THIS MODEL has evolved from a design that originated in 1978 about the time that K&B introduced the 3.5 engine. I had tired of Formula I Pylon Racing, and at about the same time my son, Joe Jr., became interested in Free Flight. Helping him rekindled my interest.

The first Buck was a 650 of higher aspect ratio, longer fuselage and larger stab. It flew quite well, but it was difficult to keep in trim, and it did not transition from power to glide as well as I thought it should. The model met its demise because of pilot error—I didn't hook up the variable-incidence tail (V.I.T.) while test flying. This mistake led to two improvements: a new airplane and a lesson from Doug Galbreath, who advised that I replace the release wires on the Seelig timer with reconfigured wires that captivate the auto-rudder and V.I.T. lines.

The new ship was very similar to the 650 version. I changed the wing and stab construction to add stiffness and did away with the metal fuel tank, switching to a pacifier. (It's hard to keep the fuel from foaming in a rigid tank. I have seen many fliers fighting what they believe is an engine problem only to find out, after much frustration and sometimes the loss of an airplane, that the trouble was foaming of the fuel.)

This second version was a much more consistent performer, but it was just about all the airplane the 3.5 could handle. With the advent of the K&B 3.25 and my desire to have a ship that could be flown in both Classes A and B with this combination of engines, it became evident that Buck had to lose some inches.

The wing was cut down to 600 squares by taking out some of the center section. This also reduced the aspect ratio, which helped accommodate the increased structural loads of the higher speed. I flew this combination successfully for about a year, but I was never completely happy with the transition from power to glide. As the speed increased during the climb, it had a tendency to bear left and flatten its attitude. Normal adjustments did not seem to help.

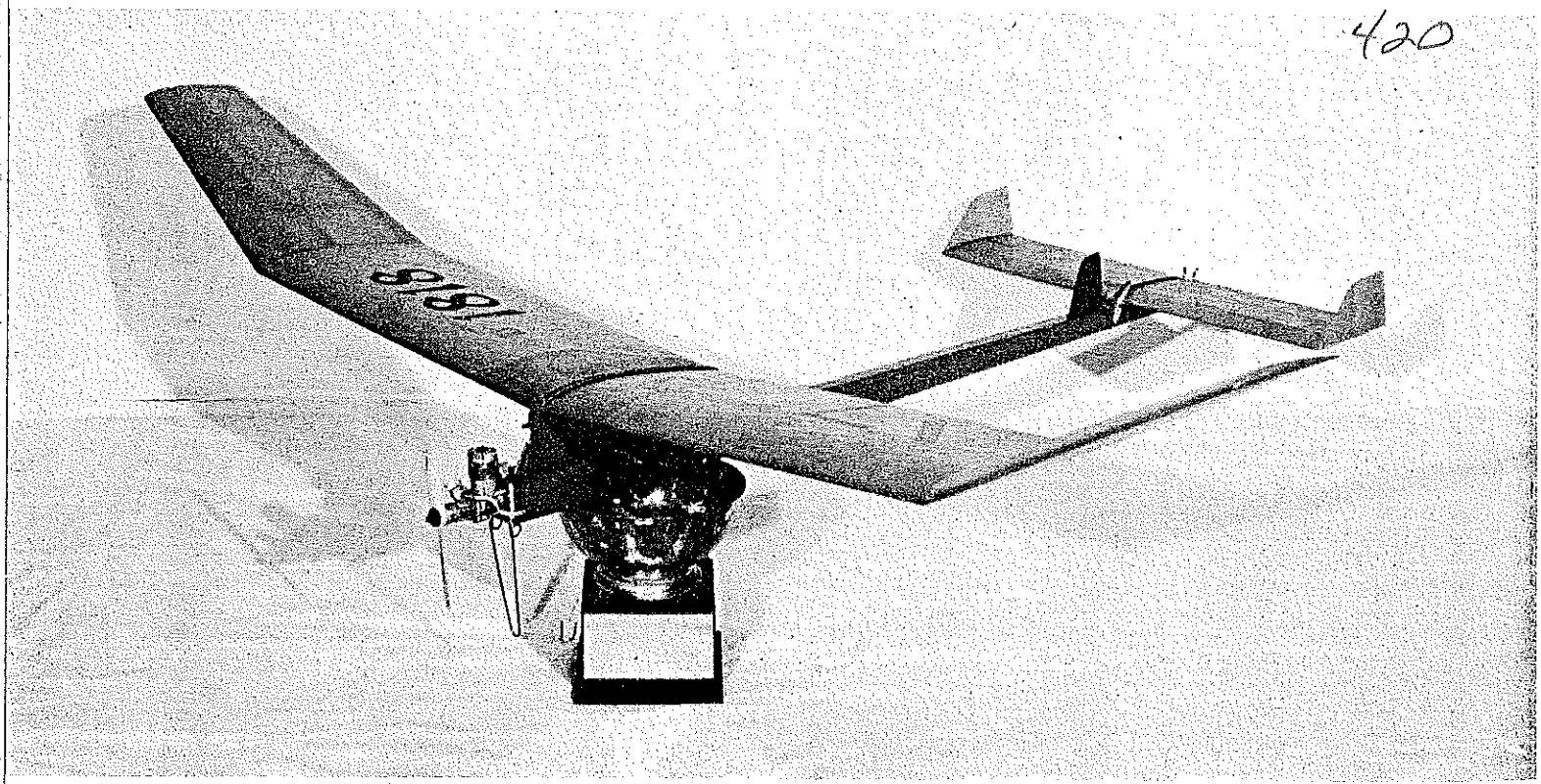
During the winter a new, smaller and lighter stab was built, and the fuselage was shortened about 1½ in. These modifications moved the center of gravity from 70% to 65% of the wing and required more angular difference between the wing and stabilizer to trim out the glide, all of which had the happy effect of not only improving the transition, but Buck now gets much higher under power.

What was once docile with the K&B 3.25 now became a real "hummer," and using the K&B 3.5, it's "awesome." The Buck configuration, as it is now, is one of only three airplanes I've owned that I would not change if I were to build another.

I had one opportunity several years ago to fly Buck for a full flight in dead calm conditions at the U.S. Free Flight Championships. Walt Ghio sponsored a single-flight, no-time-limit Power event at 6:30 a.m.—the same time and day as Bob Meuser's single-flight Mulvihill event. Buck won with 9:40, using a 13-sec. engine run; it dethermalized from about 100 ft. Incidentally, it beat the best Mulvihill time.

Along the way, versions for Class CD and ½A were built and flown. The CD is 850 sq. in., the ½A 270 sq. in. All sizes fly well, and all are relatively easy to adjust—especially if you have had experience with auto-surfaced Power ships.

Before getting briefly into the construction aspect, I think some explanation of the fuel system might be useful. As mentioned earlier, I switched from the conventional metal tank to a pacifier tank with outstanding



It looks so serene sitting here. Under power with a hot .19 or .21, it's something else. The author, former Wakefield World Champion and top RC Formula One Pylon Racer for a time, put his design talents to work and produced this hot FF which is more than a match for most any other model.

Buck 600

results. I would highly recommend the pacifier system to anyone using today's high-revving and less-than-perfectly-balanced engines. If you *must* have a metal tank, I suggest you pack it in as much foam rubber as you can get around it; this is to absorb vibration.

My pacifier system incorporates a pinch-off device (detailed on the plan) which facilitates the use of a single fuel tube. No Ts or Ys are used, nor anything else that will detract from the reliability of the system. The pacifier tank is assembled in the normal manner, then it is covered with a small party balloon with a few drops of rubber lube inside it. This provides some degree of chafing protection for the tank in its compartment. In all the years I've used this system, I have not experienced a pacifier failure.

Construction. For best performance you should try to build Buck between 22 and 25 ounces, so care in the selection of wood and covering must be exercised. Except where noted, use lightweight wood—especially in the stab and wing tips. The structure is designed to be rigid, so the covering can also be kept lightweight. Every effort should be made to keep the ship free of warps. Fast-moving airplanes must be straight and true. Warps other than the recommended amount of right-wing washin will cause no end of grief.

Fuselage. Select a flat surface to build on. The sides are cut from 3/32 medium sheet balsa and edged with 3/32 × 3/32 spruce. Pin one side to the building board, install the pylon assembly, all the bulkheads, and the top and bottom from the pylon to the rear end. Now is the time to install the plastic tube V.I.T. and auto-rudder line guides. Use a suitable tube of approximately 1/16-in. inside diameter (I.D.). Assemble the second side. When you remove this assembly from the board, it should be straight; if not, correct the problem before going any further.

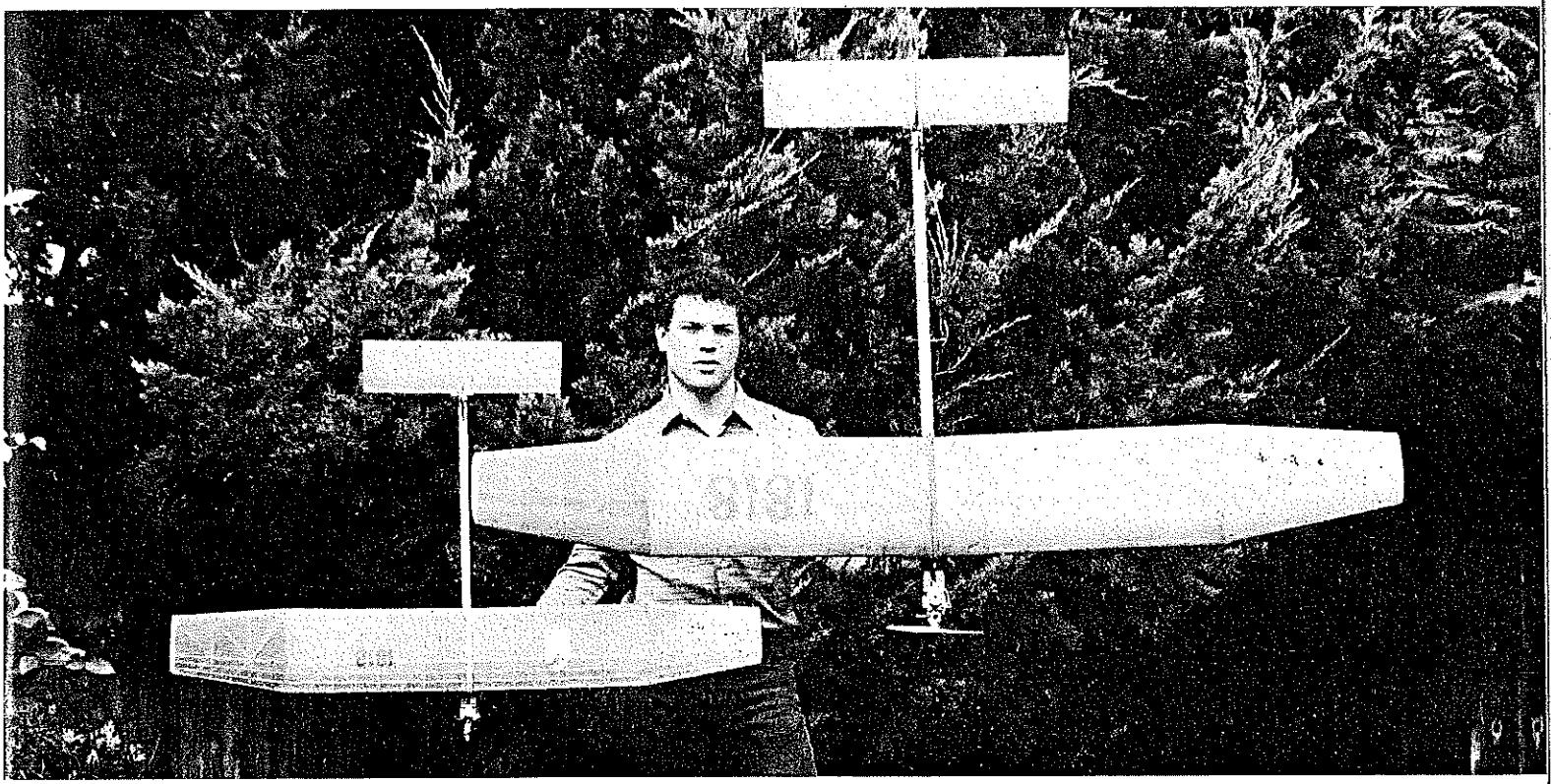
The front end can now be assembled. Before gluing the tank compartment sides in place, smooth and seal all the inside surfaces with epoxy paint. The firewall is cut from 1/16 plywood, and 4-40 blind nuts are installed to accommodate the hole spacing of your engine mounting plate. The pylon and aft fuselage details can now be completed.

Cover the firewall and approximately one inch of the fuselage sides, top and bottom, with a single piece of 1½-oz. fiberglass cloth and epoxy. The entire fuselage is covered with lightweight Plyspan or other suitable tissue. A single coat of nitrate dope is applied to shrink the tissue, followed by two coats of clear Superpoxy thinned to penetrate the tissue and wood.

The rudder/fin assembly is cut from 1/16 medium C-grain balsa sheet that is covered the same as the fuselage and glued in place with epoxy or cyanoacrylate (CyA). With a pin, punch holes in the area of the fuselage under the rudder so that the glue will penetrate the wood.

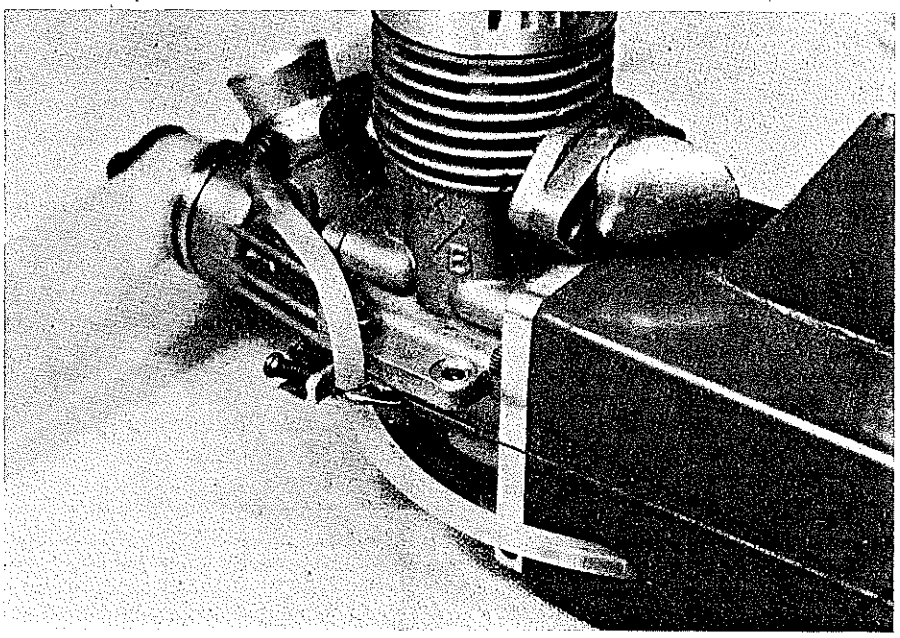
V.I.T. and dethermalizer (D.T.) hammers are cut from 1/4-in. nylon sheet. This material or an exceptable substitute can be obtained at most good plastic shops. The hammers pivot on a piece of 1/8-in. tubing and are spaced apart with 1/8-in. I.D. plastic washers. The tube's length is cut to fit between the 3/32 plywood hammer mounts at the aft fuselage. A small suitable screw holds it in place. Select hammer return springs that will provide enough pull to assure that the system will not hang-up. A malfunction here will almost always lead to the demise of the airplane.

The timer I use is the Seelig, modified by replacing the release wires with reconfigured

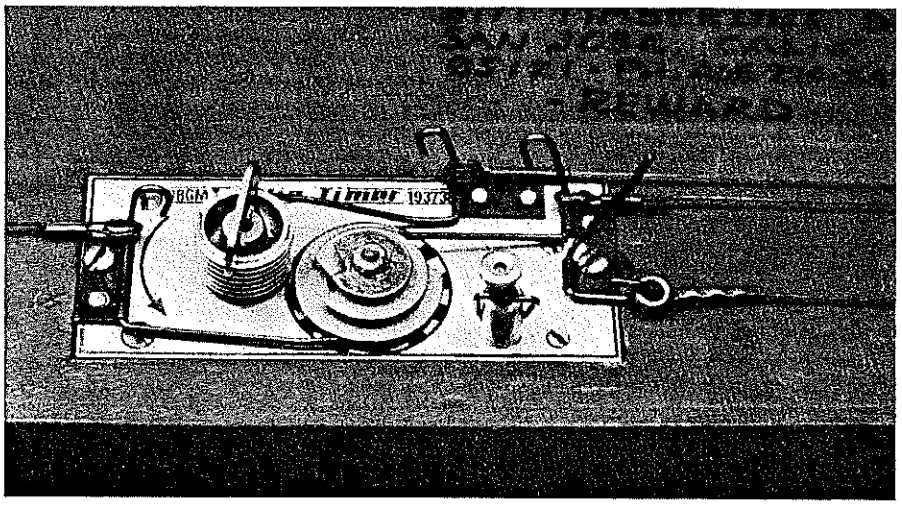


Joey Foster, the author's son, holds a Half-A-Buck and the Buck 600. The ½A version, just like the bigger one, is fully auto-surfaced with VIT and AR. It won the ½A event of the 1982 U.S. Free Flight Championships with 41+ minutes. Joey's interest in FF was dad's impetus in designing the Buck series.

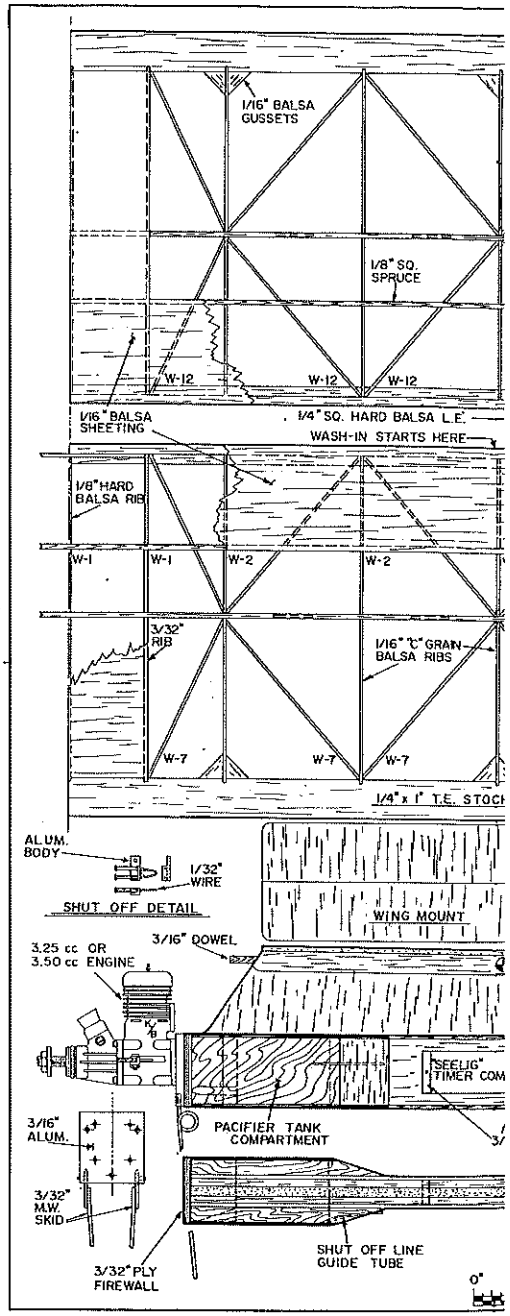
In the larger Class CD size, this design was the 1981 NFFS Model of the Year for the large Power model category. In all sizes it represents the state of the art in FF Power. This one is for Class AB—for hot .19s and .21s—with VIT and AR. ■ Joe Foster



This type of engine shut-off system allows the use of a single fuel line to the pacifier pressure tank. There are no extra Ts or Ys to detract from the reliability of the system.



Standard release wires of the Seelig timer have been replaced with reconfigured wires that retain the pull lines when they are released. This is an aid in helping you to remember to hook everything up—and to wind and set the timer. In the heat of competition everything needs to be nearly foolproof.



wires that captivate the V.I.T. auto-rudder, and fuel shut-off lines.

Wing and Stab. I like to make a plywood jig that allows assembly of half of the wing at a time. The left half should be flat and true. The right half must have ⅛-in. of washin at the tip dihedral break. This wing structure is such that any twist in the building surface will permanently impart a twist to the structure; that's why a flat building board is so necessary.

Cut all ribs from medium-light C-grain sheet except those noted otherwise on the plan. Select the spar wood with care. The ⅛ × ⅛ spruce must be straight, narrow-grain, and have a smooth external texture. The rear ⅛ × ⅛ balsa spars should be hard and straight-grained.

Each wing half can be assembled without removing it from the work surface, which is a help in keeping it true. When joining the halves, take care that no twist is inadvertently assembled into the structure.

The stabilizer is a straightforward structure, which is built of very lightweight wood, except for the spars. Again, a flat work surface is important.

Cover the wing and stab with lightweight Plyspan or a suitable substitute. Use one layer of covering, please, except for the center underside of the wing, which can be double-covered to aid in puncture resistance. I have always used non-plasticized nitrate dope, because it seems to stabilize more quickly. Keying the wing is important in obtaining consistent flights.

Testing. Adjust your timer so that there is at least two, preferably three, seconds delay between engine shutoff and V.I.T. release. This is important because during the initial test flights, you should not glide the airplane. This is accomplished by not engaging the D.T. Therefore, D.T. will occur two to three seconds after the power stops. This delay will keep the wings from folding. Initial flights should have a power run of no more than three seconds. After you have double- and triple-checked that all the gadgets function properly and you have test-run the engine to assure that the shut-off works, get yourself a good night's sleep followed by a strong cup of coffee, and head for the flying field.

Hand-glide the ship and adjust until it looks like it will not stall or dive in. Start with the V.I.T. power setting shown on the plan. The rudder is set neutral. Launch the airplane at approximately 60° up and slightly to the right of the wind. Observe the pattern. In three seconds it should not have changed from the 60° angle, and it should have demonstrated only a slight tendency to go right. Stay with those short runs until it looks as I have described.

Use small changes in rudder setting to keep it going straight or very slightly right, and adjust the V.I.T. power position so there is no tendency to flatten or increase the 60°

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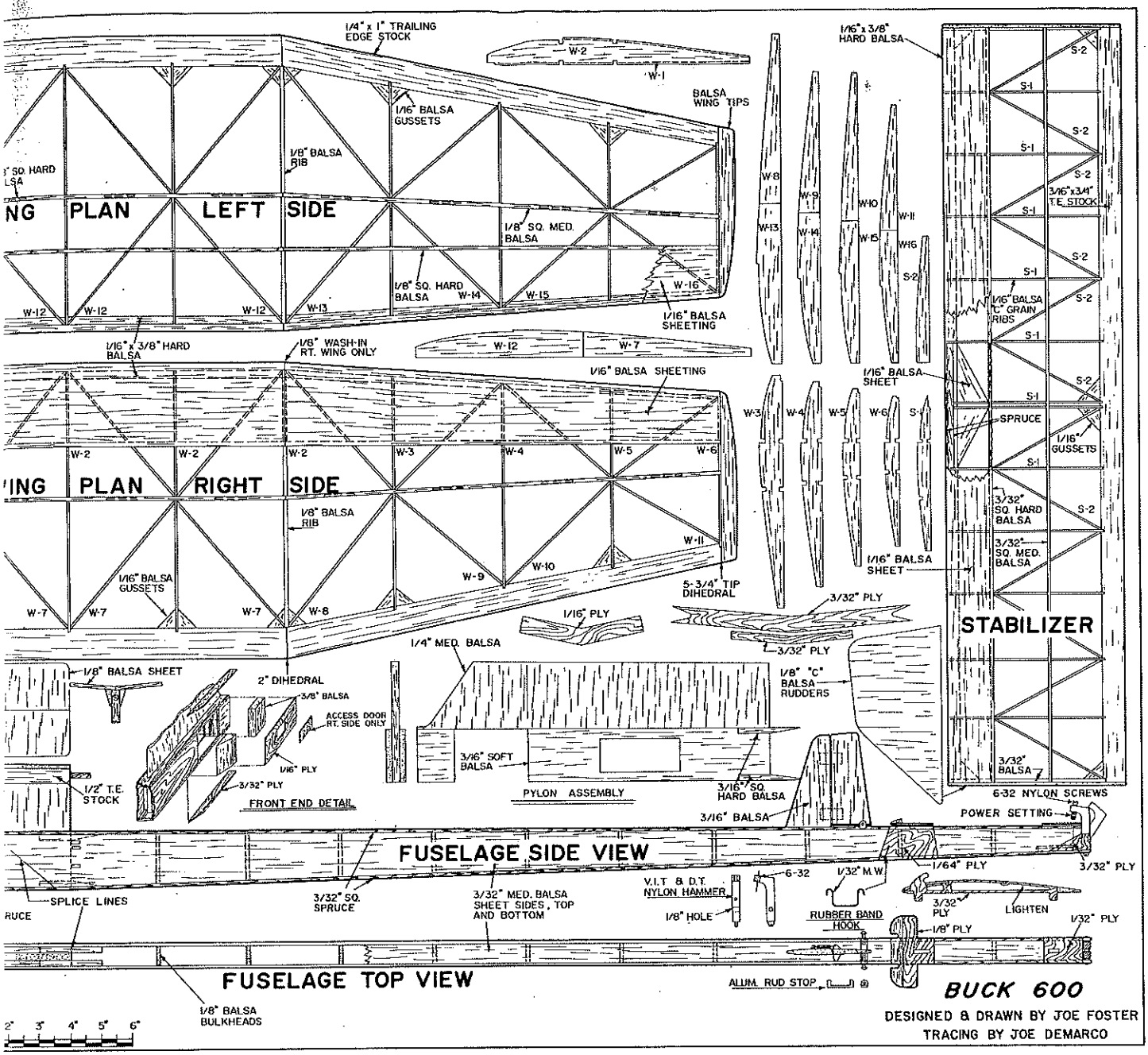
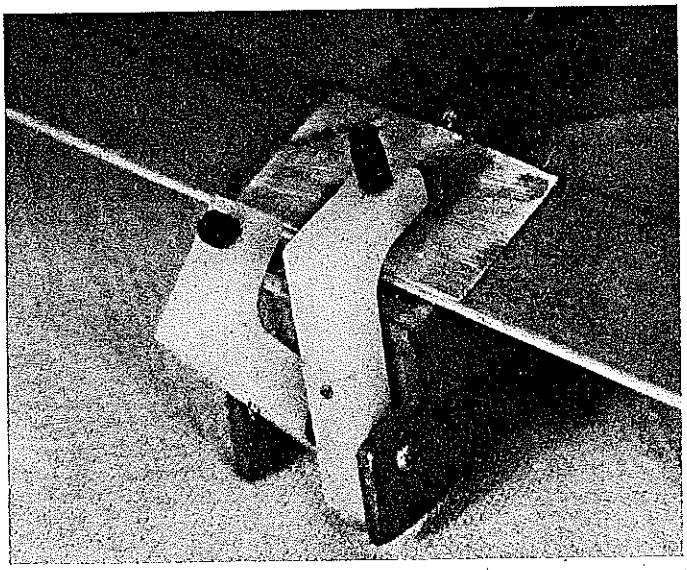
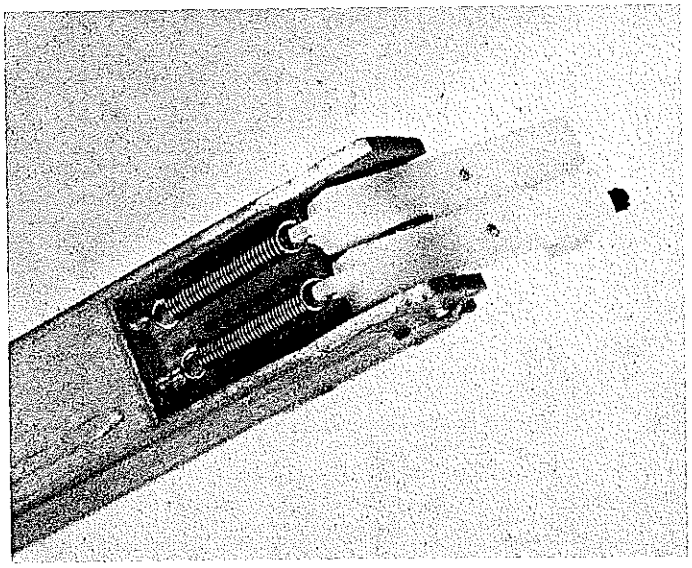
FULL-SIZE PLANS AVAILABLE . . . SEE PAGE 172







The working end of the VIT and dethermalizer actuation. As seen in the left picture, a thin piece of aluminum, steel, or plastic can be used as a wear plate where the hammer screws contact the stabilizer. Right: Be sure the return springs are strong enough for a reliable release of the hammers.

up your models!

A trip to the entomologist at the local university revealed that the culprits were the offspring of the hide and leather beatle, Dermestes Maculatus. They love soft burrowing material, and balsa is a natural if there are no hides around. Bob sealed all of the infested materials into plastic trash bags along with Shell "No-Pest Strips," and the problem disappeared. Still, I got rid of the samples he sent me posthaste, well-wrapped in metal foil! I considered sending them to Meuser, but . . .

This month's happy hint has to do with a great source of single-edged razor blades. Since the great shaving revolution involving stainless steel blades (great for beards, lousy for anything else), modelers have been up against it for a blade that would hold an edge. The newsletter of the San Diego Scale Staffel recently recommended a source of single-edged blades for a reasonable price. When my order for a hundred arrived, I was happy, the blades being average carbon steel. My next order, however was filled with PAL-brand blades, blued and all, and they *really* hold an edge! A hundred of these little beauties will cost you only four dollars and twenty-five cents, postpaid from Cobbie's Gifts, P.O. Box 2, Deal, NJ 07723. Ask for the PAL blades.

Well, gang, I'm trying to get caught up with the letters which keep this column going. Wish we had space for all of 'em! They are much appreciated. Until next time, may Dermestes Maculatus spare yer balsa (and styrofoam, for the RC crowd!).

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

Buck 600/Foster

Continued from page 67

angle of climb. Now start adding to the engine run in increments of one second, observing each flight for adverse tendencies and making adjustments as necessary to correct them. The perfect adjustment is 70° to 80° up and approximately a half-turn to the right in 10 seconds.

If you have to use more than about 1/16-in. of right rudder to obtain a right tendency through the power pattern, you probably have too much washin in the right wing panel. Correct this condition, and start over (rather than fighting it); otherwise, the ship will have a speed-sensitive and inconsistent pattern.

When you have safe power runs of over five seconds, it's okay to start gliding the airplane. Glide adjustments are, of course, straightforward by using the D.T. hammer adjustment to change the incidence of the stab. All test flights are made under full power.

I have enjoyed many pleasurable years of flying the Buck design. In the different sizes, they have rewarded Joe Jr. and me with national records in Classes A, B, C, and D, and they have won consistently at the U.S. FF Championships and other important contests. I hope you have as much success and pleasure with yours.

Thermals

CL Aerobatics/Paul

Continued from page 68

ing." For those of you who have never prepared an airplane with a silver undercoat, you are missing a **very important step.** Silver shows up all of the flaws—**very emphatically.** Usually, you will have to go back over the plane in many places to correct "bad spots." Also, silver is a good base for the color coat. Most of us at this point would now cover the entire plane with the base color coat: white if your name is McDonald, Werwage, Fancher, Powell, Paul, or Casale; red if your name is Gieseke or Barrett; yellow or orange if your name is Whitely, Adamisin or Bob McDonald; olive drab if your name is Frank McMillan; black if your name is Glenn Meador! However, Windy has another method which is very intelligent and just plain makes good sense. Read carefully what follows.

"Now, with 1/8-in. masking tape, I masked out my trim and letters; this left me with a 1/8-in. silver outline on all trim and letters. I always paint my trim **first** inside the silver "borders" I've created with the 1/8-in. tape and work inward with as many colors or patterns as I need. If you airbrush,