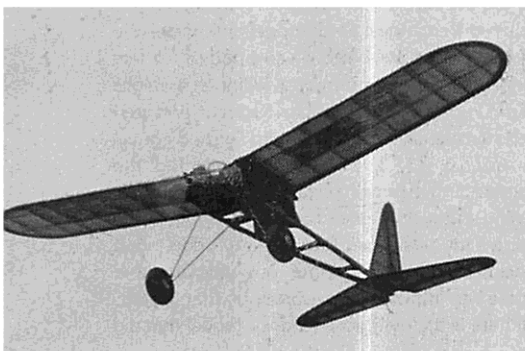


1936: It was a vintage year for FLYING ACES. Bill Effinger and Thracey Petrides dreamed up a super-simple stick design, still a classic after 42 years. An R/C natural/Hank Stumpf

# FLYING ACES STICK



Here is the Granddaddy of all "STIK" type power models. It was designed in 1936 by two well known metropolitan New York area modelers, Bill Effinger and Thracey Petrides. Bill later went on to become the founder and president of the late and famous Berkeley Models of West Hempstead, N. Y. He now lives in New Jersey. Thracey graduated from N.Y. University in the Class of '42 with a degree in Aeronautical Engineering. His present whereabouts is unknown to us.

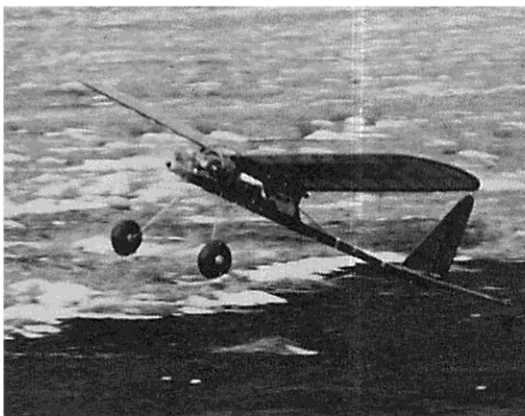
The first construction article for this model appeared in the April, 1936 issue of FLYING ACES magazine, the direct ancestor

of today's FLYING MODELS.

If nothing else, the Flying Aces stick gas model proves the old adage that there is nothing new under the sun. All the essential elements of today's stick type radio controlled models are there in easily recognizable form. No significant changes from the original model were required to adapt it for radio controlled operation. Now on with the job!

## Construction

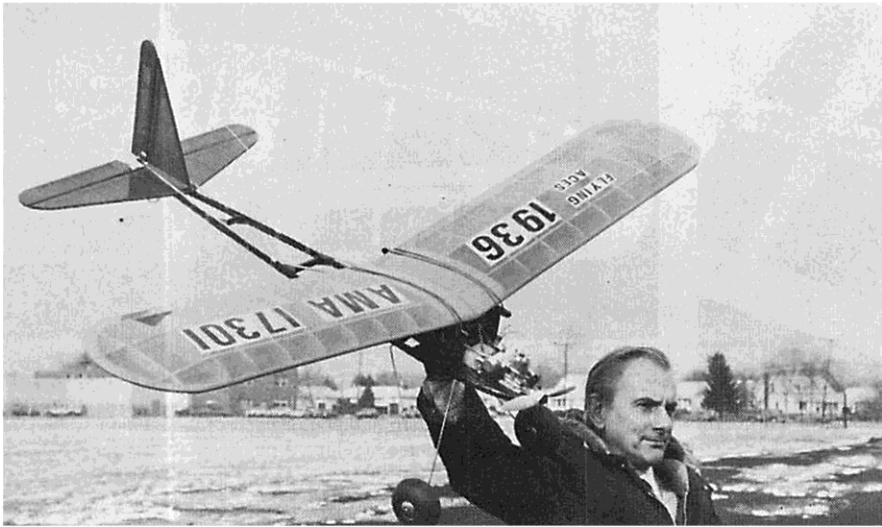
Start by building the wing. Prepare a wing rib template using plywood or sheet aluminum. Cut 17 ribs from  $\frac{3}{32}$ " sheet balsa. Later



PHOTOGRAPHY: BOB ABERLE



Some designs are for the flying. Beautiful scale replicas can come later, they have to be admired too, but sometimes what you need is an ultra-easy aircraft that can get you in the air, fast enough, and long enough to polish up your flying skills. It's an aircraft you can complete in a week, a flying test bed.



$\frac{1}{2}$ " spruce wing mount rails. Be sure to use epoxy or white glue for spruce, do not use model airplane cement. Cut out and drill the engine mount plate to match your engine and install 4-40 blind nuts on the bottom side. To add some rigidity, there are numerous plywood gussets reinforcing the crutch joints. Don't underestimate the importance of the gussets in a structure of this type. They give it the ability to take twisting and bending loads it gets during flight and landing. The completed fuselage was stained with walnut stain and finished with two coats of urethane varnish which provides good protection from oil and fuel. Although the author left this area open for authenticity, the sides and bottom of the wing mount/crutch area between F-1 and F-2 may be covered with transparent Solar film or heavy celluloid to preserve the original open framework appearance while still protecting the radio equipment from possible oil and fuel damage.

The engine selected to power this old timer is the superlative Schneurle ported K&B .21, which is in the vanguard of up to date performance and design. Back in 1936, this airplane flew with a Brown .60 while now a .21 does the job with ease. Actually, you can use any engine from a hot .15 to a sport .35. Just remember to cut the fuselage mounting plate to match your engine. An SS-2 Sullivan tank is mounted sideways on the fuselage right behind the engine to complete the powerplant installation. For sport flying, I recommend a 9x4 wood prop and 5% nitro glow fuel.

The main landing gear is bent from  $\frac{1}{8}$ " diameter wire with a  $\frac{3}{32}$ " diameter wire brace. Bind these pieces together with copper wire and solder. Use balloon air wheels to give your model that authentic Old Timer look, such as the  $3\frac{1}{2}$ " Trexler air wheels used on the author's model. Many hobby shops stock these wheels, but if all else fails, they can be ordered from Sig Mfg. Co. The landing gear is attached to the fuselage crutch with Midwest molded nylon wire landing gear clips.

The tail surfaces are constructed of balsa with  $\frac{1}{4}$ " square leading and trailing edges,  $\frac{1}{4}$ " x  $\frac{1}{2}$ " spars,  $\frac{1}{8}$ " x  $\frac{1}{4}$ " sheet tips and stabilizer center. Join the elevator halves with  $\frac{1}{4}$ " diameter dowel. Sand the pieces with #150 sandpaper rounding the leading and trailing edges and spars. Slit the spars to accept your hinges and epoxy them in place, being careful not to get epoxy in the actual hinge. Glue the fin to the stabilizer using  $\frac{3}{8}$ " balsa triangle stock at the intersection for strength. Put the tail assembly away until you are ready to cover it.

Prepare the wing and tail surfaces for covering by applying one coat of Balsarite, and when thoroughly dry, sand lightly with #200 sandpaper. We used transparent orange MonoKote for the wing and transparent blue for the tail. This duplicates the colors used on the original model and compliments the stained and varnished fuselage nicely.

### Radio Installation

The author installed a three channel Cirrus radio, but any three or more channel radio will do, since installation room is no problem.

All the radio equipment is installed in the area under the wing between fuselage formers F-1 and F-2. The battery and receiver are wrapped in foam and taped together and

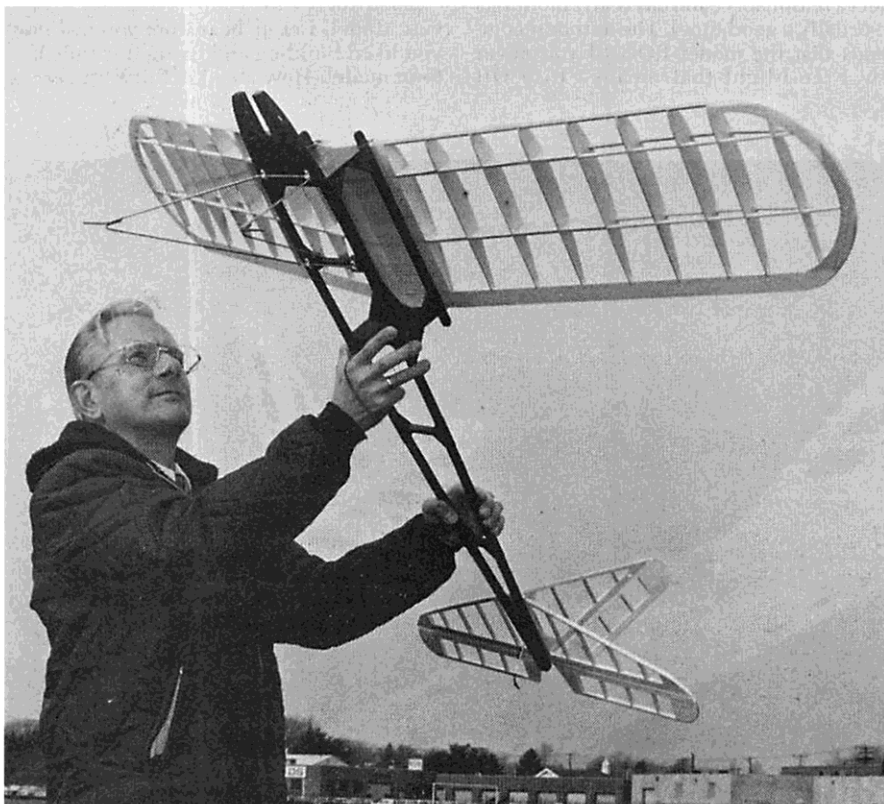
take three of these ribs and cut them down to take the  $\frac{1}{16}$ " center-section sheeting and the plywood dihedral braces. Cut two tip ribs to match the sections shown on the plans and you are ready to start assembly.

Select straight grained medium hard balsa  $\frac{3}{8}$ " square for the leading edge and  $\frac{1}{4}$ " x 1" tapered stock for the trailing edge. Use  $\frac{1}{8}$ " x  $\frac{1}{4}$ " spruce or rock hard balsa for the spars. Cut the tips from the  $\frac{1}{4}$ " balsa sheet. Now assemble the wing halves and then join them using the  $\frac{3}{32}$ " plywood dihedral braces.

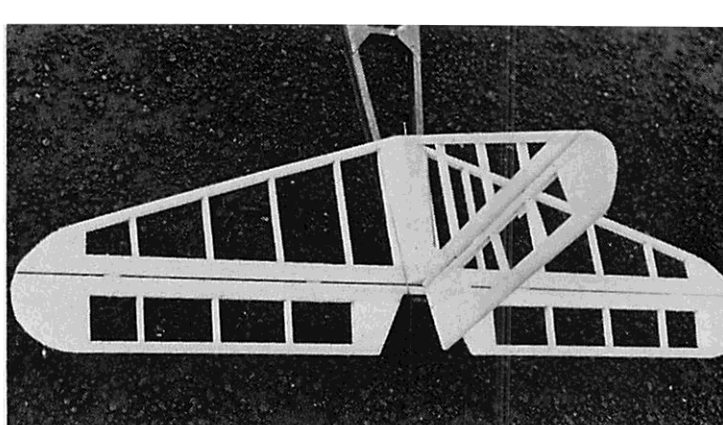
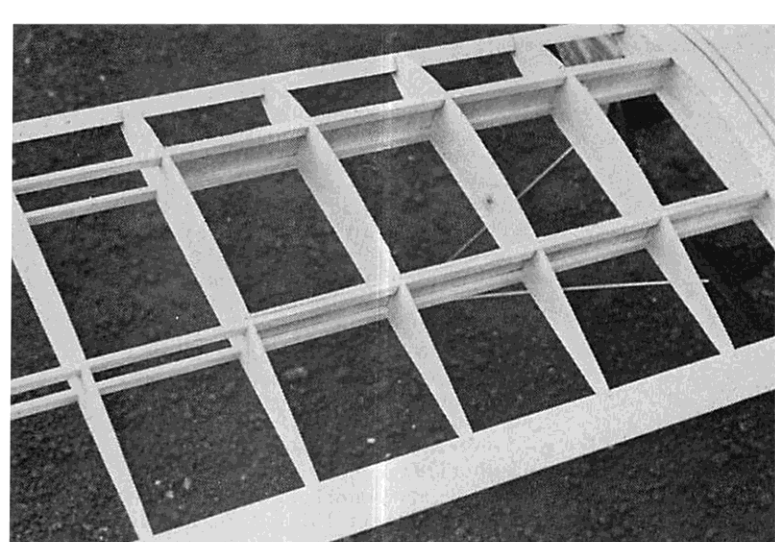
After joining the wing, install  $\frac{1}{16}$ " sheet balsa vertical grain webs between the spars

out to the fifth rib from the center. Complete the wing by covering the center-section with  $\frac{1}{16}$ " sheet balsa and reinforcing the center-section trailing edge with  $\frac{1}{8}$ " diameter dowel. Finish sand the completed wing with #150 sandpaper and put it aside for covering later. The resulting structure is light and yet possesses adequate strength for the rigors of R/C flying. The original completed wing weighed in at 8.5 ounces.

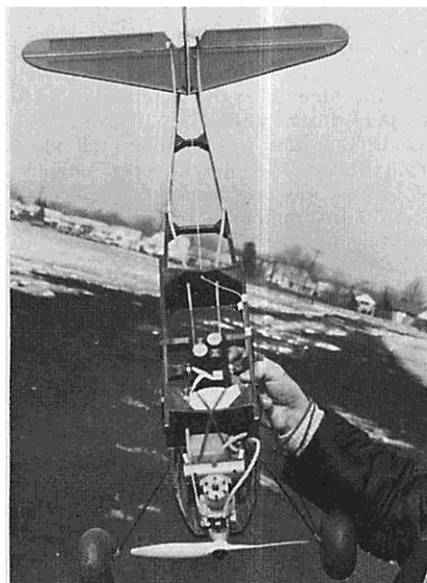
The fuselage structure is basically an open framework crutch constructed with  $\frac{1}{4}$ " x  $\frac{1}{2}$ " spruce longerons and cross braces with a  $\frac{1}{2}$ " plywood engine mount plate. To this are added two  $\frac{3}{16}$ " plywood formers and  $\frac{1}{4}$ " x



Flying Aces, 1936. Those were the days. Fellows built a new ship every week, buses to the outskirts of town were full of newly doped aircraft. Hank Stumpf holds his replica. It's a fun machine to fly with a modern radio. **Beneath:** Naked framework won't frighten many builders, it will make a pretty good trainer.



Simple tail surfaces offer little in the way of problems, it's all routine. **Left:** Note the vertical grained spar web of balsa out to the fifth wing rib. **Left center:** The radio is a modern addition, instead of the ignition system. **At bottom:** How easily it all glues together. A quickly built flying machine.



strapped to the back of former F-1 with rubber bands. The three servos and the on-off switch are mounted on a servo tray which is screwed on to the two transverse rails on the fuselage crutch. Tape the excess radio and servo cable to the crutch to prevent them from flapping in the breeze. Two nyrods run from F-2 back along the top of the longerons to the rudder and elevator control horns. Use nylon reinforced scotch strapping tape to hold the nyrods to the longerons. The motor control runs forward through former F-1 and is also a Nyrod.

#### Flying Notes

Check out operation of your radio installation thoroughly before bringing the model to the field for its first flight. Make sure everything works smoothly with the engine running. When you are satisfied, select a reasonably calm day (early mornings are usually a good time). The author recommends that the model ROG (if you never flew Free-Flight that means "Rise Off

Ground") instead of being hand launched. The large balloon wheels permit ROG's even off fairly rough grass fields. Be sure to go easy on the throttle as the K&B .21 has more than enough power for this aircraft.

The first two test flights were made by Glenn Spacht with your author joining in on the third flight after everything was trimmed out. Flight characteristics are straightforward and relatively docile. Low speed controllability is outstanding with speeds as low as 20 to 25 mph. Another pleasing aspect is the aircraft's lack of spiral diving tendencies, even in very tight turns. These old timers have a large amount of inherent stability due to the generous dihedral and tail moment arm, so if you get into trouble neutralizing the controls will give it a chance to recover by itself - presuming you have enough altitude.

Good luck with your Flying Aces Stick Gas Model. Let us hear from you and how you liked building and flying this truly historic model. How about it Bill Effinger? 