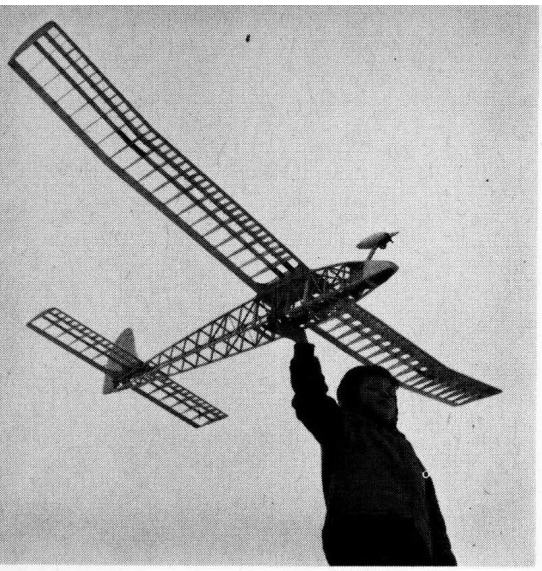


Tandem belly wheels reduce abrasions on forward nose area. Easily installed, with slight shock absorbtion qualities. Weight of forward wheel aids in balancing without overlong nose moment.

FULL SIZE "TIMELY" PLANS AVAILABLE

Room in the fuselage for poking and prodding. Wide enough, deep enough for older receivers.

. . . over

A hundred gulls in a thermal attests to the fun to be had. Carve yourself a little of the action with a Radio-Soarer!

Don McGovern's "VULTURE" A SINGLE-CHANNEL R/C

80" of Quickly-Built Radio Soarer. Power Pod takes any size engine, Towline, Hi-Start, Slope Soaring too!

Substitute sheet siding if you prefer, but keep heavier grades toward the nose, all radio gear as far forward as practical, and pad it in foam.

80" span, 647 sq. inches warped, .049 to .099 optional power-pod.

▶ Someone once defined 'Mixed Emotions" as that feeling you experience while watching your mother-in-law drive off a cliff in your brand new Cadillac. And it about describes the conflict within a modeler as his newest sleek soarer hooks into a thermal, only to pull a disappearing act while confirming its state of trim as efficient.

So . . . to have the cake and chew it, a small legion of addicts have resorted to radio in glider configuration, giving directional control for thermal seeking, and a means of kicking the ships out of currents, in addition to the pre-set timer type dethermalizer controls.

Thus with R/C, a flyer can enjoy the performance in an updraft without the blood-pressure raising cross-country obstacle race. Perhaps it's a soar (pun) point with this writer, for some years back at the old Holmes Airport site on L. I.—with head held high, eyes on a thermaling ship, I plowed through the weeds, right over the edge of a twenty-foot deep garbage pit. To each his own.

A touch of rudder here and there at your ground-based whim is all well

.049 power is adequate if weight is kept down, miniaturized R/C used. An .09 is more than enough blast for heavier versions. Aim for something in between. Like about six .010's maybe.

Two sides form basis of the fuselage, follows standard assembly techniques. Sole variation is the notched "X" diagonals on the forward area of the fuselage to keep all aligned properly.

Somehere in the process of aging, we decided to live without capstripped ribs. Saves a days work, a little weight to boot. Spars tunnel in through the ribs instead, never touch covering.

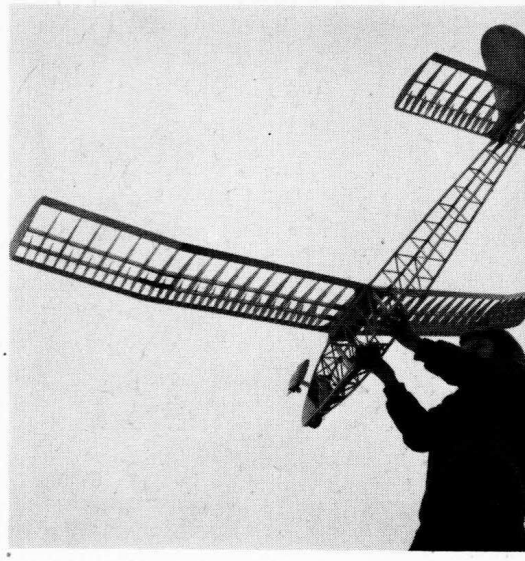
Canted leading edge works out fine, minimum to carve, a lot of beef to take the hard impacts. False ribs retain the airfoil by lessening sag.

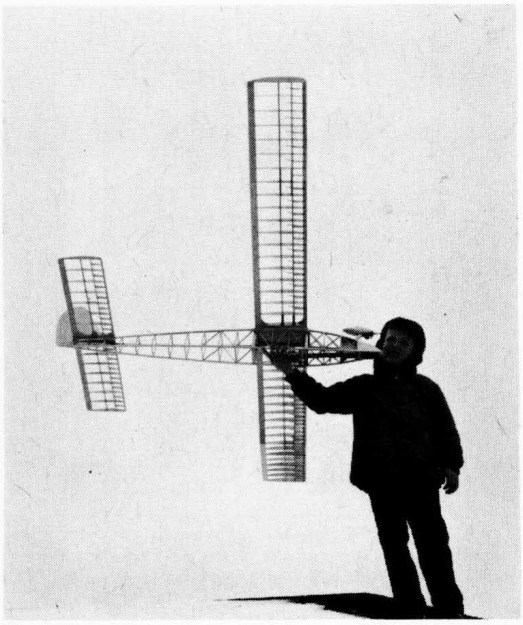
VULTURE

Calm type flier—for soothing the nerves. Simple easy structure, inexpensive, gives you another ship to vary your flight diet.

and good, but first you must get the ship up in the air, and high enough to seek out the currents. Towline will of course do the job . . . sometimes. It seems to be more practical however to use a small engine in a pod for a power assist. R/C calls for enough of a pre-flight count-down, without the task of towing aloft, transmitter in hand like a football. Then too, a pod may be made removable, permitting towline or hi-start (¼ rubber, ¾ towline) launches, or even slope-soaring where terrain is suitable.

As all aircraft must be, the "Vulture" is a compromise. We would prefer no pod at all, but the slight loss of glideability is well worth the added height and duration possible with a purring engine. Particularly when the thermals are elsewhere found. It slays us not to use an N.A.C.A. 6409 section on it, but so many mag builders shy away from



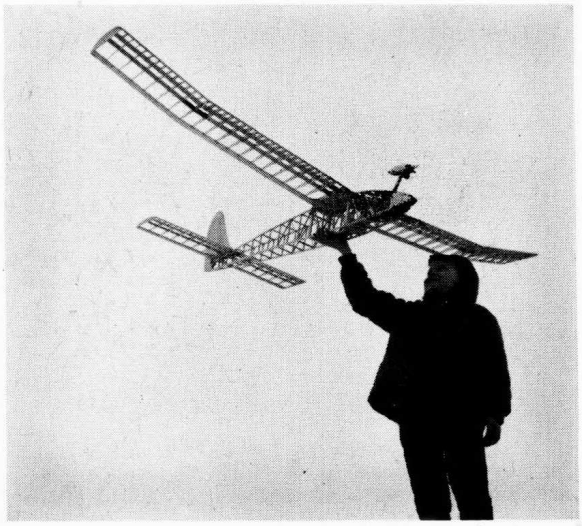


Engine power could be installed right in nose, as on conventional gassies. Best for low drag, but a bit rougher on the engine in rocky areas.

covering undercambers, and the added building time involved, that we used the flat bottomed section shown. Should you prefer another foil, go to it, the craft will trim out easily with almost any good soaring section. Remember though that the aspect ratio is quite high, and spar depth must be adequate, particularly as R/C weight payload is increased. Our dreams of a fuselage conjure up an oval planked/canopied affair. Laziness one out. You've got yourself a box. Two sides, built one on top of the other, scads of

Stab follows basic wing structure, lifting section, flat bottom. Sheet fin drops into slot in stab. Sweptback hinge line provides a slight up elevator effect as it turns, no weight penalty.

Intended as a good basic radio soarer, gets you in the air in a practical manner. A good everyday calm air flyer, less refinements such as an oval-planked cross-section, elliptical planform.



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room, no problems. The 3" x 4½" inner cross-section will house any R/C gear you can think of, and room to get your gnarled fist in too.

We did not intend the design for more than simple rudder control. More intricate intermediate/multi installations would be gilding the lily, and quickly reach the point of diminishing returns. A glider can soar with just so much weight, and then advantages gained through coordinated turns and trim are lost to increased sinking speed. Better you build two ships, a powered simple soarer for carefree thermal seeking, a power job for acrobatics. We did sweep the hinge line of the rudder/fin rearward, to create a slight "up-elevator" effect, desirable on the turns. We think you will find the "Vulture" a fine training craft for radio, and a sensitive stable, capable flyer in calm, thermal air conditions for which it has been designed. Do not expect the same degree of wind penetration out of it as you might a heavier power job. Each has been intended for different flight conditions.

Plans are ¼ full size as presented in the magazine. Reminds us of the fellow we met in Chicago some years back, who built our "One Horse Shay" .60 ukie, and commented it was underpowered. Turned out he mis-scaled it up to an eight foot span. 2½ horsepower would have been about fitting. Scale all dimensions up four times, or order a set of full size plans from the plan service listed.

CONSTRUCTION: Drag down to your dealers, and sight down all his lumber for warps. He considers it an occupational hazard anyway, and it makes all the difference in the end result when your key lengths are reasonably straight, even textured to start with. Light grades toward the rear of the ship, and like rules of common sense should be employed. Study the plan a bit beforehand, and decide on any modifications you might like to make in the design before you proceed too far. You should have an idea too of R/C equipment to be installed, if any, and test fit accordingly.

WING LAYOUT: Spars have been installed internally in the ribs, to recess them well below the covering, and to avoid the need of time-consuming capstripping of the ribs. Close spacing, plus false ribs insure a good airfoil, though it may seem like a lot of cotton-pick'en parts. Actually to space them out might save only a half-dozen ribs. at the expense of a flimsey wing. A good template of thin ply will aid in trimming the ribs to shape. If a modelers jig saw is available, it can cut ribs quickly by the stack.

Plans show the complete wing layout, so all four panels may be assembled in rapid order. Pin tapered, notched trailing edge flat to the plan, and cut identical lengths for the spars and leading edges. Cut ends to angles shown to form the dihedral, polyhedral breaks. Ribs should be slipped onto the spars, with a false rib between each, then spaced out, but not cemented for the time being. Rib ends are next pre-coated with cement, as are the trailing edge rib notches. Press rib ends into the notches one by one, bit by bit, working down the length of the panel two or three times to seat each correctly. Pin front of the main ribs to hold the position, and then align all false ribs. Apply cement to the leading edge ribs notches, and position, weight down and pin in place. Once again the false ribs should be straightened to assure a neat job. Note ribs at the center of the wing are undercut 1/16" for sheeting. Ribs at the three breaks in the wing should not be installed until after the gussets have been cemented in place, and the panels joined.

Once the panels have been assembled, apply a tiny drop of cement to each spar/rib juncture, just enough to hold it in position until the panels are removed from the workbench. At this time, a second thorough application of cement may be applied to both sides of the ribs at the spar joints, as well as to fillet around trailing edge rib

joints, and likewise at the leading edge.

The panels should be test fitted together, spar ends etc. trimmed to permit a good joint. Pre-cement both ply gussets and spars to seal the wood pores before the final cement application. Use care in aligning the leading and trailing edges as the panels are mated, or washin/washout effects will result. Block up the panels until the cement has dried.

The trimming and sanding of the wing should not be attempted until all panels are joined, and the wing center is sheeted. Then use a model knife, coarse, then finer grades of good quality sandpaper. Apply a skin of cement over leading/trailing edge joints to prevent those annoying "loose at the seams" conditions in the middle of a flying session. If after all this, a slight warp is detectable, fear not. it can be removed after the covering is applied, as long as the structure is sound and well cemented.

STABILIZER: This is duck-soup, and once the ribs are cut out, it can be assembled in half an hour. Wood sizes are given on the plan, and that is the only difference between the stab and the wing construction. Note the two center ribs are spaced ⅛" apart to receive the rudder fin. Sheeting is applied top and bottom to the four center ribs, with a slot left for the fin. Add block tips etc. as on the wing.

RUDDER & FIN: Just plain old ⅛" sheet, butted together will do nicely. Pin-prick the outline through the plan, and cut-out. Blame us not for mistaken detours to worm-holes. That stuff with the grit on it is called sandpaper, and makes the difference between a slab of sheet, and an airfoiled, polished rudder. Worth the extra five minutes, for it is by such things you are judged as a modeler.

FUSELAGE: Build the two sides directly over the plan, and forget that old bit about the waxed paper to protect the drawing. We can't think of anything we like less in our glue joints than wax, so settle for trimming off the adhesions as the sides are parted. Basically the sides are of ¼" sq. med. hard longerons, with ¼" sheet at the extreme nose, ⅛" x ¼" uprights all the way aft, except for the ¼" x ½"

uprights at the wing positions. these also act as wing dowel mounts. Crosspieces when the sides are joined are also of ⅛" x ¼", with ¼" sq. used at the wing leading edge and trailing edge spots. Note 1/16" x¼" diagonals are used in the forward half of the fuselage, both as seen in the side and the top view of the fuselage. These are most important, as they keep the fuselage properly aligned under the unequal stresses of the longeron bends. Where the "X" truss is employed, notch end ⅛" deep and cement together.

Optional variations of the fuselage structure might include side stringers, side sheeting, or bending the sides in toward each other along the top of the fuselage, aft of the wing, to create closer to a triangular section. Make sure in such a case that you leave an adequate cross-section for R/C escapement rubber, torque rod needs etc. It should be noted that the entire fuselage may be assembled of ⅛" sheet, rather than building up the sides, though unless extreme care in wood selection is employed, the balance will be thrown too far rearward.

POWER-POD: Keep cross-section to the minimum for your engine. Unless your ship is a scale-buster, an .049 in good condition should drag it up for you. An .09 is more than adequate, and anything in between will serve nicely. It's the kind of ship that can make use of tired old engines, as the need is only to get up to soaring heights, and the route need not be straight up. We recommend you consider your local flying terrain, R/C experience, and install a maximum tank capacity, or shut-off timer compatable with conditions: As mentioned before, with modifications, a removable pod can be made, permitting towline and slope-soaring. Another suggestion is to install your engine in the nose as on conventional craft, which is the cleanest power installation, though a bit harder on small engines under rough field landing conditions. Remember it is a fair sized model, which packs some weight when it uses the shaft as a shock-absorber. Belly wheels are a help, but not a cure-all.

RADIO INSTALLATION: Each will have his own ideas on this, and units of various manufacture may be employed with no problem, so long as the end result balances the model as indicated, and functions reliably. Mounting instructions by the manufacturer should be followed, and vary with each, due to the size, type, vibration problem, relay, or lack of on each. All we can do is generalize, and suggest that receivers be adequately padded with foam, escapements or servos mounted securely and aligned carefully to avoid binding tendencies. Batteries up forward for balance, and tied down or padded in foam to prevent re-shaping the inside of the sponge a

sudden stop. The torque rods must be straight, mounted in bind-free bearings, and incapable of developing trouble. Rudder hinging can be either cloth, nylon lacing, or other low-friction type bearings, as long as the action is near effortless. If rudder is used to actuate an escapement, install a convenient rubber winding hook, hatch, and install rubber parallel to the es-

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capement shaft. Provide nose access hatch if your battery compliment warrents it. Receiver is serviced through the usual under wing area of the fuselage, as may be the escapement, servos or other batteries.

TOWHOOK: If you anticipate towline launches, a ply bottom along the forward fuselage area could be installed, drilled to receive a 1/16" diam. wire towhook. This could be squeezed to release from the holes it engages, and shifted fore and aft to meet wind conditions. Those of you unfamiliar with "Hi-Start" launching may conjure up the idea by imagining the towline to be 1/4" rubber, stretched taut, with the far end attached to a stake. Once released, the model climbs much like towing by hand, with these exceptions: If you overdue, the wings fold, and it would be nice to have a helper hand-holding the other end to release if it gets in trouble. Properly executed, it can give a very fine degree of climb, and we have had many launches in which a great deal of extra height was reached after the model parted from the line, in an accelerated climbing turn. You may find it more practical for launching with very long towlines, but consider it experimental, and test out with minimum rubber sizes. Fuselages and tails have been seen to go like dull arrows if you get the message.

COVERING: When you're through choking on the sanding-dust, uncork the dope, and thicken up an ounce or two with a dribble of cement. This mixture will adhere the covering more easily than thinned out dope alone. We recommend Silkspan for the wing and stab, rudder and fin, and colored silk for the fuselage. Silk on the wings might prove a little too much in the warp department, otherwise go to it. Likewise, lesser material than silk may be used on the body at the risk of a rip here and there. Silk should be applied soaking wet, Silkspan wet or dry, wet if badly wrinkled, and Jap Tissue dry as a bone, moistened afterwards as would be dry Silkspan.

Colored Silkspan seems to be a problem hereabouts, hope you can find more than plain-old white. And there is another point to ponder. How come all you can seem to buy is one square yard of silk at a time. Very discouraging to those who build larger models. We could suggest suppliers offer continuous lengths also, to avoid builders having to splice lengths to fit larger ships. That's are feeble one-man Crusade for this issue. Send postcards! ! !

Final costs of dope should contain a few drops of castor oil to serve as a plasticizer, reducing the tendency toward warping. Allow the dope surfaces to cure for a day or so, then steam out any obvious warps, by holding the afflicted panels over a tea kettle spout, twisting a like amount in the opposite direction, and holding till the surface cools. Repeat as often as necessary to align the panel, and the result should be permanent thereafter. Assemble the model, sight for proper alignment, and check the balance. Add weight to nose or tail as indicated if error is severe.

FLYING: Avoid monsoons. After all the fitting of parts, it would be reasonable to give the thing half a chance. Curb your enthusiasm till a lull in the weather arrives, and then have at it. A few hand glides will indicate if all is well, a stall-free, but floating glide is desirable. Wing area is generous, span is large, and weight even with R/C will be quite low, all of which adds up to a very peaceful flyer, and a good training craft. Delete any noticable turn in the hand glides, before trying from an elevated hillside, roof or similar launch spot. Such a glide from a small height should help assure all is ready for power, or towline.

Give the engine a minimum amount of fuel, or if timer equipped, a few seconds will suffice. Start with very low power, and work up slowly. It must be remembered that it is a high-aspect ratio ship and a high-speed under power might result in some pretty twisted flying surfaces. Better to use minimum power to achieve the gradual climb intended. Response to rudder will likewise be a little easier on the nerves under stable flight conditions.

Climb it up, settle yourself in a lounge chair, and then have a ball. ●