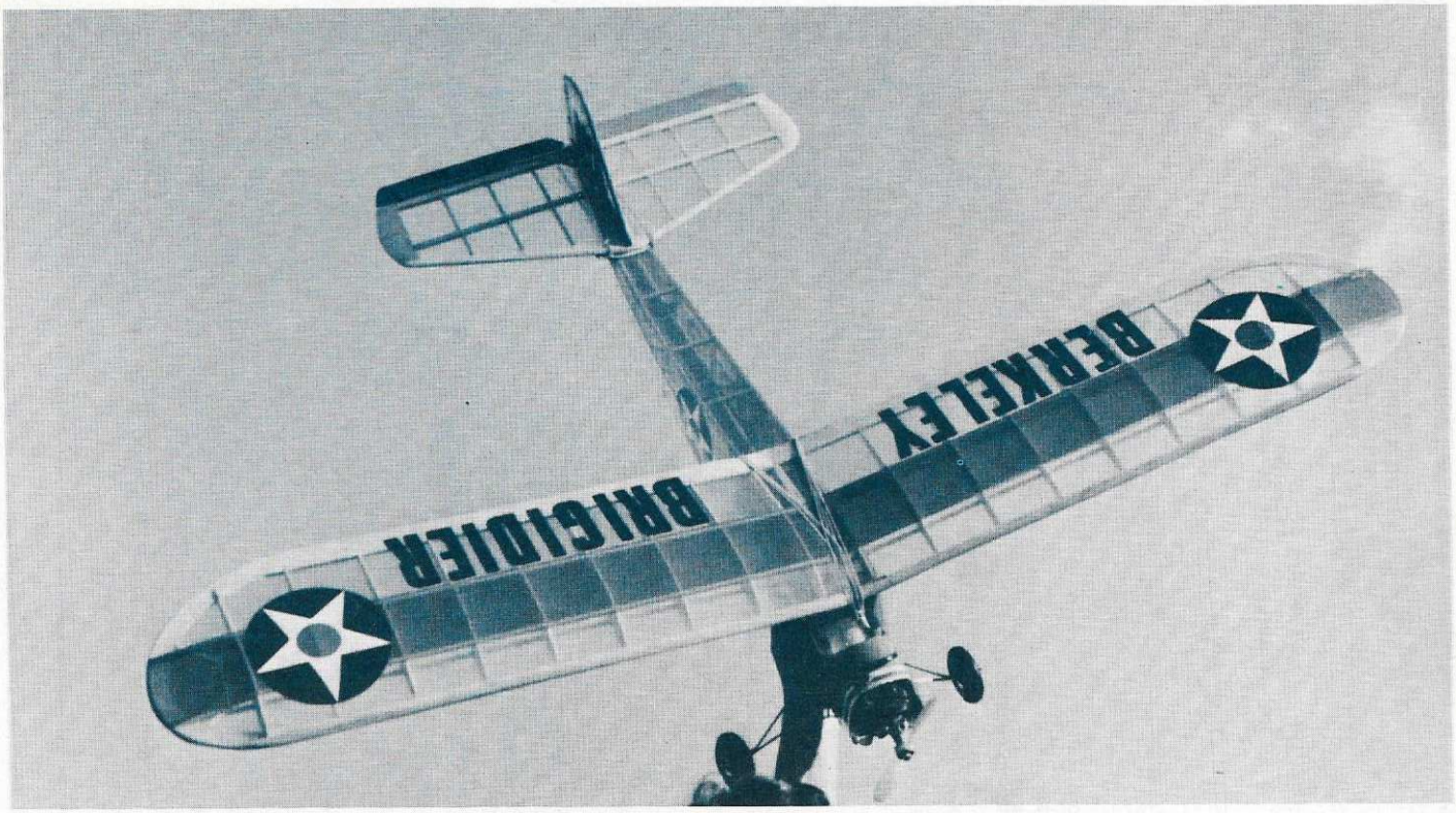
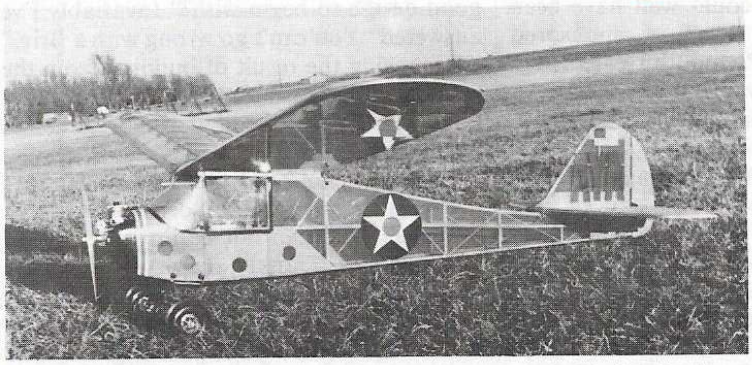
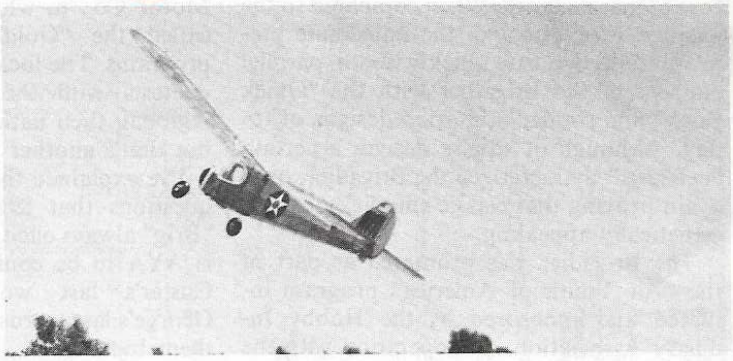


Here the old plane is proudly displayed with its translucent covering, permitting a good view of the internal structure of pretty bird.

Berkley Brigadier



Still another view of the Brigadier, note lightening holes in fuse.



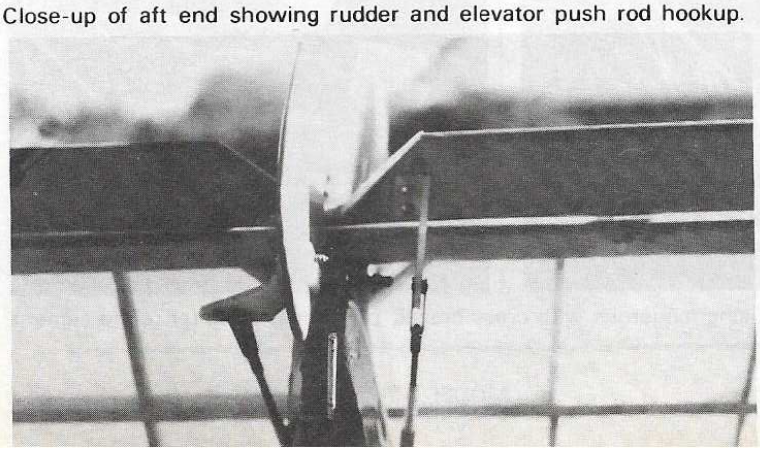
Up, up and away!—but we won't use that corny old "wild blue yonder."

BY DR. DEE MATTHEWS . . . Famous old-time Free Flight kit by Berkeley Models an excellent subject for R/C Assisted Free Flight event added to S.A.M. schedule!

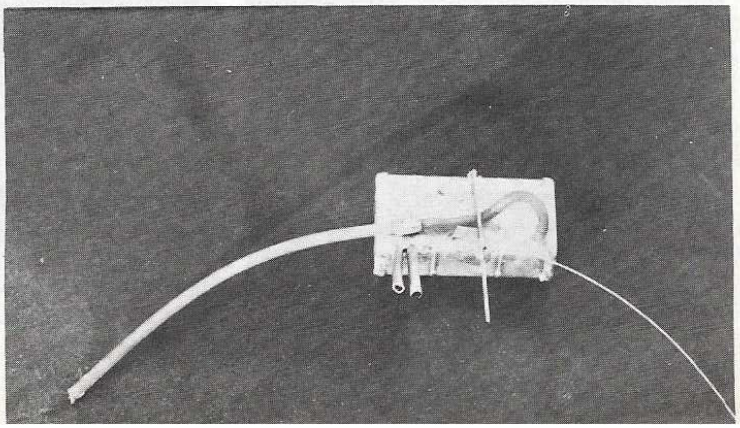
• This is a "two-way" model; a three-channel sport job, or a two-channel thermal-seeker. The Brigadier has been flown both ways with equally satisfactory results. Back in the early days of U-Control we used the term "two way" to describe Free Flight models with bellcranks and elevators added; fortunately the newer connotation denotes a more successful approach. The Free Flight-to-U-Control conversions were also called "goats," which says it all; a more appropriate name for *this* Brigadier would be a "lamb."

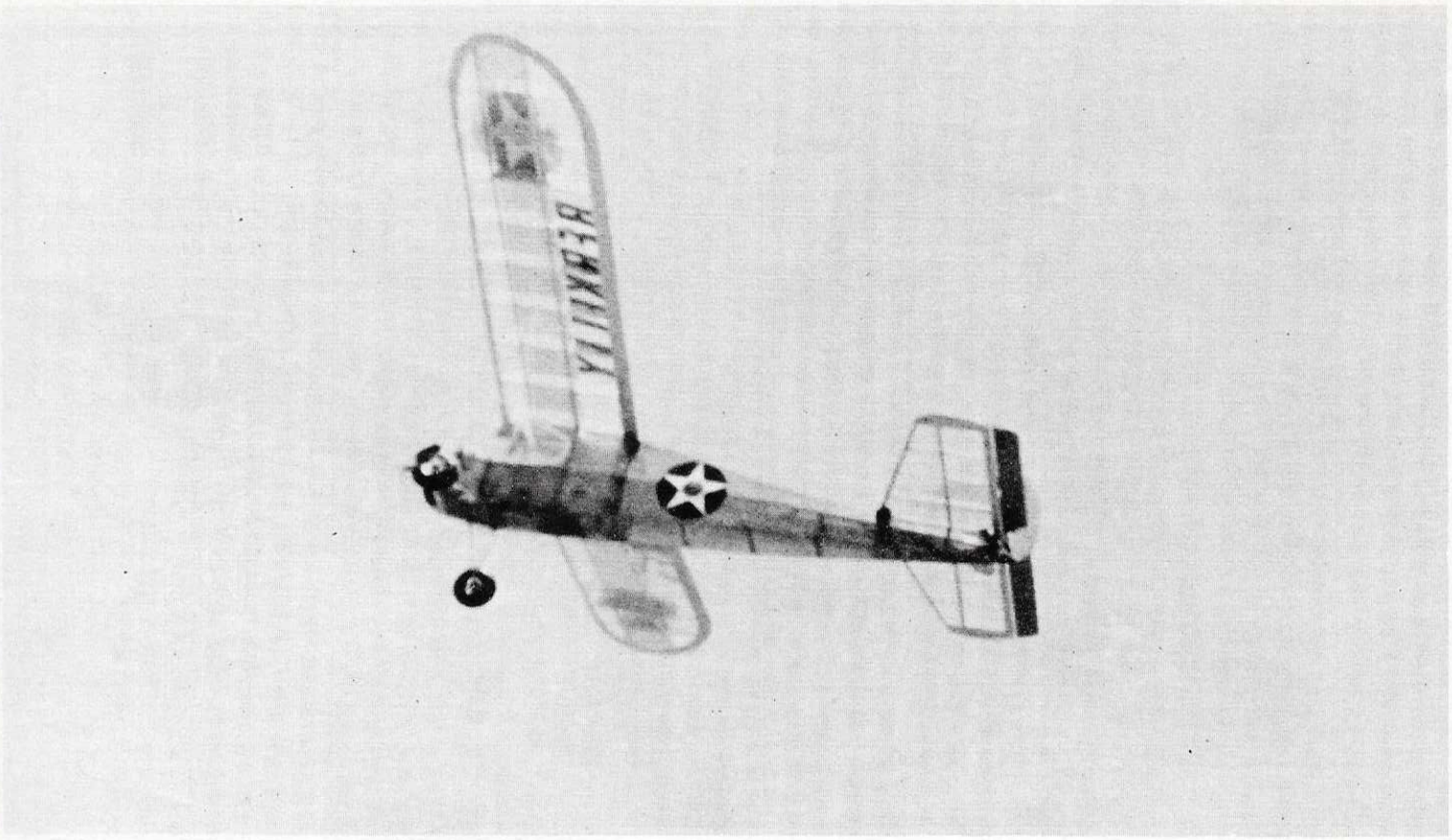
The Berkeley Models' Brigadier was kitted in 1940 as a powered Free Flight model for beginners; a look at the drawings will reveal a concentrated effort at simplicity of struc- *(Continued on next page)*

Close-up of aft end showing rudder and elevator push rod hookup.



Home-built fuel tank showing the cutoff system to limit eng. run.





According to the author, the old bird is steady as a rock on engine, gets good altitude, finds any lift and manages to stay in it as well.

BERKELEY BRIGADIER O.M.T. . . . CONTINUED

ture rare in a model of that era. Obvious consideration was given to minimization of parts, avoidance of difficult techniques, and ease of maintenance. When compared to the average Free Flight of the immediate pre-WWII era, we can quickly see a parallel concept of the Brigadier with the "Quick Stick" and similar utilitarian designs of today. Although of square design, a certain "cuteness" characterized the Brigadier, once again proving that classic simplicity can be esthetically appealing.

The Brigadier was promoted as part of the "Air Youth of America" program initiated and sponsored by the Hobby Industry Association in cooperation with the AMA, much as they support the Delta Dart program of today. Unfortunately, the AYA program was interrupted in its infancy by the events of December 7, 1941, and became only another nostalgic item in the fascinating series of developments that led to the present state of the art in our hobby.

The immediate postwar era saw a program developed by the HIAA and the AMA in conjunction with the Plymouth Motor Co., in what could well have been called the "Golden Era" of sponsored programs. The local Plymouth Dealers held contests with the winners advancing to regional, then national contests in Detroit, but that's another story.

I've explained the AYA to anticipate the questions that letters on the tail of this "Brig" always elicit. Under no circumstance is AYA to be confused with Gen. George Custer's last words. Everyone knows George's last words were: "Wow, look at all them Indians!"

I once had a Brigadier Free Flight, powered with an Ohlson and Rice "23" ignition, unfortunately it was from a wartime kit with basswood longerons, cardboard ribs, covered with gift-wrap tissue and painted with enamel; for some reason, it didn't fly well. (The good old days!) As my interest in Radio Assisted Old-Time Free Flight has grown by leaps and bounds, several younger modelers have asked "What would be a good design to begin with?" Invariably I've answered "You can't go wrong with a Brig." After seeing the result of building from the original plans, I decided to do a modernization to eliminate several glaring weaknesses in the structure.

Please be cautioned that this model does not meet the rules of the Society of Antique Modelers, and can not be flown legally in their contests. Frankly, the SAM events are degenerating into a situation of one or two predominating designs, powered with screaming Schnuerle-ported engines, and really intense competition—just exactly the thing most of us started flying Old-Timers to get away from. The leadership of SAM is sensitive to the problem and is actively seeking correction before it becomes too late. Good luck, guys! If your bag is with

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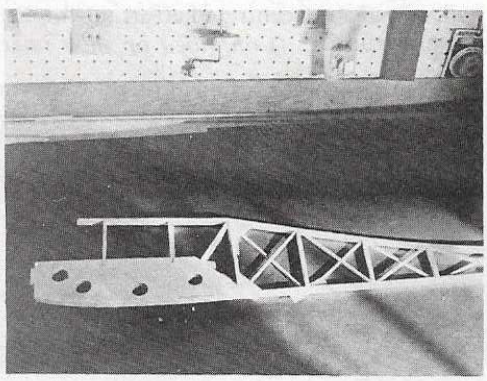

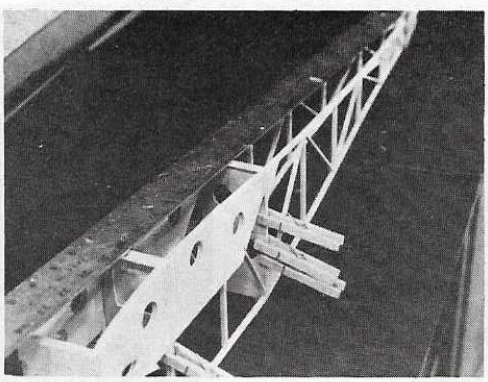

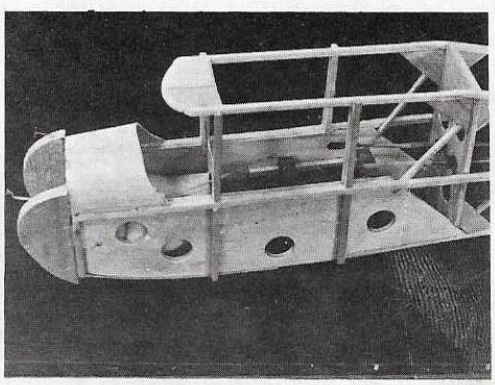

Three photos above show the basic box construction for the fuselage, using longerons with cross braces, plus sheet sides for reinforcement.

The Berkeley Brigadier

(Continued from page 56)

SAM, go build something else. If, however, you are in search of a project that will give many hours of relaxed fun with a minimum of building effort, a model that will forgive darn near any flying error, a cute little .09 Sport trainer, then the Brigadier is for you. Let's build one!

WING: I would suggest starting with the wing panels to generate some scrap for use on the tail and fuselage. This is my pet method of construction: I've used it for many years with little change. It produces a light but strong structure with good warp resistance. I stole it from George Fuller's "Dixielander" series, and for all I know he stole it from someone else.

Trace the rib outline onto tracing (typing) paper, spray with 3M Sprayment and stick onto a 3/32" or 1/8" plywood scrap. Cut out ply rib, check spar notches, and pin onto a stack of 3/32" balsa rib blanks. If you do not have access to a jigsaw, the rib stacks can be carved and sanded to shape using the ply rib as a guide. The same "trace, stick, cut and peel technique" can be used on the 1/4" balsa tips. I prefer to cut the outlines slightly over-size, making the butt joint final cuts directly on the plan, "Hot Stuffing" the pieces together then sanding to exact shape.

Cover plan with Saran Wrap, not wax paper. Pin the notched trailing edge stock onto the plan, rough-position the bottom spars using ribs to locate fore and aft and the pinned-down tips to position spars' length. Using aliphatic resin throughout, glue ribs into place using plan to keep everything square. After ribs are placed add leading edge, then top spars. Now build the other wing exactly the same way.

Allow at least 24 hours for complete glue cure, then remove panels from working surface. The dihedral joint can best be done by blocking the wing tip up the required height, then cutting the center section angle against a flat table edge. After you are satisfied with the joint, pin one panel flat and block up the other to twice the panel dihedral, epoxy leading and trailing edge joints and allow to set. Remove wing from building surface, cut notches in ribs for ply gussets (two hacksaw blades bolted or "Hot Stuffed" together work super well), epoxy gussets into place, holding them with clothespins.

All that is left to do after the epoxy has set is to carve and sand the leading edge to contour and round out the tips. Don't overlook the wire on the trailing edge; it prevents the elastics from cutting in. This wing is plenty strong for Mono-Solar-Rite, but silk it if you wish.

TAIL FEATHERS: Can't get much simpler than this without going to all-sheet surfaces (much too heavy). I used Sig nylon hinges, cutting the slots *before* contouring the surfaces. I cover before permanently installing hinges. I've been using round toothpicks and Hot Stuff with no problem, since these surfaces aren't subject to much force. I used rubber bands and dowel posts in order to make the surfaces removable; however you can decomplicate things by epoxying the stab directly onto the fuselage if you wish.

The rudder is vulnerable in turnovers; I cured this with 1/16" dowels glued into holes drilled from the bottom of the stab-center section—your option.

FUSELAGE: Cut out the formers from their respective ply size, again the "trace, spray, cut and peel" technique is great. *Drill all holes now.* The lightening holes in the 3/16" ply side aren't really necessary: I cut them with a 3/4" auger bit in a drill press just for fun. Install blind nuts before assembly, it's easier.

Lay a sheet of Saran Wrap over plan—do not use wax paper as it clobbers glue joints. Lay down one fuselage side, cut and fit vertical members, then balsa crossbraces. Allow this side at least two hours setting before removing pins that will be in the way. Lay some masking tape over areas that will be hard to reach with a table knife when you separate the halves later on.

Build a second side on top of the first, as identical to it as possible. Allow overnight drying, then remove from building surface, and gently pop apart halves with a table knife.

Now we'll get the dreaded part done so simply you'll never dread a frame fuselage again! Trial-fit bulkheads A,B,C and D into their respective notches, trim as needed for tight fit with no binds. Remove and reposition with epoxy on A and aliphatic resin on the rest. Turn the fuselage upside down with the wing rests flat on the building surface and pin in place.

Mark midlines on A-B and C, place straight edge on line running to tail post. Pull tail post together, bond and hold with clothespins, adjusting so that midline of post matches straight line back from A, B and C line.

Add cross frame members, cut to lengths specified on plan. Bond in place in pairs (top and bottom), again adjusting to midline mark. Complete fuselage frame and allow overnight curing of aliphatic resin. Remove from building board and congratulate yourself for constructing a nice square frame.

While the frame is setting make tank modifications. The shutoff as shown is ridiculously simple to make, but it works over and over again. Test for leaks under water before installing. If you're going three-channel with motor control, the Sullivan SS-3 fits perfectly.

Add side longerons, Nyrod exits, etc. Trial-fit tank, motor and R/C, adjusting location to establish C.G. Set up Nyrods for neutral with stab-rudder temporarily in place. Remove hardware and dowels, form cowl from two pieces per side, 3/16" sheet cross-grained. Mount tank and cover coaming with 3/32" A-grain balsa, using Hot Stuff. Cover fuselage with silk or Mono-Solar-Kote.

The wind screens, dowels, tail skid, and stab saddle are added after covering, for simplicity. The wind screen is made by cutting around the pattern; it is not necessary to cut through the plastic—just score, then break. The plastic will not stick to MonoKote, so cut little holes through to the wood, then "Hot Stuff." Permanently assemble dowels etc. and the fuselage is finished.

FLYING: Of course, the first flight begins in the workshop: that is, check C.G., neutrals, movements, prerun and tune motor and so forth at home—not at the field! Presuming the C.G. is as drawn, the surfaces are parallel, and no major warps are present, hand-gliding the model should be unnecessary. First flight should be with just enough power to break ground; on the two-channel rig a solid four-cycle with an 8 X 4 will be plenty. If your R.O.G. does not use much up-elevator, the model is made to climb on its own with sufficient forward velocity; use the throttle to control takeoff! If you hand-launch (most practical with the model), try to hold parallel with the ground in both planes. Take two or three long strides into the wind and *gently* push the model *(for crying out loud, don't throw it!).*

Presuming you're not a hot pilot, this "Brig" is

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The Berkeley Brigadier

(Continued from page 90)

ideal in that it has a natural tendency to fly level and will correct most overcontrol situations if allowed to proceed on its own. When in doubt, let the model fly itself.

I've had considerable fun handing the transmitter to spectators with the "Brig" in the gliding mode. I usually just say ". . . a little bit to your left" or ". . . a little back pressure" and have been pleasantly surprised at the quickness with which absolute novices can learn to maneuver the model. One local youngster was able to set up for a landing and get the "Brig" onto grass the third time I gave him the transmitter.

That is what the "Brig" *was* in 1941 and *is* in 1977, a superb beginner's model—Free Flight or Radio Control! ■