

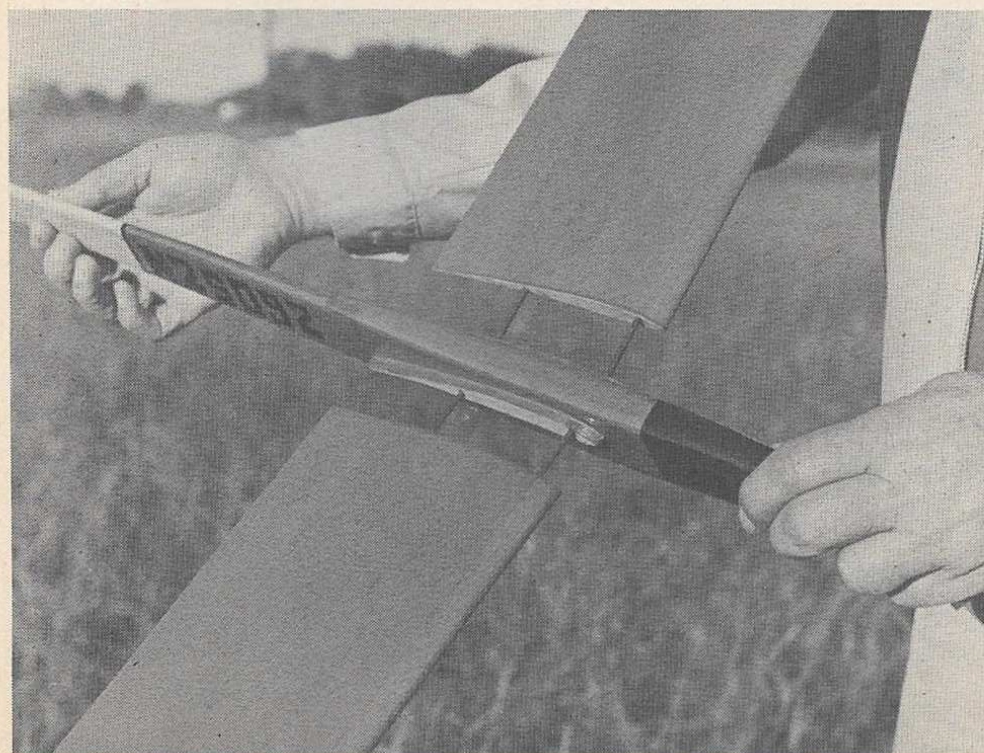


"Model building builds model boys."
Where did you go wrong, A.M.A.?

Dick Mathis'

"Tumbleweed" A/2

Transparent MonoKote on a windy-weathered bird.



Plug-in type wings allow for easier carrying, faster tows. Streamlined! The installation as described in the text lasts well, is easy to make.

◆ It's a cool October evening, with only a whiff of wind and we (my Dad, Tom Peadon, Frank Jarratt, and your truth-seeking writer) are enjoying the finest part of Nordic flying—trying to get good still air times. My faithful old "Tumbleweed" looks like the outside of a Las Vegas night club with its new suit of red and yellow free-flight MonoKote by Top Flite. We theorize the ultraslick MonoKote will improve still air times (it does—about 5 seconds, I would venture). Tom's "American Crow" is cleaning our plows with 2:30's while we sweat to break 2:00 minutes. Frank's ship is a cross between a "Crow" and a "Tumbleweed" which combines the

"TUMBLEWEED" CONTEST RECORD

2nd, Odessa, Texas, 1967 AAA Prop Buster's Annual
2nd, Wichita Falls, Texas, 1967 AAA Red River Valley
2nd, Tulsa, Okla. 1967 AAA Glue Dobbers Annual
2nd, Bryan, Texas, 1967 AA
1st, Dallas, Texas, 1967 AA Cloud Climbers Fall Rally
2nd, Bryan, Texas, 1968 AA
2nd, Odessa, Texas 1968 AAA Prop Busters Annual
1st, Dallas, Texas, 1968 AA Cloud Climbers Fall Rally
1st, Fort Worth, Texas, 1968 AA Plainsmen Annual



"Tumbleweed" A/2

... continued ...

worst features of both—but it's still beating my times.

Finally, as the sun goes down, my overweight body manages one more tow in the ideal conditions. I haven't changed my windy weather adjustments so I have to run like a maniac to pull it up, and then it doesn't really have a good chance at decent times with such tight glide turns. I can't stand to be shown up even in a flying session where everyone is flying my designs, so I think—"What would be impressive?"

Tom has driven across the field about a half-mile to pick me and my ship up and go home, since it is now almost totally dark. "Tommy-T, are Dad and Frank still there?", I ask "Yeah, Baby, sock it to yourself," replies Tom. "Turn the car (a 1932 Hupmobile) around and give me a launch, then catch up with me," I say. "Yeah, Baby, sock it to yourself," says Tom. (Note: Tom is the smart one). Picking myself up off the ground after Tom's Hupmobile runs over me as he turns it around, I play out the line and wait for Tom to launch it. "Hey, Big Daddy, where's the D-T fuse?", yells Tom through the gathering blackness. "Forget it," I say. "Sock it to yourself, Ace," are Tom's parting words.

As I bring it slowly overhead Tom pulls up alongside in the car. I jump on the front (this only cost \$75.00 to have repaired) and, through hand signs to Tom to regulate speed, proceed to tow the "Tumbleweed" smartly back past my Dad and Frank, who stare in muttering disbelief! A half mile tow is easy when you go by car, especially with a safe ship like this. Released in the dark, the "Tumbleweed" cuts a nice 2:05—good time for a windy weather machine.

Now, it's a week later and the last contest of the season and I want to finish in a blaze of glory which will last

My Dad, condescending to pose with my "Tumbleweed," he strains under 17.5 ounce weight. Three extra ounces speeds up the glide, helps penetration in the wind, where the "Tumbleweed" excels. The MonoKote, (transparent kind) helps too.

through the winter. My "Tumbleweed" floats overhead on the towline. I'm trying to make sure I place it in a thermal, putting the pressure on the others. Even though the wind is 20 mph and there is severe turbulence, I don't pay much attention to the model itself because it was built for just these conditions. Rather, I am concentrating on not running into a parked car; stepping in someone's toolbox; or towing into the officials tent. There is a good reason for this because this season I saw one guy fold a folding chair the hard way (from the inside with his nose) when he ran over it while towing his Nordic. To top it off, his airplane remained on the towline, narrowly missed him and

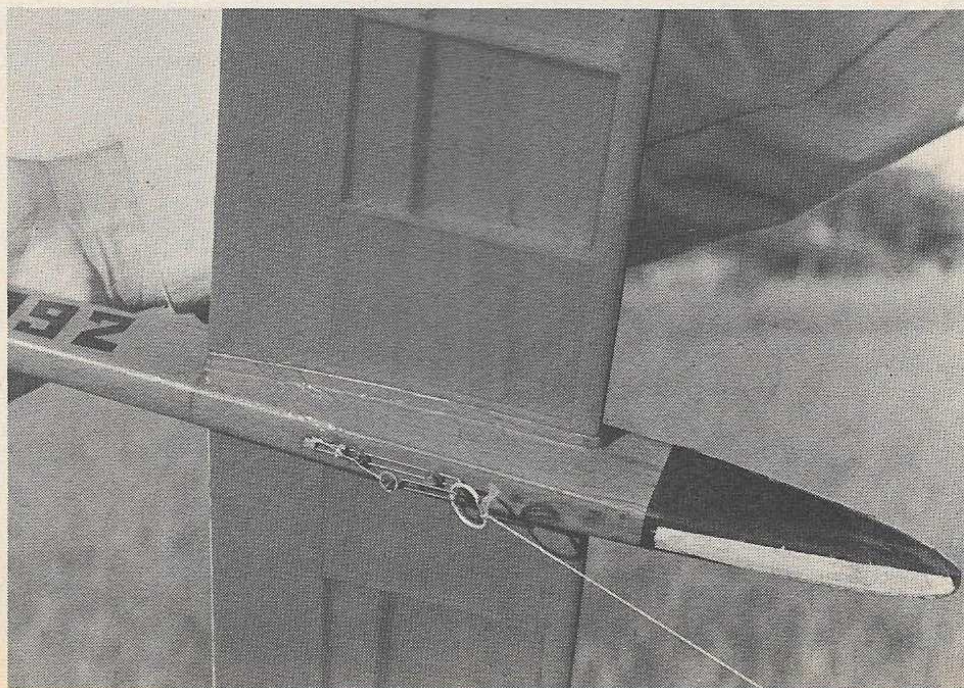
impaled itself on a 1947 Tucker Torpedo. Another case involved a guy running head-long into a mesquite tree (they have 2" thorns). Yet another ran over his own spare Nordic. I remember these cases and watch where I'm going.

The thermal activity this morning puzzles me. They are small but violent and they are just as likely to toss a model into a bad downer as they are to carry it out of sight. I've decided to let the thermal go completely through when I feel it and then whip the ship into a stall-turn to the left, hoping it will center itself in the thermal just as it completes its downwind leg. In other words, the last thing I'm worried about is the model's flying, and this is the way you should be—confident of your equipment.

Nonchalantly, I glance upward to the "Tumbleweed"—so suave! Suddenly, there's the lift—time to work it into position for the launch (coming from my left to my right for a left glide circle). What's happening? Instead of starting to its left, it does an instant 180 degree turn and points straight downwind. How can this be? For an instant I tell myself to wait and see if it tries to correct itself. In this case one split second of hesitation is fatal. The "Tumbleweed" goes "skree-eee-ee-e-e, flutter-flutter" straight down, still on the towline. I'm fumbling for the panic release on the reel (it's called "panic release" because when you can't find it, you panic). It happens so fast even throwing the reel doesn't keep the "Tumbleweed" from burying itself up to the wings straight in.

Now if you haven't flown in contests in Texas before, you don't know that the competitive spirit here is honed to

The towhook is shaped to make it hard for the towline to slip off accidentally. The Auto-Rudder release slips over the hook, disengaging when the ring comes off. It should be set up so that it takes very little tug to come free.



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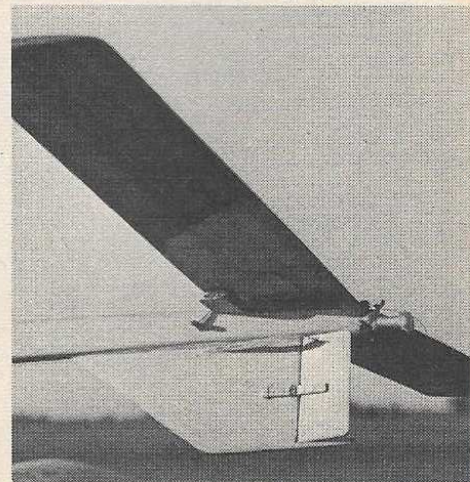


Fly with
THE BOLD ONES

"Tumbleweed" A/2

a fine edge. In other areas you can expect some sympathy when your airplane collides with a 70 mph trailer truck or is attacked by a flock of woodpeckers. In Texas, however, the more gruesome the death of a competitor's model, the harder you laugh. So, the sight of my model (which was the focal point of more than normal attention because it was the contest debut of new MonoKote free-flight covering material) sticking in the ground like a post was the signal for considerable laughter. Being used to this, I started the 164 foot walk wondering why my old reliable A-2 had turned into a snake. This is the sign of a pro, I think. Pros don't blame their launcher, the wind, their airplane, luck, the ground or any thing besides themselves. Accordingly I conclude that the only thing that could have been wrong was the name of the airplane. Airplanes fly like their names. Tumbleweeds live on the ground and don't fly well. Conclusion—I'd better be more careful naming the A-2 I build to replace this one.

The closer I get to it, the louder the laughter seems. My Dad, who launched it and who is also approaching the crash site, is wondering when I will blame him for it. I just shrug, and we both stand looking at the thing. Strange, it doesn't look too bad. Don't let your hopes rise, I tell myself, it must have been going over a hundred when it dinged. Still, it looks intact. Suddenly a brilliant thought hits me. Don't stand there mourning like the movie kid who commits hari-kari when he finds his pet armadillo has died trying to run faster than 3 mph. Be a pro, be suave! So, I casually unplug it from the earth and turn to walk back to the car without even inspecting it. They're still laughing but as I glance over the "Tumbleweed" it dawns on me that it is unscratched! This is it, my chance to put everyone down. Sticking a new d-t fuse in back, I call for another timer! Oh, ecstasy! Suaveness, style, firmness of



Simple, crude, contest winning back end has no fancy hardware, but it is easily adjusted. Fuse dethermalizer is a matter of taste, although most good flyers use mechanical timers. The V-tail offers no mounting problems. This is a practical ship, worth having.

FLYING MODELS

jaw, elan oneupsmanship, cunning, professionalism! (Excessive blah . . . the Editor)

I really would like to check it over more closely, but in private, so I tell them to forget the timer, I want to wait for better air. If it isn't apparent yet, I consider this adventure's climax one of the coolest moments in AMA history. Of course, I tend to over-dramatize things, and you shouldn't always take me too seriously. I am serious, however, when I report that, without any trim change or repair, the "Tumbleweed" went on to win the contest with a near-maximum score. Why did it dive in, then? Simple—over confidence in unpredictable conditions which led to slow reactions on my part.

I built the "Tumbleweed" in early 1967, using a set of "Hypodemic Nerdle (FLYING MODELS, 1967) wing blanks I had started in 1962. The fuselage sides came from an F.A.I. power fuselage I had started in 1961! This sort of scavenging always leads to a good ship. If you really want to see me foul up, give me several sheets of new, untouched balsa. I will go into a trance and cleverly shape these virgin materials into a 1937 Packard steering wheel—every time. I always save old model parts, knowing they will be needed someday. While I consider my American Crow" (F.M. 1968) my No. 1 Nordic now, I still prefer the "Tumbleweed" for windy conditions.

My primary objective in building the "Tumbleweed" was to have a maintenance-free glider that would stay in trim regardless of conditions. Flying three or four events in a single day means you can't spend much time testing at a contest, so you must sacrifice some performance for reliability. Strangely, everytime I think I'm doing this, I end up with better contest times. There must be a moral there somewhere.

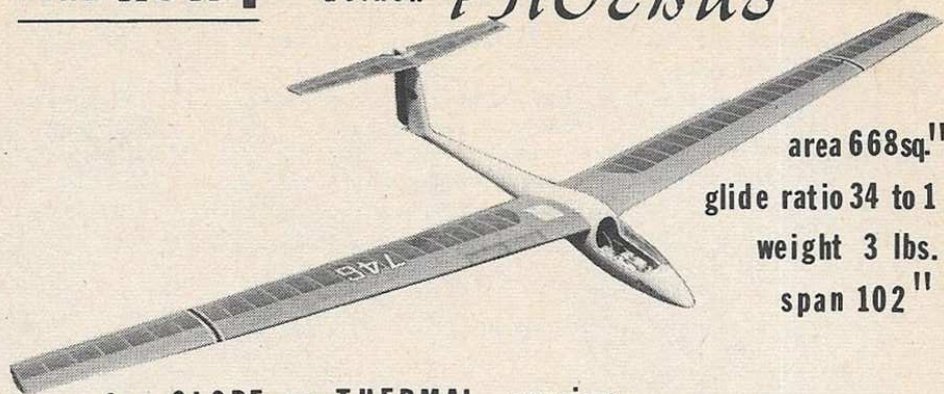
My ship weighs 17.5 ounces now, which is about 3 ounces more than it is required to weigh. The extra weight is largely due to having a too short nose, which required more lead than I had anticipated to put the center of gravity in the right place. I've lengthened the nose on the plans to alleviate this problem. Also, the fuselage aft of the wing has been lightened on the plans. The extra weight on my ship seems to have helped its windy weather performance (a phenomenon predicted by several well-known Nordic fliers, like Mike Des Jardines, of the U.S., and Bo Modeer of Sweden, who by the way placed third in the last World Championships with an 18 ounce). However, it seems to slightly handicap its performance in light thermal conditions. It will only do about 125 seconds in calm air, where it might gain 5 or 10 seconds if it were lighter. You be the judge of what weight you want. Built with light wood, the "Tumbleweed" will weigh about 14.5 to 15 ounces. Medium wood and a slick, weather-proof finish will bring it up to about 16-17 ounces. I recommend the latter, especially for less experienced fliers.

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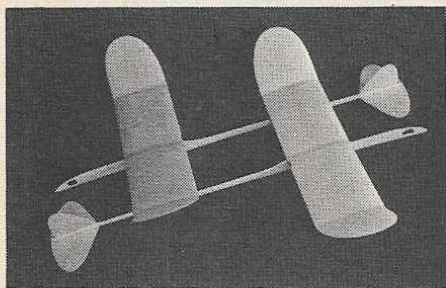
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"Tumbleweed" A/2

There are a few construction short-cuts I want to outline. First, the sheet wing is the easiest Nordic construction around. Start by cementing the unshaped leading and trailing edges to the main sheet. Flush fits here save sanding later, so pin them all flat on the board. When it dries, turn over and shape the trailing edge to its final taper. Now turn the panel back upside down and pin the trailing edge firmly to the building board. Shim up the leading edge so when you press a rib into place, the top sheet assumes the correct shape. Use more shims to insure that the sheet is touching the ribs in all places. Cement the ribs in, dry, and shape the leading edge. Finish sanding the entire wing with 400 grit paper.

I insure good alignment of both wing halves by installing the plug-in tubes in one piece and then sawing the tubing in half after they have firmly set in their proper slots. All you do is pin both wings flat, install the tubes, dry, and then separate. The plug-in wires themselves should be bent for dihedral before installing in the fuselage. When you have the fuselage and wings ready to take the plug-in wires, fill the over-size holes with epoxy, slide the wires in, wipe off excess epoxy, slide the wings on over the wire, align them, and let it dry. This kind of easy installation is usually good for a couple of years hard flying. There is little value in making it more elaborate.

The stab is probably twice as strong as most, but it needs to be, considering the fields we fly in now. The fuselage is an example of the "Cole type" high tail philosophy. Theoretically, it helps to have the tail out of the wing wash. The incidence settings shown give the high tail attitude, which makes the thing look like its diving when it isn't! I think it works.

The plans show exactly the same tow-hook and auto-rudder set-up I used on mine. It's not glamorous, but it doesn't fail at crucial times. The stab mounting shown is not vulnerable to having the stab ride over the front, causing crash dives. The pop-up angle is critical for proper dethermalizing with no spinning. If you have trouble with spins anyway, increase its angle even more.

If you use free-flight MonoKote, you should not predope the wing, as this causes air pockets when you iron the stuff on. Conventional materials—silk or tissue for the wings should be preceeded by several coats of sealer sanded thoroughly. The stab should be either MonoKoted or tissue—no silk—it causes warps. The fuselage should be well-finished and weather proof. In fact, a slick, durable finish on the entire model should pay off in the long run.

Trimming can be simplified immensely if you put the center of gravity where I show it. From there, you add left rudder tab for about a 100 foot

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"Tumbleweed" A/2

diameter circle. Any stalling or diving should be corrected with stab incidence—pack up the back end to cure diving and lower it to cure stalling, but leave the center of gravity alone. Glide trim is the easy part. When you tow the thing, you will find out fast if your wing is warped too much. The "Tumbleweed" is not too sensitive to warps due to its short span, but they can ruin the tow if you're not observant. Ideally, the wing should be perfectly straight, or slightly washed in on the left main panel (about 1/8 inch). This means the trailing edge of this panel should be lower than the leading edge at the dihedral joint.

The effect of wash-in is to keep the tip on its side up in the glide (in other words, it fights the rudder and keeps the ship from spinning in hot thermals). However, in the tow, wash-in causes relatively more drag than lift on its side due to the higher air speed, and this makes the ship tow toward the low trailing edge. On very fast tows, this can be bothersome, but if you go slowly, this wash-in can be a friend on the tow because it allows you to speed up and work the ship into its left glide turn on the release. A release straight into the wind or to the right causes stalls. The secret, then is to vary your speed on the tow. You can also set the auto-rudder slightly to the right rather than straight to give you a right divergence at low speeds, and even more tow control. (A straight tow resulting at moderate speed.) Beginners should shoot for straight wings and a straight tow, to be on the safe side. You should correct undesirable warps immediately, even if it means going home and not flying that day. Wash-in on the right side of the ship is not permissible, since it will cause right divergence on tow, and excessive left banking on glide.

Towhook adjustments are primarily for different wind conditions—back for light wind—up for heavy wind. Also, the towhook location can cure bad towing habits. If it weaves back and forth, move the hook back. If it diverges to one side and will not come back (and

the wing is not excessively warped) move the hook up.

I have described all the adjustments I use—it's impossible for anything else to affect the way the thing trims out—unless it would be stab tilt. Occasionally, raising the left hand tip of the stab helps maintain a tight glide circle and had little effect on the tow. In rare cases, one wing tip is heavier than the other, and causes erratic gliding. The wings should be balanced before the first flight.

I use a four minute dethermalizer fuse for three minute maxes—allowing myself about 60 seconds to tow. I rarely make trim changes, even if the thing seems obviously out of trim on a particular flight. It's better to wait a few flights and make sure it wasn't a freak thing. A good open class flier should average about 13.5 minute totals for five flights with the "Tumbleweed" over a contest season. This will probably place you in the top two in eight out of ten contests. It won't win the world championships, but who cares—neither has any other American's airplane, in this decade. A sharp junior or senior should average over 10 minutes just by towing to the top and releasing, without trying to pick lift on the line, which I think is smart for the percentage flier. Picking lift on the line is best left to the more experienced fliers, who have confidence in their equipment. A smooth release from 164 feet is the important thing, and it usually beats a 50 foot release no matter what kind of thermal is there.

I've presented the "Tumbleweed" as a simple glider for the inexperienced Nordic flier. It is ideally suited for this. I now use it as a back-up for my "American Crow" (FLYING MODELS, 1968), which is better suited to good weather conditions. At the same time, several U.S. Nordic team members, and virtually all of the top fliers around these parts know the "Tumbleweed" is hard to beat in any competition. You need not be ashamed of it because it doesn't look like the world champion's. Don't be fooled by elliptical tips, high aspect ratios, flimsy structures, and long tows. The "Tumbleweed" is a winner, too—even if it is ugly enough to derail a train.

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