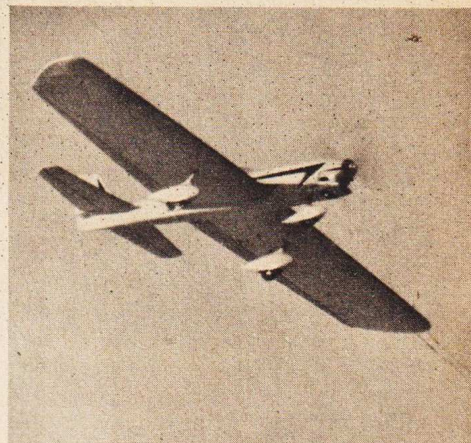


Acts of raw courage are not uncommon in this sport of ours, but it certainly must have required real fortitude, warm clothing also, to insist on getting in some flights in this deep snow.

# MIDAS



Perseverance does pay off and while the sky may be overcast, the flight was smooth and steady.

By GERRY FLAUGHER . . . UNLIKE ITS NAMESAKE WHOSE TOUCH TURNED EVERYTHING TO GOLD, OUR .45 STUNTER TURNS EVERY MANEUVER INTO A THING OF REAL BEAUTY.

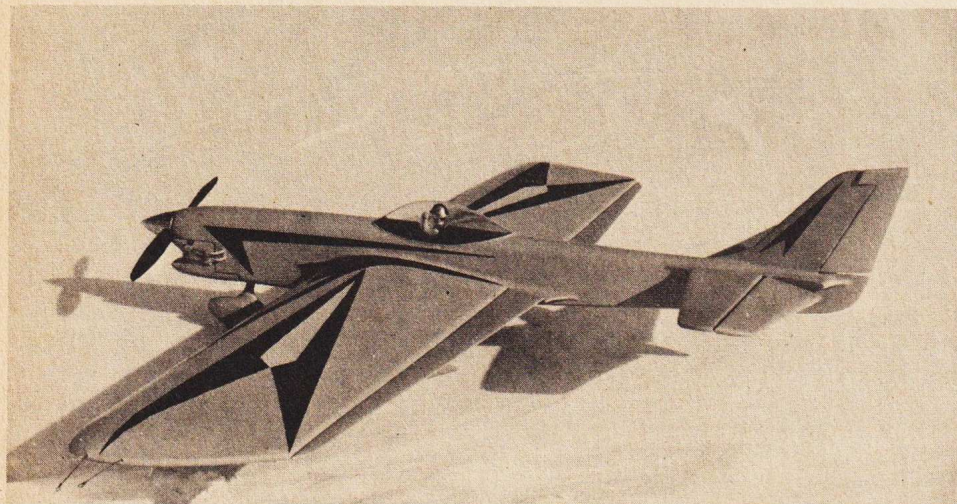
► Midas .45 is a control-line stunt design that can meet the needs of both contest and sport fliers. The sport fliers will find this one a joy to build and as rugged as any he will come across for just plain flying fun.

Midas has evolved from two years of experimentation which began with a Phoenician design. That very fine flying model didn't have the ground handling characteristics that I like my planes to have, so I moved the landing gear to the wing with a big improvement in landings and take-offs. In the fall of 1962 I decided to make an intensive modification of the design. I tried to retain some of the flying characteristics of the Phoenician while at the same time change the looks and the type of construction. Well as all of you know it, it's almost impossible to come up with something really different.

I made these changes: A trike gear, an I-beam wing, fully sheeted wing and a change in fuselage lines. This plane was named Midas .35. It had just under 600 square inches of area and had an all up weight of 59 ounces. I used a 20% airfoil at the root tapering to only 17% at the tip. It had a flying speed of about 55 to 60 mph.

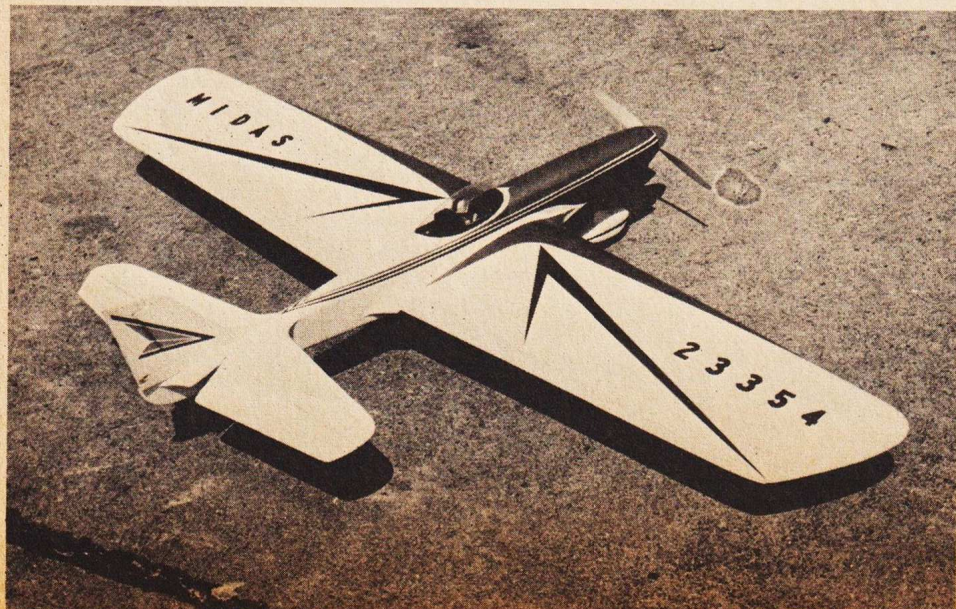
After about 75 flights, stress cracks began appearing at a couple of places on the fuselage. Also the landing gear was too stiffly mounted and it couldn't be landed anywhere but on a paved surface without bouncing.

Among other things that happened to Midas .35 were: The tank vents were too long and vibrated excessively, so I cut into the side of the fuselage and re-vented the tank. Also this was the first time that I had used a swept-back rudder and fin. I had just glued it to the top of the fuselage and it didn't seem to want to stay in place. I finally cut a



And now that the flight is done, the pilot appears to be using his hand to warm his ears.

Author must have taken this picture just to show that Illinois has something other than snow.



groove into the top and filled it with fibreglass resin, then stuck the rudder and fin into it. After 75 flights, it hasn't come loose.

After all this fighting with the original, I could see some excellent characteristics in her. I felt that enough good qualities were shown to make it worth following through in a new plane. The more I thought and talked to others at meets, the more I began thinking along the lines of a .45-powered Midas. The nose and tail moments were lengthened and wing area increased. It was decided not to sheet this wing so the plane could be flown at a slower speed and to try to improve ground handling characteristics.

It was thus that Midas .45 came into being. You will find that Midas flies right in the groove or any place you fly it. When you give her up or down, she turns smoothly with no tendency to mush, sink, or lose flying speed.

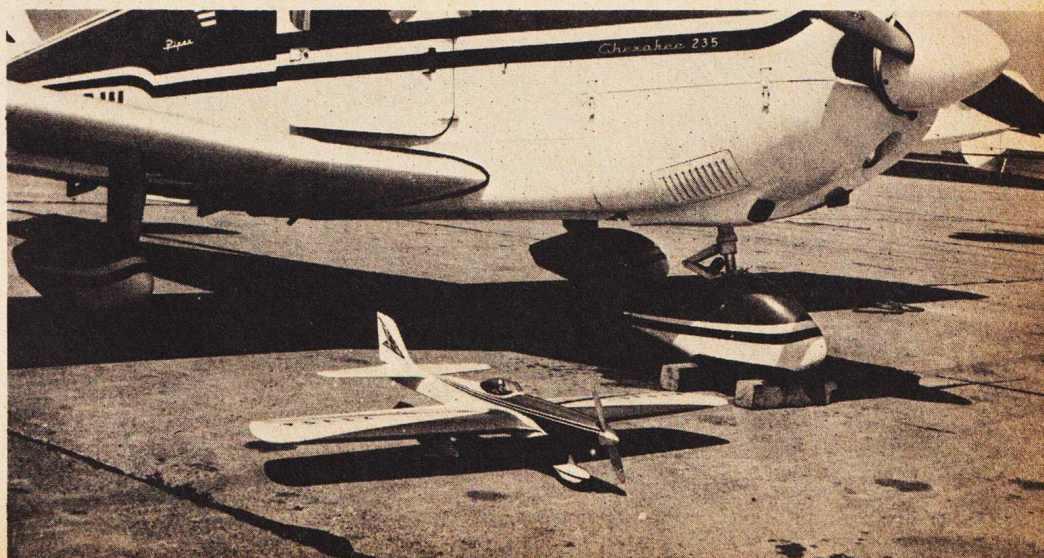
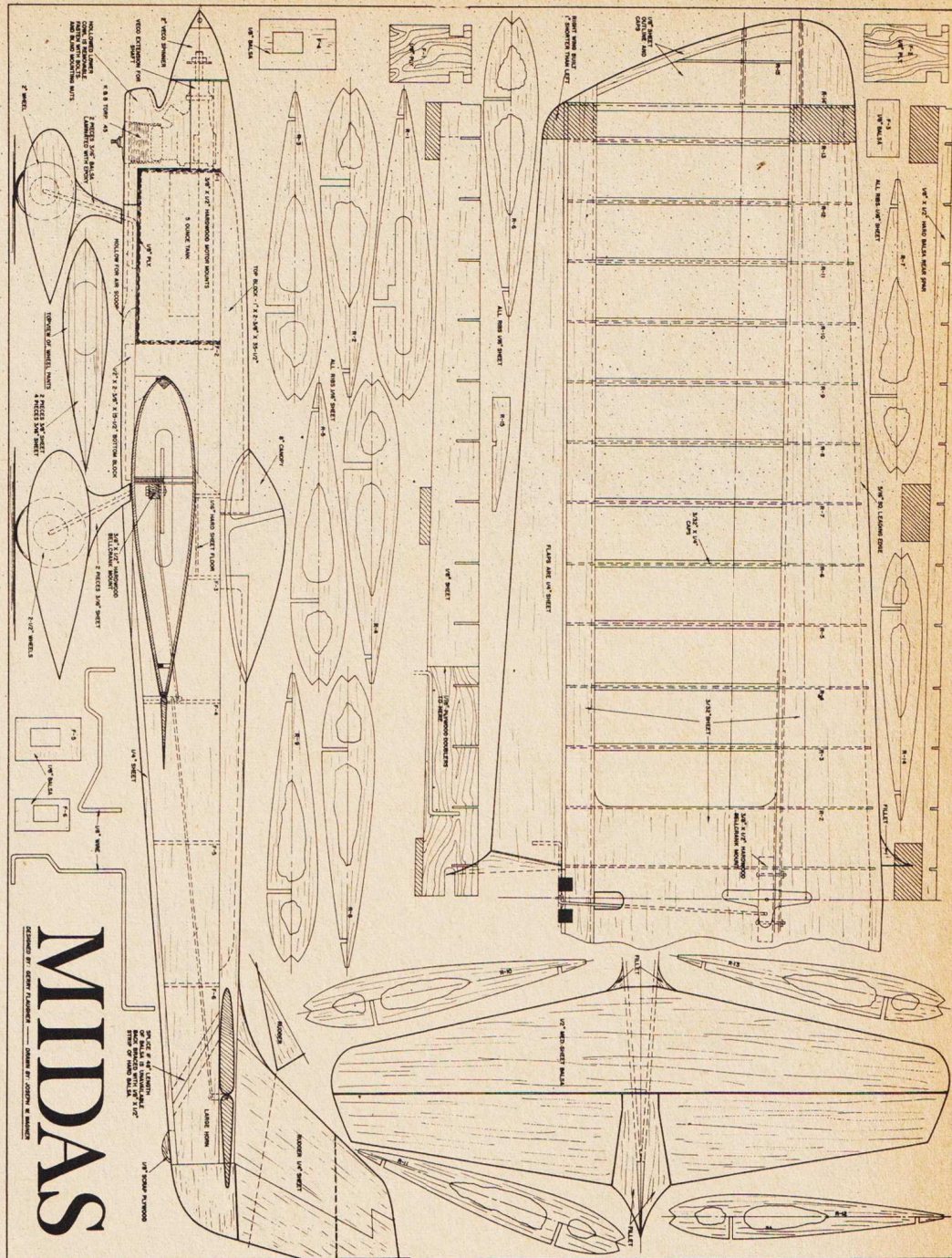
Before getting into the construction, I would like to say a few things about stunt flying that I have found out by intensive experimentation. There are three axes about which a stunt model can move. They are pitch, roll, and yaw. It is yaw that I would like to talk about. There are three methods of taming a control-line model on its yaw axis. First: the amount of lead-out rake, second: the amount of rudder area, and third: the amount of lateral area.

It is true that while bellcrank location is very important to the stability, the model is actually flown from the wing tip and it is this location of the lead-outs that determines the attitude the model will fly on its yaw axis. The amount of rake is determined by the weight and speed of the plane and the length and diameter of lines. Since most .45-powered models are flown on 70' .018" diameter lines, part of the equation is solved but to make things simple, most stunt models use about 5 degrees of rake.

Next, rudder area can vary a little according to the amount of lateral area. If the rudder isn't very large it doesn't contribute too much toward stability in a tight maneuver and seems to be much less on inside maneuvers due to the blanketing effect of the wing. An airfoil rudder seems to be more effective than the off-set type.

Lateral area should not be too scarce aft of the CG for this reason. Fuselages with deep aft areas weathercock on the up-wind side and tend to dampen the yawing oscillation.

While on this subject of yawing, I would like to mention another factor that enters into the picture, it is wing sweepback. The basic reasons for sweepback are that as air flows over the surfaces in flight it has a tendency to slide toward the tips. When yaw occurs, the leading edge



Just as pretty as the real thing standing behind. Stunt models lend themselves to good finishes.

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**Midas**

of half the wing swings closer to 90° to the airflow. This side of the wing then becomes more efficient with relationship to lift and produces more drag and lift and drag work together. The increase in drag dampens the oscillation and stability returns. A tapered wing is well worth the extra work it requires but a straight wing is sufficient for sport flying.

Also don't forget about the stabilizer and elevator. They have to be airfoiled in order to give good performance.

I would like to give my cure for stopping the hunting problem. It is true that old stunt ships usually don't hunt because the controls have loosened up enough to let the flap drop a little when the elevator is in neutral. It seems that most modelers use a reamed-out hole for the push rod at the elevator horn. I have been using a Du Bro Kwik Link on my flap push rod. This enables me to get a good adjustment on the controls by adjusting the flaps to a slight down position.

I feel that construction of the wing can be truer if they are built in halves and then joined at the middle with plywood doublers.

Begin construction by cutting out the main and rear spars and plywood doublers. Glue 1" by 2" tabs to rear spar. Be sure to cut bellcrank slot in spar and doublers, as it presents quite a problem of cutting it out after the ribs are in place. Slip ribs onto spars and align carefully. At this point glue only to leading edge and rear spar. After these joints have dried, glue on the trailing edge cap and glue to main spar. Be sure to drill landing gear bolt holes in plywood doublers before joining wing halves. After wing halves have been joined and are dried, add controls and main landing gear. Sheet leading and trailing edges and add tips. Install flaps and make sure they are working freely before planking center section. Add caps to ribs and the wing is practically finished.

To build the fuselage: There are two ways to start. Either start by forming a box by gluing and screwing motor mounts to the doublers and adding formers 1 and 2 and when they are dried, add sides and the rest of the formers. Or, by cutting out the sides, then laminate the doublers and motor mounts and then add rest of formers. I have been using the first method and like it best. Lightening holes may be drilled in the doublers but this brings about a slight loss in strength. After this assembly has dried, drill engine mount holes. Tack glue top and bottom sections then carve and sand to shape. Remove and hollow out. Install tank and bolt nose wheel strut to 1/8" plywood platform. Install nose platform using fibreglass resin and cloth strips.

Cut out rudder and fin, build stabilizer and elevators. I recommend the built-up type of stabilizer and elevator but if lightweight contest balsa can be obtained a solid assembly can be used.

Plank bottom of fuselage before permanently attaching stabilizer as a slight twist will probably occur in the sides if you don't. Permanently attach top and add rudder and fin. Build cowling and wheel pants.

For the finish: Give the entire model two to four coats of filler coat or until all wood grain is filled. Sand down until you just start cutting into the wood thus leaving

the grain filled. Cover fuselage and flaps with lightweight paper. Cover wing and tail with heavyweight paper and add wheel pants. Give the wing five or six coats of clear dope. Apply fillercoat to fuselage until a very smooth finish results. Never start putting on your colors until you are satisfied that you can do no more with the fillercoats.

Then when satisfied with the surfaces, start putting on your colors sanding lightly between coats. Anywhere from 6 to 15 coats can be used but I have never found it necessary to use more than 10. Sand the final coat with No. 600 wet paper and finish it lightly with rubbing compound and wax.

The finished model should weigh in at about 60 to 64 ounces.

I would like to thank Dwight Hartman, without his help in taking the pictures, this article couldn't have been completed.