"To Fly Where No Model Has Flown Before"

Fred Mallett's Slope Soaring Journey is on page 10.

R/C Soaring DIGEST

December, 1993
Vol. 10, No. 12

U.S.A. $2.50

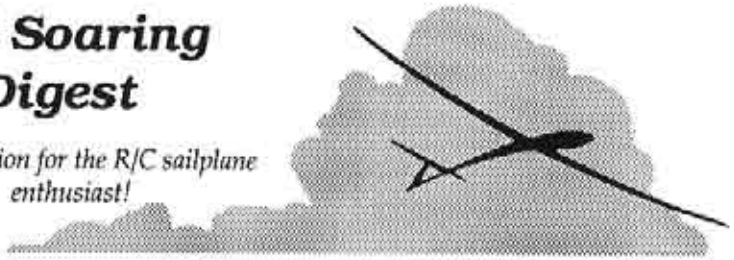
Cold Weather Soaring

David D. Garwood shares his approach to flying in cold weather on page 6.

"Lou Garwood with Gregg Goris' A-10 WARTHOG ready for launch on the slope. Standing in snow covered dune grass, Lou wears a hooded nylon jacket, balaclava and sunglasses covering his face, plus mittens, snow pants and boots."

R/C Soaring Digest

A publication for the R/C sailplane enthusiast!



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R/C Soaring Digest (RCSD) is a reader-written monthly publication for the R/C sailplane enthusiast and has been published since January, 1984. It is dedicated to sharing technical and educational information. All material contributed must be exclusive and original and not infringe upon the copyrights of others. It is the policy of *RCSD* to provide accurate information. Please let us know of any error that significantly affects the meaning of a story. Because we encourage new ideas, the content of all articles, model designs, press & news releases, etc. are the opinion of the author and may not necessarily reflect those of *RCSD*. We encourage anyone who wishes to obtain additional information to contact the author. *RCSD* was founded by Jim Gray, lecturer and technical consultant. He can be reached at: 210 East Chateau Circle, Payson, AZ 85541; (602) 474-5015.

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The Soaring Site

Whoops!!

In the November issue of *RCSD*, there was a printing error on page 26. We apologize for the error and are reprinting the article on "Thoughts of a Novice" by Jeff McComb.

"On The Air..."

Starting this month, we have a new columnist, Fred Rettig of Mobile, Alabama, and his column is called "On The Air With Corn Fed". His writing is on the light hearted side, full of wit, and should make you laugh out loud. (It took us 10 minutes to stop laughing.) Please give him your support and encouragement; his address and telephone number are with his column. (Mrs. Rettig did the typing for Fred. She gets our full support, as well!)

LSF Vouchers

We received a letter from Cal Posthuma, secretary of the LSF. He says, "There is a quicker service on LSF vouchers. They can be sent directly to me at either of the following addresses: Cal Posthuma, Valhalla RV Park, Rt. 5 Box 8, Edinburg, Texas 78539, or, Cal Posthuma, 5996 Leonard, Coopersville, MI 49404."

Looking for CST?

Composite Structures Technology (CST) has recently moved from Los Osos to Tehachapi. Their new address is Composite Structures Technology, P.O. Box 642, Tehachapi, CA 93581-0642; order desk (800) 338-1278.

Building for the '94 Jamboree

We received a note from Erik Eiche of Richmond, BC, Canada. He says, "I am scratch building another vintage scale model, my biggest so far. It's the German OBS (Martin Simons' "Vintage Sailplanes", page 64). The size is 1:4. The wing span is 6,5 meters (21' 4"), wing area is 28 sq. ft., horizontal stab span is 4'. It is huge! I'd like to fly it at the '94 Jamboree."

Thanks, for sharing what you are building for the Jamboree, Erik! Wow! Hope to see you there!

Mid-South Championships

Bob Sowder, Memphis, Tennessee, sent us a FAX to let us know that the June Mid-South Championships will now be a 4 day event, instead of 3, due to the interest and number of phone calls they have received regarding Cross Country! Cross Country is currently scheduled for Thursday and Friday, Hand Launch is scheduled for Friday, and Thermal Duration is Saturday and Sunday. Please see the Events Schedule for Bob's number and the dates.

NASSA

Information on NASSA will be included in the Special Interest Group section starting this month.

F3J Newsletter

We received a letter from Jack Sile (Editor for *SOARER*, the newsletter of the British Association of RC Soarers), in England. Jack says, "Well, it is cold and bleak. a typical British October. And, the days are already short and the dark comes early. In the mean time, I am remembering the fun days of the summer in F3J. So much so, that I have attempted to start an international newsletter, strictly for F3J. I drummed up a few donations and got the first issue out. Rough, but as with SOARER, I hope to improve with each issue. Depends if I can round up the $45.00 every two months to get it printed, plus $30.00 to mail it."

Jack sent us a copy of the 1st issue of *Thermal Talk*, A Newsletter for F3J Enthusiasts. "This is an unofficial publication designed to act as a forum to discuss, educate, and exchange information concerning FAI Class F3J." The first 2 paragraphs are reprinted here in their entirety.

"As I sat here pondering over the winter building season, I wondered why I had to wait to hear from the many friends that I enjoyed the company of in the summer. Then, I wondered why there wasn't an exchange of information about F3J. Well, the more I wondered, the more determined I became to start an F3J newsletter. So, I contacted a few more friends who kindly donated some funds and in one day I was in business. Now, I should clarify that this is an unofficial forum for you to express your views, show off your models, and let F3J pilots know about competition. It is for non-profit, and will be run strictly on your donations. It is also non-political and there is no attachment with any national nor international body.

"As you might guess, I intend to send it around the world and hope to have news from many far flung places. I also hope to have a modest donation as well! Now, this kind of a newsletter really depends on the response I get from you in the way of articles, drawings, comments, and the like. We also want to bring more members into the competitive fold. We want to publicize our sport/hobby for the good of all. I can't think of a better way of doing it than by describing F3J, relating the fun times we have had and passing on technical information to beginners. Of course, we have had fun and as I relate the events of the past season, I hope you will recall those super times we have had over the past four seasons. So, here goes. Remember issue two will depend on you and your support."

Jack has given us permission to reproduce the newsletter and pass it around. So, if any of you are interested in F3J and would like to see the first issue, just let us know. We will absorb the printing costs of this ten page newsletter by doing it ourselves, so the quality obviously won't be as good as the original, and they have a page size larger than the 8 1/2" X 11", as well, so it will have to be reduced. If you wish to make a donation, please send it to Jack, and not to *RCSD*. Subscription rates are listed in the newsletter as £3.00, plus £1.80 for postage in the U.K., and £2.50 second class for postage outside the U.K. (Issue cover cost is: Donation £.50p or $.75., which does not include postage.) For those of you in the U.S.A., Jack can accept checks drawn on a U.S.A. bank. For those of you that wish to write articles, you may write them in your native language, and he will seek an interpreter. The address is: Jack Sile, 21 Bures Close, Stowmarket, Suffolk, England, IP14 2PL. The telephone is 0449-675190.

Flap Saver Pushrods

The following letter is from Nick Trubov, Fort Smith, Arkansas.

"What a coincidence! The arrival of vol. 10, #10 came the day I pulled a flap horn loose (on landing), and I found "Flap Saver Pushrods - A Necessity" on page 23.

"What a good idea Mr. Friant presents. In my search for some brass tubing, I found some yellow (inner) nyrod pieces which are a TIGHT fit over my flap pushrods. Since the loads on flap pushrods are really ONLY IN TENSION, I felt no need to stiffen this connection. I merely cut out 1/4" of pushrod, pressed the pushrods into the inner nyrod section and, "VOILA" (Or do they say Viola!? in Texas as they do here in Arkansas?), enough friction to hold the flap without breaking servo or flap on landing. AND, I can now adjust the length of the pushrod in a hurry, too.

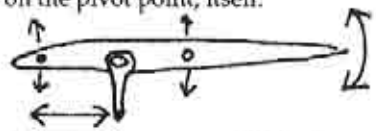
"Keep up the good work, and use this idea if you like, for your own planes or in *RCSD*."

Thanks, Nick. As you can see, we did!

Pivot Rods & Linkages

In the October issue of *RCSD*, page 3, Gregory Vasgerdsian asked a question about the proper location for full-flying T elevator pivot rods and linkages. Dan Fulmer of San Francisco has written to say:

"I just received the October issue and was reading on page 3 a question from California by Gregory Vasgerdsian on pivot and actuating linkages for flying stabs or T-tails. I have built a number of these types of contraptions and they always have worked OK, but I have wondered about the overall flimsiness and somewhat sloppy nature of this type of tail. Regarding the pivot point, according to most sources, this would be about the 1/4 MAC as a close approximation. I say approximation because, if the pivot point is off one way or another, the stab will tend to pitch up or down depending on location of pivot point. This pitching up or down will increase in strength depending on air speed and/or trim. this has not, or will not, cause a problem on light weight, slow, thermal type gliders, but I would imagine it would be a serious concern on ten pound+, 100 mph slope gliders or F3B machines. Concerning the actuating point, I really don't think it makes any difference if it is in front of or back of the pivot point, or if it is on the pivot point, itself.



The main concern would be how far from the pivot point the actuating linkage was in order to determine mechanical advantage. Now, I am no mech. engineer, but I feel my intuition (good substitute for engineering degree) tells me that the actuating point should go in front of the pivot point, simply because the tail would come out somewhat lighter as the weight of the linkage would be slightly forward and require less nose weight.

"The disadvantage of that layout would be that you don't get a long moment arm from the pivot point to the actuating point. (Longer servo arms and pivot arms mean less slop.) Well, I guess you can tell by now that for these complications, lack of simplicity, and more weight, I don't build any more flying type stabs.

"Jef Raskin of Pacifica, California wrote an article on flying stabs vs. conventional stab/elev. layouts, and came up with the conclusion that a well designed stab/elev. system with the correct incidence angle is just about as efficient, durable, simple, light weight, strong, etc., etc. I agree with him on that one, especially concerning servo loads on flying stabs vs. elev.

"Any flying stab/T-tail system has to be built with a minimum amount of slop in the system to function correctly, and as far as Mr. Raskin has pointed out to me, is not a good choice for a fully aerobatic slope glider. (Does not function well at high angles of attack.) Some people I have spoken to that fly big, fast, heavy slope planes, say that there have been some problems with flying stabs failing at high speeds in very windy conditions. They have been thinking of going back to a conventional layout because of this problem. (Pivot rod not strong enough, or separating from stab, or fluttering caused by slop, etc., etc.)"

SOARTECH 10

Soartech 10 is now available from H. A. Stokely, 1504 North Horseshoe Circle, Virginia Beach, VA 23451; phone (804) 428-8064. Information about the issue is included in Wil Byers' portion of "Ridge Writer". The ordering costs including postage and handling are: $16.00 U.S.A., $18.00 Canada & Mexico, $20.00 Surface other countries or $23.00 Air. The other 9 issues of Soartech are still available, as well.

If you're planning on ordering #10, there was some information in Herk's literature we thought would be interest. "Soartech 10 has several articles that explain the analysis of model airplane design and flight by using computer programs to do the calculations. For folks who'd like to make use of these programs, I'm making all of them available on a single disk. If you'd like to receive them, send $12.00 to cover the cost of the disk, packaging, and wear and tear on the equipment, and I'll send you a copy ($15.00 for orders outside the North American Continent)."

"This isn't any kind of a regular software offer, so there is no manual or detailed instructions on the use of the programs other than the articles in Soartech 10. It is just a time saver for folks who'd like to use the programs by sparing them the time it would take to type in the code that has already been provided in the text. Ask for the Soartech 10 disk."

Also, "Soartech 10 has now been given the opportunity to distribute Mr. Hans-Walter Bender's incredible airfoil coordinate data bank, for all the countries where German is not the principle language." *The database includes over 2500 different airfoils and,* "Mr. Bender is now making this dictionary available on computer disks."

"The entire dictionary requires two high density (1.2 Meg. IBM format 5.25") computer disks, with all of the coordinate files in uncompressed ASCII text files. (Other disk formats including MAC, high density only, are available upon request.) The files have all been edited into a single format, so that any process designed to use them needs to deal with only one type of a file arrangement. A data sheet is provided to describe the use of this ordinate system.

"Mr. Bender and his friend and associate, Mr. Ludwig Wiechers, have also developed programs that run under DOS and Windows that allow these airfoils to be viewed, modified, and plotted on the computer. These programs are currently available only in German, and I expect it will be a few months before we have them converted to English. When they are converted, I will also make them available. However, because the files on the airfoil data base are in open ASCII format, they can be adapted to be used with any airfoil viewing or plotting method or program.

"I also suggested to Mr.'s Bender and Wiechers that we should make this collection available in book form for the many model builders who do not use computers. They have agreed with this idea and we will, perhaps in 1994, publish all this data. Mr. Bender is constantly adding to the collection, also. Updates will be available periodically to those who purchase the collection. In Germany, this set of disks is priced at 450 Marks. At today's exchange rate, this is $281.00.

"That's not much if you think of all the work that went into it, and the cost of model sailplanes, today. It is a lot of money if you don't have it though, and they have given me latitude to establish a lower introductory price. I don't know how long we will be able to sustain it, but for North American buyers, I can now supply the set of disks for $115 including postage. Outside of the North American continent, the price will be $125. Updates will be priced based on their content and purchasers of the original data set will be notified of availability and price. If you want to get Mr. Bender's collection at the introductory price, or if you want more information please write." *(Herk's address is shown above.)*

Dale Willoughby's WIK ASTIR CS-77 is ready to be AERO-towed by NOSENS QUARTER SCALE CUB. On Guam, 1985. Dale Willoughby photo.

FAI F3I

The following letter is from Dale Willoughby, San Diego, California.

Dear Jerry & Judy,

Enclosed is an easy-to-read copy of the FAI F3I AERO-TOW GLIDERS provisional rules which I brought up to date with the assistance of Mr. Thierry Montigneaux, FAI Executive Officer.

The reason I asked Judy to return the paraphrased rules is evident... Some of the adopted rules at the Plenary Meeting in Paris last March were not included, should have been, and are now.

Please note that they are furnished "For Reference Only". Additional copies are available for $3.00 and a long envelope with $.52 postage affixed.

My aim is to publish a booklet containing these provisional rules (once the paragraph numbering is corrected), detailing photos of each requirement for Aero-tow Gliders, correct towing procedures, a list of those gliders (read sailplanes) now on the market that qualify as "FAI Legal", and an offering of the mysterious AUTOMATIC ALTIMETER required for F3I International Competition.

To meet this goal, I need a list of sailplanes from the importers-manufacturers, including home-built sailplanes, that conform to the exact requirements for F3I sailplanes, i.e., at least 3.5 meter (11.4828 ft.) wing span, a canopy, a wheel, and a proportional fuselage cross section as described in paragraph 5.6.1.4 of the Provisional Rules.

Can you help? Do you still possess that photo of the J-3 Cub and GROB Astir CS-77 taken on Guam that I sent in with the Paraphrased Provisional Rules earlier this year? If so, please use it... Providing this letter is printed in the "Soaring Site".

Once the booklet is in print, I expect to place ads to offer it to the readers of *RCSD*. And I do so like format where all ads are grouped together... It makes comparison so easy.

Enclosed also is $4.00 for the January and February 1992 issues of your publication.

Sincerely Yours, (signed) Dale Willoughby

Dale also sent in a FAX which reads, "WANTED! F3I Aero-Tow Soaring Modelers, clubs or individuals worldwide now involved in (or desire to) fly scale sailplanes according to FAI F3I rules. Send name, address, and phone number for listing in F3I Handbook, now in preparation. Include $3 for Easy-to-Read copy of rules to: Dale Willoughby, MCLB Box AQ, Barstow, CA 92311 USA.

Happy Holidays!
Jerry & Judy

Cold Weather Soaring

...by David D. Garwood
5 Birch Lane
Scotia, New York 12302-5516

In snow we go! A Sig NINJA cruises past a pair of well dressed New England slope flyers flying in January.

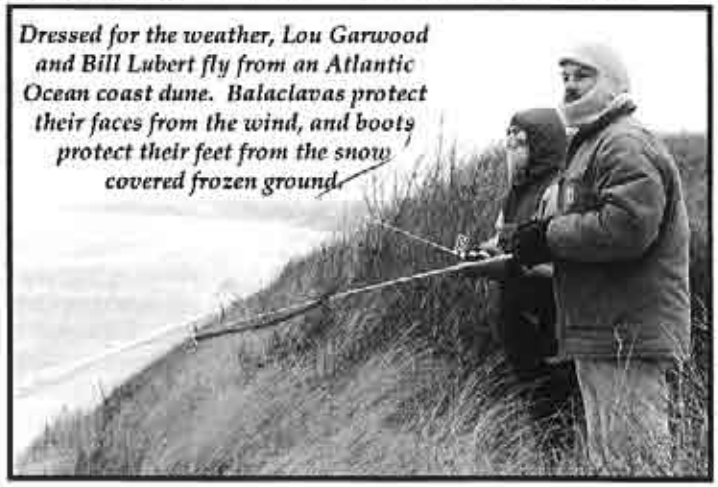
A construction worker flying buddy said of being outdoors in cold weather, "Hey, I work in it. We ought to be able to fly in it," and offered to loan me a pair of the Carhartt insulated overalls he wore on the job. Reflecting on this attitude, I started to feel like a weenie for NOT flying in the cold. Me, I have a desk job, but since being outside is one of the great benefits of RC sailplane flying, I try to fly every weekend, warm or cold.

Thermal Soaring

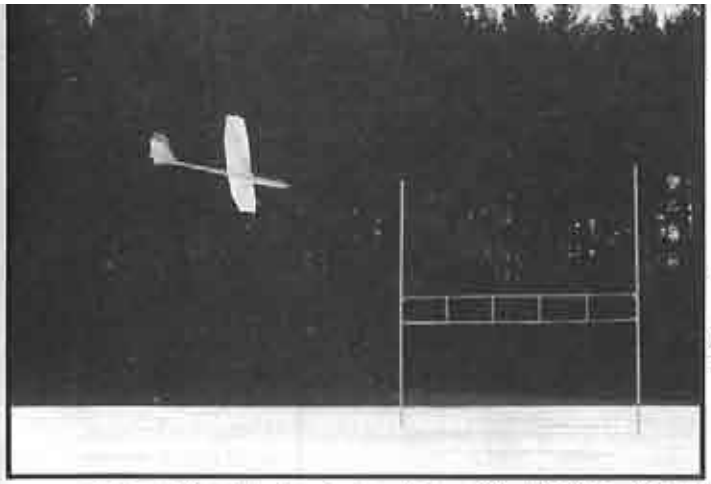
Cold weather doesn't mean thermals are absent, just as hot weather doesn't mean thermals are present. Remember it's the temperature DIFFERENTIAL that generates thermals, and that differential is created by uneven heating of the ground. If a snow covered field borders an asphalt parking lot, the dark surface will absorb solar radiation more readily than the snow, and heat the air above it more rapidly. Some sailplane flyers believe thermals form in every field, every day. They may not be boomers, but they're there for us to find and fly in, the trick in cold weather thermal soaring is launching so we can find them.

One of the first discoveries the budding winter soaring pilot makes is that high starts don't work on frozen ground. The rubber stretches out okay, but it doesn't contract. Or more specifically, it doesn't contract in the field, it contracts when it warms up a bit in your car, and crushes the wooden reel it's wound on.

To launch over frozen ground you'll need a winch or an electric (self-launched) sailplane. The one big advantage of laying out a winch in winter is that vegetation is at a low ebb and bugs are nonexistent. Electric launch really comes into its own when high starts are unusable. If you fly electric sailplanes, you'll make good use of them in the cold.



Dressed for the weather, Lou Garwood and Bill Lubert fly from an Atlantic Ocean coast dune. Balaclavas protect their faces from the wind, and boots protect their feet from the snow covered frozen ground.

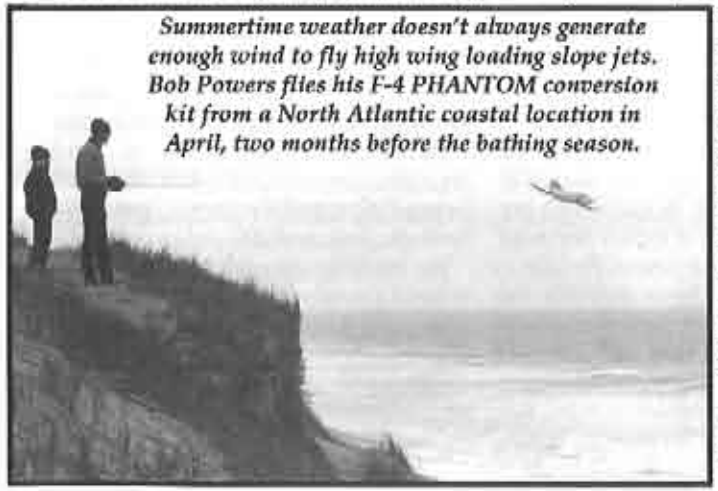


Ace R/C QUASOAR on final approach over snow covered football field on Groundhog Day in upstate New York. The ground cover contrast between the snowy field and the pine woods is enough to generate thermals, especially when the sun's out.

Slope Soaring

No winch? Go to the slope. The slopes are always there, ready for action when the wind comes, and the wind is often better in the winter. Some sites are better with no leaves on the trees. Two of our inland slope sites have deciduous trees upwind of the hill. Both are tough to fly in summer, but when the leaves fall the wind smoothes out and they support several types of sailplanes. Agricultural activity is down, and we have greater access to farm field sites. Finally, for coastal slope soaring sites in resort or tourist areas, off-season flying means the hills and beaches are more accessible because there are fewer people competing for the same resource.

Remember that with the wind chill, it's cold at the slope



Summertime weather doesn't always generate enough wind to fly high wing loading slope jets. Bob Powers flies his F-4 PHANTOM conversion kit from a North Atlantic coastal location in April, two months before the bathing season.

Pierce Aero PARAGON about to meet its own shadow on landing. The ground cover is thin snow topped with glaze ice. Flyers congregate under a large tree which sheltered the ground from snow accumulation.

in winter, so dress for the occasion to be comfortable.

Clothing

Dress in layers. This strategy works because fundamentally it's the trapped air that keeps us warm, not the cloth, leather, or feathers in the garment's construction. Air's relative resistance to transmitting heat is the reason those warm goose down parkas work and that pink fiberglass insulation in houses works.

Trapped air holds in body heat. The air between layers of clothing adds to their insulating value so LAYERS of clothing are warmer than an equivalent thickness of a single garment. Further, dressing in layers allows you to adjust your personal body temperature by adding or removing layers.

Let's discuss specific items of clothing for cold weather exposure, going from head to foot. Head covering is important, as physiologists estimate that as much as half the heat lost from the body is radiated from the head, due mainly to its rich blood supply. A knit watch cap works well because it covers the head and ears. A ski mask covers the face as well but may cut down visibility too much. My current favorite is the balaclava, a knit cap that pulls down to cover the neck, has an opening for the eyes and nose, and has a short brim. Eye protection in windy weather is important to preserve good vision because the cold increases tears. Wear regular prescription glasses, sun glasses, safety glasses, or ski goggles to protect the eyes.

Cover your upper body with your favorite combination of long underwear, sweat shirts, sweaters, or flannel shirts topped off with a windproof jacket. This last is the most important, I think, and my favorite is a hooded shell known as a "mountain parka" or "60/40 jacket" because it's commonly made of a combination of 60% nylon, 40% cotton. It's tough, windproof and somewhat water resistant. Interestingly, it provides almost no warmth on its own, but serves to keep the other layers working by shedding the wind. Use one with a hood, and it will provide an extra layer of protection for your head.

There is a large variety of glove types available for sportsmen. Some cover the palm and wrist and leave the fingers uncovered, some have flaps so you can extend or retract fingers. My current favorites are thin leather driving gloves and thin cloth glove liners, and I've seen excellent thin rubber gloves with cloth liners available from SCUBA suppliers. Consider also transmitter mitts designed especially for R/C flying. Good hand protection can make the difference between flying and having to put your hands in your pockets.

Do your legs get cold? Mine used to, before I got snow pants from a ski shop. Alternatives are Carhartt insulated overalls, or a snowmobile suit.

You won't last long if your feet get cold. My preference is leather boots with two layers of socks: one cotton, one wool. Like gloves, many types of warm footwear are available. If you're susceptible to cold toes, look at electric socks, Thinsulate™ insulated boots, and thick Arctic type or snow mobiling boots.

With the right clothing, you can withstand a lot of cold weather to fly, especially if you have the right attitude.

Attitude

Sure, it's easy to conclude it's too cold to fly, that cold weather is "building weather" but you can build at night. Get out while the sun shines and fly, I say. You might be surprised at how good the flying is, and you'll certainly be impressed with your own toughness and stamina.

Are you a contest flyer? Hey, more practice! Was there a contest last year where you finished fourth or fifth, and consoled yourself that with a few more practice sessions you could have finished in the metal? Well, that sure happened to me. Adverse weather practice builds skill and confidence for fair weather contest flying.

Sure, a snow-covered flying field may not generate the boomers that clear ground does, but there's bound to be SOME rising air. Dave Thornberg taught us, "You learn more about your sailplane and yourself below 50 feet than above 50 feet."

Conclusion

Soaring in winter can be almost as rewarding as at any other season. To succeed you've got to be prepared in the clothing department, and may have to modify your launch method. Beat the cold! Bundle up and fly. ■

Dave Garwood is a hard core R/C soaring enthusiast who has flown R/C sailplanes each month for the last five years. He flies in upstate New York and New England, which have noticeable winters. ■

Author prepares to launch a Douglas Aircraft QUICKSILVER in excellent 30 knot winter wind. Before I found suitable thin gloves, one hand was protected, while the other exposed to hold the plane and thumb the transmitter.

To Fly Where No Model Has Flown Before

A Slope Flying Journey

...by Fred Mallett
Corpus Christi, Texas

I was looking out over the Columbia River a 1000 feet below; a 20 knot breeze blew at my face; my transmitter was in my left hand, the "Shogun" in my right; my launch arm was cocked back behind my head. Excitement! This plane had less than 10 minutes of flight time, and that was a month ago! This was an unknown slope, not to mention the fact that the landing area was a 15 foot wide strip of rough rocks and dirt before a two lane highway; and there was another 1200 foot of lift developing slope above that!!

The journey started from our home in Corpus Christi, Texas. It was our annual summer windsurfing pilgrimage to the Columbia River gorge area of Washington and Oregon. After giving some thought to the area we were about to visit [lots of cliffs, steep hills, and plenty of wind (30 kts on the average, 3-4 times a week)], I decided it would be stupid not to bring some slope planes along this year. After fondling the whole squadron for a few hours, I finally settled on 3 planes. The first was a hand launch that used a 5 year old poly wing my father built; the night before we left, I slapped together a new pod and boom V-tail for it. With a 275ma battery, it came out at 11 oz. "It is completely untested," I thought as I packed it into the van.

My medium lift plane is a "B'ZARO", which is my own design. It is a 51" full symmetrical airfoil, 370 sq. in., pod and boom, conventional tail, 19 oz. plane that flies exceptionally smooth. And my high lift plane was another new one to me: the Shogun. It had taken two short test flights in primer, but had not been flown since painting and CG adjustment.

We started our 2270 mile drive across the flatlands of Texas, eye-balling the breeze and the bumps for a possible test site for handlaunch. We finally found a site somewhere on the west side of Texas when my wife, Reneé, wanted to stop for an ice cream. I had noted a raised railroad bed with a breeze coming in at 90°, so foregoing my ice cream, I ran to give it a test. I'll admit it was a challenge, what with the power lines railroad designers are prone to putting within 20 feet of the tracks; but my mission was accomplished. I got the plane balanced out with only a few minor scratches from landing on the rocks. After watching it buzz around bumping up and down in the turbulent lift, Reneé christened it the "gnat". (Actually, she said, "It looks like a gnat.")

This trip was planned to be the four wheeling version of slope flying. "To fly where no model has flown before," was the motto, so I was expecting lots of cosmetic damage from landing in difficult locations. A typical pre-flight conversation ensued as we approached each potential flying site.

I would say, "It looks like a good site, but the LZ (landing zone) looks terrible!"

Reneé would respond, "How does the lift look?"

"Great!" I said, and Reneé would reply, "Go for it!"

It is amazing how many people will pull into a rest area if you stand there holding a plane pointed over a cliff, while getting up the guts to heave it over the side.

Once the Gnat was balanced, no bump was too small to check out for flying conditions. One memorable non-slope site was at the Visitor Center in Dugango, Colorado. The hand launch flights were short, but the surrounding area was beautiful; the grassy area was so well kept that I was barefoot the whole time.

Five days after we left, we pulled into Maryhill, Washington, where we camped for almost the entire time we spent in the gorge. The afternoon of the first day I made my first gorge flights. There was almost no wind, just barely enough from the southeast to stir the flags. Driving up the cliffs from the Maryhill bridge, the first pullout beckoned. It looked like a possible site, so I heaved the Gnat over the near vertical cliff. What a rush... Will it go up, or sink out? In this case it went up 20, then 30 feet. It was time for a turn back to the right. Uh oh... Sink time! It went quickly below the edge. I walked closer to the edge so that the plane wouldn't get below the sight line, and found that flip-flops are not good footwear in a desert area. (They grow cactus here.) But the Gnat had made another turn back to the left and it was climbing again. I realized that the breeze past the cliff must be more easterly, which made it badly cross-slope.

Starting to work large radius turns on the left, and fast trips to the right with a sharp turn, after a few rounds, the Gnat was able to get enough altitude to get a landing line. Then, as I made the last run to make a landing, the Gnat signaled big lift crossing to the right. A thermal had broken free, so a quick bank into a circle, and I soon had a crick in my neck from looking up. Ahhh... Success, after the challenge of working difficult lift. Once up high, there were thermals everywhere. About 20 minutes was enough of looping down and riding the boomers back up.

The next day, there wasn't nearly enough wind for windsurfing, but 10-15 from the west meant B'ZARO weather. We headed out west on the Washington side of the river as the Oregon side is a freeway. About seven miles or so from the campground, the river made an abrupt turn north, which presented a beautiful slope to the west wind. Not seeing a landing zone anywhere, I dutifully heaved it off the cliff.

Now, having learned to slope fly in Corpus Christi, with 20-30 foot cliffs, we usually fly terrain clearance mode, as the strong lift is very close to the slope. After trying this method and struggling for 5 sweaty minutes, I realized that there was more lift away from the slope. Continuing out, the lift just got better and better. Next thing, I found myself flying 70 yards from the slope in tremendous lift. It was hard to keep my eyes on the plane, as my head was thrown back and I was laughing. I had always wondered how people found the time to learn to fly slope planes aerobatically, what with all the plane repairing time; these big slopes sure help!

The lift envelope extended so high that I had lost count of the spins before recovering with more height above ground left than I can typically find off the slopes at home. I could spec the plane out in pure slope lift. In that one flight, I got in more rolls and loops than all my previous flights combined. The plane was designed for aerobatics, but until now, my thumb was not. I did my first outside loops. (Easy, just push! Lots of room!) I even did a couple respectable vertical 8's. Then I heard the sound I had forgotten I was dreading, "40 minutes". It was time to start looking for a LZ, and luckily the lift was less near the hill. After 10 minutes of testing the angles, I decided the best approach was from about 80 feet below my feet and off to the right. I let the plane drift up the hill, and then banked hard as it went above the highway at about 6 foot altitude to turn into the wind. I wanted to try to drop it in the 20 feet or so of gravel before the edge. On about the 10th try, I came in slow enough

to drop it without harm. One flight, plenty of stress and fun, it was time for a beer. It is a vacation after all.

For the next 13 days, the wind blew hard. It was time for the Shogun. So, there I was, arm cocked, not knowing if it would fly or not. I had Reneé take a picture of my first launching of the completed Shogun. About 1/2 second after the picture was taken, the Shogun lodged itself into a cattle fence about 10 feet away and below me. Amazingly, it survived with nothing but a chip in the paint on each wing. On the second launch, it waddled out 50 feet or so until it got up some speed; and then it headed for the sky! This is a very different plane to fly. Just doing figure eights is exciting as the plane is so fast and small; it is work just to keep your eye on it! After a few passes to calm down, I began doing some chandelles, and then rolls. The plane flies very well, but the best was the long drawn out scale-like turns that look so much like the fighters that I remember coming in for final approach to the aircraft carrier some 15 years ago. "This is one fast bird!" I thought. After 20 minutes or so, I started making approach runs as the LZ was, as always it seems, terrible. I couldn't seem to slow down much, so after about 100 passes from all angles, it seemed like a hot landing would be coming up! Reneé brought out a blanket for the ace pilot to gently land on.

"Here we go..." I thought. Come from below to reduce speed; it is only about 40 mph, now. Make a long knife edge turn to keep it low. Flatten and flare into the roadside pullout, and bingo! Exactly 1 foot to the right of the blanket, and into the gravel at about mach 2. Well, at least it landed with the wings level. The roll-out (skid-out?) scraped a hole in the bottom of the "indestructible" fuselage. But that's what God made CA for.

Over the next two weeks, we flew all kinds of sites, and all winds, even to the point that once I was even able to slow the Shogun to a walk for a landing. This occurred on the Maryhill Museum grounds, which had the best LZ we could find in the gorge. It had a beautiful green lawn right off the edge of the cliff. Another memorable LZ was on the Oregon side near the Deschutes River. It blew up and back over the telephone poles, then dropped in under the low power lines; I pulled up to clear the 6 foot barbed wire fence, and then floated it into the long grass. I wish I had planned that one.

Finally, we headed home, and our timing was perfect. We pulled into Salt Lake City on a Friday and gave Bob Harman of the Intermountain Silent Flyers a call. He informed us of a fun fly that was being held that weekend at The Point. You have already read about The Point before, but this is one unbelievable group and flying site. There were over 30 cars parked there, and so many beautifully built planes that Reneé kept handing me a napkin for the drool.

On Friday evening, the wind was up, so I flew the Shogun and B'ZARO. Saturday, it was light, but there was so much thermal activity that everyone got in plenty of flying. I never saw so many people helping out beginners. There were several great fliers with all us rookies helping us improve our skills. We hated to leave, but after 4 weeks, home beckoned.

The only major plane casualty was the Gnat, which occurred on the last day's drive when trying to pick a parking lot thermal at a rest stop. I could have sworn it was behind that telephone pole!

Reneé says we stopped every 10 miles to try slopes as we drove through the Rockies. I disagree! It was only half that often... ■

CORE ONE

...by Gene Cope
Union Gap, Washington

Wil Byers has designed and built an all composite sailplane apply titled, Core One. This model features a kevlar fuselage and carbon cloth balsa sheeted foam wings, stab and rudder.

I acquired one of his prototype models second hand from a fellow who decided he didn't have the time to finish it. It was a superb Father's Day present from my wife who allowed the extra funds to acquire it. Regrettably, it sat on the shop shelf for a year and a half before I did some bartering with Mike Mellor to finish the main assembly so I could move ahead with a scale project. Well, I just finished the covering and installation of the radio. As you might imagine, the Core One test flights were accomplished the following day. These flights consisted of two hand tosses and three winch launches. I've had a few minutes of flight time on another Core One belonging to Gary McVay. This model, however, has its wing tips turned up. Gary's ship flew fast but turned well in lift and was very manageable in flight. so, the test flights of my Core One were not totally unfamiliar territory, but the performance was beyond remarkable. The first launch was a straight forward climb-out with no bad habits. This flight lasted over 5 minutes, but the landing approach was a bit steep due to a stab trim setting problem; it was nevertheless manageable, and a safe landing was made. The second launch was just as stable and the ship showed a distinct love for thermals. Even though the Core One is fast, it is quite sensitive to lift and skied out like a home sick angel. The flight lasted for just over 12 minutes and was a thrill with the Core One turning well into lift. It demonstrated excellent flight and directional stability with it's 123" wing and 5 lb. weight.

The Core One is controlled with a pull-pull rudder system. Its servos are buried in the wings for aileron and flap control. There is also a 1/16" cased music wire utilized to give positive control to the stab. The radio I am using is a Vision, and it allows me to get all I can out of the Core One's potential.

The Core One demonstrated excellent thermal riding potential on its third flight with an elapsed time of 33 minutes. And this flight also demonstrated to me just how sensitive the model is to lift. It is fun to fly because it can penetrate the most powerful thermals or transition to rise gently in light lift. The dihedral is only 1 1/2 deg., but it showed no tip stall tendencies. Wil has narrowed the fuselage of the Core One since I got mine and is building a new ship called the Cloud Climber with a higher aspect wing, a slightly modified airfoil and fuselage with a lower profile area. If it performs anything like the Core One, it will be a winner, for sure. ■

Gary McVay's Core One with turned up tips.

My Core One is flat on the ground.

Jer's Workbench

Fiberglass Fuselage Repair

I have received several telephone calls regarding how to repair a fiberglass fuselage. So, I thought this would be a good subject to write about. However, for some reason, it wasn't easy to find a broken fuselage to repair. My local club newsletter here in Dallas, The Soaring League of North Texas, ran my advertisement asking for a broken fuselage. Now, this was intended to be a good deal for someone. You give me a broken fuselage that I can repair and write about in my column, and I'll give you a repaired fuselage in return. Unfortunately, the first fuselage that came my way was in a paper bag, and was well beyond repair. Even if I had used the original mold that created the fuselage, I couldn't have done it justice. Into the trash can it went. A few weeks later, I received one that was indeed repairable; however, I was in for a few surprises as I tackled the repair job. I'll try to explain as I go along through a step-by-step explanation of my repair process.

As you can see in photograph 1, there were two breaks on the right hand side of the fuselage: one very large break in the middle and a hairline crack in the back under the trailing edge of the wing. In order to repair this type of damage, I

Photo 1 - Fuselage showing breaks.

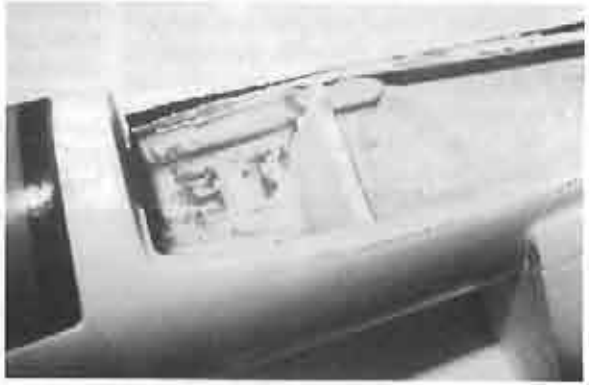


Photo 2 - Inside of fuselage. Shows former, pushrods and paint, which have to be removed.

Photo 3 - Inside of fuselage after everything was cleaned out.

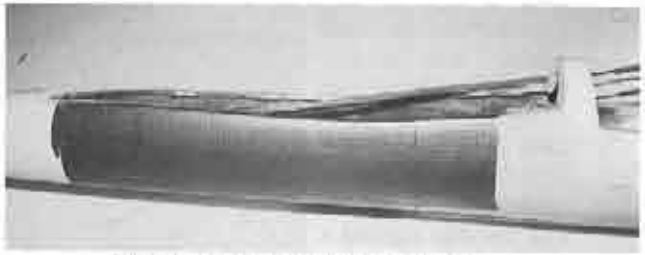


Photo 4 - Duct tape covers the cracks which need to be repaired.

Photo 5 - Inside of fuselage after repairs.

had to be pried loose using a screwdriver. I removed the paint with acetone; I brushed on the acetone and wiped it out with paper towels. Once cleaned out, I discovered that this fuselage had been repaired several times before. There were also a couple of hairline cracks on the left side of the fuselage. Very carefully, using my moto tool, I ground out the old patches so that I would have a smooth surface to work with.

Photograph 3 shows how I pulled the pushrods out of the fuselage, which made it much easier for me to get at the inside. I did not remove the plywood mount for the towhook.

I used duct tape to hold everything in place as shown in photograph 4. By applying tape over the breaks, the epoxy resin was not able to bleed through the cracks and run out and down the outside of the fuselage.

Now that all the preparation was complete, I started the repair job. First, I cut 1 inch strips of 4 oz. fiberglass cloth to lay over the cracks. Then, I brushed in West System epoxy resin and filled each crack, laying in a strip of fiberglass after each crack was brushed.

Then, I prepared to lay in a second layer of 4 oz. fiberglass over the entire repair area. Because of the plywood towhook mount in the bottom of the fuselage, this layer would not be able to lay flat, so I first added a filet by using cotton flocking mixed with epoxy; I filled this in around the plywood. Also, I had been wanting to try out the use of kevlar pulp, so I made a thick paste by mixing the pulp with epoxy resin. Using this

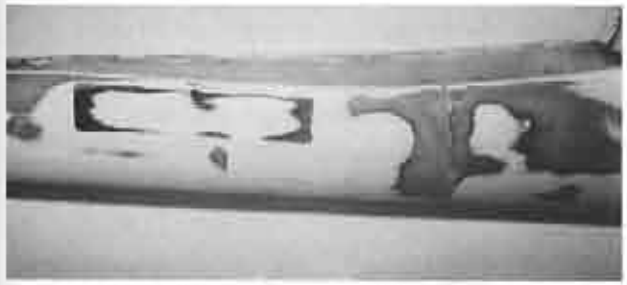


Photo 6 - Duct tape removed; fuselage sanded.

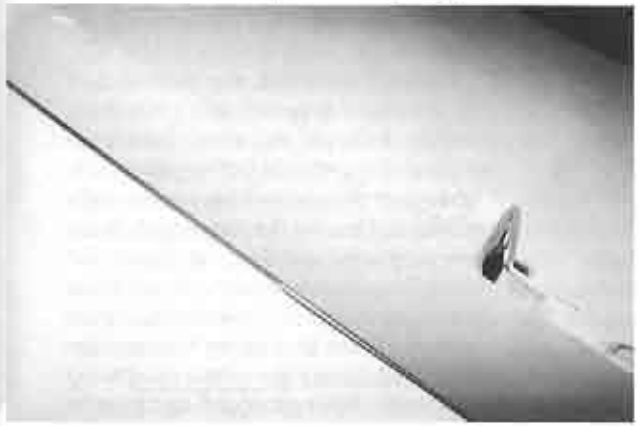


Photo 7 - Repairs are complete; fuselage is primed and ready to paint.

find, for myself, that it is best to do all the repair work from the inside of the fuselage. This meant that I had to remove everything that was inside the fuselage.

Photograph 2, before repair work was started, shows the former, pushrods and paint that were inside the fuselage. The former was easily removed; the pushrod

mixture, I made a filet under the lip of the wing saddle to add strength to the fuselage, and then the whole area was covered with the second layer of 4 oz. cloth. Photograph 5 shows the results. Setting the fuselage aside, it was allowed to cure over night.

The next day, the duct tape was removed and the area was block sanded as shown in photograph 6.

The last step was the easy part. The fuselage was sprayed with a coat of primer. Once dry, the fuselage was again block sanded and another coat of primer was applied as shown in photograph 7. The repair job is complete, and the fuselage is now ready for paint!

Happy Holidays!
Jerry Slates

West Systems epoxy, 105 resin, 206 hardener
Gougeon Brother, Inc.
P.O. Box 908
Bay City, MI 48707

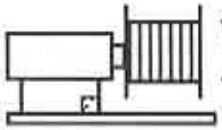
4 oz. fiberglass cloth
John Sweet
US 220 South, Box 10
Mustoe, VA 24468

Cotton flocking
Aircraft Spruce & Specialty Co.
P.O. Box 424
Fullerton, CA 92632

Kevlar pulp
Fibre Glast Developments Corp.
1944 Neva Dr.
Dayton, OH 45414-5598

Duct tape, acetone
Local Paint Store

Paint, combination scratch filler & primer
Dupli-Color, Wimbledon White
Local Western Auto ■



Winch Line ...by Gordon Jones

Gordon Jones, 214 Sunflower Drive, Garland, Texas 75041; (214) 840-8116 After 5:00 P.M. CST

Preparation for Flight

Over the years the phrase, "It flew right off the board," has been written, and uttered on many a flying field. Why did that particular airplane fly so well on the first flight is the immediate question that is asked by the bystanders. Well, if you look at the builder you will notice that he is one that takes his time building, and invariably he also spends a great deal of time with radio installation and balancing the airplane. He checks and rechecks everything that could possibly reach up and bite him on that first flight or any other flight for that matter. Let's analyze what 'Mr. Perfection" does a little bit and see what we forgot to do or didn't do as well as we could when we built that last airplane.

First and foremost, our builder took his time and ensured that everything was as it should be when the kit (or original design) was put together. He made sure that everything was straight and level. He used the proper glue in the proper places and he used rulers and triangles quite frequently to be sure that the alignment of fuselage and tail were correct. Now that doesn't sound too hard; well it takes more time than many builders are willing to spend, and it seems like an awful lot of trouble to make sure that the leading or trailing edge is exactly square with the fuselage. Yes, every one of the little details is equally important. The slight misalignment that happened early on can equate to a giant problem further down the road at the final stages of construction. It is better to take your time and do it right the first time. If you take your time, measure, and then double check before you CA or epoxy it together you will probably not need to take corrective action. And as a side note it will, in all likelihood, take less time to do it right the first time. I know that I will not change the building habits of a whole lot of folks with the previous statements, but those are the facts. Plus, I could never get Pancho Morris to give up his chain saw and paint brush anyway.

The second major thing that our perfectionist does is to take his time with the radio installation. He makes sure that the servo tray fits properly in the fuselage. He fits each servo in the servo tray so that it fits just right, and then puts a layer of fiberglass cloth over the servo tray after he has epoxied it into the fuselage to insure that things are really secure. He takes the time to make sure that the rubber grommets are in each servo mounting lug hole, and even installs the brass eyelets correctly. The wiring for the wings servos took a whole evening to do the job, but each wire is the right length without the excess and each solder joint is a work of art. Again, he has taken his time and done things right rather than throwing the radio in with the *intention* of coming back later and "fixing it up". The control rods are secure in numerous places in the fuselage and the control cables are straight and the soldered couplers have been measured to just the right length so that there is enough thread on the clevis to make the needed adjustments.

When setting up the control movements with his radio he has allowed for differential on each aileron and his flaps hang down at exactly 90 degrees. Each control surface moves smoothly and in the right direction prior to getting to the flying field. He has set up landing crow and even has his launch pre-sets pretty well dialed in from looking at his last similar airplane. Looking inside the fuselage the switch is actually fastened to the servo tray so that it does not move all over the place. The battery pack is packed in foam against sudden impact and insulated from the nose weight. (Yes, nose weight when not insulated from the battery can make bad things happen.) Even the excess servo and battery wires are wrapped neatly and held together with rubber bands so as not to get in the way.

Once the airplane is built and the radio installed there are a couple of other items that our friend has taken the time to do along the way. He took each wing panel and weighed them to see if they weighed the same amount so that he would not have any lateral balance problems. (He probably did this prior to covering.) He then set up his trusty measuring platform and carefully balanced the plane to the center of gravity on the plans, or the calculated CG for a scratch built. If you had watched this operation you would have noticed that his addition and subtraction of weight was accomplished in single pieces of lead shot not in large hunks. When he was done, he permanently installed about half of the weight in the nose allowing for the weight of the epoxy that he put in with the lead shot. After he had installed the permanent ballast he rebalanced the airplane to be absolutely sure his CG was still just the way he wanted it.

If you watched his hand tosses to set the stabilitor, you noticed that he threw the plane with just a little bit of a down angle to it in case the plane ballooned on him so he could compensate without erratic heart rendering control movements. Plus with the CG and the controls set up properly his first toss was a large circle that landed at his feet. It takes time and attention to detail, but it is well worth the effort. Think about it the next time you start a new building project, and how nice the results will be when you are done. ■

Understanding Sailplanes

...By Martin Simons

13 Loch Street, Stepney,
South Australia 5069

The Cross Country Sailplane

(Notes prepared for the MARCS Symposium, October 1992.)

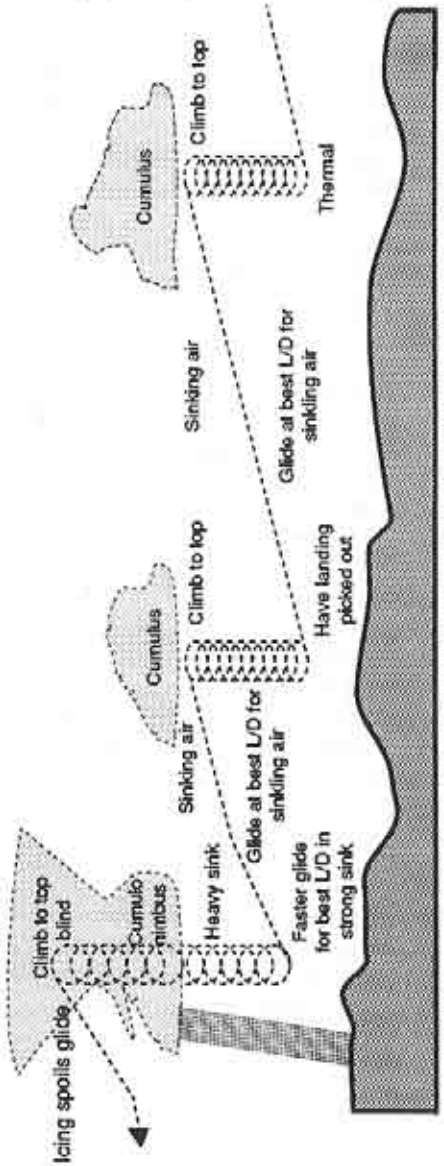


Figure 3. The classical style of cross country flying.

Information needed: Climbing or sinking.
Altitude now.
Prospects of lift ahead.
Speed to fly through sink.
Suitable landing areas.
Wind speed and direction.
Hours of daylight remaining.

Instruments needed: Total energy variometer (compensates for airseed variations).
Altimeter.
Airspeed indicator.
Oxygen breathing if likely to go above 10000 ft.
Maps.
Clock.

Classical cross country soaring

The first cross country thermal soaring flights by full sized sailplane were achieved without much theoretical analysis. It seemed obvious to pilots that when they found a thermal, they should squeeze every possible foot of height from it. Even if it was feeble, it should not be wasted. Long periods were spent circling, up to the base of any clouds that might form and, if gyro instruments were carried, into the clouds.

Having reached the top of the thermal, the pilot would set course and trim the sailplane for its best glide ratio, always faster than the trim for minimum rate of sink. The ensuing glide might bring the inexperienced down to a premature land-

Figure 4. The performance polar of a sailplane

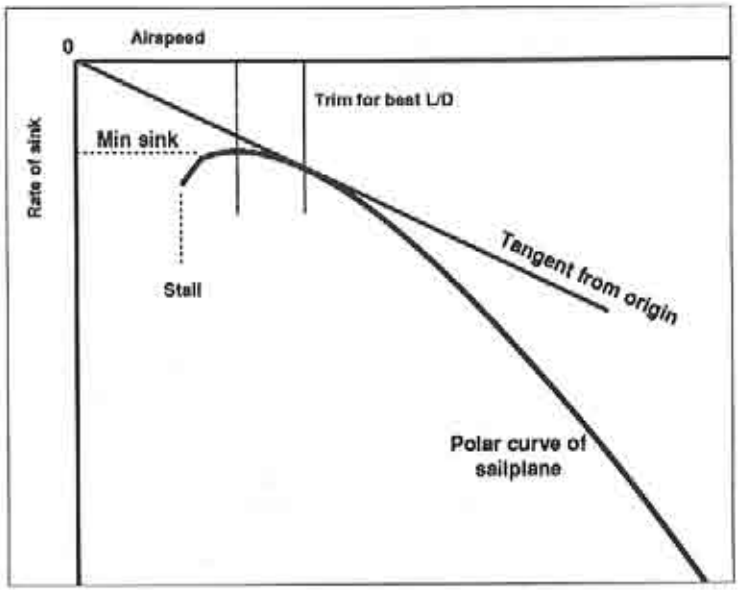
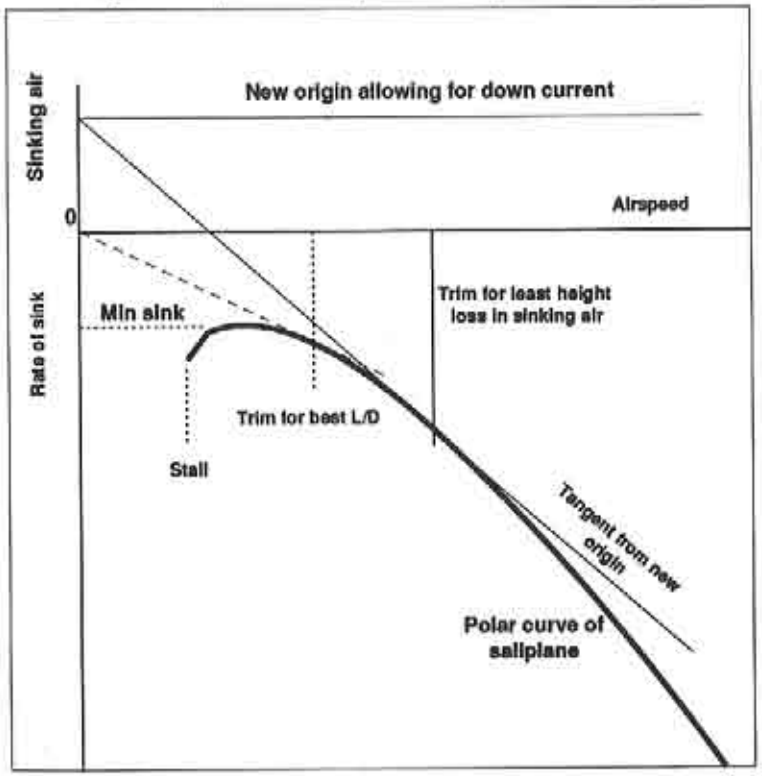


Figure 5. The performance polar of a sailplane in sinking air



ing. Pilots soon learned to divert a little from their course towards likely sources of lift, even stopping to do a little slope soaring if nothing else offered. When another thermal was found it would be used to the full, and then another long glide would carry the flight forward **(Figure 3)**.

The first important change in this classical method came when it was realized that to fly at the best lift/drag ratio or L/D of the sailplane, giving the best distance for height in still air, was never the best way to reach the next thermal. It is safe to say that, except on extremely rare occasions of dead flat calm, no intelligent sailplane pilot ever flies at the nominal best L/D trim.

Figures 4 and 5 show why. The heavy line in Figure 4 represents the straight flight performance curve or **polar**, of a sailplane. The exact shape of the curve does not matter much, nor do the particular figures for sink, best L/D, etc. All sailplanes of whatever type have a polar like this.

The vertical axis on the chart indicates the rate of sink of the sailplane through the air. The horizontal axis is the airspeed. It is easy to see that the minimum rate of sink occurs where the curve reaches its highest point on the chart. The trim required for this is the airspeed vertically above the summit of the polar.

The maximum L/D or best glide ratio is found by drawing a line from the origin or zero-zero point where the two axes cross, to touch the polar curve tangentially. If the air was always totally still, this would be the best speed to fly in order to achieve the greatest distance across country, after a climb. But if a sailplane can climb in thermals, some air is going up. If there is air going up there must be air coming down, and it will come down between the thermals. The glider trying to cross the gap from one area of lift to another, is almost always trying to pass through, or **penetrate**, areas of sink.

On the chart, we can easily represent sinking air by extending the vertical axis upwards, as shown in **Figure 5**. If the sailplane is in a down current, the speed of the sinking air has to be added to the sinking speed of the sailplane. If it was sinking at 2 ft per second, and enters air which is going down at 1 fps, it will descend at 3 fps and so on. The sink can be represented by shifting the origin as shown.

To find the best trim for penetrating sink with least waste of height, the tangent has to be drawn from the new origin. It is immediately obvious that to conserve altitude between thermals, **as soon as there is sinking air to penetrate, the airspeed must be increased.** To early sailplane pilots this seemed quite against their basic instincts. Desperately anxious not to sacrifice altitude, they hated to put the sailplane's nose down and, apparently, throw height away. But it did not take them long to realize the truth. Flying slowly through sink was the best way to waste height. Penetration was the important thing.

The air between thermals is usually sinking, but like thermals themselves, the rate of movement is not uniform. Weakly sinking air demands only a slight increase in speed, very strong sink demands a very large increase in airspeed, moderate sink a moderate airspeed increase and so on. The rate of sink experienced from moment to moment in the air, requires appropriate increases and decreases of speed. The pilot has to monitor the rate of sink all the time and change airspeed accordingly. This is true for models too.

In terms of the instruments, some pilots began to carry charts in the cockpit, with sliding axes and transparent rulers. This was much too clumsy in practice. Paul MacCready (the same who developed the muscle and solar powered aircraft) was a champion soaring pilot in the nineteen fifties, and offered a convenient solution which was universally adopted.

The MacCready ring could be fitted to any dial type variometer and gave the pilot an immediate, constantly up-dated, indication of the speed to fly. As mentioned below, the MacCready theory was intended for cross country racing, requiring the pilot to set it for different expected thermal strengths. A diagram like Figure 5 here may be used to make a MacCready ring, but I will not go into that here.

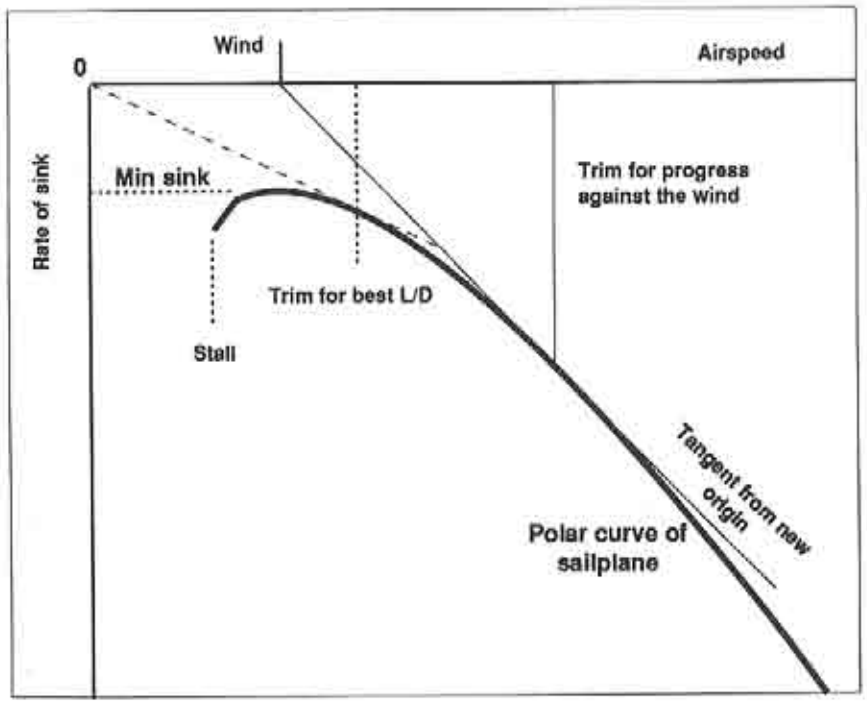
For the best possible height conserving glide in sinking air, the MacCready ring is set to zero and the speed required is indicated.

The MacCready ring is still used, but with modern electronics it is usual now to incorporate, in the instrument package, a mathematical model of the polar curve. The computer compares the actual rate of sink with the airspeed and the polar curve of the sailplane. It then gives a reading to the pilot in terms of airspeed required, according to the MacCready theory. Naturally, if the sailplane enters rising air, the instrument immediately indicates that the airspeed should be trimmed back, and if the sink increases, the indication is to speed up.

It is already clear that, for the instruments to work correctly, the performance polar of the sailplane must be known, at least to a first approximation. There can be no instrument package applicable to all sailplane designs; every type needs its own.

There are some excellent software packages now which enable us to calculate the performance of any model sailplane. These probably are sufficiently accurate for us to use them as the basis for the new instruments. However, the calculated polars are not exact and since model builders too are not always per-

Figure 6. Sailplane performance when flying against a headwind



fect, we should ideally find the polar curve for each individual model by a series of careful tests in flight. The difficulties involved in this are very great and I shall not attempt to discuss them here. This might make a good topic for a whole seminar on some future occasion.

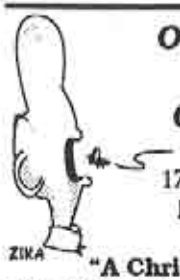
The effect of wind

An interesting side issue arises if there is a wind. Strictly, if the only consideration is to cross the gaps between thermals with least loss of height, the wind makes no difference. Thermals and sailplane all move along with the general atmospheric drift. The instrument will give the same reading, which will be quite correct. Speed up in sink, slow down in lift, never fly at the best L/D.

However, if the pilot is aiming for some distant goal where the sailplane will land, there comes a time when the wind has to be taken into account. This is a commonplace situation for model fliers on almost any flying day. The model, in a thermal, has drifted some way, and now has to be brought home to land. What is the correct trim?

The answer, for a particular polar curve, can be found by shifting the origin of the airspeed axis **(Figure 6)**. If the wind speed is, say, 10 mph and the sailplane is flying against it at 30 mph, the speed over the ground is 30 - 10 = 20 mph. The wind can be represented on the chart by moving the origin 10 mph. to the right. A tangent drawn from this point shows that the speed for the model to get to the goal with least height loss, is considerably more than that speed for best L/D. Flying against the wind and also trying to penetrate sinking air, demands an even higher airspeed.

The modern sailplane instrument system allows the pilot to set up the so called 'final glide' situation, allowing for any wind and/or sink, together with the height on the altimeter, and then the airspeed is adjusted accordingly. Cross country model sailplanes should be fitted with similar electronic instruments, all of which will need to be transmitted to the ground in comprehensible form. ■



On The Air With Corn Fed

Fred Rettig
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"A Christmas Story"

Well, it's Christmas time, again. I'll tell you one thing, though. I won't make the same mistake this year as I did last year. All was going well, as planned, 'til early Christmas morning.

Reflecting back, there I was running out of time to shop for the baby and wife. After all, I only had so many dollars. Sipping my coffee, scratching my head, *"Hum, let me see. I can buy the baby one of those stick ponies and some of those wooden block cars and trucks. Okay, the baby's covered."*

Reason for my expert planning, you see, was so I would have enough money for my family and some left over so I could get me a pair of them smallest servos to fit in the tail of my new Super-V Santa's bringing me. If I order them now, they would be in my tool box in time for Christmas day, and I would be flying before year's end. So, you see, my planning had to be just right. *"Okay, the wife... Let's see. Yeah, a new skillet and some pots. Yep, she burned up her big pot when she parboiled them squirrels too long last Fall. What a mess! I guess I'll have enough for that bottle of smellums she wants. Well, boy, did I cut it close. Only four dollars left over. Oh, what the heck. Buy the dogs some of them beef bones down at the butcher. Now, I'm broke, but not to worry. The little black boxes are in the bag. Okay, let me recap. Baby okay. Wife okay. Dogs okay. Last of all me, Corn Fed, two servos. How much better can it get?"*

Winch broke yesterday. Not last Christmas, but yesterday! Took that sucker out back and unloaded both barrels on it. It was a sad sight. It was like family, you know, one of those mother-in-laws who keep dealing out misery on you. That winch won't mess with me no more.

Oh yeah, back to last Christmas. There I was Christmas Eve, laid up in the bed nice and warm. It was getting late, but who could sleep? Santa's coming! Tossing and turning, I was just about to doze off when I heard a noise. Could it be him? Probably just that ol' rat that keeps getting into the wife's fruit cake supplies. If that don't kill 'em, nuttin' will. Wait a second, that's too loud for a rat. Better go see.

To my amazement, there he was! Santa, himself, in my big chair looking over his list. I glanced around. Baby got his. There's the wife's. *"Okay, where is Corn Fed's?"* I realized I had said out loud. I looked at Santa and said, *"No Super-V under the tree?"* He looked at me with piercing blue eyes. It seemed forever before he spoke. *"Corn Fed, your heart and your motives are all wrong."* *"What do you mean, Santa?"* I replied. *"Well, you remember that night that you sat down to figure your money for Christmas gifts?"* *"Yeah?"* I answered. *"Your gifts were good, but most of all you considered yourself and what you would get out of it all. You schemed and planned for yourself, and that's not what Christmas is all about."*

"Christmas is a time for giving," Santa went on. *"Just as God gave His only begotten son to mankind, He gave the perfect gift. He never held back. Christ came and set the example for living, and most of all giving, for mankind to follow. That, Corn Fed, is the true meaning of Christmas. Giving of your best out of love."*

I blinked my eyes, and he was gone! I sat down bewildered and pondered the encounter. I realized I had missed the whole meaning of Christmas. I had put myself before others. Suddenly, it was so clear. The true reason of the season is giving out of a pure heart with unselfish motives. That is when both giver and receiver will find true joy and happiness.

As I turned away with a lump in my throat, a tiny glimmer caught my eye under the Christmas tree. There, in the spot that was empty just moments before, sat my new Super-V. In the still of the night, I heard Santa in flight, saying, *"Merry Christmas to all, and to all a good night."*

Merry Christmas,
Corn Fed

P.S. Be kind to your friends, and don't forget to say your prayers.

▚ ▚ ▚

ATTENTION: Fred Weaver of California. You've won the raffle you entered down here. Please notify us how you want the two hogs shipped. ■

Switch Mounting

...by Pancho Morris
Mesquite, Texas

There have been two instances, recently, where a plane has been launched with the receiver switch off when it had been in the on position prior to launch. In both cases, the switch was mounted on the outside of the fuselage. In one case, I know the switch was mounted under the wing; I'm not sure about the other. The switch could have been turned off by a hard impact to the ground on a previous flight or by the launcher handling the plane previous to launch.

It has always bothered me when I have picked up someone's plane to launch it to find the switch right where my hand is holding the plane for launch. It has also surprised me to realize how many times I have found the switch in this location. It is too easy to accidentally hit the switch during handling or on launch.

Since building a Metric many years ago, I have adopted their system of putting the switch in the radio compartment under an easily removable canopy. This does two things. It keeps the outside of the fuselage clean aerodynamically, and it keeps the switch protected from accidental contact. ■

on the Wing

B²

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Jim Marske's Pioneer II-D

The Pioneer II-D story began in 1953 when Jim Marske read an article about Charles Fauvel's AV 36. Fascinated by the report of a successful tailless sailplane, Jim built and flew a model which exhibited the same positive attributes as the full size version. In 1954 Jim read about A1 Backstrom's EPBI-A. A scale model of this Backstrom design performed in equivalent fashion to the Fauvel model. What impressed Jim about the tailless planform was its uncanny ability to recover from pitch upsets with minimum loss of altitude.

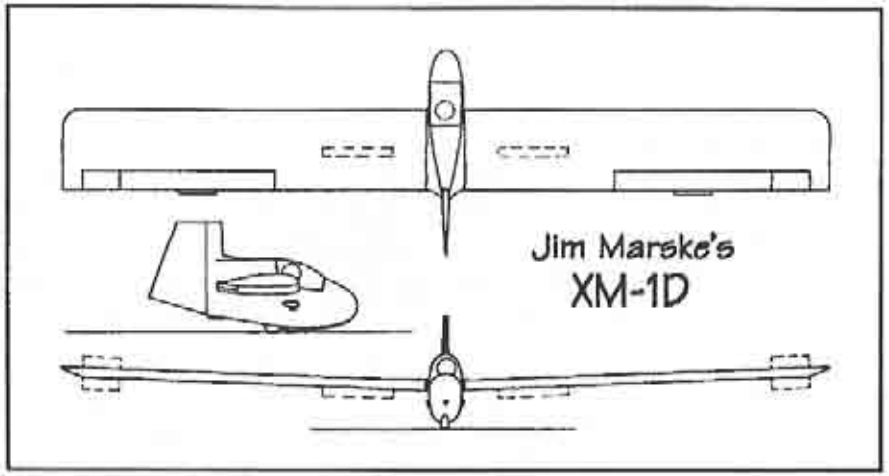
Encouraged by his success with the two scale models, Jim began working on his own version of a tailless sailplane, and when an eight foot span model showed excellent performance, construction of a full sized tailless sailplane began in earnest.

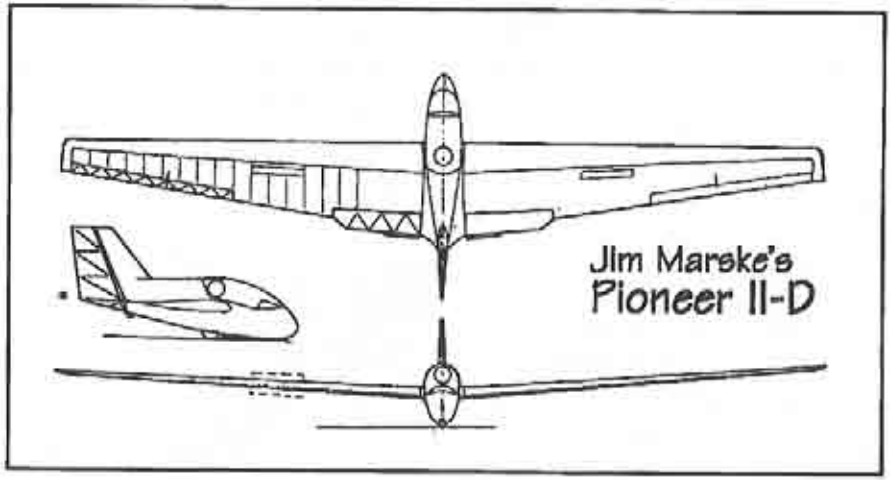
Four versions of a constant chord planform were eventually built and flown, designated XM-1, XM-1B, XM-1C, and XM-1D. From an appearance standpoint, the most visible changes which appeared during this evolution were the removal of the two tip fins and placement of a single fin on the rear of the fuselage, and significant streamlining of the fuselage itself. Roll and pitch for the XM-1 series consistently involved use of elevons; but drag rudders were added outboard of the elevons on the D model. Performance of the XM-1D was exceptional for a sailplane of just 40 foot wing span - it had a glide ratio of 30:1 at 57 mph.

In order to eliminate some of the problems associated with the constant chord wing, Jim adopted a tapered planform for the Pioneer series. Rather than sweep the wing back, however, he swept it forward, resulting in a wing with a straight leading edge. The benefits include a forward CG which increases the elevator moment, an ability to use aileron differential without adverse pitch effects, and an inhibition of spanwise airflow at high angles of attack. In addition, the Fauvel airfoil which had been used up to this time was abandoned in favor of the NACA 23112-75 because of its higher maximum coefficient of lift and lower drag.

The Pioneer I first flew in March of 1968. Impressed with its performance but seeing needed improvements, modifications were made. The design became the Pioneer IA and flew in August 1968. The Pioneer IA has some striking similarities to the Schweizer 1-26: the total wing and stabilizer area of the 1-26 is equal to the wing area of the Pioneer; the airfoils used in the two 'ships are from the same family; the aspect ratios are about the same; both fuselages are of similar construction and aerodynamics. Despite these similarities, the Pioneer's performance was superior. Minimum airspeed for the Pioneer IA was 32.5 mph, and minimum sink was at 46 mph. The maximum glide ratio was 35:1 at 57.5 mph, and speeds of over 100 mph were easily obtained despite a wing loading of just 3.3 lbs./ft^2. To give an idea of performance potential, consider these achievements... The Pioneer IA flew a goal and return flight of 216 miles in 3 1/2 hours, averaging 62 mph.; it reached an altitude of 31,000 feet in the Pikes Peak wave; it was flown as fast as 162 mph without any indication of flutter.

The adoption of a fiberglass fuselage and installation of ailerons and true air brakes separates the Pioneer II from its predecessors. The Pioneer II-D, the latest version, spans 13 meters (42.6') and has a wing loading of 4.4 lbs./ft^2 fully loaded.





Available as a kit, it can be built and stored in a standard 22' garage.

Scaled to 1/4 of full size, the Pioneer II-D has much to offer the modeler. It is of reasonable dimensions and is easily transported. Our own model climbed easily and steadily in a thermal without circling, a characteristic identical to its full sized counterpart. It was also capable of both loops and rolls. Since the controls are identical to conventional sailplanes (ailerons, elevator, rudder and air brakes), there is very little difficulty in making the transition from conventional to tailless flight.

We sold our Pioneer II-D to a modeler in Seattle, but have recently considered building another. With dual tow hooks mounted on the CG, winch launches and aero tows should be relatively hassle free. We would very much like to try the latter method of getting to altitude, particularly with an unconventional design like the Pioneer. Who knows, perhaps you'll see us with a new Pioneer II-D at a future scale event.

Most of the information for this column came from "Experiment in Flying Wing Sailplanes" by Jim Marske. Copies are available directly from Jim at Marske Aircraft Corporation, 130 Crestwood Drive, Michigan City IN 46360. At least two full sized Pioneer II sailplanes are currently flying in the United States, and one in Canada. ■

Genesis

Designed by RnR Products
...by Sherman L. Knight
Kirkland, Washington

Like just about everyone else reading this article, I am addicted, in a bad way. Even though my fiberglass fuselage Alcyone flies great (modified with six servos), and is an excellent contest airplane, as an addicted modeler, I am always looking for the next "breakthrough" sailplane.

Last February, within minutes of each other, I received phone calls from several of my flying buddies. They all said the same thing. There was a new ad for an airplane called the "Genesis" advertised in the AMA Magazine, and it satisfied all the criteria I was looking for. I called the people at RnR Products to verify the specifications and the introductory price. It took me less than a week to make up my mind and order the new kit.

The Genesis is an all new airplane from RnR Products. Unlike their prior efforts, the Genesis is designed from the ground up for thermal duration events. Like most of their other products, the wings are molded (hollow). The molding of the kit is first class. At the appropriate locations in the finish are recesses the depth and thickness of the tape or whatever accessory needs to be glued in place. The resulting wing in terms of smoothness and airfoil cross section is rather amazing.

Kit Content

The kit came carefully packaged in a large sturdy box containing all the parts necessary for assembly. The wings, stab, fuselage (with fin), and rudder are already molded. In other words, there are very few pieces to the airplane. A small plastic bag containing several pieces of hardware, such as carbon fiber joiner rods, hinge seal and gap tape, pre-assembled control rods, clevises and ball links, wing bolt and T-nut connector, etc., were also provided.

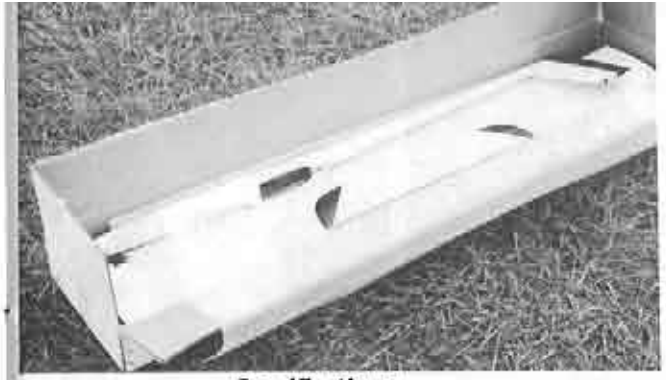
All the essential hardware was provided. The only additional materials needed to complete the kit was epoxy and C.A. glue, various grades of sandpaper, a razor saw, rattail file, iron, Dremel tool, countersink, and various drill bits. All surfaces of the model are prefinished and no painting or covering is required. The kit includes an instruction manual 20 pages long. Because the vast majority of the pieces are already built, there are no "plans". The instruction manual consists of 8-pages of written instructions and 12-pages of photographs and diagrams. The instructions were sufficient, but lacked detail in some areas. Overall quality was very high.

The Wing

The wing arrived in three separate pieces: the center panel and the two plug in wing tips. RnR provides rectangular carbon fiber joiner rods for the wing tip panels. The wing section is the SD-7037 and, with a computer radio, is designed for full trailing edge camber changing, both for thermal and tight maneuvers.

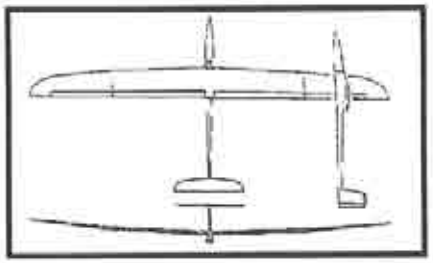
It appears the wing is molded from tip to tip in one piece. The joiner boxes and spar assemblies are already molded in place. The fiberglass work was as fine as any I've seen. It appears that the manufacture simply cuts the wing tips off in the proper location and supplies the bent joiner rod to provide a slight amount of polyhedral at the wing tips. When joined, this results in a tight fit at the highest point on the upper surface of the wing. However, there is a large gap along the entire bottom of the wing. You can leave it this way and simply cover the joint with the provided tape. However, I elected to sand the proper angle at the joiner location for a smoother fit. Personally, I think it was well worth the effort.

The wing root sanded relatively easily with 200



Specifications:

Wing span:	113 in.
Wing area:	855 sq. in.
Weight:	70 oz. (approximate)
Wing loading:	11.7 oz./sq. ft.
Airfoil:	SD 7037
Aspect ratio:	14.2 : 1
Stabilizer span:	23 in.
Stabilizer area:	80 sq. in.
Stabilizer airfoil:	NACA 64A010



grit sandpaper on a two-foot sanding bar. I placed a couple layers of tape over the bottom edge so that I wouldn't accidentally sand in the wrong location.

I also constructed a straight joiner rod out of hard balsa so I could sand a matching leading and trailing edge. The leading and trailing edges of all the wing sections contain a "flash" overhang anywhere between a 1/16 and 3/16 of an inch deep. This is easily sanded off. However, by assembling the wings with a straight joiner rod, I was able to sand a matching leading and trailing edge at the joint.

I like knife edge sharp trailing edges. That's possible with this kit. However, at the trailing edge, I would recommend leaving 1/16 inch of the flash material. Now when you sand the top and bottom to get that knife trailing edge, there is a little additional material to work with.

This is when the mentally difficult but physically easy part begins. You've just spent almost $500 for this perfectly molded wing. Now the instructions tell you to get out an exacto blade and a razor saw and start cutting holes in it. For a couple of hours, I kept finding something else to do. Finally, when I ran out of other things to do I was left with no choice but to begin cutting into the wing itself.

Although I found this part a little nerve wracking, it was extremely easy to accomplish. The plans call for the use of a razor saw to cut out the ailerons and flap in locations that are marked on the wings. The markings on the wings are very easy to follow. RnR Products has actually placed a recess in the surface (formed in the mold) of the wing where all cuts are to be made. You simply follow the line. A note of caution: other modelers assembling this kit and the Synergy 91 went a little too far with the razor saw and actually cut all the way through the bottom side of the aileron. On the ailerons, you only cut the top surface. The lower surface becomes a "living hinge", which results in an extremely streamlined wing section. The location of the flap hinge is different on the top and the bottom so you can't cut through both surfaces at one time. The flaps are hinged on the bottom with what appears to be mylar tape that is extremely high quality stuff. Additional hinge tape is available separately from RnR.

Once the flaps have been cut from the center section, you then glue a curved plastic flap gap seal on the top leading edge of each flap. It provides an extremely smooth transition between the upper surface of the wing and the flap when the flap is mixed with aileron. However, when the flap is extended past 45 degrees or so, a gap does open.

The ailerons are gap sealed with a white electrical tape. Again, the leading edge of the aileron surface is recessed half the width and the thickness of the tape. When properly applied, the tape gap seal smoothly flows into the surface of the wing.

Servo hatches are cut in the bottom of the wing by cutting the hatches on three sides leaving the front side as a flexible hinge. The servos are then installed, and the hatches are taped closed with some of the mylar hinge tape provided in the kit. Make sure that you apply the tape to the hatch cover firmly before pushing the servo hatch into place.

The wings are already pre-wired. The wir-

ing runs from a location immediately above the wing saddle to each servo location.

The kit provides a 15-pin connector for use when connecting the receiver to the wing servos. However, this connector weighed nearly 7/10's of an ounce and I elected to replace it with an 8-pin deans connector. I then glued the female connector permanently into the wing. The 8-pin connector works extremely well, and has practically no weight.

Some of you might ask, "How do you connect all four servos and their 12 wires to an 8-pin connector?" It's really quite simple. All your servos are powered by the same power supply. Connect all the positive terminals to two of the pins, connect all the negative wires to another two pins, and that leaves each signal wire with its own separate pin.

You now have to install flap and aileron horns and the servo linkage. Typically, I undersize all my exit holes and then go back and carefully file them larger so that they are only as large as necessary. On this particular model, the size of the openings is of more concern than usual because all of the aileron and flap linkages exit the top of the wing.

I was concerned with the installation method of the servos. They are glued in place using a thick mixture of epoxy and microballoons. As someone who has suffered through a multitude of servo gear failures in the last year, this was a relatively nervy experience. I elected to use a combination of RCD Apollo 24 and High-Tech MH 80 micro servos both in the wing and the fuselage. In all areas except for the rudder, the gear sets are metal. There appears to be more than sufficient power and authority to move the control surfaces. The servos can be removed by pushing on the top surface of the wing and "popping" them out.

Several other Genesis have been constructed in the area prior to mine. They all had the same complaint. Not enough aileron throw. To increase the throw, continue to cut the end of the aileron approximately 1/4 inch ahead of the aileron. This eliminated binding of the aileron when traveling in the up direction. Further, I elected to overhand the gap on the upper side of the aileron using a piece of folded 220 grit sandpaper and sanding a gap approximately 1/16 of an inch. I was able to obtain about 1/3 more aileron throw and am pleased with the overall response of the model. RnR recommends that you mix 25% flaps to ailerons increase role rate.

With the servos in place and using the mixing features of my JR 347 radio, I was able to obtain a 50% flap to aileron ratio. This improved the roll rate significantly.

Fuselage

In the Pacific Northwest, we often have days of low overcast and no lift. It is important to build an airplane as light as possible. (You can always add ballast if you want to.) The wings didn't leave much, if any, opportunity for weight reduction, so I was hoping that I could find some in the fuselage.

The control mechanism for the tail feathers is all solid wire, push/pull. The stabilizer is fiberglass over rochelle foam reinforced with carbon fiber. The rudder is also a built-up piece of hollow fiberglass.

In an effort to reduce tail weight, I elected to construct a built-up rudder and to replace the rudder control system with pull/pull cable. The gross weight of the rudder and control system supplied in the kit was 1.7 oz. The gross weight of the built-up rudder with the pull/pull cable was .3 oz. Not only did this result in significant reduction in tail weight, but also results in a reduced amount of counter balance nose weight. I use waxed sail repair thread for my rudder pull-pull cable. I strongly recommend using twisted rather than braided cable. This will greatly simplify your tension adjustments. Simple adjustments to the tension can be made by twisting or untwisting the cable!

Simplify the pull-pull cable system by using one continuous cable for the entire setup. Drill a hole through the leading edge of the rudder perpendicular to the direction of flight. Reinforce the hole with thin CA or install a small brass tube. (Make sure that there are no sharp corners that may cut the cable.) Connect a clevis (or other method of connection) to one end of the cable. Snake the loose end down the fuselage to the rudder. Run the cable through the hole in the rudder, wrap it around the leading edge and back through the hole in the rudder. Now snake the cable back down the fuselage to the rudder servo. Connect the second clevis to the end of the cable (cut to the right length) and connect to the servo. If the cable length is close, just twist or untwist until you have the desired tension. Finally, the distance between the two holes in the servo arm should be exactly the same as the length of the hole (or tube) in the rudder.

I also elected to go with micro servos in the fuselage. I was able to place both micro servos at the very front of the molded servo tray by angling them at a 45 degree angle. The pull/pull cables cross in the center, and travel directly from the servo to the rudder without interference anywhere in the fuselage. Also, the fin is wide enough at the location of the connection of the pull/pull cables to the rudder that all of the cabling is internal and cannot be seen from the outside of the airplane unless you have full rudder throw one way or another. (Note: the rudder supplied with the kit also uses an internal wire guide so that there is no visible rudder horn from the outside of the kit.)

The servo tray is molded into the fuselage. This is a very nice feature. The cutting of openings in the tray is necessary and a Dremel tool with the sanding wheel is mighty helpful. The trailing edge of the slip-off nose cone needs to be sanded to fit. The joint between the slip-off nose cone and the fuselage is not as good as one you can make yourself, but the results are certainly acceptable.

The receiver was then slid up underneath the built-in servo tray against the last servo. Finally, the recommended 800 MA battery pack was replaced with a 1200 MA battery pack.

Photographs and the parts list identified a carbon fiber bellcrank. However, the bellcrank that I received looks like it was stamped out of 26 gauge aluminum. Although it appears to work well, I'm not sure if it's lighter or heavier then the carbon fiber bellcrank. (Earlier kits received by several of my friends included the carbon fiber bellcranks.)

The bellcrank system and the rocker assembly for the T-tail are very simple to install. I got lucky. I simply drilled holes in locations stamped on the side of the fin, and the T-tail lined up perfectly. If you're having a problem obtaining alignment, I would recommend aligning the stabilizer pivot tube differently than that recommended in the plans. The plans simply recommend using a triangle to obtain a 90-degree angle between the fin and the stabilizer. However, neither the fin sides nor the stabilizer bottom provide a clean 90-degree angle. Try the following instead.

Leave the alignment of the T-tail rocker arm for one of the very last things you do. Assemble the center section of the wing on the fuselage. Enlarge the hole on one side of the T-tail pivot tube so that it can be properly aligned.

Place a piece of graph paper on a flat workbench, and then turn the entire model upside down. Place a couple of foam blocks under the wings so that the fuselage is fairly parallel to the work surface while the T-tail is resting (upside down) on the work surface. Now align the trailing edge of the wing with the grid lines on the graph paper. If your foam blocks are exactly the same height, the T-tail will now be level with the wing. You then move the trailing edge of the stabilizer back and forth until it also matches the same grid as the wing. Tack the joiner tube in place with C. A. glue, hit it with some kicker, turn it over, and then jam fit the remaining area around the pivot tube with epoxy glue. This will result in a perfectly aligned T-tail with minimum amount of fuss.

The method of attachment of the T-tail and its related rocker arm assembly is all internal and extremely well streamlined.

The fuselage wing saddle is not as accurate as I would have expected. So I mixed up some epoxy with microballoons and a little bit of chopped carbon fiber and created my own. I was hoping this would reduce the amount of oil canning of the fuselage in the area where you grip it prior to launch. However, that was not the result. Be careful when gripping the

fuselage when launching with a winch, or more importantly, when pulling back a very stiff high start. Several of the Genesis' out here have resulted in surface cracking around the area of the wing saddle, which we believe is from gripping the sides of the fuselage too tightly. There are no formers for bulkhead in this area of the fuselage. If you've got a heavy hand, you might need to install some.

The wing saddle sits above the fuselage on a pylon. If you've ever seen a WWII PBY CATALINA Flying Boat the concept is similar but not as drastic. Free flighters have been using the Pylon to increase stability and reduce parasitic drag at the wing to fuselage connection for years. The pylon also allows the flaps to clear the ground by more than 3/4" in the full down position. I like the pylon wing mount. However, without actual wind tunnel testing it's difficult to tell if it actually increases the efficiency of the model.

The Finish

At the time I ordered my Genesis, I couldn't choose a color. I had to accept the color provided. All four of the Genesis' received in this area have white tops and red bottoms. I'm not sure if this is going to cause any confusion down the road. The finish on my kit was very good. The white tops and fuselages were solid with no fish eyes or swirls. Same is true for the red bottoms. However, this is not necessarily true for some of the other kits received by my buddies. One of the kits received had very little white paint on the upper surface of the fuselage. This resulted in a dishwater white with many swirls and color bleeding through. Another kit was somewhere between the one just described, and the one I received, which had no color faults at all. Also, the word ROCHELLE could clearly be read through the red bottom paint on the stabilizer received by one of the other modelers. Because the letters are an inch and a half high, it shows through the paint quite clearly. (He's been joking about changing his name).

The only significantly disturbing finish detail that was in every one of the kits inspected was a very apparent and visible parting seam in the fuselage. I didn't want to add any more weight to the model, so I didn't paint it. One of the other modelers came up with the idea of using automotive trim tape to cover the parting seam. His idea works pretty darn well.

Flying

I balanced the model with the C.G. approximately a pencil's width behind the location indicated in the instructions. This required an addition of 2.6 oz. of nose weight. Once I got to the field, I was disappointed with pitch control, the model porposed whenever it flew into the wind, and severely failed the dive test. After a morning of flying, I removed 2.4 oz. of the nose weight. I'm left with .2 of an oz., and I'm considering taking that out.

The first winch launch was downwind. Although I wasn't satisfied with pitch trim, the plane flew surprisingly well and the first flight lasted about 12 minutes.

More elevator compensation was necessary than indicated in the instructions for pitch control with full flaps. Probably the most amazing thing about this airplane is how well it slows down. I thought my Alcyone (at 63 oz.) slowed down awful well. The Genesis slows down even better. I haven't had a chance yet to practice spot landings, but I'm impressed with the ability of the airplane to resist rolling from cross winds on approach. The zooming ability of this airplane on launch is truly amazing. The wings simply do not flex. With a slightly heavier wing loading than what I'm used to flying, it just seems to climb forever during the zoom. I've only got a dozen or so flights on the aircraft so far. Many of these were for the purposes of setting up control throw or compensation mixes. But, I'm impressed so far. More later.

I entered the Genesis in a one-day club competition with only 13 flights under my belt. I was leading after the first 4 rounds, and was impressed with the survivability of the airplane. I didn't have the elevator compensation for full-flap fully dialed in, resulting in some deep lawn dart type landings. On two occasions, I buried the airplane up to the end of the nose cone. There was no damage.

The fifth flight was a 3-minute precision. I was able to nail the flight time, but I also nailed my leg on landing. I had made some changes to the elevator compensation with full-flap, and I overflared at the last minute. The right plug-in wing tip hit my leg so hard it drew blood. After contact, I limped for the next 20 minutes.

I had been adjusting the elevator compensation and went a little bit too far. This time, instead of landing, the airplane flared and flew right into my leg. Although the contact was out of the plug-in wing tip, damage was very light. A balsa wood block is used to hold the wing skins apart right before the flap and aileron. This balsa wood piece fractured down the center, but was easily glued back in the field with thick C.A. The 2-56 thread rod used between the servos and the flap linkage was bent almost 25 degrees, but the mylar flap hinge tape was undamaged. A couple of cracks appeared in the fuselage around the wing pylon, but nothing major. None of the servos came loose. Oh well, maybe in the next competition.

I have removed all of the lead weight used to trim the model. Once properly trimmed, the model has an amazing speed range. It slows down to a crawl. The instructions locate the C.G. 5 7/8 inches back from the nosecone/fuselage joint. Final trim located the C.G. 6 5/8 inch back from the nosecone/fuselage joint. I'm used to flying airplanes with lower wing loading and learning to fly at higher speeds has been more difficult than I thought. Later, the tow hook was moved back the same amount and the resulting launch is almost vertical.

After removing the nose weight, and building the model with a built-up rudder, the final flying weight of the model is 64.6 oz. If another 5 oz. of weight could be lost, this would be a truly phenomenal airplane.

I used metal gear high-tech HS80's on all control surfaces except the rudder. (I didn't think metal gears there were necessary so they weren't used.) The servos have taken an incredible beating and none have stripped. However, the metal gears don't allow very accurate centering and I'll probably be replacing them in the future. I'll either replace the elevator servo with a dual-ball bearing servo or replace the elevator and both the flap servos with JR-341s.

Even though the model flew great, I was still dissatisfied with neutral elevator settings. Stalls were still too frequent and consistent thermal turns in turbulent air were still to difficult. I was just about to change the elevator servo to dual ball bearing under the belief that I had a centering problem. After reading about turbulators on the bottom of the elevator of a ASW-24 I decided to try it on the Genesis first.

I turbulated the bottom of the elevator with two layers of automotive trim tape at approximately 30% of chord. I was truly flabbergasted by the change in flight characteristics. The model required four clicks of down trim to compensate for the turbulator. The dead spot at neutral elevator completely disappeared. Pitch control smoothed out considerably. I would highly recommend a little experimentation.

Conclusion

This is an extremely well-priced kit. Although I spent approximately 35 hours of construction time, it could have been done in as little as fifteen. It has exceptionally good flight characteristics and thermals very well. A computer radio is necessary. If you can mix elevator to trailing edge camber and increase camber approximately 1/8 of an inch with full-up elevator, it does amazing things with the flight performance.

This is a great airplane. After approximately 60 flights and turbulating the elevator, I've become very familiar with this aircraft.. Many people at the flying field have asked me if it flies better than the Alcyone. It doesn't fly any better, it just flies different. The Alcyone is a slower flying airplane, and can thermal better than any plane I own. It will stay up in air warming up off the grass and is the most spiral-stable airplane in my inventory. The Genesis has a much higher speed range and will out climb the Alcyone in strong thermal conditions. It is very resistant to cross wind induced roll which has resulted in higher landing scores.

For the price, this airplane is hard to beat. It thermals great, flies great and lands slow. You'd be happy with this airplane, and I strongly recommend it. The Genesis is available from RnR Products, 1120 Wrigley Way, Milpitas, CA 95035, or you can call them at (408) Wings-51. Although the aircraft was originally introduced at $395, the price has recently gone up to $489. ■

Sherman Knight is a member of the Seattle Area Soaring Society and flies out of the 60-Acres flying field in Redmond, Washington.

■

Ridge Writer

...by Mike Bamberg

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Cards & Letters

I'm back in the saddle again (or is that Jerry's line?). As I reported last spring I became a flight instructor this year. The amazing thing to me is that this summer I have flown over 300 hours as an instructor. I thought maybe I'd get 50 or 60 hours, but 300 is just crazy. The other crazy part is that most of that time came from flights of about 1 hour in length. I'm sure having fun!!

In the slope flying arena, I've been absent from active participation due to the reason noted above, but there have been a few letters come in and several future activities to talk about.

In the letter department, Jef Raskin kindly wrote back regarding my comments on the Anabat and the Thermic series of handlaunch gliders. I obviously need to see Jef fly the Anabat series to fully appreciate the design. He suggests that you re-secure loose servos with RC-56 glue. It will really lock them in but is easily removed when you finally trash the plane beyond repair. One of the most satisfying aspects of the design, to me, is the bounce factor. It takes a lickin' and keeps on tickin'. As I have mentioned before, one of the fliers in this area has built a series of stand-off scale planes using the techniques from the Anabat construction. They fly pretty well and look great in the air, but don't look too good close on the ground; wrinkles ya know. (Maybe you'd better not look too closely at me either. Same reason.) Jef also sent along several plans for a series of hand-launched gliders he and others have been using at the local kids' museum to teach about flying. These are very much in the same vein as the Thermic series and well documented. Jef has offered to share these designs with other groups doing similar educational programs. Drop him a line at the Anabat factory, cost is $5.00 for copying and postage. Jef also admits to hoarding several kits of the Thermic 18 hand-launch. It is a great outdoor flier in the hands of a strong launcher, but it's a little big for first time pilots. Jef reminded me of the first R/C glider I had, his was almost identical, which was a Thermic 50 with a single channel super-regen with escapement actuator. I know that's Greek to most of you but it was the starting place for anyone flying gliders in the late 50's and early 60's.

Another letter came from Bill Williams of Pendleton, Oregon (flag waving and cheering in the background). I wish I could share the whole letter with you, as he has a delightful writing style. Maybe we could get him to write a short article or story for *RCSD* (hint, hint, nudge, nudge, hey Judy). He had several comments regarding the Thermic series and using them as free flight slope soarers in Colorado during his youth. He also mentions the wealth of information available from the Zaic Yearbooks and "Circular Airflow" book. These great books are still available from the AMA; check your membership paperwork for a catalog listing prices. Bill re-acquainted himself with modeling by building 'Nordic' style electric powered free flights. After losing both of them, he decided it would be better to build them a little bigger and put a radio in to get them back. He then addressed an issue that many of the long time modellers often discuss. How to help young people become involved in aeromodeling. I had previously commented on about using free flight as an inexpensive entry to the hobby. Bill's comment is that he's not interested in losing planes in free flight when control is possible and the kids know that too. He goes on to say, "Still, I'm a bit disturbed by the direction modelling has taken. It's not that I think people shouldn't fly $1000 or more ships, but I'd like to see more effort and technology go into producing simple and cheap planes that fly well." He then comments on the Anabat series, and the new COX gliders that Larry Renger designed as good steps in that direction. "But a raw beginner, especially one without some background in flying can have a hard time getting started in R/C. I think it's easier, if more expensive, to get into full-scale piloting than to become proficient flying a model." Another modeller in the Portland area, Don Peznecker, is also a full-scale pilot (He also flies full-scale planes.), and agrees with the last sentiment. One of Bill's favorite training planes is an electrified Oly II. Coincidentally, Don Peznecker also does a lot of training with the same set-up. They both find that beginners can handle the stable characteristics of the Oly II.

Another letter just arrived from Gregory Vasgerdsian, and was also about the Thermic series of gliders. He also has fond memories about the little gliders and the high quality of the designs and plans. Greg is also involved in the NASSA scale organization and sent along a picture of his new scale project. (In talking on the phone, he admitted that it was actually one of about three in process.) It's a Polish design from the early '60s called a Zefir 2. He's building it from plans distributed by Bob Holman. Greg only sent the fuselage picture at this time but when I get a picture of the completed project I will get it to Judy to publish.

Several months ago I wrote about Rolf Zurcher, a modeller in the Vancouver Washington area. He is busy making lots of planes using vacuum bagging and some unusual lay-up techniques. At the last Portland Area Sailplane Society meeting, he showed some Gentle Lady wings he had completed. Finished weight of the glassed foam wing was 1/2 ounce heavier than the stock wing!! He uses colored wrapping tissue as a outer layer (veil cloth) in the lay-up with just one layer of 1.5 ounce glass over white foam. There is a spar inset into the upper surface for compression strength and that's it for the structure. The polyhedral joints have a 1 inch reinforcement strip. Rolf has been using the tissue technique for some time. I have tried using silkspan as a veil, but it still leaves a little bit of pin holes of its own sort. The wrapping tissue is a 'harder', smoother paper. The problem then is getting the paper to wet-out. Rolf has been using the West Systems epoxy with the tropical hardener which gives a little longer pot life and seems to improve the wet-out. One of the bonuses to the tissue paper is the many colors that are available and the patterns that can be layed-up with the paper during bagging. Good stuff!

Most of us know the biggest problem with slope flying: what do you do when the wind doesn't blow, especially when there is a race scheduled? Several of us in the Portland club have decided to try to be better prepared for those days. There have been several articles in other magazines describing the European "Speed 400" class racing. This is an electric pylon racing class using the Graupner Speed 400 electric motor and 7 cells. Those are the aircraft limitations. The normal course is about 300 meters in length and the object is to make as many laps as possible in 4 minutes with a timed last lap. See Mitch Poling's article in the October *Model Airplane News* for complete details on the course and such. We have about 12 people building the racers at this time. You can build one, complete with motor, prop, speed control and airframe for about $100. Anyway, we'll be trying this out over the next few months and I'll report on the result of our design and logistical efforts.

Until next time, keep those cards and letters coming (Right!), and if the wind doesn't blow, get a crowd at the bottom of the hill to hyperventilate! (In the direction of the hill, of course!) ■

Ridge Writer

...by Wil Byers

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SOARTECH #10 hits the street!

That's right SOARTECH #10 is out and it is packed full of useful information. I just got mine tonight (11/01/93) and this has got to be one of the best SOARTECH I, yet. Let me put it a better way, **THIS IS A MUST HAVE ISSUE!** #10 includes the following:

All Molded F/G Sailplane Construction - Martin Bamert
Eyesight and Soaring from *Silent Flight* - Herk Stokely
Stability and Control Calculations - Jim Stephens
A Book Review - Max Chernoff
The Selig S-4233 Airfoil - An Analysis - Oliver Wilson
Airfoils for Aerobatic Sailplane Wings - Jef Raskins
Another Look at Wind Tunnel Results - Martin Simons
Towing Model Sailplanes by Electric Powered Winch - V. & L. DeFilippis
Two PC Programs for Structural Design of Model Wings - Steve Pituch
Downwash at Tail Due to Circulatory Flow of Wing - Max Chernoff
On Wing Load Computation - Max Chernoff
The advanced Plank (AP 86) Planform - Denis Oglesby

The articles presented in SOARTECH #10 are well worth $16.00 US and $20 for other countries. In fact, the construction article presented by Martin Bambert alone is worth the price of this issue. However, all the articles are superb as best I can tell in the three hours that I have reading it. I especially, like the fact the program source codes are given. And, as Herk says, "They also contain very valuable modules that relate to input and display of data as well as output of results. A program writer is often challenged more by input, display, and output than by the calculations that produce the answers." So, you can see this is a great buy for those wanting to expand their horizons in R/C soaring.

Another absolutely outstanding book I just purchased, is "Airfoil Design and Data" by Professor Dr. Richard Eppler.

"Airfoil Design and Data" is an extremely technical book written by Dr. Eppler to explain the logic and design philosophy behind the development of his Computer Program for the design and Analysis of Low-Speed Airfoils. It explains the latest state of the art work prepared by both Dr. Eppler and Dan Somers on a program for the design of low-speed airfoils. This book represents more than 30 years of work by Dr. Eppler on the design of airfoils.

The book particularly focuses on the program and a methodology to solve the potential flow problem for given airfoils. And, how one designs airfoils from the properties of these potential flow distributions. His book then further explains how the solution of the potential flow analysis and design problems can lead to the calculation of boundary layers and the total lift, drag and moment coefficients.

Dr. Eppler's book also presents a number of new airfoils which he has developed with his computer program. However, these airfoils appear to be designed mostly for full-scale aircraft. Nonetheless this is a valuable resource and one you may be interested in reading. It is available from: Springer-Verlag New York, Inc., P.O. Box 19386, Newark, N.J. 07195-9386. Their telephone number is 1-800-Springer. The cost of the book is $79.00 plus shipping and handling. ■

NASSA News

NORTH AMERICAN SCALE SOARING ASSOCIATION

To: NASSA Members

...from Byron Blakeslee, NASSA #002

Purchasing Scale Glider Kits

NASSA has prepared this listing of scale glider kits and sources to help you in selecting and purchasing scale sailplanes. Robin Lehman, our aero-tow enthusiast member from New York City, supplied much of the information. Robin has many years experience in dealing with German makers and lent me his collection of catalogs, from which most of the data came.

Robin also supplied me with a copy of a sailplane listing that appeared in the German 'FMT' magazine in 1991. It contained 65 scale glider kits of under 4.5 meters wingspan and 39 of over 4.5 meters! You can see that this list more or less just scratches the surface of what is going on in Europe primarily Germany. Scale glider flying, both on slopes and flatland, is a very popular and highly respected avocation in Europe.

All NASSA members are invited to write NASSA HQ to add kits and makers to these lists. If we work together and share information, everyone will be aided by the accurate and up-to-date data.

Hopefully, more domestic sources of scale glider kits will be coming along. For those who want to take the plunge and order directly from Europe, this is Robin's suggested procedure:

Phone and take pot luck (remember 4 hour time difference from Eastern time). Some makers will speak enough English to communicate price and deliver information. If phoning doesn't work, try writing. Ask for a catalog and latest price list. Cash US dollars may be sent to pay for catalog and postage.

After you select a kit (with all extras), establish exact payment and shipping method with maker. Payment by bank wire transfer or money order is best. Do not expect quick delivery from smaller makers. They may have a backlog of six months or more!

Shipment by air freight is best. UPS, Federal Express, etc. have "fast" and "slow" schedules; "slow" takes about 2 days longer but is cheaper. If several people go together on an order, shipping cost per kit will be much lower. The use of an international shipping company will save headaches. Try Kuhn-Nagel, 1-800-237-9305. They are based in New Jersey, but have affiliates in most major cities. Your kit will end up at US Customs. A duty of 15% is charged for "toys".

Some German makers will not ship to the US because of the fear of liability lawsuits. ALRO is one of the bigger makers of large scale kits. They flat out told Robin they all refuse orders from the US!

A few hints about aerotowing. Any size glider can be towed by a power plane, however they should be matched so the tug does not have too much or too little power to tow the glider at a reasonable flying speed. The glider will ordinarily become airborne first. It should fly just a few feet off the ground until the tug gets flying. The glider can use spoilers to retard lift during the whole tow. During the climb, the tug should make large sweeping turns. The pilots should stand near each other so they can communicate - especially the tug pilot telling the glider pilot when and which way he's turning. The glider pilot should strive to maintain his position directly behind the tug, always keeping the towline taught. A jerking towline can break the line or releasable towhook fitting. Small gliders may tend to be "jumpy" because of their light weight and quick response. Large gliders tow more smoothly because of their higher inertia and slower response.

The tow plane should have the tow-line fastened as close to the CG as possible. On high wingers, the preferred point is just behind the wing. Towing from the tail is possible (and more realistic), but is a recipe for disaster unless both the tug and glider pilots are well experienced. If the glider gets out of position, it can swing the tug's tail and overpower the pilot's control.

The towline (50 to 100 feet of (approx. 100-150 lb.) monofilament with 3 or 4 red streamers tied to it) must be detachable from both the glider and tug for obvious safety reasons. The glider pilot should tell the tug pilot when he's ready to release. As with full-size practice, upon release, the glider should turn right - the tug turns left to maximize separation and minimize the risk of collision.

Because large scale sailplanes are so popular in Europe, they have developed purpose-built tow planes with sufficient power to tow third (and larger) scale gliders. For our purposes, a large high-winger like a Sr. Telemaster (available from Hobby Lobby) powered by a large gasoline engine like a Quadra is a good place to start. NASSA will have more information available on towing and tow planes.

A Listing of Scale Glider Manufacturers & Distributors

DAVE HILL makes only one scale ARF kit at this time: a 1/4 scale Libelle. Others coming.

EISMAN is a full-line manufacturer, producing sport, F3B, electric, gas and scale glider kits of good quality.

FIBERGLASFLUGEL aircraft are ARF models of all-molded construction. Quarter scale models, such as ASW-20 and Salto are extremely good flyers, especially on the slope, with a wide speed range. 1/4.5 models are also good flyers. Problem with fuselage is that parting line requires sanding. Also quite expensive.

WINDSPIEL has FGF catalog in English available for $10.00.

GEWALT is a "glider super-store" with probably Germany's biggest range of "own brand" glider kits of all kinds. Kits assembled from parts made by others. Many accessories carried also. Wonderful catalog!

GRAUPNER is the world's largest model company. Kits are aimed at "mass market" and

not of the scale fidelity that many of the smaller German makers produce. Robin Lehman says the 4 meter Discus is excellent flyer.

HOBBY LOBBY offers a fairly complete free catalog, (heavy into electrics). HL stocks only a few Graupner and Krick scale glider kits. Graupner kits not shown in catalog may be available.

ICARE took over Raymond Size's scale glider production in the spring of 1993, after Raymond went out of business. Only two small ARF slope ships available now, but others should be added. Info available for $1.00.

INHOFF sells a superscale ASW 22B for $12,000 - which must be the world's most expensive model. Robin Lehman says Inhoff is "very" difficult to deal with.

KRAUSE, Per Robin Lehman, tends not to reply and is difficult to deal with. If you can get through the red tape, expect a long delay. However, gliders are excellent and worth the wait. Discus, SB 9, Salto and Standard Libelle are excellent flyers and good airplanes.

MULTIPLEX. Per Robin Lehman: I have personally flown Alpina Magic, DG 500, Alpina CS and Ka6E (which needs down trim on stab)and have found them to be excellent ships and very good kits. If you deal with Multiplex directly, they seem like excellent people. Beemer is US distributor, and if he has an airplane in stock, that's probably the best way to go. BEEMER has Multiplex catalog in English available for $12.00.

ROBBE. Per Robin Lehman: I have put several people into Robbe's ASW 24, which is a beautiful kit and an excellent flying airplane (needs down trim). It's very easy to fly and extremely light! From what I can tell, you can't go wrong with any of their glider kits.

RODELMODEL. Per Robin Lehman: I flew their ASK 21 fly and it was an easy to fly, docile floater. I also flew their Grob 103, which was not a good flying airplane - the kit is a lot of work and the end result not worth the trouble. Very slow in response.

ROEBERS. Per Robin Lehman: I've never ordered an airplane from them, but have flown the Discus and Twin Acro. Both are very nice flying airplanes.

ROKE. Per Robin Lehman: I have flown Roke's ASK 18, Twin Astir, ASH 25, SB 10 and DG 202G. I have been very pleased with how all his airplanes flew, especially the quarter size ASK 18, which has to be about the easiest glider to fly I know. A real honey! Roland Kern speaks English and is quite easy to deal with. His shop is small - expect delays in delivery.

ROSENTHAL is a well-known and high quality fuselage and composite parts maker. Workmanship is superb. You can buy his scale glider fuselages and make your own wings, or (as is common in Germany), go to a wing maker (like Hans Muller) for a custom built set of wings.

ROWING per Robin Lehman: Rowing makes a variety of airplanes really ARF. LS4 and LS6 are excellent airplanes. LS5 is also good but a bit fragile... definitely not for beginners as it will take no abuse. Mr. Sommer speaks very good English and is easy to deal with. Good models but pricey.

RZ per Robin Lehman: The large ASK 18 is a real honey. The Pilatus is highly aerobatic and an excellent flying airplane. These are extremely nice people to deal with (Thomas speaks English), and for the money, I think just about the best buy. As far as I'm concerned, you can't go wrong with these people. Excellent airplanes and just about the least expensive.

HANS MULLER per Robin Lehman: I have one of his airplanes and he does excellent work. Dan Troxell has dealt with him first hand and he seems like a good person to deal with. No problems except Hans speaks no English (Frau Muller speaks some English). Hans makes wood veneer over foam wings only; his fuselages come from Rosenthal, or other makers.

VIKING MODELS, USA makes fuselages, only. Some models have plans or other documentation available for completion of wings, etc. Excellent quality at very good prices. Jerry makes competition and sport glider fuselages, also. Free catalog available.

WANITSCHEK is a full-line model manufacturer and catalog is pretty complete. Models are good flyers but are somewhat dated in terms of airfoils. Wings are of built-up construction. Fuselages are extremely nice; builders may want to make their own foam-core wings.

WIK per Robin Lehman: WIK makes a whole variety of quarter-sized and fifth-sized ARF all-glass airplanes. Was out of business for a while, but now back. I have their Speed Astir which is an extremely nice slow-flying floater (contrary to the name).

NASSA members may obtain a complete list of manufacturers and their addresses by sending a Stamped Self Addressed Envelope (S.A.S.E.) to NASSA. Also, included with the address list is a kit specification sheet that provides data relevant to specific models. Our address is: NASSA, P.O. Box 4267, W. Richland, WA 99352. ■

A big country fair - with wings. Photo by Sandy Hunter.

The Biggest & The Best
The 1993 Visalia Fall Soaring Festival

The Twentieth Year

...by Al Doig
Escondido, California

"Most times, Visalia is a road sign off highway 99 in Central California. It's just a few miles past the Pixley water tower. For the past few years though, in October, I've turned off at the sign and joined the CVRC gang in what has become the biggest contest in the West. With a show of top-loftiness, they limited this year's entries to 100. Do you know, they were turning them away. They could have had 206 instead of 106 flyers." For those of you who are puzzling a bit, this is a quotation from my Soaring column in *RCM* in 1980. It reported the **1979** Fall Soaring Festival in Visalia, California! And that was the seventh year of the event!

To assume that interest in the Fall Festival has grown by leaps and bounds is not exact. It is the organizational capability of the CVRC organization that has increased to meet the interest of the soaring community. The 1993 entry list was chosen from the first 225 entry blanks post marked August 2, 1993. 293 applications were received. Only 8 entries were allowed per frequency. It was therefore mandatory to list alternate frequencies. Paring the entry list was extremely difficult and in the end some 68 applications were rejected. On Saturday morning, October 2, 1993, a field of 214 flyers were in the starting blocks. There were 15 team entries drawn from over 27 Soaring Clubs. Flyers came from 7 states (Arizona, Colorado, Florida, Illinois, Nevada, Tennessee, and Vermont), and 3 foreign countries (England, Germany and Guatemala). Soaring columnists Byron Blakeslee from AMA *Model Aviation*, Dr. Don Edberg from *RCM* and Bill Forey representing *Model Builder* signed in. Don Lowe, AMA Prexy, was observed shaking hands and kissing babies. Also present was Colonel Robert Thacker, from San Clemente, California, complete with his traditional black string tie; Col. Bob hasn't missed a one of these country fairs.

Approximately 20 big RVs were parked on the lawn. Many of these arrived a day ahead to secure a favored spot. Tents were scattered here, and there also campers in abundance. At least 30 shade covers were erected along the fence line. A vendor row was set aside for display of

Pilots raise ships for fly-by photo. Photo by Sandy Hunter.

1993 Fall Festival raffle - photo by Ed Slobod

Part of Saturday's on-field BBQ entertainment - photo by Ed Slobod

wares. Most were giving show discounts and moving merchandise at a brisk pace.

Saturday night featured a big barbecue of roast beef and chicken. This was followed by a first rate magician who entertained for the better part of an hour.

Speaking of raffles, this one is the living end. Picture huge tables stacked with goodies. The total value of raffle prizes exceeded $10,000. I think it is worth a paragraph to describe the magnitude of this raffle, so bear with me. The attending manufacturers contributed the following: Saturn 2, 2M Shadow, Sparrow, Monarch, Vacuum pump set, Feather Cut foam cutter, Shadow, Auto Vacuum system, huge bundle of balsa, a completed 2 meter Super V, Vision radio, Falcon 880, Thermal Eagle, and full size glider lessons. Additional manufacturer contributions were: Gemini, Genesis, 2 Dynaflite kits, Airfoil Program, Renegade, 100" Alcyone, 6 Ridge Runts, 4 Field Buddies, Banshee, Futaba computer radio, electric sailplane, and 2 subscriptions to *R/C Soaring Digest*. Wait! We are only started! CVRC and merchants of Visalia donated: 19" Color TV, 2 12 speed mountain bikes, large battery charger, 2 power trimmers, torch set, 2 transmitter cases, 10" table saw, drill press, chain saw (for sailplane retrieval), 2 handmade quilts, Ultima, 2 Sagitta 600s, Gemini, Cumic Plus, Legend, Meteor, Spirit 100, gas BBQ, Yahoo, plus a whole herd of stuff. Impressed? WOW!

The CVRC field is excellent. It is on 11 acres of leased farm land. 360 acres of cotton fields surround the flying site. Initial development costs of $8000 were paid from proceeds from previous Fall Festivals. The launch and landing areas are grass. This was laser bladed to absolute flat. This permits flooding for watering. Mowing, charging, and launch equipment is housed in solid steel enclosures (to prevent reoccurrence of equipment theft). Four launch stations are on concrete pedestals. 115 volt A.C. is available at each pedestal for battery chargers. Each winch is shaded by an umbrella and cooled with an electric fan. Each winch station is serviced by an automatic retriever.

1993 Fall Festival raffle - photo by Ed Slobod

Saturday on field BBQ - photo by Ed Slobod

During the approximately 12 hours in the two days of the contest, more than 1575 launches were required. This is 131 launches per hour, or more than one every 30 seconds. The rate mandates not only first rate equipment but several shifts of 9 experienced and trained operators on duty for the full 12 hours. One winch is always off line for cooling. The remaining three each require one operator and one runner (to retrieve the chute and hook up the sailplane). Two equipment men help with line breaks and cooling towels for the winch retrievers. One winchmaster calls the launches. Five landing judges are on duty to record landings and time. Two people man the transmitter impound. Two scorers man the computer scoring trailer. Three are required to schedule flight call-ups and keep the flight groups moving. I've not even touched on the people selling raffle tickets and providing general service. Behind the scenes, for the entire year, are the grunts, arranging food service, planning the barbecue, scrounging up raffle prizes, hiring porta-potties; and I haven't even begun to scratch the surface of what it takes to put on a contest of this magnitude.

There was also, in conjunction with all this mish-mash, a soaring contest. Conditions were good, but cycling. Both days, launches and landings were down-wind. And was the competition stiff? The entire U.S F3B team was there, as well as most of the best of the West soaring pilots and a team from England, a second from Germany, and another from Guatemala. Saturday, the task was 4 rounds of 3 - 5 - 7 - 5. Sunday was 3 - 6 and 8 minutes. Landing was in three concentric circles of .75 meters, 1.5 m and 3m diameter. The inner awarded 20% of the flight points. Next was ten and the outer circle was 5%. Speaking of tough, one noted flyer was 4 points off perfect at the end of Saturday's rounds. On Sunday, he aced the 3 and 8 minute flights. However, on the 6 minute round he collected 3:36 and zilch. He wound up 21st overall. How's them apples? The last round of 8 minutes was most critical and changed lots of places. Making all of the 20% landing points was mandatory.

Everybody won. But the top ten in the record book are: 1. Darryl Perkins, 2. Joe Rodriquez, 3. Mark Triebes, 4. Richard Burns, 5. Scott Meader, 6. Les Peterson, 7. Tim Renaud, 8. Scott Richards, 9. Roger Lackey, 10. Joe Wurts. Winning Team was the Pasadena Soaring Society. A fly-off of the top ten for a Genesis kit was won by Scott Meader. Scott, however works for RnR, so the kit went to second place World Champion, Joe Wurts, who needs the kit badly. It was interesting that many of the winners of previous Fall Festivals were flying in this year's event. However, most have moved down a notch, with the years.

Which were the most popular sailplanes? There weren't more than a dozen polyhedral type ships. Blane Beron-Rawdon was flying his straight-wing high dihedral ship - about 30 degrees on each panel. Looked like he launched too hard. The Thermal Eagle, with 27 ships seemed most popular, though there were lots of Falcons, many Genesis', Makos, Super Vs by Mark Levoe, Saturns, Legends and a smattering of Dodgson Designs. Shawn Lenci was flying his Anthem.

Well, there you are. My account of the Biggest and the Best. Look for me there next October. I'll be the guy in the funny Australian hat, asleep under the blue shade tent. HOWZAT! ■

Keep On Chuckin' or Hand-Launch Topics

...by Scott Smith
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(714) 651-8488 evenings after 7:00 PST

Introduction

Well, the month of October has flown by, but I haven't. Work calls, deadlines loom, and I am lucky to simply be able to read any sailplane journals at all. Here in Southern California, the flying conditions are still actually quite good, but activity is at a lull. I suspect pilots are campaigning full-time to get their spouses to buy them the sailplanes they want for Christmas.

Rubber Noses

I have built and repaired about four different models of hand-launch gliders, and I seem to have built an Achilles heel into each of them. All of them love to separate the stabilizer from the fuselage upon a hard landing. I'm sure that my construction technique has left something to be desired, but ALL OF THEM? Harrumph!

Hence, time for innovation! I decided to see if I could crash-proof my latest model (whose stabilizer had separated on its first day out). First idea: shock-proof the nose. I took off the balsa nose and glued some foam rubber onto the front bulkhead. I'm fortunate to have a belt sander, and I simply held the foam rubber up to the sander until I had the desired shape. The nose color was awful, sort of like mucous, but, hey, form over function.

Hence, this configuration was entered in the last Inland Empire prestige contest. Bystanders kept offering me their handkerchiefs to blow my sailplane's nose, but I politely declined.

The crashworthiness was not tested until after the contest, when Dr. Norm and I compared airplanes. He was coming in slow for a landing when an air burble got the sailplane at about 4 feet off the ground. Yep, it happened. The plane dorked, but it didn't simply stop dead. It bounced back up 4 feet, just like a basketball. And, you guessed it, the stabilizer "separated" from the fuselage.

Dr. Norm passed me the transmitter while muttering, "Not enough turning authority."

Grr! Not just any foam would do. So I went to the hobby store and bought some of that expensive impact foam they sell to protect RC radios in the fuselage. It had sticky-paper adhesive, and so I cut it into rectangles and stacked it about 2 inches deep. I then attached it to the same bulkhead and sanded this the same way as before. The result looked much better: a deep blue.

I went to the Torrey Pines Gull's contest; no one noticed that the nose was foam. My plane was performing excellently; unfortunately the pilot wasn't. Alas, during the second round, the elevator horn broke loose during launch. The plane performed a graceful drunk swan dive into the hard-packed ground, catching a wing tip on the way that ripped the wing from the fuselage. However, this time the plane didn't bounce. Moreover, THE STABILIZER DID NOT SEPARATE FROM THE FUSELAGE!

Hence, on the basis of this extensive experimental field data, I can highly recommend this high-tech approach to crash-proofing your sailplane. Besides, it sands easier and doesn't require covering.

Fusing

I mentioned how the wing ripped off of the fuselage during the crash. It was NOT attached with rubber bands; rather it was held down with two nylon screws to two wing mounts made of plywood. The wing mounts themselves simply tore away from the fuselage. I was impressed with the ease of repair; all I had to do was unscrew the wing from the separated

mounts, glue the mounts back, and then rebolt the wing. I was ready for the final round, and the plane flew fine.

This damage was far less extensive than other wing damage I have suffered in lesser crashes with previous models. In those, I had tip panels break apart, the wing fold in the center, and other catastrophes that put me out for the remainder of the contest and required hours to fix. Hence, kudos to the Charlie Richardson, the designer of the Climmax, for his wing mount design. The wing is held securely, but if it "has to break", the wing mounts give and not the wing.

Or did I simply not glue the wing mounts into the fuselage very well?

Design No-No's

Ready for some controversy? Here are my observations of designs that simply don't work in a contest situation:

Rubber Band Wing Mounting

The problem is that, unless you have some kind of wing-fuselage keying mechanism, the wing won't stay in the same place on the fuselage. Every time it moves, the trim changes. And since the plane is being thrown as hard as possible and since it gets involves in mid-airs and has hard landings, the wing will move around a lot. The one advantage is, you are always flying an airplane that feels different.

One-Point Mounting

Sounds good, doesn't it. If the wing bonks anything, it will simply pivot around, avoiding any damage to the aircraft.

That's the problem. In one contest, my single-screw mounted wing connected head-on with a two-screw mounted wing on an opponent's aircraft. We both stalled completely and flew out of the stall. My opponent recovered completely and went on to fly a ten-minute round. My plane could henceforth only turn right. Why? The plane's wing pivot had yielded, as it was "supposed" to do, and the aircraft now looked like a flying pair of open scissors. I had to land (at a distance, of course), straighten out the wing, and relaunch after the thermal I had been circling in had drifted out of reach with all of my competitors happily circling in it.

As soon as I could, I replaced that turkey with my present two-screw wing mount aircraft.

Balsa Leading Edges

I promise you that your plane's wing will challenge another plane head-on for the same air space. In a built-up wing, the debris scattering will be spectacular. If you're lucky, you'll witness a severed wing section slowly tumbling over and over in the air. It's fun to time how long it takes to finally get to the ground.

Now I want at least 1/8" thick hard wood (spruce) at the front of the leading edge.

Empennages Made of Sheet Balsa

If you choose light, thin sheeting, then good luck trying to cover it. When you do, the shrinking film will warp the surface along the grain like a potato chip. If you make it heavy, it won't warp (yet), but you'll have to add 2 oz. to the nose to make it balance. This latter alternative makes it hard to achieve an overall weight of 14 oz.

I've found that built-up fins and stabilizers get the balsa grain running in all directions and hence prevent warp. They're lighter, too.

Secure Hatches

Specifically, I mean the kind of hatch that overlaps the wing and is securely bolted down. Someday, during a really hard crash, the wing will separate from the fuselage. As it careens forward into the notch formed by the hatch and the fuselage, one of two things will happen:

1. If you're lucky, the wing will succeed in separating the hatch from the fuselage anyway, disintegrating the forward bulkheads and separating the nose block from the fuselage. The ubiquitous Wanderers are famous for this always-entertaining rekitting mode.

2. If you're unlucky, the bulkhead will hold and the wing will break in two right at the notch.

Moral: build the wing like a s*** brickhouse, not the hatch.

Lame Excuses

Awright, awright, I promised to discuss the lame excuses other pilots use not to fly competitive hand-launch. One excuse is used more than all others combined, and here it is, along with its variations:

"*Whine!* I can't throw, (sob)."

"I *grunt* threw out my back (sudden double-bending over)."

"I don't want to break my nails."

Now, we hand-launchers are, of course, sensitive, nurturing, and supportive of our other soaring brethren. And because hand-launch is more manly than the other sedentary sailplane activities, we, more than most soaring groups, provide support for those who want to try but are awed by what they see.

Hence, almost anyone in a contest is willing to throw for someone else who doesn't think he can. I volunteer all the time. And I usually only have to throw once or twice before the pilot I am benefiting realizes he can throw better than I can.

Next Month

Auto flight trimming using Velcro and irate responses from readers. ■

An Interview with Rudolf Freudenthaler

This past year has been one of the best for me as far as the RC sport goes. First Brian Agnew (many time NATS winner) came up from Florida and we flew for days. I then went to the AMA Nationals and met Joe Wurts and Skip Miller (both of whom unselfishly helped me, especially in F3B). I started my own sailplane and accessory company. Then came the KRC meet which is always a great event. I lent a new Spectrum to Daryl Perkins for Visalia and he won. I have gone into sailplane kitting and now to top it off, four time world F3E champion Rudy Freudenthaler has spent three days flying with me. Quite a year.

Rudolf is from Austria and knows very little English. I do not speak any German, but with the universal language of RC we had no problem on the flying field. Besides being world champion

Rudolf Freudenthaler with Surprise III.

four times, Rudolf owns a hobby store in Austria and also manufactures his own line of planes.

I asked Rudolf some questions to which I thought most of us would like to have the answers. The following is an interview with Rudolf I was able to have with the help of my dad and his friend who are both fluent in German.

ED: The Surprise II and III that you sell. Are they the exact copies of the plane you have won the world championships with?

RUDOLF: Yes. They are made from the same molds that my personal planes are made in.

ED: What motor prop speed controller and batteries do you use?

5 of the 16 planes flown on Sunday by Rudolf Freudenthaler & myself. Front yard of the Slegers International Airport.

RUDOLF: I use a HP 355/45/5 motor, my own RFM 150 prop, 27 Sanyo 1000 MA batteries and the Sommerauer 125 amp speed controller.

ED: Do you do any modification to the motor or plane?

RUDOLF: Yes. The motor, a little. I put air exhaust holes in the wing just in front of the trailing edge.

ED: How often do you practice?

RUDOLF: I fly a lot all year, weather permitting. But, about 2 months before the world championships, I try to fly every day for 2-3 hours. With it staying light in the summer to almost 9 PM, I try to fly even more.

ED: When you practice do you always fly 27 cell?

RUDOLF: No. I fly my Surprise III on 10 cells during the week and 27 cells on weekends.

ED: What 10 cell combination do you fly?

RUDOLF: The best 10 cell combination that I have found is the HP 320/40/3 or the Ultra 1800/3 with my 140-150 RFM prop on 10 1000ma Sanyo and a 50 amp Sommerauer.

ED: What 7 cell combination would you think is the best?

Rudolf Freudenthaler with Spectrum.

RUDOLF: For performance the HP 270/4 or Ultra 800/4.

ED: For the 1994 world championship what plane are you going to use?

RUDOLF: The Surprise III with a few minor changes.

ED: What changes?

RUDOLF: (smiles)

ED: Do you think the F3E 10 cell will ever become popular?

RUDOLF: If it does not become an official event it will not grow.

ED: Now that you have seen what is flown by the majority of Americans, what type of plane do you have in Austria that is like ours?

RUDOLF: The Nordic Fly III and the Spirg.

The rest of my interview was more of a conversation than question and answers. In talking to Rudolf it was clear that electric in Europe is much more popular than in the United States. There are many more clubs, fields and contests for electric in Europe than in the US.

In his store he sells mostly electric, then gliders and very few gas powered planes. But Rudolf did say that most shops sell more gliders than electric. Electric and sailplanes have become more socially accepted in Europe than gas. Entry level planes are planes made by Robbe and Graupner.

While Rudolf was here we flew many of my planes, i.e. Falcon 550E, Surprise II and Surprise III, Mark Allen's Rocket and Pocket Rocket, and MAP Aura I. We also flew some non-powered gliders, i.e. Spectrum, Falcon 600, Banshee, and Falcon 880. Of all these he liked the Rocket for electric and the Spectrum for the non-electric. Of course, like all great pilots he made it look easy.

Personally it was just a super time. One that I will remember for ever.

Good flying! ■

"Jeff McComb at Huntsville right after receiving his first trophy for flying. Note the writing in the background" Edwin Wilson photo.

Thoughts of a Novice

...by Jeff McComb
Louisville, Kentucky

(The following article appeared in The L.A.S.S. Word, the newsletter of the Louisville Area Soaring Society, Louisville, Kentucky, and has been printed in MASS Mail, the newsletter of the Memphis Area Soaring Society, Memphis, Tennessee. We believe that most of you have not seen the article, so have obtained permission to reprint it, again. The article was written after Jeff attended the Mid-South Championships in Huntsville, Alabama this last June. Edwin Wilson provided us with Jeff's picture!)

For the entire time we packed the van, the little voice kept saying, *"Jeff, this is a contest. Why are you packing your airplanes? This is for the experienced guys, not you. You're going to look like an idiot. Just forget about it."*

Maybe the planes won't fit, I thought, and I can stay at home. Maybe I'll step on a wing and... Oh yeah, Ed brought extra planes. Man, he'd have to think of everything, wouldn't he?

So, off we go, heading towards the interstate and the rain. RAIN!!! I could now relax, knowing that the rain would stop me from flying - or rather, from making a fool of myself. But no such luck. When we arrived at the field the next morning, the clouds started to break up and, as if by magic, the wind died down providing what would be "perfect" weather. Perfect for everyone but me, that is. By now that knot in my stomach was as big as a watermelon - and growing rapidly. This was my first venture at another field and by comparison to "Old Faithful", this one was a monster. In fact, this place was so huge that even I laughed (nervously) when they talked about boundaries at the pilot's meeting.

As a relative newcomer to the sport, it just intimidates me when I see these guys unpacking their ivory inlaid veneer, triple hinged, foam contoured, velvet lined flight boxes. The voice says, *"Jeff, leave your **beginners** stuff in the van!"* At least it only takes me a few seconds to take the rubber bands off and get ready!

All at once the sideline takes on the appearance of "Canopy City" with wall-to-wall airplanes. But wait a minute! I'm supposed to be flying with the **NOVICES** and I don't see any Gentle Ladies out there. *"Jeff, you got suckered, but there is still time to get out!"* uttered the voice, again. But how can I? They have my radio gear at the impound and my eleven year-old son, Chris, is saying, "C'mon Dad! You can do it!"

As I watched these hi-tech, ballistic missiles zoom into the sky, Ed pointed out people that I had previously only read about. The voice was getting louder and my hands were now starting to shake. Ed's turn came and went; he did well with a nine minute flight and perfect landing. Then, (Oh, hell!) they called my group.

There were only two in my group and no planes in the air to follow. *"Maybe they know I'm a novice and everyone rushed to get out of the way,"* the voice screamed. I hardly heard Ed saying, "Calm down, take a deep breath, and just fly your plane." So much to remember: turn on the transmitter, plane, check trim, direct drive winch... Be careful. What else? What else?!? The guy working the winch says, "A Sagitta. Hmmmmm. I haven't seen one of them in a while." Is there time to run? No, I realize. I'm the only one on the flight line and all the experts are watching. The rudder on my plane is quivering and I'm not touching the sticks. My hands are shaking uncontrollably. How am I going to land without the tennis courts or power lines as references? Is this really fun? Up we went and hit some lift. Eleven minutes, four seconds later I nailed an eighty point landing. *"See, I told you there was nothing to worry about. Why don't you listen to me? I knew you could fly with them!"* that voice taunted.

I wanted to jump up and down and wave my fist in the air, but it seemed more appropriate to act like it was no big deal. My shirt was wet, but it seemed easier to explain it away as humidity - not nerves. Yes, this was fun and it accomplished goal number one: to have fun. Goal number two was: not to be last, and this was accomplished by placing a respectable sixth on the first day. I was then told that the top three novices beat the first place sportsman so they would move up before the second day of competition.

The icing on the cake was my third place trophy for my performance on the second day. I cordially invite everyone to drop by to admire it anytime. I wanted to put it on the wall in the bedroom, but my wife wouldn't let me.

What you don't see or feel by not trying this is that wonderful companionship and friendship that develops among RCers. These guys are down-to-earth and also aim to have fun. It's also more fun to talk to them in person than to just read about them in some magazine. They all seemed to find satisfaction in getting someone back in the air. "Loan extra wing rods, servos, and fuselages" was an unspoken rule.

Just as there are different kinds of proficiency at our field, there are different stages there. I did not find novices or juniors excluded or shunned or laughed at by "The Experts". I did, however, find an abundance of encouragement, advice, and new friends.

Thanks, Ed Wilson, for twisting my arm to go. Maybe now I can help twist some arms, too. The more we get to go on these jaunts, the more fun we can have. Also, a huge thanks to Mid-South for a great tournament.

You guys that have just built number one, landed for the first time, or just soloed, keep in mind that even these experts went through this and put a great many years into gaining the skills that they now have. I don't want to leave the impression that I'm ready for the expert class. I'm only a novice wishing more of you have an experience like this. If you are not repairing your airplane each time you fly, you may be ready for a novice tournament, too. Let someone twist your arm. If not, at least go and time for an expert. You will gain so much first hand knowledge and experience.

P.S. - Some of you experts at our field better watch out for Mike Wilson. He beat both Ed and myself on the second day and is maturing into a very good flier. Fortunately, he is still in the junior group. Mike took 2nd on the first day and tore the competition up by over 600 points on the second day for 1st place.

P.S.S. - For two and a half days, we ate, slept, talked, flew a few sailplanes, and the excitement even caught up with my son, whom I have been trying to hook into the hobby for two years. We really enjoyed the time together and... What's a few more planes around the house, anyway? ■

R/C Soaring Resources

Do you hold seminars and workshops? Would you like to be included as a contact to answer questions on soaring sites or contests in your area? If so, please contact *RCSD*. Our address and telephone numbers are on page 1.

Seminars & Workshops

Free instruction for beginners on construction and flight techniques. Friday & week-ends (Excluding contest days) Bob Pairman, 3274 Kathleen St., San Jose, California, 95124; (408) 377-2115.

California Composite Seminars - We want to help you build better! Bring your project and let us help you with it. Thirty five dollars for a six hour plus Composite Technician lesson includes lunch! Two people minimum, please. Great mountain flying all year round! Clubs? We travel, too! Please call (805) 822-7994 and ask for Scott Metze.

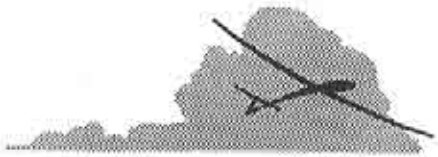
Reference Material

Madison Area Radio Control Society (M.A.R.C.S.) *National Sailplane Symposium Proceedings*, 2 day conference, on the subject and direction of soaring. 1983 for $7.00, 1984 for $7.00, 1985 for $8.00, 1986 for $8.00, 1987 for $9.00, 1988 for $9.00, 1989 for $10.00, 1992 for $12.00. Delivery in U.S.A. is $3.00 per copy. Outside U.S.A. is $6.00 per copy. Set of 8 sent UPS in U.S.A. for $75.00, outside U.S.A. for $80.00. Last 4 (1987-1992) in U.S.A. is $45.00, outside is $50.00. Allan Scidmore, 5013 Dorsett Dr., Madison, WI 53711.

BBS

BBS: SLOPETECH, Southern California; (714) 525-7932, 2400 - 8-N-1

BBS: South Bay Soaring Society, Northern California; (408) 281-4895, 8-N-1



Contacts & Soaring Groups

Arizona - Southern Arizona Glider Enthusiasts, Burt Kline (contact), 2642 W. Ca Puebla, Tucson, Arizona 85745 U.S.A., (602) 882-4083. SAGE welcomes all level of flyers!

California - California Slope Racers, John Dvorak, 1638 Farringdon Court, San Jose, California 95127 U.S.A., (408) 259-4205.

California - Northern California Soaring League, Mike Clancy (President), 2018 El Dorado Ct., Novato, California 94947 U.S.A., (415) 897-2917.

Canada - Southern Ontario Glider Group, "Wings" Program, dedicated instructors, Fred Freeman (416) 627-9090 or David Woodhouse (519) 821-4346.

Iowa - Eastern Iowa Soaring Society (Iowa, Illinois, Wisconsin, Minnesota), Bob Baker (Editor), 1408 62nd St., Des Moines, IA 50311 U.S.A., (515) 277-5258.

Kansas - Wichita Area Soaring Association, Pat McCleave (Contact), 11621 Nantucket, Wichita, Kansas 67212 U.S.A., (316) 721-5647.

Maine - DownEast Soaring Club (Northern New England area), Steve Savoie (contact), RR#3 Box 569, Gorham ME 04038 U.S.A., (207) 929-6639.

Maryland - Baltimore Area Soaring Society, Al DeRenzis (President), 5003 Wetheredsville Road, Baltimore, Maryland 21207 U.S.A., (410) 448-0808.

Nevada - Las Vegas Soaring Club, Steven Smith (President), 6978 Starwood Dr., Las Vegas, Nevada 89117 U.S.A., (702) 873-9591.

Northwest Soaring Society (Oregon, Washington, Idaho, Montana, Alaska, British Columbia, Alberta), Roger Breedlove (Editor), 6680 S.W. Wisteria Pl, Beaverton, OR 97005 U.S.A., (503) 646-1695 (H) (503) 297-7691 (O).

Texas - Texas Soaring Conference (Texas, Oklahoma, New Mexico, Louisiana, Arkansas), Gordon Jones (Contact), 214 Sunflower Drive, Garland, Texas 75041 U.S.A., (214) 840-8116.

Utah (U.S.A.) - Intermountain Silent Flyers (IMSF), Bob Harman (contact), (801) 571-6406... "Come Fly With Us!"

Washington - Seattle Area Soaring Society, Wald Reynolds (Editor), 12448 83rd Avenue South, Seattle, Washington 98178 U.S.A., (206) 772-0291.

NASSA
North American Scale Soaring Association

The North American Scale Soaring Association is an organization of scale soaring enthusiasts dedicated to the furtherance and enjoyment of scale soaring in North America. Membership dues are $10.00 a year, and provide for sponsorship of NASSA Scale Fun Flys & Rallies, and for the implementation of a National Scale Building and Soaring Achievement Program. Join NASSA and join a network of scale soaring enthusiasts that influence the direction of scale sailplanes in North America. Please provide your address, phone #, and AMA #, and we will send you a membership card and membership roster. A bi-monthly column keeping NASSA members up to date is included in *RCSD*, with additional information available periodically direct from NASSA. Help promote and support the continuation of scale soaring by sending $10.00 to: NASSA, P.O. Box 4267, W. Richland, WA 99352.

F3B/USA • F3F/USA
RC Sailplane Technical Journal

F3B/USA is a bi-monthly publication dedicated to the sports of F3B and F3F. The journal is intended for the beginning as well as experienced multi-task soaring enthusiast. Articles cover a wide variety of areas including: technical data issues, description of techniques, and articles written by and about the top people in the sports.

Subscription Rates: $12 per year (6 issues)
For More Info Write: F3B/USA,
87 1/2 N. Catalina, Pasadena, CA 91106

LSF

The League of Silent Flight (LSF) is an international fraternity of RC Soaring pilots who have earned the right to become members by achieving specific goals in soaring flight. There are no dues. Once you qualify for membership you are in for life.

The LSF program consists of five "Achievement Levels". These levels contain specific soaring tasks to be completed prior to advancement to the next level.

League of Silent Flight
10173 St. Joe Rd.
Ft. Wayne, IN 46835

T.W.I.T.T.
(The Wing Is The Thing)

T.W.I.T.T. is an organization of engineers, scientists, pilots, sailplane enthusiasts, model builders and many other persons having an interest in flying wing/tailless aircraft technology. Write to T.W.I.T.T., P.O. Box 20430, El Cajon, CA 92021 to find out how you can participate.

Send SASE for membership application and flyer: "What is T.W.I.T.T." or, send $2.00 for full information package including one back issue of our newsletter, postpaid. Full membership is $18.00 (US) or $22.00 (Foreign) per year and includes twelve issues of the newsletter. Back issues of newsletter are $.75 each, postpaid in USA.

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, Route 1, Box 239, Lovettsville, VA 22080.**

You are invited to join the
NATIONAL SOARING SOCIETY

- OFFICIAL AMA SOARING "SPECIAL INTEREST GROUP"
- YEARLY NSS "SOAR-IN" TOURNAMENTS
- NATION WIDE "EXCELLENCE AWARDS PROGRAM"
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- NSS IS INVOLVED IN THE ORGANIZATION AND OVERSEEING OF THE SOARING PORTION OF AMA NATS (INCLUDING AWARDS BANQUET)
- YEARLY DUES ARE $15 U.S.A. AND $20 OVERSEAS (SPECIAL FAMILY RATES)
- NSS OFFICERS ARE FROM ALL 11 DISTRICTS

For Info., Contact NSS Secretary/Treasurer
Robert Massmann
282 Jodie Lane
Wilmington, OH 45177
(513) 382-4612

NEW PRODUCTS

The information in this column has been derived from manufacturers press releases or other material submitted by a manufacturer about their product. The appearance of any product in this column does not constitute an endorsement of the product by the *R/C Soaring Digest*.

Airfoil Plot & Model Design Programs

...from Chuck Anderson

Chuck Anderson has released upgrades for his Airfoil Plot and Model Design programs. These programs allow modelers to plot airfoils and wing plans without the hassle of learning a complex CAD program.

The Airfoil Plot program plots airfoils up to 40 inch chord lengths on most dot matrix and HP II LaserJet compatible printers. The program will run on any IBM compatible printer running MS-DOS 3.3 or later. If the computer has CGA, EGA, or VGA graphics, the airfoil will be displayed on the screen. A 286 or better computer with a math co-processor is recommended to speed up plotting if using a LaserJet printer. The program will plot airfoils with skin thickness offsets and vertical station lines as well as generating templates for use when cutting foam cores with machines such as the FeatherCut machine. The program also includes a Data Entry program for entering coordinates and a Utility program for changing camber, changing thickness, or combining airfoils.

SD8040 WITH AIRFOIL PLOT PROGRAM

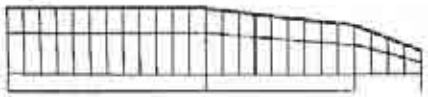
The Model Design program includes all the features of the Airfoil Plot program and will also plot wing ribs with spars, leading edge, and trailing edge as well as wing plans.

The Model Design program will also plot a complete set of ribs or foam core templates for wings with up to 5 panels in each half span. Computers with CGA, EGA, or VGA graphic will display a full half span wing with up to 5 panels on the screen.

SD 8040 WITH MODEL DESIGN PROGRAM

The standard versions of the Airfoil Plot and Model Design programs include 42 airfoils and can plot NACA 4-digit, NACA 5-digit, and Quabeck airfoils from equations. Libraries of additional airfoils are also available. The deluxe versions of the programs add the airfoils from the Sailplane Airfoil Libraries to give 130 Eppler, Selig, NACA, and RG airfoils. Send a stamped, self addressed envelope for more information and upgrade prices.

Airfoil Plot program (42 airfoils)	$35
Deluxe Airfoil Plot (130 airfoils)	$60
Model Design program (42 airfoils)	$50
Deluxe Model Design (130 airfoils)	$75
Sailplane Airfoil Libraries 1 & 2	$15 EA.



Chuck Anderson, P.O. Box 305, Tullahoma, TN 37388; (615) 455-5788 after 7 PM. ■

Mini Hi-Start

...from Sky Bench Aerotech

The Mini Hi-Start features two modes. Mode one is designed especially for the R/C hand launched (60" span) sailplanes the easy way, from a 200' clear area. Total length is 150'. Mode two has an additional 150 feet of line complete with swivels, and is for higher launches and light weight for 2m sailplanes. The kit contains both mode one and two, and it assembles in 15 minutes. Kit contents include 1/8" tubing, Day Glow colored line for improved visibility, stake, wood reel, swivels, assembly instructions, tips on installing tow hooks, launching technique, and how to organize a Man-on-Man hand launch (or 1 1/2m) contest with Mini Hi-Starts. Direct from Sky-Bench Aerotech, retail prices are:

Mini Hi-Start Kit	$19.95
Mode One & Two Line Kit	$14.95
Reel Kit	$8.00
Shipping - Continental USA	$4.00

Sky-Bench Aerotech, 69598 Brookhill Dr., Romeo, MI 48065; (313) 752-0732. ■

SPECTRUM and SPECTRUM 2m

...from Spectrum Enterprises

The SPECTRUM and SPECTRUM TWO METER are manufactured by Spectrum Enterprises which is owned and operated by Steve Hug of Windsor, CA. These two new sailplanes are the latest in a series of designs by Ron Vann and Mark Triebes.

The thermal duration plane of the future is available now! The SPECTRUM, a brand new entry into the soaring scene, made its debut at the prestigious Visalia event by placing First and Third out of some 225 entrants. Flown by Daryl Perkins and Mark Triebes the SPECTRUM lived up to the designers expectations. Several departures from the current thermal design trends and the attention to detail by the manufacturer set this design apart from the norm.

The clean aerodynamics of the SPECTRUM start at the nose with a tight fitting slip-on nose cone. The nose cone is even available with moulded fiberglass "sharks teeth" for absolute stops on the landing spot. The one-piece epoxy/fiberglass fuselage is reinforced with Kevlar for strength and durability to withstand the rigors of competition flying. The wings and stab come to the builder not only pre-sheeted with obechi and the root rib installed, but with the wood hinge line reinforcement installed prior to sheeting the wing. This "box structure" provides greater increased torsional stiffness as compared to the more common cap strip method. The control surfaces are even cut along the hinge line to add even less work for the builder. The servo pockets are routed as an additional consideration to the builder. High atop the fin is a bolt-on T-tail stabilizer that utilizes a conventional elevator to extract a super positive pitch response.

The flying characteristics of the SPECTRUM, while demonstrated in the competition maximums at Visalia, are those of a solid thermal sailplane. Thermals and light lift alike are easy prey for the time tested S3021 airfoil; while the RG15 provides the all around qualities of a great SMT ship. Landings with the SPECTRUM are a dream with either airfoil as the flaps are designed to provide positive control all the way to 100 points.

The specifications of the SPECTRUM are:

Wing Span:	104"
Wing Area:	855 sq. in.
Airfoil:	S3021 or RG15
Aspect Ratio:	13:1
Weight:	60 oz.
Wing Loading:	10 oz./sq. in.

The SPECTRUM TWO METER is a smaller version of the open class SPECTRUM. It shares the same manufacturing attention to detail and prefabricated quality of Spectrum Enterprises. A triple taper planform with the thermal eating S3021 are the basis for this wonderful little sailplane. The pre-sheeted obechi wings and stab arrive with all of the prefabrication you will come to expect in a Spectrum Enterprises kit. The fuselage, as with its big brother, starts with a slip-on nose cone; also available with moulded "sharks teeth" if you desire. The one piece fiberglass fuselage, while light, is built with durability in mind to provide longevity.

The flying characteristics of the SPECTRUM TWO METER are those of a larger plane with extraordinary thermal performance. While not yet a contest proven contender, it will only be a short time until this jewel makes its mark in soaring circles. At 40 ounces, the SPECTRUM TWO METER launches like a small rocket piling up inertia on the way up the line to shoot off the top of the zoom to spectacular heights. It floats along in light lift with ease and responds very nicely to a breeze as it tracks off to the next thermal. The larger plane feel is readily apparent when bringing this 2 meter into the spot; it feels rock solid on approach and lands where you put it.

The specifications of the SPECTRUM TWO METER are:

Wing Span:	78.5"
Wing Area:	554 sq. in.
Airfoil:	S3021
Aspect Ratio:	11.2:1
Weight:	40 - 43 oz.
Wing Loading:	10 oz./sq. in.

The SPECTRUM and SPECTRUM TWO METER are available from Slegers International, Route 15, Wharton, NJ 07885, (201) 366-0880. ■

New Products

"SOAR BIRDY"

...from Just Plane Fun Models

The "SOAR BIRDY" 2M sailplane kit, first made popular to the sailplane market in the late 70's, has been re-manufactured to today's launching and soaring standards. It features a two piece wing built around a strong spruce I-Beam spar sheer-webbed with 1/8" balsa and joined together by a 1/4" steel wing rod. The wing span is 76" with a total wing area of 684 square inches. The 38" fuselage is made of balsa and plywood and has more than enough room for any standard size servos, and can be modified for either electric or gas motor launching.

Balsa and plywood parts are precision cut and sanded to ease building. Wing, stabilizer and rudder build right on the clear, easy to read full-size plans, with step-by-step instructions to guide you through each building phase.

Retail price is $40.00 and will be available at your local hobby shops. For dealer information, contact: Just Plane Models, 3390 Paseo Barbara, Palm Springs, CA 92262; (619) 327-1775. ■

Grob 102 Club IIIb Scale Fuselage

...from ICARE Sailplanes

ICARE Sailplanes, manufacturer of a wide range of fine scale sailplanes, is pleased to offer this super scale fuselage of the Grob 102 club IIIb for the scratch builder. This version is the three wheel school version designed for clubs who want an easy to fly fiberglass sailplane. The fuselage is fiberglass reinforced epoxy and is white pre-colored. No wing fairings are moulded to the side of the fuselage, leaving it to the builder to select an airfoil. It comes with a clear canopy, a fiberglass molded canopy tray and a three view plan. Semi-kits containing wing and stab foam cores, obeche sheeting, and a quick building plan are available upon request. For more information about our products, send $1.00 to ICARE Sailplanes, Etienne Dorig, 381 Joseph-Huet, Boucherville, PQ, J4B 2C5, Canada; (514) 449-9094 EST. ■

Specifications

Scale:	1:4.5
Wing Span:	125"
Length:	66"
Weight:	82 oz. approx.
Airfoil:	None
Fuselage Price:	$115.00 + S&H
Semi-kit Price:	$165.00 + S&H

Special Events

Schedule of Special Events

Date	Event	Location	Contact
Dec. 26	TULSOAR Fun Fly	Tulsa, OK	Corey Gilstrap (918) 455-5490
May 28-June 5	World Soaring Jamboree	Richland, WA	Wil Byers (509) 627-5224
June 23-26	Mid-South Soaring Championships	Memphis, TN	Bob Sowder (901) 757-5536
Oct. 1-2	CVRC Fall Soaring Festival	Visalia, CA	

Anabat 48

...by Jef Raskin
Designer
8 Gypsy Hill Road
Pacifica, California 94044

The photo is of my daughter, Aviva, holding one of our Anabat's. We created the new kit for four reasons.

1. There is a demand for an Anabat that can carry two standard size servos and the 500 maH battery packs that many people already own.

2. With smaller equipment (270 maH battery pack, mini or micro servos), the Anabat 48 flies in lighter lift than the other Anabats, making it more suitable for some east coast and many inland slopes.

3. There is room to easily fit three or four channels with smaller servos.

4. For one-design racing, a larger plane is easier to see at the far turn.

The Anabat 48 illustrated is my personal mount, and is equipped with four channels. Using an Ace Micropro 8000 transmitter, I have it set up with flaperons, elevator, and rudder. The left stick is used to control the flaperons in their flap role. In this function they only move a few degrees up and down; usually keeping them neutral, I use a few degrees of down when I need to climb quickly in light lift, or a few degrees up to penetrate in strong winds.

The elevator is coupled to the flap function; up elevator puts the flaps down and vice versa. This gives the Anabat 48 incredible looping ability. It will loop from normal flight; no dive is needed before a simple loop. Of course, it will also outside loop up or down from normal level flight, as well.

The rudder permits true spins, snap rolls, and clean hammerheads (stall turns). This makes the Anabat 48 our first fully aerobatic kit.

✈ ✈ ✈

In regards to the Fifth Annual Precision Aerobatic Soaring Contest, I have bad news. No wind. No contest. Next year, we will have back-up winches or high-starts and tell the pilots to come prepared to fly slope or flatland style aerobatics; same maneuvers in either case. This is the first time in years that we've had no lift at all at the ocean for the contest. Is the weather crazy everywhere? ■

Status Report
World Soaring Jamboree

For those of you making plans for R/C soaring for 1994, here is a short update on the WSJ.

The World Soaring Jamboree (WSJ), as announced earlier, is a composite of R/C soaring events. It currently encompasses 18 individual events. The events include the following: 60" Class Slope Races, PSS Slope Fun-Fly & Racing, Unlimited Slope Races, Novice Slope Races, F3B Thermal Soaring, F3J Thermal Soaring, Hand Launch Thermal soaring, Two Meter Thermal - Standard - Unlimited Contests. As well, the event includes a Scale Contest, a Slope Fun-Fly, and a Thermal Cross Country Race.

In addition to the events above, the organizers want to give entrants a chance to participate in a Novice Day to help new fliers learn about the do's and don'ts of R/C soaring. They will also offer a chance for fliers to take a stab at a record by supporting Record Trials.

Besides having many flying events, the WSJ promises some social events which will include an Evening social and Washington State Wine Tasting. On another evening, the WSJ will host Professor Dr. Richard Eppler as our special guest speaker, immediately following a banquet dinner and no host bar. And, if the vendors will support it, the WSJ is planning a Vendor Forum and Show.

The WSJ organizers and event directors want to host an event you will not want to miss. It will be an event that will host the thermal soaring pilots at a **sod farm of some 450 acres of grass with unobstructed visibility.** And, the WSJ is sited in the Tri-Cities area with some of the **best slope soaring sites in the World.**

In closing, remember the World Soaring Jamboree is brought to modelers the World over by the Richland Chamber of Commerce, the Tri-City Soarers, the Seattle Area Soaring Society, the Vancouver Tercels, the Inland Empire Soaring Society, the Portland Area Soaring Society, and the Boys from Boise. We are doing our best to provide you with **9 FUN** days of soaring from May 28 - June 5, 1994.

For registration information, etc., send your name and address to World Soaring Jamboree, P.O. Box 4267, W. Richland, WA 99352.

Soaring for '94,
Wil Byers

Advertiser Index

Classified Advertising Policy

Classified ads are free of charge to subscribers provided the ad is personal in nature and does not refer to a business enterprise. Classified ads that refer to a business enterprise are charged $5.00 per month and are limited to a maximum of 40 words. The deadline for receiving advertising material is the 5th day of the month. (Example: If you wish to place an ad in the March issue, it must be received by February 5th.) *RCSD* has neither the facilities or the staff to investigate advertising claims. However, please notify *RCSD* if any misrepresentation occurs.

Personal ads are run for one month and are then deleted automatically. However, if you have items that might be hard to sell, you may run the ad for two months consecutively.

For Sale - Business

DON'T YOU HAVE ENOUGH TROPHIES?? * ATTN: CONTEST DIRECTORS!!!** Award your winners w/shirts, caps, jackets, bags, individualized w/screen art (incl. place & class). Designed by fine artist and past Natl. Champion, Tom Jones. Golf shirts from $20.00, T's from $10.00. For more info. send S.A.S.E. to: **Zoomit Creations,** 3703 Penny Ln., Carrollton, TX 75007; (214) 394-0119.

High Quality German Craftsmanship from Thermoflügel. Scale 4.4m DG-600, 4m Salto, 4.2m ASW 24, 3.5m ASH 26. Complete kits; in stock now! Call Mark Foster in California for details: (213) 257-4573.

MINI HI START KIT designed especially for 1-1/2 meter (hand launch). Thirty feet of 1/8 tubing stretches four times relaxed length for gentle launches. Two day glow colored tow lines, 120' and 150', use separately or together. $19.95 + $4.00 shipping. Sky Bench Aerotech, 69598 Brookhill, Romeo, MI 48065; (313) 752-0732.

IRON ON CARBON FIBRE 3.7 Oz./yd^2, .007 - 2"x48"... $9.00, 12"x48"... $18.00, 1'x10'... $42.50. Iron on S-glass, 12"x48"... $10.00. Chopped carbon fibre... $2.95 bag. 100# test kevlar pull-pull system, 25' plus teflon-teflon sleeving... $7.00. 100% satisfaction guaranteed. Only $1.00 S&H. CA res. add 7.75% tax. Send LSASE for brochure & free samples to: California Carbon, P.O. Box 39, Jamul, CA 91935; (619) 669-6348.

For Sale - Personal

MAGIC w/o servos, built... $400.00; SYNERGY '91 w/o servos, built... $400.00; SBXC Cross Country ship with servos, built... $900.00; MARIAH 2m kit... $125.00; VORTEX 2m kit, glass body, 7037... $125.00. Fred Rettig @ (205) 471-2507 days, (205) 964-5077 eve, Alabama.

PHOENIX unlimited sailplane, 132" span, never crashed, very good condition. Package includes 2 S133 servos for aileron, 3 Airtronics standards, drive, flap, elev, rudder, 1200 mah battery. All servos and battery wires with Deans plugs... $325.00. Call Frank Strommer @ (516) 432-8108 after 7 PM EST, New York.

ORIGINAL HOBY HAWK, excellent condition... $300.00; AQUILA GRANDE, excellent shape... $275.00. Call Pat Symons @ (916) 347-3566 or Greg Reimann @ (916) 275-0407, N. Calif.

FALCON 880, mostly built, set up for Airtronics radio... $475.00 or with wing servos... $625.00; Dodgson SABER kit... $250.00; PIVOT, built, ready to cover... $225.00; Sterling Models SCHWEIZER sailplane kit... $40.00; Airtronics Vision 8, NIB, extra trans. battery... $475.00; Airtronics Micro receiver, CH 38... $55.00. Call Randy Patchett @ (713) 288-8244, Texas.

ASW 24, 4.6 m, all glass, German retract, exquisite, servos in wings... $1450.00; DG-600, 5.0 - 5.67 m, Quabeck, ailerons, flaps, spoilers, retract, highly detailed, exact scale, includes all servos (9), pilot, spare canopy... $1650.00; ASK-18, 5.4 m, beautiful German quality, 1st place Torrey Pines scale meet, mint condition, incluudes all servos, air-tow coupling, etc... $1850.00; ultimate aero-tow plane, LANIER STINGER, very nicely built with custom tow release (see October *Model Builder*)... $695.00, or with 7 heavy duty servos add $200.00, or with O.S. 300 twin 4 stroke add $350.00. Will tow 25 lb. gliders. Giant LS4, nearly 1/2 scale, 6.5 m, 40 lb. flying weight, includes all servos (8), fixed wheel w/fiberglass fairing, aero-tow release, spare plexiglass canopy, custom wing bags, 24" spoilers, Wortmann airfoil, elevator servos in stab, custom built by German craftsmen....$2495.00. Contact Dan Troxell @ (714) 831-8013 days, S. Calif.

Airtronics INFINITY 600A computer radio, 6 channel FM, channel 49. 4 (EA) 904102 servos, FM receiver, all nicad battery packs, charger. Complete, new in box, never been used... $299.00. Call Tom at (805) 461-6408 Calif.

For Sale - Personal

Robbe ASW 24, 3.5 meter w/Starmax 40 gear drive, 10 cell, flies great; Robbe AUTOMAX 6-21 cell peak charger; SWIFT 400; APOGEE, 100", E205, 6 cell gear drive w/spoilers; KLINGBERG WING 100, 100" flying wing deluxe kit, NIB; CHUPEROSA, poly, flies great; WORLD EXPERT 7 ch W/ 2 receivers; two Futaba 4 channel ATTACK GLIDER radios W/S133 servos; Airtronics Module 7 SP, used once; 2 - Airtronics 94141 servos; 2 - FAT, S133 servos; other extra servos & flight batteries; Magnum I high Start for big birds; ACE Fast Field Charger; Other misc. goodies too numerous to mention. All planes & radio gear are ready to go flying! All for $800.00 FIRM or will trade for older jazz guitar! You pay UPS. Willie Bosco, 1588 Miller Creek Rd., Garberville, CA 95542; (707) 923-3897.

Wanted

Used 8 or 9 channel transmitter needed. Jim Thurmond, 1034 W. 10th Ave., Eugene, OR 97402; (503) 345-3069.

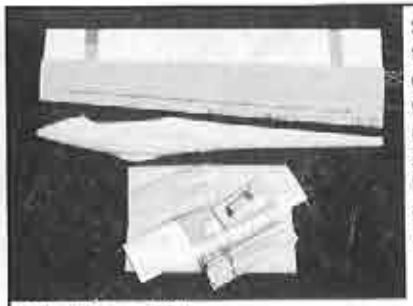
Used Vision VS8SP radio & receiver, no servos req. Call Dan Fulmer @ (415) 731-1063 or write: 2495 27th Ave., S.F., CA 94116.

I want to build and fly a 1/6th scale BOWLUS! I'm looking for plans, drawings (close to the scale I'm looking for), or gloriously, a kit or some component like a fuselage. Greg Tutmark, 15722 East Shore Drive, Lynnwood, WA 98037; (206) 742-7472 (eve).

For Sale - Business/Personal

Shipping costs will be in addition to the costs listed below. Please call Ed Slegers @ (201) 366-0880 days, 9:30 AM - 5:00 PM, closed Sun. & Mon., New Jersey.

#	Item	Price
8	880 wings, pre-sheeted	$195.00 ea.
6	550E wings, pre-sheeted	$175.00 ea.
2	550E stabs, pre-sheeted	$20.00 ea.
5	SD8000 2m cores, white	$10.00 ea.
2	SD8000 STD cores, white	$10.00 ea.
1	F3B Eagle, RG15 cores, blue	$25.00
1	F3B Eagle 9% 3014 cores, blue	$25.00
2	F3B Eagle stab cores, blue	$10.00 ea.
1	Falcon 600 wing cores, white	$15.00
1	Falcon 880E fuse	$75.00
3	550E fuse	$75.00 ea.
2	Sparrow fuse	$30.00 ea.
2	Tempest fuse	$40.00 ea.
3	X-Altation, NIB	$175.00 ea.
2	Müller Luccy, NIB	$600.00 ea.
2	Ellipse, NIB	$1000.00 ea.
1	Electric Ellipse, NIB	$1000.00
1	Müller Comet, NIB	$800.00
1	Müller Comet Electric, NIB	$800.00
2	Calyso Sport (new for 1993), NIB	$600.00 ea.
1	2m Alcyone, NIB	$75.00
1	Saturn 3.0, NIB	$300.00
1	Genesis, slightly damaged, NIB	$349.00
2	Arcus Robbe, NIB	$100.00 ea.
1	Impulse Robbe, NIB	$50.00
1	Balance Robbe, NIB	$50.00
1	Map AS 22, NIB	$600.00
1	Map ADAGO, NIB	$300.00
1	Map AURA 2, 10 cell w/servos	$400.00
1	Grifter w/servos	$500.00
2	Graupner power mos 56	$50.00 ea.
2	Graupner mini-switch 40	$30.00 ea.
4	Robbe on/off switch	$30.00 ea.
1	Vision type 2, NIB	$500.00
10	Winch line 25 lb. test, 1700 ft.	$20.00 ea.
1	Keller 35/6	$150.00
1	Keller 40/8	$150.00
1	Keller Pro 525/4	$250.00
1	Keller Pro 325/4	$250.00
1	Astro FAI .05 geared	$75.00
1	Astro FAI .15 geared	$75.00



SALTO H 101

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Wing Loading: 12 oz./sq. ft.

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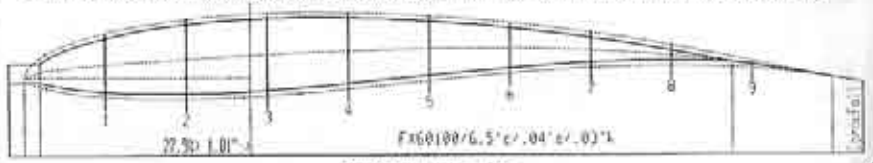

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Duration Modi 900 Kit; 3021 or 7037 Wood Wings. $350

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SPECIFICATIONS

- High Speed P Motor Aerobatic Slope Plane
- Transition Modified S3016 Airfoil
- Wing Area 426 sq. inches
- Flying Weight (unballasted) 50 ounces
- Wing Loading 17.0 to 24.0 oz. per sq. ft.
- Three Channel: Wingeron, Rudder, Elevator

FEATURES

- Machine Cut Balsa, Spruce, And Plywood
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SPECIFICATIONS

- Airfoil: SD-7037
- Wing Area: 400 sq. in. Wing Loading 5.8-8.0 oz. per sq.ft.
- Two Channel: Rudder, Elevator
- Flying Weight 14-16.5 oz.
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