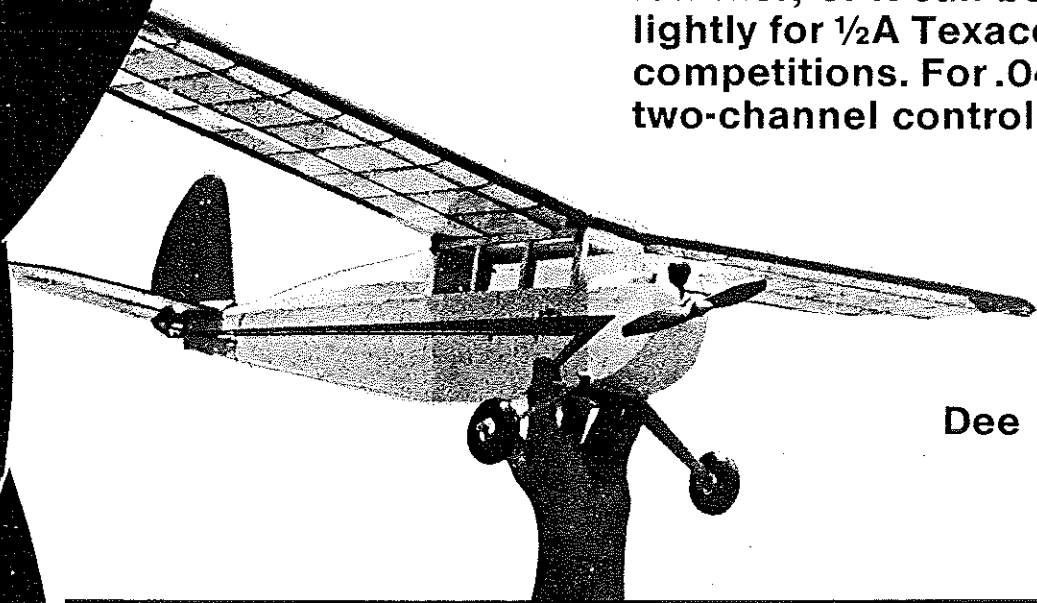


This scaled-down version of a 1938 design is a great RC-Assist fun flier, or it can be built more lightly for 1/2A Texaco Old-Timer competitions. For .049 engines, two-channel controls.



Dee B. Mathews

# KLOUD KING

THE EARLIEST RULES governing competition of models with internal combustion engines were based on fuel allotment. Engine runs were limited to try to reduce the alarming number of fly-aways being experienced in contests. Generally, the fuel was allotted based on the model's weight. The Texas Oil Co. donated a perpetual trophy for the winner of the annual National Model Airplane Championships,

There's nothing so pretty as sunshine coming through transparent covering—in this case MonoKote. Simple lines of the Kloud King combined with good proportions make it an attractive Old-Timer.

and to this day fuel allotment events in the Society of Antique Models (SAM) competitions are referred to as Texaco.

RC Texaco, as currently flown, uses 1/4 oz. of fuel for each pound of model weight (with a 1 3/4-oz. maximum). Some local contest rules further reduce this allotment to 1/8 oz., but winning times are still often in excess of one hour when thermals are present. Eligible designs, under SAM rules, are those published or kitted prior to 1939, with the Lanzo Record Breaker, Ehling Contest Winner, Dallaire, and other seven and eight-foot models predominating.

The obvious inconvenience of transporting and storing such large models, coupled with the large expenditure required, motivated SAM 49 Chapter members and other West Coast Old-Timer fliers to develop a Texaco event for 1/2 A models. The first contest was held at Taft, CA on December 5, 1979 as part of the 49ers annual contest. Since that time, the concept has swept the country. It is rapidly earning itself a position of popularity as a low cost and highly enjoyable RC Old-Timer activity.

At present, 1/2 A Texaco is a rather loosely structured, low key, fly-for-fun event. The only current rules are a minimum wing loading of 8 oz. per sq. ft., no major alteration of the original design's moments or airfoil, and the mandatory use of a Cox reed-valve engine.

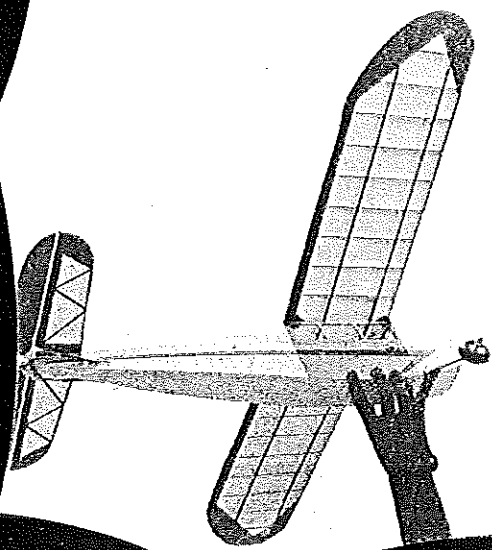
Events are run by simply having the contestant fill the standard Cox tank, fire up

the engine, and launch. Timing is usually a total of three flights, with some local variation on what constitutes an attempt, etc. It's a simple event to organize, administer, and (most important) to enter. In this writer's opinion, 1/2 A Texaco is an ideal entry point into the world of Old-Timer RC competition. As an added benefit, these little models are also excellent sport fliers.

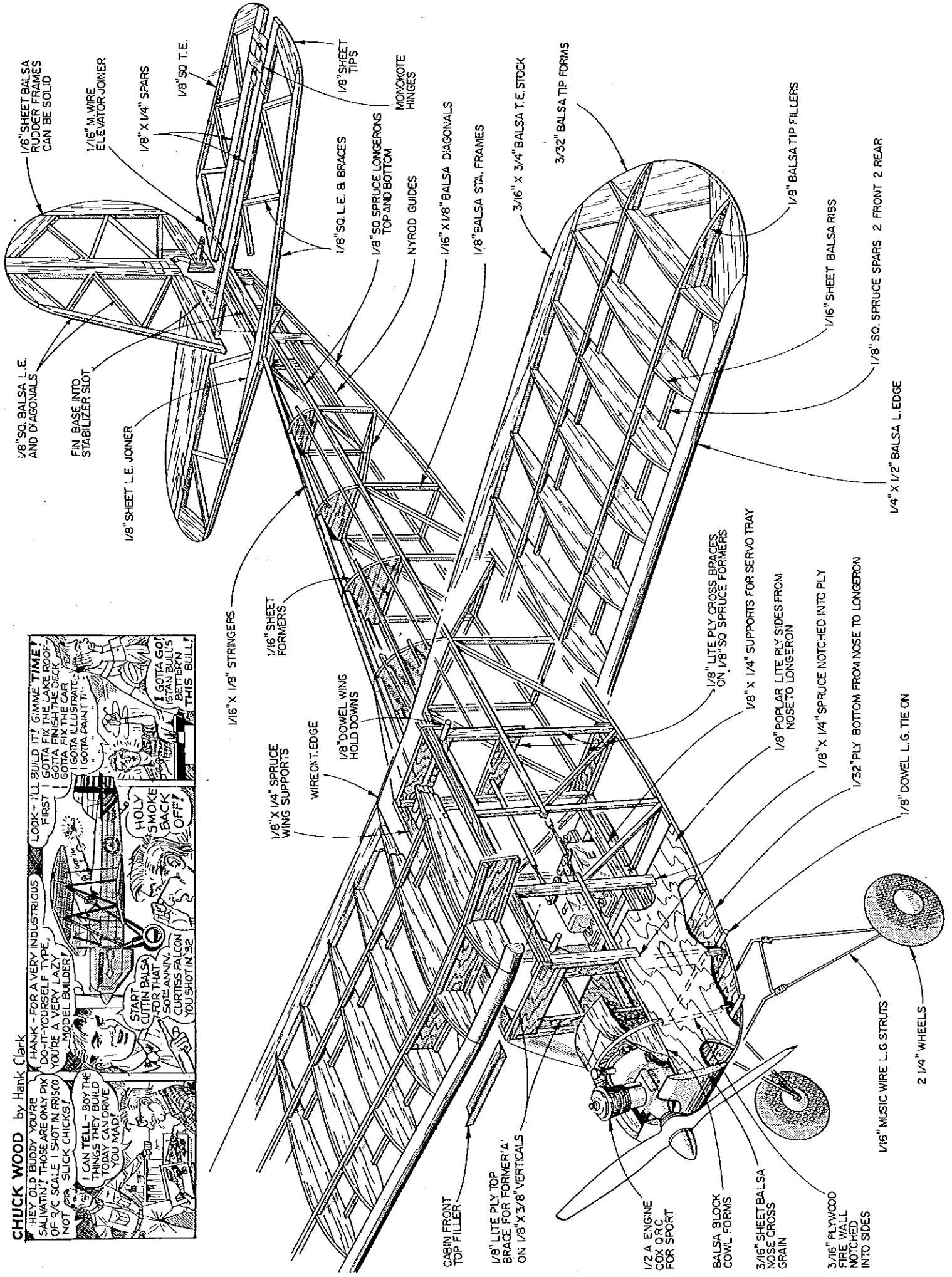
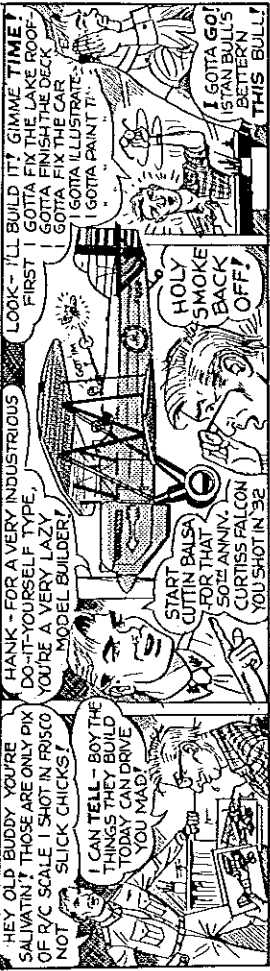
When we became aware of the proposed 1/2 A Texaco concept, naturally we decided to try our hand at it. Since few plans and only one kit were available in the early months of 1980, we opted to design and build our own. Since Mickey DeAngelis' Kloud King was the first Old-Timer converted to RC that this writer had published (July 1975 *Model Aviation*, Vol. 1, No.1), it holds a special spot in our heart. It was, therefore, the logical choice. We arbitrarily scaled it down to 300 sq. in. This turned out to be a rather good choice, as this is the average size that most fliers are using.

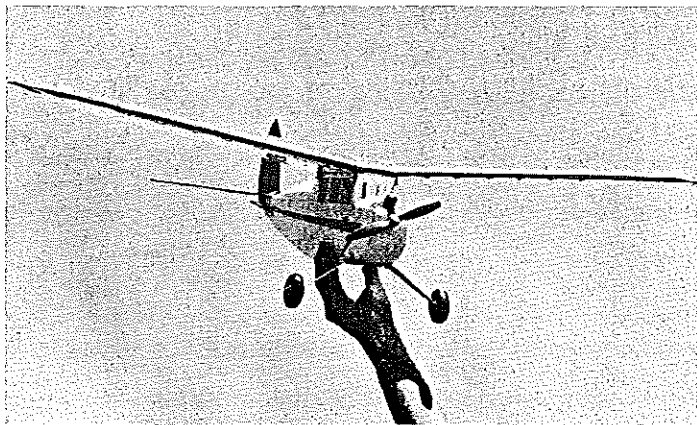
We didn't have a micro radio system, so we opted to use a pair of 1.2-oz. Cannon servos, a four-channel receiver, and a 225 mAh battery. While one of the micro systems would save approximately 3.5 oz. of weight, the 1/2 A Kloud King performs very well as it came out.

The original Kloud King was designed by Mickey DeAngelis in 1938. Powered with a Brown Junior engine, it set an endurance record of 10 min., 43 sec. at Mercer

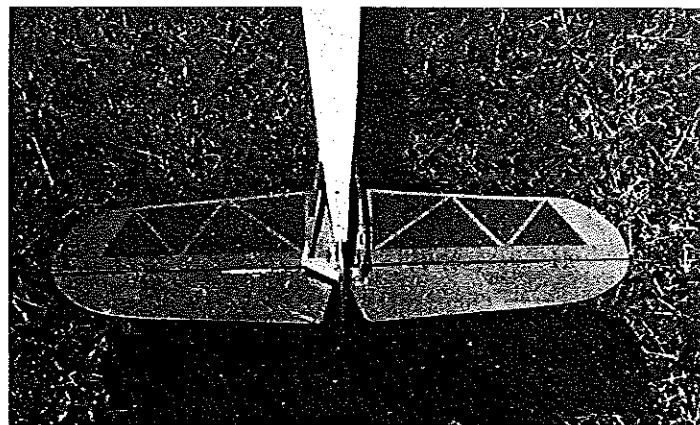


**CHUCK WOOD** by Hank Clark





1/2A Texaco, a relatively new SAM event, is rapidly growing in popularity. It's inexpensive, engines are readily available, great fun.



Use either solid wood elevators or built-up ones—plans show both methods. Servo connections are with simple nylon rods in tubes.

Airport, Trenton, NJ on May 22, 1938. DeAngelis designs (the Trenton Terror is another) are notable for their simple, functional and strong construction. They are all excellent fliers.

The converted and slightly strengthened Kloud King we presented in the very first issue of the reborn *Model Aviation* became very popular. It has been one of *MA's* best-selling plans for many years. This design for .15 to .19 engines has likely introduced more modelers to the world of Old-Timer RC-Assist than any other.

Is it any wonder, then, that we chose to base a 1/2A Texaco on the Kloud King design?

**Construction.** As our prototype was designed and developed primarily as a sport model, we opted to employ 1/8 sheet elevators and rudder for simplicity and rapid construction. Should the prospective builder wish absolute minimum weight, we have drawn an optional built-up structure. Additional weight could be trimmed from the model by substituting balsa for the spruce fuselage longerons, but this would produce a rather "tender" structure. Substitution of balsa sheet for the 1/8 Lite Ply forward section would be self-defeating, as the model likely would be tail-heavy and require ballast. Ours balanced properly without any ballast.

To be absolutely authentic, the 1/2A Kloud

King should have a bent wire landing gear. However, the ready-made Halco B 105-1 is more than satisfactory in a sport model. (In the majority of local contests, probably no one will mind.)

The primary adhesive used in constructing this model is cyanoacrylate (CA), such as Hot Stuff, Jet, and Zap. The slots cut into the wing trailing edge and the diagonal ribs of the tail surfaces are designed to increase the "wetted" surface for the CA to flow into. Five-minute epoxy is used for the firewall installation and to adhere the ply dihedral gussets.

**Wing.** Since the wing construction will generate some short lengths of 1/8 x 1/8 balsa which can be used on other units of the model, we advise starting here.

Develop a master ply wing rib pattern by tracing from the plans. Cut 18 blanks of light 1/16 C-grain balsa, and stack-cut the ribs with a jigsaw or by carving.

The wing tips are rough-cut to the inside outline and glued together. They sit on top of the lower spars. The steps in assembly are as follows:

Notch the trailing edge stock 1/8-in. deep at the rib locations, and pin in place over the plan. Pin bottom spars in place. Glue tip section onto bottom spars. Place ribs, tilting the inboard rib to the angle of the guide.

Place leading edge stock on shims, and adhere to the rib faces. Place upper spars

into notches and adhere with CA. Note that the upper spars terminate at the cut-down tip rib.

The center section can be built in place with the left wing. Cut it loose after assembly. Fill the tip with 1/8-in. scrap as shown in the tip detail drawing. The gussets are also cut from 1/8-in. scrap.

Remove the panel from the building board, and block up the tip 2 1/2 in. with the inside rib flush against a flat surface. Sand the bevel with a block. If the inside rib has been angled properly only the spars and trailing and leading edges should require contouring. Carve and sand leading edge stock to shape. Use a cardboard pattern to shape the tips.

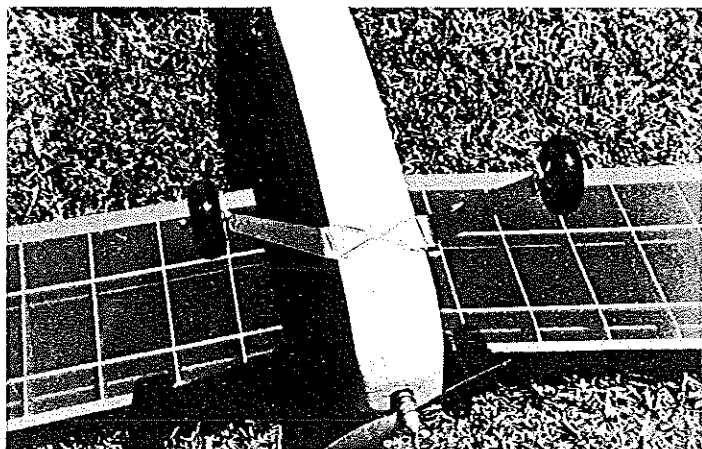
Build the left wing panel in the same way, then join to the center section with five-minute epoxy. Of course, the dihedral should be blocked up before gluing. Clothespins are good for clamping.

Using a hacksaw blade held tightly against the spar faces, cut a slot through the two double ribs. This is the first step for installing the full-depth dihedral brace. Place a section of 1/16 ply about 6 in. long into the slot, and draw the outline of the spars onto the ply. Remove and cut out. Using clothespins for clamps, epoxy the ply dihedral brace onto the spars and rib slots.

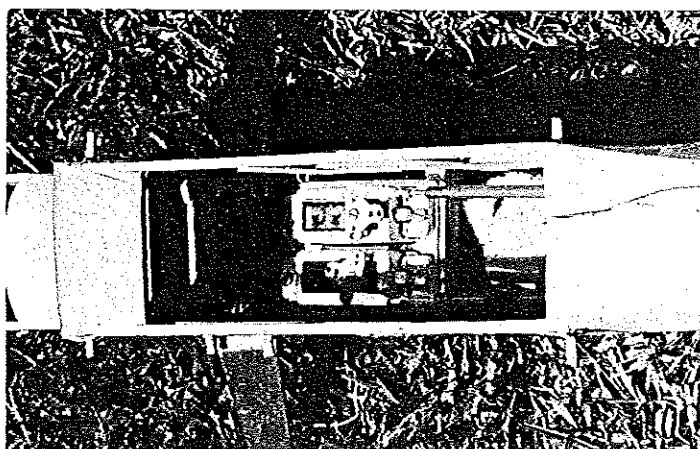
Final-sand all roughness from the wing in preparation for covering.

We strongly recommend either Mono-

Pre-bent aluminum landing gear used on author's model (rubberbanded for shock protection). Wire gear as per original is shown on the plan.



Cannon EC-4 servos and 225 mAh battery used in the prototype. Many lighter-weight servos could be used—but not needed for fun flying.



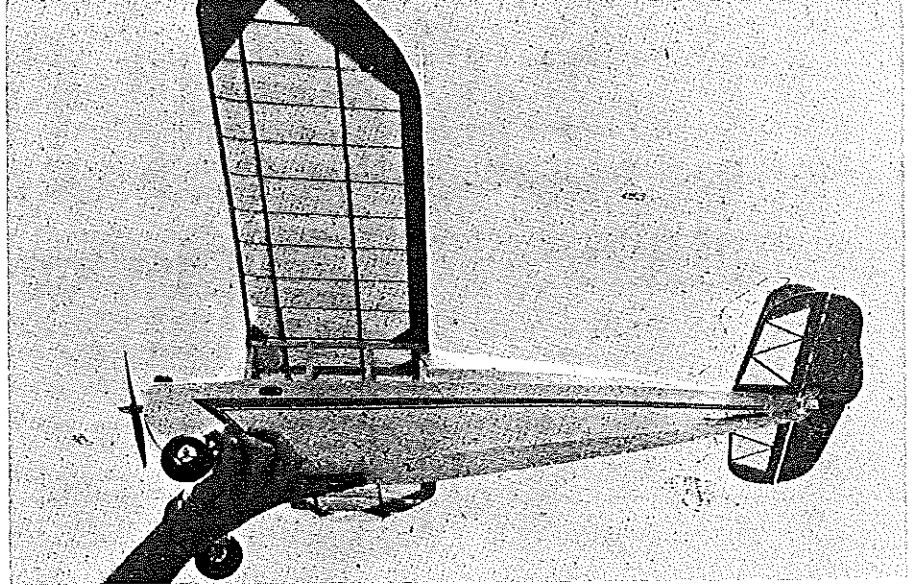
Kote or Coverite Micafilm for lightness and durability. If weight is a strong factor, consider using colored Japanese tissue and clear dope.

**Tail Surfaces.** Perhaps the most difficult thing to do is to decide whether to go for lightweight built-up surfaces or simple sheet balsa. Once that decision has been reached, fabrication is very straightforward. Only the fin slot and the music wire connector are even slightly unusual.

We strongly recommend MonoKote hinges on 1/8-in. thick structures! (More conventional slotted hinges will likely weaken the wood severely.) All that is needed are two sections of MonoKote 3/4 x 3 in. or so. These are heat-sealed along the sticky edge by lapping them about 1/8-in. with a section of scrap wood underneath. They are then applied to the surfaces in an over-and-under pattern.

Since the color of the hinge material matches the covering (presuming MonoKote was used) they're nearly invisible. They are also remarkably strong and usually last longer than the model. We have used MonoKote hinges on the rudder of a full-bore .60-size Pattern job, so obviously they are adequate for a model of this size!

**Fuselage.** Cut out the firewall and Lite Ply sides. Formers A and B are constructed directly over the plan. Lite Ply cuts easily with a sharp model knife, and the bulkheads



The author's favorite method of wing construction: sheet tips cut to outline after assembly, four spars, solid strip leading and trailing edges. The result is a simple, strong, and lightweight wing.

assemble very quickly with the use of a CA adhesive. Drill firewall for 3-48 blind nuts now. (Don't use wood screws!)

Build two identical sides, one over the other, in the classic manner. Remove the sides, and check the fit of the bulkheads and slots. Return the right side to the plans, and pin it flat. Glue the three bulkheads into the side, checking carefully for squareness. Allow the adhesive to set.

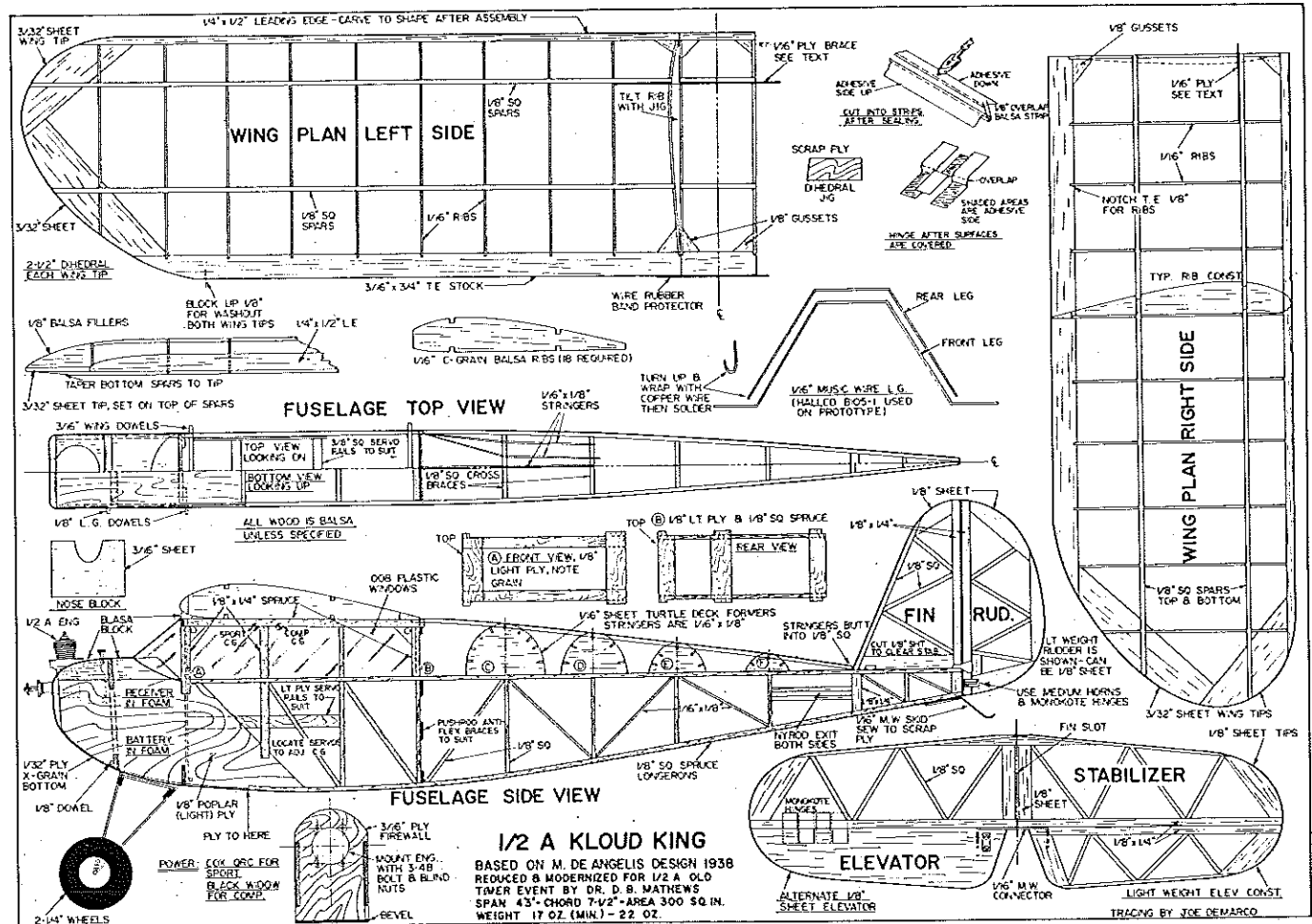
Carefully position the left frame. Check for alignment, then glue it to the bulkheads. Place a weight over the side to hold it firmly

in place, then block up the tail post exactly 1 in. above the building board, measured at its bottom edge.

Cut the cross members, using the top view as a guide; these should be developed in pairs. Position and glue the cross members, then remove the unit from the board. If the bulkheads were square and the tail post measured accurately, this will be a "true" frame in all dimensions.

We prefer to cut out the turtledeck formers with marks at the appropriate

*Continued on page 134*



Full-Size Plans Available . . . See Page 172

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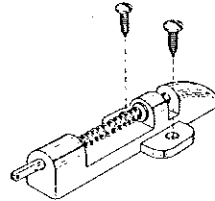
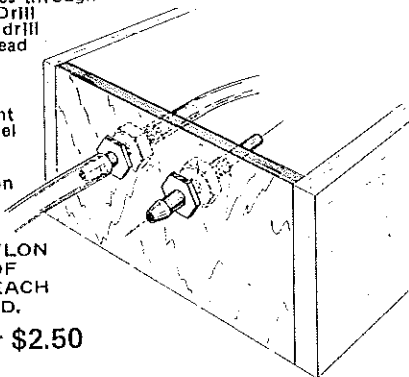
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except to try to take measures (obviously unsuccessful) to keep the setscrew and collar from coming loose. Since I was lucky enough to be able to re-install the unit, I also had a chance to recognize my latest stupidity. Time and time again I have said that we must treat our Giant Scale birds like real aircraft, not models. Yet I casually accepted a technique that is the usual practice in small RC models only because there isn't anything better. With a 5/16 or even a 1/4 steel shaft, it is a simple matter to drill a small hole and insert a tension pin which *cannot* loosen and slip off.

I was lucky on that one; my Tomahawk flew again the next day. But don't you do as I do; do as I say right from the start, "In every little way, treat your Giant Scale aircraft as a full-scale aircraft."

Bob Beckman, 8248 Holly Grove Ct., Manassas, VA 22110.

**Correction.** In the subhead of Bob Beckman's report last month on the IMAA 2nd Annual Giant Scale Fun-Fly Festival, we incorrectly substituted "Aerobatics" for the word, "Aircraft." To members and officers of the IMAA, we apologize for the error. IMAA really stands for International Miniature Aircraft Association. . . . . Carl Wheeley  
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## 1/2A Kloud King/Mathews

Continued from page 49

stringer locations rather than notches. The formers are glued and *then* notches cut for the stringers using a metal straightedge to locate each one. This technique seemingly eliminates the curved stringer problem so common with pre-notched formers.

If the aluminum Halco or similar landing gear is chosen, the forward dowel hole should be moved back to be 1/4 in. forward of the rear dowel. The tail skid is bent of light wire, then wrapped onto a pre-cut section of scrap ply and adhered with CA.

**Radio installation.** Our unit was roughly positioned with the engine bolted in place and the tail feathers taped on. The Lite Ply rails were located to suit the individual radio components. Basswood or other hardwood cross rails were cut to a tight fit, then the servos and their tray moved fore and aft to obtain a slightly nose-heavy CG.

Nylon tube pushrods were then fitted. Anti-flex cross members were also used.

## Beckman, cont.

she was a bit nose heavy, but I always like to start out that way. During the next week I took a little weight out of the nose, made some trim changes, and looked forward to another beautiful Saturday.

The Tomahawk's second flight started as well as the first one had, but before it was over I had proven that I still had some stupidities in reserve. After the takeoff, I flew around for a bit getting the feel of the bird, and then started making some low passes for pictures. On the second pass everyone began hollering "The nose wheel's turned." Sure enough, the nose wheel was turned 90 degrees to the fuselage. I immediately set up for landing, planning a long final and a slow, nose-high touchdown. Just after turning on final, the nose wheel dropped away from the plane. I continued the approach, and the bird touched on the main gear, rolled a ways, and then started

digging divots with the airscoop on the cowl. It was only then that I realized that the whole nosewheel strut had parted company, not just the wheel. Except for a few dings in the cowl, there was no damage, not even a broken prop, but the whole nose gear was way out in the weeds off the end of the runway. With help from a half-dozen club members, and a lot of luck, the gear was found. This meant I had half a chance to get it back on so I could fly again on Sunday.

It was already obvious to me what had happened. The nose wheel assembly is a double-strut unit that comes in the kit, already assembled. The upper end is a 5/16-in. steel rod that turns in two aluminum mounting blocks bolted to the firewall. It is held in by shaft collars, just like the nose gear on smaller models. In my particular installation, only one collar was used, and when the gear slid down, it disengaged the steering arm. At the time I installed the unit I didn't think anything of it

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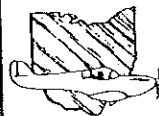
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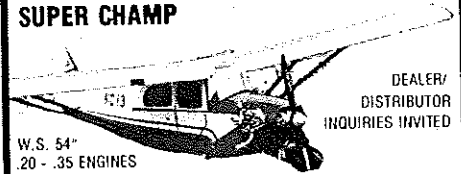
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These are fabricated by tack-gluing two sections of scrap 1/4 x 1/4-in. wood together, drilling a 7/64-in. hole at the joint, then popping them apart. The pushrod braces are then placed above and below the pushrod and glued to the fuselage verticals. Even a small model like this needs pushrod braces.

**Odds and ends.** The engine compartment should be fuel proofed with epoxy or polyester resin. Our prototype fuselage was covered with silk, given three coats of nitrate dope, then lightly sprayed with white Poly-U. This provided a sturdy and durable covering. (Those wanting light weight could use a clear finish and colored Japanese tissue.) The dowels should not be permanently glued until the fuselage is covered.

We prefer to test fly our models in the workshop! That is, we check and correct any warps and misalignments. We adjust the C.G., test the engine, and check out the RC gear—at home! The reduced stress of leisurely looking over the model in the shop often prevents a disastrous first flight. If everything is "A-OK" at home, it likely will be at the field as well.

**Flying.** Kloud Kings always fly well. If the builder has had any experience in hand launching we suggest that the early flights be launched this way. If the surfaces are true and unwarped, the C.G. is located properly, and the engine is running properly, the 1/2 A Kloud King will fly right out of your hand with little or no RC correction required. Although the model will R.O.G. nicely, hand launching is actually safer.

Turns are gentle, with very little tendency for the inboard wing to dig in. The model will correct itself to level flight by merely allowing the transmitter stick to return to neutral.

The rate of climb with a Cox QRC is brisk, but not wild. Use up-elevator sparingly. With a Black Widow engine she will climb very quickly, and you will have to be careful to not overcontrol. We try for a "screaming" left-hand power pattern using the trim controls to set it—staying off the sticks entirely!

The Black Widow will put this little lady terrifically high with a full tank of fuel. As a matter of fact we recommend bright colors to aid with visibility. A section of chrome MonoKote or other reflective tape is most helpful in keeping oriented as to which wing is which.

Landing such a lightly-loaded model is purely a matter of getting it lined up and S-turning to bleed off altitude. She floats in ground effect for a long way, which may require some down-elevator to get her wheels on the ground.

The 1/2 A Kloud King makes an excellent small trainer in the sport configuration with the QRC engine. If any prospective builder chooses it as a first RC, he need only seek some assistance from an experienced pilot.

If this article displays a certain ambivalence about this design, it is not surprising. The

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1/2 A Kloud King is both a delightful sport model in its heavier form, and a potential contest winner in its lightweight configuration. It is simple to build, inexpensive to operate, capable of thermalling very well, and perhaps most importantly, it is a cute little lady.

For those who wish to try the 1/2 A Texaco concept and/or are looking for something different in a 1/2 A RC model, we assure you the 1/2 A Kloud King is something to . . . enjoy!

### RC Pylon Racing/Hager

*Continued from page 42*

.2 of a second better than Norm Johnson's 1:14.9. Here are the summaries: August 21, 1982: 1) Bill Preis—1:18.2; 2) Dave Layman—1:17.5; 3) Gary Heithold—1:20.7; 4) Dub Jett—1:19.38; 5) John Hancock—1:20.7. August 22, 1982: 1) Dave Layman—1:17.5 (1:13.5 flyoff); 2) Bill Preis—1:14.7 (1:14.2 flyoff); 3) Norm Johnson—1:14.9 (0 flyoff); 4) Jerry Small—1:18.6; 5) Dub Jett—1:23.2.


See you next month.

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