



THE VINTAGE SAILPLANE ASSOCIATION

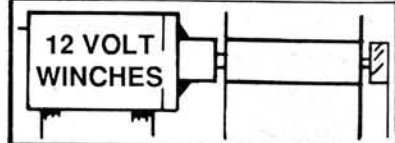
VSA is a very dedicated group of soaring enthusiasts who are keeping our gliding history and heritage alive by building, restoring and flying military and civilian gliders from the past, some more than fifty years old. Several vintage glider meets are held each year. Members include modellers, pilot veterans, aviation historians and other aviation enthusiasts from all continents of the world. VSA publishes the quarterly magazine BUNGEE CORD. Sample issue \$ 1.-. Membership \$ 10.- per year.

For more information write:

Vintage Sailplane Association
Scott Airpark
Lovettsville, Va. 22080.

FLIGHT LINE SYSTEMS

P.O. Box 1502, Lewiston, Me. 04241



For information Contact
NSS Secretary Treasurer
CLIFF OLIVER
8151 BROADWAY
SAN ANTONIO TX 78209

You are invited to join the
NATIONAL SOARING SOCIETY

- OFFICIAL AMA SOARING SPECIAL INTEREST GROUP
- NSS SOARING TOURNAMENT SERIES
- NATIONAL MEETINGS
- EXCELLENT BILMONTNLY NEWSLETTER
- NSS FULLY SUPPORTS THE F3B SOARING TEAM & LSF SOARING PROGRAM
- NSS IS INVOLVED IN THE ORGANIZATION AND OVERSEEING OF THE SOARING PORTION OF AMA EVENTS (INCLUDING AWARDS BANQUET)
- YEARLY DUES ARE \$12.00 (SPECIAL FAMILY RATES)
- NSS OFFICERS ARE FROM ALL 11 DISTRICTS

R/C Soaring

D I G E S T

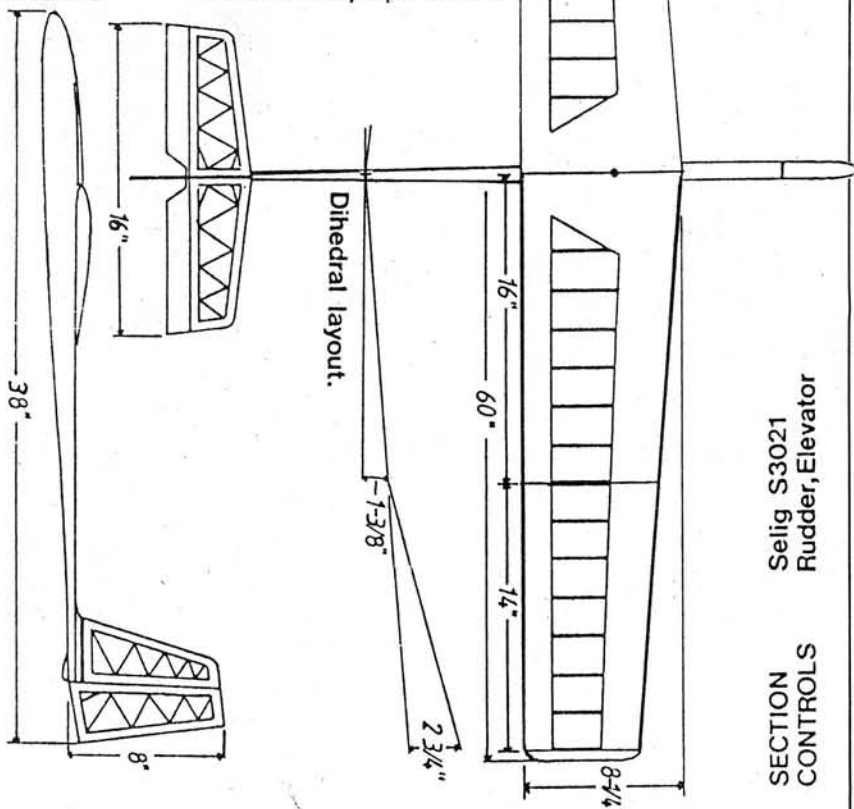
Vol. 5 No. 1

January 1988

ELIMINATOR 60

Designed by John Stevens.

WING SPAN 60 inches
WING AREA 427 square inches
A.U.W. 14 ounces
LOADING 4.72 ounces/square foot



RC Soaring Digest
P.O. Box 1079
Payson, AZ 85547

Bulk Rate
Postage Paid
Permit # 17
Payson, AZ 85547

ADDRESS CORRECTION REQUESTED
FORWARDING POSTAGE GUARANTEED

© 1987 RC Soaring Digest. Printed monthly, twelve issues per year. Edited and Published by James H. Gray, 210 East Chateau Circle, Payson, AZ 85541. Telephone Number: (602) 474-5015. Subscriptions \$16 per year in the USA; \$20 U.S. per year in Canada and Mexico; and \$24 U.S. per year elsewhere via Airmail. All rights reserved. Reproduction with permission of publisher allowed. RC Soaring Digest, RCSD, Radio Control Soaring Digest and Soaring Digest are registered names.

Graphic Design and Production by Robert W. Rondeau Graphic Design, 73 Main Street, Brattleboro, VT 05301.

HI START

In the December issue, I talked about F3B vs. Thermal Duration as a "way of life" among contesters, but I didn't finish the dissertation on good old T.D., so here goes. First of all, it is alive and well - thriving in many different climes and countries. In fact, there seems to be more interest than ever in T.D. soaring and contesting, and the U.K. is a prime example of this outside the U.S. In fact, if you read MODEL AVIATION magazine (and I'm sure all of us do) you'll find an excellent column by Byron Blakeslee in the January issue. By's column about RC Soaring discusses this very subject, and even brings in a "heavyweight" from England in the form of Bernard Henwood, editor of the SSA -- newsletter of the Sheffield Society of Aeromodellers, and also editor of the BARCS newsletter SOARER. The subject of Thermal Duration touches on subjects such as "What's the Ultimate Thermal Ship" and "British Open Class Thermal Soarers". I won't spoil this extremely interesting and thought-provoking article for you by trying to paraphrase it...but you MUST read it if you are interested in thermal soaring in its finest form.*I might add that RCSD plans to introduce some of Bernard Henwood's extraordinarily helpful ideas, tips, hints and designs in RCSD from time to time. Just in case you need your own copy of SSA, please write to the editor and ask about a subscription. You can reach him at 219 Highcliffe Road, High Stairs, Sheffield, South Yorkshire, England S11 7LQ.

For out-and-out thermal performance, there is no question that "bigger is better" in spite of my long-time love affair with two-meter sailplanes. A "good big'un" will almost always beat a good littl'un" (don't read this Paul Carlson) and the trend is toward Open Class or Unlimited Class thermal soarers whose wing spans are always over ten feet. Yes, I'll admit that small, tight thermals close to the ground are not always the "big'un's" cup of tea, but almost everywhere else, they seem to excel. I used to watch sailplanes like the ASTRO-JEFF, the CHALLENGER, the GRAND ESPRIT, and others as they handled thermal contests. Today, we have MERLIN, SAGITTA XC, and others. Quite naturally, these began life as thermal duration machines and have gone on to become cross-country sailplanes. But, let's face it; a cross-country sailplane IS, and MUST BE, a thermal duration ship. So, we see that there are two real contests available to T.D. fliers: Cross-country (soon to be an FAI-recognized Class F3H), and Seven-minute precision with spot landing, or similar "hang around the ol' airport" type contests. Modified cross-country will be goal and return, or distance around a triangle, or even around a "cat's cradle" -- something that full-scale machines have done for years. Nope, T.D. is far from dead; it is, in fact, even healthier than it was 10 years ago when everyone began to jump on the F3B bandwagon.

So there you have it. T.D. satisfies a great urge to build the ultimate low-sinking speed sailplane with ability to penetrate winds, circle in the lightest of air in tight circles, and even do some "dolphin" soaring. Surely, it's not everyman's dream of the future, but it's far from being a thing of the past.

Next time, I want to talk about Slope Soaring, and its potential for the future.

HAPPY SOARING

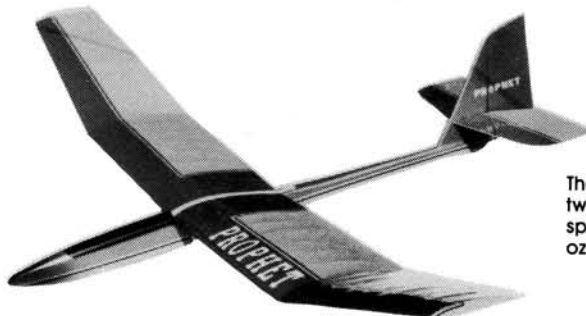
JIM

* AND IT RAISES THE QUESTION: WHY CAN'T AN F3B - TYPE SAILPLANE BECOME THE BEST THERMAL-DURATION SOARER OF ALL? Think about it, and tell me why not!

JG

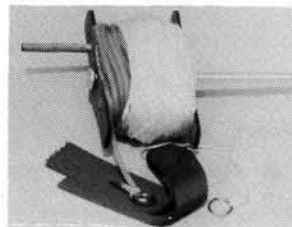
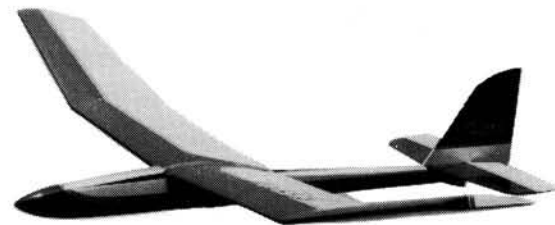
FROM DAVEY SYSTEMS

Two great sailplanes for the novice or competitor alike because they have a tremendous speed range due to the computer optimized modified E 193 airfoil. The ARIEL, 1½ meter small size, but large performance. 59 in. span, 370 sq. in. area, 5.25 oz./sq. ft. wing loading.

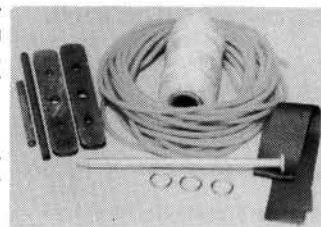


The PROPHET, the preferred two meter sailplane 78¼ in. span, 613 sq. in. area, 6.25 oz./sq. ft. wing loading.

Both sailplanes are designed to easily withstand 12 volt winch launches. The kits feature accurate die and machine cut balsa, spruce and plywood, step-by-step instructions, complete full size rolled plans, pre-cut fuselage parts, bagged small parts and hardware. The prophet has a two piece wing, hardened steel wing rod, flexible steel control rods and adjustable tow hook.



The ZIP-START -- a hi-start designed for launching 1½ or 2 meter sailplanes. Includes 30' of ¼" ID ultra-violet stabilized natural latex rubber tubing, 250' of heavy duty 160# nylon line, 3 tempered steel tow rings, 8" steel stake, tow marker ribbon, reel assembly and instructions.



DAVEY
SYSTEMS
CORPORATION

675 TOWER LANE
WEST CHESTER, PA 19380
215-430-8645

WING TIPS -- NEAT IDEAS ON "HOW TO..."

Keith Love, POB 361891, Milpitas, CA sent in a great idea for storing odds and ends. Tell 'em, Keith...and, readers, take a look at the accompanying sketch.

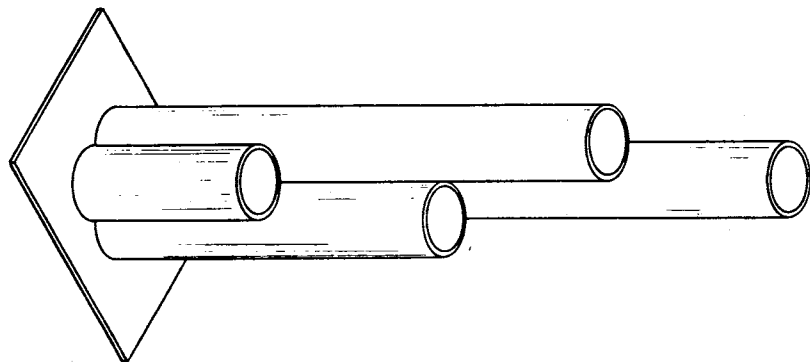
"When stuck for a place to store building materials, I came up with the idea of using some leftover paper tubes from the drafting supply store. Using a glue gun, I glued several tubes of different lengths to a base made from a piece of 8 1/2" x 11" cardboard. The result was something I could place next to my building bench and stuff full of wood, dowels, music wire, pushrods and even my straightedges! Now there is no search through my old kit boxes to see if I have a certain item, or to make an unnecessary trip to the hobby store.

"Here's another tip: some of us are now addicted to the 'Permagrit' sanding tools which are now on the market, but which carry a pretty steep price tag. They do supposedly last forever, but I was able to find similar tools at my local 'Pay 'N' Pak' store for only \$2.49 instead of the \$6.49 that my hobby store is asking! The only difference I can find is a small tab on either end for mounting handles -- which in my opinion is a nice way to use the tool, and I feel I get more for less!

"Thought your readers might want to know. Keep up the good magazine. (signed) K. Love."

Ed's note:

Thanks for the fine tip, Keith. I don't have a local 'Pay 'N' Pak' but I'm going to look for a similar outlet and see if I can find those sanding tools...JHG.



MORE NEAT IDEAS AND "HOW-TO'S".....Don Mulligan

Don Mulligan, Sierra Vista, Arizona offers the following information for those who, like myself, find themselves at a loss for how to do something when building a sailplane. Thanks, Don, for sharing.

FRICION-FREE GAPLESS HINGES

THE MAJOR CAUSE OF HINGE FRICTION IS DUE TO MIS ALIGNMENT OF THE HINGES. THIS MISALIGNMENT MAY OCCUR IN THREE WAYS. (1) HINGE SLOTS CANTED; THIS IS NOT NORMALLY THE CULPRIT AS ALMOST ANY ONE CAN DRAW A STRAIGHT LINE TO CUT THE HINGE SLOTS. IF SLOTS ARE CUT TOO LARGE, MINOR MISALIGNMENT CAN OCCUR. (2) HINGES CANTED SIDEWAYS AND (3) HINGES AT DIFFERENT DEPTHS.

IF LARGE KLETT HINGES ARE USED, ALL THREE MISALIGNMENTS CAN BE ACCURATELY CONTROLLED BY REMOVING THE INDIVIDUAL HINGE PINS AND USING A CONTINUOUS PIECE OF 1/32" MUSIC WIRE FOR A HINGE PIN FOR ALL

OF THE HINGES. ONE SIDE OF THE HINGES MAY BE CEMENTED USING THE CONTINUOUS WIRE AND THE INDIVIDUAL HINGE PINS REPLACED IF WEIGHT IS A SERIOUS PROBLEM. IF THE CONTINUOUS WIRE IS RETAINED, A GAPLESS HINGE CAN BE ACHIEVED. THE GAP CAN BE SET SO TIGHTLY THAT LIGHT WILL NOT SHOW THROUGH AND FRICTION FREE ENOUGH SO THAT THE MOVABLE PIECE WILL FALL FROM ITS OWN WEIGHT AFTER THE HINGING IS COMPLETE.

ONE OF THE MOST IMPORTANT STEPS IS THE PROPER PREPARATION OF THE HINGE SLOTS. AFTER THE HINGE LINE IS DRAWN PARALLEL TO THE CENTER LINE AND HINGE LOCATIONS MARKED, THE HINGE SLOT IS PRE-CUT WITH A NEW NUMBER 11 X-ACTO BLADE. A 45 DEGREE CUT IS NOW MADE PARALLEL TO THE HINGE SLOT AND APPROXIMATELY 1/16" WIDE AT THE TOP OF THE HINGE SLOT ON EACH SIDE. A SMALL NICK IS MADE AT EACH END OF THESE CUTS AT RIGHT ANGLES TO THE HINGE SLOT SO THAT THE GROOVE SO PRODUCED WILL TERMINATE CLEANLY.

YOU NOW HAVE A GROOVE THAT WILL ACCEPT THE ROUND PART OF THE HINGE. A GOLDBERG HINGE SLOTTING HOOK IS USED TO COMPLETE THE HINGE SLOT TO THE PROPER DEPTH AND WIDTH. TRIAL FITTING THE HINGE WILL INSURE THAT PROPER ALIGNMENT CAN BE ACHIEVED. HINGES SHOULD BE PREPARED BY WASHING IN WARM WATER AND DETERGENT TO REMOVE THE MOLD RELEASE COMPOUND USED IN MANUFACTURE. THE HINGES SHOULD BE STRUNG ON THE MUSIC WIRE HINGE PIN AT THE PROPER DISTANCES AND A SMALL DROP OF OIL APPLIED WITH A TOOTH PICK. THE HINGE HOLE WILL APPEAR TO TURN BLACK WHEN THE OIL PENETRATES. ALL EXTERIOR OIL IS CAREFULLY REMOVED FROM THE AREA TO BE CEMENTED IF YOU WERE SLOPPY.

THE GROOVE AT THE TOP OF THE SLOT WILL NOW SERVE AS A CEMENT RESERVOIR. A SMALL BLOB OF EPOXY IS PLACED IN THE GROOVE WITH A ROUND TOOTH PICK. A SERIES OF RAPID UP AND DOWN MOVEMENTS WITH THE TOOTH PICK HELD PARALLEL TO THE SLOT AND AN OCCASSIONAL WIPING ACTION WILL RAPIDLY PUSH THE EPOXY DOWN INTO THE HINGE SLOT. THIS IS REPEATED UNTIL THERE IS ENOUGH EPOXY IN THE SLOT. EXCESS DRIBBLE ON THE TOP IS WIPED OFF WITH A PAPER TOWEL. THE OTHER HINGE SLOTS ARE FILLED AS RAPIDLY AS POSSIBLE AND THE TWO LARGE HOLES IN THE HINGE BLADE DESIGNED FOR PINS ARE CAREFULLY FILLED WITH EPOXY BY RUBBING WITH THE TOOTH PICK. THESE WILL NOT FILL UP IF THE HINGE IS

JUST SHOVED INTO THE EPOXY FILLED SLOT. THIS INTERNAL EPOXY PIN MAKES EXTERNAL PINNING UNDESIRABLE AND CANNOT BE PULLED OUT AFTER THE EPOXY CURES.

ALL OF THE HINGES ARE NOW INSERTED ALMOST ALL THE WAY, ANY EXCESS EPOXY THAT COMES UP OUT OF THE SLOT WIPED OFF, AND THE HINGES ARE PUSHED IN UNTIL THE 1/32" WIRE IS TIGHT ALONG THE TOP OF THE HINGE LINE. IF YOU HAVE MORE THAN FOUR HINGES TO INSTALL AT THE SAME TIME, YOU SHOULD MAKE A TRIAL RUN WITH A SMALLER NUMBER OR ONLY TRY THREE AT A TIME UNTIL YOUR TECHNIQUE IS PERFECTED. ALL HINGES DO NOT HAVE TO BE CEMENTED AT THE SAME TIME ON THE FIRST SIDE OF THE HINGE. ONCE THE EPOXY BEGINS TO CURE, DO NOT MOVE THE HINGE UNTIL THE EPOXY IS COMPLETELY CURED. BENDING THE HINGE NOW WILL RESULT IN A SHARP CRACK AS THE EPOXY BREAKS LOOSE FROM THE MOVABLE PART OF THE HINGE. ANY SMALL PIECES OF EPOXY OR CEMENTED WOOD CAN BE EASILY PICKED OFF THE MOVABLE PART OF THE HINGE WITH AN X-ACTO BLADE.

AFTER COVERING, THE SECOND SIDE OF THE HINGES MAY BE EPOXIED. THE SLOTS AND GROOVES SHOULD BE CUT ON THIS SIDE OF THE HINGE BEFORE COVERING. WHERE ACCESS TO ONE END IS POSSIBLE, SUCH AS A RUDDER, THE LONG HINGE PIN MAY BE REMOVED AND REPLACED WHENEVER DESIRED. THE END OF THE 1/32" WIRE SHOULD BE GROUND TO A POINT TO ALLOW EASIER INSERTION.



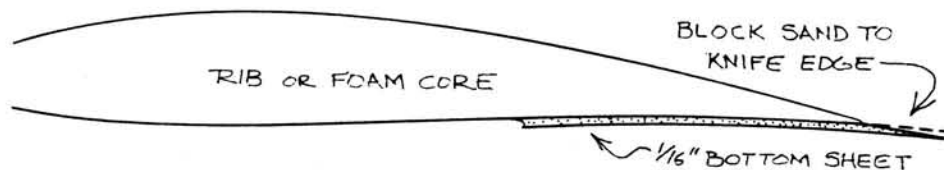
DON MULLIGAN POSES FOR THE CAMERA WITH HIS SCRATCH-BUILT ASW-20 SAILPLANE WITH 12-FOOT SPAN

RECENT SAILPLANE TECHNOLOGY TRAILING EDGE TECHNIQUES

In recent years the Eppler series and similar airfoils have become very popular in RC Sailplane construction. These airfoils call for very sharp, near zero thickness, trailing edges for effectiveness. Here is an elegant technique for building such trailing edges lightly, strongly and accurately.

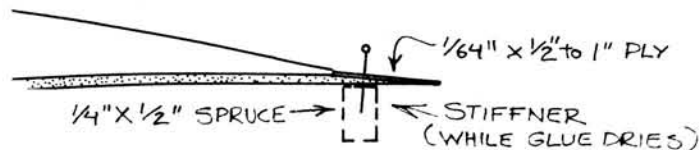
Fit the bottom trailing edge sheeting so that it extends far enough past the ribs (or core) to reach the sharp trailing edge (1/2" to 1").

Block sand it to follow the airfoil to the TE. (See Detail A)



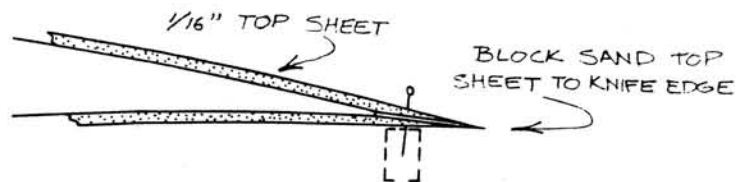
Glue "wing-skin" veneer, or 1/64" ply, on the sanded lower trailing edge sheeting, butted to the rib/core aft edge. Use epoxy, aliphatic resin glue, or "Slo-Zap".

Pin through this assembly from the top, into a straight strip of, for example, 1/4x1/2" spruce, hard balsa or tabletop if airfoil is flat-bottomed. (See Detail B).



When this has cured, remove the support strip, dress the upper surface, and install the top sheeting. Reinstall the supporting strip, check that the assembly is clamped straight and true, and allow to cure.

Block-sand the upper sheeting to a knife-edge, to complete the desired airfoil shape. (See Detail C)



On wings covered with iron-on film, film thickness buildup can be reduced by overlapping from the underside to the top only, then trimming

the top film at the trailing edge without lapping it under. Some overlap is required to prevent the film from separating at a raw edge.

Another technique for building a strong, light and accurate ultra-thin trailing edge is to pre-laminate wing-skin veneer, or 1/64" ply, into the balsa trailing edge sheeting.

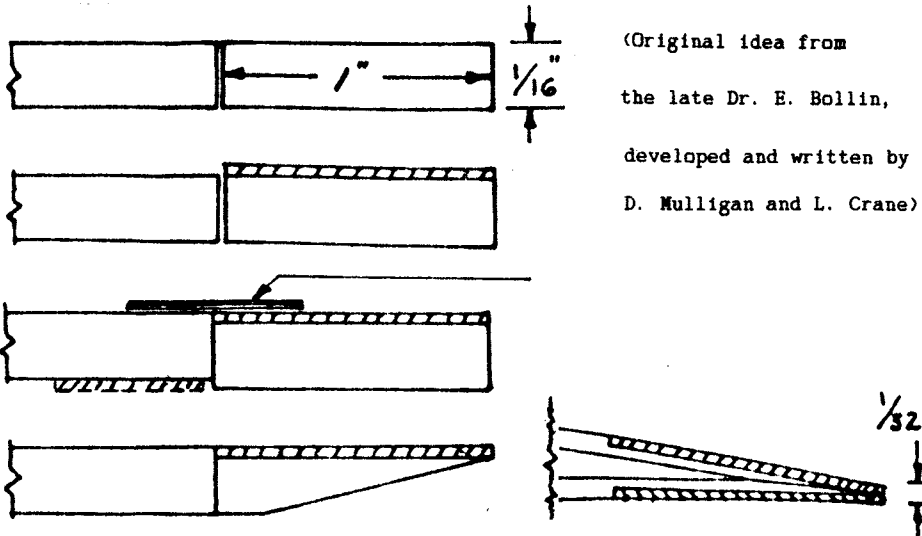
To pre-laminate such pieces, trim a strip of balsa of the needed width (1/2" to 1") from the balsa trailing edge sheet.

Cut a strip of the wingskin or plywood of identical width and glue it to the balsa strip. (Epoxy glue adds to the hardness of this assembly)

Rejoin the assembly to the balsa sheet as you would normally butt-joint wing sheeting. For example, tape the parts together tightly with the veneer side flush with one side of the balsa. Flex the seam open and apply a bead of aliphatic resin glue. Close the seam and wipe away excess glue with a damp rag or sponge. Weight the parts flat until cured.

When cured, turn the parts so that the all balsa surface is up. Block-sand until the balsa raised by the veneer layer is flush with the rest of the sheet. Bevel the balsa to a good gluing fit on the other sheeting at the knife-edge TE.

With suitable airfoil shapes, or a need for even greater TE strength, both the upper and lower TE sheeting may be pre-laminated in this way.



New Products; Another trailing edge development.....Bob Rondeau

Ed Berton of Competition Products has come up a new approach to foam wing building that's sure to improve your Trailing Edges. I just received a set of his "Full Size Core Beds" and am building my next Windsong wings with them. Here is Ed's words describing how they work.

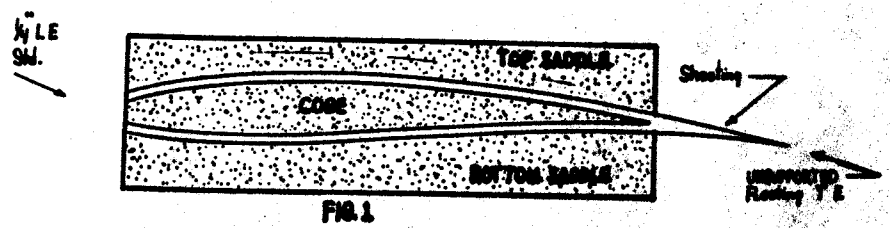


FIG. 1
CONVENTIONAL WING CORE

IN ADDITIONAL TO STANDARD OR CONVENTIONAL WING CORES (FIG.1.) WE ALSO CUT "FULL SIZE" CONSTRUCTION SADDLES. (FIG.2.) CONVENTIONAL WING CORES ARE CUT UNDERSIZED TO ALLOW FOR WING SHEETING (USUALLY 1/16" Balsa), THE TOP & BOTTOM SADDLES ARE THE SAME WIDTH. (CORD) WHEN THE CONVENTIONAL WING CORES ARE SHEETED THE TRAILING EDGE PROTRUDES PAST THE SADDLES AND IS "FLOATING" UNSUPPORTED. (FIG.1.) THIS "FLOATING" TRAILING EDGE IS VERY HARD TO GET STRAIGHT AND MAINTAIN A PERFECT AIRFOIL. TO GET A STRAIGHT TRAILING EDGE WE OFFER THE FOLLOWING.

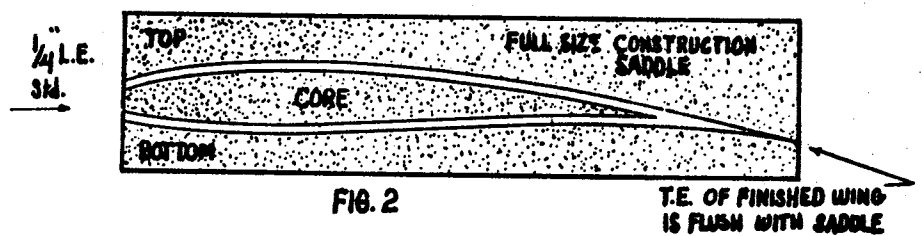
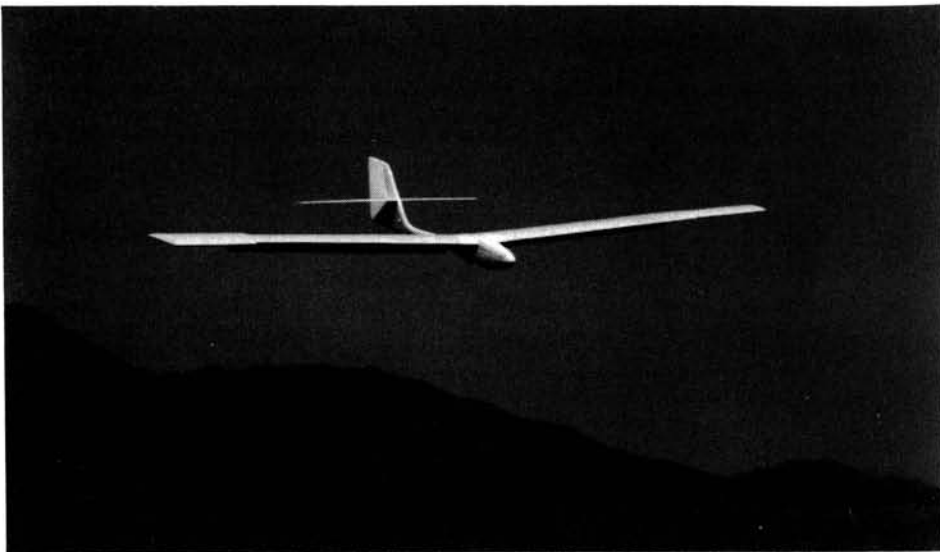


FIG. 2
"FULL SIZE" CONSTRUCTION SADDLES

"FULL SIZE" CONSTRUCTION SADDLES ARE NOT CUT UNDERSIZED. THEY ARE CUT FULL SIZE!! THE SAME THICKNESS AND THE SAME CORD AS THE FINISHED WING! SEE FIG.2. NOW WHEN THE "CONVENTIONAL" WING CORE IS SHEETED AND PLACED BETWEEN THE "FULL SIZE" CONSTRUCTION SADDLES, THE Balsa TRAILING EDGE IS FULLY SUPPORTED ALONG ENTIRE LENGTH OF THE PANEL!

"FULL SIZE" CONSTRUCTION SADDLES GUARANTEE A PERFECT AIRFOIL AND THE STRAIGHTEST TRAILING EDGE YOU HAVE EVER SEEN!! IF YOU ARE A COMPETITION PILOT AND FLY A HIGH PERFORMANCE AIRCRAFT WE SUGGEST YOU BUILD YOUR NEXT SET OF FOAM WINGS USING "FULL SIZE" SADDLES,

"FULL SIZE" BOTTOM SADDLES ARE EXCELLANT FOR BUILT-UP WING CONSTRUCTION. BUILDING AN UNDERCAMBERED WING ESPECIALLY ONE WITH FLAPS, AILERONS OR BOTH CAN BECOME DIFFICULT. KEEPING A PERFECT AIRFOIL SHAPE THROUGH THE TE. IS THE KEY TO A HIGH PERFORMANCE WING.



Finishing and Flying the Accipiter CCT By Ed Devlin

In the September '86 issue, pages 12 and 13 and the November '86 issue, page 1 of RCSD, a thumb-nail introduction to the world of the Accipiter CCT is presented. In the February '87 issue, Jim Gray gives a good account of the construction of a superior sailplane. Reread these issues if you do not recall them. Order back issues if you do not have them.

Before any further comment, a warning must be stated. I am prejudiced towards this sailplane of California Soaring Products and Jeff Morton. I have been quite close to the Accipiters since the absolute start of the idea. Jeff asked some questions...later showed a body side view...some more discussion...finally, a bit later, the Accipiter CCX, completed and flying. The CCX is an aileron-powered experiment that I fell in love with. It was only a matter of hangar session talk before the tipperon idea was formed, finished, and flying. Those two birds survived a lot of abuse while Jeff and I explored the ability they were born with. There followed a

change or two to the plane, but no major redesign was ever needed. One change was for more tipperon area only. The other was to rewing and rearfoil my second CCX copy. This latter model, with E205/211 airfoil and 11" root cord, is the plane I am now flying.

Jim Gray's CCT (T for Tipperon) came into my hands as a result of Jim's upcoming move to Arizona and Jeff's developing 100" thermal and 64" slope CCT's, making completion of Jim's bird impossible for them. Since I know the Accipiters intimately, both mathematically and from behind the stick, I accepted the challenge to finish someone else's project.

Let's first say, the CCT is not for the beginner or faint of courage. You must know how to construct an airplane. This kit takes for granted that her builder knows what he is doing. For her to fly correctly, implied items, such as wing pins, perpendicular to center lines, tail pins, parallel to and equidistant from wing pins, must be attended to. The instructions are complete, but not a Step A to Step B type.

The plane and radio came to me stark naked. I was surprised at her bland looks. I have been flying finished ones for such a long time, I had forgotten what she looked like naked.

A new stabilator was constructed as my taste runs to lifting stab airfoils. From there, the alignments were double checked, the stab control linkage was put in, and the rudder post attached, buttoning up the fuselage. The servo rails were positioned and rudder control cable put in. The canopy was final sanded and the rudder hinged. Klett large hinges are the only ones I ever use. They are connected by one long hinge pin, making the rudder removable. Time now to cover the stabilator and rudder. Balsa USA Aerospan was used to cover the entire wood structure. This covering is a bit

more rubbery feeling than Monokote and requires a lower heat insuring no melted foam. Monokote has been used on the other planes, but I am picky and Aerospan is much less "yenom." (That is dollars to the wife's pocketbook.) The body was primed using SIG Skybrite spray. It was wet sanded with 600. Final color is Skybrite White and Formula U Red spray to match the Aerospan Red. The wings are white with three shades of red trim. The flaps are hinged with Aerospan-laced hinges as per plans. This is a K.I.S.S. method and time-consuming, but it works like nothing else.

Now for the fun part. Servos and linkage must be done with free movement in mind. An Airtronics 461 was used for the tipperons, Airtronics 401 for flaps, Futaba S33 for the stab, and a Novak Ace Bantam Midget on the rudder. The elevator, flap compensator linkages are the most thought-demanding. They must be neat and correct to prevent rekitting one, at this point, expensive plane. The plans show methods for mixing and non-mixing radios. Either way, elevator compensation is a must with flap usage, both in dropped and reflexed position. I am flying my CCX with the mixing in my Airtronics Module SP. Jim's CCT has the mechanical mixer shown on the plans. This is automatic and simple in operation, but takes a bit of tinkering with the hole placements to get it right. Balance on the plan C.G. to start. When you become accustomed to the plane, the C.G. can be moved to individual pilot's taste.

The foregoing was written before actually flying Jim Gray's Accipiter. The remainder shall be told after her first time out.

With all control surfaces streamlined, several runs were done first. Only three or four steps were needed to start lifting up. On two runs, she was allowed to float within

my fingertips just to be positive.

The Accipiter has arrived at the worst part of all plane lives, the first launch. If slope lift is how she will live aloft, a steady seven mile per hour breeze is all she needs. The flaps can be used as needed, but not too much though. If flat land and thermals are used, a bit rearward C.G. than shown on the plans and look for thermals. The prototype was flown nearly out of sight thermalling at the Rose Bowl in Pasadena, California.

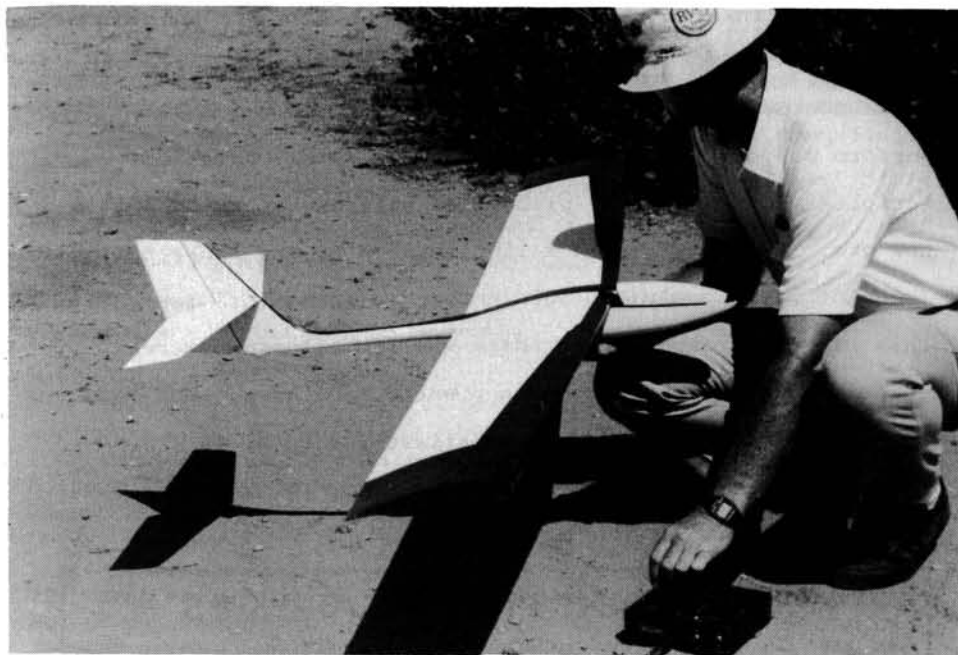
The CCT was balanced as on the plan, but the consensus was she could use a touch of nose weight. The elevator seemed a bit touchy for first flight. One-quarter of an ounce was added and off she went on her maiden flight. All that need be said are four words -- Up, up, and away! Absolutely no correction needed. In her home element, she did not have the touchy elevator we had noticed. Flying where we do, the wind God blesses us with is 10 to 17 mph with gusts to over 20 all afternoon. This bird performs akin to the bird she is named for. Of all the Accipiters I have flown, this one is the most comfortable flying to date.

Landings are a joy to do and to behold. Just fly her around onto final, level the wings, and come as close as you feel comfortable with, drop full flaps. She slows up, rolls her nose down, and lowers herself to the ground. About two to one foot off touchdown, pull the flaps to neutral and on the ground she arrives. With the wind velocities we fly in, landing can be quite bouncy and turbulent which is why landings are made forshortened and hot. For flatland soaring, approaches can be high, long, and slow with full flaps. Now for a spot of iced tea, Jeff, an Anchor Steam beer and a couple of hours straight of aileron-powered Sagitta XC flying. After an hour on the XC, it's time again for the homesick angel, but

I suppose I'd better give the XC transmitter back to Jeff.

The second flight was purely for my enjoyment. All the picture taking was now done. Flying just for the sake of flight, as Jonathan Livingston Seagull enjoyed. All the Accipiters I have flown have performed quite similar to each other, which states the thoroughbred ship she is.

Let me throw a few numbers around here. The Accipiter is a two-meter sailplane with 723 square inches of wing area. She is designed to weigh about 56 oz. which gives an 11.1 oz./sq. ft loading. With Jeff choosing the flapped Eppler 214 airfoil, she lifts her weight well. If the pilot wishes, 10 to 12 degrees of positive flap will increase her lifting capacity under light winds. She cannot be flown slow like an Aquilla, but can hover in wind. With 3½ lbs. flight cruise is about 24.5 ft./sec. - 16.5 mph. This is about 1.5 ft./sec. sink and a standard mean cord Reynolds number of 119,000 with a L/D for the whole plane of 16/1. Put in 10 degrees of positive flap, she slows to 21 ft./sec., a L/D of 20.8/1, all on only 10% increase in lift.



1. ED DEVLIN MAKES FINAL TRIM ADJUSTMENTS
ON ACCIPITER CCT "LI'L BUTEO" -2M SLOPE/THERMAL SOARER

2. ED READY TO LAUNCH LI'L BUTEO

3. THERE SHE GOES...



Having been in aviation over 40 years, this is the one lovely, comfortable, and enjoyable ship to fly. If you can make an aileron Sagitta or Antares, or any Dodgeson ship perform to your desires, you should definitely have the Accipiter CCT. The only plane that will be better is Jeff's new one. He's working on a 100" version of the Accipiter. I cannot wait to fly it. Since "bigger is better" is true, this will be greater. For those who fly aileron-powered ships regularly, this tipperon-powered baby is so much more smooth and precise. You won't believe the ride, as the Cadillac ads say.

Carbon Fiber Laminates

Aerospace Composite Products offers a variety of rigid carbon fiber / epoxy sheets which add stiffness to almost any material- fiberglass, foam, or balsawood. These laminates can be used to reinforce foam wings, leading and trailing edges, or wing spars. Carbon Fiber bonds easily with slow setting cyanoacrylates or 5-Minute epoxies. The laminate can be stripped into narrower widths.

CL-1 (.008 thick)	1"x36"	\$4.00	1"x48"	\$5.00	1"x72"	\$7.00
CL-2 (.016 thick)	1"x36"	\$6.00	1"x48"	\$8.00	1"x72"	\$11.00
CL-3 (.024 thick)	1"x36"	\$9.00	1"x36"	\$11.00	1"x72"	\$15.00

Send SASE for information on additional sizes and products.

Add \$3.00 for shipping and handling. Calif. Residents add 6% tax.

Overseas orders add 15% - Order C.O.D. or send check or money order to:

Aerospace Composite Products

• P.O. Box 16621 Irvine, CA 92714 • (714) 250-1107

The Source for Lightweight Materials

PRECISION FOAM CORES

Basic sizes and Custom Panels

Basic sizes:

Center panels	48" long by	8" cord
"	"	8½" "
"	"	9" "
"	"	10" "

Tip panels

tapers (2 sizes)
9" to 5" x 24"
10" to 6" x 40"

We have most Epplers in stock. Call or send SASE for more information

850 Concord Street, Pleasanton, California 94566 Phone (415)-462-0672

SLOPE SCENE

Harry Finch,

In response to requests for information about slope soaring sites, Jim Riggle, 18115 Bunny Court, Gladstone, Oregon sent in a most complete survey of sites in Washington and Oregon; and John Dvorak, South Bay Soaring Society, P.O. Box 2012, Sunnyvale, California furnished maps of six slope soaring sites in the Bay area. Thanks to these gentlemen for helping.

Harry,

"Dammed well upset" pretty strong stuff but probably appropriate. It certainly has seemed that getting good information on slope sites is difficult. If you can bear with a little history I'll give you the information you're after so you will simmer down a little.

I restarted modeling back in '80 after a 20 year absence. My first glider was a Zeus, a 100" Thermic 50. Couldn't get it to fly worth beans, none of the power flyers were of any real help but to watch it repeatedly crash. Tried to launch it with a .15 and I'd never flown R/C before. CG was about 2" too far back. They loved the crashes.

Next I bought a Jetco Thermic 50, a Mattel single channel "wigwag" for \$20 and used a Cox .020 for launch. I had several successful flights with power. Next I took it to Newport on the Oregon Coast, took the motor off, threw it off a 75' bluff into a 7mph wind. I knew then and there that that was flying. It was only back and forth but what great fun.

Then I got smart enough to take the .15 off the Zeus, balanced it properly, and bought a high start and built an Airtronics Oly. Now I was really learning. What great fun. Somehow I learned about the Portland Area Soaring Society, the local flying club and entered a couple of thermal duration contests but somehow that just didn't hit the spot. I really wanted to go throw my gliders off a hill into the wind. Most of the PASS members at that time were concentrating on TD contests so they didn't really share my interest (good thing they didn't, they sure are bringing home the bacon from the Nats lately).

Well I had heard about Chehalem ridge above Newberg, Oregon, took the Zeus and high start. Couldn't find a place to launch directly over the edge so I bungeed it up, great lift in a late summer storm, winds at 10 to 15 up a 600' ridge. No aerobatics yet, just flying around with out having to land.

Must have been about then that I met Mike Bamberg. First person who really shared my excitement for SLOPE. He'd heard thru a mutual friend, Jack Janacek, about a place called Dog Mountain. Well I had an aileron Sagitta by then and we had to go. The Dog is by Morton, Wn, 1,300 high at the east end of a seven mile long lake that has 2,500' mountains along its edges. Any west wind at all gets funneled right into the face of the Dog. Absolutely great smooth lift, you could fly straight out into the lift as far as you could see and still be in the lift. Time to start learning aerobatics. Great admiration of Mike, and Jack's flying

skills. Only drawback was the landing zone, using the term loosely, the top of the Dog is about 50x100' surrounded by scrub brush, one big rock right in the top with balsa magnetism in it. Great lift but poor LZ, time to look for sites that had everything.

Well here's what we've found around Portland, Oregon:

Chehalem Ridge (above Newberg, Oregon); 600' high running east west, our prevailing winter winds are from the south or south west. Good lift, mediocre landing zone, trees limit visibility on the sides, but it's close to town. I'd rate it a 'C'.

Dog Mountain (at the east end of Mossy Rock Reservoir, Morton, Washington); 1,300' high, takes a west wind of any kind and funnels it right into the face, generates huge thermals in the summer, poor LZ, access is limited by a local timber company and it's about 2 hours out of Portland, has been the site of a national hang gliding contest. Rates a 'B'.

Cascade Head (just north of Newport, Oregon); most westerly point in Continental US, 2,000' high point overlooking the Pacific Ocean, works in south or west winds which are the prevailing winter winds, great LZ, acres of grass, smooth deep strong lift. About 2 hours from Portland and requires a 10 minute hike to the flying site. Rates an 'A'.

Ecola State Park (just north of Cannon Beach, Oregon); a 400' point out into the Pacific, works both south and west winds, great lift, ok LZ and you're flying right over the water, which seems to unnerve me somewhat, drive right to the launch site, it's about 1.5 hour's drive from Portland. I'd rate it a 'C+' but others in my club rate it a 'B+' or so.

Hebo (about 15 miles south of Tillamook, Oregon); It is the tallest Mountain in the Oregon Coast Range at 3,100', has a face to take virtually any wind. I've been there a number of times but I've never really seen it 'work', all I've seen is a 5-7 mph NE wind to fly hand launchers in. I was there one day when there was lift, a south wind at 30 but the ceiling was at about 500' feet so we couldn't see a thing. The best lift Hebo has ever produced was on October 12, '63. There was a little hurricane that day, the wind gauge was blown off the tower after it had just reached 190 mph! Rates a 'C'.

Lincoln City, Oregon; Nice 50 to 75' bluff along the north end of town. Takes a west wind only and has good LZs. The lift isn't deep enough to have real aerobatic fun but good enough for a lazy thermal ship. Rates a 'B-'.

Newport Oregon; There are several bluffs along the Newport ocean front. There's a south face about 75' high by the north jetty and a west face about 50' high for several miles along the beach. There is one notch that takes a NW wind. The LZs are generally good with the worst landing down on the beach. At Newport there is also the 'Light House', a point that juts out about 3/4 of a mile into the ocean. It's about 300' high and takes either a north or south wind. The north wind landings are ok the south wind LZ is poor. Rates about a 'B-'.

Coyote Hills (on the east side of San Francisco Bay by the Dunbarton Bay Bridge); this is a hill that you could use to judge others by! It's probably easier to say what's wrong with it than

what's right because there is so much that is great about it. It must be about 250' high with a saddle, works with any westerly wind but the prevailing wind is a NW off the bay. I've flown it numerous times, there was always lift and the locals tell me it does always work every afternoon as the winds come in off the bay. Great smooth lift! Right in the middle of 12 million people! So what could be wrong? Might be crowded on the weekend, it's a 5 to 10 minute walk to the flying site, a steep walk, not one for the handicapped or elderly. The park owner won't let R/C'ers have slope races for fear of damaging the site. If you plan a trip to SF by all means go to Coyote Hills it is really an 'el primo' site. It certainly rates an 'A'.

Sunset Beach (south of Santa Cruz, CA); I only flew there once and it was several years ago. It's a nice sand dune up off the beach with a great shape, about 400' high, doesn't take much wind to produce good lift, the LZ was a little tricky though, the rotor seemed more viscous than normal. The day I was there the wind was inconsistent, your heavy would sink and your light weight would get blown away. Certainly rates a 'B', the locals may have more to say.

McKinley Ridge (15 miles east of Battle Ground, Washington); 3,500' ridge at the top of the Cascades, takes a west to north-west wind on the one side and an east wind on the other. It works most of the year with our NW summer winds, SW winter winds and our east winds down the Columbia Gorge in the spring and fall. Ok LZ, great visibility. About 2 hours from Portland and snowed in during the winter and early spring. I'd rate it about a 'B+'.

Women's Garden (Troutdale, Oregon by Crown Point in the Columbia Gorge); one of many points that jut out into the gorge. It's probably 650' above the river and takes an east wind. In the spring and fall there's almost always an east wind but there is almost no LZ, the best spot is in a field behind the take off point which is in a parking lot overlooking the gorge. The gorge does produce some incredible east winds, on Thanksgiving day I was on the Washington side of the gorge on top of Mt Zion, directly north of Crown Point. It would be a great place to fly if only there weren't trees on the edge of the bluff, the winds that day were out of the east at 45 and the temperature was 30 degrees, wind chill must have been minus a bunch of degrees, it would have been a challenge just to get a plane up and back without shattering on a frigid landing. Rates a 'C-'.

Klickitat River (15 miles north of Hood River, Oregon); I've never flown this site and have only seen pictures and heard about it from the hang gliders. It's a 700' bluff over the river and road below. The valley runs N-S and the winds are generated by the constant winds in the Columbia River gorge. This location is about an hour and one half from Portland. It sounds like it will rate at least a 'B+'.

Wind Hill (on the west side of The Dalles, Oregon); This site is yet to be flown and is next on our list of places to try. It runs N-S in the path of the gorge and is about 2,000 high, should have a good grassy LZ and is right in the path of the prevailing summer winds. If we can find a way to get on top it should rate at least a 'B+'.

Wishram (15 miles east of The Dalles on the Washington side of the Columbia); there are two sites just east of town, one for each wind direction however the west wind site has the best LZ. It's about 500' above the river. If you're going to fly there best to stop and visit with Frank Ross, maybe he'll let you fly off of his back yard, it's about a 100' bluff above down town. Rates about a 'C'.

Goodnoe Hills (at mile mark 114 on Washington Hwy 26, about 15 miles east of the Mary Hill Museum) Very close to the site of the Bonnaville Power Administration test site for wind generated power, three 300' bladed wind mills. A truly spectacular flying site about 2,500' above the Columbia River, very gentle terrain and west winds produce smooth and deep lift. A good LZ with only a few rocks and snakes to look out for. There are additional hills in this area further up the side of the gorge. All have world class views with the Columbia River below, Central Oregon to the south and the Cascade Mountains to the west, including Mt Hood, Mt Jefferson, Mt Adams, The Three Sisters, Mt Baker, Mt St Helens and Mt Rainier all on the westerly horizon! There may be a more scenic place to fly but I doubt it. Rates a 'B+'.

Richland, Washington; There have been several slope races held in this area by the Tri-City R/C Club in the last several years. They have three hills within 30 minutes of town. I've flown two of them and they are excellent. If you are headed to that area I'd suggest that you contact Wil Byers for directions to the sites and further information about which hills work in which weather. Richland has more good hills close to town than any other place I know. The best day of flying I've ever had was at their fall slope race last year winds out of the north at 20 what a great day! I'd rate the area an easy 'A'.

Now this certainly isn't a complete list and it certainly is subjective. There may still be some great hills that I haven't found yet, I sure hope so because I seem to like the search. Others may rate them differently, the air may have been different on days they were there.

If you're in the Pacific North West for vacation or business bring your glider, camera and your family along. Sites like Goodnoe Hills, McKinley Ridge, Hebo or Cascade Head are worth the trip for the magnificent views alone. If you want predictable lift best go to Cyote Hills or possibly Richland. In both cases the hills are close to town and work in most weather. But if you're on the Oregon Coast in the winter, Cascade Head's predictability is just as good. The LZs are comparable and the Head offers lift that is incredibly smooth, 2,000' deep, and you'll be in lift to your limits of vision!

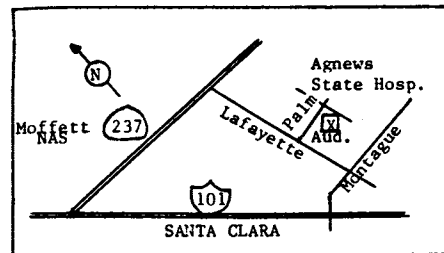
Sincerely, Jim Riggle

In John's accompanying letter, he mentions: "...You know about our ISR (International Slope Race) site at Davenport. Wind direction in the Bay Area is from the NW and velocity averages 20 mph in the afternoon. We fly everything from a Gentle Lady, Scale Power, and Vintage to Racers.

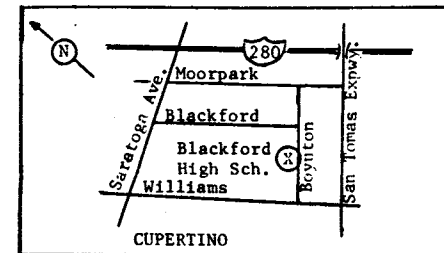
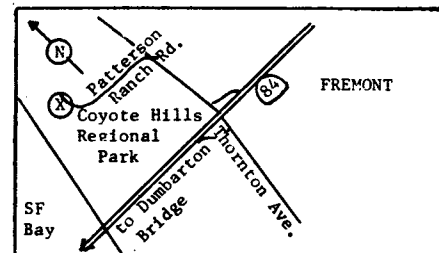
SBSS will have several fliers going to the Washington Fun FDly in May. I'm building a Schweizer TG-2 for the event.

(I) enjoy your 'Slope Scene' --(signed) John."

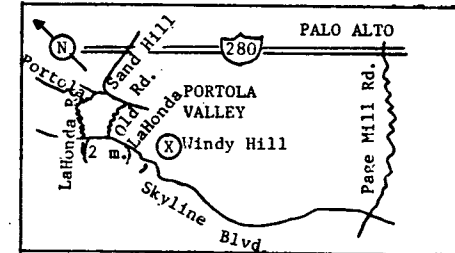
GENERAL MEETING SITE



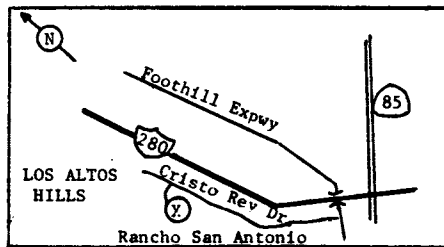
COYOTE HILLS SLOPE SITE



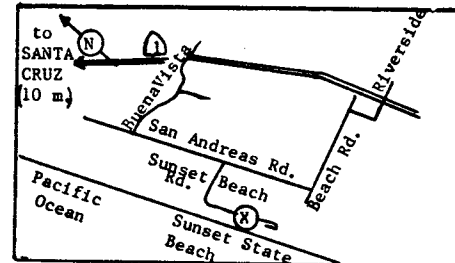
WINDY HILL SLOPE SITE



RANCHO SAN ANTONIO THERMAL SITE



SUNSET BEACH SLOPE SITE



A READER REQUEST.....Rolf Beere

Rolf Beere seeks information from anyone who can tell him about the 2-Meter PRODIGY or the THERMAL OWL. Does any reader have any information or experience to share with reader Beere? If so, please write him at 30 Diamond Head Passage, Corte Madera, CA 94925.

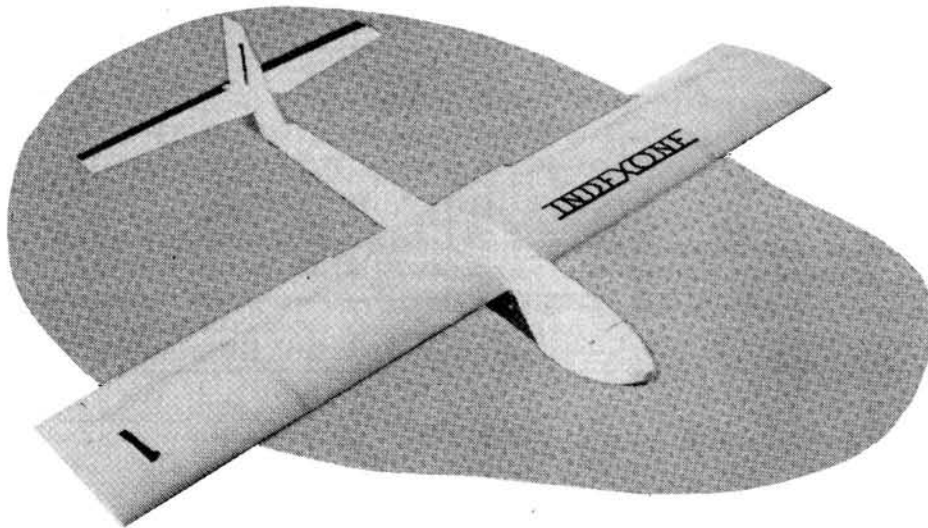
Notice to Prospective Buyers:

RCS D has recieved several complaints about California Slope Designs, manufacturers of the SOS series of slope soaring gliders, alleging that money has been paid but models have not been received. Since C.S.D. has enjoyed favorable comment in these pages we feel it a duty to keep our readers up to date on this situation.

"R/C REPORT" Magazine, P.O. Box 1706, Huntsville, AL 35807

Monthly tabloid with R/C Sport Flier emphasis. Humor, how-to's, product test reports, prize drawings, free classified ads, more product test reports, limited advertising, reader letters, crash photos, and more. Full of fun and facts.

— Subscriptions \$9.00/\$16.50 for 12/24 issues. Sample copy \$1.25 postpaid. —



WHAT'S NEW AND DIFFERENT?..... FIBER FLIGHT, THAT'S WHAT.....Jim Gray

At the Central Arizona Model Trade Show (CAM Show) in Mesa, Arizona, the booth right behind ours displayed a unique slope ship. First, you have to know why it was unique -- and then how. It's called **INDEXONE**.

In the Southwestern U.S. the slopes are usually very rocky -- and smooth landing sites are all but non-existent -- so along comes a company that suggests a solution: a Cardboard Sailplane! Hold on; try to contain your laughter until I explain that I'm not kidding. Yes, I said **CARDBOARD**, and it's tough. Resists rocky landings.

The sailplane is NOT ugly; you might say it has a certain functional beauty. The basics are: 2-channel (elevator and ailerons) and fully aerobatic. A 48-inch foam-core wing sheeted with 100# tag board makes up the flying surface, and the fuselage is one piece, folded out of 1/8th-inch corrugated cardboard which is laid out for formers. All necessary hardware comes with the kit, and you only need glue to finish it (rubber cement or white glue is fine). To speed up construction, the manufacturer suggests 3M Brand No. 77 spray adhesive and CA-type glues. Pssstt -- zapp!

Whaddya mean "you onlyneed"; what about covering or painting? Aha! Knew you'd ask. This little ship can be trimmed out - no, not flight trimmed, but appearance trimmed, using magic marking pens, striping tape, and the usual art or office supplies. If you really want to get fancy, you can use Monokote or similar film covering, or paint. Now comes the best part...the kit costs only \$25.00 plus postage and handling. A very inexpensive and remarkable craft to take to the slope, to be sure -- but does it fly? You betcha it flies, and darned well, too. Fiber Flight's Tim Webb showed a video of the flying part, and you ought to have seen it! The only thing better would be for you to buy one and fly it "for real"! Hey, it doesn't cost any more than a decent video, besides which you can have all the fun of flying it yourself instead of watching someone else enjoy life. This ship will prevent you from becoming a potato!

What can you lose? Get out there on the slope and give the Cheetahs a run for their money, but one caution: don't leave it out in the rain! Just kidding...it's certainly crash-resistant, and would be almost ideal for slope combat. It's just great for landing on those rocky slopes, too. Just in case it rains, throw a baggie

over it. You don't want a glider that mushes along, and - besides - you don't fly in the rain anyway, right?

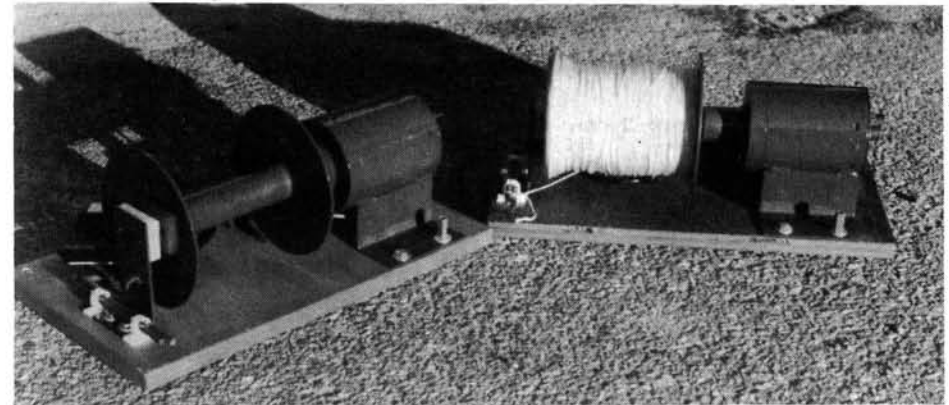
For additional information write or call Tim Webb, c/o Fiber Flight at 3305 N. Carriage Lane, Chandler, Arizona 85224. Telephone (602) 839-8921. Tell him that you heard about **INDEXONE IN RCSD**. NOW YOU CAN LAUGH, but remember that he who laughs last laughs best.

MORE ON WINCHES - FLIGHT LINE SYSTEMS.....Russell Keith

The pictures below show our refined winches which come with a new turn-around that uses two anchor pins...which keep the turn-around from running off to one side and causing a lot of friction and drag. The new turn-arounds are shorter than the old ones and "track" much better during the launch phase... and during retrieval.

The GM starters that I use do not have a shunted field, unlike most starters, and this accomplishes two things:less power is used for the amount of torque produced and the motor is smaller and lighter than a shunted motor of equal torque.

The speed of the motor is not constant. Under a light load, the motor speed is high, but under increasing load the speed is reduced to produce a smooth launch. The speed variation helps keep a constant tension in the tow line, and also helps to prevent backlash. When the line goes slack the motor speed increases, allowing enough time to turn off the foot switch and allow the winch to stop normally. Although this does not always eliminate all backlashes, it does help quite a bit.



1986 NATIONAL SAILPLANE SYMPOSIUM PROCEEDINGS

The Proceedings of the 1986 National Sailplane Symposium are now available. The 1986 Symposium Symposium had a broad range of talks and these are all transcribed so that you can read what others had gathered in Madison to hear. The Proceedings certainly doesn't duplicate the camaraderie and social contacts that take place at the Symposium, banquet, and other gatherings, but it can provide you with the opportunity to read about the technical aspects of the Symposium at your leisure. There is a large amount of information packed into the two days of the Symposium, and many of the participants order the Proceedings to give them time to digest and cogitate on the talks they heard.

Cost: Just \$10 unless you want first class mailing (\$1 extra). In fact, we just reprinted some of the old proceedings and now copies can be obtained of all of the National Sailplane Proceedings since the first one held in 1983. The Proceedings for the 1987 Symposium will be available by May or June of 1988, in the event that you wish to order a copy in advance.

An order blank is included below. Just send it along with the proper remittance to: Walt Seaborg

1517 Forest Glen Road
Oregon, WI 53575

<u>COPIES</u>		<u>COST</u>
_____	1983 Sailplane Symp. Proc. \$7 (\$8 for 1st class)	_____
_____	1984 Sailplane Symp. Proc. \$8 (\$9 for 1st class)	_____
_____	1985 Sailplane Symp. Proc. \$10 (\$11 first class)	_____
_____	1986 Sailplane Symp. Proc. \$10 (\$11 first class)	_____
_____	Advance Order for the Proceedings of the 1987 Nat. Sailplane Symposium Proceedings. Should be avail. about May or June of 1988. \$10 (\$11 first class)	_____
	TOTAL	_____

SHIPPING ADDRESS:

NAME: _____

STREET ADDRESS: _____

CITY, STATE, ZIP: _____

The 1986 Proceedings contain articles on:

1. The First R/C Sailplane by Walt Good
2. A report on the F3B Team Selection Finals - Bob Sealy CD
3. Discussion on the AMA and F3B program and the direction that things seem to be going. John Grigg, Terry Edmunds, Bob Sealy, etc.
4. A panel discussion on contest organization, planning and publicity. Jeff Troy, Cal Posthuma, and Bob Sealy
5. A discussion of the frequency situation and where we are going by Warren Plohr and Peter Waters.
6. Electrostatic Stabilizers by Maynard Hill
7. A report on some articles reporting on German Model Sailplane Experiments and Design. Willy Pfister and Gary Tschautscher.
8. Flying multi-control straight wing (not polyhedral) sailplanes-- a discussion by Tom Brightbill.
9. Vacuum Bagging Wings and other things. -Joe Wurts

THERMAL MIXER II

Perhaps one of the most intriguing new products I've ever seen is now available from High Sky manufacturing in San Diego, California. * We're all familiar with auto-pilots, and we've been exposed to thermal sniffers for some time now. The next logical step is a combined auto pilot and thermal sniffer -- and it's available from High Sky. Rainar Wiebalck has come up with an ingenious piece of equipment that is small enough to fit into almost any sailplane, and it connects between the rudder channel in the receiver and the rudder servo. The little box itself can be set to respond to various rates of climb or sink and turn the rudder accordingly! Here's a brief description of how it works. When the sailplane encounters a thermal of a preseset rate of upward movement, the rudder of your sailplane automatically turns your sailplane into the thermal. As soon as that rate of climb stops, the sailplane automatically straightens up again until another thermal, or increased rate of climb occurs, whereupon the sailplane turns again into the lift. You can also program a rate of sink into the "box" whereby your sailplane will turn away from sink and into either lift or zero sink! I plan to do a review of this neat little box unless you beat me to it b y buying one and writing your experiences for me! I can't wait to install mine and try it out! Rates of climb up to about 3 or 4 feet per second and similar rates of sink are programmable from the outside of the box by a screwdriver adjustment. Greater rates of climb or sink (for areas where thermals

and sink are greater) may be set into the system merely by opening the box and re-setting the parameters.

You should also know that the rudder can be made to respond in either direction and that it is always possible to over-ride the automatic response with your rudder control on your transmitter stick. You are not a slave to the box, but - instead - it is a faithful friend that always points you into into lifting air (or away from sinking air). Want to become a contest winner overnight? Has that 2-hour duration escaped you all these years? Hah! Just get one of Rainar's boxes - THERMAL MIXER II FROM HIGH SKY - and change all that. See you next month, okay?

High Sky, 3929 Kansas St. #9, San Diego, CA 92104; Telephone: (619)-297-5792

VIKING MODELS USA



DG-100/200 Span 150"; fuselage, plan, canopy tray and canopy.
\$125.00 plus \$12.50 Shipping

Calif. residents add 6½% sales tax.

Ask for catalog showing our other products.

2026 Spring Lake Drive, Martinez, CA 94553

Tel.: (415) 689-0766



C.D.'S, CLUBS: SEND FOR LATEST PRICE SHEET ON PLAQUES, JACKETS, T-SHIRTS, RIBBONS, NAME PLATES, AND MORE AT PRICES YOU CAN AFFORD. EVERYTHING FOR THE PRIZE WINNER. GUARANTEED QUALITY AND OLD-FASHIONED PRIDE OF WORKMANSHIP.

Fast Service Reasonable Prices in wood, metal and plastic. Stock of standard plaques and trophies always available. Ask for rates on custom designs.

(813) 327-4767

WINNING IMAGE PLAQUES

5263 - 24th Avenue N. St. Petersburg, FL 33710



AIRCRAFT SCALE DOCUMENTATION WORLDS LARGEST COLLECTION

Antiques, Military, Civilian, Helicopters, Sailplanes
color FOTO-PAAKS **KOKU-FAN 3-views**
50,000 pictures in stock 3,000 drawings in stock
40-page CATALOG \$3.00

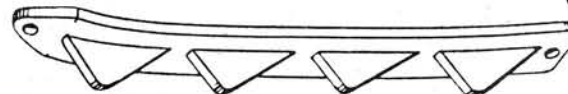


Scale Model Research
2334 Ticonderoga Way
Costa Mesa, CA 92626 U.S.A.
(714) 979-8058

R/C SAILPLANE
LANDING SKID
IMPROVE YOUR LANDING SCORES

\$2.95 *
EA.

POSTAGE PAID
U. S. Orders



- EASY INSTALLATION
- EFFECTIVE "SHARKTOOTH" DESIGN
- INJECTION MOLDED OF TOUGH POLYETHYLENE PLASTIC

McCann Tool & Electronics
P.O. Box 8155
Stockton, CA 95208

* CA RESIDENTS ADD 6% SALES TAX

ONE PIECE FOAM WING CORES

**TIRED OF BUILDING LARGE FOAM WINGS
FROM TWO PIECE CORES?**

We offer One Piece 72" Cores.

*One Piece Windsong (E-214) Cores in stock.

*We duplicate any airfoil

For additional info call or send SASE.



**COMPETITION
PRODUCTS**

813-645-5171

ED BERTON
921 BIRDIE WAY
APOLLO BEACH
FLA. 33570