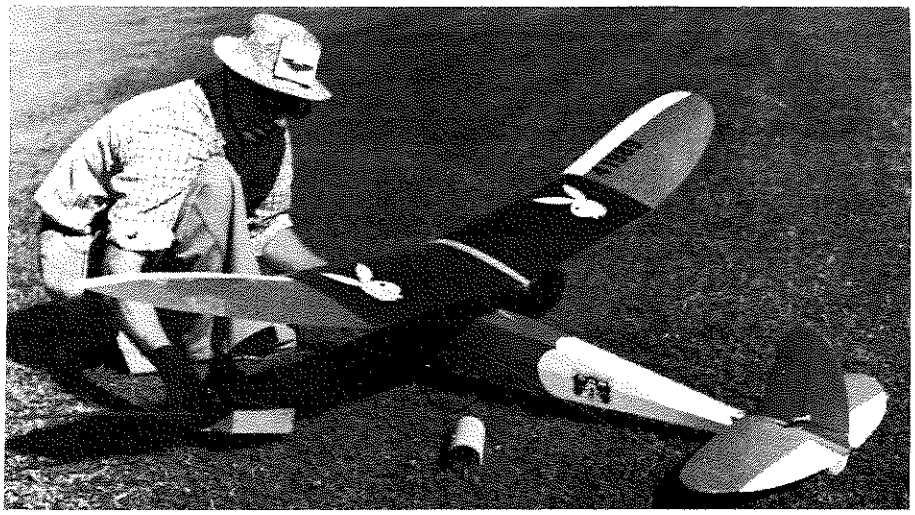


15. Dick Sturges, SAM 39, Cleveland, Ohio, just before launch of lost Playboy Senior. Another receiver switch in the "Off" position!

motors) showing the Mighty Midget upright @ $9.85, the Mighty Midget inverted @ $10.10, the Gwin Aero upright @ $11.35, the Gwin Aero inverted @ $11.60, the Mighty Marine @ $11.40, and the Warrior at $12.00, the highest of the series.

Some speculation by engine collectors have led to the assumption the Warrior was produced to compete with the Baby Cyclone, but actually the radial mount feature was incorporated in the Bunch line to compete with the Ohlsson Gold Seal, which was enjoying tremendous popularity with model plane designs especially designed for radial type engine mounts.

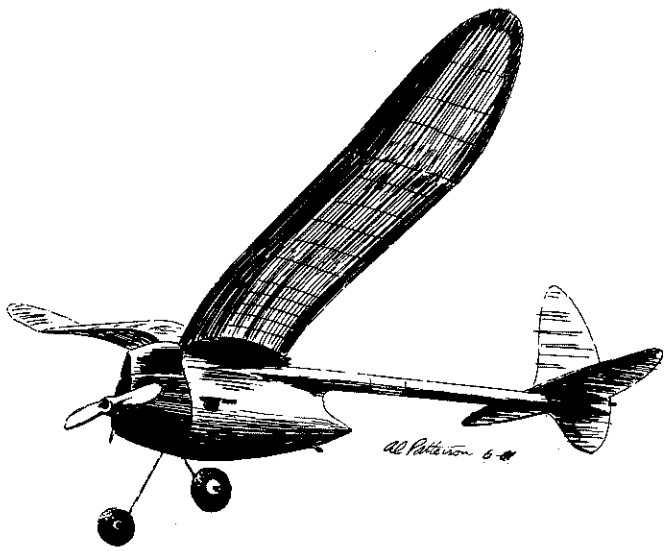
Among the new features of this Bunch engine were the adjustable spark advance with locking screw, and the provision for easy point adjustment. Other features advertised were the use of a steel cylinder (no cheap iron or die castings, as they claimed), aluminum piston with two steel rings, aluminum crankcase with three-bolt radial mounting, tempered steel spring with tungsten points, and a Champion spark plug (the best in this writer's opinion).

As reported in a previous column, the name of the "Warrior", according to Howard Broughton, then the Project Engineer of the firm, was derived from the automotive red paint they were using called Buick "Warrior Red". The engine, which owes its parentage to the Might Midget, was clearly stamped with a "W" on the bypass front.

With the tremendous competition for the motor market in Southern California, it didn't take long to sort out the shortcomings of this new engine. The main bearing was weak, and even worse, the straight and thin sleeve was unsupported (a la Baby Cyclone). With no bracket

Continued on page 76

Boomer Bus!



OLD TIMER Model of the Month

Designed by: Henry Struck
Drawn by: Al Patterson
Text by: Bill Northrop

• Is there another modeler in this world who has created more original designs in nearly every facet of model aviation than Henry Struck? Recent generations may not know his work as well as those who were hacking balsa throughout the 30's, 40's, and 50's, but that is their misfortune. On the other hand, many of his designs are still perpetuating his genius, and among those, the Boomer Bus is another example of his ability to get out of the rut and still create a classic in the process.

The Boomer Bus was inspired by a full-size classic, the Bowlus Baby Albatross sailplane, featuring a finely proportioned pod-and-boom fuselage. Construction is not exactly for the amateur builder, but the pleasing and unusual results are well worth the effort. The fuselage fillets can be left off, and the gull wing section can be built straight without affecting performance, but really, the challenge of duplicating the graceful wing curves and the smooth fuselage filleting is too tempting. We've duplicated some of Hank's original construction hints to help you along. The complete article was in the February 1941 issue of Air Trails, in case you know someone with a complete library.

The ship has a 380 sq. in. wing area, which puts it in the old Class B (.20 to .30 cu. in.) size though it would also perform well with a hot ignition .19 for Class A. If used with R/C Assist, an .09 or .10 glow engine should make it hop around pretty well.

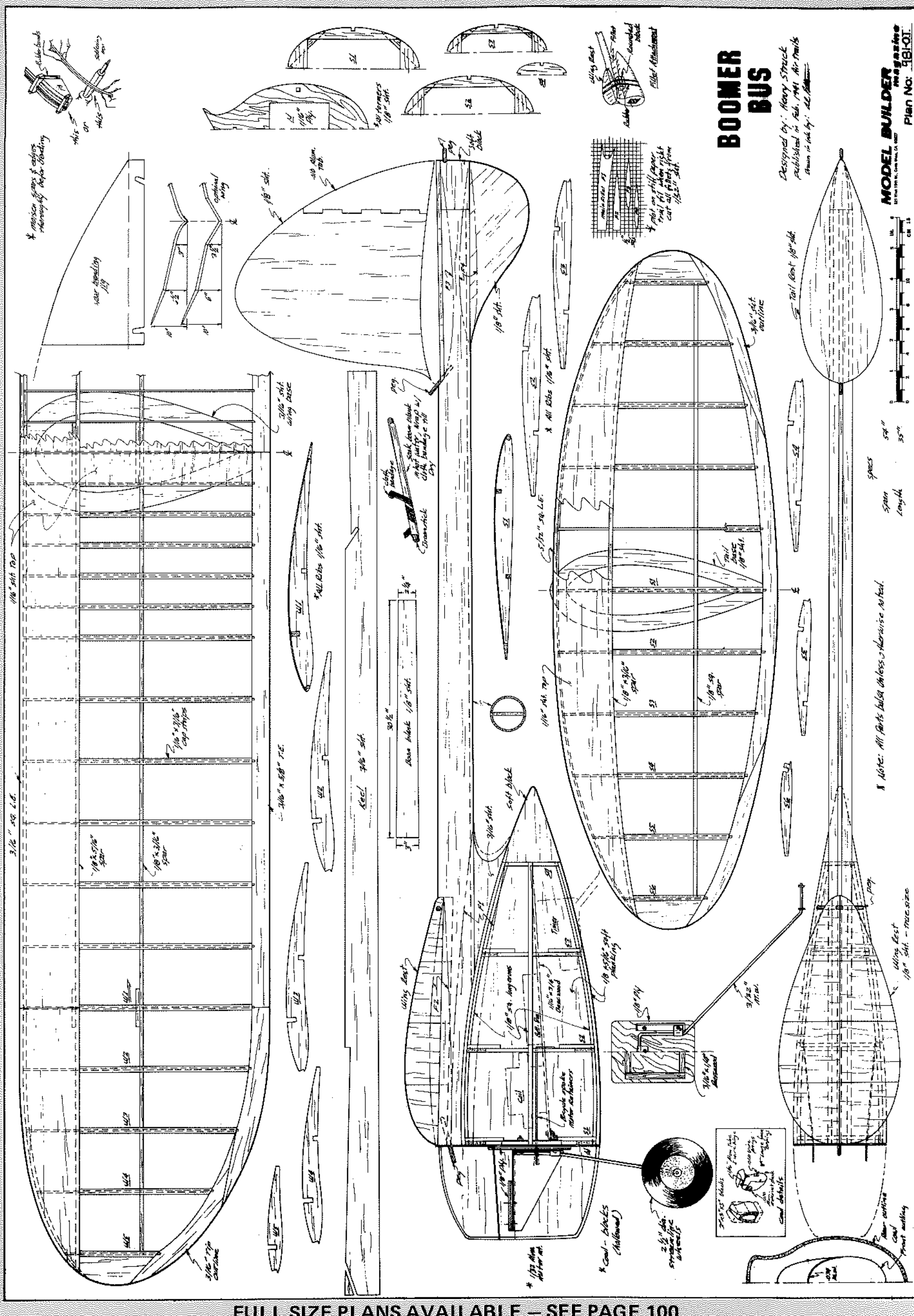
Here are some construction hints taken directly and/or in part from the original article:

FUSELAGE:

It is best to begin work by making the boom first to allow construction to continue uninterrupted while the blank is drying. Select a sheet of straight-grained medium-hard 1/8 sheet balsa, cut it to the size required for the boom blank and soak it thoroughly in hot water. Mold it carefully around a straight length of broomstick or rod of similar diameter and wrap it with cloth bandage to hold it while drying. The wood may be baked slightly to hasten drying, although the safest way is to set the stick aside for about twenty-four hours and work on the fuselage, or pod.

The pod, although planked, is so short

Continued on page 102



FULL SIZE PLANS AVAILABLE — SEE PAGE 100

Hirobo, but with Horizon thrust bearings. Flybar paddles would be Heli-Boy. The main rotor blades would be fashioned after the original Kavan blades, or American's Mantis, thin and long for best efficiency and feel in flight. Collective pitch control with a rod through the center of the main rotor shaft, designed for any amount of collective pitch travel. Tail rotor mixing similar to the Heli-Boy arrangement, and one servo for throttle, one for collective pitch. The swash plate would be anchored by a "four point" push-pull system for zero swash plate slop. Last of all, we'd ask for quality. Undoubtedly this is the most difficult requirement to effectively fulfill; those of you flying helicopters for any length of time know what we mean.

Next time, back to our discussion on rotor blades. •

Brimfield . . . . *Continued from page 35*

seen at Brimfield. For one of the best shows in R/C modeling, plan to attend the next damsite affair!

Incidentally, the event did end with a short contest to "redistribute the entry fees" (so said Don Foster, C.D.). One round of spins, loops and touch-and-goes (one-and-a-half minutes for each) was the hastily agreed upon event rule. The total of all determined the winner. There must have been over a dozen planes in line! A big thanks to Don Foster for his perennial interest in Brimfield. He CDs the affair year after year and has kept it going in grand style. The participants themselves also need a round of applause. Some of them have never missed a meet at Brimfield! •

Boomer . . . . . *Continued from page 61*

it offers little difficulty. Trace the bulkhead sections given in full size on 1/8 sheet balsa and assemble to form the bulkheads. Cement the bulkheads on the longerons of 1/8 square. Begin planking by cementing strips of 1/8 x 5/16 soft balsa over each longeron. Attach two or three side planks and form the motor-mount retainers of bicycle spokes and cement them solidly in the body. Plank the rest of the pod, trimming the strips wherever necessary to get a good fit.

Cut out the front bulkhead N from 1/16 plywood and cement it to the nose. A block of soft balsa is glued to the rear of the pod and carved to carry out the contours of the fuselage. Smooth the planking with rough sandpaper or by careful use of a knife. Finish the pod with successively finer grades of sandpaper, polishing with 10 naught.

Remove the boom blank from the form and cement the keel of 3/16 sheet in it. Cement a plug of soft balsa to the rear and carve to shape. Sandpaper the boom smooth and cut away the bottom of the front portion to fit the top of the pod. Use plenty of cement at this junction and check the alignment carefully. A wedge of 1/8" sheet between the boom and the pod will further strengthen the assembly.

Cut the wing and tail rests from 1/8 sheet. These are of approximate streamline outline, but their exact shape is relatively unimportant. Cut away the top of the boom and fit them in place, maintaining the incidence angles established by the keel blank. Cut the bottom fin from 1/8 sheet balsa and cement it to the boom.

The fillets are next. Cut two of each from 1/32 sheet balsa. Use balsa of the straight-grained variety to avoid splitting when bending. Moisten the back of each blank thoroughly and cement in place, using pins and a rounded block to subdue stubborn bulges. When dry, sand away the edges till the fillets blend smoothly into the structure.

The entire fuselage is covered with silk. This adds much toughness, especially to the thin fillets. When dry, apply three coats of clear dope, sanding with 10 naught between each coat. Cement short lengths of 1/8 dowel in place to serve as pegs to which the wing and tail rubber bands may be hooked.

MOTOR UNIT

Cement and brad the motor-mount keys of 3/16 x 1/4 basswood to the rear of the motor bulkhead of 1/8 plywood. Trace the motor-mount pattern onto 1/32 sheet aluminum and cut it out with a shears or jeweler's saw. File to exact shape and form over a hardwood block, avoiding sharp bends that may cause the metal to fatigue and crack. Make one right and one left. Bend five clamps from .020 sheet brass. Form the landing gear of 3/32 diameter piano wire, measuring each bend to assure symmetry.

Assemble the motor unit, using 3/32 diameter bolts. Make a battery-track bracket from 1/32 aluminum and bolt it to the basswood keys. Attach the battery track of 1/16 basswood to the bracket. Construct a battery box of 1/16 hard balsa. Cement a contact plate and a pair of battery terminals in it, taking care to keep excess cement off the face of the metal. Clamp the timer to the bottom of the battery track with a pair of brass fittings.

A pair of 2-1/2 inch streamlined sponge-rubber wheels are retained on the axles by a couple of washer soldered on either side of them. Cut a slot in the bottom of the fuselage through which the timer arm may extend, and slip the motor unit in the pod, tightening it down with a pair of bicycle-spoke nipples. Cutting a small slot in them will make it possible to use a screwdriver, facilitating the tightening process greatly. Drill one hole in the motor mount and set the engine in place, adjusting the thrust line till it is not offset in any way. Then drill the remaining holes and complete installation.

Remove the motor unit and install the wiring. Use flexible wire and make good solder joints to avoid trouble at some future date. Dope the nose of the pod and the motor bulkhead generously to oilproof them.

WINGS AND TAIL

Constructing the wings with a curved gull is mostly a matter of preparation. However, if desired the less-graceful straight gull will perform quite as well aerodynamically.

Two methods of forming the curved spars are illustrated. No. 1 consists of a block cut to the proper profile and a couple of notched clamps to hold the stock against the form. Soak the spars thoroughly and bake them or allow to dry for twenty-four hours before removing from the jig. No. 2 is trickier but by far the quicker, and with a little practice becomes a handy method for doing all kinds of difficult bending jobs. Soak the wood thoroughly and run it over a hot soldering iron, being careful to keep the strip always moving smoothly to prevent charring in spots. Once the strip is bent as desired, hold it in shape and run each side over the iron to dry up all the remaining moisture. When bent in this way it is practically impossible to unbend the strip by ordinary means.

Pin the trailing edges to a full-size wing plan. It will be necessary to allow the curved portion to overhang the edge of the bench. Construct the flat part of the wing panels and when dry remove from the bench and install the ribs in the gull section. Join the panels, raising the tips to the height specified for dihedral. Use plenty of cement and reinforce the center section with strong gussets.

Cover the leading edge with 1/16 sheet balsa, moistening the portion over the gull to ease the bend. The inside of the balsa may be doped several times to aid in bending. If desired, smaller sections may be used if care is taken to make good joints. Cut the wing and tail base of sheet balsa, using the outline of the respective rests on the fuselage as a pattern. Cement them in place and sand the bottom perfectly flat. Sandpaper the frame to remove any bumps that may spoil the appearance of the finished job when covered.

Cover the center section with silk, using small pieces on the bottom. The rest of the surfaces may be covered with double tissue. The first covering is applied with the grain running chordwise and the second with the grain running spanwise. Water (shrink) the first coat, but do not dope. Water shrink the second covering and then apply two coats of clear dope. The dope will seep through and cement the layers of tissue together. Be sure to stick the tissue to the bottom of every rib to preserve the airfoil section.

COWL

Cement together two blocks of 3 x 3 x 3 soft balsa. Trace the side view of the cowl onto the block and cut out with a jig saw. Transfer the inside of the front view and the outside of the rear to the block and saw to shape. Carve the rough blank with knife and "rock" sandpaper. Finish the outside and cut the block apart. Hollow the inside, testing frequently to see that all parts of the engine have clearance. Leave the walls about 1/8 thick. Reassemble the sections and cut a hole for the exhaust-stack extension of .010 sheet aluminum. Cut off the top section of the cowl and hinge it with aluminum tubing and wire. Note that the wire extends across the front to brace the opening. A rubber band snaps the top shut after the engine has been adjusted. Glue a pair of .020 wire prongs in the cowl. These fit tightly into large face bushings set in the nose bulkhead to retain the cowl. Dope the cowl inside and out to oilproof it.

ADJUSTMENT AND FLYING

Attach the wings and tail with a couple loops of 1/4 rubber and slip the motor unit in place. The model should balance about five inches from the leading edge of the wing. Get the feel of the ship and then glide it into the wind. Bend the rudder tab till the model glides straight.

Start the engine and get it running smoothly. Set the timer for about ten seconds and hand-launch the model. Bend the trimmer tab till the model makes a large right circle and a smaller one on the glide. "Revving up" the engine will cause the power circle to become smaller. Observe the glide carefully; if it seems a bit steep, increase the negative incidence of the stabilizer, or decrease the angle if the model seems to stall. The right wing (looking at the model from the front) may be washed out slightly; that is, warped to give that side less incidence. This will give a flatter circle.

A word of warning — be careful where you fly your model, because if some farmer or hunter ever gets a head-on glimpse of your ship, he'll instantly let fly a dose of buckshot at the big bird. •

Spectrum . . . . *Continued from page 21*

The receiver has a sensitivity of 3 uV which, coupled with the high transmitter output, should provide excellent range and interference immunity. The current drain ranges from 28 to 33 mA depending on the battery charge condition. The receiver is also voltage regulated, and therefore will operate with one cell out of the receiver battery pack.

SERVOS

The servos supplied with the system are KPS 14-II's, which have the new carbon button wipers. Using a 12 ohm motor, they are claimed to deliver 29 in-oz of torque and to have a 0.5 second end-to-end transit time. I measured the idle current to be 21 mA and the operating current (no load) to be from 100 to 110 mA. Loaded, the current went to about 150 mA.

All four servos demonstrated better than 1%, or 0.9° centering accuracy, which included about 0.4° of mechanical slop. The servo electronics is the same as in previous Kraft servos, utilizing the standard Kraft/TI IC, and they are