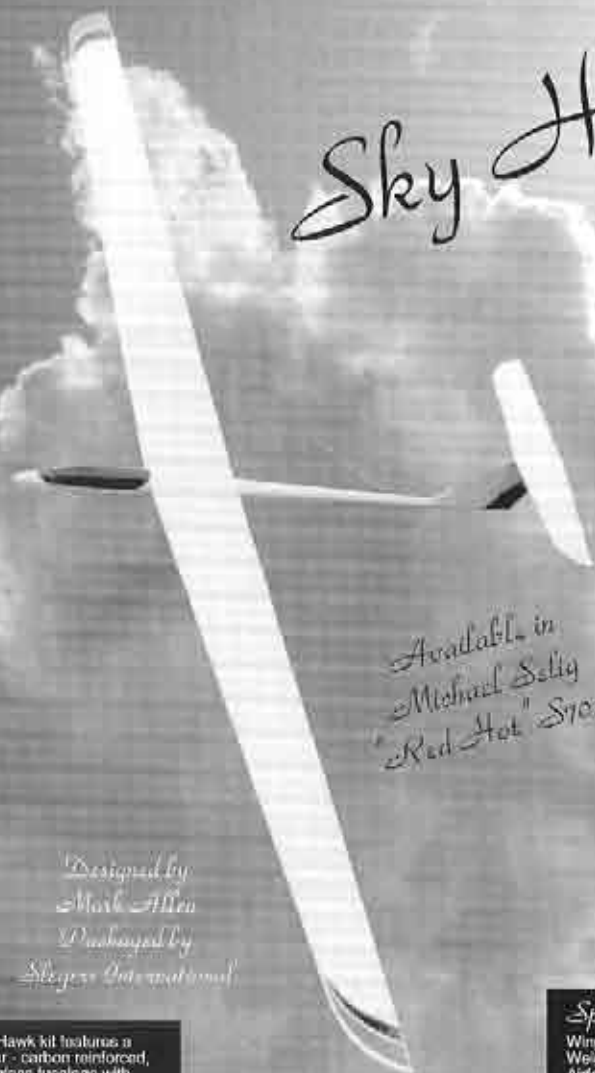


Sky Hawk



Available in
Michael Selig
"Red Hot" Store

Designed by
Mark Allen
Designed by
Slegers International

Sky Hawk Attributes

- ✓ High aspect ratio wing
- ✓ "Swift" wing tip technology
- ✓ Thin airfoils at the wing tip
- ✓ Large control surfaces
- ✓ Large tail surfaces
- ✓ Long tail moment
- ✓ Exceptional performance
- ✓ Sleek lines and good looks
- ✓ Easy to handle
- ✓ Lots of room for radio gear

Specifications

Wing Span	116"
Weight	58 - 66 oz.
Airfoil - Root	SD 7037 or S7012
Airfoil - Tip	SD 7037 or S7012 - 8%
Wing Area	800 sq. in.
Wing Loading	9.5 - 10.5 oz./sq. ft.
Aspect Ratio	15:1

Sky Hawk kit features a kevlar - carbon reinforced, fiberglass fuselage with carbon reinforced obechi - foam, pre-sheathed wings. A unique direct drive elevator servo is installed in the vertical fin.

SLEGERS INTERNATIONAL

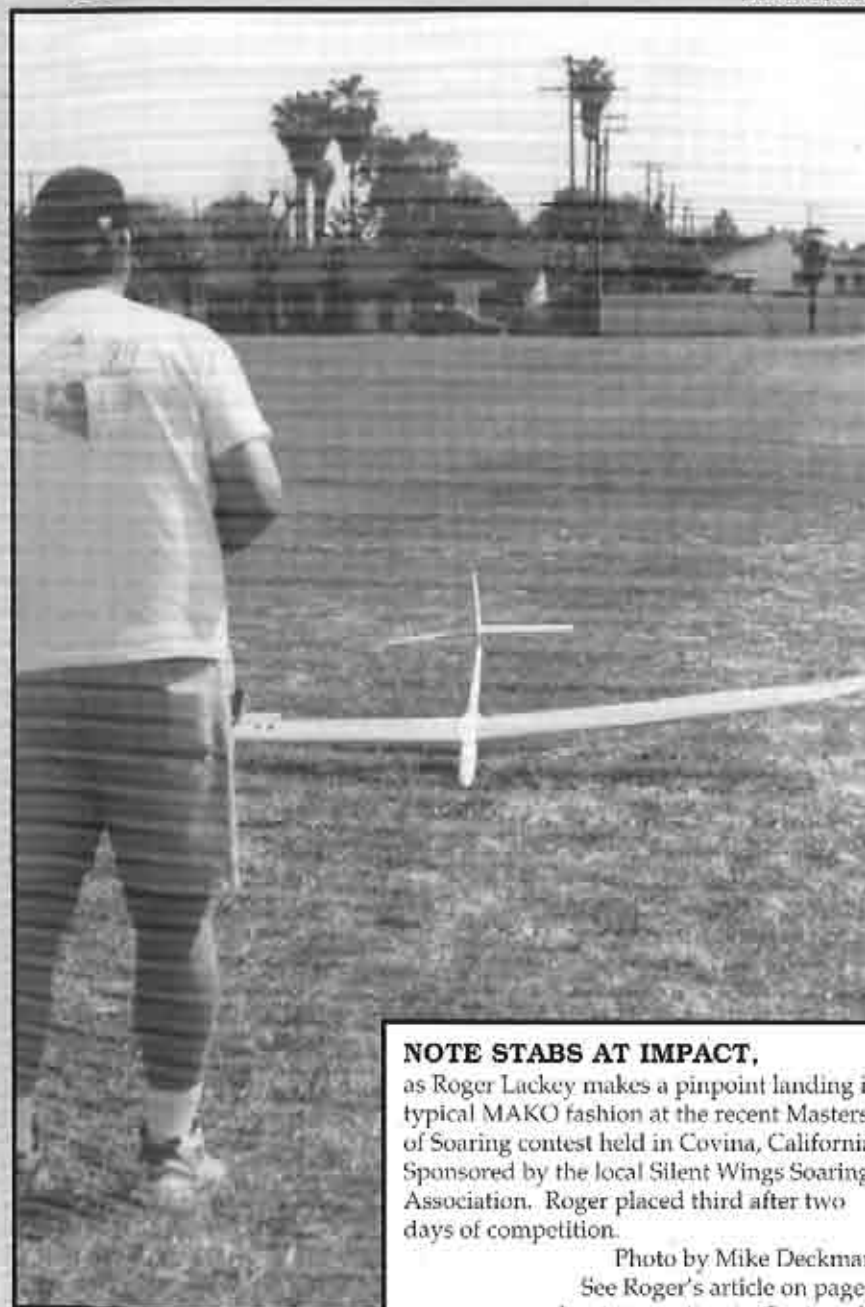
Route 15, Wharton, New Jersey 07885

(703) 366-1111 • FAX (201) 366-0549
9:30 A.M. - 4:00 P.M. (Closed Sun. & Mon.)

High Quality Electric & Non-Electric Sailplanes,
Radios, and Accessories for the Sailplane Enthusiast

Now there are three locations to serve you better! Our sailplanes are available through all of our stores:
KENNEDY COMPOSITES, 15269 CR. 1227, Flint, TX 75762 • (800) 890-8173 • FAX (202) 561-3453
CALIFORNIA SOARING PRODUCTS, 1010 N. Citrus, Covina, CA 91722 • (800) 520-SOAR • FAX (618) 906-0115

★ VISA ★ MASTERCARD ★ AMERICAN EXPRESS ★ DISCOVER ★



NOTE STABS AT IMPACT,

as Roger Lackey makes a pinpoint landing in typical MAKO fashion at the recent Masters of Soaring contest held in Covina, California. Sponsored by the local Silent Wings Soaring Association. Roger placed third after two days of competition.

Photo by Mike Deckman.

See Roger's article on page 4 about competing in Guatemala.



TABLE OF CONTENTS

3 Soaring Site Jerry & Judy Slates	26 On The Wing Determining the Neutral Point and the Center of Gravity Bill & Bunny Kuhlman
4 Guatemala? You Bet!!! Roger Lackey	32 This Old Plane Misty, The Almost 2 Meter Fred Mallett
7 Vulcan 2M & Trimming With Tissue Kale Harden	34 The Slope Spot I'm Hooked on Slope in Illinois Ron Kukral
10 Jer's Workbench Pressing Wing Skins Jerry Slates	36 Today's Fledglings, Tomorrow's Eagles Don Bailey
11 Gravity Surges in Baldwin County John R. Forstall	38 Understanding Sailplanes Flight Without Figuring Part 3 Martin Simons
12 Winch Line Design Thoughts Part 4 Gordon Jones	44 17 th Euromeeeting, VAL DI FASSA Bernardo Cason
15 Lift Off! New Products Ed Slegers	51 Tidbits & Bits
18 Workshop Talk About Drilling Holes Erik Eiche	57 Tidbits & Bits
19 Soaring East to West Landing Skegs Non-Toch Tidbits Club of the Month Bob Sowder	
21 On The Air with Comfed Hot Air Fred Rettig	
21 Just Like the Real Thing Don Bailey	
24 Recycle That Old Glider Joe Thomas	

OTHER SECTIONS/INFORMATION

56 Events
50 New Products

ADVERTISING

59 Advertiser Index
60 Classified Ads

SPECIAL INTEREST GROUPS & CONTACTS

53 League of Silent Flight - LSF
53 T.W.I.T.T.
53 Vintage Sailplane Assoc. - VSA
54 R/C Soaring Resources

Subscription Costs

USA: \$30 First Class
(Texas res., please add \$1.52 tax.)
Canada & Mexico: \$30 Air
Europe/U.K.: \$45 Air
Asia/Pacific/Middle East: \$52 Air

Back Issue Cost

Back Issues are available for 1993 and 1994,
and are mailed via first class or airmail.

U.S.A., Canada, Mexico: \$2.50 Per Issue
+ Tax (Texas Only: 7.25%)
United Kingdom/Europe: \$3.75 Per Issue
Asia/Africa/Middle East: \$4.35 Per Issue

- Please renew my current subscription.
 Please enter my new subscription to *RCSD*.
 Please send the back issues I have selected.

(Check or Money Order, only, please. U.S. funds.)

Name _____

Address _____

Please return to R/C Soaring Digest,
P.O. Box 2108, Wylie, TX 75098-2108

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.

RCSD should not be considered to endorse any advertised products or messages pertaining hereto. An advertising rate card is available for businesses, clubs and personal advertising.

RCSD Staff

Jerry Slates - Editor/Technical Editor
Judy Slates - Desktop Publisher, General
Managing Editor, Subscriptions
Bob Sowder - Assistant Publisher

[Material may be submitted via 3.5" Disk (MAC or IBM compatible), and is most appreciated!]

Please address correspondence to:

Jerry & Judy Slates
R/C Soaring Digest
P.O. Box 2108
Wylie, TX 75098-2108 U.S.A.
(214) 442-3910, FAX (214) 442-5258

Feature Columnists

Gordon Jones
Bill & Bunny Kuhlman (B²)
Fred Mallett, Kitty Pearson
Fred Rettig, Martin Simons
Jerry Slates, Ed Slegers,
Scott Smith, Bob Sowder

Artwork

Gene Zika is the graphic artist
who designs the unique **ZIKA** clip art.

Printing

JACO-BRYANT Printers, Inc., Sam Lencke
(901) 743-3466, Memphis, Tennessee

Copyright © 1995 *R/C Soaring Digest*.
All rights reserved.



R/C Soaring Digest
is printed on recycled paper.

The Soaring Site

What's new?

Joe Thomas of San Jose, California sent in an article titled "Recycle That Old Glider" which is included in this issue. In his letter, he said, "I enjoy reading the magazine every month, but I hunger for more slope and scale articles. I realize there are more thermal fliers across the country than us slope guys. The slope fliers are probably out flying and don't have time to write articles."

A second request came from Scott Carroll of Odessa, Washington. He suggested that *RCSD* provide a "spot for slopers to send ideas, comments, and pictures to share with the rest of the Sloping Community".

Well, we'll see what we can do. A new "spot" has been added this month called "The Slope Spot", and the first posted article and photos are from Ron Kukral of New Lenox, Illinois. Hopefully, some of the other readers will like the idea, as well, and we'll receive a bit more slope material than usual to share with the soaring community. Thanks, Joe & Scott.

We have also grouped a number of announcements together this month into a column called "Tidbits & Bits".

Three Peas in a Pod

Uh, huh, just when summer has arrived and it is safe to go out and fly, along come the Three Peas in a Pod. They supplied the photos from the Masters of Soaring event, which includes the cover shot of Roger Lackey; and they obtained permission from Roger Lackey to reprint his article about Guatemala which was originally written for the newsletter of the Harbor Soaring Society in Southern California. Next month, we expect that they will introduce themselves, but in the meantime, stay tuned. The Three Peas in

a Pod are coming soon! (Do you suppose this has anything to do with the yarn that we hear Cornfed told them at the Masters? It had something to do with a tree... Which reminds us. We received the April issue of *NASA Netes* which is the newsletter of The North Atlanta Soaring Association in Atlanta, Georgia. There was a note at the bottom of Tim Foster's column addressed to Cornfed. It said, "In

your landing article in *RCSA*, did you forget the all-important HAT trick you showed me in Austin?" Well, Cornfed, fess up. This is your editor speaking, and you're holding out on us! The rest of us want to laugh, too! We also hope the goat has recovered from the move!

Happy Flying! Jer & Judy



by Curt Nehring
San Dimas, California

Guatemala? You Bet!!!

...by Roger Lackey
Costa Mesa, California

If Guatemala sounds like an exotic, far away land, it should. On our recent trip to fly in Guatemala's Mayan Soaring Match '95, club members Ben Clerx, Don Edberg, and myself found out just how unique this Central America country is. Whether it be the one-of-a-kind Mayan ruins of Tikal or the out-of-this-world hospitality of our host, this truly was a trip to remember.

Guatemala is located just below Mexico and is a five hour trip by plane. Arriving in Guatemala City on Friday at 6:30 A.M. on Avia Taca, Guatemala's national airline, we were greeted by three of our hosts: Enrique, Klaus, and Jergen. Immediately, we were assisted in checking our baggage through customs and climbing into the three mini vans that took us

to the hotel. We could see the European influence in the country with its 16th century aqueduct cutting through the middle of the city. Our hotel was conveniently situated just 5 minutes from the airport. The Hotel Eldorado was first class, even by American standards, with an expansive health club, spa, and convention center.

It was only 8 A.M. when we checked in and, with a couple of hours before we could head out to the field, we decided to walk down to the pool and swim a little. As usual, Ben had the video cam working, and caught the two gringos (Don and myself) splashing and jumping around in the Olympic size pool like a couple of juvenile tourists.

If I say our hosts were terrific too many times, it's only because they were too

good to be true. Of the ten club members with cars that helped us over the weekend, there were always three or four to take us wherever we needed to go. This held true on Friday morning as we loaded up and drove the 20 minutes to the flying field. Situated on a terrace in the middle of the mountains, hills and ravines that dominate the Guatemalan landscape, the flying field's elevation is right about 6000 feet. Strangely enough, the effects of the altitude on our planes was hard to perceive. Probably because the thrust of our attention was dedicated to managing the 15 - 30 mph winds we flew in all weekend. The conditions took a little getting used to (i.e., don't launch too hard or go too far downwind), but after a few hours of practice and some good thermals, nobody seemed to mind.

Friday morning and afternoon was typical of any other two day contest with us getting a feel for the conditions, the field, and the people we would be flying with. Friday night, however, proved that the Mayan Soaring Match was not going to be a small event ignored by the local community. A press conference was held at the Hotel Eldorado, complete with newspaper men, photo sessions of the competitors, cocktails, and hors d'oeuvres. Enrique Martins, organizer of the event, welcomed twenty contestants and 30 - 40 guests to this inaugural event. The Mayans are hoping for the increased participation next year from several more countries and they've sure gotten off to the right foot.

Saturday morning dawned with the same breeze that we had gone to sleep with. Again, the forecast was for sunny skies, brisk winds, and 75 - 80 degree temperatures. Most of the out-of-town contestants stayed at the Hotel Eldorado so, after gathering in the lobby, we loaded up the van with all our planes and gear, and headed for the field. Guatemala is a very clean country without the trash and junk that is evident in Baja. As we drove

to the field, we traveled past two universities, a coffee plantation, a golf resort, and some of their famous dense jungles. If you could drive a straight line to the field, you could be there in about 10 minutes. But with all the ravines, mountains and one-way streets, the commute time is about doubled.

The two day contest consisted of about twelve rounds of flying, broken into four sets of 3 flights, each set being a fifteen minute add 'em up, and 100 points maximum for the landings. Seemed simple enough but with the strong winds, the occasional booming down draught (I had a 1:47 flight from a full launch!), and an occasional visit from a swarm of "killer bees", the task turned out to be quite formidable. With twenty pilots and an expertly administered operation, contest flying wrapped up around 1:30 on Saturday, giving us plenty of time to "shoot the bull", sample the local beer, and fun fly until a late lunch was served at the field. Jergen, one of our Guatemalan hosts and owner of a meat processing company, had several of his workers bring a bounty of pork ribs and chicken, corn and potato salad down to the field. This made for a superb BBQ that rivaled any I've had anywhere. (And if you know how much I love to eat, this is a glowing review.)

By the time we left the field and got back to our hotel, there wasn't much energy left in the group to adventure out into the night, so we just hit the pool and then went back to our rooms to take in the James Bond marathon on TBS.

Happily, Sunday dawned with much calmer breezes. In fact, several times the wind dropped below 5 mph. This made landings much easier. Thank goodness, as I completely missed four of my six landings on Saturday. Don and myself battled back and forth through sixth place throughout the day, while Ben continued to amass an insurmountable lead.



**Masters of Soaring
Covina, California
...photos by Mike
Deckman**

Glendora, California

*Joe Wurts (Below)
Ben Clerx (Left)*



By the end of the contest, his smooth flying and consistent (no zeros) landings placed him first overall, with second place going to Lauren Mills of Utah, and third to Terry Edmonds of Iowa. Again, with flying complete fairly early in the day, time was available to "hang out" and fun fly.

With one day left and plenty of flying behind us, we took the opportunity to do some sight seeing on Monday, and off we headed to Tikal, an archeological site of the ancient Mayans, in Guatemala's portion of the Yucatan Peninsula. It is about a two hour trip from Guatemala City, one hour by plane and one hour by bus. Now, I'm not big on items of antiquity, so the magnificence of this place took me by surprise. The site is home of the tallest pre-Columbus Mayan temple, as well as the second highest pyramid in Central America. The site is in several stages of discovery, and is planned to stay that way. Several pyramids have been left unearthened as they were found, while some are only partially excavated. The majority of the site is completely exposed, and much is restored.

In their time (500 BC to 500 AD), the Mayans were a very advanced civilization. The site indicates extensive water recovery systems and planning in their architecture. Fortunately, we were able to climb to the top of most of the temples, and doing so afforded us a magnificent view of this ancient city surrounded by an apparently unsurpassable jungle.

Bill Forey of *Model Builder* magazine brought a hand launch glider with him to Tikal, and had several of our group climb to the top of the pyramids, pose for pic-

tures, and then launch the plane. Under Don Edberg's masterful control, the plane safely glided down, to the amazement of the other tourists. In checking with park officials, it was determined that this was the first glider ever flown in the park, and Don Edberg the first glider pilot to escape the wrath of the Mayan gods.

The excursion to Tikal was a perfect way to end a terrific weekend. As we headed back to Guatemala City, and our flight home, we recounted our good fortune of choosing to go on this trip. Earlier in the weekend, I had indicated that a week earlier, I really hadn't been too excited about going to Guatemala. How different my attitude was on the plane home, as I relaxed and reviewed my good fortune at taking this trip that will stand out in my mind, forever. Thanks again to the Guatemala club for taking such good care of us. We look forward to seeing you again, next year! ■



So, you think I like Orange, eh? Don't understand why. (The wings are a beautiful shade of orange, the fuselage is white. ED.)

Just before Christmas, my lovely wife, Audrey, talked to Ed Siegers about the availability of a kit for the Vulcan 2 meter. She wanted to purchase the kit for my Christmas present. The kits were in short supply at the time, but Ed apparently made a special effort to get the kit to her so that she could put it under the tree. Incidentally, I had discussed the merits of the kit with both Ed and long-

time friend, Brian Agnew, beforehand. Brian now works for Ed, and both gave glowing reports about the bird. The kit arrived on time, and was under the tree as planned.

There were a couple of surprises when I opened the box a few days after Christmas. First off, there were no plans, only a seven page booklet of building instruc-

**The Vulcan 2M &
Trimming With Tissue**

*...by Kale Harden
Palm Harbor, Florida*

The purpose of this article is to review the construction of the Vulcan 2M, which I have just finished, and to suggest a different way of finishing Obechi covered wings.



*Lil T with tissue covering, 12 oz.,
(Orange, again! ED.)*

tions. These were certainly adequate for an experienced builder, but a little skimpy for a beginner. I understand that full plan sheets are on the drawing board, now (early March).

The fuselage was beautiful. I instantly liked the lines as it had a robust fuselage with enough diameter at the rear to give good strength in that area. Many kits have fuselages with small cross sections at the rear, and these rupture on the first, hard landing. This one will not do that! There is no kevlar in the fuselage, but the sides are put together with an overlapping seam instead of the usual butt joint with a reinforcing strip. Nice and smooth, and to my surprise, the fuselage was almost completely devoid of pin holes. The coat of undercoating was absolutely unnecessary when the finish was applied to the fuselage. One coat of Krylon was all that was needed.

Another surprise in the kit was the material for the "V" tail. It was solid 3/16" balsa. No foam. No built-up tail surface. Just solid balsa. Many purists would certainly turn up their noses at this, but Brian had said that it was OK. It does have a unique mounting system, which is very sturdy without being heavy. Two screws hold it in place, which allows removal for transit.

The wing is foam cored and pre-sheathed with Obechi. The servo openings are nicely cut (although I did enlarge them a bit), and the flaps and ailerons have been cut free with a router. Holes for the servo wires are already cut, and the wing required a little work to finish. One needs to finish cutting out the flaps and ailerons, and then face them and the leading edge with 1/8" basswood and add tip blocks. As the wing comes in the box, it is in three pieces: the center section and the two tips. These must be glued together with the proper dihedral and then reinforced with some glass tape. Not a real big job, but requiring some care to



Vulcan 2m - Covering wing with Japanese tissue & Trip™ sanding sealer.



Partially covered wing. Note brush and sanding sealer.

assure proper alignment.

There are numerous ways to finish Obechi. Here is a suggested way to do this chore. The idea came to me when I constructed a Lil T handlaunch. I cov-

ered the fuselage with Japanese tissue. Having used this method on free flight models, I knew it to be very strong and very LIGHT. Instead of using dope to apply the tissue, "Trip™" water based sanding sealer was used. One coat was used to apply the tissue and one for finishing after the paper was on. Trip™ is a trade name, and I purchased it at the

hardware store (Home Depot). Covering with Japanese tissue requires a little more time than Monokote, but the saving in weight is considerable. Four ounces were saved on a Falcon wing!! Some pictures are included to show this method of covering the wing. The tailplanes were treated the same as the wing.

The completed model weighs in at 33 ounces, which is very light for this type of sailplane. So far, the model has been in the air only once, but its performance promises to be spectacular. That flight lasted over 7 minutes under very windy and gusty conditions after which it was retired to wait for better weather. ■



Vulcan tail surfaces.



Equipment in Vulcan 2m



Finished Vulcan wing. Note Wargo super servo saver.



ZIKA



Jer's Workbench

Jerry Slates
P.O. Box 2108
Wylie, TX 75098-2108
(214) 442-3910

Pressing wing skins

As I have said before, I have been making foam core wings for a lot of years, and have also made a lot of mistakes during the earlier years. When I first read about and then saw the first foam core wing, I was convinced that this was the only way to make wings.

My first foam core wing was a major project, as there was no "how to" information out there yet. I made several different kinds of cutting bows, and experimented with different kinds of power supplies before I made my first satisfactory core. Boy, did I go through a lot of foam getting that first set of cores! Next, of course, I had to skin the core. This, too, was a major project. There was no Obechi available that I could find at the time; the only thing available was sheet balsa. Sheets of balsa had to be glued together to form a sheet large enough to do a

wing. Then, was the time to glue the wing skins onto the core. What to use? The only epoxy available or what I could get at the time (about 1960), was 5 or 12 minute, fast or slow cure, epoxy. Nobody was using contact cement, yet. So, I used white glue. Now, it was time to glue the skins onto the cores. I spread white glue onto the skins, taped the skins onto the core, and placed the core into the saddles; finding a flat spot on the garage floor, I laid a board on top of the core, pressed the core using a tool box and a 5 gallon jeep can, and let it cure for 48 hours!

Over the next few years, things got better. I improved my foam cutting equipment. I got a set of matching cement bricks for pressing, and then made a couple of presses. Glues got better also; there were different brands of contact cement, and double sided tapes. Then a slow cure, low viscosity epoxy came onto the market.

My presses had their good points and their bad points. One good point was when I pressed a set of cores I could pick the press up and move it out of the way and not be tripping over it. Also, on a warm day, I could move it out into the sun to speed up the cure time. One bad point is that I had to be very careful and not put too much pressure onto the core. I have at one time crushed a core, and the spar made a bump on the top and bottom of the wing. Another time, I made what should have been a 10% thick wing section about 7%. The cure for this was vacuum bagging, because I could control the pressure or vacuum. There was nothing wrong with the press; I used it for a lot of years. In fact, I still have one.



Vacuum pump that I use the most.

When did I start using a vacuum to press my wing skins onto the cores? I can't remember. Somebody said to me one day, "Have you tried using a vacuum bag?" Well, to make a long story short, I went to my local hobby shop, only to find that there was nothing available in their catalogs about vacuum pumps. Next stop was the yellow pages of the telephone book. I found vacuum pumps with related equipment, but everything that I needed was very expensive. Next stop was a surplus supply, also found in the yellow pages. There I found a 1/2 hp electric motor, vacuum pump, AC (110v) vacuum switch and a ball check valve. The above equipment cost me \$35.00 plus the time looking for it. Next, I needed a

Gravity Surges in Baldwin County

...by John R. Forstall
Pensacola, Florida

Gravity surges occur throughout most of the southeastern United States. They are confined to relatively small areas and are of no danger to humans, small animals or crops. Before the invention or radio controlled model airplane gliders, they were completely unknown to man. In fact, pilots of these light, relatively frail craft, are presently the only humans equipped to observe this strange phenomenon.

During the early period of discovery, the surges were thought to have some religious significance. This probably occurred when pilots seeing their craft suddenly plummet several hundred feet-per-second toward the earth, would yell out the Savior's name. This belief is no longer prevalent, but the behavior continues. Other profane metaphor are occasionally used, but the sacred name is by far more popular.

The surges are thought to be associated with the rapid movement of magma deep in the bowels of the earth. The system, in many respects, is similar to our own

bag. What to use? I didn't know about or where to find the good bagging film that I use today. So, I made my first bags out of that 4 mil. plastic used as a weed barrier under the decorative bark in the yard. This 4 mil. plastic works, but not very well. It has a lot of pin holes in it.

So, if you have not tried vacuum bagging yet, because you thought it was too complicated to get into, it's not. To get started, all of the equipment that I spent a lot of time looking for can now be found in the advertising section of *RCS*. Today, I have several vacuum set-ups that I have built and use, but the one pump that I use the most is a Mini-Vac that I got from CST several years ago. ■

intestine, but of a much larger scale. The moving magma creates a positive surge that is quite well known, but there is a negative component in adjacent areas that is not well defined. Negative surges cause the model gliders to rise rapidly in altitude. Lack of information in this area is attributed to the competitive behavior of pilots who, observing their craft rise suddenly exclaim, "Nothing over here boys! Try 15 degrees to the east!"

A monumental effort is under way to map the location of the most intense areas in Baldwin County. Geolological surveys of this type are enormously expensive. Your donations to support this good humanitarian project are desperately needed. Make your checks payable to the author.

A volume of detailed maps titled "Magma Charta of Baldwin County" will be published in the fall of 1996. (Assuming adequate funds are received.) ■

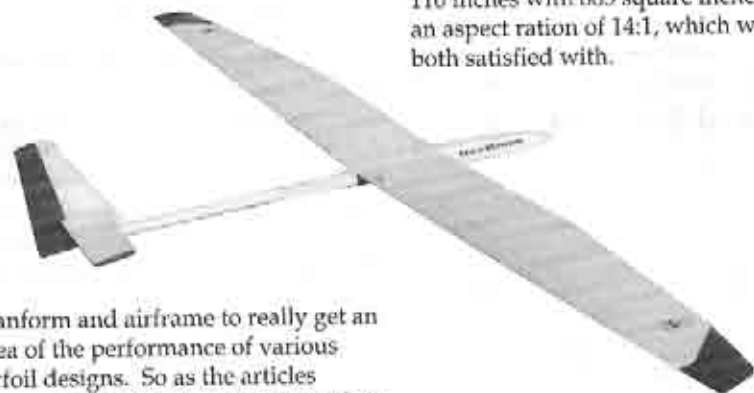




Gordon Jones, 214 Sunflower Drive,
Garland, Texas 75041; (214) 271-5334

Design Thoughts Part 4

When I first started this series of articles it was because of the requests of some of the readers of *RCSA*. In addition, my sidekick Dale King and I had been looking at a design that would meet all of our requirements for a sailplane to try out some existing airfoils. We wanted to use a standard



planform and airframe to really get an idea of the performance of various airfoil designs. So as the articles progressed so did the realization of our design.

We set an initial set of parameters for the fuselage, the wing planform and the stab/rudder. In the fuselage we wanted about 12+ inches of nose moment, 23-24 inches of tail moment, a slip-on nose cone and clean aerodynamics. We ended up with 12.5 inches of nose moment and 24 inches of tail moment after negotiating between ourselves. (We both have slightly different tastes.) In addition, we selected a fin with a slightly raked rear line as we felt that the slight angle improved performance somewhat in turns. With these factors in mind we made a plug to construct a mold for a fiberglass fuselage. (More on this later.)

For the wing we set out with a goal of an aspect ratio of at least 14:1. We have both found this to be a good number for good flight performance, and with the airfoils we wanted to try out this figure as it would be most acceptable. We also got into a bit of negotiation on the wing span at the outset as Dale likes big and I like smaller planes. We finally settled on a 110 inch span to maximize launches and increase landing efficiency. Once the basic parameters were established we sat down and started playing the numbers game on a sheet of graph paper. We ended up with a wing of 110 inches with 885 square inches and an aspect ratio of 14:1, which we were both satisfied with.

For the stab we got into a bit of an argument over thickness as Dale has been going down into the 9% range and I preferred a 10% thick stab as a preference. I must admit I did ambush Dale a bit as I got him flying a smaller airplane which he now really likes, and I used this plane to get my way on the wing and stab designs. At least he won on the fuselage end of the design.

For the rudder we used an existing design of ours that met the area requirements for the fin and we were basically completed with the design. From start to finish it took us the better part of a year to really get a feel for what we liked and didn't like. We changed some of our ideas along the



Would you buy a used sailplane from this guy? Dale King with OutRider.

way as we tried different things on other airplanes but the above is what we finally settled on.

The airplane kind of looks like the current crop of airplanes that are available but incorporates what we liked in a design. There is nothing new; no new super design techniques. Just some good ideas that have come along over the years that we happen to like. As with most flyers we like to tinker with this and that and this was the perfect medium or culmination of that tinkering. (At least for now!)

As I mentioned earlier we made a mold and produced fiberglass fuselages for the project. Firstly it was because we like the design of the fuselage and secondly I have wanted to jump into this arena for a while anyway. I must admit I was fortunate because I have Jerry Slates close at hand and he was very instrumental in the success of the mold and the fuselage construction process.

If you follow his articles, he has described how to build a plug for making a mold and the making of the mold itself. And after having done it, it

is easier than most folks think. While it is time consuming, both in the making of the plug and the mold itself, it is worth the effort if you are really interested in producing the same fuselage over and over again. I think the biggest hurdle was deciding on the design of the fuselage and then getting the ambition to proceed with the project. You will find that once you start you can't wait to lay up the first fuselage.

There are a couple of points that should be reiterated from Jer's articles; make the plug **exactly** like you want the fuselage! If you have flaws in the plug they will come out in the mold! Really take your time and it will pay big dividends later on when you lay up the first fuselage. Also, take your time building the mold as it will mean the difference in a good fuselage and a bad one. Be particularly careful of mixing instructions and follow the suggested mixing and drying times indicated by the manufacturer. Follow these two simple rules and things should turn out great.

The end result is flying and at 65



ounces with a wing loading of 10.5 ounces per square foot we are very pleased. It has met our goals and we are in the refining stage at this point. The first one that was built has an airfoil that Dale came up with and it has been a pleasant surprise. We were a little dubious when we first test flew it as we had a whole new design to test, but everything worked out. We

will continue to tinker with airfoils and our design.

This has been an interesting project and one that has brought a lot of rewards to both Dale and myself. We now have a new toy to play with to our hearts content and we can reproduce the fuselage any time we want to build a new airplane with one of those new fangled airfoils. ■



CORRECTION!

We had a computer glitch!?!

In the April issue of *RCSD* on page 19, "Design Thoughts Part 3", the diagram did not properly print. Sorry about the mistake. If we could figure out what caused it, we would promise not to do this again!

LIFT OFF!

...with Ed Slegers

Route 15

Wharton, New Jersey 07885

(201) 366-0880 - FAX (201) 366-0549

9:30 AM - 5:00 PM (Closed Sun. & Mon.)

New Products

A few new products have come in this last month that I liked and thought you might want to take a look at. Some are for the electric flyer and some for the sailplaner.

The first is a new speed controller from Astro-Flight. The model #211 is a digital speed controller with brake. It can be used on a maximum of fourteen cells down to a minimum of one cell. The maximum volts is 20, and the maximum amps is 65. The #211 with wires weighs 49 grams. The size is 1.25 x 2.0 x .25. The #211 has no BEC (otherwise it would not work with anything other than 6 - 7 cells), and comes with a connector of your choice. The #211 has high rate switching. At half throttle, duration is increased by 50% over frame rate controllers. The #211 also has a soft brake which will save wear on the motor brushes. It also has a safe start.

What all this means is that there is a controller that will fit just about any of the sport electric flyer needs. I have used the #211, and it works very well.

Another new product from Astro-Flight is a new charger model, 115D. This is a peak detection digital charger. The 115D is an AC/DC peak detecting charger that will both trickle and fast charge. It will charge from 1 - 8 cells AC and from 1 - 7 cells DC. You can charge any battery from a 100ma to a 4000ma. I have found this to be a good charger to keep my receiver and

transmitter battery up at the field.

Another new product is Skyshine. I have tried just about every type of reflector tape available in an effort to get a little bit of reflection off the plane on those days when it is specked out; most are ineffective. Not so with Skyshine. This stuff is unbelievable. It looks just like headlights on the plane, and comes in sheets so that you can trim patterns to suit your taste; it also comes in round servo covers. If you like to fly really high, Skyshine is almost a must-have product.

The last new item is by Litco. They have a battery charger for the very serious modeler. This is more of a battery management system than just a charger. The charger has more features than I have room to list. The manual is 15 pages long, but some of the highlights are:

- DC at field and AC at home by using a wall transformer.
- Processes 4 batteries at a time.
- Trickle charges up to 48 cells simultaneously.
- Processes from 1 - 12 cells and from 10ma to 9999ma.
- Batteries discharge current is 205 - 330 - 500 - 1000ma.
- Charges current in 1ma steps from 4ma to 1000ma.
- Fast charge currents are 250, 330, 500, and 1000ma.

All of this is programmed by a touchtone key pad. Charging terminates into a trickle. A nice feature is that the fast charge goes to 80%, then slow charge to 100%, and then trickle. The list goes on and on. For the pilot who is real serious about battery management, this seems to be one of the best available.

Good Flying! ■

Workshop Talk

About Drilling Holes

...by Erik Eiche
6080 Tranquille Pl.
Richmond, B.C.
Canada V7C 2T1

Drilling holes?? What's the big deal? Anybody can drill holes! Right?? Right!! But I wasn't going to talk about holes **anybody** can drill. More to the point, it will be about "problem" holes we come across every once in a while when building model airplanes. This article will cover holes in:

- White and blue foam
- Balsa
- Poplar and birch plywood
- Sheet aluminum
- Sheet brass
- Fiberglass
- Arborite
- Plexiglass

Although common twist drills, which were designed to primarily cut steel, will also cut wood and plastic, they are **not always** the ideal tool for drilling holes.

Let's start with foam.

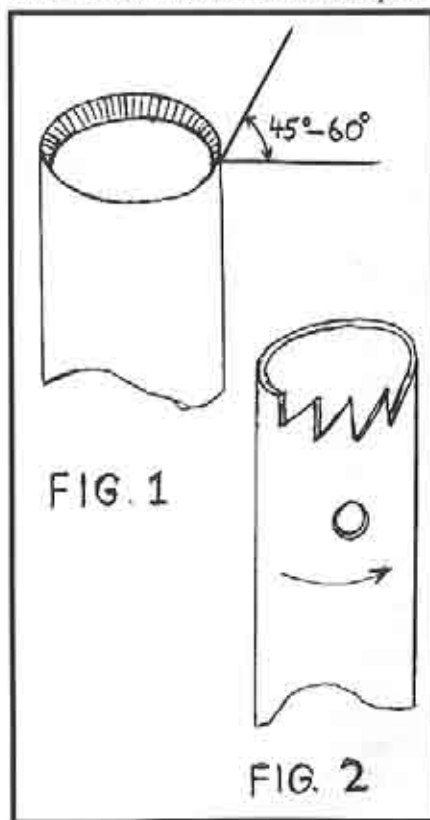
One of the jobs when building foam wings is to drill a deep hole into the foam for installation of a ballast tube. Well, foam doesn't like to be "drilled", but it doesn't mind being "cut". So, let's make a cutter from a piece of thin walled tubing. Brass or steel is OK. The diameter of the hole in the foam is determined by the outside diameter (O.D.) of the tubing. Use a round file (fine cut), and sharpen one end of the tubing from the inside, only. (Figure 1.) A piece of dowel stock, inserted approximately 3/4" into the opposite end, makes a good handle. If the dowel is too loose, increase the diameter with masking tape for a "slide" fit.

[There are all kinds of "fits", but I'll only talk about mechanical fits.

Three of the more common ones are:

- Interference fit. That's when the hole is smaller than the part (shaft, bolt, etc.) that's supposed to go in.
- Slide fit. This is the case when both have the same diameter and can slide freely without play.
- Clearance fit. The hole is oversized. Amount is usually specified.]

Put the dowel back in the tubing and tie the two together with masking tape. You are now ready for action. Push your brand new cutter with a twisting motion into the foam. If you feel increasing resistance, remove cutter with a twisting motion and check for foam build-up in-



side cutter. With handle removed, it's easy to remove the foam by pushing it out. Put handle back and proceed until proper depth is obtained.

Next is balsa.

If I want neat and round holes in balsa, I use a holesaw. You can make your own from brass tubing, with the stuff you can buy at your friendly hobby store. You'll also need a small triangle file. It's really easy. Just file a number of teeth all around the circumference of the tubing and, voila! You have a holesaw (Figure 2).

My smallest holesaw is 3/32" (2.5mm), and has 6 teeth. The largest is 1/2" (12.5mm) with just over 20 teeth. The number of teeth is not critical. Holesaws 1/4" (6.3mm) and larger should have a short piece of hardwood dowel or steel rod in the upper part that goes into the drill chuck. You guessed it! It prevents deforming when tightening the chuck. In addition, I drill a small hole into the side of the holesaw, about 1/2" or so up, through which I can insert a bent piece of piano wire to push out possible waste build-up. Before you start with your first hole, remember, it is good shop practice to support the back side of your job (balsa sheet in this case) with a back-up, which

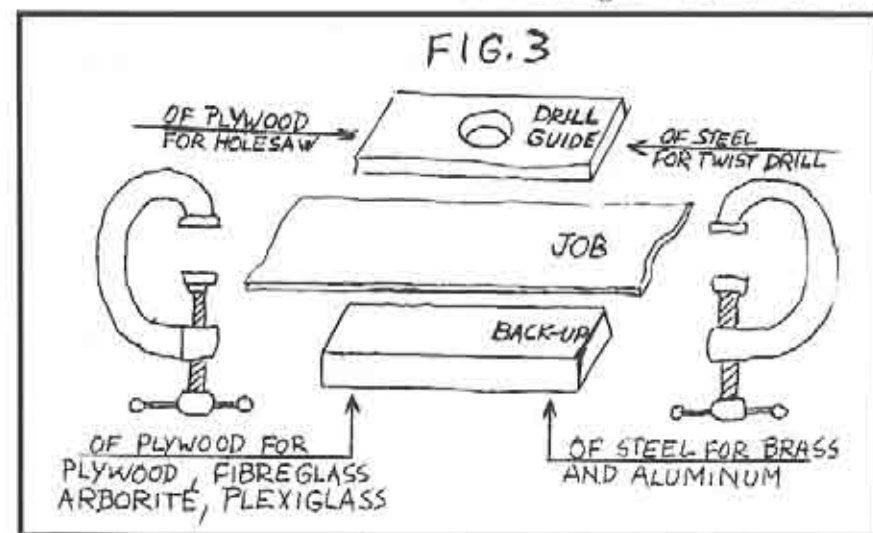
can be a piece of scrap plywood. You are now ready to try your new holesaw.

Poplar plywood

Poplar plywood is sometimes used for fuselage sides of Sagitta type models. It is a great opportunity to use your brass holesaw to cut the holes for the wing rod and alignment rod. When the location of the hole is critical, like for the wing rod, I use a drill guide. This can be a piece of scrap plywood with a hole the same diameter as the one you are going to cut. Align the hole in the drill guide with the marked hole of the fuselage side. Also, think of having a back-up piece in place. Now, clamp the 3 together (Figure 3), and you are ready for "Operation Holesaw".

Birch plywood

Although birch plywood is a lot denser than poplar plywood, there is no problem cutting holes with a brass holesaw in up to 1/16" (1.5mm) thick birch plywood. The holesaw needs a minor modification if you want to cut holes in thicker, 3/32" - 1/4" (2.5mm - 6.3mm), birch plywood. Use a small needle nose pliers and bend every second tooth a bit inboard. You guessed it, again! It reduces friction without increasing the hole size. 400 - 500



rpm is a reasonable speed for brass holesaws up to 1/2" in diameter.

Aluminum

The average builder doesn't use aluminum too often, but there is the occasional time. Sheet aluminum comes in a wide variety of grades. 1100 is the most readily available aluminum. It is of low strength, but easy to form. 6061 is a medium strength aluminum alloy which can be heat-treated. It is usually available in the T-6 temper. The higher strength aluminum alloys like 2024 and 7075 are principally used in aircraft and not available at your friendly neighborhood hardware store.

Now, back to drilling holes. I guess most model builders have some assortment of "general purpose" twist drills. They are OK. You just have to watch that they don't play tricks on you, like making pentagon shaped holes, etc. One can "restrain" drills from doing that, by using a drill guide (Figure 3). Whenever practical, "sandwich" your sheet metal job between a drill guide and a back-up and you will end up with a perfect hole. Cutting fluid helps to keep wear and tear and metal build-up down to a minimum.

A real slick way of cutting holes in sheet aluminum is using a UNIBIT. It will even cut plywood and some plastic. It's kind of a "stepdrill", because it increases its drilling capacity from 1/8" (3mm) diameter, to 1/2" diameter in "steps". There is also a UNIBIT in hole sizes from 1/2" - 1" diameter available. I can highly recommend both. I only know of 3 minor drawbacks: 1) Cost, 2) Smallest hole size is 1/8", and 3) It only cuts fractional hole sizes (from 1/8" to 1/2" in 1/32" increments, and from 1/2" to 1" in 1/6th).

Brass

I love to work with sheet brass, because it has so many "built-in" qualities. It's easy to cut, file, polish, solder, form, and very forgiving if, for instance, the bend is

not where you thought it would be and you want to re-do it. But sheet brass can be nasty when drilling holes with a twist drill. Sheet brass, as we buy it, is relatively soft as far as metal is concerned; a sharp twist drill loves to bite into soft metal. The most critical moment comes when the drill wants to break through the back and grab your "masterpiece" and spin it around. Well, we can prevent that. The idea is to eliminate this "breaking through" business altogether by using a proper back-up. The drill is supposed to cut through the job and into the back-up, but not through the back-up. So, the larger the drill, the thicker the back-up has to be. For a perfect hole in sheet brass or sheet aluminum, use a steel back-up (flat bar, or whatever you have). If all this is too much bother for you, take the UNIBIT. It doesn't have the "grab and spin" tendency twist drills have. But remember, it will only cut certain size holes.

Fiberglass

Any cutting tool will prove that fiberglass is wicked stuff. The name says it all; it is glass. Don't ruin your newly acquired UNIBIT cutting holes in your Lovesong fuselage. I took a brass holesaw to do it. Check your holesaw after each hole, if it needs re-sharpening. If you decide to use a twist drill, make sure you have a good drill guide and back-up in place.

Arborite

Arborite is a medium hard multi-layer plastic with a hard finish on one side. For best results with twist drills, sandwich arborite, and clamp it tight (Figure 3). And, again, the UNIBIT does an excellent job if you run it at low speed.

Plexiglass

The UNIBIT cuts holes equally well in Plexiglass. If you use a twist drill, you've got to keep the backside of plexiglass in tight contact with a back-up. Twist drills

Table 1 For best results.

	First choice	Second choice
White foam	cutter	-----
Blue foam	cutter	-----
Sheet balsa	holesaw + b.up.	-----
Poplar plywood	holesaw + dr.g. + b.up.	drill + dr.g. + b.up
Birch plywood	Unibit	holesaw + dr.g. + b.up
Sheet aluminum	Unibit	drill + dr.g. + b.up
Sheet brass	Unibit	drill + dr.g. + b.up
Fibre glass	holesaw + dr.g. + b.up.	drill + dr.g. + b.up
Arborite	Unibit	drill + b.up + dr.g.
Plexiglass	Unibit	drill + b.up

dr.g. - drill guide b.up - back-up

have too much bite for plexiglass, and might otherwise chip the back of the hole.

Summary

The easiest and most convenient way to cut holes is with UNIBIT. When using a twist drill, "sandwich" job tightly between a hard drill guide and hard back-up.

Note 1

In one of the next issues, I will talk about a simple and inexpensive, homemade tool. This tool enables you to drill perfect holes, free of burr, in plywood, plastic, and sheet metal from 1/16" down to as thin as 0.001", like brass shim stock and kitchen foil, with a twist drill (any size

hole: metric or imperial, 1/16" - 1/2").

Note 2

Got a phone call the other night. "This is R... I bought a German kit. Do you know how to convert g/dm² into oz./sq. ft.?" I said, "It's easy. Divide the number of grams per square decimeter by 3. Example: 33 g/dm² = 11 oz./sq. ft."

Note 3

I plan to have a workshop on "drilling holes", next winter. Unfortunately, the shop is rather congested. Two or three people per evening would be the maximum. Let me know if you are interested. There is no charge for Oakalla Hawks members. ■



Landing Skegs

Anyone read an article on landing skegs lately? Whew! What a hot topic!

Well, I must admit guilt... I use one (thanks to Cornfed). Here are a few of my thoughts on the subject. If I should go to a contest and the C.D. says no skegs, I'll say, "No problem." But as long as they are universally permitted, I will most likely continue to use them, particularly on ships where the flaps extend below the bottom of the fuselage.

I believe that many people who object to landing skegs are looking at it from a safety issue. There may be some merit to that, but I believe the chances of getting bonked in the body (and injured) by the

nose, or wing of a sailplane, are far greater than being injured from a skeg. I will concede that sharp metal landing teeth, forward of the wing should not be used under any circumstances.

Honestly, the main reason I use a landing skeg is to protect the flap servos. And yes, I do use servo savers, as well. While I am not particularly fond of the aesthetics of an inverted shark fin hanging from the bottom of a fuselage, skegs do provide some function in protecting flap servos. However, I would not be opposed at all to having the tow hook as the only protrusion on the bottom of the sailplane, as long as we all do it via an AMA rule change.

Non-Tech Tidbits

...by Mark Thomas

As most everyone knows, it is possible to intermix different makes of servos with whatever brand of radio you may have. All it takes is some simple wire snaps or connector modifications. However, you might not know about intermixing of servo arms. I did a swap test on the 3 major brands, and here is what I found. JR arms will fit AIRTRONICS servos. They fit a little loose, but if you're in a pinch, they are certainly tight enough to be safe. AIRTRONICS arms will fit JR servos with a somewhat tight fit, but they will go on. FUTABA will not take JR or AIRTRONICS arms, nor will FUTABA arms fit JR or AIRTRONICS. Knowing this just might come in handy at a contest if you break a servo arm and don't have a spare!

Tony Boothman, President of the Central Ontario Glider Group was kind enough to send in the following write-up and photos about their club.

Club of the Month

Central Ontario Glider Group
239 Dodson Rd.
Barrie Ont. Canada L4N 4N5
Tony Boothman, President

Our club, known as COGG, has most of our members from Southern Ontario. That's within a sixty mile radius of Toronto, but as far away as Northern California and Quebec.

We fly on approximately a two thousand acre sod farm, thirty miles north of Toronto. We are a very metropolitan club with members from Austria, Australia, South Africa, Czechoslovakia, England, Scotland, Poland, USA, and of course, Canada.

We have some very good pilots, several LSF 5's, and some who only fly their own designs (very well, I might add). The sailplanes we fly range from Gentle Lady's to Grifters, and have a fast growing number of people who fly electric. Our group has a full contest schedule that we share with several other clubs, including a cross country race called The Dash for Cash. Our annual events also include a Snow Fly contest/social held in February (snowmobile suits mandatory). This time of year we do get the "odd thermal", although in February, 20 miles north of Toronto, it's not just the thermals that are considered odd.

In 1995, our club is hosting the sailplane portion of the Canadian Nats to be held on the 13, 14, and 15 of July. We have also decided to run our cross country race the same week. If anyone wants information on these events, write to me and we will give you the details we have to date. If anyone would like additional information on electric events at the Canadian Nats, please write to: Stuart Pearce, 40 Holgate St., Barrie, Ontario, Canada L4N 2T7. Stuart is a COGG member and the Electric Chairman for the Model Aeronautics Association of Canada.

Many thanks for your contribution Tony. Sounds to me like the Canadian Nats is a place to be in July if you have the opportunity!

**Until next month,
Thermals! ■**

Fred Rettig
1408 Monilmar Dr.
Mobile, Alabama 36693
(205) 471-2507 (days)



Hot Air

This is just a little note to say what's up with Cornfed. You see, I moved my business this past month. My, what a job that was! After all, dad's goat wagon would only hold so much. And if that ain't enough, the goat only had onespeed, and that was real slow!! Anyway my new address is shown with the column this month, and I still have the same phone number.

I did not get much of a chance to visit with Bubb, the buzzard, this month, but he did talk about a few things I forgot to mention in my last article. He said, "If you think that a trip out flying every now and then will help your understanding of a thermal, you are just foolin' yourself. For you see, by the time you get out to the field, start flyin', and recapping, what have you really accomplished with the last flying session? Visit with your buddies, try out a few trick maneuvers, and whatever else strikes your fancy. Then,

Just Like The Real Thing

...by Don Bailey
Bothell, Washington

All of us at one time or another watch our slender creation as it glides along in the air and imagine ourselves up there in the cockpit looking down. Let's be honest, models are meant to be an imitation of the real thing, an ersatz means of enjoying the phenomenon of rising air with-

it's time to pack up and go home."

Also, "If you fly a little more on a more regular basis, say more than just once a week, then you will be able to take in the old information and the new information that your plane is showin' you, as well as the wind shifts and all the other weather related conditions. Apply what you have learned at your practice sessions, which will make for constructive and profitable days, a feeling of accomplishment. With your new found ability, you will be able to read thermals around you before and after you launch your plane."

"You will need to learn how to fly the feathers (plane) that work the best for you. Learn them, and know everything there is to know about them, in all conditions, and by doing so, you won't be second guessing your plane and its ability to perform. In other words, get a plane and stick with it. As you become more knowledgeable about thermals, then try new planes and new airfoils."

Signing Off, Cornfed

P.S. Don't forget to pray, and say something good about your friends.

ATTENTION: All who can help and will help. The USA/F3B team need all and any donations they can get. This year, the team will be going to Romania. Contact myself or Tim Renaud at Airtronics.



out the hassle of driving a long distance to the nearest gliderport and getting in that long waiting line for a tow, without the eyebrow-raising cost of getting legal with the FAA and showing a positive balance in the ol' club account, and without the need to plan ahead for the weekend and then sweat bullets that the good weather will hold. Model gliders are the ultimate convenience, combining manageable size with minimum setup time,

so that you can change your mind on your way home from the hardware store and stop by the field for a quick thermal, and still have time later on for that fence repair job. And though some may regard our models as toy airplanes, the truth is that the experience of catching good lift with an R/C glider is every bit as rewarding as the real thing.

Full scale soaring is one of those unique sports that doesn't fit the traditionally accepted meaning of the word 'sports'. You are more likely to see a televised event of a soaring regatta on the Discovery Channel than on ESPN. Something about skinny men in polo shirts and a tennis hat packing themselves into a tiny fiberglass cockpit with a boom mike in their face just doesn't fit in with the analgesic balm crowd. A soaring event has all the esoteric panache of the America's Cup, but unlike a sailboat race, with camera crews buzzing overhead capturing every angle as the entire flotilla changes tack, a glider event doesn't translate well as a spectator sport, and few people turn out just to watch. Sailplane pilots are aware that the rest of society is simply not in on their little secret and that they thrive in an environment shared only with the soaring birds. And they remain convinced that any paltry imitation is sheer mockery.

But in reality, model gliders are nothing less than full-size sailplanes in miniature. All of the challenges and disappointments and rewards and pleasures are identical, only to a lesser degree. Admittedly, though a good power launch on an E3B winch with a nice ping off the top may give you a rush, it can't compare with the excitement of being towed aloft behind a Super Cub at the end of a long rope with the sound of the wind rushing all around you as the belly wheel slowly spins down underneath your seat. You miss out on the joy of watching the landing strip drop away beneath you as the

view gets better and better and your shadow disappears into the wheat fields, or the thrill of yanking on the release knob and coming back and hard over on the stick as the airstream softens to a murmur and the vario settles in the green. But with R/C models, if you find bad air on a given flight you simply shoot an approach and relaunch, no sweat. The full-scale guy who finds himself circling desperately around in dead air, on the other hand, gets a feeling in his stomach like cold oatmeal as the prospect of another long wait on the ground becomes more and more likely. In addition, R/C flying is a community activity with a picnic atmosphere, where it's not uncommon to find several guys sitting next to each other in lawn chairs as they all work the same thermal with their gliders and chat about the advantages of trailing edge reflex.

At the end of a great day of soaring, the R/C guy goes home feeling just as good about life as the full-scale pilot, and for the same reasons. The experienced model flyer plays his thermal machine like a musical instrument. He's tapped into the subtle effects of the air on his glider, reading the significance of every tip and bobble, intuiting which way to turn, when to speed up and when to slow down in order to work the lift and stretch his flight time. Rising air can be elusive, and sink is an invisible foe, and when things get dicey you need to stay focused to stay airborne. I've had days where I have saved a flight by finding a last minute bubble at low altitude and stayed with it for painstaking minutes while it built in intensity and slowly spread all around me, until at last I was fat with altitude and could relax and pull out the old sack lunch and enjoy. The fact that I was sitting in the cockpit of a Blanik in one instance and out on the grass with a transmitter in my lap in another made very little difference, the challenges are

fought with the same strategies and, as with any skill sport, success is a measure of ability.

Now that we've established R/C as a worthy surrogate for the real thing, is there a way for us model flyers to capture the aesthetic value and enjoyment of full-scale gliders without the hassles? You bet there is. The answer is scale replicas. Tune in on the remarks from the occasional bystanders who have interrupted their bike ride to watch the gliders for a while and you will hear repeated comments about how beautiful they are. It's those long, slender wings and perky tails and the graceful manner in which they ply the skies that appeals so much. How better to capture the essence of glider flight than to construct an exact duplicate of a far-real sailplane?

When you study the panoply of choices you realize right off that the field is dominated by white fiberglass superships, such as the Windspiel and Thermoflugel line, or the Robbe and Graupner kits. Not exactly your typical bargain when you see some of the price tags. Some people get off the bus right here, but there are alternatives to the five hundred dollar German kits. A few of these kits are priced less than your average open class TD ship, though you may have to do some looking in the used market classifieds. Krick now offers a beautiful all-wood Grunau Baby for less than two hundred dollars through Hobby Lobby, and there are a number of other options, as well. If you don't mind building from scratch, you might consider the many choices offered through plans services such as Bob Holman and Cirrus Aviation, or even Carstens and RCM. There is a vast array of plans available for the old wood and fabric prewar and postwar gliders such as the Kranich, Minimoa, Rhoenbussard, Bergfalke and the Schweizer TG-2. Many of the modern

superships are also available as wood projects though these can represent considerable hours of patient shaping. As with open-class TD ships, you pay quite a bit more for prefab, but save many hours of construction time. The enterprising modeler may choose to create his own design of a reduced-scale sailplane of his own preference. You may end up with the world's only fifth scale Weltensieger with this route. New possibilities for competition become available to you when you own a scale bird, particularly if you take the time to amass some photo and three-view documentation and you were astute enough to model your project after a specific aircraft, preferably one that you were able to inspect in person. Serious scale modelers fuss over the slightest mods and markings, but unless you're going for a first place at the Tournament of Champions, close enough is good enough.

When you are done, you will have something to be admired on the ground as well as in the air. People will gather around as you hook up and launch, and watch with excitement while you circle overhead and slowly climb out, and when at last you set up for a long, straight approach with the spoilers gaping open at the end of a long, enjoyable flight, and then gently set your ship down on the belly wheel and roll out to a stop, you'll find yourself wondering why you didn't build scale sooner. Start on one right now and in just a few months you can be standing under your very own scale glider watching the sunlight gleam through the canopy and bounce off the rib-stitched fabric wings. It's just like the real thing! ■

Recycle That Old Glider

...by Joe Thomas
San Jose, California

I learned to fly gliders with a Goldberg Sophisticated Lady that I purchased contrary to the advice of my training instructor, Sean Sharif (see the March cover of *R/CSD*). He told me to buy a Gentle Lady, but the Sophisticated version seemed so much more realistic and pretty with its T-tail, clear canopy and pilot. I have since graduated to more complex and exciting models, with my current favorites being a Thermal Eagle and a Multiplex DG-600. But the original Lady has a special place in my heart, being my first glider, so it remains in flying condition, complete with servos and, until last week, a fully charged battery pack. This despite the fact that it hasn't been flown for at least 18 months. It has now been relegated to the garage for storage to free up space for the Eagle.

My second model was the Airtronics Sagitta 600, recommended by Sean as a means to develop my building skills and to learn to fly a faster flying model without the lesser stability of an aileron-equipped glider. The Sagitta served its purpose and is now used solely for 2-meter competition flying. Oh, by the way, I fly about 95% slope and 5% thermal.

The third model in my fleet was the Sig Ninja, used as an aileron trainer. The fuselage was beefed up with carbon fiber and fiberglass and the wing span was increased by 6 inches to give it more stability. The Ninja was a good looper and decent thermaller, but the roll rate was too slow for my newfound skills. I needed something more suited to aerobatics. I built a Super Cheetah, but had so few enjoyable flights with it that I sold it and built a Super Dragonfly.

The Dragonfly flew faster than the Ninja and rolled a lot better, though it tended

to fall out of loops unless it had lots of speed. The problem with it was that the fuselage was fragile. First the wing saddle developed cracks. These were repaired with bass wood and carbon fiber. The fuselage also had a tendency to break about six inches aft of the wing trailing edge. It broke at least four times. After about a year of flying it, I became proficient enough not to break the thing. All those repairs had an adverse effect, though. The model was overweight. Maximum specification weight is 42 ounces. Mine weighed 64, about 50% heavier. This put the wing loading at about 16 ounces per square foot. At this loading, the Dragonfly required lots of wind to stay airborne. Without it, it just wouldn't lift, and it was a handful to fly.

I have purchased and built many different models in the last three years, including several scale gliders. However, I was still lacking a good, large, fast ship for slope flying. The DG-600 would fit the bill, but it was not a model I was willing to take chances on. A member of my soaring club, the South Bay Soaring Society, was selling of some of his used models, and I picked up a Thermal Eagle at a great price (thanks, Mike). The Eagle flew beautifully on its first flight. Mike flies only thermal, and he had spent many hours sorting this model out. Its performance is close to that of the DG, but without the panic factor built in. Needless to say, the Eagle supplanted the Dragonfly as my number one slope ship, except on light lift days, when I fly my latest version of the Gentle Lady. So I decided to sell the Dragonfly. Another member of our club bought it, but he didn't want the radio gear. And there sat the Ninja, waiting for a transplant.

It took me about thirty minutes to reinstall the radio equipment and trim the model out. I took it with me to the slope about a week ago, and I wasn't impressed with the performance. It needed more

wind (lift). The Eagle didn't fly that day, either.

Then came last Sunday. Sean wanted to test fly his newly built Thermo-Flügel Pilatus B4 scale model. Our usual slope site, in Marin County, had proven unsuitable the previous week, so we set out for Los Banos Creek Reservoir. The reservoir is L-shaped, so the chances of finding a slope with the wind blowing in the right direction are very good. When we arrived, there were two other flyers on the southern slope. One was airborne, the other had damaged his SR-7 on landing. Well, Mick came in for a landing and splattered his ship. Seems the rotor was pretty wicked. We drove further west looking for a slope with a more straight-in wind direction and a better landing zone. We found what we were looking for and flew for a while until the wind shifted. So we headed east to look for more favorable conditions.

Sean liked the look of the corner of the reservoir, so we parked, got out of the truck, and were nearly blown off our feet. Out came the wind gauge, 50 miles per hour! No way would I be flying. Mick launched and his plane quickly slammed into the side of his truck. Off to the north and we came upon a good site with 20-25 MPH winds and lots of flat space for landings. I flew the Eagle and was goaded into trying my first outside loop. Not too difficult, but very scary. I landed the Eagle and brought out the Sailplanes International Axle. This model has a wingspan of 72 inches and rolls by way of wing twist (wingeron). The Axle was in its element. This is a highly aerobatic, fast glider. After tossing it around for about 30 minutes, I decided to try out the Ninja, to see if I could get it trimmed out and flying better.

Then I changed my mind. Why not try some ballast? After all, with 25 MPH winds, the Ninja would probably have difficulty penetrating. I had two ballast

rods in my toolbox and fastened them to the inside of the fuselage. No luck. They interfered with the aileron linkage. So I bolted them to the bottom of the fuselage and added some tape for extra security. I launched. I pancaked into the ground. I launched again, this time successfully. Sean warned me not to get too crazy, in case the wing wasn't strong enough to handle the extra load. I figured the wing loading was 50% greater, since the lead weighed about 1/2 of the normal weight of the Ninja. Guess what happened? The old Ninja flew great. It rolled faster than ever before, and generally flew better. It was a tad bit pitch sensitive, but tons of fun to fly. I even tried my first spins. Recovery was simply a matter of letting the control stick return to neutral. I tried just about every maneuver I could think of. The Ninja was truly reborn.

Which brings me to the point of this story. (You were wondering when I would get there?) Just because you've outgrown a model doesn't mean it has outlived its usefulness. Think about what you could use it for. Maybe a backup contest ship, or a trainer for a friend, or a sacrificial lamb for those slope sites with lousy landing zones or questionable lift. Experiment with it. Try flying it with ballast to see how differently it flies. Put a different wing on it. I've seen a Talon with a Ninja wing and a Coyote with an Impulse wing. Or, give it to a newcomer to the hobby.

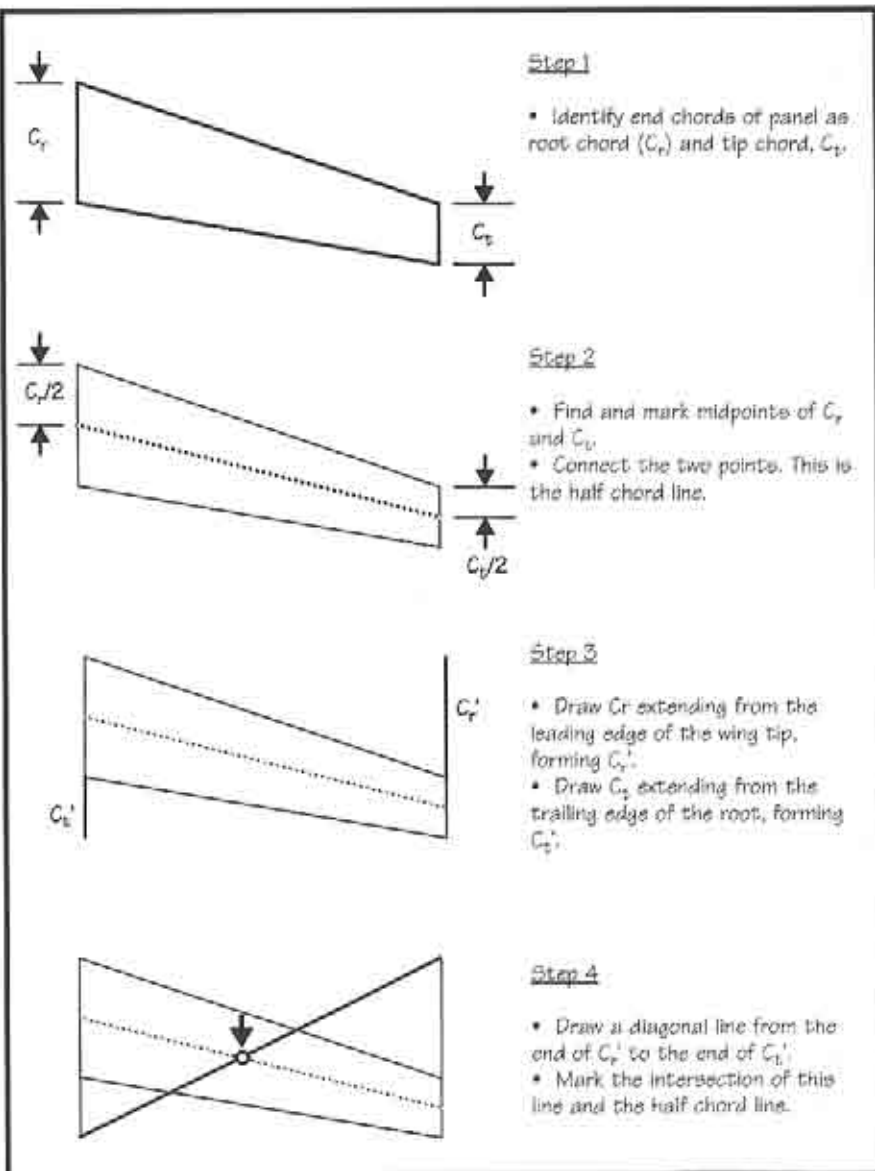
Now that you're finished reading this article, go out in the garage or down in the basement and see what you can come up with. You may be surprised at how much fun you can have with that old glider. Just recycle it! ■



P.O. Box 975
Olalla, Washington
98359-0975

Determining the Neutral Point and the Center of Gravity

The center of gravity (CG) is defined as the center of mass. If suspended by the CG in a gravitational field, an object will remain motionless regardless of orientation. The pitch stability of an aerodyne is



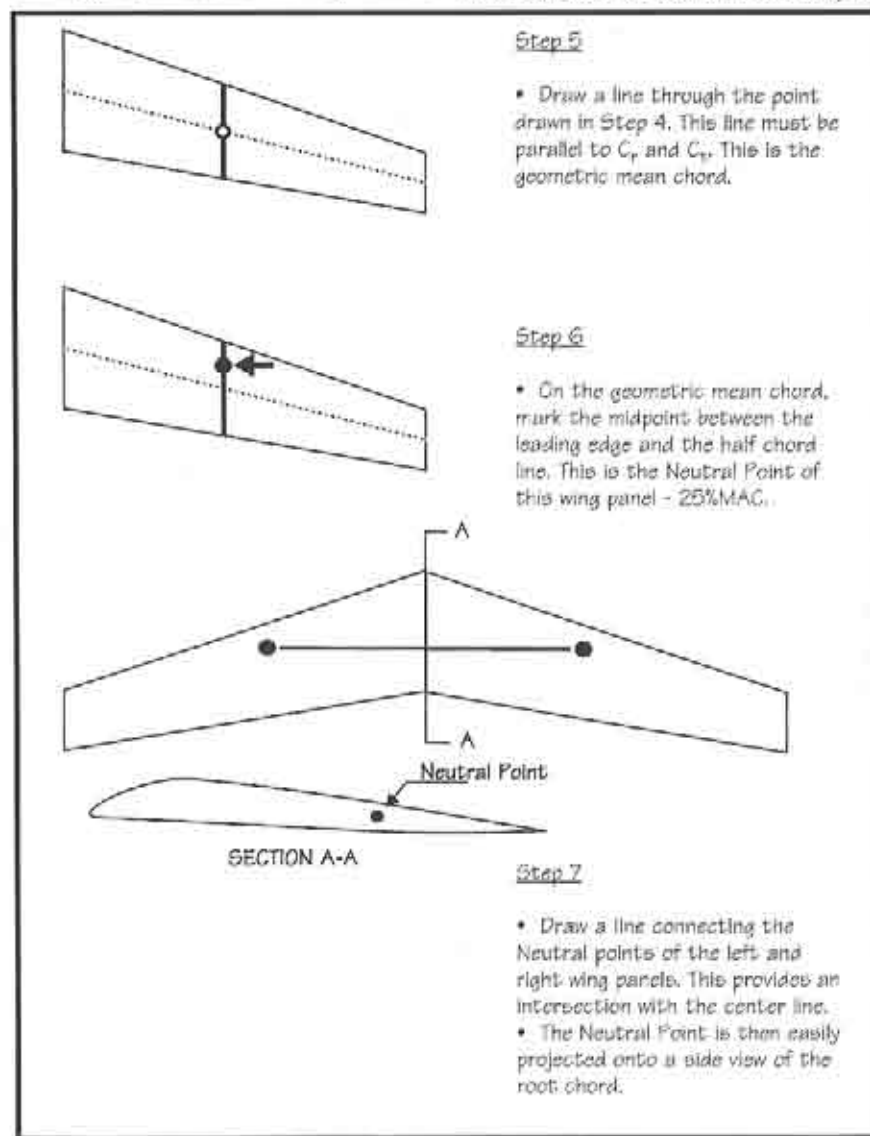
directly linked to the location of the CG in relation to the neutral point (NP), the quarter chord point of the mean aerodynamic chord (MAC).

If the CG is ahead of the NP, the aerodyne will be stable in flight, and moving the CG further forward will always make the aircraft more stable. There will invariably be an associated change in decalage or, in the case of swept tailless

aircraft, a change in wing twist. As the CG is moved back toward the NP the pitch forces generated by the elevator become more effective.

If the CG is at the NP, the aircraft will be neutrally stable. That is, the pitch attitude of the aircraft will not change if the elevator is not deflected. The term neutral point is derived from this behavior.

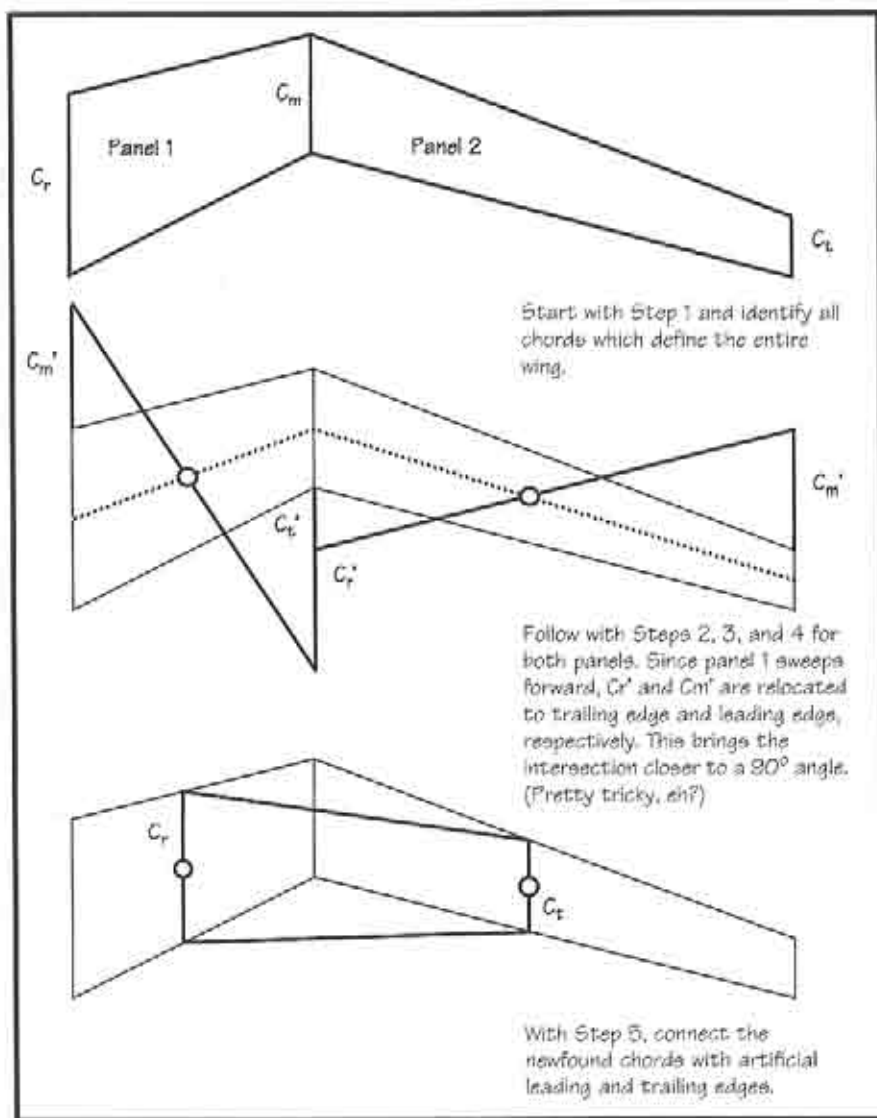
If the CG is behind the NP, the aerodyne



will be unstable in pitch. While this condition may enhance maneuverability or some other performance factor for a full sized aircraft, it is something to be avoided by modelers. A full sized aircraft in this state may be flyable by an experienced pilot, but a model aircraft in this state may not be flyable at all. If the CG is substantially behind the NP, some sort of active control system will be necessary for sustained flight. Redundant

computer systems take care of maintaining pitch stability in the B-2 Stealth bomber and NASA's X-29 research vehicle, both of which are inherently unstable.

We certainly do not want to winch launch and attempt to fly an unstable aircraft, so there can be no denying the importance of pitch stability. Yet the usual methods for assuring ourselves of a safe balance

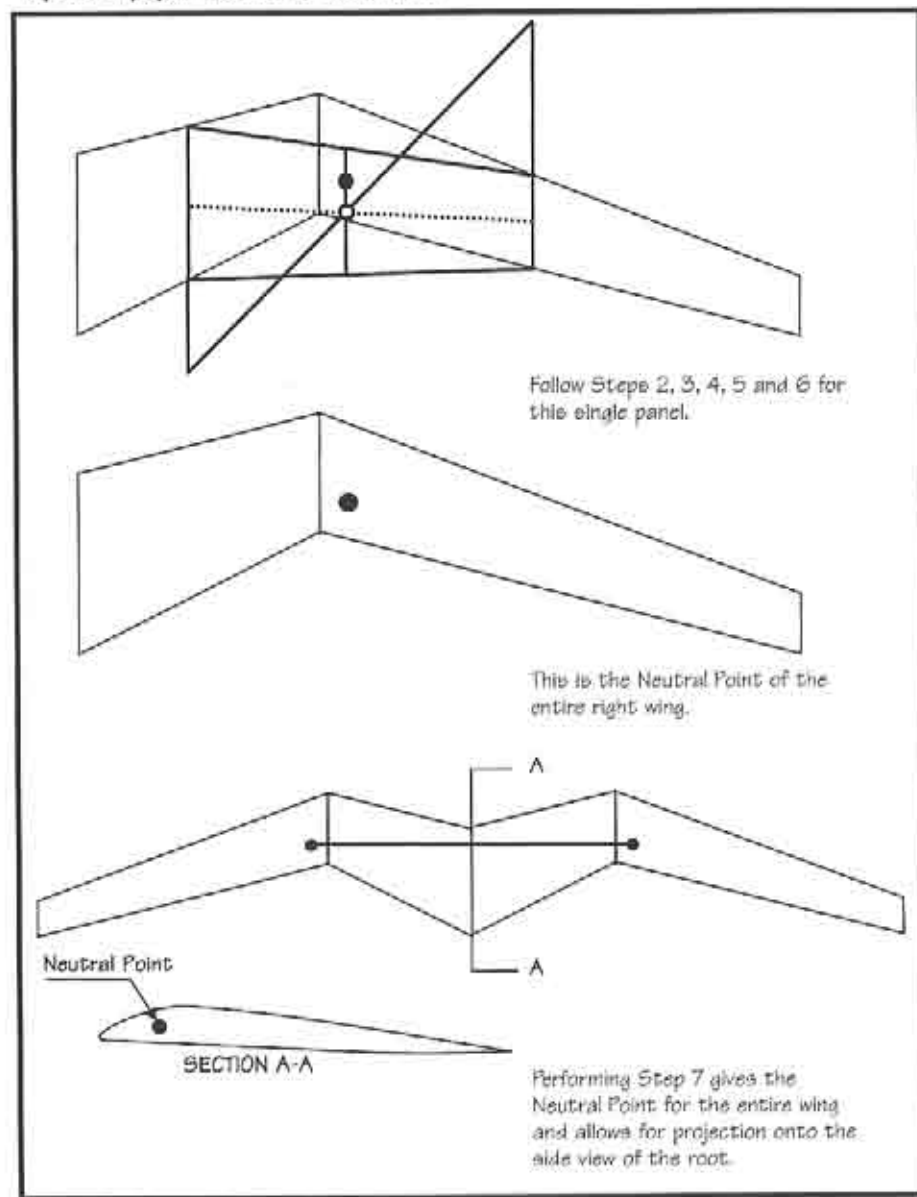


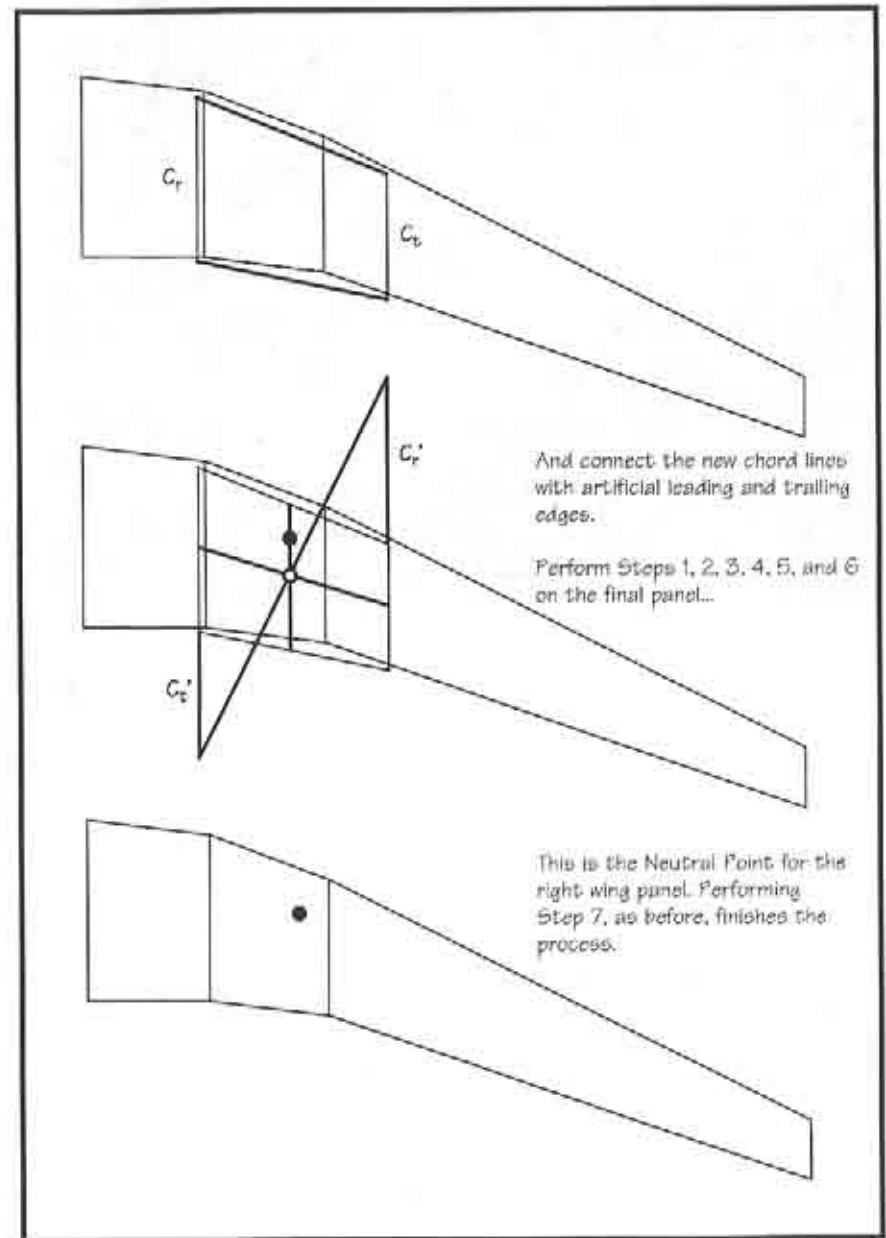
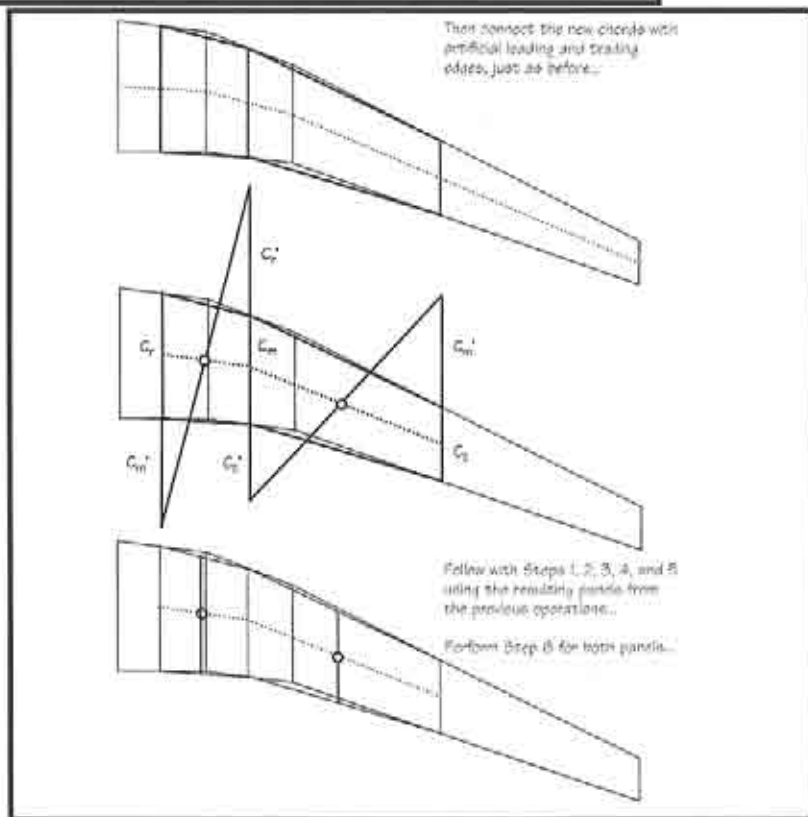
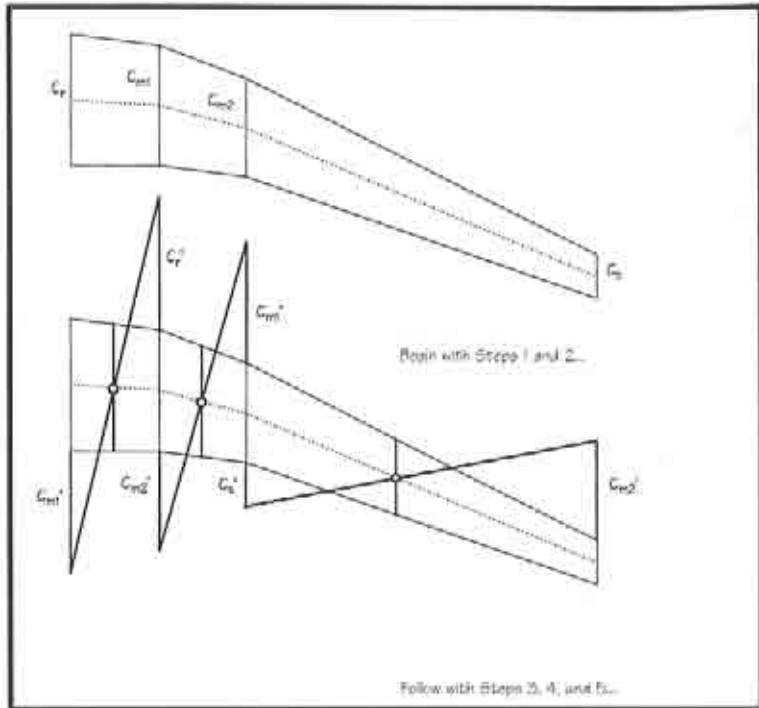
point—CG ahead of NP—involve quite a bit of relatively complex mathematics. There has to be a better way, and so there is. We'll describe here a graphical method of finding the neutral point which works for any tailless planform.

To start, draw out one complete wing on a piece of paper. This can be either a full

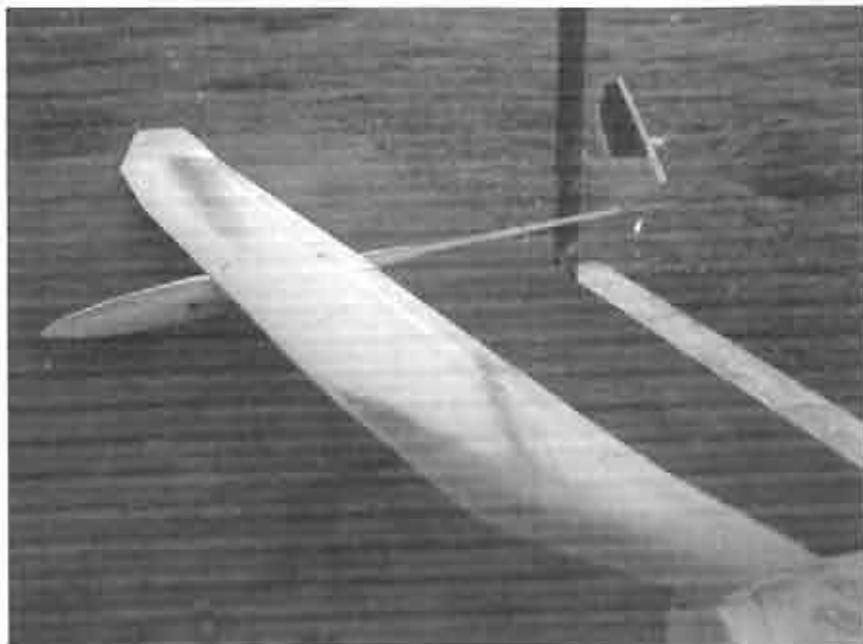
size tracing, or drawn to some scale with which you feel comfortable. By following the simple directions outlined here, you can easily find the NP of either single or multipanel wings without resorting to mathematics of any kind.

Before flying your latest tailless creation, make sure the CG is in front of the NP!

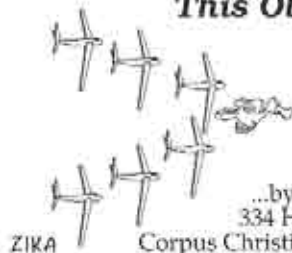




If you have a topic you'd like to see discussed in "On the 'Wing...'" please drop us a line. Bill & Bunny Kuhlman, P.O. Box 975, Olalla, WA 98359-0975. ■



This Old Plane



...by Fred Mallett
334 Haroldson Dr.
Corpus Christi, Texas 78412
(512) 991-3044 (Week Days)

ZIKA

Misty The Almost 2 Meter

I fell in love last night. Don't tell my wife, even though she understands my passion. (God bless her.) For the first time in my flying career, I learned why glider designers get defensive about the planes they design when others slander their craft. Having built most planes lately from scratch, and without plans, I have on occasion come up with some good and even great flying planes. None compare to the feeling I got upon flying my newest plane for the first time. Others may call her, "Ugly," but in my eyes it is a very pretty craft. Most importantly, it felt comfortable from the first flight. I am

primarily a slope flyer, but the first flights were from a high start. The second flight included thermal climbing, numerous rolls, a rolling circle, loops, inverted thermalling, and a couple speed dives. With a ~7 oz. wing loading, I expected very little energy retention, or speed. Was I ever wrong. It was a big dive to a most beautiful sounding, singing pass near the ground, to a rolling climbout back to near as high as I started. Rock steady the whole time. Can you tell I'm a proud Pappa??

The attempt is to document building techniques in this column, and this issue will do some of that. But really, this time, it is amusing to follow my "scientific reasoning" behind the plane discussed here. During the wing building, this plane could have ended in the trash can many times due to the problems encountered, but with perseverance, a really nice plane came out of it. It was built last fall, but my plan is to use it for 2 meter TD competitions this year. To think it was almost tied up in a hefty bag!

General Specifications

Span: 70"
Length: 40"
Weight: 24.5 oz. w/700ma battery + 1.5 oz. balance lead
Type: Almost 2 meter

Wing

White foam core, Obeechi sheeting, triple taper

Area: 508 sq. in.
Root chord: 8" constant for 30"
Inner tips: 8 to 7 taper over 12"
Outer tips: 7 to 4 taper over 8"
Tiphedral: 75" (in outer tip only)
Airfoil: SD7037 (modified to 8% thick, 2.4% camber)

Tail

V-Tail

Total area: 75 sq. in.

Fuselage

Glass Pod and Fishing rod boom
Pod built by Lost Foam method

Controls

Ruddervators, Spoilerons (4 servos)
Designer: Errors by Fred Mallett

I started to design this to be my high start plane/light wind slope plane. It was going to be a 2 meter; but lots of things went wrong along the way. This cacophony of errors turned into a symphony of harmony. Here is how the core cutting went.

Thinking there was lots of foam in the shop, and wanting to have the plane done for my first 2 meter contest that weekend, the first problem came about when there was only one chunk of white foam left. It was not big enough to cut a two meter 575 sq. in. wing of the Schuemann planform as designed. So, a pencil and tape and a new planform was developed using all the available foam. This turned out to be 74" worth. Close enough. Next, when cutting the constant chord 34" center section (hands on bow type cutting), I had an itchy nose when climbing the leading edge, and wound

up with a faux pas! The foam was kinda thick, so I turned the foam over figuring to cut from the bottom. That reminded me why I did not have enough foam to make a two meter. It was not quite thick enough for two cores. So, now I had 4 nice tip sections (two per wing half), and a screwed up constant chord center section. Looking at the center section, I realized that the leading edge of the second one was perfect, and the 25% point back on the first was perfect. So, cutting the LE off one, and TE off the other gave me a good core. I laminated the two together with a full height, 1/8" basswood spar, using wood glue. There was my spar. Problem now was that I wanted this plane to be light. If I cut the center section for center dihedral as planned, I end up having to join them, and thus add weight. So, a flat center section with bent up tips will have to do. Then I thought,

why not bag it in one piece like with the slope ships?? From there I arrived at the wing seen. I also had to cut it down to 70", as my longest vacuum bag was 74". The tips are upturned, and pressed in with the bag, the wing is done in two pieces of Obечи, one top, one bottom. Here is how.

The wing was prepared as usual for bagging, and the piece of the top bed for the inner tip panel was weighted down on the wing after it was in the bag. The lower beds of all panels were glued together; I put the lower bed in the bag with the wing, and used the upper beds only to hold things flat on the table, with the upper beds on top of the bag. The tips were then blocked up the desired amount; the top bed was weighted to hold the inner panel down, and vacuum applied. Be sure to inspect each tip after vacuum, as the bend might not occur evenly; just remove vacuum, hold in place, and draw down again.

I had each piece of top Obечи slightly split where the bend occurred; it was minor, and self healing with the epoxy squished out in the bag. I think this could

have been fixed with a band of masking tape applied just outboard of the bend.

The fuselage on this plane was done with the lost foam method, as a pod, and the tail boom attached with a couple 1/8" formers with holes drilled to fix the rod in place. An old fishing rod made the boom. The fuselage has 12 oz. of glass over 6 oz. carbon reinforcement. Ought to be plenty strong. It came in at 2.7 oz. without the tail boom.

The radio installation is also interesting, but it is not my idea. The concept came to me from Frank Weston, when I bought my mosquito HLC from him. The idea is not to weaken the fuselage with a hatch. The entire radio goes into the hole under the wing, with all components attached to the wood stick. The stick is then screwed into the fuselage side to keep it from moving. I used two 4-40 nylon bolts, with blind nuts glued to the radio stick. The tail surface push rods are attached with a collar sleeve pinching both the wire from the servo, and the wire that goes through the pushrod tubes to the ruddervators. ■



Ron at Mount Baldy.

I'm Hooked on Slope in Illinois

...by Ron Kukral
New Lenox, Illinois

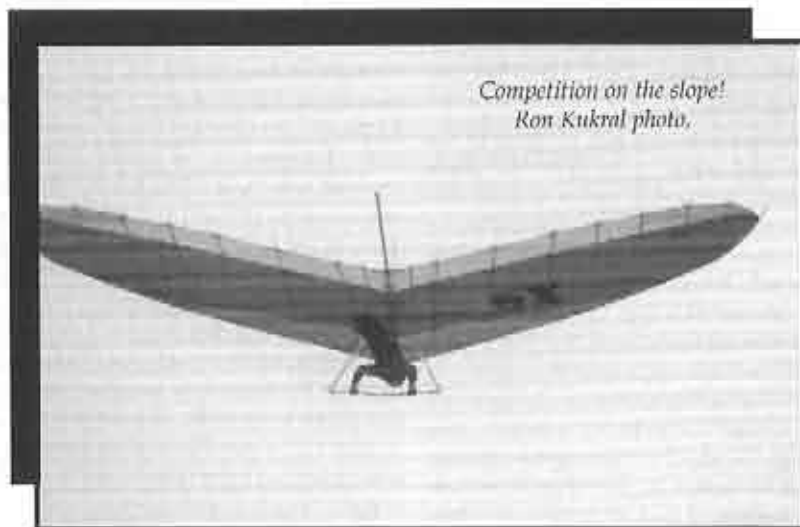
Things are going well here in the flat land. We had our annual New Year's Day Fun Fly. Eight flyers (?) showed up, but only two electric flights were made, both by yours truly. I had batteries charged and didn't want to take them home. It was sunny, cold, and windy (minus 20 wind chill).

SOAR has had a couple of slope outings, and I am now hooked. I had two thirty minute plus flights on a used airplane I bought from Fred Frederickson,

the club's one-man sailplane factory. These were my first test flights with the plane and my second and third attempts at slope flying. The flights were a testament to Fred's building and the ease of slope flying. Anyone who has seen me fly knows I sure can't take credit for it! ■



Ron Kukral at the SOAR field.



Competition on the slope!
Ron Kukral photo.

Today's Fledglings, Tomorrow's Eagles

...by Don Bailey
Bothell, WA

There are times out at the field when I don't have much patience for anything. Like when I'm racing like a madman to get my glider put together so I can catch that amazing thermal going on just over my head that everyone else has already discovered, and suddenly I realize that I've forgotten my battery pack and I'm desperately rummaging through my flight box for another pack that will fit in the nose. At times like this it's best to give me a wide berth and not pester me with peripheral distractions. More often than not, it's times just such as this that some bystander who's been hovering nearby decides to land on my shoulder and start asking me the Basic Questions. You know the Basic Questions by now, don't you? "How far away can you fly? How high can you go? What keeps 'em up there? How much does it cost?" For the most part, I'm a very congenial and laid back kind of guy, which is why model gliders appeal to me in the first place, but at a time like this it's hard for me to understand why anyone couldn't perceive from a million miles away that I'm on a mission from God and right now I need lots of extra space. Doesn't it show?

Herein lies a warning, and it comes in the form of a maxim: today's Cub Scouts are tomorrow's Eagles. There is a propensity for us more seasoned pilots to disregard the neophyte and even pass him off as a nuisance when the thermals are churning and we haven't gotten our fix yet, but we do ourselves a disservice when we come up short on hospitality and warm reception, because with enough encouragement these curious onlookers may someday become our final round competition.

I don't know how it is that so many people who have never met each other and know absolutely nothing about model airplanes have managed to unanimously agree on an entire lexicon of synonymous terms for the exclusive use of the uninitiated. The transmitter is always the 'controller', the stab is the 'back wing', the ailerons are always the 'little flaps', the fuselage is the 'body', and R/C is 'remote control'. Nine out of ten neophytes I've talked to will inform me that once upon a time they had a model airplane with a motor on it that was 'string-controlled' (read control-line) but that it crashed. And for some reason they are all mystified by the fact that we have the ability to steer the aircraft around the sky in complete control even though there is no engine. Comments like these can sometimes leave you feeling exasperated and confounded, particularly if it's a hot day and you forgot and left your cooler full of cokes at home. You start thinking about making up a stack of Basic Answers to Basic Questions to pass around. Quiz to follow.

But if we stop to think about it, these people are not trying to pester anyone; they have a sincere curiosity about what they are seeing and they don't have the foundation to ask questions meaningfully. How would you start out if you suddenly found yourself sharing a booth at a restaurant with the Prime Minister of England? If you bring up Lady Di in the first three minutes you're through. Some people have an innate skill for sauntering on up and casually interjecting themselves into the conversation without being obtrusive, but this is rare, and most observers who are dazzled by the novelty of our hobby simply want to understand more. We, as inured hobbyists, have a tacit responsibility to encourage such questioning by answering as concisely and plainly as we can, and with a convivial demeanor that reflects the ca-

maraderie that is the very soul of model soaring. Consider it doing your part for public relations and for the promotion of a sport that could always use a little support from the common gentry.

For the most part, I enjoy chatting about my hobby with folks who show an interest, and I get a sense of pleasure when I can infect someone else with my addiction. It doesn't really take that long to do, either, if you use the right approach. Starting right in with a discussion of chord length as it relates to Reynolds number and boundary layer separation is the wrong approach. What you want to do is impress them with the magic of it all. Talk about the nature of rising air, and how the hot sun can make it boil like water in a pot, show them how we like to follow soaring birds, or chase thermal breezes downwind, or sidle up along a tree line. Open up the nose of your glider and show them how the servos are connected to the control surfaces. Let them move the control stick themselves, and watch them light up with excitement as they see how it works. There's a lot for a layman to grasp, so stay with the simple stuff like towhooks and hi starts and leave the explanation of differential aileron and adverse yaw for later. If you're selling the sport (and you should be), one of the most encouraging things you can tell them is that if they can play video games, they can learn to fly a radio-control glider. Remember that what you regard as tame and familiar appears to them as hi-tech and intimidating, and breaching this barrier by offering an analogy they can relate to is reassuring.

So what do we get for our efforts? Recruits. Our hobby is vibrant and growing, and there is an aesthetic appeal to it because it is quiet and environmentally friendly and just plain good, clean fun. But it requires open fields and places to park, and the ongoing saga of glider clubs that have lost their flying sites to

soccer teams and ball parks continues, and there is power in numbers when undertaking turf battles. Smaller clubs die through attrition, the death knell being the loss of the club flying site, but a constant influx of new members insures a healthy future and justifies the preservation of the club field. Newcomers reinforce the positive influence of a club on the community, by generating more revenues to the local hobby shops and to the club itself. The larger the club the more firmly established, and the more helpers are available when it comes time to host a regional event.

We all have a tendency sometimes to focus on our own territorial interests and to dodge the intrusion of outsiders, but it's important to realize that by welcoming and fellowshiping newcomers to the sport we insure our own survival. So the next time you're out there on a bright and beautiful day and you forgot your wing rod and some guy starts in on the Basic Questions with you, take a breath and take some time out for him. He could turn up some day with a spare wing rod that's just your size. ■

Don Bailey is the President of the Seattle Area Soaring Society and his articles also appear in Updraft, their club newsletter, which is edited by Waid Reynolds. Don says, "We have a great club out here in Seattle with over a hundred members and a beautifully mowed field to fly from. We will be hosting a scale competition on the 20th of August for anyone who is interested." For more information, Don can be reached at (206) 485-6398, and Waid can be reached at (206) 772-0291. ED. ■

Understanding Sailplanes

...by Martin Simons

© Copyright by Martin Simons
All Rights Reserved

13 Loch Street, Stepney,
South Australia 5069

Flight Without Figuring Part 3

Airspeed

If a heavy aeroplane has a small wing area, its wing loading will be high. To make the small wing support the large load, it will have to move fast through the air. This demands power to overcome the increased drag.

A so-called square law applies. All aerodynamic forces increase in proportion to the square of the airspeed. (More, if the speed approaches that of sound.) To double the speed requires four times the thrust. If the airspeed is increased by three times, the aerodynamic forces, including drag and hence the required thrust, have to be multiplied by nine, the square of three. Five times the airspeed creates 25 times the aerodynamic reaction force, and so on. If the power available is insufficient, the model with a high wing loading may be incapable of taking off and sustaining itself in level flight.

A glider with a high wing loading will fly faster down any given glide slope than a more lightly loaded one. It will lose height more rapidly than the lightly loaded aircraft but at a greater airspeed. When soaring in rising air, the lightly loaded glider will gain height more rapidly but when speed of flight is more important than the rate of descent, which is often the case, gliders may be loaded with ballast to compel them to fly faster.

If the airspeed at any time is too little, flight becomes impossible. The minimum airspeed for flight is the stalling speed. This term can be slightly misleading. A wing stalls when the air flowing over it breaks away, refusing to follow the sur-

face in smooth, 'streamlined' fashion. (This was explained in the previous article.) A wing which is moving too slowly to support the weight it is supposed to carry, may not be stalled. The stalling speed is merely that airspeed below which a particular set of wings cannot develop enough lift to carry the weight of the aircraft.



Figure 1. The meaning of stalling speed. During the take off run, the wing is not stalled (no flow separation) but the lift is not enough to support the weight.

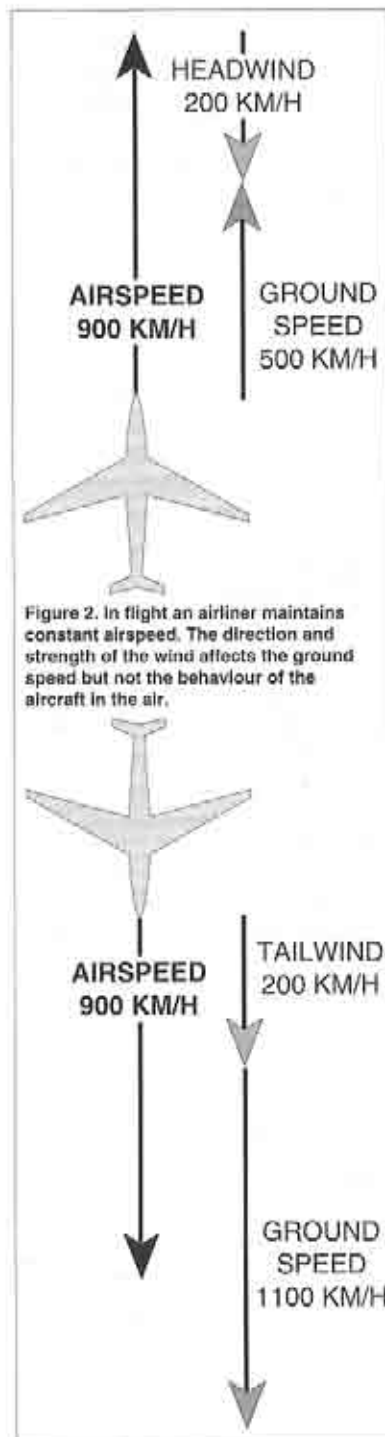


Figure 2. In flight an airliner maintains constant airspeed. The direction and strength of the wind affects the ground speed but not the behaviour of the aircraft in the air.

Consider, for instance, a model taking off. As it begins to move forward, air begins to flow slowly over and under the wings. This flow is quite smooth and follows the contours of the wing closely. The flow does not separate but the wing as yet is not producing enough reactive force to lift the model off the ground. Only when the airspeed is greater than the so-called stalling speed, will this be possible. Figure 1.

Ground speed and airspeed

Airspeed is not ground speed.

Flight is sustained by wing in motion through the air. The speed of the wind over the ground has nothing to do with this. The wind exerts forces and pressures on the ground and on objects and people standing in its way. The only wind the model aeroplane feels is the wind generated by its own motion through the air. Since it is in the air, totally immersed in it, it cannot sense any relative motion of the ground underneath. Once the model is entirely supported by the air, all the actions and reactions affecting it, apart from gravity, are aerial forces. Gravity always acts vertically down. No other forces emanating from the ground have any influence on the flying aircraft. When a model's motion in the air changes, inertia forces will arise. (Inertia is the resistance of a mass to any change of its motion relative to the supporting medium, in this case the air.) These are entirely the result of changes of motion relative to the air, not to the ground below.

Ground speed is very important when taking off or landing, or when an airliner is navigating from airport to airport. An airliner at a cruising airspeed of, say, 900 km/h, may be in a jet stream wind of 200 km/h. (Figure 2.) This will affect its ground speed. If the jet stream is directly opposite to the direction of flight, the ground speed will be reduced by 200

km/h to 700 km/h. Arrival at the destination will be delayed. (Being late, it will be held up even longer by air traffic control.) If the flight is heading the other way, the ground speed will be increased by 200 km/h to 1100 km/h. The flight will arrive early. (Being early, it will be held up by air traffic control until it is late.)

If the airliner is heading directly across the jet stream, the track over the ground will be slanted like that of a boat crossing a flowing river. (The ground speed along this slanted track will then be 922 km/h.) The airspeed, which sustains the flight, will be registered correctly on the instruments in the cockpit. It will remain as determined by the pilot, steady at 900 km/h.

The modern navigation equipment in the cockpit will inform the crew of the ground speed. The passengers will be unable to detect any difference between flying one way and flying another. The speed of the air rushing past the windows will be the same. The flow of air over the fuselage and wings will be the same. The thrust of the engines will be the same, whether they are flying with the jet stream, against it, or across it at some angle.

If the airliner banks in order to turn, the passengers may notice this, and feel an increase in the force which pushes them down into their seat. If the aircraft turns with a bank angle of 60 degrees (which would be most unusual for an airliner) the passengers will feel twice their nor-

mal weight. This apparent increase of their weight is caused by inertia. The people in the airliner feel the so-called 'g' force. The loads arise from the reactions of the air to the banked wing. Changes in ground speed arising from the turn have absolutely no influence at all. No mystical or magical influence rises up from below when an aeroplane turns, to push the passengers down into their cushions. The fact that the jet-stream as a whole happens to be going along, changes nothing in the way the flow passes over and around the aeroplane. This is true if the airliner turns completely round to fly in the opposite direction, or even if it performs a complete circle within the jet stream. The flow of the air at the speed indicated on the instrument panel, is what keeps the aeroplane up against gravity. All the other forces felt are from the air. Figure 3.

Scale all this down to model sizes and speeds. A stable model which is trimmed correctly for an airspeed of, say, 40 knots, on a windy day, will maintain this airspeed whether it is flying upwind, downwind or crosswind, or in circles. There will usually be some turbulence and gusts, especially near the ground or close to obstructions like buildings or trees. The stable model will correct for these automatically, as far as possible. Although the airspeed will vary a little on either side, it will maintain the same average whichever way the nose is pointing. Providing the pilot has trimmed accurately, even in a turn or in a series of continuous circles like those of a thermal

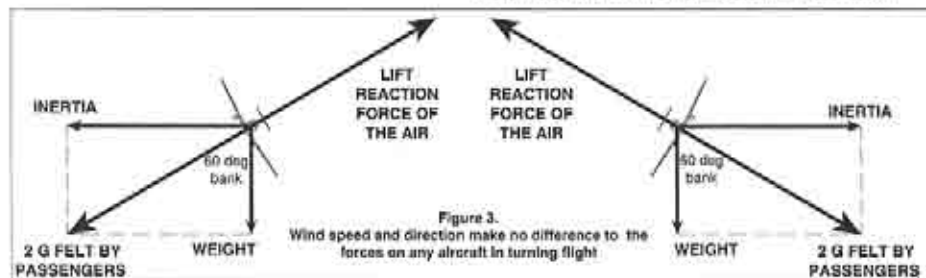


Figure 3. Wind speed and direction make no difference to the forces on any aircraft in turning flight

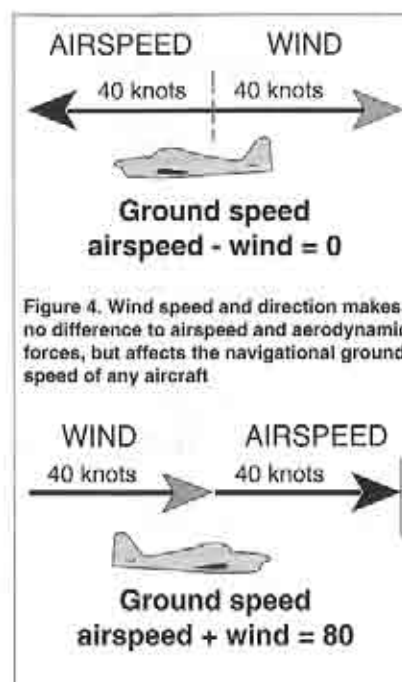


Figure 4. Wind speed and direction makes no difference to airspeed and aerodynamic forces, but affects the navigational ground speed of any aircraft

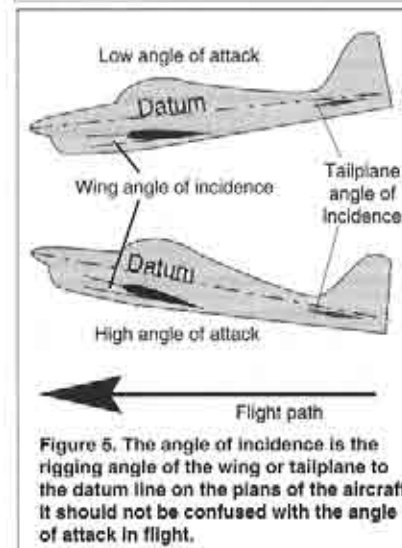


Figure 5. The angle of incidence is the rigging angle of the wing or tailplane to the datum line on the plans of the aircraft. It should not be confused with the angle of attack in flight.

soaring sailplane, the airspeed will be constant throughout and the changes of ground speed make no difference. Model fliers often have great difficulty understanding this. The speed and track we observe is not the airspeed of the

model, but its motion relative to the ground. For instance, if the model is flying at 40 kts directly into a 40 kt wind, it will have no ground speed. We might describe it as hovering (Fig. 4). Assuming the model has been trimmed so, the airspeed will still be steady at 40 kts. The airspeed will still be 40 kts if the model is turned to fly downwind. Its ground speed will be 80 kts but the airflow over the model will still be 40 kts. The model is not flying faster relative to the air which supports it, when it is heading downwind. It is not flying slower when pointing upwind. Its airspeed remains the same although its ground speed is nil.

If the model is directed to fly straight and level across wind, its track, from a viewpoint on the ground, will be at a distinct angle to the direction in which the nose of the model is pointing. It will drift sideways, like a boat crossing a river. The general current carries the boat with it. The steersman may point the bow upstream, downstream or at some other angle, as viewed from the shore, in order to arrive at the desired landing place, allowing for the current. Whatever the heading, the water flows from bow to stern. The same with a model aircraft. To navigate to a chosen place above the ground, the direction and strength of the wind must be allowed for, but unless the model is deliberately sideslipped or skidded, the airflow remains directly from nose to tail and the airspeed is not affected by the wind.

Some quite experienced model fliers evidently become very confused about this. Some even think that when their model is flying across the wind direction, the air is blowing sideways over the wings and fuselage. This is nonsense.

The only safe way to judge airspeed and direction is by watching carefully the attitude of the model. Think all the time of the way the air is flowing relative to the wing. Do not be deceived by the

speed over the ground or the apparent drift when flying across wind.

Angles of incidence

In a side view of an aircraft on the plans, a straight line through the leading and trailing edges of the wing at the centre or root end becomes the reference chord line. The angle of this chord to the fuselage datum line, a rigging angle, is sometimes called the angle of incidence (Figure 5). This must not be confused with the angle of attack. The angle of attack of the wing is its angle to the line of flight. As the pilot increases and decreases the angle of attack in flight, using the elevator, the fuselage will move with the wing, nose up or down. The rigging angle of incidence remains the same (unless something breaks loose). The angle of attack varies.

At some speeds, the fuselage may be aligned with the airflow and its drag will then be least. At all other speeds, because the trim will be relatively nose up or nose down, fuselage drag will be slightly greater than the minimum. These variations are usually very small and have little noticeable effect on the performance of the ordinary model.

In the most advanced types of competition, model fliers do try to minimise fuselage drag. A pylon racer, for example, will fly faster if the fuselage is set at such an angle to the wing that it is in line with the airflow at maximum speed. It does not matter if the fuselage is markedly nose up when the model is flying slowly after the race is over (Figure 6).

Rigging angles, especially relative to the undercarriage, can matter on take off and landing (Figure 7).

For instance, if, when the aircraft is standing on the ground, the wing is at too great an angle, it stalls (flow separates) as soon as the take off run begins. To take off, the tail must be raised, which is usually easy enough with 'tail dragger' aeroplanes.

Fuselage set for low drag at high speeds



Streamlined flow preserved

Figure 6. A racing aircraft should have the fuselage set at such an angle to the wing that minimal drag is created at high speeds (low angles of attack). At low speeds the fuselage drag is not so important

Fuselage at high angle of attack when airspeed is low



Streamlined flow breaks down

At the other limit, if the ground angle is such that the wing is at a negative aerodynamic angle, taking off will be possible only if the tail can be lowered. This can happen with tricycle undercarriages.

If the fuselage is rigged at such an angle to the wing that the tail touches down long before the main wheels, landings will be very dangerous. Providing such rigging errors are avoided, the angle of incidence of fuselage to wing is not of very great importance.

The angular relationship of the tailplane or other stabilising surface with respect to the wing, and the movements of the elevators, are much more significant. These govern the angle of attack of the wing and change this angle according to the pilot's commands.

Some complicating factors

Often a wing is deliberately built with some twist. Usually this is in the form of washout, a reduction of the chord line rigging angle towards the tips. If, for instance, the wing is washed out 2 degrees, the geometric angle of attack at the

Wing at stalling angle when wheels are on the ground



Take off impossible at this angle to the airflow



Take off requires wing angle of attack to be reduced by raising the tail

Figure 7. Rigging angles relative to the ground attitude of the aircraft are important.

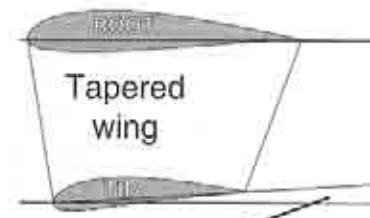
Wing at negative angle when wheels are on the ground



Take off impossible at this angle to the airflow



Take off requires wing angle of attack to be increased by lowering the tail



Washout angle 3 degrees

Figure 8. Wing twist is often built into a wing deliberately. Twist may also be caused in flight by the air loads on the wing

tips will always be two degrees less than at the roots (Figure 8). Many wings also change in section from root to tip. This may produce the effect of washout so that, again, the root chord reference line does not truly represent the whole wing.

In flight, as the wing comes under varying loads, there is always a certain amount of strain. This not only bends the wing up (or down if the load is reversed), but also usually twists it. This changes the angle of attack at each point. To prevent this, the wings must be made stiff in the torsional sense, although no structure can ever be totally rigid.

If there is already some intentional washout built in, the effects of distortion in flight will combine with this. In an extreme case, if the outer parts of a wing twist excessively until they meet the air at a negative angle of attack, less than the aerodynamic zero, the lift force becomes negative, downward instead of up. If flight is to continue, the total lift provided by the whole wing must still equal the weight to be supported. When the tips are lifting down because they are twisted or have too much washout, the inner parts of the wing are forced to provide not only enough lift to balance the weight, but additional lift to counteract the download on the tips. ■

**17 Euromeeting
VAL DI FASSA
Passo Pordoi - Dolomiti Mountains
...by Bernardo Cason
Italy**

The maxi MAMMUTH by Klaus Nietzer is taking off with the traditional system of gummi-start; this model, particularly detailed, is all wooden and covered with plywood and silk, and is very realistic in flight and landing.



One of the maxi Pilatus B-4 of the ARRIVA ANDERLE TEAM flying in the background of the Marmolada's glacier at about 3.000 mt. of altitude.

The last week-end of July, this year it was on 30/31, coincides with the most waited and prestigious appointment for the enthusiast of slope soaring: the EUROMEETING VAL DI FASSA that arrived at its 17th edition.

This meeting is one of the most important in Europe and this is evident from the level of organization (described later on) and the beautiful landscape in the heart of Dolomiti Mountains at 2.400 meters of altitude, between Mount Sella, Mount Marmolada, Sas Pordoi and... the sky. Very tempered, the participants came from all over Europe with many of international sailplane calibre who were ready to demonstrate their abilities.

The spirit of this appointment is always that of a meeting, a meeting among slope enthusiasts, model-makers and firms involved in this field, to compare notes with each other and to learn and bring each other up to

date about the latest trends.

Besides the traditional firms like GRAUPNER, AVIOMODELLI Group MANTUA MODEL, AIR JET (ex-Carrera), and MULTIPLEX that always took part in the preceding editions of EUROMEETING, other little but not unknown firms were also present this year; among the most important and famous were: the Italian PIERO CUCCOLO, ROBERTO GUERRA, ARO MODEL, LUCIANO BAGHINO and the Austrian BRUCKMANN.

181 participants came from Italy, Austria, Germany, France, Nederland, Switzerland and Slovenia confirming the European features of the meeting; the meeting is organized with seven different categories of models plus a combination according to the proved formulation realized by the organizers: gliders (until 3,50 mt.), super sailplanes (over 3,50 mt.), acrobatics, oldtimers, delta, canard and flying wings.

It should be noted that, year by year,



The last extraordinary realization by Josef Wimmer: the experimental reproduction of the flying machine made by Leonardo da Vinci; it was piloted by Udo Fiebig, official pilot in Graupner Team.

the sailplanes are always more detailed and sophisticated; this confirms the opportunity to be present at this meeting. In fact, we noted the positive trend of Italian participants who were all well prepared and organized and ready to compete with the Austrian and German fliers, who are famous in radio control soaring.

A very good organization, take care of

This transparent, beautiful, school glider is a symbol of what EUROMEETING is all about: a Paradise for not only slope flying both modern and sophisticated models, but also a Paradise for vintage models, as well.



"Radio Control Flight Fassa Valley", with Leopoldo Rizzi as manager and coordinator of the different enterprises, was helped by Oscar Winterle and the Model Teams from Belluno and Trento; other necessary members of the organization, such as Bernardo Cason, Mario Begher and Carlo Simconi are always present at the meeting and are indispensable collaborators; a very efficient Jury was directed by the famous Ercole Macchi.

All this was largely reported in a series of articles in the regional newspapers and reportages realized by the national RAI-TV.

On Friday 29 of July, from 4 p.m. to 10 p.m., as tested in previous years, every participant was invited to the Hotel Bellavista to draw the bag containing all the necessary material furnished by the organization (pectoral, stickers for TX and models, 4 free trips for the chair-lift, a nice k-way and other ad copy). This prevents wasting flying time on the slope during Saturday and Sunday.

Some of the participants and models waiting for the turn of flight; in evidence are two fully acrobatic reproductions of the LUNAK, a recent rediscovery for the enthusiasts of slope flying.

At 10 p.m., almost all the participants had drawn their bags and, around midnight, Bernardo Cason and Mario Begher finished storing all the data, which was divided into different categories, all with compatible frequencies.

At 9 a.m. on Saturday morning, the appointment was on Col del Cuc at 2.400 meters of altitude at a panoramic site which permits long flights on both sides of the mountain. There is good visibility and a large area for landing; a long queue of modelers with several models (more than 200) reached the slope site through paths and grass fields while large tents, European flags, and nice music in the air signed the taking-off area.

This beautiful, all wooden, KLANICH was built and piloted by Albrecht Gasteiger just a moment after the launch from Col del Cuc.



A spectacular imagine of the maxi PILATUS B-4 launched with particular strength by Martin Fischer and piloted by one of his friends of the ARRIVA ANDERLE TEAM from Salzburg.



Finally, while a troupe of RAI-TV was recording the most important models and events of the day, the first group of gliders was launched into the blue sky and so, one after the other, all the 24 flying groups had their moment of glory in front of a lot of interested and enthusiastic people.

On Sunday, late in the afternoon, took place the price giving at Hotel Bellavista in Pecol where everybody received a medal and a gift; this meeting was closed with the drawing of a lot of kits, servos, accessories and radios furnished by Johannes GRAUPNER and the wine bottles which were furnished by one of the sponsors. ■

Torrey Pines Gulls

Radio Control Soaring Society, Inc.

INTERNATIONAL HAND LAUNCH GLIDER FESTIVAL

Date: May 20 & 21, 1995 **PRE-REGISTRATION CUT OFF: MAY 15, 1995**
Place: Torrey Pines Gulls Thermal Field **Times:** Pilot check in - Saturday 8:00 AM
 West Garden Road Pilot's meeting - Saturday & Sunday 8:45 AM
 Poway, CA (San Diego, CA) First Flight - Saturday & Sunday 9:00 AM

Tasks:

Saturday

Round	Window	Throws	Objective
1	10	unlimited	greatest number of flights with increasing times, first flight must be at least 15 sec., to receive credit for a flight it must be longer than the previously credited flight
2	10	unlimited	the most number of flights in the following sequence: :10, :20, :30, :40, :50, 1:00, 1:10, 1:20, 1:30, 1:40
3	10	unlimited	longest three flights
4	10	6	longest five flights, none over two minutes
5	7	6	one five minute
6	10	unlimited	a two minute flight, a three minute flight, a four minute flight

Sunday

Round	Window	Throws	Objective
7	10	unlimited	the most number of flights in the following sequence: :10, :20, :30, :40, :50, 1:00, 1:10, 1:20, 1:30, 1:40
8	10	unlimited	most flight time from increasing flights, must have at least 3 flights, first flight must be at least 15 sec., to receive credit for a flight it must be longer than the previously credited flight
9	10	unlimited	longest three flights
10	7	4	three longest flights, none over two minutes

Head to Head Round - for top ten competitors

Round	Window	Throws	Objective
11	6	unlimited	most number of increasing flights, first flight at least 5 sec.
12	4	4	three one minute flights
13	10	4	four two minute flights

Awards: 1st - 10th, top team (3 from AMA club) **Tee Shirts:** \$12.00
Entry Fee: \$20 Pre-Registration, \$30 at Contest non refundable **BBQ:** Sat. night, \$9.00, catered by Tony Roma's
Lodging: -Camping at field, no hook ups **CD:** Steven Stricklett
 -La Quinta Inn, \$43/night, two queen beds 2276 Viewridge Place
 619 - 484 - 8800, mention contest Escondido, CA 92026
 -Poway Country Inn, 619 - 748-6320 619 - 741-1037

Name _____ Phone (____) _____ - _____ AMA # _____

Address _____ Frequency 1st _____ 2nd _____ 3rd _____

City _____ State _____ Zip _____ AMA club _____

Tee Shirts: @ 12.00 each Small ___ Med ___ Lg ___ Xlg ___ XXXg ___ Entry Fee \$20.00
 Dinners: @ \$9.00 _____ Tee Shirts _____
 _____ Dinners _____
 _____ Late Fee _____

PRE-REGISTRATION CUT OFF: MAY 15, 1995 (Make checks payable to TPG) Total Enclosed _____

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*.

"ILLUSION"

...from M M Glider Tech
M M Glider Tech's newest addition is the

"Illusion". It is designed for the entry level competition flyer. The kit features a built-up D tube wing, fuselage, and tail. Mini or micro radio equipment with a 250 mah battery is recommended, although larger equipment can be installed. The characteristics are smooth, it will float in the lightest lift, and seems to go out searching for thermals. The SD7084 airfoil gives that some-



thing special with great hang time and a winning launching ability. The wing is triple tapered with a 55 1/4" span, and 418 square inches of wing area. Flying weight is 11 to 13 oz.; wing loading is 3.9 oz. per sq. ft. The kit includes a full size blueprint, instructions, hardware package, piano wire pushrods, precision machined cut ribs, and fuselage slides. The cost is \$41.95 plus \$3.00 S&H (plus 8.25% sales tax for CA residents). For information on the Illusion and other products, send a SASE to: M M Glider Tech, P.O. Box 39098, Downey, CA 90239; (310) 923-2414. ■

Multiplex R/C Equipment & Kits

...from Beemer R/C West Inc.
...from Critter Bits

Beemer R/C West, U.S. distributor for Multiplex R/C equipment and kits, and Critter Bits, a California based concern dedicated to the movie special effects industry, are joining marketing forces. Beemer R/C West and Critter Bits will now offer Multiplex to both markets simultaneously.

Multiplex, one of the world's leading manufacturers of high quality R/C equipment, is exclusively distributed by Beemer R/C West, a ten year old company based in Fountain Hills, Arizona, Critter Bits, based in La Canada, California, provides R/C equipment to the special effects industry, and found that the R/C equipment offered by Multiplex fits most special effects applications without requiring costly modification. This means that Multiplex will soon be a big star in Hollywood.

Beemer's mission is to sell and service Multiplex equipment to R/C hobby enthusiasts and to open new markets for Multiplex. Under the watchful eye of Bob Boomer, Beemer R/C West Inc. has earned a reputation in the modeling industry for high quality and service. The clients range from new modelers to special applications required by N.A.S.A. Affording every client with the same professional advice and service is Bob Boomer's

hallmark. Karlton Spindle, founder of Critter Bits, has forged a bond with Bob Boomer as a satisfied client, and based on that relationship are joining forces to promote Multiplex with an expanded marketing campaign.

Customers will be able to place orders from Beemer R/C West Inc. or Critter Bits. Either way, service, quality, and customer satisfaction will remain top priority.

Beemer R/C West Inc., Bob Boomer, 13827 North Wendover Drive, Fountain Hills, AZ 85268; (602) 837-0311, fax (602) 837-0155.

Critter Bits, Karlton Spindle, 5399 Harter Lane, La Canada, CA 91011; (818) 568-4757, fax (818) 790-1346. ■



ZIKA

Tidbits & Bits

Invitation to MSSC Folks

The guys from N.A.S.A. (North Atlanta Soaring Association) would like to invite the soaring competitors at the Mid-South Soaring Championships to a hospitality suite, Friday night from 8:30 - 11:30. Beer, soft drinks, chips and dip provided. The room number will be announced at the field on Friday afternoon, or ask the front desk at the Holiday Inn where the N.A.S.A. party is at.

Georgia Hobby Shop Invitation

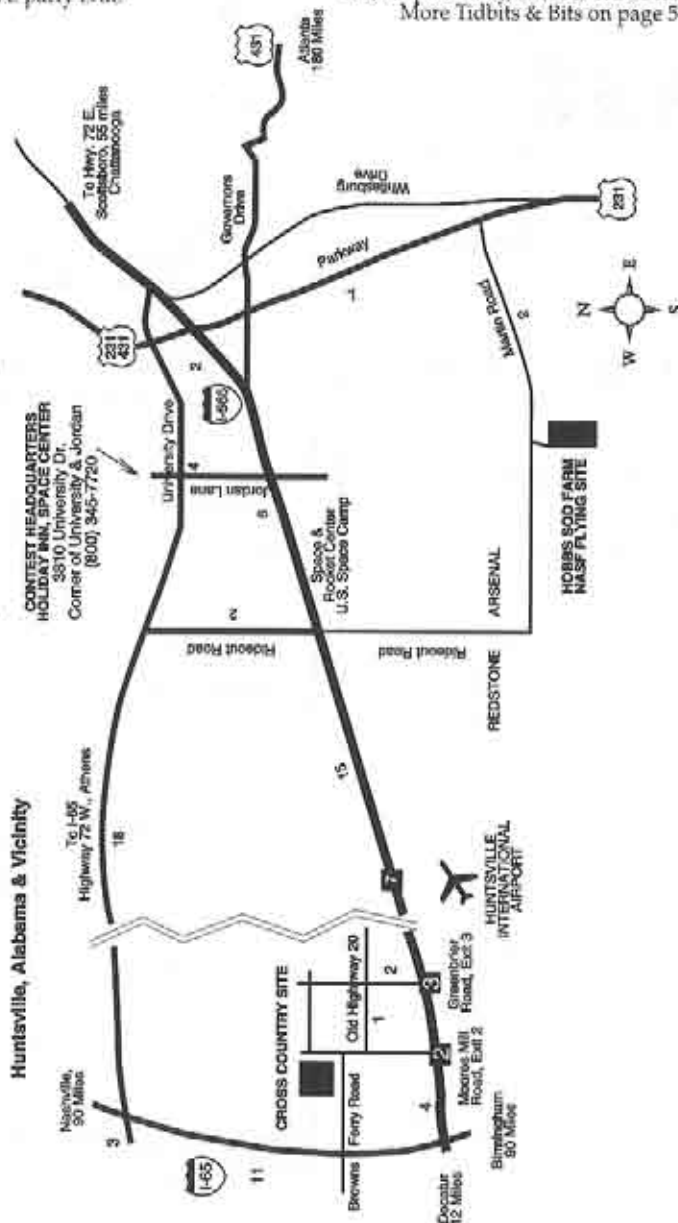
When traveling North Atlanta, please drop by Finney's Hobbies in Duluth, Georgia. We speak glider! We also have the N.A.S.A. glider field less than one mile from the shop, so bring your plane and be our guest! We are located next to KMART in the Peachtree Hill Shopping Center at the intersection of Peachtree Industrial Blvd. and Pleasant Hill Rd. Or, call me, Ralph Finney, at (404) 495-8512.

More Tidbits & Bits on page 57...

PROGRAM CORRECTION - We goofed!

To all Mid-South Soaring Championship Folks:
We regret that the name of the Holiday Inn in the Official Program is incorrect. There are, indeed, two Holiday Inns. The correct one is Holiday Inn, Space Center. The Program map is also incorrect; corrections shown here are not to scale. The Inn has been notified, and the telephone number in the Program is correct.

Huntsville, Alabama & Vicinity



HUNTSVILLE,
ALABAMA
June 15 - 18
1995

The MID-SOUTH SOARING CHAMPIONSHIPS

The largest four day
sailplane contest
in the South!



June 15 - 16
CROSS COUNTRY

Cost: \$15.00 per team

June 16
HAND-LAUNCH GLIDER

Cost: \$10.00 per person

June 17 - 18
THERMAL DURATION

Awards:

Expert: 1st - 5th place both days
Sportsman: 1st - 4th place both days
Novice: 1st - 3rd place both days
& **HIGH OVERALL**

Junior: 1st - 3rd place both days
Cost: \$15.00 (1 day), \$25.00 (2 days)
JRS: \$6.00 (1 day), \$10.00 (2 days)

Due to the anticipated attendance to this event, pre-registration and payment is requested. For complete information, write or call Ron Swinehart, (205) 722-4311 (day), (205) 883-7831 (eve), Huntsville; Rob Glover, (205) 883-2888, Huntsville; Bob Sowder, (901) 757-5536, Memphis.

Show & Modeller's Mall space available on request for hobby related businesses!

SPONSORED BY
NORTH ALABAMA SILENT FLYERS
MEMPHIS AREA SOARING SOCIETY
R/C SOARING DIGEST
AMA Sanctioned

TNT COMBINE A GREAT
SOARING CONTEST &
A FAMILY VACATION!



**2 days of Open Class,
Thermal Duration
Expert & Novice**

You can have TWO DAYS of Open Class competition while your family visits the sights and delights of the River Walk, and see where Travis, Bowie and Crocket stood their ground at the Alamo. Tour buses will pick up your family at the field and return them at the end of the day!

Discount Airline Tickets

Special Hotel Rates

Awards, Raffle, On Site Food & Drink

Ship us your airplane and radio!
We'll have it ready at the field,
and then ship it back to you.

**"Out of Towners"
Early Registration Raffle**
Register before 15 May,
and be eligible to win a
double room for one night **OR** a
rental car for the TNT weekend.

For a Registration Form &
Vacation Planner call:
TNT Registration
(210) 658-8842
FAX (210) 554-7161

Texas National Tournament Pre-Registration
5465 Prancing Deer Dr., Bulverde, TX 78163

**18th Annual
EMPIRE STATE
SOARING CLASSIC**

**OPEN THERMAL
DURATION CONTEST**

JUNE 17th and 18th

Stillwell Nature Preserve
Syosset, Long Island, N. Y.

First ESL open contest of the year.
A premier soaring site and
the top east coast flyers will attend.

For more information call:
Taylor Fiederlein
(516) 922-1336 eve. EST

SLOPE RACE

SIG/LASS

MIDWEST SLOPE CHALLENGE

MAY 19-21

**3 Classes:
SIG Ninja
SIG Samurai
Run What You Brung**

Where? Lucas, Kansas
Who? Contact Paul Wright
at (402) 795-2012 or
Stephen Rohman at
slr@cdmasters.com



The Vintage Sailplane Association

Soaring from the past and into the future!
The VSA is dedicated to the preservation and flying of vintage and classic sailplanes. Members include modelers, historians, collectors, soaring veterans, and enthusiasts from around the world. Vintage sailplane meets are held each year. VSA publishes the quarterly **BUNGEE CORD** newsletter. Sample issue: \$1.00. Membership is \$15.00 per year. For more information, write to the:

Vintage Sailplane Association
Route 1, Box 239
Lovettsville, VA 22080

T.W.I.T.T.

(The Wing Is The Thing)

T.W.I.T.T. is a non-profit organization whose membership seeks to promote the research and development of flying wings and other tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation which is dedicated to furthering education and research in a variety of disciplines. Full information package including one back issue of newsletter is \$2.50 US (\$3.00 foreign). Subscription rates are \$18.00 (US) or \$22.00 (Foreign) per year for twelve issues.

T.W.I.T.T., P.O. Box 20430
El Cajon, CA 92021

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.
Fl. Wayne, IN 46835

R/C Soaring Resources

These contacts have volunteered to answer questions on soaring sites or contests in their area.

Contacts & Soaring Groups - U.S.A.

Alabama - North Alabama Silent Flyers, Ron Swinehart, 8733 Edgehill Dr. SE, Huntsville, AL 35802; (205) 883-7831.

Arizona - Central Arizona Soaring League, Iain Githero, (602) 839-1733.

Arizona - Southern Arizona Glider Enthusiasts, Bill Melcher (contact), 14260 N. Silwind Way, Tucson, AZ 85737; (602) 325-2729. SAGE welcomes all level of flyers!

California - California Slope Racers, John Dvorak, 1063 Glen Echo Ave., San Jose, CA 95125; (408) 259-4205.

California - Desert Union of Sailplane Thermalists, Buzz Waltz, 3390 Pasco Barbara RD, Palm Springs, CA 92262; (619) 327-1775.

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

California - South Bay Soaring Society, Mike Gervais, P.O. Box 2012, Sunnyvale, CA 94087; (408) 683-4140 after 5:00 pm.

California - Southern Calif. Soaring Action, Pete Young, 6592 Belgrave Ave., Garden Grove, CA 92645-1802; (714) 892-3473.

California - Torrey Pines Gulls, Ron Scharck, 7319 Olivetas Ave., La Jolla, CA 92037; (619) 454-4900.

Florida - Florida Soaring Society, Ray Alonzo (President), 3903 Blue Maidencane Pl., Valrico, FL 33594; (813) 654-3075 H, (813) 681-1122 W.

Georgia - North Atlanta Soaring Association, Tim Foster, (404) 978-9498 or Tom Long, (404) 449-1968 (anytime).

Illinois (Chicago Area) - Silent Order of Aeromodelling by Radio (S.O.A.R.), Jim McIntyre (contact), 23546 W. Fern St., Plainfield, IL 60544-2324; (815) 436-2744. Bill Christian (contact), 1604 N. Chestnut Ave., Arlington Heights, IL 60004; (708) 259-4617.

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

Indiana - Bob Steele, 10173 St Joe Rd., Fort Wayne, IN 46835; (219) 485-1145.

Kansas - Wichita Area Soaring Association, Pat McCleave (Contact), 11621 Nantucket, Wichita, KS 67212; (316) 721-5647.

Kentucky - Bluegrass Soaring Society, Frank Foster (President), 4939 Hartland Pkwy., Lexington, KY 40515; (606) 273-1817.

Maine - DownEast Soaring Club (New England area), Steve Savoie (Contact), RR#3 Box 569, Gorham, ME 04038; (207) 929-6639. InterNet e-mail <Jim.Armstrong@acornbbs.com>.

Maryland - Baltimore Area Soaring Society, Russell Bennett (President), 30 Maple Ave., Baltimore, MD 21228; (410)744-2093.

Maryland and Northern Virginia - Capital Area Soaring Association (MD, DC, and Northern VA), Steven Lorentz (Coordinator), 12504 Circle Drive, Rockville, MD 20850; (301) 845-4386.

Michigan - Great Lakes 1.5m R/C Soaring League & "Wings" Flight Achievement Program & Instruction, Ray Hayes, 58030 Cyrenus Lane, Washington, MI 48094; (810) 781-7018.

Minnesota - Minnesota R/C Soaring Society, Tom Rent (Contact), 17540 Kodiak Ave., Lakeville, MN 55044; (612) 435-2792.

Missouri - Independence Soaring Club (Kansas City area, Western Missouri), Edwin Ley (Contact), 12904 E.36 Terrace, Independence, MO 64055; (813) 833-1553, eve.

Nebraska - B.F.P.L. Slopers, Steve Loudon (contact), RR2 Box 149 E1, Lexington, NE 68850, (308) 324-3451/5139.

Nebraska - S.W.I.F.T., Christopher Knowles (contact), 12821 Jackson St., Omaha, NE 68154-2934; (402) 330-5335.

North Carolina - Aerotowing, Wayne Parrish, (919) 362-7150.

New York, aerotowing Long Island Area, Robin Lehman, (212) 744-0405.

New York, aerotowing Rochester area, Jim Blum and Robin Lehman, (716) 367-2911.

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

Ohio - Dayton Area Thermal Soarers (D.A.R.T.S.), Walt Schmolli, 3513 Pobst Dr., Kettering, OH 45420, (513) 299-1758.

Ohio - Mid Ohio Soaring Society (MOSS), Hugh Rogers, 888 Kennet Ct., Columbus, OH 43220; (614) 451-5189, or e-mail tomnagel@freenet.columbus.oh.us.

Oklahoma - Central Oklahoma Soaring, George Voss, (405) 692-1122.

Tennessee - Memphis Area Soaring Society, Bob Sowder (contact), 1489 Wood Trail Circle, Cordova, TN 38018, (901) 757-5536, FAX (901) 738-1842.

Texas - Texas Soaring Conference (Texas, Oklahoma, New Mexico, Louisiana, Arkansas), Gordon Jones, 214 Sunflower Drive, Garland, Tx 75041; (214) 271-5334.

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

Washington - Seattle Area Soaring Society, Waid Reynolds (Editor), 12448 83rd Avenue South, Seattle, WA 98178; (206) 772-0291.

Outside U.S.A.

Australia - Southern Soaring League, Inc. (SSL), Mike O'Reilly, Model Flight, 42 Maple Ave., Keswick SA 5035, Australia. Phones: ISD+(08) 293-3674, ISD+(08) 297-7349, ISD+(018) 082-156 (Mobile). FAX: ISD+(08) 371-0659.

Canada - Manitoba, Winnipeg MAAC Men Gliding Club, Bob Clare, 177 Tait Ave., Winnipeg, MB, R2V 0K4, Canada, (204) 334-0248.

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

England (BARCS & Europe), Jack Sife (Editor), 21 Bures Close, Stowmarket, Suffolk, IP14 2PL, England; Tele. # 0449-675190.

Hong Kong - Robert Yan, 90 Robinson Road, 4th Floor, Hong Kong; (852) 5228083, FAX (852) 8450497.

Reference Material

Still a few copies available of some issues of the printed transcripts of talks given on RC Soaring at the Previous Annual National Sailplane Symposium. Prices reduced to clear out stock. Talks were on thermal meteorology, flying techniques, hand launch, cross country, plane design, airfoil selection, vacuum bagging, plastic coverings, flying wings, etc., etc. Send SASE or call for flyer giving details. Many copies of most recent (1992) transcript left. Clubs have found them good for raffle prizes, gifts, etc. Al Scidmore, 5013 Dorsett Drive, Madison, WI 53711; (608) 271-5500.

Seminars & Workshops

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

BBS/Internet

BBS: SLOPE TECH, Southern California; (714) 525-7932, 14.4 baud - 8-N-1

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

Internet - Email list/resource of RC soaring related folks, including US and international club contacts, vendors, kit manufacturers/distributors, software, equipment and supplies. Also a resource for aeromodelling related WEBSites on the internet. Contact Manny Tau at taucom@kaiwai.com, or on CompuServe: 73617,1731.

Hobby Shops that Carry RCSD

Action Hobbies
3723 S. Mendenhall
Memphis, TN 38115
(901) 365-2620

Air Capital Hobbies
8989 West Central
Wichita, KS 67212
(316) 721-4164

California Soaring Products
1010 North Citrus
Covina, CA 91722
(818) 966-7215

Finney's Hobbies
3455 Peachtree Industrial Blvd., Ste. 980
Duluth, GA 30136
(404) 495-8512
(404) 495-8513 fax

Gunnings Hobbies
550 San Anselmo Ave.
San Anselmo, CA 94960
(415) 454-3087

Cyro Hobbies
23052 Lake Forrest Dr., Unit C2
Laguna Hills, CA 92653
(714) 583-1775

HiTech Hobbies
284 - B Wellisian Way
Richland, WA 99352
(509) 943-9241

Hobbies 'N Stuff
9577 L Osuna Rd. NE
Albuquerque, NM 87111
(505) 293-1217

Hobby Counter
1909 Greenville Ave.
Dallas, TX 75206
(214) 823-0208

Hobby Town USA
8090 S. 84th St.
La Vista, NE 68128
(402) 597-1888

Hobby Warehouse
4118 South Street
Lakewood, CA 90712
(310) 531-8383

Tim's Bike & Hobby
2507 Broadway
Everett, WA 98201
(206) 259-0912

**GONE
SOARIN'**

ZIKA

Schedule of Special Events

Date	Event	Location	Contact
May 13	TPG 60" Slope Race	Torrey Pines, CA	Eric Larson, (619) 793-7640
May 13	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
May 14	2m Postal	Everywhere	Steen Hoof Rasmussen
May 21 (second date) - 4/95 RCSD			
May 19-21	SIG/LASS Slope Race	Lucas, KS	Paul Wright, (402) 795-2012
May 20	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
May 20	Six Rounds of Open	San Antonio, TX	Jerry Caldwell, (210) 438-4077
May 20-21	Int'l. HLG Festival	Poway, CA	Ron Scharck, (619) 454-4900
May 20-21	Electric Fun Fly	Memphis, TN	Tom Ernst, (901) 767-9518
May 20-21	Spring Fling	Davis, CA	Jean Nolte, (916) 966-0857
May 21	SOAR Contest	Plainfield, IL	See Illinois R/C Soaring Contacts
May 26-29	Rabble Rally	Morrison, FL	Ken Goodwin, (904) 528-3744
May 27	SASS HL 1	Redmond, WA	Jim Thomas, (206) 488-2524
May 28	TPG/SC2 Therm. Cont.	Poway, CA	George Joy, (619) 748-2167
June 3	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
June 10	TPG Unltd. Slope Race	Torrey Pines, CA	Eric Larson, (619) 793-7640
June 11	TPG 60" Slope Race	Torrey Pines, CA	Eric Larson, (619) 793-7640
June 15-18	Mid-South Champs (International Contact)	Huntsville, AL	Ron Swinehart, (205) 883-7831
June 17	1.5m Hi-Start Contest	Washington, MI	Tom Ernst, (901) 767-9518
June 17	MAN-ON-MAN	Dayton, OH	Ray Hayes, (810) 781-7018
June 18	MAN-ON-MAN	Dayton, OH	Ken Davidson, (513) 864-1774
June 17-18	Fathers Day North/South Challenge	Visalia, CA	Jerry Shape, (513) 843-5085
June 17-18	LISF Empire State Soaring Classic	Syosset, NY	Ed Hipp, (209) 625-2352
June 18	SOAR Contest	Plainfield, IL	Taylor Fiederlein, (516) 922-1336
June 18	TPG Thermal Contest	Poway, CA	See Illinois R/C Soaring Contacts
June 23-25	SOAR Mod. F3J Contest	Plainfield, IL	George Joy, (619) 748-2167
June 24	TPG Fun-Fly & BBQ	Torrey Pines, CA	See Illinois R/C Soaring Contacts
June 24-25	TNT Open	San Antonio, TX	Steve Stricklett, (619) 741-1037
July 1-2	WRCC Summer Soar-In	Sedgewick County, KS	Perry Van, (210) 658-8842
July 1	1.5m Hi-Start Contest	Washington, MI	Pat McCleave, (316) 721-5647
July 1	TPG HLG Contest	Poway, CA	Ray Hayes, (810) 781-7018
July 2	11th Annual HL Contest	Dayton, OH	Art Markiewicz, (619) 753-3002
July 8-9	Kansas Flatland Open	Kansas	Gale Leach, (513) 429-2543
July 9	HLG Contest	Dallas, TX	Ed Kempf, (913) 780-5543
July 12-13	COGG XC Dash for Cash	Cookstown, Ontario	Bud Black, (214) 235-0867
July 14-16	Canadian Nationals	Barrie, Ontario	Jack Nunn, (707) 728-4467
July 15	1.5m Hi-Start Contest	Washington, MI	Neil Tinker, (416) 491-5823
July 15	Ohio Cup HL & STD	Dayton, OH	Ray Hayes, (810) 781-7018
July 16	Ohio Cup 2m & UNL	Dayton, OH	Bob Massmann, (513) 382-4612
July 15	HL/Open	San Antonio, TX	Jim Martin, (513) 376-9046
July 15-16	SOAR 95 (Unl, 2M)	Redmond, WA	Mike Howell, (210) 657-3332
July 16	TPG Thermal Contest	Poway, CA	Jim Thomas, (206) 488-2524
July 21-24	Wasatch Mt. Scale/PSS Soaring Festival	Pt. of the Mt., UT	George Joy, (619) 748-2167
July 22-23	SWIFT/Western XC	Mead, NE	Bob Flarman, (801) 571-6406
July 23	SOAR F3B Contest	Plainfield, IL	Christopher Knowles, (402) 330-5335
July 29-Aug 6	NATS - Soaring	Muncie, IN	See Illinois R/C Soaring Contacts
Aug. 4-6	Fun Fly	Cape Blanco, OR	Randy Banta, (503) 664-5025
Aug. 12-13	Thermal Grabber **	Redmond, WA	Jim Thomas, (206) 488-2524
Aug. 13	TPG Thermal Contest	Poway, CA	George Joy, (619) 748-2167
Aug. 18	Dawn-to-Dusk Challenge	Everywhere - Jimmy Prouty, prouty@emh.kadena.af.mil	
Aug. 19	Handlaunch	San Antonio, TX	Jerry Caldwell, (210) 438-4077
Aug. 19	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
Aug. 19-20	SBSS Summer Classic	Gilroy, CA	Scott Meader, (408) 244-2368
Aug. 20	SOAR Contest	Plainfield, IL	See Illinois R/C Soaring Contacts
Sept. 2	SASS HL 2	Redmond, WA	Joseph Conrad, (206) 630-2670
Sept. 9	TPG HLG Contest	Poway, CA	Art Markiewicz, (619) 753-3002
Sept. 9	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
Sept. 9-10	13th CASA Open	Gaithersburg, MD	Steven Lorentz, (301) 845-4386

Sept. 16	2M/Open	San Antonio, TX	Gene Warner, (210) 732-3101
Sept. 16	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
Sept. 17	TPG Thermal Contest	Poway, CA	George Joy, (619) 748-2167
Sept. 17	SOAR Contest	Plainfield, IL	See Illinois R/C Soaring Contacts
Oct. 7	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
Oct. 7-8*	Fall Soaring Festival	Visalia, CA	
Oct. 7-8	SOAR Fun Fly	Plainfield, IL	See Illinois R/C Soaring Contacts
Oct. 14	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
Oct. 14	TPG Unltd. Slope Race	Torrey Pines, CA	Eric Larson, (619) 793-7640
Oct. 15	TPG 60" Slope Race	Torrey Pines, CA	Eric Larson, (619) 793-7640
Oct. 14-15	Fall Soaring Tournament	Memphis, TN	Bob Sowder, (901) 757-5536
Oct. 21-22	Canyon Lake Classic	Canyon Lake, TX	Greg Dickerson, (210) 656-1796
Oct. 21	2M, Open, HL - Potters Creek Park	Washington, MI	Tom Meeks, (210) 590-3139
Oct. 21	1.5m Hi-Start Contest	Washington, MI	Ray Hayes, (810) 781-7018
Oct. 22	TPG Thermal Contest	Poway, CA	George Joy, (619) 748-2167
Oct. 22	SOAR Contest	Plainfield, IL	See Illinois R/C Soaring Contacts
Nov. 4	TPG HLG Contest	Poway, CA	Art Markiewicz, (619) 753-3002
Nov. 5	TPG Fun-Fly & BBQ	Poway, CA	Steve Stricklett, (619) 741-1037
Nov. 5	SOAR Turkey Shoot	Plainfield, IL	See Illinois R/C Soaring Contacts
Nov. 11	TPG 60" Slope Race	Torrey Pines, CA	Eric Larson, (619) 793-7640
Nov. 12	TPG Thermal Contest	Poway, CA	George Joy, (619) 748-2167
Nov. 19	Open	San Antonio, TX	Perry Van, (210) 658-8842
Nov. 24-26	22nd Tangerine	Orlando, FL	Ed White, (407) 321-1863
Dec. 9	TPG 60" Slope Race	Torrey Pines, CA	Eric Larson, (619) 793-7640
Dec. 10	TPG Thermal Contest	Poway, CA	George Joy, (619) 748-2167
Dec. 9-10	Winter Soaring Festival	Indio, CA	Buzz Waltz, (619) 327-1775
1998 World Soaring Jamboree			
* Western States Triad			
** Unlimited, 2M			

Tidbits & Bits

9th Annual Southwest R/C Handlaunch Glider Contest

The Soaring League of North Texas invites one and all to the 9th Annual HLG contest to be held at the University of Texas at Dallas (UTD), Sunday, July 9th. There is a ten minute time slot duration (4 rounds). Pilot's meeting is at 9:15 A.M., and the first flight commences at 9:30 A.M. The launching method is: hand launch, optional furnished zip-starts, or bring your own gorilla. Scoring will be normalized to the high score in the flight group; flight groups will be changed for each round. Pre-registration is requested. (\$10 prior to July 1, and \$12 after). Plaques are first to fifth place with a pick of donated prizes. AMA sanction #50465. Class A Aircraft, only (1.5m or less). To obtain more information or mail in your entry fee, the contact is: Bud Black, 1322 Magnolia Dr., Richardson, TX 75080; (214) 235-0867.

"Run What Ya Brung" Fun Fly Cape Blanco, Oregon

Randy Banta of Central Point, Oregon sent in the following:

"Hi. My name is Randy Banta, and I'm an avid soaring enthusiast! I've been building and flying sailplanes here in the southern Oregon area for over fifteen years. I'm crazy about scale R/C sailplanes! I belong to NASSA and own a Ventus and a DG 500, which was previously owned by Pete Bechtel.

"There are only about a half a dozen of us here

in the Rogue Valley, that fly sailplanes on a regular basis... Our favorite place to slope soar is Cape Blanco on the Oregon coast, which is why I'm writing you this letter. Our "Club", which has no formal name, is planning a "Run What Ya Brung" fun fly at Cape Blanco the weekend of August 5th (4, 5, 6th).

"We read all about these famous pilots, and we'd love to meet them in person and fly with them! If anyone would like more information, they can call or write me at: Randy Banta, 107 Princess Way, Central Point, Oregon 97502; (503) 664-5025."

Dawn-to-Dusk Challenge Hand Launch, Thermal, Slope An 8 Hour Team event

The following announcement is from Jimmy Prouty of Japan.

"The Dawn-to-Dusk Challenge is a contest that will let "glider guiders" compete in a world wide contest from the comfort of their own field. It is "for fun" and I hope that amateur pilots/teams will participate along with the more experienced glider clubs. The name of the game here is to participate and have fun, no matter what your experience level! My club only flies gliders on a very sporadic basis, and it looks like we'll have pilots standing in line to get a chance to fly!

"The basic concept of the contest is simple: a team of pilots and helpers must keep a glider in the air for a period of 8 hours through a series of launches of any number of gliders. The team that has the least number of launches

for the maximum amount of time is declared the winning team. The contest will be flown on August 19th, starting at 8:00 A.M. All dates and times are local time for the team that is entering. A back-up date of 26 August will be used if the original date is unflyable."

For additional information and a copy of the rules, please contact: Jimmy Prouty, PSC 80 Box 12565, APO AP 96367-2565; e-mail, prouty@emh.kadena.af.mil.

F3J - A World Championship Event Effective January 1, 1997

The following is from Jack Sile, England.

"F3J becomes a World Championship event effective 1 January 1997, with the printing of the new FAI Sporting Code.

"There is no Championship event in 1996 as a result.

"The Slovak Republic proposed a bid for the F3J Championship in 1997. The UK tentatively proposed a Continental Championship bid in 1997. It will not be discussed until December 1995 as to whether the first event is World or Continental. FAI CIAM Soaring committee would prefer that F3B and F3J Championships be in opposite years. '97 would normally be an F3B year. There is only one bid for F3B Worlds in '97, and that is connected to the World Air Games. If Turkey gets the World Air Games bid as opposed to South Africa, they are seeking to host an F3B W/C. If they don't get the bid (later to be determined in Toronto), then there is no current bid for a World Championship in '97 for F3B."

Great Lakes 1.5 Meter R/C Soaring league 1994 Report by Ray Hayes

"The league is now celebrating its first year of activity that has included a national 1.5 meter hi-start contest during the LSF Nationals held at Muncie, Indiana, the creation of the WINGS 1.5 meter flight achievement program and the crowning of the 1994 League's Grand Champion, Paul Sherman of Rochester Hills, Michigan.

"The League is devoted to promoting the pleasure of flying Class A (1.5M) sailplanes from either hand launching or using a high start made of thirty feet of 1/8 OD rubber and one hundred and twenty feet of tow line (conforms to WINGS program).

"The League, through its WINGS program, has attracted attention from beginning R/C sailplane pilots, to those that have dropped out of soaring and are now excited about the new challenge presented by the WINGS program. The best part of the WINGS program comes from focusing the 1.5M pilot on improving his flight skills as he works his way to the sixth level. Also, it does not require attending contests to complete the program. The WINGS first newsletter included a reprinted article on thermal detecting that is particularly interest-

ing to HL pilots because it explains thermal activity at low ground level altitudes. The next issue will feature covering balsa sheeted wings lightly, and announce the date and rules of an upcoming national postal contest, and more.

"Twelve fun fly and contest flying sessions were held throughout 1994 on a field donated by the Romeo, Michigan Parks and Recreation Department. Dimensions of the field are approximately four hundred square feet with very nicely mowed grass. More than adequate for using one hundred and fifty foot high starts. Finding a school yard or other small flying site is relatively easy, and this is part of the attraction 1.5M sailplanes have. They are simply convenient to build and fly.

"1995 will see a repeat of last year's flying activities with a continued emphasis on training new pilots. Last year, on Memorial Day, a 1.5m Hi Start contest was held in Lancaster, PA. It was sponsored by L.A.S.S. with Frank Wren at the helm as Contest Director. Stev Swanson finished first flying a Skeeter. Frank Weston was second with his Mosquito, and I was third with my Jouster. It was held at an excellent flying site on a beautiful, all blue sky day with nearly calm conditions.

"The 1.5m Hi Start contest sponsored by GL R/C SL at the 1994 LSF Nationals was flown by 25 entrants. The format was the same used in the previous twelve GL R/C SL flying sessions. MAN-ON-MAN, normalized scores and group launching from 5 identical, 150 foot Hi-Starts furnished by myself, Sky Bench Aerotech. The contest was in direct contrast to the Lancaster, PA event, both in time of day and in weather. The contest started after the day's task of the LSF event was completed, and one round was flown before rain and lightning shut it down. The remaining 5 rounds again started at the end of the day's events and finished in near total darkness utilizing automobile headlights. Now, we all know that a thermal contest under these conditions is a flop, but at least the top four finishers were happy because the contest was a Cash Bash, and paid out to fourth place. The winners were: Don Harris - 1st, Tom Matyi - 2nd, Jerry Shape - 3rd, and Al Scidmore - 4th.

"Susie Lipp was a big winner, also, in her efforts with the scoring chores. She was in overload from start to finish, because we flew true MAN-ON-MAN. Winners of each group fly winners of the other groups, and like scores fly against each other. Without the aid of a computer, she managed to not only produce the normalized scores, but also create the next flight groups based on their previous scores. A big thanks for your help, Sue.

"If you want to join the Great Lakes 1.5m R/C Soaring League's WINGS program, send \$2.00 to receive your flight performance voucher, back issue of WINGS newsletter, and future newsletters to: Ray Hayes, 58030 Cyrenus Lane, Washington, Michigan 48094."

FIBERGLASS YARD SALE

0.72 oz. 25"

or

1.4 oz. 25"

\$0.50/yd.

1.4 oz. 50"

\$1.00/yd.

3.16 oz. 38"

\$1.25/yd.

\$5 handling charge on orders under \$50. FOB Tehachapi CA. Quantities are limited!

1-800-338-1278



Composite Structures Technology

PO Box 642, Dept. MK
Tehachapi CA 93581

Advertiser Index

- 63 Aerospace Composite Products
- 70 Aire Master
- 64 Apderson, Chuck
- 65 B² Streamlines
- 65, 79 California Soaring Products
- 74 Charlie's
- 59 Composite Structures Technology
- 63 C.R. Aircraft Models
- 67 Critter Bits/Beemer R/C West, Inc.
- 66 Dave's Wood Products
- 69 David Layne Designs
- 67 Harris Nelson Co.
- 68 HiTechHobbys
- 73 ICARE Sailplanes
- 62 Inventec Corporation
- 64 J&C Hobbys
- 75 Just Plane Fun Models
- 68 Kennedy Composites
- 73 Levee Design
- 71 Maverick Technologies
- 64 P.E.P. (Sky Shine)
- 75 Perret's Studio
- 66 Performance Composites
- 66 Pony X Press
- 65 RA Cores
- 74 RuR Products
- 78 Sailplanes Unlimited, Ltd.
- 63 Salesmark, Inc.
- 60 Sanders, Eric (CompuFoil)
- 73 Sky Bench Aerotech
- 76, 80 Slegers International
- 71 Soaring Specialties
- 66 Squires Model Products
- 70 Superior Aircraft Materials
- 64 Taucorn
- 61 Tekoa: The Center of Design
- 66 The Birdworks
- 72 TNR Technical, Inc.
- 73 Vern Hunt Design
- 77 Viking Models, U.S.A.
- 77 Windspiel Models
- 64 Zatloka, George
- 59 Zoomit Creations

new 1995

the Glidester
GLIDING GLIDERS
Glide-O-Rama
Der Glidemeister
GLIDE

100% Cotton
made in USA!

Tom Jones
3703 Penny Lane
Carrollton, TX 75007
214-394-0119

Der Glidemeister will be offered on navy blue polo-style shirts and black t-shirts. The shirt fronts say "Der Glidemeister", backs are splashed with brilliant art in blue, red, white, yellow.

ORDER FORM

POLO SHIRTS Navy Blue

POLO STYLE	XL	XXL

T-SHIRTS Black

POLO STYLE	XL	XXL

Please indicate size and number of each shirt.

100% Cotton Navy Blue Polo: \$22.00
 4 O.L. 100% Black-T: \$15.00
 XXL-Additional Cost/EA: \$1.50
 Tax: (Texas + 8.25%)
 U.S.A. Shipping - Each: \$3.00

Sub Total: _____
 Less 10% if both shirts ordered: _____
 Total Enclosed: _____

Name: _____
 Address: _____

HURRY, Limited Quantities!

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

GLIDER RETRACTS - high quality, 1/5, 1/4, 1/3 scale made in U.S.A. 1/4 are standard or heavy duty. Contact Bill Liscomb, 7034 Fern Place, Carlsbad, CA 92009; (619) 931-1438.

"By now many of us have realized that Model Aeronautics is an enjoyable and satisfying lifetime hobby." One of over 670 quotes and stories by Frank Zaic in **FRANKLY SPEAKING**. \$6.95 plus \$1.25 postage. Model Aeronautic Publications, Box 135, Northridge, CA 91328.

PLANS - R/C Sailplans - Scale, Sport, and Electric. Old Timer, Nostalgia and FF Scale and Sport-powered, rubber and towline. All models illustrated. Formerly B² Streamlines Plans Service. Catalog \$2.00. Cirrus Aviation, P.O. Box 7093, Depot 4, Victoria, BC V9B 4Z2, Canada.

FOAM CORE WINGS - high quality, 1# white bead board foam wing cores for 1/3 scale ASW 19/20. E-203 airfoil, 4 piece set. Plywood root ribs available. Contact Roy Simpson, 53260 Monterey Dr., Bristol, IN 46507; (219) 848-5973 eve.

For Sale - Business

PC-Soar Version 3.5 Sailplane Performance Evaluation Program Optional Sailplane Library now expanded to 54 models including: Alcyon, Anthem, Genesis, Mako, Probe, Thermal Eagle, and Synergy-91. Free Library Upgrades. PC-Soar Upgrade to Ver. 3.5 \$10. PC-Soar New Purchase \$40. New Libraries of Sailplanes and Airfoil Polars \$30. Please include \$3 P&H for all purchases & upgrades. Also available: RCSD Database and Laser cut airfoil templates. LJM Associates, 1300 Bay Ridge Rd., Appleton, WI 54915; ph: (414) 731-4848 after 5:30 pm weekdays or on weekends.

"REAL BALLS" Ball Bearing endplates for Ford longshaft starter motors. \$120/set + \$5.00 ship. Coming soon! Top quality F31 reel and pulley set, ultimate sanding bar. NEW ADDRESS: Douglass Boyd, 29918 SE Davis Rd., Estacada, OR 97023; (503) 630-4451, (503) 630-3515 msg.

PRECISION AMAP WING CUTTER, replacement parts, and service. AMAP Model Products, 2943 Broadway, Oakland, CA 94611. Butch Hollidge, (510) 451-6129, or FAX (510) 834-0349.

For Sale - Personal

NIB X-Cellent III F3B glider, molded hollow core wings/stabs, RG15 airfoil, honeycomb laminate, slip-on nose cone, detachable V-tail stabs, factory pre-painted wings/stabs (white top, red bottom), unpainted fuse. All up wt. approx. 70 oz. with up to 4 lbs. of ballast into 3 piece wings. Hand picked by Hans Muller for me. Heavy duty wing/stab covers incl... \$1095.00, pay shipping in the U.S., trades or best offer considered. Contact me for more info, via a kit review article. Manny Tau @ (714) 492-9553, California, or taucom@kaiwan.com.

NIB kits: two Dodgson Designs Sabers... \$225.00 each; Dodgson Designs Pixy... \$75.00; 2 meter Mariah... \$100.00; Multiplex Schaumpus (3 or 3.5m)... \$375.00. Ready to Fly: Falcon 600 w/ 2 wings (3 piece S3021 and 3 piece SD7037)... \$375.00. Misc.: 1 set glass bagged 2m Duck wings, S3021... \$50.00. Shipping extra depending on your needs. Jim Thomas @ (206) 488-2524, Washington.

Vision with update, three 8 ch receivers, 2 transmitter battery packs... \$550.00; Spectrum 3021 w/ 6 341 servos, like new... \$750.00. Brian Agnew @ (201) 366-0880, New Jersey.

Spectrum RG-15, built special for Daryl Perkins, won last year's Masters, with servos... \$550.00. Ed Slegers @ (201) 366-0880, New Jersey.

Viking Models Jantar fuselage... \$100.00; Multiplex Alpina kit, not NIB, built... \$300.00; Thermal Flügel ASH 26E, 3.5m, NIB... \$400.00. Plus shipping. Philip Fugate, RT #1 Box 277A, Delano, TN 37325; (615) 338-2096, 6-11 pm EST.

NIB, never charged, Vision 8SP w/ 3.0 program (8 aircraft)... \$589.00. NIB kits: Airtronics Legend... \$150.00; RnR Genesis... \$300.00; CMP Mariah 2m... \$100.00; Esteem 110... \$250.00; Bob Smith Sundancer II... \$100.00. Prices do not incl shipping. Tom Gressman @ (303) 979-8073, Colorado.

Rowing LS-6, all glass, 4.2m span, very nicely finished, excellent condition, with retract, four 141 servos in wing, provisions for aerotow, one of the nicest models available... \$1500.00. Bill Liscomb @ (619) 931-1438, California.

Slegers International Spectrum, RG-15 airfoil, RTF, just add receiver and go fly, comes with wing bag... \$500.00 firm, includes shipping. Ray Cindric @ (704) 549-5511 between 5-9 pm, EST or anytime on weekends, North Carolina.

Highly reflective holographic wing tape, improves visibility dramatically with multi-color reflections. Available in 3/4" by 144" strips. For \$11.50. Derek Khaw, 2300 Whitfield Park Dr., K2, Sarasota, FL 34243; fax (813) 359-2288.

AURA 3 electric, NIB... \$500.00; IMAGE electric, NIB... \$400. Both manufactured in France. We will pay shipment. Call Mike @ Inventec @ (215) 953-1736, 9 am - 9 pm, Pennsylvania.

1/4 scale Grobe 103 Twin Acro, 1/5 scale Ventus, 1/5 scale Pilatus B4, Rohacell foam 1mm & 2mm. Stanley Zak @ (305) 687-7706, Florida

DG-500 by Multiplex, wing servos, excellent condition... \$800.00; LS-4 by Rowing, all glass, wing servos, excellent condition... \$1000.00; DG-300 by Multiplex, all glass, excellent condition... \$800.00; ASW -17, 3.5m, w/flaps... \$275.00. Call Ray Franz @ (714) 362-5545, California.

FEATHER/CRAFT™

READY BUILT WINGS

2 METER (78") Double Taper	\$78.00
	\$10.00 Shipping
100" Double Taper	\$100.00
	\$15.00 Shipping

CHOICE OF RG-15 OR 7037 AIRFOIL

WE ALSO HAVE OPEN CLASS WINGS IN STOCK

BUCK AN INCH - HARD TO BELIEVE? High quality, finish sanded, Obечи over white foam wings. These BUCK AN INCH BABIES are strong - reinforced with a full depth sheer web and carbon. Sharp trailing edges are inlaid with fiberglass. **TOO GOOD TO BE TRUE - FAST FINISHING!** Just dig into your "left overs" box and come up with the leading edge, tips and aileron/flap trim material. Fiberglass the two wing panels together and you're finished. **GREAT ONE PIECE BOLT-ON WINGS.**

Blue Anodized Control Hardware
Stainless Heat Treated Tow Hooks
Ready-Built Stabilizers and Rudders
2M & 3M FG/Kevlar Fuselages

NEW!

20" Long CARBON JOINER ROD, 1/2" d, 5°
14" JOINER RODS, 1/2" diameter
ALUMINUM 6", STAINLESS 6", CARBON 5"

The NEW Shadow 120 Open Class and Shadow 2M WINNERS are in stock!

WOW! RUSH MY ORDER!

909.763.0464 fax 909.763.0109 MASTERCARD
email LNFE21A@PRODIGY.COM VISA



TEKOA: THE CENTER OF DESIGN
49380 SKY HARBOR WAY
AGUANGA, CA 92536

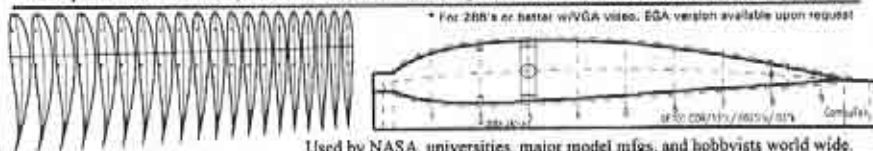
SoarSoft Software Presents...

CompuFoil Professional

- == Fly ahead of the competition - with accurate wings produced by CompuFoil! ==**
- Built in CAD program allows for direct airfoil editing.
 - Outputs std. DXF file importable to most CAD programs!
 - Easy to use windowing interface.
 - Prints full foam templates, or sets of ribs for built up wings!
 - Add building jig holes.
 - Prints full set of elliptical planform ribs.
 - Computes transitional airfoil - even with different root and tip airfoils.
 - Add washout to template or building jig holes.
 - Calculates panel volume & surface area for weight estimations.
 - Pop-up Feather/Cut (tm) calculator.
 - Two hi-res template preview modes plus browser mode.
 - Prints spar slots.
 - Compare airfoils with overlays-zoom/pan/screen/print.
 - Supports dot matrix and laser jet printers.
 - FREE updates!
 - Modify airfoils by changing camber, thickness, mirroring or combining tops and bottoms of different airfoils.
 - Plus much, much more!...No other template plotting program can match CompuFoil's versatility and features.

CompuFoil Pro V1.96-\$65, Demo disk-\$5, NACA airfoil generator-\$18, 185 airfoil library-\$13, S&H add \$3

* For 200's or better w/VGA video. EGA version available upon request



Used by NASA, universities, major model mfgs, and hobbyists world wide.

• Also available: The Feather/Cut foam core machine. The perfect CompuFoil foam core partner.

AN INNOVATIVE NEW DESIGN FOR THERMAL DURATION CONTEST SUCCESS

ESTEEM

COMPETITION SAILPLANES

For the Intermediate and Advanced Flyer

ESTEEM 110

Span: 110 inches
 Airfoil: SD7030 Modified
 Wing Loading: 12.0 oz/sq ft
 Wingspan: Pre-sheeted obachi over-foam
 Weight: 32 ounces
 Fuselage Length: 64 inches
 Wing Area: 940 Square Inches
 Receiver Area: 104 Sq. Inches
 Access Points: 10/15
 Maximum Battery: 2.0/10/10

ESTEEM 121

Span: 121 inches
 Airfoil: SD7030 Modified
 Wing Loading: 12.0 oz/sq ft
 Wingspan: Pre-sheeted obachi over-foam
 Weight: 36.54 ounces
 Fuselage Length: 64 inches
 Wing Area: 1070 Square Inches
 Receiver Area: 110 Sq. Inches
 Access Points: 10/15
 Maximum Battery: 2.0/10/10

\$325.00 for materials + Plus \$15.00 S&H

Purchase Direct from
 Manufacturer and
 Save up to
\$75.00 Off
 Regular Retail
 Prices

ESTEEM

is the result of more than
 three years of intense data
 gathering, intensive full top
 manufacturer's workshop, an innovative
 design program, and exhaustive testing.

ALL PRICES ARE QUOTED OVER THE PHONE

GAZELLE

Span: 180 inches
 Airfoil: SD 7084
 Wing Loading: 12.0 oz/sq ft
 Wingspan: Pre-sheeted obachi over-foam
 Weight: 32 ounces
 Fuselage Length: 64 inches
 Wing Area: 940 Square Inches
 Receiver Area: 104 Sq. Inches
 Access Points: 10/15
 Maximum Battery: 2.0/10/10

Gazelle 2 Meter Sailplane

Introducing Special \$195.00

Airfoil: SD 7084 non
 modified which is 12%
 superior in all aspects
 over its basic 3021 airfoil.

Wings are sheathed
 obachi over foam with a
 1/2" carbon fiber spar
 tube inserted 50% of the
 length. Carbon fiber
 cloth reinforced top and
 bottom sides.
 Weight is only 8.6 oz./sq.
 ft.

Electric version is also
 available using 10 cells
 and all up front weight of
 only 13 oz./sq. ft.

AT \$1.02 ALL UP WIDTH 8.6 OZ/SQ FT. LOADING
 FIBERGLASS KEVLAR FUSE, FOAM CRACKEE AND
 CARBON FIBER TAPE WING CONSTRUCTION MAKE
 THIS SAILPLANE SOMETHING YOU WERE MISSING
 IF YOU NEVER SEEN REAL LAUNCHES, SPEED
 RUNS, CORK SCREW THERMALING AND SIMPLY
 FLYING JOY, FLY ONE.

INVENTEC CORPORATION 215-953-1736

608 David Drive • Treviso, PA 19053

All Wood Kit \$59.95
 Fiberglass Kit \$99.95
 Pre-Fab \$169.95

CLIMMAX
 60" Span Hand Launch

NEW! BLAZER
 Outstanding Light-Lite
 Performance!

60" Span, 2 Or 4 Channel
 7-10 OZ Wing Loading
 Bolt-on Wing
 Epoxy/Glass Skin
 Rolled Plans
 Vtail Hardware

FG KIT \$79.95
Pre-Sheeted Wing Kit \$99.95

MasterCard VISA

Shipping & Handling \$9.00
 California Sales Tax 7.5%

Call In Or Send Order To:

C.R. Aircraft Models • 205 Camille Way • Vista • CA • 92083 619 / 630-8775

SEND S.A.S.E.
 FOR FREE
 1995 CATALOG
 Of Sailplanes &
 Accessories

NEW AUTO-VAC SYSTEM

Introducing the new fully automatic vacuum bagging system that is completely self-monitoring. It has a fully adjustable vacuum switch and a large capacity reservoir which prevents frequent cycling of the vacuum pump.

The Auto-Vac kit comes completely assembled, mounted on a wood base, and ready to use. Included in the kit are the E-Z Vac II electric pump, rated at 24 Hg, adjustable vacuum switch, vacuum gauge, large capacity reservoir, check valve, neoprene tubing, E-Z Vac connector, two Quick-Lock seals, 9' of 18' wide bagging tube, 9' of 15' wide breather cloth and a set of vacuum bagging instructions.

\$215⁰⁰
complete

230 V System available.
 Add \$7.00 for S&H. Check/M.O./C.O.D.
 M.C. /VISA accepted. CA residents add 7.75% Tax

Aerospace Composite Products

14210 DOOLITTLE DR., SAN LEANDRO, CA 94577
 (510) 352-2022 • (510) 352-2021

Foam Cutting Wire

ABSOLUTELY THE FINEST CUTTING WIRE AVAILABLE ANYWHERE!

HERME 107® ALLOY WIRE OUTPERFORMS ALL OTHERS

- ✓ HANDLES HEAT UP TO 1500 DEGREES
- ✓ NO STRETCH OR SAG AT CUTTING TEMPERATURES
- ✓ GLASS SMOOTH CUTS
- ✓ HIGH TENSILE STRENGTH MEANS LONG LIFE
- ✓ USED BY INDUSTRY FOR COMMERCIAL CUTTING
- ✓ REALLY, REALLY, REALLY EXPENSIVE

To Order: send \$10.00 for each ten foot sample to:
SALESMARK, INC.

14505 21ST AVENUE NORTH - SUITE 206 - PLYMOUTH, MINNESOTA 55447

SKY SHINE

**HIGHLY REFLECTIVE HOLOGRAPHIC
SELF-STICKING TRIM FILM
FOR YOUR HIGH-FLYING MODELS
CHEAP INSURANCE AGAINST FLY-AWAYS**
Check or M.O. for \$5.00 for 3" x 18" strip.
Custom Shapes Available
For Free Sample Send SASE to PHIL PEARCE
111 E. GENEVA DR., TEMPE, AZ 85282-3638
PH: 602-966-6384

J & C Sound Security High Tech Alarm

Triple Function

Freq. Interference; Lost Aircraft
Locator; Radio Range Check.
(Not compatible with PCM radios)

Only \$24.95 with Connector. Specify
Futaba J, Hitec, JR or Airtronics

Make Check plus \$1.00 for shipping payable to:

J & C Hobbies

1051 Universal Road, Pittsburgh, Pa 15235
(412)795-9344

OK, FLYING FRIEND!

So you want instantaneous improvement
in your flying, and to have more fun? The
new *Flying Buddy '94 Transmitter
Support* will do it for you! To get yours,
just send:

\$48.00 + \$6 for S&H

To: **George Zatlaka**

12212 NE 66th St., Kirkland, WA 98033
(206) 827-1960

RC POWER DUCK ANTENNA

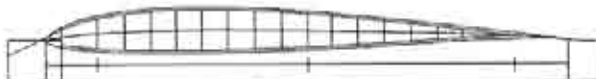
- Individually hand-tuned for 72MHz
- BNC quick disconnect for Airtronics,
JR, & Futaba tx's, 12" height
- Black, blue, red, yellow or pink colors
- \$23.95, 7.75% CA res. sales tax, \$3.00 S&H

CRONUS STOPWATCH

- Dial pre-sets for count-up/down timers
- Programmable time and Lap Counters
- Ideal for thermal duration and F3B
- \$25.00, 7.75% CA res. sales tax, \$1.00 S&H

TAUCOM, 2490 S. Ola Vista, #28, San Clemente, CA 92672
(714) 492-9553; FAX: (714) 586-8508

Airfoil Plot 6.0 \$35



Plot Airfoils and Tecca foam core templates for only \$35. Requires computer running MS-DOS 3.2 or later and a dot matrix or HP/II LaserJet compatible printers. View airfoils on screen if CGA, EGA, or VGA graphics are available. NACA 4-digit, NACA 5-digit, and Quabeck airfoil generators plus 42 airfoils are included. You can also enter coordinates, change camber, change thickness or combine airfoils. For more info send SASE to Chuck Anderson, P. O. Box 305, Tullahoma, TN, 37388 Phone 615-455-6430

Also Available
Airfoil Plot 6.0 Pro \$60
Model Design \$50
Model Design Pro \$75

Affordable Custom Cores for modelers, by modelers

Custom computerized cutting services. Spans to 56", chords to 27" .001" accuracy or better. Gray or white foam. Raw cores or full custom glider wing kits with balsa or obechi sheeting and spar materials available (stabs too)
Obechi in stock - 10" wide, \$9.00 per linear foot with core order
Rejuvenate or upgrade your floater with a new airfoil/wing/controls
Gentle Lady or Spirit 2M full wing kits, S3021 or SD7037, balsa or obechi - \$35
Large airfoil library including Soartech foils direct from Dr Selig on the net
White foam single taper stabs or HLG - \$10, 2M - \$15, Std - \$20, Open \$25
add \$5 for each additional taper. Gray foam - \$5 extra stabs/HLC, \$10 larger
All orders add one 55 S&H charge - COD \$6 additional
Call/email us to quote your next project - Internet: racores@world.std.com

RA Cores, P.O. Box 863, Southbridge, MA 01550 or (508) 765-9998

Shop Hours:
Mon. - Thurs. 9:00 AM - 6:00 PM
Fri. 9:00 AM - 9:00 PM
Sat. - Sun. 11:00 AM - 6:00 PM

CALIFORNIA
SOARING
PRODUCTS



T-SHIRTS (M, L, XL) .. \$10.00

White 50/50 w/graphics on back & ea.
sleeve. Cobalt blue lettering.

HATS \$7.50

VISORS \$7.50

Plus \$3.50 S&H.
Calif. res. add
8.25% sales tax.

Soar Head.

SLEIGERS INTERNATIONAL © 1994

California Soaring Products, 1010 North Citrus, Covina, CA 91722
ORDERS ONLY: (800) 520-SOAR • FAX (818) 966-7915 • INQUIRIES: (818) 966-7215

VISA • MASTERCARD • DISCOVER

SAILPLANES!

A DIGEST FOR SCALE MODELERS
by Fernando Galé and Aldo Calza

- 716 pages, perfect bound — two books under one cover
- comprehensive information for building realistic flying models
- profusely illustrated, with many charts and tables
- 580 3-view drawings of full size sailplanes from 25 countries
- includes many unique, odd, and one-of-a-kind gliders

US\$58.00, packaging and shipping included

B²Streamlines

P.O. Box 976, Olalla WA 98359-0976 U.S.A.



OLD BUZZARD SOARS AGAIN

In a lighthearted fifty-minute

VIDEO

based on the popular

OLD BUZZARD'S SOARING BOOK by Dave Thornburg

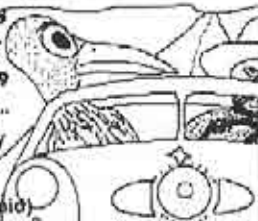
Launching, thermaling, landings — plus a special section on hand-launch technique. Funny, instructive, great for clubs and individuals alike!

Video \$27.95, Book \$16.95 or both for \$39.95

PONY X PRESS
5 Monticello Dr.
Albq. NM 87123
(505) 299-8749

"DO YOU SPEAK"
modeling history
a few left at
\$19.95

(all prices postpaid)



DAVE'S WOOD PRODUCTS.
12306 BERGSTRASSE
LEAVENWORTH
WA 98826
1 (509) 548-5201

- 1. CONTACT CEMENT:**
INDUSTRIAL GRADE, NON TOXIC
HEAT RESISTANT, WATER BASE.
 - 2. HOBBY LOBBY ITEMS:**
DISCOUNT ON PURCHASES
OVER \$50.
 - 3. OBECHI VENEER:**
SELECT & STANDARD GRADES.
- SEND SASE FOR INFORMATION.

VISA & MASTER CARD

SPYDER FOAM

Spyder Foam is the first extruded styrene foam developed expressly for composite construction. It has about 3 times the compressional strength of blue foam and greater shear strength. Spyder Foam achieves its strength by having the cells aligned perpendicular to the wing surface, creating a rigid honey comb effect. In other extruded foams the cells run parallel to the wing surface and when subjected to a compressional load the cell walls easily collapse, creating a spongy surface.

In addition to increased compressional strength,

Spyder Foam's vertical cell alignment provides for a stronger bond with the laminate. Capillary force pulls the resin further down the open cell walls, creating greater shear strength between the foam and skin, and reducing the possibility of delamination. Spyder Foam weighs about 10% more than blue foam, but because its strength allows for lighter laminates it is possible to build wings that are both stronger and lighter. Since Spyder Foam is an extruded styrene; it can be hot wire cut in the same manner as other styrene foams.

Spyder Foam is available in 1 1/2 and 2 inch thickness, at the following prices:

Size	Price	Size	Price
1 1/2" X 2' X 3'	\$ 14.04	2" X 2' X 3'	\$ 18.72
1 1/2" X 2' X 4'	18.72	2" X 2' X 4'	24.96
1 1/2" X 2' X 5'	23.40	2" X 2' X 5'	31.20

Minimum order 4 Sheets
Shipping and handling extra

For information call or write:

The Harris Nelson Co. 3628 Harvard Dr., Oceanside, CA 92056 (619) 439-7037

STARLING & STARSHIP

Join an exclusive group of California performance pilots by flying an efficient, fast, durable PERFORMANCE COMPOSITES sailplane. These V-tail planes are completely assembled, needing only a few hours to finish. Wings: RG-15, obechi, blue foam, carbon. Fuselage: 100% Kevlar & S-glass. 60" STARLING: \$179.95. 2M STARSHIP: \$249.95. S&H: Call; CA res. add 7.25% tax. STARLING now available w/carbon wings & stabs! Call for price.

PERFORMANCE COMPOSITES • P.O. Box 6843,
Napa, CA 94581 • (707) 253-8029

Case-Hardened Tool Steel

☆☆ WING RODS ☆☆

For All Sailplane Types

- Guaranteed to NEVER set a bend on the winch or in flight! Competition Proven!
- From 5/32" to 1/2" Dia.; 7" to 25" Lengths
- Falcon 880 Drop-In Repl. \$10.00 Incl. S&H

SQUIRES MODEL PRODUCTS

574 MAPLE AVE., SUNNYVALE, CA 94086

(408) 245-8111

Send SASE for Free Price List

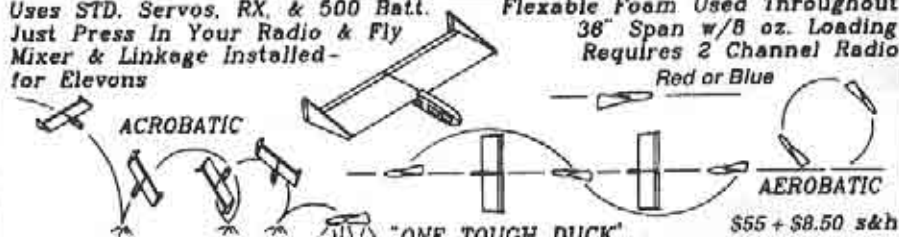
THE RUBBER DUCK

100% BUILT

"ELASTIC SLOPER"

Uses STD. Servos, RX, & 500 Batt.
Just Press In Your Radio & Fly
Mixer & Linkage Installed-
for Elevons

Flexible Foam Used Throughout
38" Span w/8 oz. Loading
Requires 2 Channel Radio
Red or Blue



"ONE TOUGH DUCK"

\$55 + \$8.50 s&h

THE BIRDWORKS P.O. Box 1302 Port Orford, OR 97465 (503)332-0194

MULTIPLEX

...to give you real pleasure from model sport
NEW FOR '95!

JOKER	3333mm Full House Contest Plane
TWIST	1920 mm Full House Contest Plane
AKRO STAR	2222mm ALL NEW! SLOPE Plane
CONDOR	4200 mm Full House, Top O' The Line, You got to fly this one! \$725
ASW 27	1970 mm Scale in an easy to transport size!
GRAFFITI	1880mm ELECTRIC Full flying stab
GLIB	2100mm ELECTRIC T Tail

SERVOS Micro 388 33mm x 32mm 22g metal gear \$62.00

(602) 837-0311
BEEMER R/C WEST
(ARIZONA)

Send \$1.00 for 1995 Color Brochure
to 13827 N. WENDOVER DRIVE
FOUNTAIN HILLS, ARIZONA 85268



(800) 375-1312 (CALIFORNIA)

HiTechHobbys
284-B Wellsian Way
Richland, WA 99352
(509) 943-9241



**HOBBY SHOP
OPEN TO THE PUBLIC**

PRICES DO NOT INCL. WA TAX.
PLEASE ADD \$10.00 S&H
WITHIN CONTINENTAL U.S.A.
CALL OR WRITE FOR S&H
OUTSIDE U.S.A.

**HUNTING
FOR A
BARGAIN?**

RADIOS

1. AIRTRONICS VG4R w/4-102's\$158.99
2. AIRTRONICS VG6DR w/4-102's\$184.99
3. AIRTRONICS VG7P w/4-102's\$234.99
4. FUTABA 4NBF w/3-S148's\$153.99
5. FUTABA 6VA w/4-S148's\$199.99
6. FUTABA 7UAFS w/4-S148's\$349.99
7. HITECH RCD FOCUS 4 w/4-HS300's ..\$135.99
8. HITECH-RCD FOCUS 6 w/4-HS422's ..\$167.99
9. HITECH-RCD PRISM 7 w/4-HS422's ...\$249.99
10. JR MAX 4 w/3-507's\$154.99
11. JR MAX 6 w/4-507's\$199.99
12. JR XF622 w/4-507's\$239.99
13. JR X-347 w/4-507's\$339.99
14. JR X-347 w/2-341's\$389.99
15. JR X-388S w/4-507's\$409.99
16. JR X-388S w/2-341's\$459.99
17. JR PCM-10SK w/4-517's\$809.99

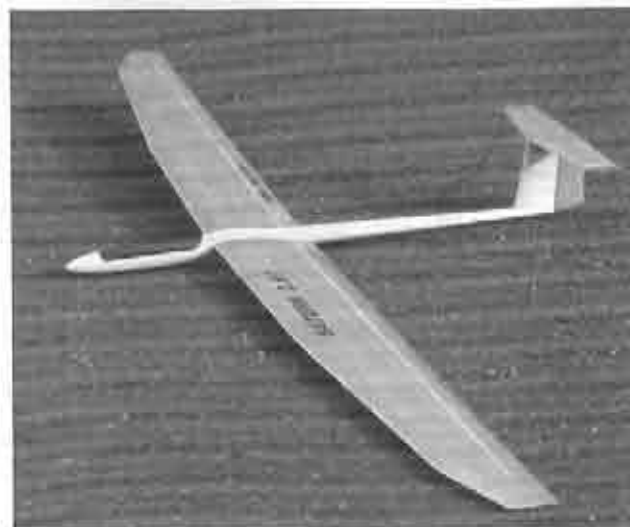
VISA • MASTER CARD ACCEPTED



1808 Applegate Drive
Modesto, CA 95350
(209) 529-8457

Saturn 2.9T

The Saturn 2.9T is one of the strongest and lightest airframes available in its class, producing maximum altitude on winch launches. Using a T6 aluminum alloy wing rod and the world class HQ airfoil it has begun making its mark in contest winners circles.



Winner at Visalia, Oct. 1994

1st Roger Lackey
7th Ben Clerx
(out of 242)

Mako

An Open Class competition sailplane designed by Ben Clerx.

Specifications:
Wing Span 114"
Wing Area 850 sq. in.
Flying Weight 70 - 74 oz.
Wing Loading 11 oz./sq ft.
Airfoil SD7037

\$ 325

Pre-sheated Kit
Optional V-tail Available

FOR ORDERS ONLY
800.890.6173

FAX 903.561.3453



Barry Kennedy
15269 CR. 1227
Flint, TX 75762
903.561.3924

COMPOSITE MATERIALS

Uni-Directional Carbon Fiber
Uni-Directional Kevlar Tape
Epoxy Filament Spars
Obch1
West Epoxy
West Pumps

Fiberglass Cloth
Carbon Wing Rods
Carbon Tube Spars
Titanium Wing Rods

**NOW AVAILABLE:
1/2" & 5/8" CARBON
5- JOINER RODS**

For info.
on our
products,
please send
LSASE. Call
for wholesale and
manufacturer's pricing
schedule. Prices subject
to change without notice.

BUILDING ENHANCEMENT TECHNOLOGY

Wing Span: 113 in
Wing Area: 938 sq in
Airfoil: HQ 2.0/9 - 2.0/8
Weight: 65 - 72 oz
Wing Loading: 10 - 11 oz/sq ft
Kit price: \$199.00
Pre-sheated: \$299.00

FOR PERFORMANCE OUT OF THIS WORLD

TNR Technical Inc.

279 Douglas Avenue • Altamonte Springs, FL 32714
(407) 682-4311 • Fax (407) 682-4469

Authorized SANYO Distributor

1-800-346-0601



TNR

TECHNICAL INC
YOUR BATTERY STORE

GROUP A

SIZE	DIA	HT	OZ.	PRICE
N50 AAA	1/3 AAA	.394	.591	14 \$3.00
N110 AA	1/3 AA	.551	.657	25 3.00
N150 N	N	.453	1.12	32 3.00
N225 AE	1/3 A	.650	.642	39 3.00
N250 AAA	AAA	.394	1.72	35 3.00
N270 AAA	2/3 AAA	.551	1.16	49 3.00
KR600 AE	2/3 A	.650	1.09	63 3.00
N600 AA	AA	.543	1.94	81 2.25
N-700 AAC	AA	.543	1.94	81 3.00
KR900 AAE	AA	.543	1.94	81 3.00
KR1300 SC	SUB C	.866	1.65	1.58 3.00
4 Cell Receiver Packs				\$12.00
5 Cell Receiver Packs				15.00

SPECIFY SOLDER TABS - FREE OF CHARGE

GROUP B

SIZE	DIA	HT	OZ.	PRICE
N650 SC	1/2 SUBC	.866	1.01	1.02 \$4.50
N800 AR	A	.650	1.90	1.16 4.50
N1008 SCR	2/3 SUBC	.866	1.29	1.44 4.50
KR1000 AE	4/5 A	.650	1.65	.95 4.50
KR1200 AE	A	.650	1.90	1.00 4.50
KR1400 AE	A	.650	1.90	1.09 5.00
N1400 SCR	SUBC	.866	1.65	1.87 4.50
KR1800 SCE	SUBC	.866	1.65	1.65 4.50
KR2000 C	C	.992	1.92	2.71 4.50
4 Cell Receiver Packs				\$18.00
5 Cell Receiver Packs				22.50

SPECIFY SOLDER TABS - FREE OF CHARGE

GROUP C

SIZE	DIA	HT	OZ.	PRICE
KR1700 AE	4/3 A	.650	2.59	1.48 \$7.50
N1700 SCRC	SUBC	.866	1.65	1.90 7.50
KR2300 SCE	5/4 SUBC	.866	1.92	2.04 7.50
KR2800 CE	C	.992	1.92	2.57 7.50
4 Cell Receiver Packs				\$30.00
5 Cell Receiver Packs				37.50

SPECIFY SOLDER TABS - FREE OF CHARGE

GROUP D

SIZE	DIA	HT	OZ.	PRICE
N4000 DRL	D	1.27	2.36	5.64 \$ 9.95
KR4400 D	D	1.27	2.36	5.11 9.95
KR5000 DEL	D	1.27	2.29	5.26 12.00
4 Cell Receiver Packs				\$40.00
5 Cell Receiver Packs				50.00

SPECIFY SOLDER TABS - FREE OF CHARGE

TRANSMITTER PACKS

Available in the following configurations

BN-600 AA	19.95	• 1 Flat Pack of 8
BN-700 AAC	21.95	• 4 Sticks of 2 Squares
BN-800 AAE	24.95	• 2 Sticks of 3 and 1 Stick of 2

Add \$5.00 shipping & handling • 7% sales tax for Florida residents.

CONFIGURATIONS



Two Sticks of 2



Flat Pack



Square Pack



One Stick of 4

CONNECTORS

		Extensions:
Futaba J	\$4.00	6" \$5.00
Futaba G	\$4.00	12" \$5.00
Airtronics	\$4.00	24" \$5.50
JR/HiTec	\$4.00	36" \$6.00

CELL CELLS

PS 612	6V	1.2 AH	\$12.00
PS 1270	12V	7.0 AH	\$19.95

SHRINK WRAP

Light Weight, Sized By Flat Width

Per Foot	Per Foot
1 inch \$1.00	3 1/4 inch \$2.00
1 1/2 inch \$1.00	3 3/4 inch \$2.50
2 1/4 inch \$1.50	5 inch \$3.00
2 3/4 inch \$1.50	



STINGER! HIGH PERFORMANCE SLOPE GLIDER

• Wingspan 82" • Fuse 48" • Glass Fuse • Airtol Mod RG 15
• Removable Nose Cone • Foam Wing / Stable Flight / Shaping Included
• Rotor Plan \$150.00



AFRO L-39 ALBATROSS PSS GLIDER

• Wingspan 82" • Fuse 42" • Airtol Mod E 205 • Glass Fuse & Canopy Frame
• Formed One-Carvey • Foam Wing & Stub / Shaping Included
• Rotor Plan \$175.00

VERN HUNT
DESIGN
2714 NORTH AVENUE • HARTLAND, WI 53029 • (614) 367-0070

SCHOOL YARD RC SAILPLANES



1.5 Sagitta

60" span, bolt on balsa sheeted foam wing, ply balsa fuse, 7032 airtol, area: 330 sq in, 7 oz before micro RC install.

Kit \$49.95 plus \$6 S+H

LAUNCH BY HI START OR HAND THROW

Mini Hi Start for easy launches. 150" length, 30" 1/8 OD rubber and 120" tow line, wood-steel and convenient ground base system that does not require hammer to set up for use. Perfect for launching 1.5 M HL sailplanes from small areas.

Kit: \$29.95 plus \$4 S+H. (Free air if ordered with model kit.)

1.5 M Joust



60" span, bolt on balsa sheeted foam wing, ply balsa fuse, 7032 airtol, area: 350 sq in, 8 oz before micro RC install.

Kit \$49.95 plus \$6 S+H

Kits are easy to construct and fly. Use spray contact cement on wing sheathing. Complete instructions and flying tips included. Wings have built in tip wash out for easy flying. Thermal flying is fun and relaxing and now it is inexpensive.

Send check or money order to:

Sky Bench Aerotech
58030 Cyrenus, Washington, MI 48094
810-781-7018

CONTEST WINNERS

SUPER V

Levoe Design



RESULTS

SPECS	AV 100	AV 1M
SPAN	97.5 IN	78.5 IN
AREA	768 SQ. IN.	610 SQ. IN.
A.R.	12.37	10.10
AIRFOIL	7032	7032
WEIGHT	50 OZ.	40 OZ.
LOADING	9.30 OZ / SQ	9.43 OZ / SQ
SSS A/R	3.66	3.49
SSS D/R	5.69	5.49

AMAR RATS

1st 100, 1st 1000

2nd 100, 2nd 1000

3rd 100, 3rd 1000

4th 100, 4th 1000

5th 100, 5th 1000

6th 100, 6th 1000

7th 100, 7th 1000

8th 100, 8th 1000

9th 100, 9th 1000

10th 100, 10th 1000

11th 100, 11th 1000

12th 100, 12th 1000

13th 100, 13th 1000

14th 100, 14th 1000

15th 100, 15th 1000

16th 100, 16th 1000

17th 100, 17th 1000

18th 100, 18th 1000

19th 100, 19th 1000

20th 100, 20th 1000

21st 100, 21st 1000

22nd 100, 22nd 1000

23rd 100, 23rd 1000

24th 100, 24th 1000

25th 100, 25th 1000

26th 100, 26th 1000

27th 100, 27th 1000

28th 100, 28th 1000

29th 100, 29th 1000

30th 100, 30th 1000

For info, send SASE or call:

Levoe Design

SAILPLANES

510 Fairview Avenue

Sierra Madre, CA 91024

818-355-2992



ASK-21

Scale sailplane.

Span: 83"

Airfoil: Ritz

Weight: 42 oz

Wingload.: 11oz/sq ft

Price: ARC kit \$185.00 + 15.00 S+H

Also SALTO H101 53" span, \$145.00 + 10.00

Dealer inquiries welcome



ICARE Sailplanes
381 Joseph-Huet
Boucherville, Qc
J4B 2C5 Canada
(514)449-9094

SPEED CONTROLS



SC-75-S • 9.5 Grams
• Ultra High Frequency
10,000 IPS • 75 Watts
\$54.50

SC-75-BEAC • 10.5 Grams
• Ultra High Frequency
10,000 IPS • 75 Watts
\$79.50

L.R. TAYLOR POWER PACER



Great airplane saver!
Charges and cycles TX and
RX batteries; shows battery
capacity remaining; warns of
bad cells in pack.
Retail **\$99.95** Spec **\$89.95**

CLASSIC



Finally available again -
new more versatile kit. 2
wings, Vee tail option, all
machine cut. #11002 -
\$27.00

TRY
LITESPAN
AT A
NEW LOWER
PRICE

Charlie's



2828 Cochran Street, Suite 281 • San Jose, CA 95065-2793 • (805) 584-0125 • Fax (805) 584-0792

COMING SOON NEW NOVA
NEW SHOOTING STAR
NEW INNOVATIVE PRODUCTS
NEW & ANTIQUE AIRPLANE KITS

IMPROVED PERFORMANCE FOR 1995



The 1995 models of every sailplane made by RP incorporate design and construction improvements suggested by you, our customers. All wings are now laid-up at a 45 degree bias using lighter and stiffer materials to decrease weight and increase torsional stability. All fuselages and other parts are also built stiffer while keeping the weight to a minimum.

PRODUCTS™ Ask about complete building services

Still At 1991 Prices!

THE NEW GENERATION NOVA

The new 108" Nova with high aspect ratio, two-piece wings greatly improves light lift performance. The HQ 1.08 airfoil makes the NOVA a contender in all wind conditions!



Models have white fuselages, wing tops, struts. Choice of colors on wing bottoms and rudder.

Nova:
Span: 94" or 108"
Airfoil: HQ 1.08
Two-piece Wing With
5/8" Carbon Joiner
Foam-Core Molded Wings

Revolution
Span: 60"
Airfoil: S2048
Slip-On Nose Cone
Parts Hollow-Core
Molded

REVOLUTION 60" SLOPE RACER

The Revolution is the first all-molded 60" slope racer designed to compete in the popular 60" class. Features the S2048 airfoil, T-tail and a slip-on nose cone. Parts and Joiner systems available for scratch builders.

ORDER DIRECT
408/246-4751
(WINGS-51)



PRODUCTS™

1120 Wrigley Way • Milpitas, CA 95035

Also Distributed By Slegers International 201-366-0880

THE HIGHEST PERFORMANCE CLASS "A" OR "B" ELECTRIC SAILPLANE AVAILABLE

LASOAR 650 — '94 A.M.A. NATS Champion!

1st Place in Class A and Class B

• Capable of "edge of your sight" launches in 45 sec. on .05 geared motor and 7 cells

• Exceptionally light wing-loading — 11 oz. per sq. ft. — give excellent cruise distance, thermal indication, rapid climb rate.

• Effective spoilers for very controllable landing approaches

Also Winner:
• Southern Electric Fly-In
• Memphis-In-May Electric Fly-In

SPECS:

✓ Wingspan: 92"
✓ Airfoil: Eppler 387
✓ Wing Area: 650 sq. in.
✓ Ready-to-Fly Weight: 50 oz.
✓ Wing-Loading: 11 oz./sq. ft.

KIT FEATURES:

- ✓ Preheated Obache Wings
- ✓ Epoxy glass and Kevlar-reinforced fuselage
- ✓ Pre-cut ailerons & servo wire holes
- ✓ Pre-fabricated motor mount
- ✓ All balsa and hardwood included
- ✓ Rolled plans

PERRET'S STUDIO
1780 Prytania Street • New Orleans,
LA 70130 • (504) 524-3442

Kit price: \$240.

A Classic is Back!
Just In Time for your Classic Sailplane Meet

THE RETURN TO BASIC...
AND THE RETURN OF THE ORIGINAL

BIG BIRDY

100" STANDARD CLASS
SAILPLANE KIT

WINGSPAN: 100 INCHES
WING AREA: 1045 SQ. INCHES
FUSELAGE LENGTH: 49.5 INCHES
RADIO FUNCTION: 2 OR 3 CHANNEL
W/ SPOILERS

For Kit
and
Dealer Direct
Information
Contact:

JUST PLANE FUN MODELS
3390 Paseo Barbara Road
Palm Springs, CA 92262
(619) 327-1775



MADE IN U.S.A.

AVENGER



*Designed by
Mark Allen*

Specifications

Wing Span 59"
Airfoil SD 7037
Wing Area 390 sq. in.
Wing Loading 4 - 4.5 oz./sq. ft.
"A" Tail Twin Boom
Price \$160.00 + S&H

SLEIGERS INTERNATIONAL

Route 15, Wharton, New Jersey 07885

(201) 366-0880 - FAX (201) 366-0549

9:30 A.M. - 5:00 P.M. (Closed Sun. & Mon.)

*High Quality Electric & Non-Electric Sailplanes,
Radios, and Accessories for the Sailplane Enthusiast*

Now there are three locations to serve you better! Our sailplanes are available direct from us or from:
KENNEDY COMPOSITES, 15269 CR. 1227, Flint, TX 75762 • (800) 890-6173 • FAX (903) 561-3453
CALIFORNIA SOARING PRODUCTS, 1010 N. Citrus, Covina, CA 91722 • (800) 520-SOAR; FAX (818) 966-7915

★ VISA ★ MASTERCARD ★ AMERICAN EXPRESS ★ DISCOVER ★

thermo flügel

COBRA
3500mm, HQ 1512

ASW 24
4200mm, Eppler E-203

ASW 20
3500mm, Hitz II mod.

AMIGA
4000mm, HQ 312 mod.

*Our Full Color Catalog
for Fiber Glas Flügel
in English is \$10.00 U.S.*

Scale & Competition Sailplanes
Almost Ready to Fly Kits
Several Sizes

Please send SASE for more Thermo Flügel information to:
Windspiel Models, P.O. Box 2121, Coeur d'Alene, ID 83816
(208) 667-2276 • FAX (208) 667-8712

Mastercard & Visa

(Top) Stiletto II 49" fuselage, set up for bolt-on wing with max. 10" wing cord...\$75.00
(Center) Stiletto RG-15 49" fuselage, set up for 10" cord, RG-15 wing root...\$75.00
(Bottom) Condor 3M fuselage, 52 1/4" long, pull-off nose cone, set up for bolt-on wing with max. 10" wing cord...\$80.00

S&H costs for each plane in the continental U.S.A. is \$10.00.
Texas residents, please add 7.25 % sales tax.

High Quality Fiberglass Fuselages & Vacuum Forming
Are you a scratch builder? Like to design your own models? Or, do you have some old wings that need a fuselage? If the answer to any of these questions is, "Yes," then consider one of my generic kevlar reinforced fiberglass fuselages for your next project.

Jerry Slates

We do custom mold making.
Please call

VIKING MODELS, U.S.A.
2 Broadmoor Way
Wylie, TX 75098-7803 U.S.A.
(214) 442-3910 • FAX (214) 442-5258
9:00 A.M. - 5:00 P.M. CST

Canopies & Accessories
An in-house vacuum form machine allows us to produce our own canopies. If you are looking for a canopy or other vacuum formed accessories (including sailplane, power, etc.), please let us know. We have a large inventory of canopies and do short production runs. Manufacturer inquiries are welcome.



CALIFORNIA SOARING PRODUCTS

SAILPLANE KITS:
SLOPE, SCALE, ELECTRIC,
PREVIOUSLY OWNED

NEW!!
"WINGS BY MATSUMOTO"
CUSTOM BAGGED,
CALL FOR QUOTE.



JR RADIOS
HITEC RCD RADIOS
AIRTRONICS RADIOS
ACCESSORIES
MODELING TOOLS
BUILDING MATERIALS
COVERING MATERIALS

SPECTRUM 2M
WING SPAN 78.5 IN.
AREA 554 SQ. IN.
ASPECT RATIO 11.2:1
WEIGHT 40-43 OZ.
WING LOADING 10 OZ/SQ. FT.
AIRFOIL...S3021
PRICE \$195.00

KITS IN STOCK

NIGHTHAWK 60"	RG15	\$149.00
VULCAN 2M	S7012	\$195.00
SPECTRUM 2M	S3021	\$195.00
SKY HAWK 116"	SD7037	\$345.00
ESTEEM 110"	SD7080	\$375.00 SALE \$290.00
ESTEEM 122"	SD7080	\$400.00 SALE \$300.00
SPECTRUM 104"	S3021/RG15	\$295.00
PRISM 117"	RG15	\$295.00
ELECTRIC HAWK 74"	SD7037	\$229.00
AVENGER	SD7037	\$165.00
MAVERICK	RG15	\$550.00
STEVE LEWIS F3B EAGLE		CALL
THERMO FLUGEL SCALE KITS		CALL
MM GLIDER TECH LINE		CALL
C.R. AIRCRAFT RENEGADE COMPOSITE RG15		\$269.95
C. R. AIRCRAFT CLIMMAX PRE-FAB HLG		\$169.95

(Prices do not include S&H and Calif. sales tax.)
WEST COAST DISTRIBUTOR FOR
SLEGERS INTERNATIONAL • (201) 366-0880

VULCAN 2M

V-TAIL
WING SPAN 78.7 IN.
AREA 556.55 SQ. IN.
ASPECT RATIO 11.13:1
WEIGHT 33-38 OZ.
WING LOADING 9.25 OZ/SQ. FT.
AIRFOIL...S7012
PRICE \$195.00

FOR ORDERS ONLY
(800) 520-SOAR

VISA • MASTERCARD • DISCOVER
FAX (818) 966-7915
INQUIRIES: (818) 966-7215

California Soaring Products, 1010 North Citrus, Covina, CA 91722
Mon. - Thurs. 9:00 AM - 6:00 PM, Fri. 9:00 AM - 9:00 PM, Sat. - Sun. 11:00 AM - 6:00 PM

HOBBY SHOP

OPEN TO THE PUBLIC



SAILPLANES UNLIMITED, LTD.
63 East 82nd Street, New York, NY 10028
PHONE 212.879.1634
FAX 212.535.5295



1/3 SCALE SALTO

Please call
or write for
brochure.

*Robin Lehman is pleased
to make available the art of
German scale craftsmanship at
the lowest possible price.*

1/4.5 SCALE ASK 21



1/4.5 SCALE ASK 18

SCALE SAILPLANES IN STOCK

ASK 21 (1/4.5), Roedelmodel	\$495.00
4.2 meter span (165"), wing profile E393 mod., weight ca. 3900 g.	
ASK 18 (1/4.5), Roke	\$830.00
4.15 meter span (164"), wing profile E193/197, weight ca. 4600 g.	
ASW 27 (1/3.5), Krause	\$680.00
4 meter span (157"), wing profile HQ 2.5/12, weight ca. 4200 g.	
Salto (1/3), Krause	\$880.00
4.5 meter span (177"), wing profile HQ 3/14, weight ca. 6000 g.	
Discus (1/3.75), Krause	\$680.00
4 meter span (157"), wing profile E211, weight ca. 3800 g.	
Discus (1/3.75), Roebbers	\$530.00
4 meter, wing profile HQ 3.0/14, weight ca. 4200 g.	

Shipping additional. NY residents add sales tax.