

PHOTOGRAPHY: BOB LOBOZZO

A departure from the usual "Stik" aesthetics, the Midwest Sweet 'N Low Stik still offers all the enjoyable flying of its forebears.

An FM Product Review:

Midwest's Sweet 'N Low Stik

By Bob Lobozzo

Low wing addition to the Stik family retains the characteristic ease of construction and fine flying traits. For .40 engines.

This product review started out perhaps a little differently than most. An aircraft was needed to test certain new products and ideas. It was necessary that it be .40 powered and of simple construction. It was desired that it be constructed from an available kit rather than scratch-built.

The Sweet 'N Low Stik by Midwest Products Co., 400 S. Indiana St., Hobart, Indiana 46342, filled the requirements. Specifications include a 54 inch wing span, 600 square inches of wing area and a .29 to .50 cubic inch engine requirement. Construction is a mixture of balsa and plywood with an advertised flying weight of 5½ pounds.

After securing the kit, we dumped the contents on the workbench and started separat-

ing the fuselage, wing, and tail parts, making piles for each. Inspection revealed that all the wood was of good quality. The die cutting on the plywood parts was good; however, the balsa parts were only fair with some die crushing evident. The hardware supplied was of good quality and fairly complete. At this point, I honestly believed that I could not put a similar plane together from scratch without spending more money than the actual cost of this kit. The plans provided are full size and include notes on construction.

I was very impressed with the basic construction; it was simple and strong, an excellent engineering job by Midwest. Before I go further, I would like to qualify my opinions on the actual construction, etc. Being basically a scratch builder, I am, in general, very

critical of kits. I can truthfully say I found very little to fault on the Sweet 'N Low Stik. Changes were made to suit personal preference and, except as noted, I feel that built as is, it will make a fine aircraft.

Construction

The tail assembly was started first, and being all 3/16 inch sheet wood, it goes together quickly. The elevators are supplied in one piece with a wire joiner. The idea is to install the joiner before separating the elevator halves to insure alignment of the halves. I tapered the rudder and elevator halves to reduce weight. As per the plans, they were to be left flat and untapered. I think 3/16 inch is a little on the thin side for an aircraft of this size and would have preferred 1/4 inch sheet

for the tail assembly.

Moving on to the fuselage, its sides are poplar plywood and have round cut-outs at the rear to reduce weight. Due to the strength increase over balsa, they do not require doublers in the forward area.

The fuselage is flat on the top, from the firewall to the bulkhead behind the wing, allowing it to be built upside down on the plans. The fuselage sides, firewall, and two bulkheads are pinned down over the plans, to the work board. The rear of the fuselage is aligned, over the plans, with a combination of squares. Prior to actually gluing the fuselage together, the stringers and wing saddle doublers, etc. are installed. It was decided that the lightening holes at the rear of the fuselage made it too weak; so $\frac{3}{16}$ square balsa braces were installed vertically between the cut-outs, to strengthen this area. Epoxy was used for the fuselage construction forward of the wing and cyanoacrylate for the remainder.

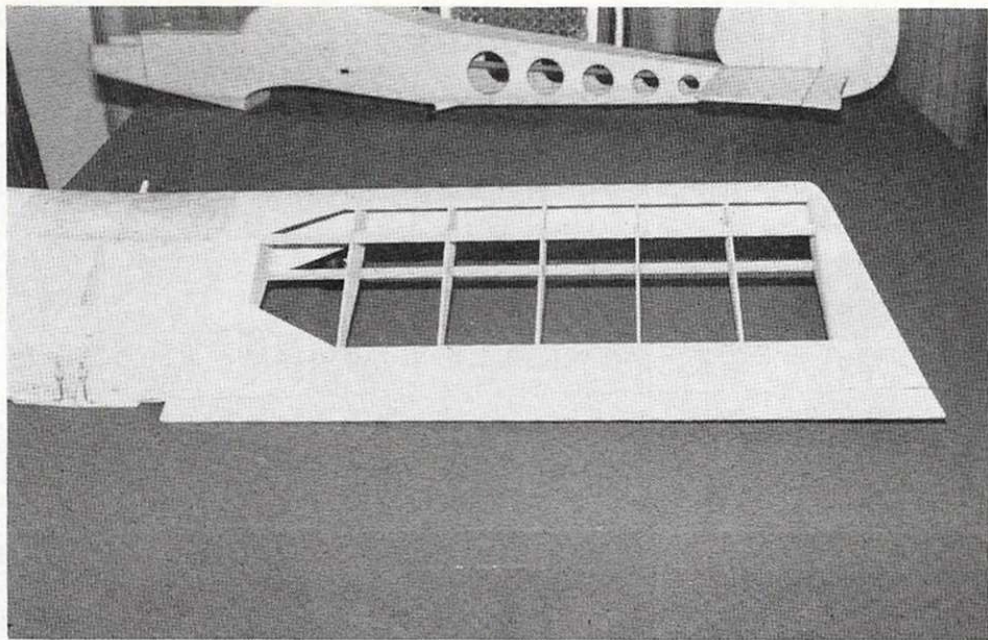
About this time, it was becoming apparent that the space for radio installation was smaller than I was used to. With surplus lite ply from the die cut fuselage sides and scrap $\frac{3}{32}$ balsa, I fabricated a canopy of sorts. Also added was a sheet cowl of $\frac{3}{8}$ soft balsa. The above changes gave the Stik a slightly different look and provided more room for the radio.

The wing was now started and was built in two separate halves on a straight flat board. First the rear trailing edge sheeting was trued and pinned down. The trailing edge rear filler strip was epoxied in with slow cure epoxy and pinned flat. The ribs and spars were added and glued into place with some cyano.

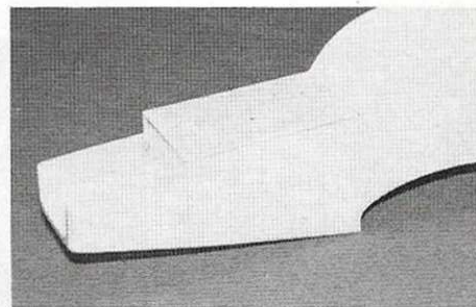
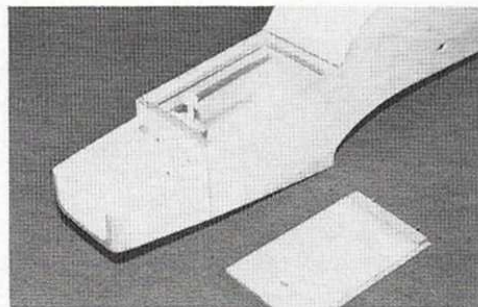
With the wing half pinned to the board, all possible parts were added; then the wing was flipped over, re-pinned, and the remaining parts added. At no time were pieces added without the wing being flat on the board and pinned or weighted. It should be noted that the bottom of the ribs are perfectly straight from the main spar to the trailing edge, both top and bottom, which made the task simple. A criticism here is that as most modelers build the wing in two separate halves, the center rib should be doubled, one for each wing half. This allows each half, or wing, to be built separately and accurately. I fabricated additional pieces and built identical halves. After joining the wing panels, the center section was glassed. No mention is made of reinforcement of the center section with glass. Although the wing appears strong, I glassed the center section because it is a critical area. No particular problems were noted on the wing except as mentioned and it proved to be straight and strong.

Ailerons were hinged with my own gapless hinges along with the elevator and rudder. The plans indicated that the outboard aileron ends are wider than the inboard ends. I believe that this invites possible flutter but I followed the plans in this case and had no problems during flying.

With the fuselage structure framed out, the radio and control rod installation was tackled. The servos were tray mounted to $\frac{3}{8}$ square servo rails, installed between fuselage sides. DuBro metal control rods running in nylon sleeves were installed on rudder and elevator with a cable being used for throttle control. Holes were made for switch, charging jack, control horns, etc. At this time $\frac{1}{16}$ plywood pieces were installed under the rudder and elevator horns to strengthen these



The wing before covering (above). Although no mention is made of glassing the center section, the author did so from his own preference. Easy access to the fuel compartment (below, left and right). The tank area was fuel-proofed with Hobbyepoxy and nylon hatch hold-downs substituted for the rubber band method.



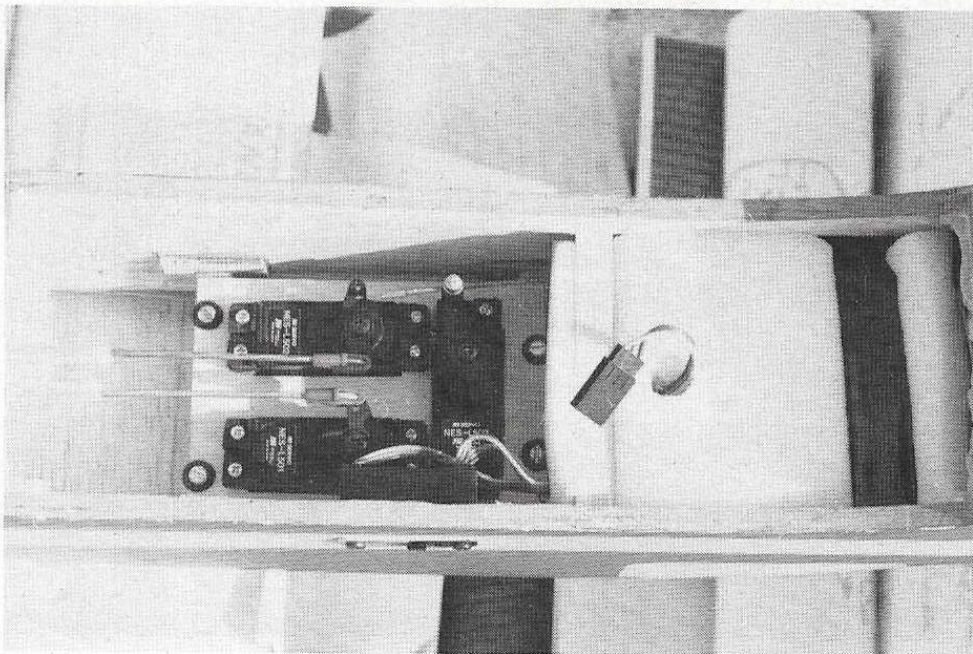
The completed framework shows the lightening holes in the fuselage sides. They're made of poplar ply and require no additional doubling. However, as a precaution, the author added bracing to the tail.

areas. The radio was removed and the bottom sheeting behind the wing was installed on the fuselage. The plans show $\frac{1}{16}$ control rods on elevator and rudder with no brace at mid-point. As shown, these will flex under load. They must be braced at the center.

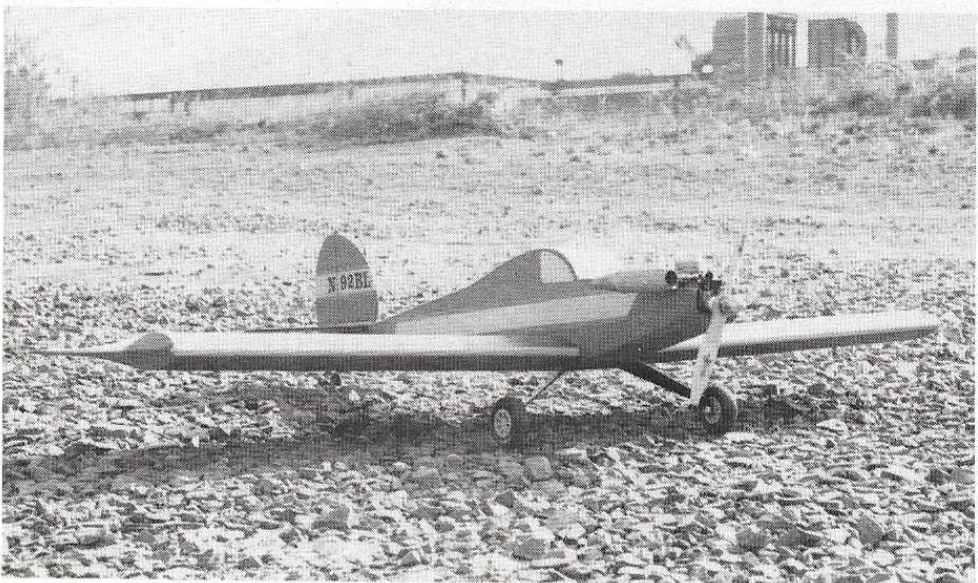
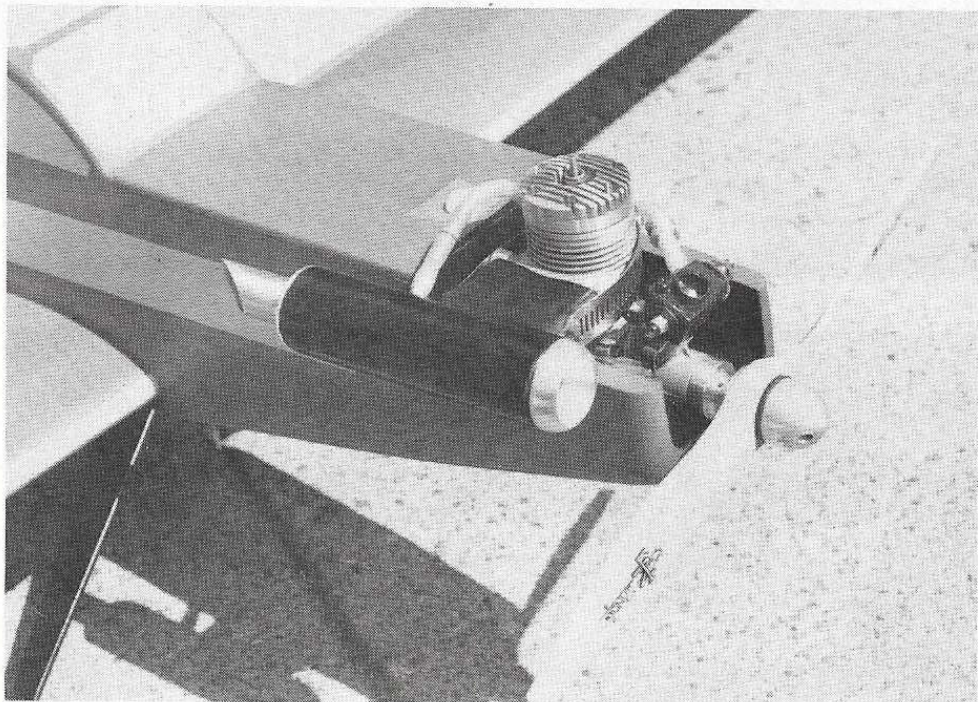
The rubber band hatch hold down shown on the plans is a fast fool proof method, but

we elected to use two metal pins and a single nylon screw to retain the hatch over the tank compartment. The entire tank compartment and interior of the engine cowl was sealed with Formula II glue by Hobbyepoxy.

Given the option of tricycle or conventional gear, we chose the latter set-up, creating a tail dragger. I followed the plans on the



For control, a JR radio with 501 and 502 servos was used (above). The servo tray supplied didn't suit the installation, so a custom plywood one was substituted. Any sport .40 will fly the *Sweet 'N Low Stik* with ease. For hotter performance, an Enya .40X (below) pulled the plane with a lot of authority.



landing gear mount and had no problem. I used a Hallco dural gear I had on hand, as it gave me a little more tread width. I believe the stock gear would have been adequate. No mention of a tail wheel is made nor is one supplied. Not wishing to rely on a skid, a Goldberg tail wheel bracket was added to the rear of the fuselage. I bent up some $\frac{1}{16}$ music wire and strapped the tiller arm to the rudder with some thin brass stock. A $1\frac{1}{4}$ inch tail wheel completed the assembly. Fuel tubing was slipped over the $\frac{1}{16}$ inch wire prior to clamping it to the rudder to prevent metal to metal contact.

The wing hold down blocks are probably adequate to hold the wing on, but they are so small that I doubted I could drill through the wing and hit them on center. Larger blocks were installed and braced and a small $\frac{1}{16}$ inch plywood plate was added at the bottom of the wing in the bolt hold down area.

Covering

With the exception of the numbers and letters on the vertical fin, all covering and trim was Hobby Shack's Solartex. The yellow trim and blue pin stripes were ironed over the basic red color. On the top of the wing, however, the yellow and red are butted together with pin stripes over them. I glued the butted seam with cyano as I did not feel that the Solartex stuck well enough to the spar to stay on during flight. I could not get the Solartex pin stripes to adhere well enough to this area and glued them down also.

I glued all edges around the wing saddle, hatch, engine compartment, etc., with cyanoacrylate. After covering was complete, we sprayed the entire model with three light coats of clear dope. Sig Supercoat was used and we experienced no problems with it sticking to the Solartex.

Radio

An Apollo series JR radio (DSC-4SVM) was ordered from Circus Hobbies. This is a 5 channel radio with servo reversing and dual rates on aileron and elevator. The set is supplied with two 501 and two 502 servos. They're identical except that two operate in reverse direction of the other two. The servos are rated at 40 ounce-inches of torque, weigh 1.6 ounces each, and measure $1.37 \times .75 \times 1.53$ inches.

During radio installation, we found we could not use the servo tray provided as it put the servos too close for our particular installation of rudder and elevator control rods. The plane had originally been set up for a different radio. The simplest solution was to make up a plywood tray spacing the servos as needed. Once the servos were installed, the battery and receiver were added, mounted vertically against the bulkhead in front of the wing. The battery was against the bulkhead and the receiver located between the battery and servos.

With the extra room from the added canopy, more than ample space was afforded to install the radio without having to shoe horn anything into place. A piece of foam was installed over the top of battery and receiver and held in place by sticks wedged under fuselage doublers.

Flying

With the modifications to the structure, which added weight, balanced by careful attention to saving weight overall, ready to fly the plane was four pounds, fifteen ounces, less fuel. It required no ballast to achieve the

balance point, which was slightly behind the recommended point. Incidentally, the weight is more than 1/2 pound under the stated weight and was checked on two different scales.

The initial test flight was essentially uneventful. The first flight was flown by someone else as I had to man the camera duties.

Any decent running sport .40 such as the K&B .40 originally installed, is adequate to fly the Sweet 'N Low Stik through all but the more advanced maneuvers requiring brute power. A hot .40 will provide more than adequate performance for most flyers. The Enya .40X that was substituted for the K&B .40 which developed problems was used for most of the flying and was powerful and smooth running. The carburetor, which looks old fashioned with the idle air bleed set up, does have a fuel metering system. It worked quite well, providing excellent throttle response.

Although a good flying aircraft, the Sweet 'N Low Stik cannot match an average .60 powered pattern ship for aerobatic performance. To expect it to do so would be unreasonable. At five pounds and 600 square inches of wing area, it is bothered by wind more so than a heavier, larger aircraft.

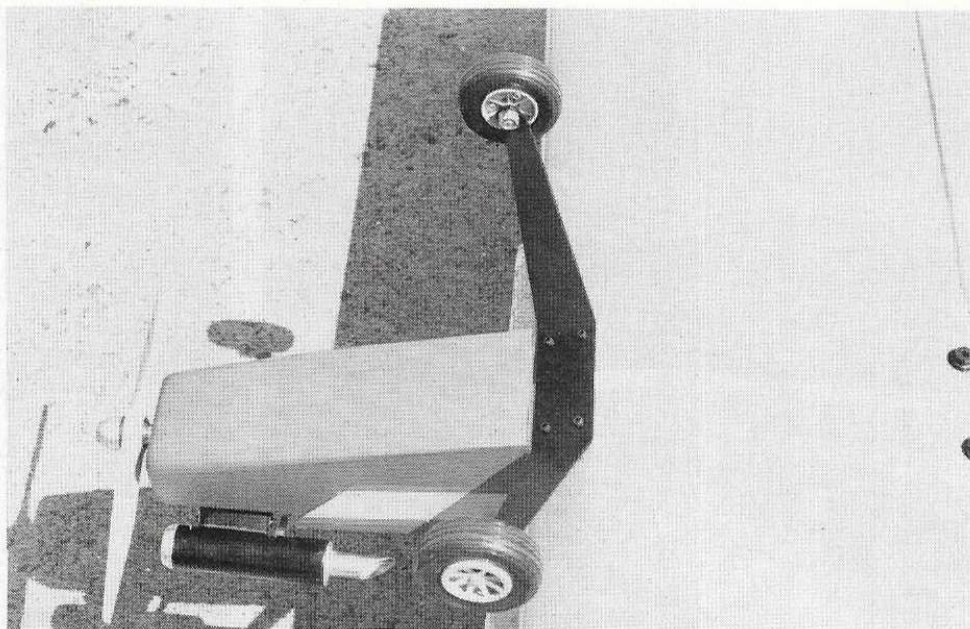
Take-offs with the tail dragger configuration were no problem, providing toe-in was maintained on the main wheels. Landings are exceptionally slow and will allow bounceless, three point landings on hard surface runways.

In the air, all the basic maneuvers, Cuban eights, loops, rolls, stall turns are all easily performed with a sport .40.

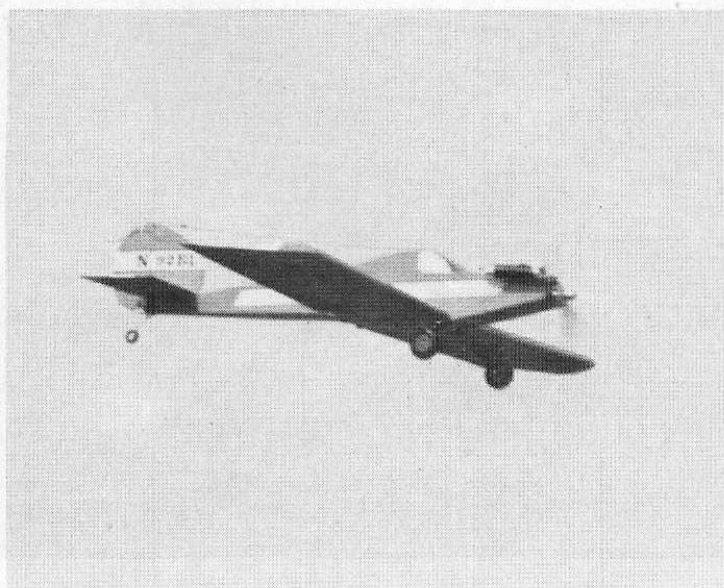
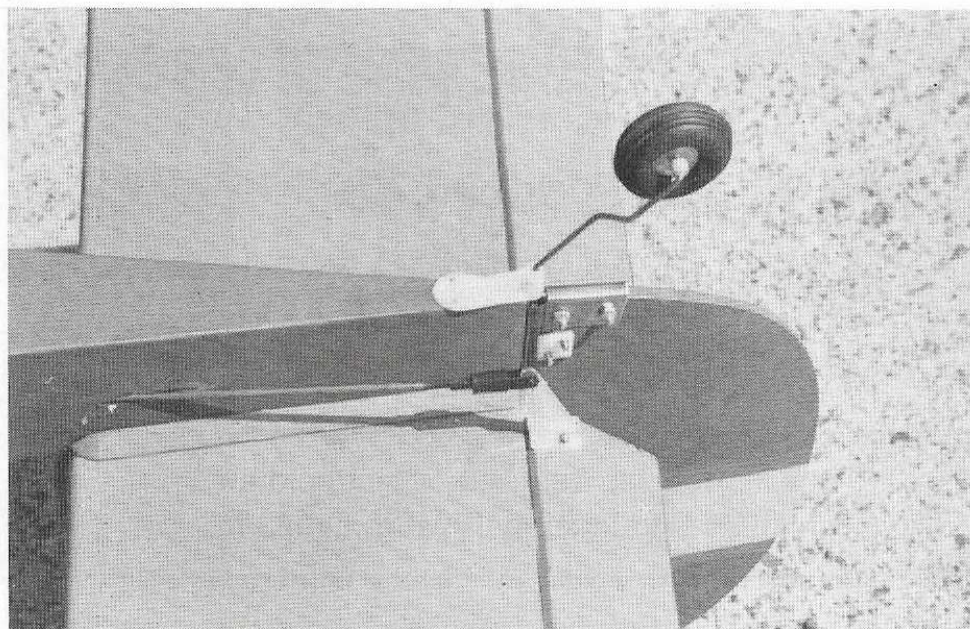
The model tracks fairly well and is easy to fly. Anyone with some stick time under their belt should be comfortable with this plane. The model is economical, fast building, and will fly well enough on a mild .40 to bring a new flyer up to a proficient level.

The JR radio performed so well during the flying that we quickly forgot it was new, unfamiliar hardware and concentrated on flying. Absolutely no problems were encountered with it.

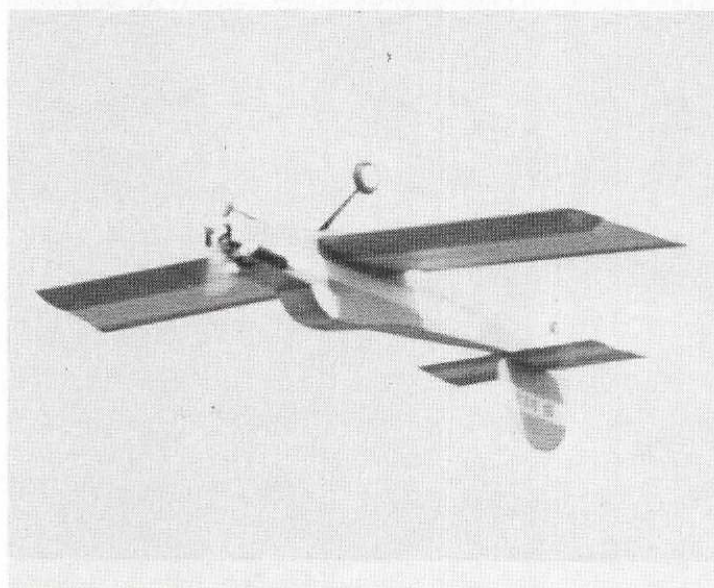
I would not hesitate to recommend the Sweet 'N Low Stik as an aerobatic trainer or fun fly type aircraft. It will do everything a .60 powered whip will do only not as smoothly. I feel it is a good change of pace from the .60 powered aircraft and enjoy flying mine. ☐



You can set the plane up as either a tail dragger (above) or with a tricycle gear. The Hallico dural gear was used in place of the kit's 5/32 formed wire gear. No mention is made of a tail wheel, so a Goldberg tailwheel bracket was used with some 1/16 wire, a 1 1/4 inch wheel, and some brass sheet to make one.



You'll find that the model is easy and economical to fly. Anyone with a bit of stick time "under their thumbs" can handle this plane.



Don't expect it to do the full pattern. However, it does most aerobatics quite well and tracks steady and true. Good for aerobatic training.