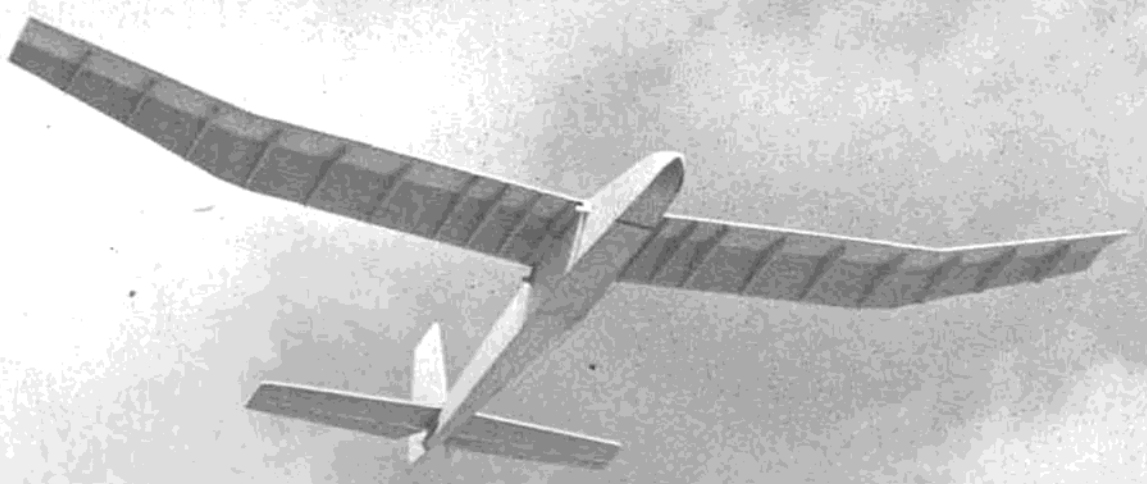
SUPER TURKEY

If simplicity is a virtue, you're going to have the most virtuous R/C aircraft on the field with this six foot span, all-balsa, Jedelsky wing sailplane for two-channel operation.

BY JOEL RIEMAN



In this world of computer designed model airplanes, simplicity is a virtue. Too many model glider enthusiasts are becoming concerned with Reynolds numbers and formulas. Their intentions are to design a super ship that will fly fastest on the slope or break a distance record in the desert. While competition and being top-seated are all well and good, and very American, it can also be nerve racking and expensive. So, while your Grand Esprit is still in one piece, set it aside and consider the advantages of having a model like the Super Turkey.

To begin with, the all-sheet construction and Jedelsky style wing make for easy and fast building. In fact, the model can easily be built in one full day. Financially speaking, $25.00 to $30.00 is all that is needed to buy the necessary materials — tools excluded, of course. When completed, you have a hands-off airplane. Its stable nature and good maneuverability make it an ideal trainer, although it is in no way limited to beginners. All told, the Super Turkey is a simple, inexpensive, good flying sport model, which, if demolished on the face of a slope, would be a relatively minor loss, assuming there is no radio damage.

It has taken approximately five years for the Super Turkey to reach its present state. Actually, the design combines the best ideas of four glider flyers, all of whom had been experimenting with all-sheet, Jedelsky winged flying machines. One of the four flyers was Bill Watson who added the final touches, drew the plan and supplied the needed information for preparing this article. It was Bill who tried the first V-tail on the Super Turkey. Although it looked sporty, it required a little more attention than the conventional tail version and was also more difficult to rig.

I first came in contact with the Super Turkey about four years ago, after watching Bill Watson, a superb pilot, perform incredible stunts with his model. Impressed, I built one, installed a used EK brick and set forth to fly my wood grain bird (it matched my radio). It had been a wise choice for my first RC glider. By the time I had mastered slope landings, I had inflicted several wounds, all of which could be repaired with a band-aid and some five-minute epoxy. Even a folded wing, the result of an attempted Hi-Start launch with 1/4" surgical tubing, was not too serious for this remedy. That wing had not been glassed.

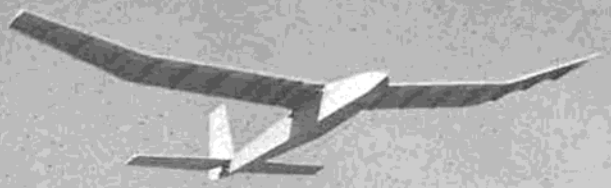
My model was a bit on the heavy side, but 90% of the flying I did with it was on the slope. The Super Turkey, while well suited as a slope glider, was originally designed for thermal flying. If most of your flying will be of this type, build light, adding ballast for the slope or windy conditions. Use the recommended flying weight of 26 to 38 ounces as a guide in building your Super Turkey.

CONSTRUCTION

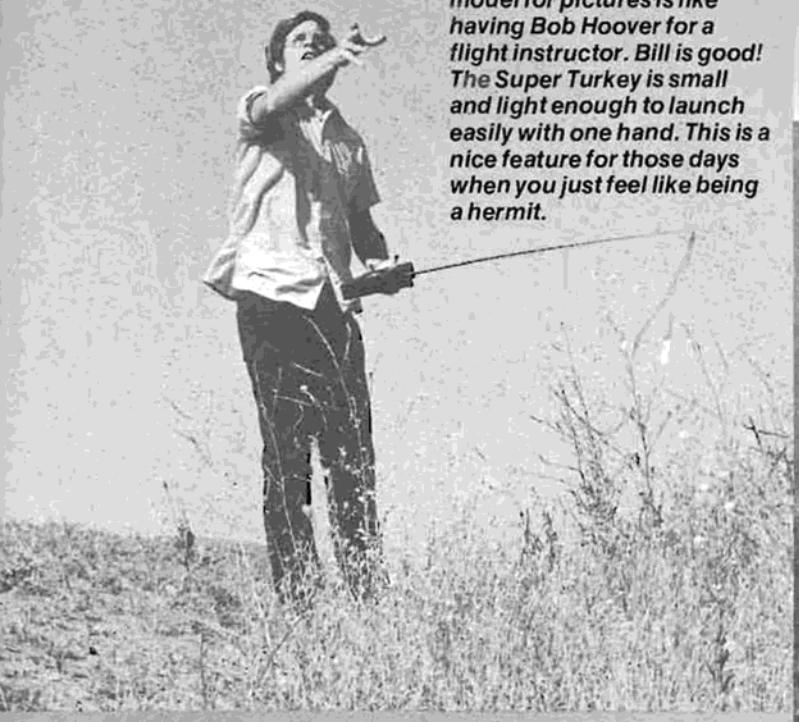
Wings: The wing plan illustrates the simplicity and ease of constructing a wing Jedelsky fashion — two planks with ribbing. This type of wing has been used successfully in the past on free-flight power ships, Nordics, and RC gliders. It's hard to beat for low cost sport models.

The wing shown spans 72" — two lengths of 3' balsa — and has an area of 500 square inches. An 8' wing can be built in the same manner if 4' stock is available. In either case, you will need two sheets each of 3/8" x 3" medium hard balsa and 1/8" x 4" light stock of the length you choose. Make sure when choosing this wood, that it is unwarped and that the opposed sheets are of equal weight.

Begin building the wing by tapering the 1/8" sheets as shown on the plan. This will automatically provide washout when the tips are raised. Now cut 8 long ribs from 1/8" hard sheet and 12 short ribs from 1/8" medium hard sheet. Using a ball point or felt tip pen, mark rib locations on both of the 3/8" sheets of wood and then glue the ribs in place using Tightbond or a similar adhesive. When dry, turn over and glue on the 1/8" sheet. At this point, turn the wing over once

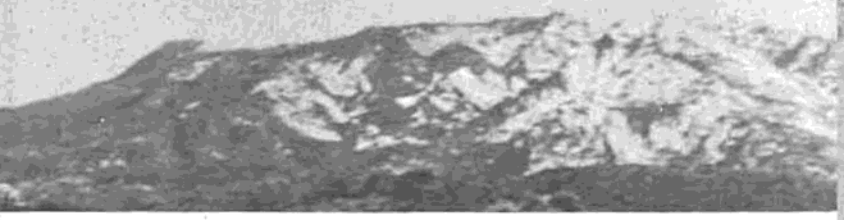


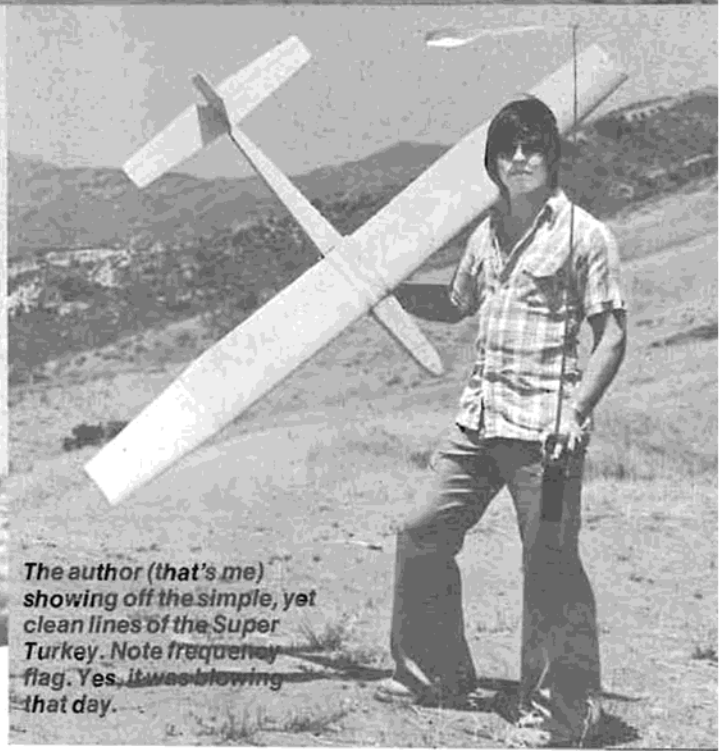
Having Bill Watson fly your model for pictures is like having Bob Hoover for a flight instructor. Bill is good! The Super Turkey is small and light enough to launch easily with one hand. This is a nice feature for those days when you just feel like being a hermit.



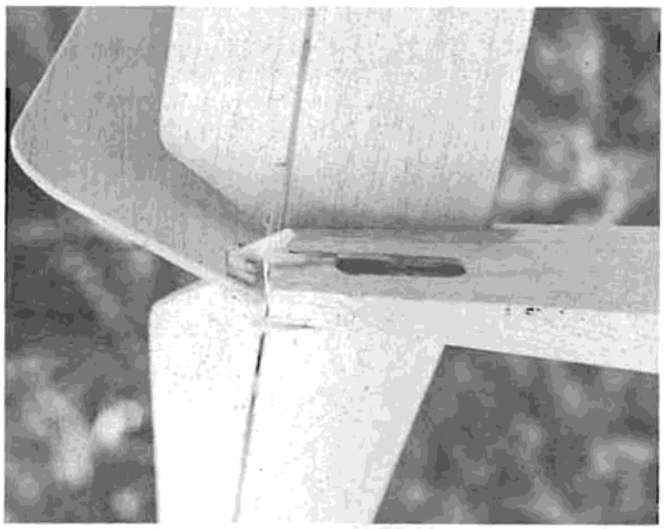
Although the Super Turkey was originally designed as a quicky thermaler, it is beautifully suited to slope flying. If you have a lush spot like this one in the heart of Malibu Canyon, it makes it that much nicer. The Pacific Ocean lies just behind the hills.

Drop the nose a bit and it penetrates well, but does not build up excessive speed. The model is quite capable of positive aerobatic maneuvers and will be especially strong if you glass the wing joints as described in the article.

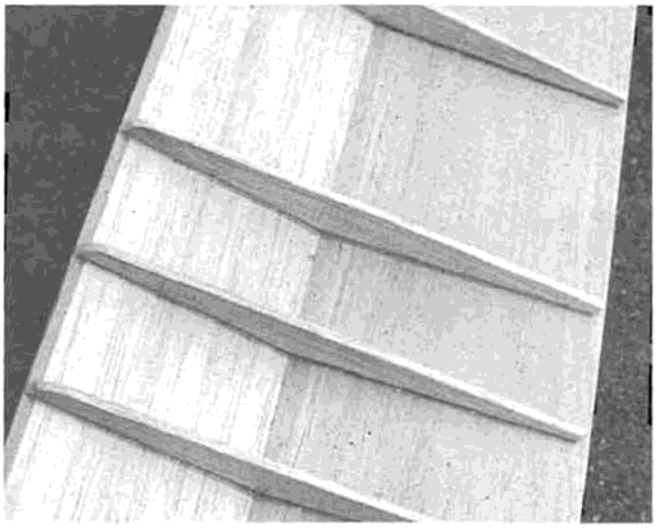




The author (that's me) showing off the simple, yet clean lines of the Super Turkey. Note frequency flag. Yes, it was blowing that day.



Close-up of tail group showing pushrods and horns. Small rudder horn was used on prototype, however, it had to be set on block for clearance.



Underside of wing showing how ribs are located and glued in place.

more and add a gusset of glue where the ribs meet the wing panel. Now add the leading and trailing edges and razor plane and sand the 3/8" sheet to the airfoil shape. To add dihedral, cut the wings at the designated locations, sand in proper bevel and glue up as indicated on the plan. The plywood wing tip plates can now be added and the center section filled with foam or balsa. Do not dope the finished wing; doing so will add weight and offer little in return in the way of performance. If you must use Mono-Kote, limit it to stars and stripes. Covering the entire model with this material would only double your expenses.

The finished wing will be very rigid and strong enough to take the loads of any normal positive G maneuvers. I can make no such statement regarding negative maneuvers. To be extra safe, fiberglass all dihedral joints, top and bottom, using 6-ounce cloth for the center joint and 2-ounce cloth for the tip joints.

Fuselage: Cut out fuselage sides from 1/8" medium hard sheet. Put the two sides together to make sure they match and to drill holes for the wing mounting dowels. Now glue the 3/8" square longerons to the inside edges of the fuselage sides as shown on the plan. If you are building the conventional tail version, taper longerons to measure 3/32" at the back. Cut formers from 1/4" sheet. Join the fuselage sides together, using F2 and F3, being careful to keep the two sides aligned while the glue dries. When this is done, glue the tail together, then add F1. You may now add the bottom sheeting, making sure it is made from hard balsa. It is bound to take a lot of beating. The top sheeting is added after installing the pushrods. Finally, carve a nose block, make top hatch and add wing mounting dowels. Add a skid if you feel it is necessary, and, if you plan to tow your Super Turkey aloft, a towhook is a nice addition. Fiberglassing the forward section of the fuselage, once again, is optional.

SUPER TURKEY

Designed By: Ken & Don Hamlyn
Mike Reagan & Bill Watson

TYPE AIRCRAFT
Sailplane-Sport & Trainer
WINGSPAN
72"
WING CHORD
7⅜"
TOTAL WING AREA
500 Square Inches
WING LOCATION
High Wing
AIRFOIL
Jedelsky
WING PLANFORM
Constant Chord Center
Taper Outer Panel
DIHEDRAL, EACH TIP
2" First Break
5" At Tip
O.A. FUSELAGE LENGTH
42⅜ Inches
RADIO COMPARTMENT AREA
(L) 10" X (W) 2½" X (H) 2½"
STABILIZER SPAN
23¾ Inches
STABILIZER CHORD (incl. elev.)
4" (Avg.)
STABILIZER AREA
91 Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
6⅞ Inches
VERTICAL FIN WIDTH (incl. rudder)
5½ Inches
REC. ENGINE SIZE
Not Applicable
FUEL TANK SIZE
Not Applicable
LANDING GEAR
Skid
REC. NO. OF CHANNELS
2
CONTROL FUNCTIONS
Rudder and Elevator
BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa
Wing	Balsa
Empennage	Balsa & Spruce
Weight Ready-To-Fly	26-38 Ozs.
Wing Loading	7.49-10.95 Oz./Sq. Ft.

Tail Assembly: Here you have a choice between the V-tail or the conventional stabilizer. The conventional tail is the more practical application. It is less susceptible to damage since it is mounted more securely than the V-tail. It offers better control and is much easier to rig. Be sure to make your decision on which tail to use before building the fuselage.

All tail surfaces can be cut from 1/8" medium hard or 3/16" light sheet balsa, but not too light. After cutting these pieces out, round off the leading and trailing edges. The elevators can be cut out separately, connecting them with a piece of 1/8" x 1/4" spruce at the center. If you are making the V-tail, use the outer outline. After hinging the control surfaces to the stabilizers, epoxy it all on the fuselage. It is necessary to fiberglass the V-tail version as shown on the plan, using 2-ounce cloth, if you want it to last more than a couple of flights.

Radio Installation: Any two channel radio — brick or single servo — will fit in the Super Turkey's radio compartment. I've used both successfully. Your model will probably come out tail heavy, so mount the radio gear as far in front of the C.G. as possible, leaving some room up front for nose weight. Use servo tape to mount the servos, but before installing, smear Devcon epoxy on the floor of the compartment to make the surface stickable. Aim carefully when mounting because, once down, they are hard to "pry" up. If you use an inferior brand tape, the servos may need additional support. Place the receiver and battery pack, in that order, in front of the servos, and pad with foam rubber.

Make pushrods from 1/4" square hard balsa tapered to 1/8" at the ends. Epoxy and thread wrap wire ends onto each end using a clevis at the control horn end. Pushrods of this type provide posi-

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tive control and cannot expand and contract, causing trim changes. If you choose to go with the V-tail, these pushrods cannot be used. You will need to devise a workable linkage using one of the various V-tail mixing units now available from your hobby dealer.

Flying: Before that first big heave, check all surfaces for proper alignment and security; also check the C.G. location. If it is too far aft, add nose weight. For testing purposes, it's safer for your model to be slightly nose heavy. This is especially true if you are flying off of a slope where you may need the ballast for penetration. If the winds are brisk, add ballast to the C.G. location. Keep in mind that adding ballast increases the wing loading. Doing high G maneuvers while the plane is heavily loaded could cause a wing failure to an unglassed wing.

A slope does provide excellent conditions for trimming a model like the Super Turkey. Providing the wind is up, you need not land until you have determined the model's ballast needs. And, if the approach is not to your liking, you can opt to go around and try it a second, third, and fourth time. Because of the large elevator and rudder, control response is immediate, allowing easy escape in the case of a balked landing.

Off the slope, the Super Turkey is a competitive thermal ship, if built light. One of its attributes is that it does not gain speed quickly when the nose is low. Because of this, it does not easily get ahead of you when thermaling. Good launches are attainable with both winch and Hi-Starts. Light back pressure while on tow will assure optimum height.

For an exercise in fun, not futility, build the Super Turkey and leave the computers to the people at IBM. □