

# TOSS -- UP



## NEWSLETTER

SEPTEMBER 1992

844 CHARLES STREET,

MOORPARK, CA. 93021

A.M.A. CHARTERED CLUB # 1943

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**NEXT CLUB CONTEST:**

Date Saturday, October 10, 1992  
Place Paramount Ranch, Agoura  
Time 9:00 a.m.  
C/D Don Northern?

**NEXT CLUB MEETING:**

Date September 24, 1992  
Day THURSDAY  
Place Cameron House  
Time 7:30 p.m.

## TOSS NOTES FROM AUGUST 1992

OLD BUSINESS - none

### NEW BUSINESS

- 1) Mike Leal reported that his exhaustive multi-county search for an inexpensive stopwatch similar to the LORUS resulted in finding one by SPORTLINE. This watch is similar in all functions but does not have a sweep minute hand. It costs \$30 and is available at SportMart. Mike is trying to get a group discount, so if you are interested, please let him know (soon).
- 2) For the SC2 contest - Mike Leal has been appointed the score keeper and transmitter impound supervisor. Don Northern will be the winch master. Don't forget to come out and help. There is plenty of things to keep you busy. We need winch operators, score card collectors/transmitter handlers, landing judges, etc.
- 3) Edgar Weisman claims that he (and a few assistants ?) will be giving winch/retriever operator lesson to club members prior to the SC2 contest.
- 4) Mike Reagan and Thomas Akers check out the Presidential Library in Simi Valley as a possible slope sight. They claimed it has good possibilities. Edgar Weisman stated that he would contact the 'powers to be' to see if we could get it as a club sight. Will keep you posted.
- 5) Edgar W. is going to contact T.O. to get our meeting schedule for October through December.
- 6) Mike Reagan had received the sanctioning papers and is going to take Thomas Akers over Lancaster on September 12th for setting some new Junior national records.
- 7) During the past several meetings we have been discussing the possibility of changing our monthly contest schedule to Sundays only. A few of the participants dislike using Paramount for contests because of a) the height of the grass, b) the tall grass is hard on our winches and retrievers and c) the heavy brush pokes holes in the monokote. Let us know what you think about this.

### TREASURER'S REPORT

After the September contest, our club's balance stands at \$380. This is an improvement over last month. We would

like to thank all those flyers who showed up for this month's contest. There were many new faces.

### WHAT'S NEW

- 1) They have just mowed our field again at Paramount Ranch. So lets go out there and use it.
- 2) School is back in session. That means you'll have to be pretty lucky to be able to fly at Redwood on Saturdays. Remember that on Saturday, TOSS is on the bottom of the list of rights to the field.
- 3) I spoke to Bob Steele of the League of Silent Flight for some clarifications on their requirements. Bob is the ex-president of LSF and was able to shed some light on contest requirements. Here is some of the information that he passed on: a) It doesn't matter how long you have been working on qualifying for the next level. Just make sure that you send it to the current location. b) Where it says "place or points" it really means "place AND points". c) When flying in a contest, you may use the sum of all entrants in all classes for the total number of participants if it is beneficial. In other words, if there are 10 experts, 5 two meter flyers and 8 sportsman, the total number of entrants would be 23 as long as everyone was flying the same contest under the same rules. d) If you are flying multiple classes in the same contest, you can use either score for calculating the points. Or, if desired, you may use each class as a different contest as long as there was sufficient entrants in each class. e) If the person witnessing/signing for an event has an LSF number, be sure that you have him include it. f) Be sure to have your LSF Level 4 & 5 events witnessed by the appropriately rated LSF members and be sure to include their numbers. Lastly, Bob said that after 20 years of debating over the possibility of a Level 6 rating, there does not appear to any chance for one based on accomplishments. He suggested that if you have your Level 5, try starting them all over again. < Bob >

### JUNIOR NATIONAL RECORD ATTEMPTS

by Thomas Akers

On September 12, Mike Reagan and I attempted to set new Junior National Records for Open Distance and 2 Meter Thermal Duration. It all started off on Saturday morning in the desert outside Lancaster, California with a

modified Sophisticated Lady and high start strung out next to the road and adjacent to a large field.

The lift was strong. Strong enough that one minute you may be looking for a place to land and the next minute you were looking for the plane. Thermals were providing climb rates that could be measured in thousands of feet per minute. The wind on the other hand, was not as cooperative. It blew quite strongly at about a 45 degree angle to the road. The net result was that you could climb up to altitude but you would lose it to the wind trying to stay on course.

After several failing attempts, a day was called. Neither record was broken. Like the saying goes, "If you first don't succeed, try, try again", and we shall. -B.S.-

## FOR SALE

Japanese ZERO slope plane kit. Foam wings, fiberglass fuselage. \$75 or best offer. Larry Jimenez (805) 652-1937.

## Novice Corner

by Tom Hagney

### Winch Safety

I just wanted to take a few minutes of your time to discuss winch safety. On several occasions, I have seen what I would consider, unsafe winch awareness. The club winches are powerful and fast mechanical devices which can cause considerable personal injuries. Let's cover a few

A person standing behind the drum when a line breaks under tension can be whipped by line coming in.

A person standing directly behind the turn around, when a line break occurs during launch, can be whipped at a considerable distance beyond the turn around.

When winding the line onto the drum at the end of the day, it is possible to get a finger or hand tangled in line and pulled into the drum.

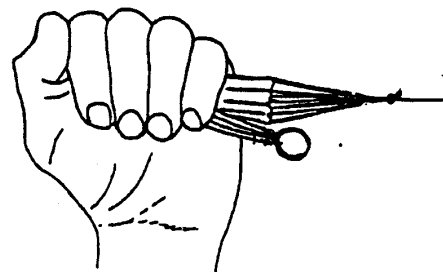
During retrieval of chute, it is possible for the line to get pulled through the hand or body, causing deep cuts.

During retrieval of chute, it is possible to have chute ripped from hand, causing loss of hand or finger(s).

To prevent these injuries a few precautions should be taken.

**Do** turn off the winch at the disconnect before retrieving a chute. At contests, the timer should flip the switch after winding down the chute. If you are retrieving your own chute, check that the winch is off before going after the chute.

**Do** hold the line so that an accidental operation of the winch will pull the line free of your hands without cutting or tangling. Fold the chute in half and carry in hand so lines exit from back of hand as illustrated in drawing below.



**Do** retrieve the line at the end of the day in a controlled manner. Retrieving the line slowly can prevent a tangle from pulling a hand or finger into the revolving drum. A technique that works well is to pick up the foot pedal assembly and gently tap the switch against the side of your leg (like a tack hammer) in an intermittent manner.

**Do** wear a heavy glove to prevent friction burns when winding line onto drum.

**Don't** put your finger through the launching ring or wrap the parachute around your hands when retrieving the chute.

**Don't** stand behind the turn around or the drum while the winch is running. If necessary move the foot control pedal to one side when launching.

**Don't** allow the line to run across any portion of your body including hands, when retrieving the line.

One last comment. When using the winches, avoid dragging the lines through field debris (cut sod, weeds, pallets) and then attempt to wind in the line through the debris. This practice is very hard on lines as well as winch motors. It is better to wind the chute down to the turnaround and walk a little farther. After disconnecting battery cables, tuck them into the accessory container or secure them so that they do not drag under the winch. Thank you.

From RMSA



THE CREEPING ANTENNA CAPER  
by al doig

Whilst "fun" flying after the CVRC field dedication in Visalia a few weeks ago, I lost directional control of my Anthem and it headed for the adjacent corn field. At the time I put it down to sloppy flying leading to a mushy stall. There I was in eight foot high corn in a flooded field with mucky mud and water between the rows. Another flyer shared my fate when he spiraled into the corn, earlier on. Those from farming communities know that corn fields do not give up airplanes easily. Keith Schwemmer and I mucked about for a while with no luck. I was told that if I returned after harvest and looked for a tail sticking out of a bail of corn stalks, I might recover the ship.

However, the CVRC club doesn't leave a guest lost in a corn field. One of the members owns a sleek twin engine aircraft. He left for the airport and returned with his ship. He made several passes over the field and guided us, via radio to a particular row of corn. "Up six more rows" came the instructions on one pass. "Wave your hat" on the next pass. It looked like the Reno air races - twin airplanes go like the Bombay express. "OK, your airplane is 150 feet up that row". I paced off 150 feet, and there it was in the tops of the corn. I heaved a sigh of relief and brought out an undamaged Anthem. thanks to the generous pilot.

It has taken me all this time to get to the reason for this piece. After returning home, I happened to be messing around in the receiver compartment of the Anthem. My receiver antenna is pushed into the center tubing from a Ny-Rod push rod. This is then fed into the fuselage. There was no antenna in the tubing!! I found it wadded up under the receiver! No wonder I lost control. I couldn't imagine how the antenna got out of the tubing. I reckoned I must have temporarily put the receiver in the ship and never went back and installed the antenna.

However, in talking with Ken Raymond and Keith Finkenbinder, both assured me this is a common problem. With successive landings, the foam around the receiver will actually work the antenna right out of the tubing. If conditions are right it doesn't take very long. In thinking back, I remember several times finding the antenna quite a ways out of the tubing.

Both Ken and Keith tape the antenna wire to the ends of the tubing before inserting it into the fuselage. I have now adopted this precaution!

*From NCCSC 8/92*

From The B.D. Files (EDSF AUG '92)

### Tips From Balsa Dust

In the last installment of Balsa Dust, we left you with a freshly sheeted foam wing core in need of finishing. Let's start out by installing the leading edge. I always try to use spruce for the LE as it is only 25% heavier than balsa, but provides 50% or more strength. This helps prevent nicks and dents, and is a necessity on planes that will be flown on the slope. Look for straight grain with no knots or dark spots as these can cause carving and sanding problems.

First, locate the edges of the core and mark the location of the LE at both root and tip (look at your plans or match the thickness of the LE stock to the thickness of the core/skin). Be sure that the LE stock is both wide and high enough to allow you to properly shape the LE. Line up a yardstick or long metal straightedge on the tip and root LE marks and draw your cut line. I tape the straightedge to the wing to assure a straight line. Next, cut the core/skin sandwich to the marked line using a sharp X-Acto knife, bandsaw or jigsaw and carefully use a sanding block with 150 grit or so to clean up the cut. Whatever method you use, make a straight cut and be sure to maintain the cut at 90° to the core. Glue the LE to the core; I prefer using 5-minute epoxy with microballoons (mixed to a medium thickness slurry) or the new Goldberg "Epoxy Plus" which is basically the same thing but pre-mixed with microballoons. Use lots of tape to hold the LE in place. I generally tape the LE at the root, tip and one or two spots in between, and then use a piece of scrap 1/16" sheet balsa about 3" long by 1/4" wide (cut to a tapered point on one end) to scrape away excess epoxy as well as "troweling" epoxy into low spots or gaps. I then use #64 rubber bands, spaced about 3" apart, to firmly hold the LE until the epoxy completely sets (about 1 hour).

After the epoxy cures, use a small wood plane to shape the LE to within 1/32" or so of the final shape. I find that a plane is far faster and superior to sandpaper for this task, especially on spruce. The small Stanley plane is the best I have found, and is reasonably priced (about 12 bucks at most hardware stores). Be sure to buy a spare blade and sharpening stone at the same time. Avoid those cheap planes that use razor blades, as the blades are too flexible and are hard to control. Adjust the plane so that you get a very thin cut (about 1/64" thick or less) and use a light hand. Holding the plane at a 45° angle to the LE seems to help prevent "digging in" or cutting too deep. Be careful not to remove too much material. As always, keep the wing in the foam beds whenever possible, especially when sanding or planing. This prevents dents and gouges in the wing skins from glue drips, wood splinters, etc. on your bench.

Trim the root and tip to the correct dimensions and dihedral angle, if necessary, and glue on tip blocks and root ribs. A jigsaw or band saw is best, but a razor saw works fine as well. For dihedral angles, a large disc sander is preferable, but you can also do fine with a large sanding board. To make the sanding board, cut a 2' x 1' x 1/2" thick piece of plywood or particleboard and glue on two large sheets (8-1/2" x 11") 150 grit sandpaper. Use 3M 77 or similar contact cement, and

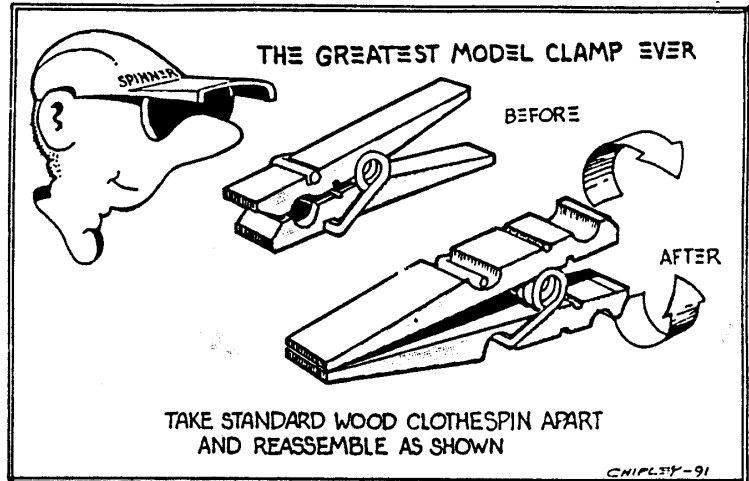
## Balsa Dust

from page 5

follow the instructions for a "tack" bond. To sand the right angle, you can make a "dihedral gauge" from a piece of cardboard or scrap balsa and protractor. For example, a  $3^\circ$  dihedral gauge would have an angle of  $93^\circ$  (draw it out on paper first if you are confused). Tape the gauge to the bottom of the wing and slide the wing root back and forth on the sanding block until the correct angle is achieved (i.e. the gauge and wing root are flat). Be careful not to remove too much material from the TE area as it will tend to cut faster than the LE and mid chord areas by preventing the wing panel from "rocking" as you sand (this will cause you to have a curved root).

I find it is much easier to rough shape the tip blocks prior to gluing them on. This will also allow you to hollow them out without as much chance of removing too much material. Now glue on the root and tip block using thickened epoxy. After this cures, locate and mark the centerline of the LE and tip block with a pen (use tape as a temporary guide). Place the wing back in the saddle(s) and plane the tip to the final shape. Prepare the panels for sanding by placing strips of tape on the skins about  $1/8$ " behind the LE and tip glue joints to act as sanding guides and to prevent you from sanding into the skins. Start shaping and feathering the LE and tips into the panel, working from 150 to 320 grit and finishing with 320 grit used by hand. Don't remove too much material with the rough grits, and be very careful to maintain the proper airfoil shape. (Note: The first 10% of the chord is considered to be the most critical part of the airfoil. Don't be tempted to "Sharpen up" the LE in a misguided quest for speed. At the speeds and Reynolds Numbers we fly at, this has only detrimental effects such as tip stalling, increasing stall speed, etc.) If you are really serious, make LE templates from Formica or plywood and use these as your sanding guides.

Do the TE next. If you tapered the skins at the TE before you sheeted them, then this should be a quick process with a 220 and 320 grit sanding block. If you left too much sheeting overhang, then you need to trim the TE to the correct



From JMS5 Aug'92

dimensions first. If you used glass or carbon matt in the TE, then use the sanding blocks to smoothly taper the skins to a point, using the glass as a centerline. If you are going to Monokote the wing, then leave at least  $1/32$ " of thickness or you will have a very difficult time with the TE cutting through the covering material (it helps to have a  $1/16$ " or so overlap of covering at the TE). Now is the time to final sand the entire panel with 320 or 400 sandpaper - use a flexible sanding block (the large 3M rubber blocks work excellent here). Be careful- if the paper develops torn or ragged edges, you can quickly cut grooves or dents into the skins. See Balsadust #1 for details. Finish the LE by hand, if necessary and be very careful to not cut yourself on the TE. (ED. Note: Homework assignment: Reread last statement 3 times and memorize. Don't find out the hard way about sharp TEs!)

Layout and mark the aileron and flaps (if used) on the wing panels. You can cut these out with a jigsaw, bandsaw, table saw, X-Acto knife, razor saw or router, but keep in mind that you will remove material equaling to the thickness of the saw blade from the wing. Also consider the thickness of the material used to "cap" the edges. You should plan on removing about  $1/32$ " of material when you clean up the edges of the saw cuts with a 220 grit sanding block. I find

that if I use a Dremel jigsaw or small bandsaw, then  $1/32$ " balsa capping works great; with a table saw ( $3/32$ " thick blade) or router table ( $3/32$ " carbide bit) then  $1/16$ " balsa is good. If you use an X-acto knife, be careful to make many small cuts and use a very sharp blade; otherwise, the foam will "tear" instead of cutting.

You will probably need to make a second cut on the control surface to allow proper spacing for the capping material. You will also need to "angle" the second cut to allow for flap and aileron movement. Make sure that you cut this angle at the correct bias for the control surface in question (typically, cut away the top surface for flaps hinged on the bottom, on ailerons cut away from the bottom surface). You can use a disc sander, band saw or jigsaw (with a fence and the table set at the proper angle) or your new sanding board. For very light airframes or where control surface stiffness is not a problem, then you can get away with a thin layer of epoxy or UFO as the cap. At any rate, I use UFO exclusively to glue the capping on. Trim the capping to size and carefully fair into the surfaces with a 320 grit sanding block.

There you have it - a wing (almost) ready for covering. Next time, we will go over cutting servo wells, making servo wire channels in already built wings, control horns and other neat stuff. I promise a few surprises and unique techniques here, so stay tuned! Thermals-Balsa Dust.

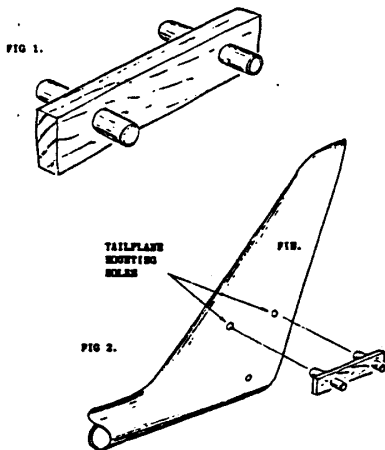
HINTS OF THE MONTH:

From the pages of "Soarer", the newsletter of the British Association of R/C Soarers (BARCS), comes these helpful sketches by master artist and former editor Bernie Henwood. This is just the thing to understand and use if you have a new kit with a fibergalss fuselage, and want to install a full flying stab and bellcrank. The simple jigs that you make can be used over and over again, if you standardize bellcrank and wire size.

Speical thanks to Jack Siles, expatriate American editor of this fine British newsletter!

**MAKING TAILPLANE DRIVE SLOTS IN FINNS**

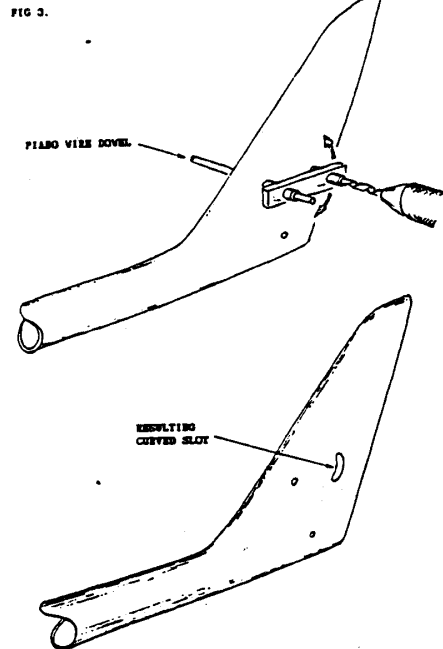
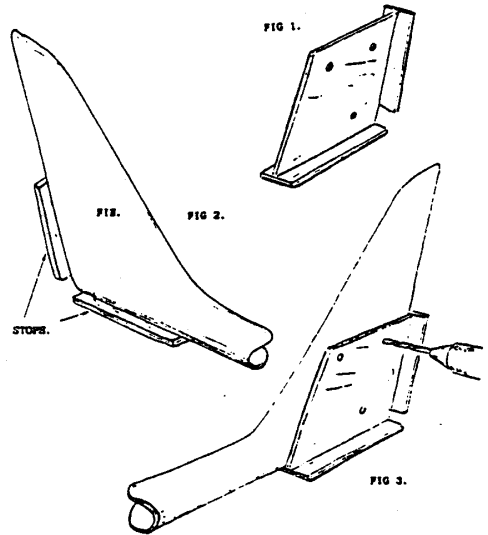
Making the curved slot in the fin for the tailplane driving dowel to run in is a fiddly job. A method I use to produce instant slots of exactly the right curvature is illustrated below. The jig used is simply a piece of 10 x 3mm spruce with two tubes fixed in the place the same distance apart as the tailplane dowels. Fig 2. The front tube ID. matches the tailplane pivot dowel and the rear tube ID is chosen to fit a twist drill slightly larger than the tailplane rear dowel. After the fin has been drilled for the tailplane dowels and the pivot tube fixed and checked for accurate alignment, an appropriately sized piece of piano wire is passed through the pivot hole, the jig slipped onto this and the slot rounded out with a twist drill in an electric hand drill as shown in Fig 3. Note that I do each side of the fin separately.



**HINTS AND TIPS FROM BERNIE HENWOOD**

**DRILLING FINNS FOR TAILPLANE DOWELS**

The dowel holes for tailplane mounting need to be accurately located on the fin and to simplify this process I use a simple 3mm ply jig as illustrated in Fig 1. The two stops on the jig need to be square to the ply plate to which they are fixed and the fin trailing edge also needs to be square to the ply plate to which they are fixed. The jig is used as shown in Fig 2, with the fin trailing edge hard against the rear stop and the fin bottom hard against the bottom stop, the holes are drilled through the jig into the fin. Fig 3. To maintain accuracy I drill each side in turn rather than drilling right through from one side. I use the jig to position the tailplane pivot dowel hole, the tailplane rear dowel hole and the closed loop bellcrank pivot hole at the base of the fin. I drill all holes slightly undersize and check for accurate alignment using suitably sized piano wire rods, before opening the holes up to the correct size. Using cyano' this jig is very quick to make.



The result should be a neatly finished and accurate slot, achieved without marking out or fiddly work with a needle file. And if you make all your tailplane dowel spacings the same you can use the jig repeatedly AND interchange tailplanes if required!

From Modesto R/C Club

## KIT REVIEW - BILL ROSEBERRY

The Spirit glider by Great Plains (@ \$35.00). This is a 2-meter glider of the polyhedral type, controlled by rudder, elevator and spoilers. It features the Selig 3010 Airfoil and a light wing loading.

We have built and flown five (5) of these gliders over the past year with various wing loadings - the lightest flies best.

Recommended changes: General - using a gram scale, check the wood for weight. Kit wood varies from 4-6 lb stock to 14-15 lb stock. Density can be checked in lieu of a gram scale with your fingernail (that is a no-no). If you can't cut it with a razor blade, don't use it in a glider.

### Fuselage:

1. Change 1/8 ply bottom to 1/16
2. Drill nose block to pour in lead
3. Throw plastic cockpit away
4. Lightening holes, fuse sides, aft of T.E. of wing
5. Lightening holes, fuse bottom, aft of tow hook
6. Ballast box in fuse at C.G. (6-8 oz)

Tail Feathers: Lightening holes in the elevator.

### Wing (Polyhedral type):

1. One piece wing with bolt on provisions
2. L.E. Sheeting goes back 4 1/2" (past the spar)
3. Ribs cap stripped
4. Tips sheeted with 1/32 (past the spar)
5. L.E. is radiused with gentle curves on the triple-taper plan form
6. Wing joiner box area needs careful attention. Too abrupt a change in structure - needs several bays with 1/32-1/16 shear webs

Bill Forrey covered this glider in Basics in the August 1991 issue of Model Builder.

## GLIDER KIT REVIEW - BILL ROSEBERRY

Up for review: the Apogee by Dynaflyte. It is a standard class, 100" span, Eppler 205 Airfoil, featuring a polyhedral wing and guided by rudder and elevator.

Weight is to be 40 oz., which gives you a 7.6 wing loading. Craig Trout is the builder of this one which, with many modifications, weighs 47 oz. for a 9.0 wing loading. This is his second Apogee and the recommended changes derive from flying his first Apogee.

### Recommended changes:

#### Fuselage:

1. Replaced all balsa aft of C.G. that was not superlight (tail feathers included)
2. Shortened tail moment 1/2" at the rear end
3. Moved servos 3/8" forward
4. Moved C.G. 1/4" aft
5. Moved tow hook 1/4" aft

#### Tail Feathers:

1. Eliminated balanced rudder design
2. Increased thickness of airfoil and horizontal stab to gain rigidity.

#### Wing:

1. Wing rod changed from 1/4" to 5/16"
2. Installed ballast tubes aft of spar, wing root
3. Ply shear web extended another rib bay on rear of spar only
4. Added "I" beam construction on spars, four rib bays out from root.
5. Wing sheeting extended 4 1/4" from L.E.
6. Installed "Z" bent wire spoiler return
7. Tip of wing swept back past the T.E. with anhedral

Construction Tip: The ribs are die cut and this leads to an uneven upper camber. Sand wing with a 2' "T" bar and the rough 205 airfoil will begin to look like a 3021.

## CRAIG TROUT - Notes on Middle-of-the-Road Moderately Priced Sailplanes

Listen to the talk at any gathering of more than one sailplane pilot and you will hear that the floater type sailplanes work good in light lift, but cannot cover a lot of ground in search of it...and that the go-fast high tech (high priced) sailplanes can travel long distance, but cannot climb as well in small, weak thermals...and that sailplanes between this flying envelope are probably no good for anything. At the risk of offending everyone, I will share my personal experience.

- #1 I like high average contest scores. Occasionally I even get lucky and win
- #2 I am not a master builder
- #3 I do not have Joe Wurtres pilot skills
- #4 I am not a beginner pilot
- #5 I don't have a six-figure income

Most CD's like to equip contests with average flying weather (some calm, some wind, some rain, some hail, some downwind launches, some sink, some thermals) - sounds like ideal conditions for the average pilot. Try to find a sailplane for the average pilot and you will see we have eliminated about 90% of what is out there on the market. Do not fear...somewhere in a dark corner of a hobby shop or someone's garage there does exist a sailplane for you. With careful building, very few modifications and lots of flying practice, these sailplanes are capable of scoring high and even winning contests!

Model Name/Manufacturer	Price	Airfoil	H. Stab. Position	Class	Comments
Sophisticated Lady/Goldberg	\$35.95	Flat Bottom	T	2M	Wing/tail need beefed up. Don't use washout. Airfoil responds to trip
Spirit/Great Plains	\$39.95	S 3010	Lone	2M	Good wood & instructions. Good flyer
Sagitta 800/Airtronics	\$				Lots of building. Good

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