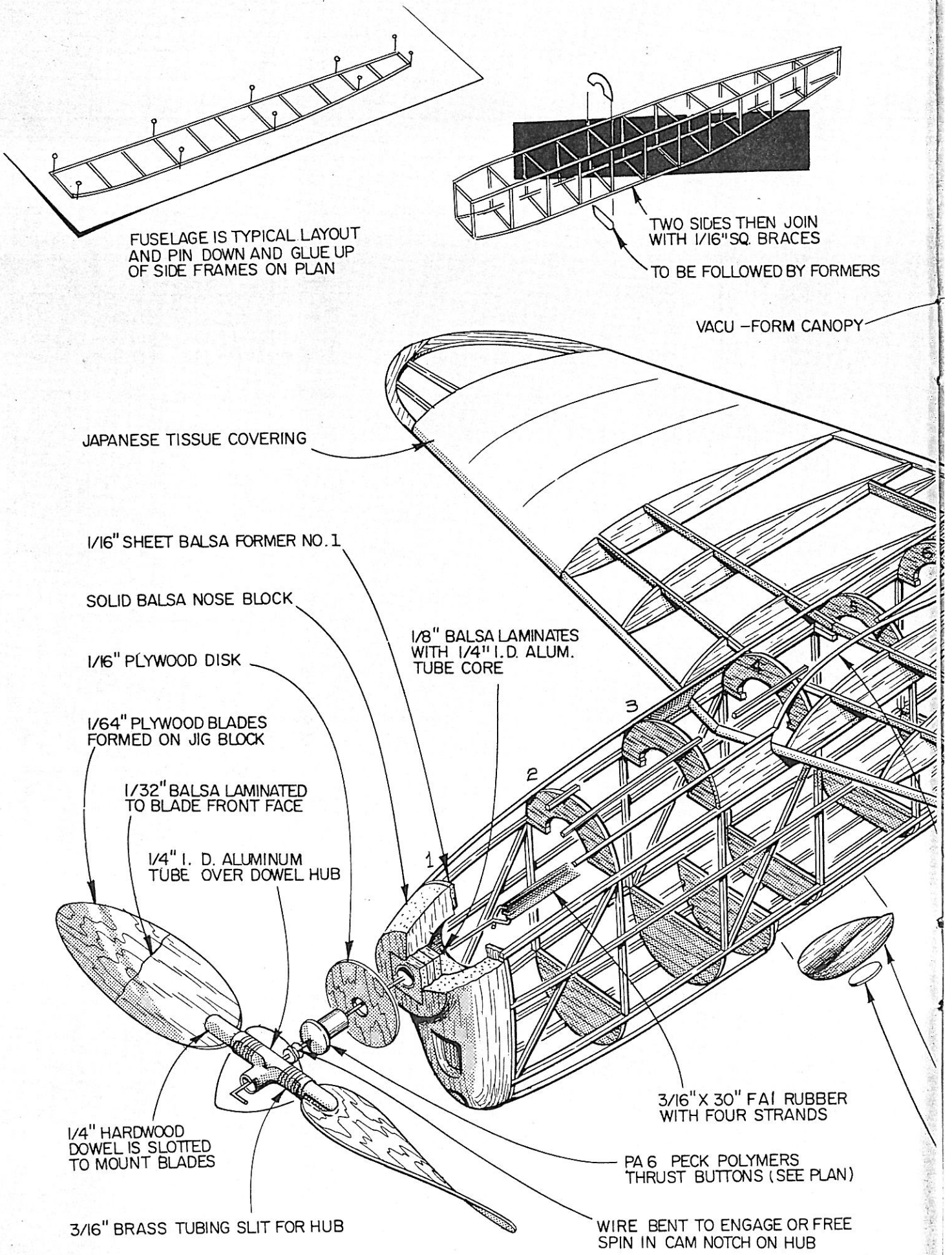
The use of opaque projector and a Hertz 3-view made it a simple matter to draw the outline of this aircraft to the desired size. This is a quick and easy way to make a plan with sufficient accuracy for FAC scale.

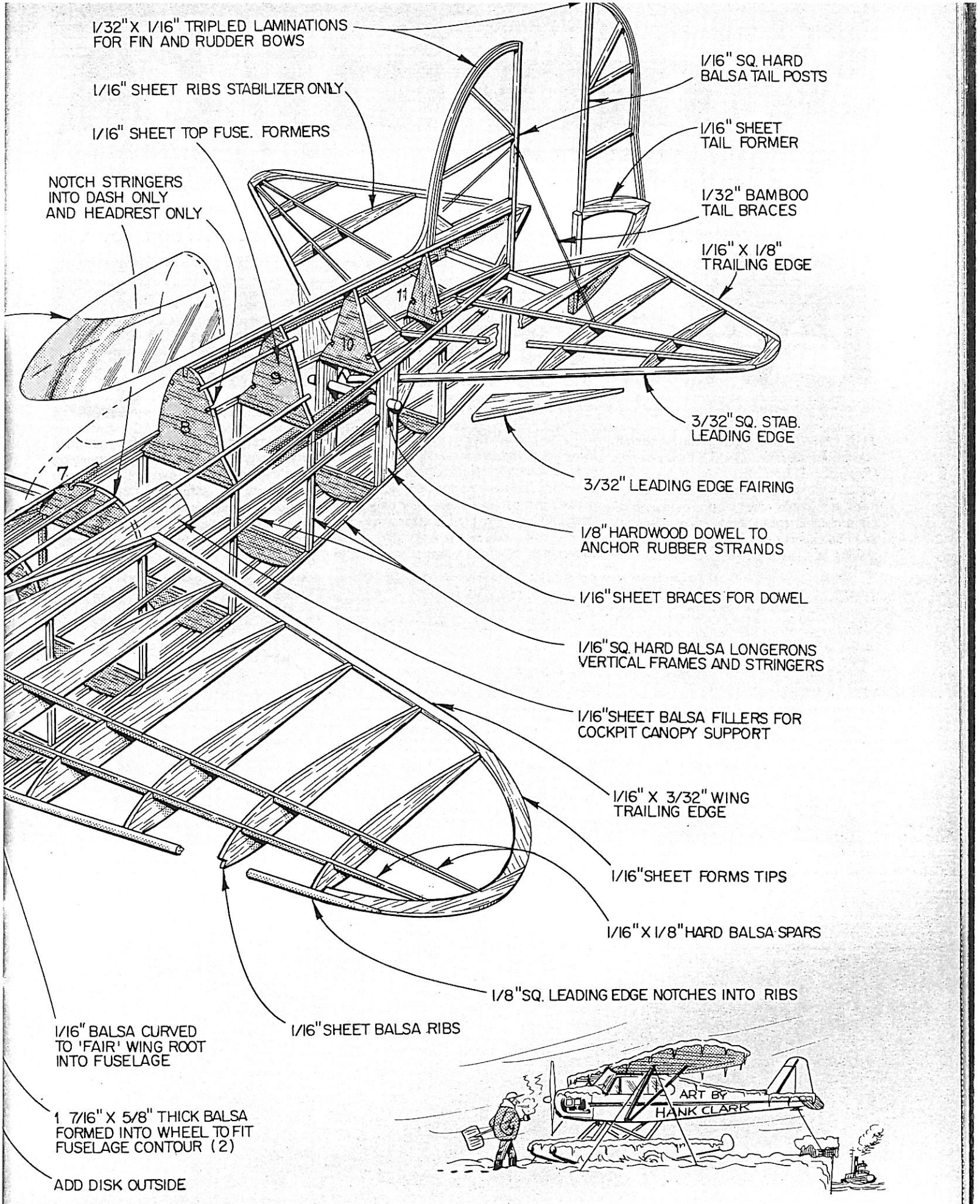
I finished the model a week prior to the Spring 1977 FAC meet. On its first test flight, with about 200 turns, Chambermaid climbed out in a nice right pattern and transitioned smoothly into a flat, slow glide in the same direction. The model displayed the same stable characteristics with 400 turns. On the third flight with 800 turns packed in I was shocked to the bird cork-

continued on page 113



FULL-SIZE PLANS AVAILABLE . . SEE PAGE 120


FUSELAGE IS TYPICAL LAYOUT AND PIN DOWN AND GLUE UP OF SIDE FRAMES ON PLAN
TWO SIDES THEN JOIN WITH 1/16" SQ. BRACES
TO BE FOLLOWED BY FORMERS
VACU-FORM CANOPY
JAPANESE TISSUE COVERING
1/16" SHEET BALSA FORMER NO. 1
SOLID BALSA NOSE BLOCK
1/16" PLYWOOD DISK
1/64" PLYWOOD BLADES FORMED ON JIG BLOCK
1/32" BALSA LAMINATED TO BLADE FRONT FACE
1/4" I. D. ALUMINUM TUBE OVER DOWEL HUB
1/8" BALSA LAMINATES WITH 1/4" I.D. ALUM. TUBE CORE
1
2
3
1/4" HARDWOOD DOWEL IS SLOTTED TO MOUNT BLADES
3/16" BRASS TUBING SLIT FOR HUB
3/16" X 30" FAI RUBBER WITH FOUR STRANDS
PA 6 PECK POLYMERS THRUST BUTTONS (SEE PLAN)
WIRE BENT TO ENGAGE OR FREE SPIN IN CAM NOTCH ON HUB


1/32" X 1/16" TRIPLED LAMINATIONS FOR FIN AND RUDDER BOWS
1/16" SQ. HARD BALSA TAIL POSTS
1/16" SHEET RIBS STABILIZER ONLY
1/16" SHEET TOP FUSE. FORMERS
1/16" SHEET TAIL FORMER
NOTCH STRINGERS INTO DASH ONLY AND HEADREST ONLY
1/32" BAMBOO TAIL BRACES
1/16" X 1/8" TRAILING EDGE
3/32" SQ. STAB. LEADING EDGE
3/32" LEADING EDGE FAIRING
1/8" HARDWOOD DOWEL TO ANCHOR RUBBER STRANDS
1/16" SHEET BRACES FOR DOWEL
1/16" SQ. HARD BALSA LONGERONS VERTICAL FRAMES AND STRINGERS
1/16" SHEET BALSA FILLERS FOR COCKPIT CANOPY SUPPORT
1/16" X 3/32" WING TRAILING EDGE
1/16" SHEET FORMS TIPS
1/16" X 1/8" HARD BALSA SPARS
1/8" SQ. LEADING EDGE NOTCHES INTO RIBS
1/16" BALSA CURVED TO 'FAIR' WING ROOT INTO FUSELAGE
1/16" SHEET BALSA RIBS
1 7/16" X 5/8" THICK BALSA FORMED INTO WHEEL TO FIT FUSELAGE CONTOUR (2)
ADD DISK OUTSIDE
ART BY HANK CLARK

for some of the new fliers. We permitted a running launch by an assistant which greatly helped those experiencing difficulty. Two problems arise on launch. One of these is the torque reaction to be left, and the second is that the engine leans out or quits completely on a hard launch. The solution to the first is a hard javelin type launch while the second problem is eased by a soft launch. Experimentation with air pickup position and tank height has usually helped us solve the problem. If the airplane nose is dropped just prior to launch, the engine can be made to load up some, allowing such a hard throw that some are accused of making the first pylon on muscle power alone.

In summary, we have operated largely within the framework provided by the AMA 1978–79 Provisional Rules for 1/2A Pylon and have had lots of fun, a successful season, and have enticed a number of average fliers into a competitive event. We now have another vehicle for getting average modelers interested in a competitive racing event. I feel that we should jealously guard against attempts to substantially change its essential nature. A lesson from past history is available in the process by which many present AMA events have evolved from a very simple but good idea into a very specialized event with only a small elite number of participants. If permitted, the specialists will take over and refine this event around their capabilities and interests. The average modeler will not have the machine shop, extra dollars, access to special parts and fuels, or have the skill and experience to construct a competitive racing machine. In larger communities there will still be enough fliers for a race, but in the smaller communities interest will dwindle until the spark goes out. Certainly the name of the game is racing, but let us keep the original objectives in mind and keep this an event for the "average" modeler with "inexpensive and easily constructed" planes.

Chambermaid/Henn

continued from page 50

screw up like a Wakefield and fly OOS in about 4 minutes. By some miracle, about an hour later, I retrieved the model approximately a mile downwind of where it was released. It had flown over a small forest, several communities and landed in the only open area in the vicinity. Needless to say, it was kept grounded until the contest, where it easily won the Shell and Greve Races and placed third in Scale.

During the morning of the meet, in still damp air, two flights were clocked at about 1:45 and another at 1:59.

The model wasn't flown again for a year until the Spring 1978 FAC meet where it again won the Shell and the Greve Races. During July 1978 it was entered in the FAC Nats which were held in Johnsville, PA. On the first day of the meet a 15-minute thermal flight earned Chambermaid second place in Scale. The next day it was nudged out of first place by a few seconds in the Shell by my own Mr. Smoothie (contestants may fly two planes in this event) which caught some good air on one flight and maxed. My son Billy talked me into using Smoothie instead of the better flying Chambermaid in the Thompson Race. A stiff breeze was blowing and the models were to be launched dangerously close to the edge of the field. It turned out Billy was right since even the Smoothie flew beyond the field into a tree and was disqualified.

Chambermaid's latest accomplishment was the winning of the Shell and Greve Races (during a rainstorm) at the October 1978 FAC bash. The competition encountered at the Connecticut meets is about the toughest to be found anywhere. Winning any kind of a rubber FF event in Yankee territory is never easy.

Construction of the model is straightforward with no unusual or difficult aspects. Choice of wood is paramount. Use the lightest contest balsa you can find for the fuselage formers, nose block, wing ribs, wing tips and all the rudder and stabilizer parts. The rest of the components are constructed from slightly firmer wood, with the exception of the fuselage longerons which are hard balsa.

The fuselage has flat sides which makes for easy assembly. Once assembled, the sides can be joined in a box-like fashion

using 1/16" sq. crosspieces. The formers can then be glued to these crosspieces. Most of the formers are not notched. This saves some sanding and eliminates the possibility of misaligned stringers due to improperly cut notches.

When constructing the wings, jack up the trailing edge near the tips so as to build in about 3/16 in. washout. This is important as it improves the stability of the model. Wing washes that are built in prior to covering are more permanent than those twisted in after completion.

A stabilizer built as that shown on the plan will be far superior to a simple flat-bottom structure. It will be stronger, more warp resistant and will generate more lift allowing for a further aft center of gravity. A greater latitude with the length and weight of the rubber motor will be permitted due to this more rearward balance point.

The rudder outline is laminated from three strips of 1/16 × 1/32 balsa formed around a cardboard form. Soak the strips in water for a few minutes then wipe them off with a paper napkin. Apply a slightly thinned water base glue to the middle strip, slap them all together and work them around the form. Fasten the strips to the form with small pieces of masking tape. When dry, the resultant structure will have adequate strength and be much lighter than one laminated from basswood or built up in the conventional manner using sheetwood. The importance of keeping the tail components light cannot be overemphasized.

Mount the wings on the fuselage prior to covering and before installing the lowest of the top forward section stringers. Simply poke the protruding ends of the leading edge, trailing edge and spars through the fuselage until the bottom of rib number one butts up against the top longeron. Set the incidence and dihedral as shown on the plan and glue the whole works together. The bottom of the junction of the trailing edges may have to be trimmed to allow sufficient clearance for the rubber motor. The stringers previously omitted can now be installed. They will have to be curved over the wing spars as shown on the photographs and plans so as to fair the wing into the fuselage. Some small sections of 1/16" sheeting should be added to the fuselage around the points where the wing attaches to add strength and facilitate covering.

The removable part of the nose block is constructed from a disk of 1/16 plywood glued to 3 laminations of ⅛" balsa cross grained.

Make the thrust bearing in the following manner. Cut a piece of ¼" I.D. aluminum tubing 9/16" long. Push a Peck Polymers (PA-6) nylon bearing all the way into one end of the tube. It should be a tight press fit. Drive another nylon bearing into the other end of the tube until it butts up against its mate and cut it off flush with the end of the tubing. Install this completed assembly into the nose button with at least 2° down- and right-thrust. This type of bearing is great for Coupes, Wakes, and Unlimiteds. Use a longer piece of aluminum tubing and drill out the nylon bushings to accommodate heavier wire.

The fuselage and wing assembly and tail components can now be covered. The color of the actual airplane was creme. Yellow is the closet color available in Japanese Tissue. I used white tissue and air brushed it lightly with a thin mixture of nitrate dope and "mud" color Floquil railroad paint. Use care not to warp the lightly constructed rudder and stabilizer. When covering such fragile structures I generally preshrink the tissue on a frame prior to application. The additional shrinking which results from doping is enough to remove wrinkles and pull out slack.

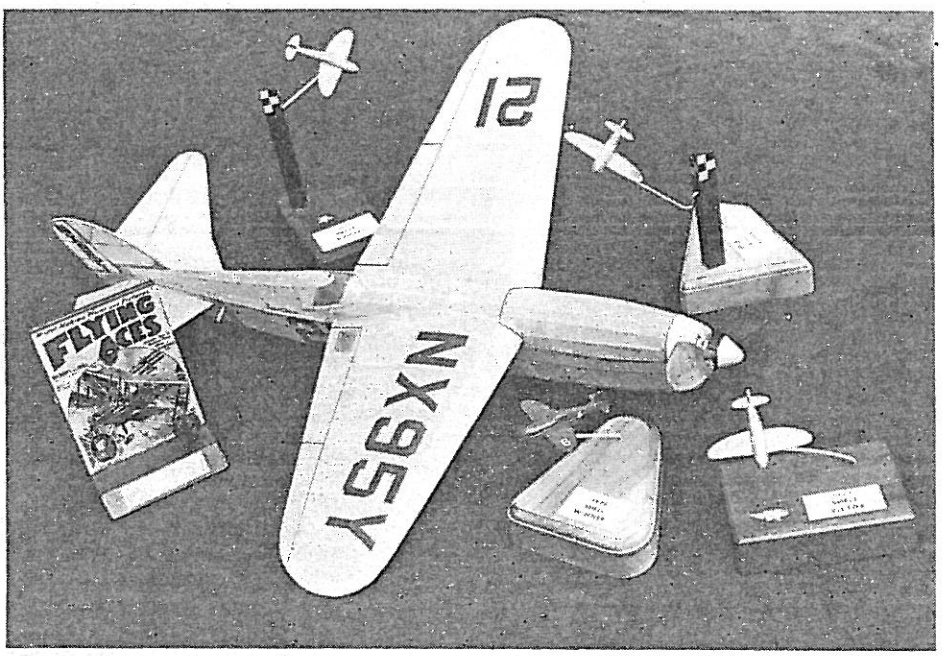
After covering, the rudder and stabilizer can be attached to the fuselage. Don't fill in the area above the stab until after trimming to allow for incidence adjustments.

The cockpit canopy and spinner are vacu-formed. A single wheel 1-7/16" in diameter and ⅝" thick can be formed by turning a piece of balsa on an electric drill. A piece of brass tubing can be driven through the balsa and Hot Stuffed to facilitate installation in the drill chuck. When the wheel is completed, slice it in half and fit to the bottom of the fuselage.

The combination of a 10" diameter × 14" pitch prop with 4 strands of 3/16 × 30 FAI rubber worked well on both Mr. Smoothie and the Chambermaid. If you don't have the FAI stuff, ¼ Sig will do just as well. The Sig rubber usually takes a few more turns but tires more quickly. I've wound both types to destruction while clamped in a bench vise and have found that they blow at about 1250–1280 turns. When flying in contests I have never put in more than 950 winds simply because that was all that was necessary to win by a comfortable margin.

I prefer to use laminated props with aluminum tubing hubs on my race planes because they are easy to build and will withstand much abuse. The blades are made from one sheet of 1/64 plywood with a piece of 1/32 balsa laminated on top. The form shown on the plan can be used for this purpose.

This form can also be used as a jig to set the blades into the hub at the proper angle. Details for the hub and free-wheeling device



The Chambermaid and some of the trophies it has won. He preshrinks Japanese tissue to avoid warping and depends on dope to remove wrinkles and pull out slack. Cockpit and prop spinner are vacu-formed. At FAC Nats, while we watched it, the ship put up two flights at 1:45 and 1:59.

are shown on the plans and photographs. If carefully constructed, this type of free wheeler is rugged and dependable.

This is an extremely easy model to trim and it is likely only minor adjustments will be necessary to make it fly well. Adjusting the glide of a small model with a large free-wheeling prop is difficult so the following procedure is recommended.

Prior to installing the rubber motor and prop balance the model at the point shown on the plan by adding clay to the nose. Next, test glide the model and make appropriate adjustments to the stab and rudder to obtain a floating glide with a hardly perceptible right turn. It is important that the glide turn should not be too tight so as to prevent spiralling in under power.

When this is accomplished, remove the clay, install the prop and rubber motor, wind the slack out of the motor, and rebalance at the same point. If you are lucky, it will balance as mine did without addition of extra weight. All up weight of my model with a 14.5 gram motor was 67 grams. Theoretically, it is grossly underpowered. If your model comes out much lighter, equip it with a D.T. and use it for category III Unlimited. If it is heavier you may have to use more rubber to get it to fly well. A longer motor (36–40") made from 4 strands of braided ¼" FAI rubber might do the trick. Braiding the rubber helps to reduce the weight shift which occurs when excessively long motors run out and bunch up.

After braiding a 40 inch motor will measure less than 36 inches. It will take about 1500 turns and keep a 10/14 prop spinning at a good clip for over a minute. I never used such a motor in my Chambermaid but did use one with good results in my San Francisco I which, although a larger and heavier model, has the same distance between the rear motor peg and prop hook.

After the motor and prop are installed, crank in about 200 turns and give your model a heave. It should climb gently to the right. If it doesn't turn, shim the nose plug so as to add right-thrust. Minor stalling or diving tendencies can also be corrected with thrust adjustments. Try to get a good power pattern without disturbing the rudder and elevator settings so as to preserve the glide. If your model seems to be behaving, increase the number of turns with each successive flight. When properly adjusted you will be amazed as to how high the model will climb and how well it will glide even with that big free wheeler up front.

I would be pleased to hear from anyone who builds the model. My address is 53 Hall St., Clifton, NJ 07014.

Jungmeister/McClure

continued from page 62

Power for the prototype and Bü 131A production Jungmann was provided by the Hirth HM 60R inverted in-line four-cylinder, aircooled engine, rated at 80 hp. Salient specifications, Bü 131A are given in accompanying tables.

Extensive early acceptance and the consequent expanding production of the Bü 131A, Jungmann, motivated a relocation of the Bücker facilities to Rangsdorf Airport in 1935. There, production of the improved Bü 131B was initiated in early 1936. Concurrently, 1935/1936, the more historic Bücker Bü 133 Jungmeister, was designed, developed (prototype), and brought into early production. Briefly deferring discussion and description of the Bü 133, Jungmeister, salient specifications, Bü 131B, Jungmann, are given in the accompanying table.

Changes, as compared to the Bü 131A, were essentially due to employment of the new engine, the Hirth HM 504 inverted in-line four-cylinder aircooled, rated at 105 hp.

German production of the Bü 131, Jungmann, having been initiated in later 1934, continued into 1940, at which time other Bücker/Andersson designs were in production (e.g., Bü 181, Bestmann, monoplane). It is known that several thousand Jungmann machines were built in Germany alone, with hundreds more built in Spain and Japan. Some 200 Jungmanns were used by the Japanese Navy while over a thousand were constructed for the Japanese Army. Some Spanish examples of the Bü 131 were not completed until well into the 1960's.

It is usually concluded that the Bücker biplanes were never actively armed aircraft. However, it is known that from 1942 on,