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March, 1996

Vol. 13, No. 3

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R/C
Soaring
G L S





R/C SOARING DIGEST

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SKY PILOT & RCHLG 'MANIA'

Paul P. Clark (L), Sky Pilot, is setting up with two other "gaigins" (foreigners), Joe Wurts (C), and Gordon Jennings (R) also attended the RCHLG event in Japan.

Paul talks about RCHLG 'mania' on page 4.

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ZIKA

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

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The Soaring Site

The 13th Year

Ever wonder what the notation on the cover means: Vol. 13, No. 3? Well, the '3' means March, and the '13' means that R/C Soaring Digest has been published for 13 years, now! Yes, 13 years ago last January, Jim Gray published the very first issue of RCSD, a half letter size, black and white publication. Techniques have changed, of course, and it has evolved from the simple cut and paste to the computerized publication that you are holding now.

Many of you have shared your love of this hobby over the years, by writing articles, and sending in photos or other tidbits of information from time to time. Robin Lehman of New York City, New York has been writing frequently on the subject of scale; and, next month, Steve Savoie of Gorham, Maine will kick off a new column by introducing himself, and those soaring topics that he hopes to cover. As with all of the columnists who take the time to share their ideas and notions through the pages of RCSD, please let them know they are appreciated, what subjects you would like to read about, or send them photos and information about yourselves and, of course, your plane.

What's new? There are many exciting sailplane events scheduled to take place this year; Japan is caught up in RCHLG 'mania'; several new resource listings have been added, and there is a telephone number for Hawaii, now; Gene has been busy generating more clip art for us to smile about; and now it's time for you to see the rest for yourself. Until next month!

Happy Flying!
Jerry & Judy Slates

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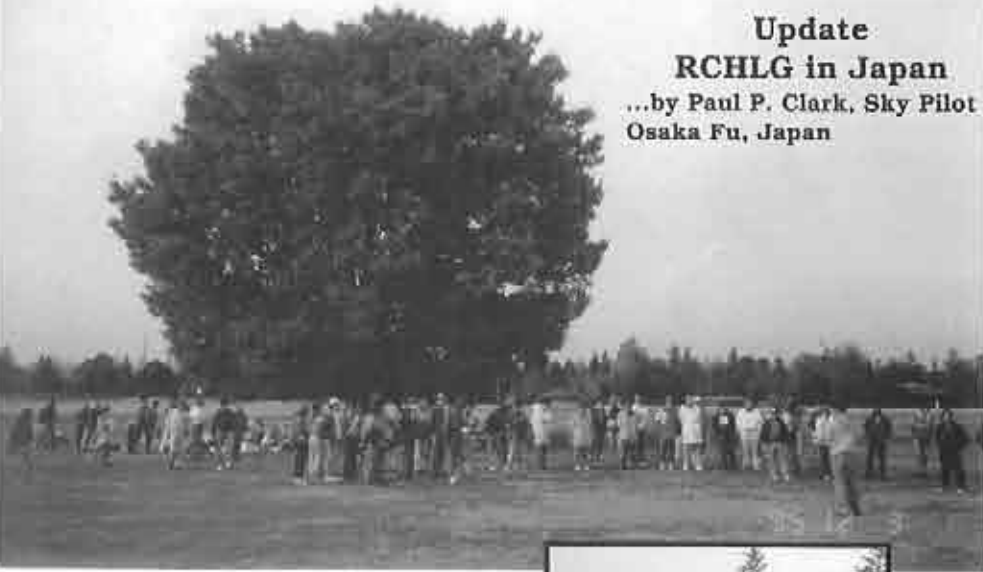
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Update

RCHLG in Japan

...by Paul P. Clark, Sky Pilot
Osaka Fu, Japan



The crowd gathering about TDKH's own Charlie Brown RCHLG tree for instructions. Their trademark.

RC hand launch glider coverage hit heavy sink following the Great Hanshin Earthquake. It took a lot of lift from under our wings. Japan's First National RCHLG Contest is history, held in Tokyo, preceding the earthquake.

Joe Wurts showed up on schedule; Gordon Jennings also came from the United States, and Sky Pilot, Paul Clark, from Osaka. Joe was the attraction and he wasn't disappointing but, more significantly, the contest drew nationally from across Japan; forty-two participants out of 60 pre-registrations came from over one-fourth of Japan's prefectures (states or provinces). Nobusuke "Buzz" Tokunaga's enthusiasm, along with the hard work of the Takatsuki Denpata Kaku Han (Takatsuki Field Flyer's Group) and Joe Wurts' influence put RCHLG on the map in Japan with this contest. And, RCHLG interest has continued to expand like the "big bang" ever since.

The contest was as historical as an event can be in the modeling world. In preparation for the contest, TDKH had been given national coverage in Japan's magazine, *Radio Control Technique*: the



Lining up for the first round, first flight.

feature article also included centerfold plans for MM Glider Tech's, Merlin. The field of contestants was an impressive one, with a number of recognized national RC power and glider pilots, including three of Japan's World F3B team participating, due in large part to Joe Wurts' influence from his F3B appearances in Japan.

The contest itself took on more of an

RCHLG fun fly format in which only two rounds were flown and scores were based on the contestant's best three flights. The task was to accomplish as many two minute maxes as possible in a ten-minute window. The air being even throughout each round made it an interesting contest. On the other hand, the flying parameters disallowed following thermals far enough for even two-minute maxes. Gordon, a champion flight pilot himself, had hoped to give Joe a run for his money but, for all his good flying, didn't get a max and left CD, Buzz, with his max on Joe's tail until Joe managed a second max to win. In capping off the event, *RC Technique's* special coverage of TDKH before the contest was followed up with a color feature article of the event.

An incredible number of RCHLG kits are being imported into Japan by World Models, Tamaya Models, and others. "Buzz" himself is marketing his *Boomerang* (RCHLG), with which he won the

1995 contest (three contestants flew the *Boomerang*), on an order basis, runs his own RCHLG outlet, and is D. J. Aerotech's Monarch agent in Japan. *RC Technique* has become full of advertisements for hand launch gliders, particularly from the U.S.A., but also Europe, and now Japanese kits are quickly appearing on the market. The magazine continues to give good coverage to RCHLG and runs more and more pictures of clubs having RCHLG contests. This all evidences the growing popularity of the RCHLG with the RC flying community. RCHLG was a natural for Japan, but it wasn't happening until Buzz and TDKH, with Joe's influence and Sanwa's taking a major role in helping sponsor contests, cut the bubble loose.



Joe with new and old friends.

Gordon's two-Monarch flying travel case.



After a rained-out March, 1995 contest, an RCHLG *ad hoc* committee formed and set up five more contest dates for the rest of the year. The same committee, meeting after the Second Annual National RCHLG Contest in December (There were 38 contestants this time with the flying notably improved.), set up a schedule of dates for 1996: January 13, March 16, May 25, September 28, and December 7. The committee, with due respect for Joe, named the December



*Tough customers.
(Front L - R) Buzz Tokunaga,
Gordon Jennings
(Back L - R) Joe Wurts, Paul Clark*

National Contest the Annual Joe Wurts (RCHLG) Cup Fly.

While Joe couldn't make it to Japan in '95, join him the 7th of December, for the Third Annual Joe Wurts (RCHLG) Cup Fly. RCHLG has been exploding around the world, originating in the United States, immigrating to Europe, spreading Down Under to New Zealand (Australia is the new frontier.), and it has become in Japan what RC Technique calls RCHLG 'mania'. It really is a fun 'fling' to do! ■



**Jer's
Workbench**

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Making a Vacuum Bag

Last month, I talked about the vacuum pump, and said that I haven't done many vacuum bagged wings. Having tried vacuum bagging some 20 - 25 years ago, it just didn't seem worth the trouble. However, vacuum bagged glass wings made sense, and that appeared to be the way to go. The roadblock was the vacuum bag. How does one find a good material to make a vacuum bag that doesn't leak or pull apart under vacuum? Well, I tried everything and anything I could find at the local hardware stores; hobby shops didn't have any idea what I was talking about; those who were doing vacuum bagged wings weren't giving up their secrets, and who could blame them.

And today? There are no more secrets. One can purchase everything needed over the counter at hobby shops, or mail order from specialty places such as Aerospace Composite Products or Composite Structures Technology.

OK, so there are no ready made vacuum bags that I've been able to find. So, how does one go about making a bag? How about nylon bagging material? It comes in a couple of different forms. First, there is a



Photo 1 - Sealed end of vacuum bag. Note that the vacuum line is well into the bag, and that the end of the vacuum line is onto the breather cloth. This stops the vacuum bag from sealing off the end of the vacuum line before the vacuum is removed from the bag.



Photo 2 - Open end of vacuum bag is sealed using a bag clip. It's easy to use. Just lay the rod across bag about 2 - 3 inches from end of bag; fold bag over and slip "U" shaped over rod and bag.

nylon bagging tube. This is available in 18" and 36" widths; it can be bought by the yard. Easy to use, one only has to seal the ends. Also available is a flat stock which is 60" wide. High stretch bagging film can be used on very complex shapes, such as a violin or a ball. For a set of wings, I've chosen the nylon bagging tube.

An 18" wide tube has filled the bill so far, and I have two sets of bags. One set is 3 feet long for doing stabilizers; the other set is 6 feet long for vacuum bagging the wings.

As shown in the photographs, start by opening one end of the nylon tube; lay in a strip of sealing tape onto the

bottom surface inside the tube. Be careful, as the sealing tape is going to reach out and attempt to stick to anything that it comes into contact with. Next, lay in the vacuum line, which is the tube used to connect the bag to the pump. The vacuum line should go into the bag about 6". Now, take another piece of sealing tape and put this over the vacuum line; lower the top side of the bagging tube. Using the thumb, seal

the end of the bags. That's it. All done!

The other end is easier, as I use a bagging clip. Sealing tape could be used to seal the other end, but it is almost impossible to open again without cutting the end off the bag. After a few times, the bag can get very short...

Before using a new bag, it should be tested for leaks. Connect the bag to the vacuum pump and turn on the pump. Depending upon the size of the vacuum pump and the bag, it can take anywhere from 30 seconds to 2 minutes to draw all of the

air out of the bag. If there is a leak, you should be able to hear the air drawing into the bag. If the bag is leaking where the sealing tape is installed, it can be easily fixed by pressing down over the leak.

If the leak is in the bag, run the flat of your hand over the bag very slowly; you should be able to hear and feel the escaping air, which is likely a very small pin hole. A piece of masking tape can be used to seal the leak.

When the bag is not in use, it should be stored in a safe place, out of the way, such as in a box, so that it will not be accidentally damaged.

A bit more about vacuum bagging next month. ■

UPDATE

**First Annual Northeast
Aerotowing Fly-In
Elmira, New York
June 1 - 2, 1996**

Plans continue to develop regarding our aerotowing fly-in. Most recently, we have been invited by the Harris Hill full scale soaring group to come up at the end of our day, around 4:00 or 5:00 pm to fly R/C at their field. This could be aerotow or slope if conditions permit. They have offered to shut down full scale operations early to accommodate us. This is an informal arrangement that will supplement our main event at our club field. The Harris Hill folks have also offered to reserve sailplane rides for our participants at the same time, if there is interest from attendees. They have both trainer types and high performance ASK-21's. The charge is about \$40 - \$50 per 20 - 25 minutes, depending on the aircraft. Keep in mind that the National Soaring Museum is adjacent to the glider port for those who want to visit. Both of these offers are open ended and require no action on our part until the fly-in.

Because this is the beginning of tourist season for our area, we have arranged to hold a block of rooms for our guests, but I would encourage any one who is interested in coming, to act early so as to avoid any difficulty finding last minute accommodations.

Information packs are now available, and we have had a good early response. If you would like to get on the list, please contact John Derstine at (717) 596-2392 or e-mail 2076482@mcimail.com.

See you all in June! John ■



Greg Probst, Indianapolis, launching 1980 prototype "Andromedia". Maintenance free retriever, nicknamed, "Shagger", would routinely shag launch chute...

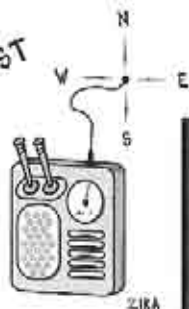
...And return it to the winch. Shagger was one of the best "Retrievers" of his time. A bowl of water and a pat on the head kept him running, the only down-side to this type of "system" was the chute would come back slightly moist.



Hindsight. Bob Sowder launching "Andromedia" at Manassas Battle Field park in northern Virginia. This no composite ship was equipped with top and bottom spoilers, flaps and a thermal sniffer. Design won 3rd place at 1980 Toledo Show. Many fliers today are beginning to yearn for the 'ole "non-composite" days. 1982 photo.

SOARING EAST TO WEST

with
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Cordova, Tennessee 38018
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LSF News

The League of Silent Flight (LSF) has a newly elected Board of Directors as of the first of the year. Bob Steel, of Ft. Wayne, Indiana has been elected President for the next two year term. Bob is a former, two-term, LSF President back in 1988 through 1991. Working with Bob are Mike Remus, Vice-President, also of Ft. Wayne, John Vennerholm, Secretary (Spruce Pine, North Carolina), and Cal Posthuma, Treasurer. Depending on the season, Cal can be found in Michigan or Texas.

I spoke with Bob recently by phone to get the latest LSF scoop. One big piece of news is that past president, Mike Stump, who championed the LSF Nats, will continue as LSF Nats Contest Manager. Mike has done a tremendous job over the past years handling the many logistics of the LSF Nats. According to Bob, the existing "partnering" with AMA and LSF is expected to continue with regards to



the LSF/AMA National Championships. Furthermore, he informed me that LSF members can expect more frequent communication through the LSF newsletter, *Short Lines*. More emphasis is expected in recruiting new LSF members. Congratulations to the new LSF Board.

For those of you who are new to soaring, the League of Silent Flight is a soaring accomplishments program consisting of five levels. Level one is designed for entry level pilots and provides a flying program (tasks) to enhance your flying ability. Each subsequent level gets progressively more challenging, and personally rewarding. LSF offers up a tremendous program, whether you are new to



RnR cross country crew getting ready to eat dust during Mid-South Cross Country Race.

best, a labor of love... So Hey... Take a second out of your life and say thanks to the dedicated club member who is responsible for getting your club information into your mailbox each month, or so.

And speaking of newsletters, I received a recent edition of the Central Arizona Soaring League newsletter that included some thoughtful "Pearls of Wisdom" by M. Howard. This is a clever and creative piece of writing, so hence, some pearls of wisdom courtesy of Mr. Howard:

- 1) If your completed model is not more than ten percent heavier than advertised, then your scale needs to be calibrated.
- 2) When flying HLG, remember that the best thermals are always just

soaring or a veteran looking for a fun challenge. For additional information and the LSF address, check out their ad in *RCSD*. By the way, there are no dues, and your only expense, besides sailplane, radio, etc., etc., is postage.

Attention Newsletter Editors From Around the Globe!

One thing that is really neat about doing this column, is that for some reason, I get on the newsletter mailing list... and I really appreciate that! Publishing a monthly newsletter is, at

beyond the range of whatever it is you are flying.

- 3) The wind will always abate DURING the launch of a properly ballasted sailplane.
- 4) Your winch is never as strong as your neighbor's.
- 5) If your winch is as strong as your neighbor's, you will soon discover that your wings are not!
- 6) If it is calm at your house - then it's windy at the field (at least when you get there).
- 7) The wind direction will never change while the winch line is strung out. It will not change while you prepare your ship for launch. It will change when you place the ring on your towhook.
- 8) You will never experience winch problems until your buddy discovers the thermal of the century. Winch repairs will take until all signs of rising air have evaporated.

AnEan (The Bird)

An original design by Mark Barbee

"Originally built in 1989 as a slope design, the AnEan evolved into a Thermal Duration sailplane. Spanning 116 inches with a mean chord of 7.26 inches, the aspect ratio is fairly high at 16 to 1. The wing area is 842 sq. in. Airfoils were chosen to improve low speed handling. The root section is an

SD7037 with the SD7032 at the tip.

"At 65 ounces, AnEan cruises, thermals, and lands well in most conditions.

"The original slope design had a two meter span and a "T" tail configuration. Test flights were flown in Ireland on some beautiful, heather covered, 300' cliffs overlooking the North Atlantic Ocean. This spot, called "Horn Head", is in county Donegal (northern most tip of Ireland). Two sons of a man I worked with there accompanied me on these test flights. The day was typical Ireland - cold, wet, and windy. Flights went well despite the conditions, and now the "x" plane needed a proper name. Being from that area of Ireland, the boys were able to speak the old Irish language. They decided instantly upon a name and grabbed a large black marker and wrote "AnEan" on the airplane carrier. They told me that this translated simply as - "the bird". An appropriate name, and it has stayed since with the design. Pronounce it any way you like - only the Irish know how to say it properly!"

Thank you Mark Barbee, and all of you who take time to send in photos and information about your club, events, individuals, and individual ideas. Until next time...

Thermals - Bob ■



Mark Vlasak (L) and Mark Barbee with their Barbee designed, all composite AnEan's.

Time Flying

...by Daniel Fulmer
San Francisco, California

A few years ago a good flying buddy of mine posed the question, "Have you ever scratch built a plane that you flew for more hours than you spent building or rebuilding it?"

Since I had never given the question much thought, I really could not say if I had flown a plane for more hours than I had spent with it on the building table. My friend had two planes that he flew quite a few hours and had also kept track of the building time versus the flying time. One of his planes was a 100" pivot wing design, with the outer 20" of the wing pivoted for roll control. This plane took approximately 50 hours to build and flew very well. He said he was approaching the break even point of flying time versus building and rebuilding time, after flying regularly for about two years.

Since that time I have decided to keep a flying log consisting of dates, locations, wind speed and direction, planes flown and, most importantly of all, hours flown. Some interesting facts have surfaced in the two years I have been keeping these somewhat sloppy records. The most surprising information is that I seem to fly the most in the area that slope soaring is not allowed. The area is the Fort Funston cliffs, just south of San Francisco. These magnificent, almost 200' west facing steep slopes, are absolutely ideal for slope soaring, with steady strong winds, perfect flat, treeless ice plant covered landing area, and a parking area for visitors. Unfortunately, the local hang gliding club has a complete monopoly on this federally owned and patrolled land. The local law, enforced by the U.S. park police, reads, "No radio control gliders permitted when hang gliders are in the air." When they are not in the air, we can fly our slope soaring creations as long as the wind holds out! This little window of opportunity has given me 58 different days flying at this site over a two year period. Sometimes, the wind is too strong (25 mph+) for the hang glider crowd, and sometimes it is blowing hard in the morning and they just don't

get set up until afternoon; and once in a while, they are all there but are not flying. My hours working for the fire department in San Francisco, allow great flexibility during the weekdays to check out this fantastic flying site.

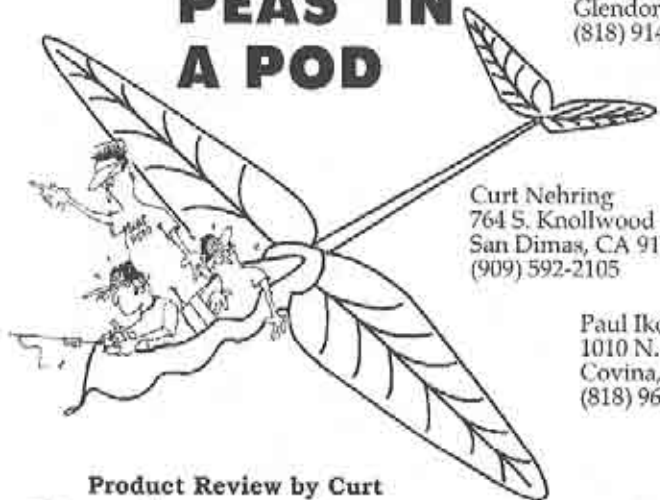
The total number of days that I flew came to 108; the number of flying sites visited was ten. The most activity was in the months of February through May, with the predominate wind being West & West/Northwest. Twenty-six days had wind from 10 to 15 mph. Thirty days had 15-20 mph winds. Ten days had 20-25 mph winds. Nineteen days had 25-35 mph winds, and ten days had 35+ mph winds. I flew a combined total of ten different planes for a total of 67 hours in the air and did not come close to achieving more flying time than building time on any of the planes! There were frequent mishaps, but none were serious enough to put any plane out of commission for long. Of the ten planes that were flown, seven were scratch built.

I would be interested to hear how these figures compare to the many slope soaring enthusiasts out there. If anyone is interested in slope flying in the area, please don't hesitate to give me a call or drop a letter. I can give you a map of soaring sites with an explanation of the pros and cons of each site.

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THREE PEAS IN A POD



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Product Review by Curt

This past Christmas, my wife gave me the Avocet Vertech altimeter watch as a gift. Three Peas recently covered a scale soaring event, and after several conversations proposing future scale contest, it's assumed that altitude measurement will most likely be at least one of the required tasks. I'm very interested in becoming actively involved in scale thermal duration; this additional piece of equipment will truly be a valuable asset.

Recently, I had an interesting conversation with Mako's Ben Clerx. Most are already aware that Ben flies 757-767's for American Airlines, but he recently purchased an Avocet Vertech Pilot and reports that it is incredibly accurate for all full-scale applications. Many of us purchased Casio's version a few years ago with disappointing results. Ben says that just isn't the case with the Vertech and is quite pleased with his purchase. I assume that he'll be using it in his new all-glass scale ship which is soon to arrive from Germany.

I had the Avocet in my Prism recently, and recorded 780 feet before losing the plane to radio failure. The watch survived and so did the Matsumoto wings. They both took a lickin' and kept on tickin'!! The Avocet Vertech has a multitude of functions, a 2 year warranty, and even tells the time! It also displays rate of climb, temperature, barometric pressure,

total vertical feet gained, best rate of climb and highest altitude. The popular Vertech Alpin (cycling, hiking and skiing) has the same functions we need in R/C Soaring as the Vertech Pilot, but some folks may need the word "pilot" on their watch. The watch retails for \$129.00, is made in the USA, and is widely available. Three Peas give it a "10Pod" rating. For purchase or more information, contact Owens Valley Soaring (full-scale) at 619-387-2673 or Colorado Cyclist at 1-800-688-8600.

"Riding The Wave"

Curt: In our Dec. '95 column titled "Painting The Thermal Picture", we gave you the groundwork for successful thermal hunting. We guarantee that you won't be disappointed with the results if you just follow its "simple" principals. We also briefly mentioned the importance of learning how to ride the wave, but didn't go into any great detail at that time because the technique is closer to slope flying than what we experience while thermaling.

Mike: When the wind is blowing steadily without interruption, this is a good indication that wave action may be developing. The best places to search are upwind over tree lines, above a row of roofs or most elevated and uneven ground-based obstacles or terrain. Watch your antenna flag. The search pattern is not directly

into the wind, but more like the sloper's figure 8, except that you don't have to worry about turning away from the slope to avoid a nasty collision with an immovable object. Think of the glider as being more of a sailboat tacking into the wind in a zigzag fashion.

Paul: Once you think you're in a wave, make one 360 degree thermal turn. If the plane falls-off on one side, you're most likely in a wave and not a thermal. It is common however to use the wave to climb to amazing altitudes and pick up some pretty darn brutal thermals. Curt did just that for his LSF Level IV goal and return out in the desert at Rosemond, California. A bunch of us were sitting around chewin' the fat because the wind was kickin' something fierce. Curt launched his Mako V just to do some fun-flyin' and the next thing we knew he's specked out and looking for a driver and spotter. Well, he pulled it off and has never let us forget that he was the first one to make his goal and return that day either! He's just that kind of guy, if you know what I mean! "Every" club has at least one!!

Mike: No, with Curt I think they broke the mold into a million pieces.

Curt: So now you're in the wave, but how big is it? That's pretty easy. Fly upwind until you begin to lose altitude, then do the same thing downwind. Stay within those two points and that will be your 'lift zone' as long as the wind continues to blow. Almost every field has an area that quarantines a wave in the right conditions. Learn to work it, because sometimes by the last round in a contest, that's all you have.

Paul: I just want to re-emphasize what Mike said about tacking at an angle into the wind. It's not just more efficient, but you also see more of the airplane as it signals patches of lift back to you. It's a good idea to make a visual note of these "lift pockets" because they'll still be there on your next pass.

Mike: Paul has a good point. Sometimes you can pull a little flap in these pockets and work the area a bit longer to your benefit.

Curt: Adding to that, I like to play with cambering the entire wing while tacking into the wind. Presets are okay, but feeding it in manually works better. On

the downwind leg, usually fly with a clean wing or a little bit of reflex.

Mike: I want to mention that you don't need a high-tech sailplane to ride the wave, because just about any poly ship can do it with some ballast added.

Paul: Ballast? I think that's another article!

Mike: While I'm thinking about it, Curt talked about using camber to effectively work the wave. Some time ago, while I was editor for our club's newsletter, *SWSA Popoff*, Curt wrote an article on using flaps. It was later re-printed in the 12/94 AMA newsletter and gave an explanation of cambering and "starting-point" instructions for setting up your sailplane. It was simply titled "Flaps" and could be useful information to help you tackle waves and thermals. I also remember it being published in the *Eagle's Nest*, a newsletter for the Sacramento Valley Soaring Society. Just a thought.

Paul: Well Soar Heads, it's always good flyin' weather here in Southern California, so we're gonna grab our planes and catch one of them bodacious killer waves.

Mike: Are we going to hang ten??

Curt: Cowabunga dude.

And until next month...
"Boomers"! ■



ZIKA

This Old Plane



ZIKA

...by Fred Mallett
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One Corndog to go.

Being a traveling man, I seem to have a thing for planes that come apart into little pieces for traveling. Being a lousy pilot, my planes often end up in little pieces anyway, but that's another story. This story is about yet another way to make a take apart airplane. In this case, my favorite HLG, the corndogger. After traveling for a year with a combination slope/hlg/highstart plane, it turns out that almost all I ever flew was HLG. Probably because that has become my favorite type of RC flying. Many people have asked me about making a 2 piece HLG wing that is still light, and what follows is my first experience at making one of these.

This being for vacuum bagged foam core wings, I felt that the strongest joiner system would be one that is bagged in. Since my work shop was being converted to a bathroom at the time, I called Chris Boultinghouse of CAB

Designs to see if he would do a custom wing. The answer was, "Sure, for a price." That out of the way, he bagged up a new wing for me as follows:

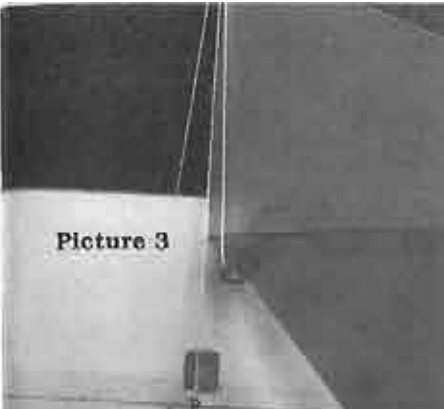
- 1) I asked for a heavier (more durable) layup than usual, as I often fly in very confined (dumb) places on trips.
- 2) To prepare for the joiner system, he put in a 1/2" basswood at the center of the wing, to be cut in half, and sanded to dihedral angles.

Chris bags his wings flat in one piece, then cuts them in half for the poly break (and shipping).

When I got the wing, it was nicely bagged, and with the root rib bagged in, it would be stronger than glued on the edge. I then followed his normal procedures in cutting for the poly break, and glassing the joint. Next, I set the wing halves at the desired center poly angles, and sanded the root ribs to join nicely. Next, a horizontally mounted drill was used to make 1/4" holes through the root rib, and 2" into the foam. Use care here in deciding the height. I wanted the hole to touch the bottom surface of the wing, so it would ride on the bottom surface instead of floating in foam.

The joiner system was going to have small aluminum tubes and a carbon tube inside that as the wing rod. A trip to the

Picture 3



the bolt through the plywood on the front tab, so it kept pulling apart on launch.

The fix was to tape the wings together. This lead me to realize that the tabs could have been eliminated completely, and the wings just taped together. I would still have one bolt in each wing half; just cut holes through the tape with a knife before putting the wing on.

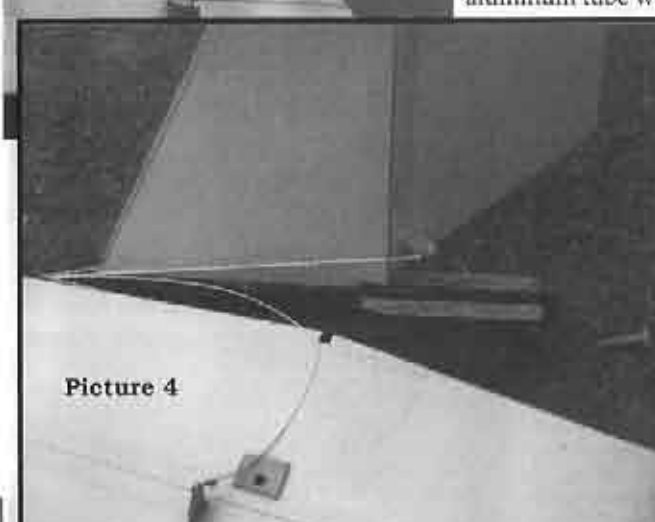
The joiner has held up to many a launch, land, crash, and cartwheel, which tells me it is probably stronger than it needs to be. The carbon tube arrow shaft wing rod, and the aluminum tube weighs in at .2 oz. The tube

rod is about 3 inches long, and about 2" of aluminum tube is glued into each wing. The root rib added some weight to the wing, so probably about .6 oz. was added to the plane with the size root rib and tubes I used.

I would not change the root rib thickness, as the sanding took some off, and I wanted the bolts to go through it: it worked out fine.

The next issue on a travel plane is to remove the tails easily. The corndogger uses pull pull cables, so this was easy. Picture #3 shows the tails

Picture 4



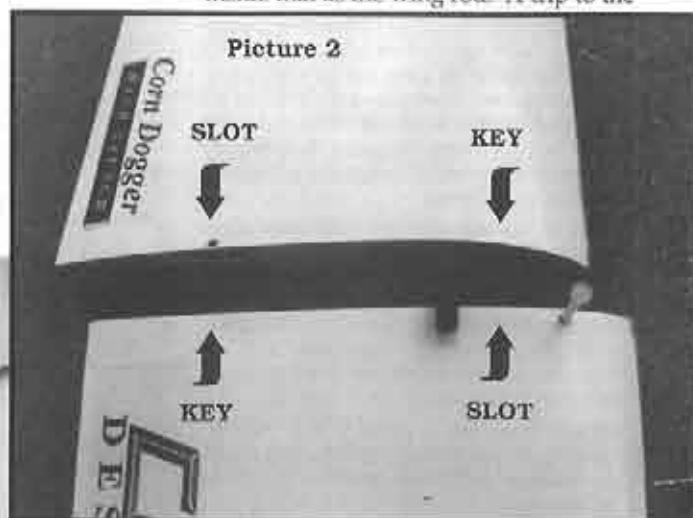
local archery store found a set of tubes that fit nicely inside each other. The aluminum rods were roughed up, and epoxied in place with faring compound.

To mount the wing, I always use 2 4-40 nylon screws, the issue was to keep the wing halves together. What I came up with at the time was over-engineering. Looking at picture #1 you might be able to tell that one bolt is in each wing half, and that a slot was cut front and back at the exact same height on each root rib. This was done with a dremel, and a jig. On the front of one wing a woodruff key like piece of plywood is glued into the slot, and the other wing got one at the back. This keys the wing halves together. The bolts go through the key when inserted. This allows the same bolts to both hold the wing on, and together. (See picture #2.) It was a neat arrangement, and lasted several trips, till I got radio hit, and it dived in from 40 feet. This ripped

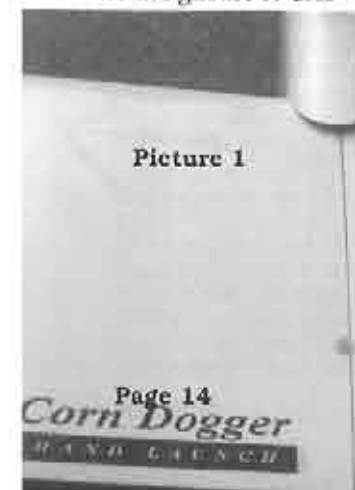
on. Note the hook at the end of the up elevator pull cable; there is another on the lower cable. Also note the single 4-40 bolt. Picture #4 shows the tail being removed. The vertical fix is glued on permanently, and look at the lower aft edge; the notch is what makes it all work. The notch in the leading edge of the stab slides in the slot formed by the boom and the notch in the fin. The two triangle pieces are glued to the boom to make a platform, and the single hole in the back of the boom is reinforced with C/A, and threaded for the bolt. The strings for the pull pull do not even have to be loosened; just remove the bolt, and twist to the side. This loosens the strings so you can remove the hooks, and take the stab and elevator off completely.

With the extra layup on the wing, and the joiner system, using a 275ma pack, and 2 servos (built this one poly), the plane weighs in at 13.5 oz. ■

Picture 2



Picture 1



on the Wing



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Photo by Steve Cameron.



Photo by Steve Cameron.

1/4 Scale Pioneer II-D at 60 Acres

Jim Marske's Pioneer II-D, mentioned many times over the years we have been writing this column, was the subject of our first venture into scale sailplanes. Our model, constructed in 1989, was built to quarter scale and flew successfully at the first Scale Fun Fly in Richland, Washington that year. A couple of years later it got kind of crumpled on the same slope, victim of pilot error. Both wings were broken about half way out, and the front of the fuselage was pushed in. A member of the Seattle Area Soaring Society bought the

carcass and set about the task of repairing the damage.

Around mid summer of this year we received a call from Don Bailey, also a



SASS member, who had subsequently purchased the partially repaired glider. Don had completed the repairs, recovered the wings and vertical tail, and painted the fuselage. Armed with the correct CG location and control throw information, he planned to enter the Pioneer in an upcoming scale contest at 60 Acres in Redmond. We were pleasantly surprised to hear that our creation had not only been reborn, but was to be flown in thermal conditions, something we never had the chance to accomplish.

At 60 Acres in August, we got a chance to see first hand the change which had been imparted. Don had replaced the releasable tow hooks with more standard fare and constructed a bridle which snapped onto the end of the winch line. A large battery pack reduced the necessary lead in the nose to a minimum. Now all white, the Pioneer looked just like its full size counterparts.

Before taking it up on the winch, we rechecked the CG and control throws. For safety, a bit more lead was added to the nose. Control throws looked good, and Don set up the transmitter to mix rudder with aileron. The first launch offered a surprise in the form of a tip stall relatively close to the ground! Don corrected rapidly, however, and once off the towline the Pioneer settled into a rapid glide. The tip stall problem, which was never experienced during slope flying, should not have come as such a surprise. On the slope, very high lift coefficients were never needed. A winch

launch, however, puts very high lift demands on the wing. A relatively small chord at the wing tip, coupled with the airfoil of the full size Pioneer II-D, makes tip stall a likely difficulty.

With some down trim in the elevator, the second launch was better, with no evidence of tip stall. Over the next few launches and glides Don got things pretty well sorted out. Some lead was taken out of the nose, the down trim in the elevator was retained, aileron-rudder mix was turned off, and a trim tape strip was applied to the outer third of the wing at about 20% chord. These changes, taken one at a time, almost eliminated the tip stall problem, so that it became evident only when the angle of bank approached about 50 degrees. Despite having to hold the bank angle to below 50 degrees, Don did manage to get some thermal flying in during the contest. The Pioneer appears very realistic in flight.

Don completed all of Saturday's contest flights and took the Pioneer out for a second day of flying on Sunday. Now somewhat used to the Pioneer's flying characteristics, he seems satisfied with its performance and told us he plans to finish the project, to include full detailing of the cockpit and fabrication of a clear canopy.

We're looking forward to seeing the Pioneer compete again later this year.

Special thanks to Steve Cameron for taking pictures while we were assisting Don. ■



The Telemaster "looks" right with the large landing gear.

The Best Darn Towplane This Side of the Atlantic

...by Robin Lehman
New York City, New York

By the time you read this, many of us are being squeezed in Old Man Winter's grip and we haven't been flying for quite some time. It's just plain cold and nasty outside. Resigned to lousy flying weather (great for flying snow), our thoughts turn to winter building projects.

Just in case some of you are thinking of a towplane, I thought I'd pass on some lessons we learned during this past flying season.

This year's lesson is that more is better. A seemingly ridiculously overpowered, but not overweight, workhorse will tow up the sailplanes so easily and effectively that I thought I should pass this information on to you.

The airplane in question towed perfectly well with an O.S. 108 (with a 15 x 8 APC prop it pulls 14 pounds static thrust), but was repowered with an O.S. BGX-1 (with a Zinger 20 x 8 it pulls 19 pounds plus). Sailplanes up to 18 pounds are pulled off the ground

with almost no steering, and most airtows are accomplished effortlessly. The glider is towed to maximum height in only about three minutes! The glider pilots love it.

What makes an airplane a good towplane?

- 1) It should not be overweight.
- 2) It should have plenty of excess power.
- 3) The motor should be reliable and easy to start.
- 4) It should carry enough fuel to take three or more sailplanes to altitude without refueling.
- 5) It should be large and very easy to see at height.
- 6) It should have very good ground handling characteristics.
- 7) It should be able to handle crosswind take-offs and landings with ease.
- 8) The landing gear and airframe should be rugged enough to withstand the occasional bad landing.
- 9) It should be very stable and easy to fly, because several different pilots might fly this towplane on any given day.
- 10) The towplane should be easily obtainable and easy to build.



With the long stinger gear with 4 1/2" wheels, the Telemaster sits right off the ground. Note the struts.



The O.S. BGX-1 up front.



The position of the tow release aft of the wing. Note the rear position of the battery.

With this in mind, what do you come up with? Why, the Senior Telemaster, of course! This does not mean that you cannot tow with many other excellent towplanes, but the Telemaster, for ease of operation, is among the very best work horses around.

We have three Telemasters in Rochester. One was scratch built by Jim Blum and is slightly larger and longer than the Senior Telemaster. It has an O.S. BGX-1 for power and tows 1/3 sized gliders weighing up to 20 pounds. Jim will write an article about this one in the near future.

The second Telemaster is the A.R.F. from Hobby Lobby. It is powered by an O.S. 108, and would do nicely with most 1/4 scale ships up to 12 pounds. We made just a few alterations on this kit. More on this one at a later date.

The subject at hand is the stock Senior Telemaster kit sold by Hobby Lobby. My Telemaster was built four years ago and started life with an O.S. 108 for power. It was later repowered with an O.S.F.S. 160 Twin and pulled up to 1/3 sized gliders with that motor. Recently, it was repowered with the O.S. BGX-1, and pulls all the same gliders with much greater ease and authority.

Why so much power? We found that with more excess power, life is much easier for the glider pilot. The sailplane is airborne in just a few feet, which means less steering and fewer pilot errors. In simple English, the larger motor gives us hassle-free airtows every time.

Should you decide to build the Senior Telemaster and power it with the O.S. BGX-1 or an equivalent motor, remember that the purpose of this motor is airtowing. If you want to use the Telemaster for touch and gos or for fun flying, with the O.S. BGX-1 it will climb very well on 1/2 throttle. The Telemaster is not designed to scream around the sky at full throttle. If you want aerobatics, go get a Lazer or an Ultimate. But all that extra pulling power does wonders for the Telemaster as a towplane.

A few changes were made in the kit during the original building.



View from below. Rudder and elevator servos are in the tail.

The 32 oz. Du-Bro tank pretty much fills the fuselage by the center of gravity.



As you will see from the photographs, I recommend a few additional changes which I have not made in my four year old Telemaster, but should be done in the building stage. These changes are as follows:

The wing

All the changes we made are intended to strengthen the wing, while at the same time adding very little additional weight.

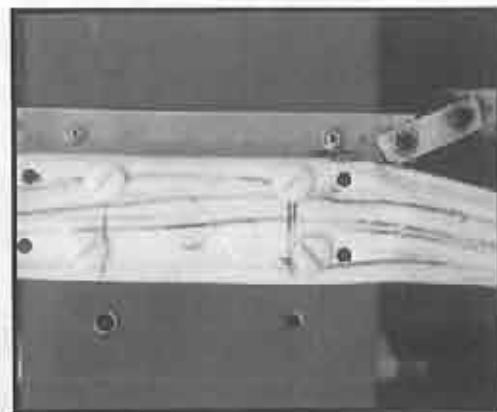
- 1) We covered approximately the front top third of the wing with balsa. If you do this, add cap strips to the ribs as well, to make a nice smooth top surface for covering.
- 2) The entire center section of the wing is beefed up to accommodate four 1/4 x 20 bolts which hold the wing onto the body (1/4 x 20 nylon bolts are sufficient for this job). I personally hate rubber bands for holding wings on. Not only are they dirty, but every time you put the wing on, it's in a slightly different place. This is not a necessity, it's just my personal preference. If you do go the rubber band hold down route, do make sure your dowelings stick out of the body far enough to accommodate large rubber bands!
- 3) The entire center section of the wing is covered in balsa for approximately 12 inches (six inches on a side).
- 4) We securely glued a ply strip flush with the bottom of the wing approximately 18 inches outboard to accommodate a strut attachment point. The strut is attached

with a 6 x 32 bolt which screws into a blind nut. A wood screw is not sufficient for this task, it must be a (metal) bolt!

- 5) Put an aileron servo outboard by each aileron, one servo per aileron.

The fuselage

- 1) From the front end of the body to just behind the wing, we added some 1/16 ply on the sides and underneath. Glued to that 1/16 ply, we made up 1/32 ply sheets covering both sides to the rear, and the top and the bottom to the rear, which makes a very strong box arrangement.
- 2) We made a hatch for the front end of the airplane from where the front rubber band doweling sticks out of the body to the front of the firewall.
- 3) With the O.S. BCX-1, you will notice that I carry a 32 ounce Du-Bro fuel tank about where the C of G is on the Telemaster. That means that full or empty, you will have no change in pitch. The front hatch now contains virtually nothing, but you will need to find a way to snake the fuel line



The landing gear is held on with 4 1/4 x 20 nylon bolts.



Holes for 1/4 x 20 bolts to hold wing onto Jim Blum's Telemaster.

from the tank through the firewall to the motor. If you can do this easily without having a hatch, then by all means glue the front end solid which will make it a little bit stronger.

By the way, on the earlier configurations with the smaller motors, I used a 16 ounce tank in the front end of the airplane where the hatch is. If you go this route, it's nice to have a clear hatch cover so that you can look

inside and tell whether you have enough fuel to take-off and do another glider tow.

4) We added another piece of 1/4 inch ply to the front of the firewall, with quite a few triangular balsa strips inside the body for strength. As mentioned above, my Telemaster started out life with an O.S. 108, and only recently was fitted with the O.S. BCX-1 which is a much larger and somewhat heavier motor. Much to my surprise, the only difference in balancing the airplane was to move my battery

from the front of the airplane to a rear position. If you decide at the outset to use the larger O.S. BCX-1 motor, then I would suggest building the firewall location on the fuselage 1/2 to 3/4 of an inch more to the rear. In other words, you don't need quite so long a nose moment in order to balance the airplane.

- 5) If you decide to use four bolts in the wing, you will have to put some cross pieces of ply in the body to accommodate 1/4 x 20 blind nuts. Another excellent, and

perhaps even better, way to hold the wing on is with 1/4 x 20 bolts for the rear of the wing, and two dowelings for the front of the wing. If you decide to go this route, you will have to change the wing accordingly, and add a little bit of ply into the body to accommodate these dowelings. The dowelings, of course, are in the wing, and so you will have to drill out two holes in the added ply piece in the body to mate with these dowelings.

6) We put the rudder and the elevator servo in the rear of the body, just in front of and underneath the stab. As you can see from the photographs, if you build the stock Telemaster, the body begins to thin down quite considerably there, and so we could not put the servos further towards the rear. If you plan to use the larger O.S. BGX-1 motor, you can use heavy 4 x 40 wire for the pushrods which is very stiff and adequate over the length necessary to reach the control arms. If you plan to use the lighter motors, check and see how everything balances, but I think you can still use these heavier pushrods without a balance problem.

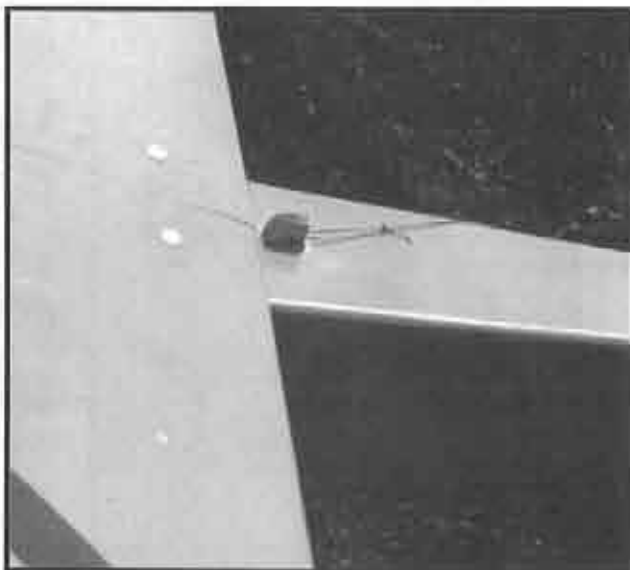
The stab

Mainly for aesthetic reasons, I took one rib out on each side of the stab. Much to my surprise, this made the Telemaster, if anything, a better flying airplane. It also now looks more like an airplane and less like a model, which is why I made this change in the first place. I would recommend doing one less rib on each side. Just in case the kit has been modified, my stab is 28 inches from tip to tip.

The rudder

1) I doubled the rudder area. It's extremely helpful to have plenty of rudder, so that on take-off you can easily control the airplane and keep it straight (especially on crosswind take-offs and landings).

2) I would recommend your bracing the fin with a piano wire brace on each side going to the stab. This will greatly strengthen the whole aft area of the airplane. You will note in the photographs that I did not do this, and I have been flying and airtowing my Telemaster for four years now without a problem. However, with larger and heavier sailplanes on tow, I think it might be an advantage to take the precaution of bracing the stab (which I will probably do this winter). It's very easy to glue a little piece of ply to the top of the stab while you are building. Don't forget to add a 4 x 40 blind nut underneath! These braces should bolt on, not screw on.



Tow release aft of wing.



Elevator and rudder servos in the tail.



Aileron servo in the wing.



Brace on stab and fin.

The landing gear

With a larger motor, swinging a 20 x 8 prop, you need to find a fairly large landing gear for ground clearance. The gear which we have been using is made by Supergear (contact Jack Huisman at 217-359-5116). The gear we use is made for the large Stinger. This gear fits nicely on the bottom of the Telemaster and does a super job. You will note that the gear is held on with four 1/4 x 20 bolts which screw into blind nuts on a piece of ply in the bottom of the fuselage. This gear is fiberglass and certainly sets the airplane off

the ground with ample prop clearance. I use 4 1/2 inch Skylight wheels which give the airplane excellent and smooth rolling ability on grass. For the smaller motors, I used a stock fiberglass landing gear available in most hobby shops. I also used the same 4 1/2 inch Skylight wheels.

The wing struts

I leave my struts permanently attached to the body and simply fold them underneath the body for transport. That way, all you have to do is put the wings on and attach the struts. Do not fly the Telemaster without the struts.

The tow release

Last but not least, don't forget to put a servo tow release on top of the fuselage just aft of the wing.

Which motor?

What motor you use depends mostly on what sailplanes you plan to tow. If you plan to tow 1/4 and up, I strongly recommend you go the route of the O.S. BGX-1 or equivalent. In that way your towplane will serve you well for just about any scale sailplane up to 1/3 sized. The O.S. BGX-1 costs about the same as the O.S. 108!

If you prefer to use a gas motor (G-38 or equivalent), you may get a lot of vibration, so I would recommend using soft mounts. If you go this route, measure the size of the firewall before you start or you might find the motor is too large to fit! If so, modify your building from the start!

The (uncowled) O.S. BGX-1 has proven to be a most reliable power plant. It starts every time with one flick of the propeller (backwards), runs very smoothly from low idle to full power, has no vibration, and perhaps most importantly, it is extremely quiet with the huge stock muffler which is furnished with the motor.

The Telemaster is a wonderfully easy airplane to fly, and of course it makes an excellent tool as a trainer. For those of you who are interested in airtowing, and now fly gliders exclusively, I recommend the Telemaster as a trainer to get you your powered wings.

We've been most delighted with our over-powered Telemaster! It tows the gliders up with such authority that mistakes and aborted tows rarely happen any more. The glider pilots love it!

Good flying! ■



Perfect Dimensions

...by Dan Fulmer
San Francisco, California

The perfect size and dimensions of an aerobatic slope glider has always been a question I have pondered over. I am sure many readers will quickly point out that it all depends on the pitch of the slope, wind speed, height of ridge, etc. I feel, in that regard, you are probably right; but is there an all around perfectly dimensioned slope plane that fits the bill for almost all slopes encountered? I imagine that the answer to that question will be as illusive as finding the perfect anything, but the fun is in the journey as many before me have said.

Before I get myself into trouble concerning this subject, I must define what I feel constitutes an aerobatic slope plane. To keep the subject simple (nothing is really simple), there are only two requirements for an aerobatic slope ship. One is that it be fully controllable in the three axis (pitch, roll, & yaw), and two, that it fly as well inverted as upright. Loops have to be flown the same, inside as well as outside. This last performance eliminates any thought of a non symmetrical wing section. Now, I can

just hear all of you cambered wing flyers out there hollering about how your plane can do all the things and more that any symmetrical winged so called aerobatic plane does! The "Plane" aerodynamic truth about cambered wings is that what you gain in upright flight, you lose the same amount in inverted flight. Some might think that by using camber changing on their symmetrical airfoils that they are getting the best of both worlds. The truth in that regard is camber changing degrades the performance (lift/drag curve) of symmetrical airfoils. They are just not designed for that purpose as are some of the newer hot thermal duration type foils. I swear to you the above mentioned information is more or less true. I read it in Martin Simons' book on aerodynamics! Granted you will not be able to climb as high with a symmetrical sectioned wing, but if you wanted to get as high as possible, you would fly a "Gentle Lady"! One slightly annoying characteristic concerning a symmetrical airfoil is that they have a somewhat vague feel around the neutral pitch on

Span	48" (52" with rounded tips) 9" root 6" tips 2/1 forward sweep ailerons 25 - 30% of cord
Area	370 square in. Aspect Ratio approx. 6.5/1. Horizontal Stab Area 16% of main wing area, approx. 60 square in. Elevator Area 22% of horizontal stab area. Vertical Fin Area approx. 35 square in. Rudder Area, 50% of vertical fin area, approx. 18 square in. The somewhat small horizontal tail areas are the result of the symmetrical main wings zero pitching moment.
Trailing edge of wing to leading edge of stab	12", nose moment, 9 1/2"
Weight	24 oz. approximately 10 oz./ sq. ft. loading

the elevator stick. This leads to a dart quick response on the pitch once the stick gets past the mushy area at neutral position. This can be somewhat corrected by moving the C/G forward, but this leads to sluggish response in other areas. You just have to fly the plane at all times to get maximum aerobatic capability. I think it's more fun to set it up real twitchy.

Having settled on a symmetrical winged design, we have to address the main problem associated with this type section, namely efficiency. If the span is too small (36" or less), the darn thing is hard to see far away and does not have the Reynolds #'s to be able to handle light winds, except if it is made totally out of Styrofoam. And if it is made totally out of Styrofoam, it is too light to handle higher winds in the range of 20 mph and up. Another drawback of these smaller planes is that none of the maneuvers that are performed are graceful looking like the stunts the full size aircraft do at air shows. If you ballast these baby flyers up for strong winds, then you had better have eagle eyes because they get extremely small quickly. Except for damage control, a small winged plane is just not very efficient.

The other extreme is the 70" - 100" + size aerobatic plane. This size climbs out well and loops much better than a smaller span size. They look graceful in the air and you can see such a size a long way off. The down side of this size is three fold. First is the roll rate or lack of so to speak. Secondly, and probably the most important consideration, is that the aircraft takes up way

too much cubic airspace for any and all types of aerobatic maneuvers. The size of slope necessary to really get a plane of these dimensions up to speed is enormous. The third factor does not have anything to do with flyability, but certainly concerns crash survivability. Large and necessarily by their size, heavy planes, do not take pilot error and electrical gremlin crashes, well. The old Newtonian physics force/mass equation takes matters out of our mortal hands.

I have built planes of these two disparate sizes, and the problems associated with their size and weight limitations became apparent under certain wind and slope shape conditions. They flew all right under narrow parameters, but once out of those somewhat narrow confines, the limitations became magnified. What was needed was a plane that satisfied a wider range of conditions; it had to roll fairly fast, loop well, handle a wide wind speed range, and be able to be seen a substantial distance away by my close to 50 year old eyes!

Taking the rolling rate requirements first seemed to dictate a span of about 45" - 50" and a taper ratio of about 9" at the root to 6" at the tip. This may seem somewhat arbitrary, but without getting into a "Simons" like discussion of the theory of model aircraft aerodynamics, suffice it to say that roll rate is pretty much dependent on span and tape. It just so happens that a 48" span fits nicely with all the building material sizes that are commonly used in the construction of a model airplane wing. The sweep of 1" rear and 2" forward puts the spar, if used, pretty much right on the C/G. These dimensions, coupled with full span ailerons of approximately 25% - 30% of cord, gives a nice starting point for our wing. The looping ability of a wing of this size and dimensions is adequate as long as the tail moment is kept reasonably short. I had made a 65" aerobatic plane that had quite a long tail moment that neither rolled very well nor looped fast enough for my expectations. I took the fuselage from that plane and cut 5" from the tail and reattached the tail feathers. The result was the plane

looped much faster, but was still sluggish in roll and yaw response. More about this plane a little later.

Three of the more important considerations of an aerobatic slope plane is that it should be as light, simple, and slippery as possible. Sometimes these requirements are not fully compatible with one another, and you have to compromise somewhat. One area that I feel you cannot compromise on is the wing. I think you have to build a fully sheeted wing, and pay a little penalty in the weight gain area. The reason for this requirement simply comes down to efficiency. An open bay wing has too many bumps and ridges and imperfections in it, which degrades the performance of an already overtaxed symmetrical airfoil. The ribs and valleys between them certainly give the wind something to think about as it meanders from leading edge to trailing edge. What we are looking for is the cleanest shape we can get, and you just can't get it with a balsa ribbed monokoted wing. What I used was custom cut, SD 8020 white foam cores, sheeted with very light 1/32" balsa and one layer of 1 1/2 ounce glass cloth and lacquer primer for protection. This wing is not as light as a balsa ribbed monokoted wing, but is only a couple of ounces heavier, if that. No spar was used, nor I felt was necessary. All wing/fuselage meeting was faired to achieve as slippery shape to the wind as possible.

Simplicity and weight savings were achieved by using one servo for the aileron, connecting them to the center servo by straight solid wire rod from their root ends. I feel that one servo per aileron is unnecessary due to the fact that you do not need differential nor camber changing ability on this type of plane. Also, an added advantage in this instance is that the ailerons can never move up or down together because they are tied to a common

pivot. Standard servos and radio gear can be used in this plane, and if you make the nose moment adequate enough, you won't have to add ballast to balance it out. Along with simplicity and lightness, a balsa fuse and built up balsa tail feathers fill the requirements of this type of plane. For damage control, I have my wing rubber banded on, but the rubber bands are hidden from the front by the fuselage and hatch fairings to somewhat negate this aerodynamic nightmare.

The 65" plane mentioned earlier was finally modified as above and fitted with a wing as outlined. This plane does everything I have asked and more; it snap rolls, flat spins (with C/G about 30% MAC), loops and rolls very nicely. It actually flies better inverted that upright for some reason, and that reason is not my flying skills! Granted, the plane demands my utmost concentration because of the rearward C/G for instant performance, but it does everything reasonably well. The C/G of such a plane should be as rearward as possible to get the stability as low as possible and still be able to control it with constant stick corrections. You need this instability factor to be able to perform all sorts of wild gyrations such as violent snap rolls and close to flat spins. Slow flight is okay for this configuration; medium and high speed performance is good as is high wind performance (up to 30 mph). Above this wind speed, more ballast is needed to penetrate.

Some of the dimensions of this particular plane are listed in the chart. These dimensions are the result of a few years of experimenting and flying out the results. ■



ZIKA

Understanding Sailplanes

...by Martin Simons

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13 Loch Street, Stepney,
South Australia 5069

Flight Without Figuring Part 7 Continued More about wing sections Camber and minimum drag

The absolute minimum drag of a wing section, is influenced by camber, but not as much as might have been expected. This was indicated already in

Figure 4. The diagrams show that as the camber increases, minimum drag rises slowly. As the air flows round the cambered profile, it is more disturbed than it is by a symmetrical section. Unless very extreme amounts of camber are used, the effect on minimum drag is not very large.

Measuring the camber

So far, little has been said about how camber is measured. It is important to have the general principles in mind first, after which the rest is relatively easy to follow.

In an earlier article, it was shown how the camber line of any profile can be found. The amount of camber is given

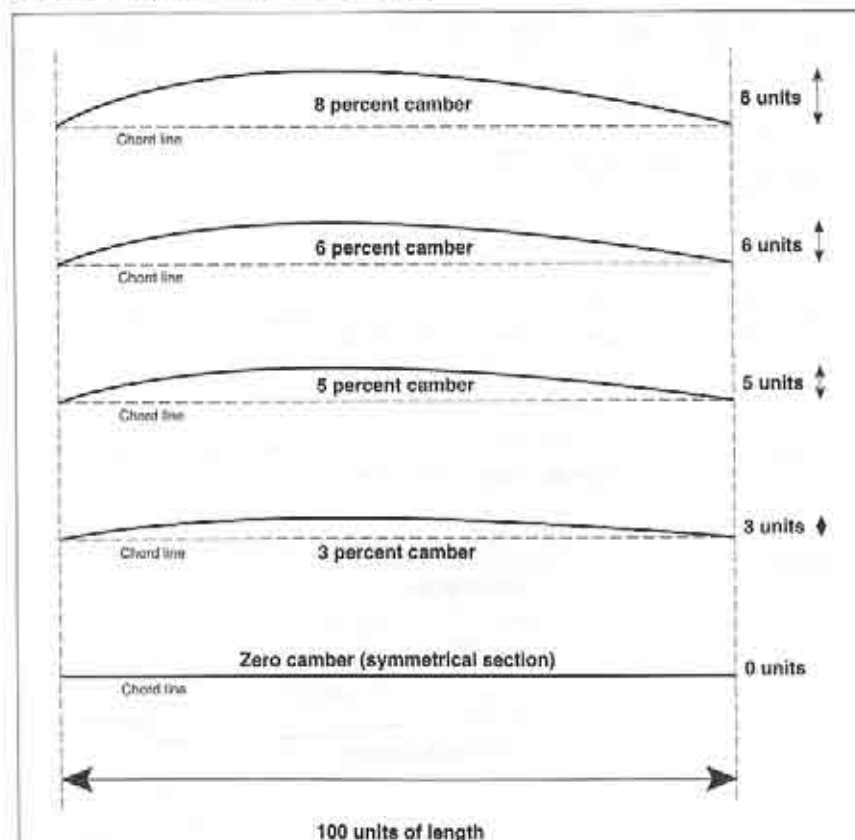


Figure 7

The amount of camber is expressed in percentages relative to the chord line. The maximum distance of the camber line vertically from the chord line, is the camber.

by the greatest distance, vertically, of the camber line from the true chord line of the profile (Figure 7). This distance is expressed as a percentage of the wing chord length. Thus, if the chord length is 100 millimeters and the highest point of the camber line is 5 mm from the chord line, the camber is 5 in 100, five percent, i.e. 5%.

If the camber line is 2 mm high, the camber is 2% and so on.

In practical model flying, cambers more than 6% are quite uncommon and are used only for very special purposes where low drag at very high lift coefficients are essential. Normally, cambers vary between zero, for aerobatic aircraft wings, and for most

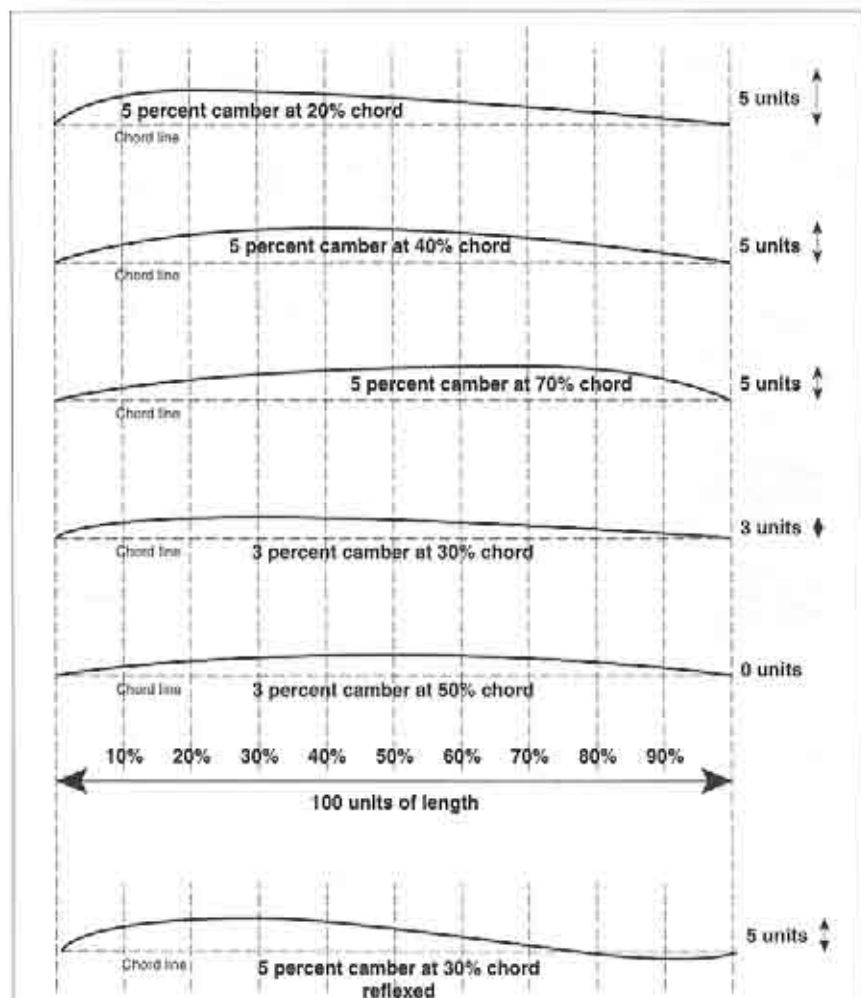


Figure 6

The form of the camber can be roughly expressed by noting where the camber line reaches its highest point in respect to the chord. A reflexed camber line is also shown.

tails and fins, up to 5 or 6% for the wings of the very lightest, slow flying 'floater' sailplanes. Ordinary sport flying models often have sections with about 3% camber. Pylon racing models and F3B sailplanes, which often have flaps too, usually have wing sections with small camber, between 0.5 and 2%.

The form of the camber line

The amount of camber, in percent, is the most important fact to know, but the exact shape of the camber line itself is also significant, especially since it has a direct effect on the pitching moment of the wing.

It is shown in Figure 8 that camber lines of the same percentage may reach their highest points at different places on the chord of the wing. It does not follow, therefore, that wings with the same amount of camber are exactly alike in this respect. They are likely to differ also in the distribution of the camber along the chord. Fortunately, the variations between practical sections are not very great.

By far the largest number of wing profiles proved useful by experience in model flying, have their maximum cambers between three and five tenths of the chord. This amount of variation is not usually sufficient to cause problems.

It is worth noting, however, that when flaps are used in flight to vary camber, the camber line of the section is distorted. This does have quite powerful effects on the pitching moment of the wing, so that drooping or raising flaps may produce nose down or nose up changes of trim. These have to be balanced by appropriate elevator movements. These days, such adjustments in flight can be done automatically through sophisticated radio transmitters.

The reflexed profile

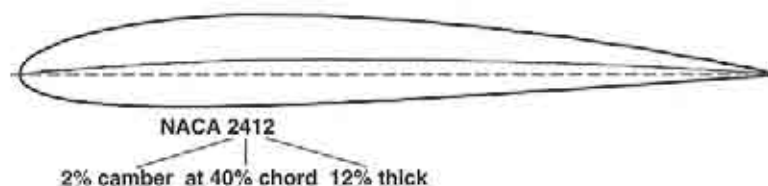
A type of wing camber that deserves some special attention, is that of the reflexed wing sections. In these, while the forward portion of the camber line is normal, arched upward to some percentage, the rear segment curves the other way, turning the trailing edge of the wing up slightly. The advantage of this type of camber is that, when accurately calculated, it reduces the pitching moment of the wing section to zero. In this respect a reflexed profile behaves like a symmetrical one. However, unlike the symmetrical section, it achieves its minimum drag at a positive lift coefficient and can, as a result, be useful for ordinary flight.

A more pronounced reflexing of the profile can produce a wing section which has a positive pitching moment. This gives such a section a degree of automatic stability and for this reason is used on some types of tailless aircraft. If the nose is pitched down, the reflexed profile pitches it up again, and vice versa, a nose up pitch is reversed to restore normal flight.

Unfortunately, the reflexing of the camber line has two undesirable effects. The maximum lift coefficient is reduced so aircraft with such profiles have to land and take off at higher speeds. The minimum drag is increased, in comparison with a normal, cambered profile at the same ideal lift coefficient. Hence, although such profiles are useful for tailless aircraft they are less efficient all round than those with normal camber.

Finding out the camber; the easy way!

It is quite common for section designers to publish, along with the ordinates, some kind of statement about the camber of their sections. This may be incorporated in the name or number



of the section.

The best known examples of this are the NACA four digit profiles which were first developed in the USA during the nineteen thirties. In this series, which despite modern developments is still useful for model aircraft, the first two figures of the number give the information about camber. The first digit is the percentage amount of camber, the second gives the location of the highest point on the camber line. The last two figures give the section thickness, about which more will be said in the next article.

Thus, the NACA 2412 section has 2% camber with the highest point at 4 tenths of the wing chord from the leading edge. It is 12% thick. The NACA 8318 has 8% camber with the

high point at 3 tenths. It is 18% thick, and such a section is not likely to be used on a model. The 4712 section has 4% camber with high point at 7 tenths, the 0009 profile is symmetrical, no camber, and so on (Figure 9).

For other wing profiles the camber may be stated in the section name in another way. For example, profiles designed by Helmut Quabeck are numbered, the first two numbers indicating the amount of camber, so the HQ 2.5/9 has 2.5% camber and is 9% thick, and so on.

Many aerofoil sections have been published with no indication of their camber at all. In these cases, the modeller may have to do some measurements, as described earlier. ■

Product Review

SKYSHEEN

...by Jim Gray
Payson, Arizona

Here's a product that I never thought I'd use or need... BUT I WAS WRONG!

Most of us who fly sailplanes in thermals tend to "ride" them until our sailplane is a speck in the sky; high and downwind. That's usually GOOD (but sometimes BAD) depending upon visibility, sky conditions, background (cloud or blue sky), color of the sailplane, and OUR EYESIGHT.

Those of us who are a bit long of tooth must really consider the last limitation - eyesight - and I'll admit to being on the shady side of my 60's where that potential limitation has become reality. Sure, I'm close to 20/20 corrected, and always thought of my vision as being better than normal, hence no NEED for doing anything special other than making sure my ship has a dark bottom covering and a light top covering.

HOWEVER, and here's the kicker, I've occasionally noticed that when I look away for a moment, or blink to clear wind tears, I SOMETIMES LOSE THE SAILPLANE! That is definitely BAD, and tends to create instant panic unless the OFB is close by and can either point out where to look, or take over the "box" until I can see it again.

In fact, a few years ago, I permanently LOST a 'plane belonging to my OFB due to its disappearance in a bright cloudless sky. When it 'went', it went FAST... Sort of a "now you see it, and now you don't". And you're right; I shouldn't have been flying it so far away. But we all do stupid things once in awhile; don't we? Well, we looked in the forest below where it was last seen, but you know the answer already; it was GONE, forever. Of course, I replaced his machine, his receiver, batteries, and servos as a matter of courtesy, but the point is that this error could have been avoided. Your own personal answer to this problem can be similar to mine: don't fly so high or far away, or do something to make your sailplane's visibility greater.

Just two weeks ago, I met Phil Pearce: glider pilot, power pilot (full scale and model), SAM member, and fellow member of the Central Arizona Soaring League. Phil lives in Tempe, Arizona about 70 miles from Payson, and (being retired) flew here to see me in his Cessna 172 on a weekday when even the birds were walking due to strong and gusty winds.

Phil sells SKYSHINE and a new product called SKYSHEEN, which you haven't heard about, until now. As it turned out, we weren't able to fly the sailplane that day, but I promised to fly it the next weekend when our Rim

Country Flyers were present.

I put a 1" wide by 18" long strip on each leading edge, and took off... not quite knowing what to expect. The morning sky was clear and blue, and there was no wind. In this instance, I flew my electric-powered Goldberg Mirage 550, to guarantee a climb to altitude without having to wait for thermals. Also, with its 54" span, it would "disappear" more quickly than my long-span sailplane, and would possibly be a better test. At a distance of about 1/4 mile, I turned back toward the field and was astonished to see the leading edges 'strobe' in red and green as they met the sun. Man, they were BRIGHT, and several club members standing nearby each commented, "I want some of that; do you have anymore with you?" Unfortunately, all I had with me was on the Mirage, but I promised to get some from Phil right away.

Now, I've seen SKYSHINE before, and think its attractive 'sparkling' effect is quite visible in sunlight, and it looks good on the tail, fuselage, or wings. However, it doesn't seem to have that brilliant and astonishing 'strobe' effect of SKYSHEEN. My plan is to add a patch of SKYSHINE to the Mirage and compare it to the SKYSHEEN, which I consider a MUST, now. By the way, when the 'plane got below the horizon and appeared against the background of green-forested hills, I was particularly pleased to see how those leading edges 'strobed' color with every turn and bank on the approach to landing. Even when not turning up-sun, those strips seem to glow with a soft white light that stands out against the dark maroon leading edge color. In fact, under any condition of lighting it's noticeably brighter than the contrasting cream color or the wing's upper surface.

The SKYSHEEN material appears



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silvery and has a holographic effect when not flashing in the sun, much like those patches on a credit card. But when it hits sunlight, stripes of rainbow colors suddenly appear along its length, and they change with each tiny movement of the material. You don't see the 'strobe' until the material is at a distance, and the effect is remarkable. SKYSHEEN is a thin metallic peel-and-stick film adhered to thicker paper backing. You cut it to the size you want while adhered to the backing, and then carefully peel it and apply it to the surface of your 'plane. I was able to apply the strip to the leading edges without wrinkles and smooth it down with a soft cloth. Presto! Permanently attached.

It is difficult to describe SKYSHEEN, because it must be seen to be appreciated, but let me assure you that I will never again fly ANY 'plane of mine without it. Phil Pearce tells me that if you should lose sight of your plane going away from you, just turn it; or, better still, put it in a spin, and the strobing color flashes will quickly draw your eye to it.

SKYSHEEN is available in strips one or two inches wide, and 36 or 48 inches long. Other widths and lengths are available by special request.

If your dealer doesn't yet carry SKYSHEEN, call or write Phil Pearce, 111 East Geneva Dr., Tempe, AZ 85282-3638; (602) 966-6384; email: 102165,2325. Be sure to ask about volume discounts for club purchases. ■

**A Mark Wilkerson
SCEPTOR doing what it
does best... Going fast!**



1995 SIG/LASS Midwest Slope Challenge

...Photos by Ed Harris
...Text by Paul Wright
Garland, Nebraska

A slope race... In Kansas?

This typical response to a Kansas slope race seems to grow from an image of Kansas being flat as a vacuum table and covered with endless miles of wheat blowing in the wind. Well, the wind part of this mental picture is correct, but the flat part is quite mistaken.

The annual spring event that has grown to become the Sig/Lass MSC is held on what experienced slope flyers have described as "One of the 10 best slopes in the country". We are speaking, of course, of Wilson Reservoir located just west of Salina, Kansas. With a flyable slope for every wind direction, landing areas the size of football fields, parking at the lip of most slopes, and the type of people who put the "heart" in "heartland", Wilson Reservoir is truly a slope flyers' dream come true.

Each year, Sig Manufacturing and Lass (Lincoln Area Soaring Society) team up to put on a slope race that draws flyers



Jim Porter waits for a break in the traffic pattern to launch a full house unlimited.

from all over the central USA and as far away as California. This year's event drew a wide range of flyers from new pilots tasting slope lift for the first time to our reigning F3B World Champion (and avid slope racer), Daryl Perkins. The one common thread among all of the pilots was a love of flying the slope.

This year's event was hampered by atypical weather for spring in central Kansas. In fact, 1995 was the wettest spring on record. Friday was a tune-up and open flying day. The weather was great, sunshine, warm temperatures, and a steady 20MPH wind right up the pipe of the south facing slope. From morning till dark the sky was filled with all sizes and descriptions of slopers. One could look up and see



SIG Samurai making a pass for the camera.



"Zero to 300 feet in 2 seconds flat". Daryl Perkins prepares to "bungee" a WHIP.



Phil Lontz and his ever present smile posing with his WHIP 60 inch racer.

flying wings, PSS, combat, racers, scale birds, acrobatics, and all manner of aircraft screaming above the hill. Hopes were running high that Saturday and Sunday would likewise be filled with great weather and great racing.

Mother nature had other ideas... Saturday morning dawned dark and wet. The wind had shifted 90 degrees

east and picked up to 25 mph. The course was laid out at 100 yards on the east facing slope. Racing got underway on time despite endless cycles of light rain and continuous cold. Three classes of racing (Sig Ninja, Sig Samurai, and Unlimited) completed three full rounds before mother nature decided we had enough fun for one day. When the real rain came about 3 pm, it came with a vengeance. The flying was over for the day.

We all headed back to Lucas where warm clothes, hot food and cold refreshments (compliments of SIG) awaited. The evening was spent hanger flying and repairing the days dings, dents, and destruction. I was particularly somber that evening for one reason only. I had listened to the weather forecast for Sunday.

Sunday dawned much like Saturday with one noted exception - no wind. Springtime in the middle of the great plains is not known for calm winds. Again, someone forgot to tell Mother Nature. It was decided by vote to wait for 11 am to make the final call. At 11:01 am we began breaking ties with the toss of a coin and handing out the prizes. Kits and plaques through fourth place in each class were handed out. Everyone got a bag of goodies from SIG. Then we all loaded up, took one last look at the sky and promised ourselves that next year would be great.

If you missed the 1995 edition of the SIG/LASS MSC, take heart! You picked the right year to miss. The 1996 edition will be the biggest and best yet. The 1996 SIG/LASS MSC will be held May 17-19, 1996. Racing will be the 18th & 19th. Friday will be open flying. We will race 3 classes this year. They are SIG stock Ninja, 60 inch, and unlimited. Also, plan on a night fly and plenty of combat. There will be a dinner on Saturday night served up by the ladies of Lucas, Kansas. Good food, great flying, and exciting racing will make this a weekend to remember.

For rules, entry form and directions to the 1996 event, contact Paul Wright @ (402) 796-2175. ■

TIDBITS & BITS

New WWW Home Page

Frank Leppa of La Canada, California says, "A new WWW Home Page dedicated to RC Soaring is now available. Point your web browser to "http://rcsoaring.com". You might find something of interest and your contributions are welcome."

Southern California Thermal Soaring League (SCTSL)

The following announcement was sent in by Hank Schorz in California.

"A radio control sailplane group, solely dedicated to competitive thermal soaring, has been established in the San Fernando/Santa Clarita Valley area. The purpose of this group is to knit together RC pilots who share this interest. All members must possess a current AMA membership, and have an interest in competitive thermal soaring.

"The group will meet once a month (at a time and place to be determined), where new technologies, and new ideas will be presented by the membership. One contest a month will be sponsored at the group's yet-to-be designated flying site. The members will be encouraged to participate in the local contest flying scene, with the goal of establishing friendly interaction with other local clubs. A newsletter will be published once a month with articles from the group's members, or from other newsletters around the country.

"The goal is to create a place to share ideas and camaraderie with RC pilots having the same competitive thermal soaring interests.

"Currently, the startup group consists of Claus Langer, Lowell Norenberg, Myles Moran, Art McNamee, Hank Schorz, Greg Nikola, Curt Suter, Joe Nave, and Howard Short, and we hope to add many more members. The group currently has several winches, retrievers, and other necessary contest equipment in possession.

"If you are interested, please fax, call, or email any of the following and we'll notify you as to the time and place of the first meeting where we can talk about such things as organization, officers, and other "stuff" of interest. Send us your name, address, phone (home and work), fax (if you have one), and current AMA number. Our first meeting will be held sometime in February, 1996.

Hank Schorz, (805) 251-0391 (H), (818) 901-7842 (W), fax (818) 901-8349, email hschorz@aol.com

Claus Langer, (805) 251-1380 (H)

Greg Nikola, (805) 296-9996 (H), fax (805) 296-9993

Spring "Intergalactic" HL

The following is a press release from Paul Siegel in Cincinnati, Ohio.

"Now is the time to start building a hand launch glider for the Cincinnati Soaring Society (CSS) Spring "Intergalactic" Hand Launch Championships! This should be a great event, with practice and unofficial hand launch golf on Saturday, April 27, before the contest on Sunday, April 28.

"Bungee Zip-Starts will be available for those who desire, so put tow hooks on your ships! There will be awards for "Juniors", so plan on entering children, relatives, neighbor kids, etc. Various fun tasks with lots of flying!"

Paul's telephone number is (513) 561-6872.

1995 2M Postal

The results of the 1995 2M Postal event, which is open to anyone around the world, was sent in by Morten Munkeso of Denmark. He says, "As you can see, only a few succeeded to finalize the event in '95. For the Danish pilots, only the tough guys were able to get airborne, as we had strong winds, about 15 m/s at ground level. I fired my Phoenix into the storm and, I must admit, I really didn't believe that it would come down in one piece; I had great difficulties, because of the kite effect, in getting the aircraft off the hook when it went up in the air. After waiting a couple of hours, we decided to cancel the event at our airfield. The second flying day it was raining cats and dogs, so the consequence was, unfortunately, that we could not contribute to the event in 1995."

- 1 - Stig Christensen, Danmark
- 2 - Alan Schwerin, USA
- 3 - Borge Hansen, Danmark
- 4 - John Ensoll, New Zealand
- 5 - Rob Condliffe, New Zealand
- 6 - Finn Matthiassen, Danmark
- 7 - Flemming Rothman, Danmark
- 8 - Bjarne Stubberup, Danmark
- 9 - Rolf Weber, Danmark
- 10 - Bryan Coulter, New Zealand
- 11 - Soren Krogh, Danmark
- 12 - John Thuner, New Zealand
- 13 - Murray Hindson, New Zealand
- 14 - Peter Slott, New Zealand
- 15 - Warren Clemmens, New Zealand
- 16 - Torben Jorgensen, Danmark
- 17 - Arthur Kotoul, New Zealand
- 18 - David Griffin, New Zealand

5th Annual 1996 Mid-South Soaring Championships

The following announcement was sent in by Mike Kelly, Tennessee.

On behalf of the Memphis Area Soaring

Society (MASS) and the North Alabama Silent Flyers (NASF), we want to welcome you to join us at the 5th annual MID-SOUTH SOARING CHAMPIONSHIPS (MSSC). This year it is once again being held at the MASS flying site, located at Cherry Point Sod Farms, Brunswick, TN, near Memphis, TN. This site is probably one of the best flying sites nationally. In the distance you are surrounded by trees, but in the flying area you are on bermuda sod.

For the previous four years, this has been the largest sailplane event in the South. We have been fortunate to have good weather, superb help

from the members of both clubs, their families, and the many friends that come back each year to fly with us. We also have had the great fellowship of over 100 fliers from as many as 19 states. We would not be able to have the terrific prizes and raffle without the support of the many sponsors listed in this program. Visit them at the Modeller's Mall, buy something if you so choose, and thank them for their support, for because of their kindness and donations many great prizes have been given away over the years. This year promises to be no exception. This year will again have four days of flying opportunities. Thursday and Friday will be cross country flying near the soy bean and cotton fields of Walls, Mississippi, just south of Memphis and near the levee of

the Mississippi River. On Friday you will have an opportunity to fly hand launch at the sod farm. Finally, on Saturday and Sunday will again be the Unlimited Thermal Duration days. In years past, this has been superb competition!

There is a lot of information included in the program to assist you, and your family if they come with you, to enjoy not only the Mid-South Soaring Championships but also enjoy some of the many events, activities, and places to see in the greater Memphis area. (Programs will be available late March.) ■

SOAR NATS



1996

Model Aeronautics Association of Canada

CANADIAN R/C SOARING NATIONALS
JULY 16 - 21, 1996 OTTAWA, ONTARIO

2 Metre - July 19 Standard - July 20 Open - July 21
Thermal duration / graduated spot landing
awards to 3rd place / Grand Champion / Best Overall Junior
Entry fee \$10.00 per class \$7.00 for Juniors

F3J - July 18
Entry fee \$10.00 \$7.00 for Juniors
awards to 3rd place - 2 frequencies required

Canadian X/C Championships - July 16-17
Entry fee \$25.00 per team
Preregistration by 15th June 1996 is mandatory for X/C and F3J

Flying site is located at Petersen's Turf Farm - Osgoode Ontario
For information and registration form write to:

SOAR NATS 96
18C Arnold Dr.
Nepean, Ontario, Canada
K1A 0K2

Schedule of Special Events

Date	Event	Location	Contact
March 22-25	New Zealand Soaring Championship	Taupo, New Zealand	Chris Kaiser, 64 9 480 8739 chris@ds.govt.nz
Mar. 23-24	2m, Unl.	Orlando, FL	Hank McDaniel, (407) 831-3688
Apr. 20-21	2m, Unl.	Orlando, FL	Hank McDaniel, (407) 831-3688
Apr. 28	Spring "Intergalactic" RCHLG Championship	Cincinnati, OH	Paul Siegel, (513) 561-6872
May 17-19	Slope Scale Soar-In	Los Banos, CA	Lynsel Miller, (408) 275-6403
May 17-19	SIG/LASS Midwest Slope Challenge	Lucas, KS	Paul Wright, (402) 796-2175
May 18-19	Spring Fling	Davis, CA	
May 18-19	CSS STD & UNL (Sanct)	Cincinnati, OH	Chuck Lohre, (513) 731-3429
May 24-27	2m, Unl., Fun, XC	Morrison, FL	Ken Goodwin, (904) 528-3744
May 25	SASS HL #1	Redmond, WA	Jim Thomas, (206) 488-2524
June 1-2	1st Annual Northeast Aerotowing Fly-In	Elmira, NY	John Derstine, (717) 596-2392
June 1-2	LSF V Task Weekend	Tri-Cities, WA	Don Pesznecker, (503) 659-9624
June 7-9	Second Annual Aerotowing & Scale Fun Fly in the South	Fayetteville, NC	Wayne Parrish, (919) 362-7150 Bernie Coleman, (704) 536-5260 b1rdbernie@aol.com John E. McCullough, (919) 851-3538 jem1@nando.net
June 8-9	SWSA 2M Soarfest '96	Covina, CA	Pete Olsen, (909) 597-2095
June 20-23	Mid-South Championships	Memphis, TN	Bob Sowder, (901) 751-7252
June 29-30	Ontario Grand Prix Soaring	Cookstown, Ontario	Jack Nunn, (705) 728-4467
June 29-30	I.G.C. Aerotow Fly-In	Belpmoos (Bern), Switzerland	Jack Kagi, 011-41-01-926-2187
June 29-30	2m, Unl.	W. Palm Beach, FL	Jim McCudden, (407) 967-8909
July 13-14	SOAR 96 (Unl., 2M)	Redmond, WA	Jim Thomas, (206) 488-2524
July 16-21	Canadian R/C Soaring Nationals - Write: SOAR NATS 96, 18C Arnold Dr.	Ottawa, Ontario, Canada K1A 0K2	Nepean, Ontario, Canada K1A 0K2
Aug. 3-4	2m, Unl.	W. Palm Beach, FL	Jim McCudden, (407) 967-8909
Aug. 10-11	Thermal Grabber (Unl., 2M)	Redmond, WA	Jim Thomas, (206) 488-2524
Aug. 24-25	I.G.C. Annual Scale Slope Soaring Festival-Swiss Alps	Adelboder, Switzerland	Jack Kagi, 011-41-01-926-2187
Aug. 30-Sept. 2	2m, Unl., Fun, XC	Williston, FL	Ken Goodwin, (904) 528-3744
Aug. 31	SASS HL #2	Redmond, WA	Jim Thomas, (206) 488-2524
Sept. 14-15	20th Annual NW Championship Soaring Tournament	Tri-Cities, WA	Tom Culmsee, (509) 375-1587
Sept. 21-22	Scale Fun Fly	St. Catharines Ontario, Canada	Gerry Knight, (905) 934-7451 Don Smith, (905) 934-3815
Sept. 21-22	2m, Unl.	Orlando, FL	Hank McDaniel, (407) 831-3688
Oct. 6	Fall "Intergalactic" RCHLG Championship	Cincinnati, OH	Paul Siegel, (513) 561-6872
Oct. 12-13	CSS STD & UNL (Sanct)	Cincinnati, OH	Chuck Lohre, (513) 731-3429
Oct. 19-20	2m, Unl.	Williston, FL	Bob Wargo, (813) 938-6582



20th Annual Northwest Championship Soaring Tournament

September 14 & 15, 1996
Tri-Cities, Washington

- ◆ 1 1/2 days qualifying rounds
- ◆ 1/2 day final flyoffs
- ◆ two team competitions
- ◆ Saturday night banquet

CD - Tom Culmsee, (509) 375-1587



Northwest Soaring Society

Sailplane Homebuilders Association (SHA)



A Division of the Soaring Society of America

The purpose of the Sailplane Homebuilders Association is to stimulate interest in full-size sailplane design and construction by homebuilders. To establish classes, standards, categories, where applicable. To disseminate information relating to construction techniques, materials, theory and related topics. To give recognition for noteworthy designs and accomplishments.

SHA publishes the monthly *Sailplane Builder* newsletter. Membership cost: \$15 U.S. Student (3rd Class Mail), \$21 U.S. Regular Membership (3rd Class Mail), \$30 U.S. Regular Membership (1st Class Mail), \$29 for All Other Countries (Surface Mail).

Sailplane Homebuilders Association

Dan Armstrong, Sec./Treas.
21100 Angel Street
Tehachapi, CA 93561 U.S.A.



A NEWSLETTER FOR F3J ENTHUSIASTS WITH EUROPEAN F3J LEAGUE NEWS

Thermal Talk is an unofficial publication designed to act as a forum to discuss, educate, and exchange information concerning FAI Class F3J. Subscription Rates: £5.00 UK, £8.00 Continental Europe, \$11.00 North America, £8.00 Rest of World.

Thermal Talk

Jack Sile (Editor)
21 Bures Close
Stowmarket, Suffolk
England IP 14 2PL

Telephone: 01449-675190
e-mail: Jack Sile 100307,522 (CompuServe)
Or e-mail: Jack Termtalk@demon.co.uk



ZIKA



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 buck 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.
Ft. 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.

Alabama - Central Alabama Soaring Society, Ron Richardson (Tres.), 381 Stonebridge Rd., Birmingham, AL 35210; (205) 956-4744, e-mail: lamerat@ix.netcom.com.

Arizona - Central Arizona Soaring League, Iain Glithero, (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 Paseo 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. Electric Flyers, John Raley (President), 1375 Logan Ave., Costa Mesa, CA 92626; (714) 641-1776 (D), (714) 962-4961 (E), e-mail: E-Flyer@ix.netcom.com.

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

Colorado - Rocky Mountain Soaring Assn., Phil Weigle, 1290 Salem St., Aurora, CO 80011; (303) 341-9256 eve.

Eastern Soaring League (VA, MD, DE, PA, NJ, NY, CT, RI, MA), Jack Cash (President), (301) 898-3297, e-mail: BadIdeas@aol.com; Bill Miller (Sec./Tres.), (609) 989-7991, e-mail: JerseyBill@aol.com; Michael Lachowski (Editor), 448 County Rt 579, Milford, NJ 08848, e-mail: mikel@airage.com.

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).

Hawaii - Maui Island Slope Soaring Operation, MISO, Hank Vendrola, 10-C Al St., Makawao Maui, HI 96768; (808) 572-5283.

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.

Illinois (Northwest) - Valley Hawks R/C Soaring Club, Jeff Kennedy (President), 414 Webster St., Algonquin, IL 60102, (708) 658-0755, eve. or msg.

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 & Northern Virginia - Capital Area Soaring Association (MD, DC, & 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.

Missouri - Mississippi Valley Soaring Assoc. (St. Louis area), Ken Trudeau, 3033 Plum Creek Dr., St. Charles, MO 63303; (314) 926-8556.

Nebraska - B.F.P.L. Slopers, Steve Loudon (contact), RR2 Box 149 El, 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 Jersey - Vintage Sailplane R/C Association, Richard G. Tanis (President/Founder), 391 Central Ave., Hawthorne, NJ 07506; (201) 427-4773.

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

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

New York - (Buffalo/Niagara Falls area) - Clarence Sailplane Society, Lyn Perry (President), (716) 655-0775; e-mail: perry@staff.sunyerie.edu; Jim Roller (Competition Coordinator), (716) 937-6427.

New York - Long Island Silent Flyers, Stillwell Nature Preserve, Syosset, NY, Joe Coppola (President), (516) 798-1479, or Taylor Fiederlein (VP), (516) 922-1336.

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 - Cincinnati Soaring Society, Chuck Lohre, 3015 Beaver Ave., Cincinnati, OH 45213; (513) 731-3429, lohre@iac.net, http://www.iac.net/~lohre.

Ohio - Dayton Area Thermal Soarers (D.A.R.T.S.), Walt Schmill, 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, e-mail: tomnagel@freenet.columbus.oh.us.

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

Tennessee - Memphis Area Soaring Society, Bob Sowder, 1610 Saddle Glen Cove, Cordova, TN 38018, (901) 751-7252, FAX (901) 758-1842.

Tennessee - South Central Area, Brian Smith, 317 Crestwood Dr., Tullahoma, TN 37388, (615) 393-4876, anytime.

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!"

Virginia - Tidewater Model Soaring Society, Herk Stokely, (804) 428-8064, e-mail: herkstok@aol.com.

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

BBS/Internet

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@kaiwan.com, or on CompuServe: 73617,1731.

Internet soaring mailing listserve linking hundreds of soaring pilots worldwide. Send a msg. containing just the word "subscribe" to soaring-request@airage.com. The "digestified" version that combines all the msgs. each day into one msg. is recommended for dial-up users on the Internet, AOL, CIS, etc. Subscribe using soaring-digest-request@airage.com. Post msgs. to soaring@airage.com. For more info., contact Michael Lachowski at mike@airage.com.

The Frequent Flier's Info. Hot Line, San Francisco Bay Area - Box 1 (lost & found airplanes, helpful tips, upcoming events), Box 2 (questions), Larry Levstik, (415) 924-4490.

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 - Greater Niagara Area Thermal Soarers (GNATS), Flat Field Soaring & Aerotowing, Gerry Knight, (905) 934-7451 or Don Smith, (905) 934-3815.

Canada - MAAC Men Gliding Club, Jim Holland, 168 Verona Dr., Winnipeg, Manitoba, Canada R2P 2R8; (204) 697-1297.

Canada - Southern Ontario Glider Group, "Wings" Programme, dedicated instructors, Fred Freeman, (905) 627-9090, or Bill Woodward, (516) 653-4251.

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

Hong Kong - Robert Yan, 90 Robinson Road, 4th Floor, Hong Kong; (852) 25228083, FAX (852) 28450497.

Japan - Dr. Paul "Sky Pilot" Clark, 2-355 Suikoen Cho, Hirakata Shi 573, Osaka Fu, Japan, IAC+(81) 720-41-2934, fax: IAC+(81) 6-954-4144, e-mail: 76055.3546@compuserve.com, http://ourworld.compuserve.com/homepages/skypilot.

Scotland - Ron Russell, 25 Napier Place, South Parks, Glenrothes, Fife, Scotland KY6 1DX; Tele. # 01592 753689.

Reference Material

"Summary of Low-Speed Airfoil Data - Volume I", Michael Selig wind tunnel testing results. \$25 USA (includes postage), \$29 surface outside USA, \$31 air Western Hemisphere, \$38 air Europe, \$42 air all other countries. Computer disk, ascii text files (no narrative or illustrations), is \$15 in USA, \$16 outside USA. Source for all "SoarTech" publications, also. Contact Herk Stokely, 1504 N. Horseshoe Cir., Virginia Beach, VA 23451. Phone (804) 428-8064, email: herkstok@aol.com.

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 Fairman, 3274 Kathleen St., San Jose, CA 95124; (408) 377-2115.

Los Banos Slope Scale Soar-In

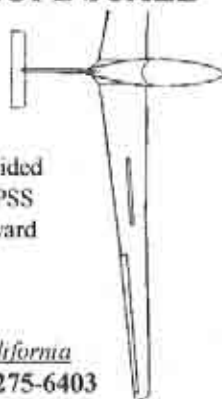
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 La Vista, NE 68128
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 Lakewood, CA 90712
 (310) 531-8383

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 Everett, WA 98201
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Approx. 30 Miles West of Buffalo/F.L. Erie
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Emphasis will be on aerotowing, although winches will be available for those wishing to launch smaller size sailplanes. Bring your 3M (118") or larger sailplane with releasable nose hook and ailerons. Enjoy the thrill of being launched behind a skilled tug pilot; join the growing aerotow movement. 1996 MAAC and/or AMA membership required. \$6 pilot registration fee.

We are expecting Robin Lehman, Sailplanes Unlimited, Ltd., and Jim Blum to be on hand, with their 1/3 and 1/2 scale gliders & tugs, to demonstrate and instruct in the art of aerotowing.

For additional information contact:

Gerry Knight, 360 Bunting Rd.,
 St. Catharines, Ontario, Canada L2M 7L6
 (905) 934-7451

Don Smith, 996 Lakeshore Rd., Niagara-on-the-Lake, Ontario, Canada L0S 1J0
 (905) 934-3815

SECOND ANNUAL AEROTOWING & SCALE FUN FLY IN THE SOUTH

June 7 - 8 - 9, 1996

To be Held at the
**PIEDMONT AEROMODELERS
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Mark your calendar! See you there!

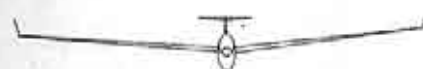
For further information, contact:

Wayne Parrish, (919) 382-7150
 Bernie Coleman, (704) 536-5260
 or e-mail b1bernie@aol.com

John E. McCullough, (919) 851-3538
 or e-mail jem1@nando.net

This event is open to anyone with a \$5 landing fee, a valid AMA license, and a real interest in scale sailplanes. It is being held to bring scale enthusiasts together for a fun time and to meet others who love flying beautiful airplanes. Scale soaring is growing by leaps and bounds. Five years ago, scale sailplanes were scarce and aerotowing was a dream. Today, scale sailplanes are admired wherever they are flown, and aerotowing is catching on fast. Our first effort in May, 1996 brought 14 pilots, 12 sailplanes and 4 towplanes together for some great flying. The weather was great, and the 1/2 mile square hay field is ideal. It was the first time aerotowing for most, but all wanted to know when we were doing it again. Now they know! If you want to learn how to aerotow your sailplane, to learn how to be a towplane pilot, to share your plane with others, or just have fun, come fly with us! The field is easy to find. It is in the heart of North Carolina's Coastal Plains off I-95. Take I-95 exit 58 east on U.S. 13 for 2.2 miles, turn right on Hayfield Rd. for 1.5 miles to stop sign, straight at stop sign for 1/4 mile, and field is on left. There are motels close by and some of the best Southern Fried Chicken you have ever tasted!

FIRST ANNUAL NORTHEAST AEROTOWING FLY-IN



June 1-2 1996

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Classified Note

Please note that the cut-off date for classified ads has been changed to the 1st of the month.

The cut-off date for display ads is also the 1st of the month, and the ad must be camera ready.

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 1st day of the month. (Example: If you wish to place an ad in the March issue, it must be received by February 1.) 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.

PC-Soar Version 3.5 Sailplane Performance Evaluation Program Optional Sailplane Library now expanded to 54 models including: Alcyone, 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.

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.

A.M.P. Aerial Model Products, sport, slope, race prototypes - all airfoils. 60" Del Valle Snake, 94" H&K Cobra, AMAP Flair, Kevin Cutler's full house Davenport Monitor. All race tested. Butch Hollidge, (510) 680-0589, eve, California.

WANTED: Sales Reps. Just Plane Fun Models is looking for energetic people who love flying R/C sailplanes and would like to support their hobby by becoming a sales representative for my line of sailplane kits. Be your own boss and set up your own territory. Call or write Buzz Waltz, Just Plane Fun Models, 3390 Paseo Barrera, Palm Springs, CA 92262; (619) 327-1775. Commissions paid on all sales.

FORD LONG SHAFT MOTORS, \$75. Classic glider kits, cool bands. HITEC, FUTABA, AIRTRONICS radios. #2 meter zip starts: \$24.95. Call us for your glider needs. 1-800-359-0233. Ask for Scott. 10AM - 4PM MTN time.

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ROCKET & POCKET ROCKET, the original all-molded electric sailplanes, designed by Mark Allen, now available from the Fuse Works. Rocket: \$495.00 + S&H, Pocket Rocket: \$395.00 + S&H. Phone (707) 537-1588 or fax (707) 539-3413, Northern California.

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For Sale - Personal

Spectrum w/6 servos, 600 mah battery... \$550.00 + shipping; NIB Falcon 880, pre-Airtronics... \$275.00 + shipping. Tom Peterson, (612) 944-6246, Minnesota.

1/4 scale Grob 103 Twin Acro, new; 1/5 fuselage only, Pilatus B4, Discus, Ventus; 1/4 ASH 26, Grob 103 Twin Acro. Stanley Zak, (305) 687-7706, Florida.

NIB Futaba Super 7, your choice of frequency... \$300.00 + shipping; **Craft Aire Freedom**, NIB... \$50.00 + shipping; **GM Thermal Charger Electric**, NIB, incl. motor/prop... \$65.00 + shipping. John Horning, (408) 438-7794, anytime, N. California.

Schemp-Hirth Discus 1/3.75 scale by Roebers, 4 m span, incl. Liscomb retract, double-deck spoilers, air-tow nose release, and other extras, NIB... \$575.00. Misc. scale retracts, spoilers, etc., unused, call for info.; **VS Sailplanes Rotor**, glass fuse... \$100.00. Rob, (619) 930-0616, S. California.

Airtronics Thermal Eagle, NIB... \$300.00; **Airtronics Infinity 600, PCM rcvr, 4 servos,** original manual, xnt condition... \$275.00; **Vacuum Pump, Barnant Model 400-1911, xnt cond...** \$100.00. Frank, (818) 790-1297, eve, California.

1/4 scale, 148" DG-300 w/nose release & cockpit detail, 2 canopies, needs new paint on fuse... \$350.00 + shipping; **Viking Smoothie fuse w/C.E. Bauer wings, built-up tail, 115" span, good condition, w/2 wing servos...** \$150.00 + shipping; **Robbe ASH-25, 3.6m wing span, Plura fuse, NIB...** \$250.00 + shipping; **Fiber Glas Flügel Kimbo, 106" span, all glass, T-tail version of Salto, excellent condition...** \$300.00 + shipping. Philip Fugate, (423) 338-2096, after 5 pm, EST, Tennessee.

Model Technique, 110" "Crystal" F3B sailplane, circa 75-80, factory obechi over foam, E-205 section, full house (flaps, no spoilers), 6 servos required, glass fuse, all carbon tail boom (also factory) w/T-tail, servo wiring harness in wings incl. excellent condition, never damaged... \$300.00; **Fiber Glas Flügel V-tail Salto H101, 106" span, E-393/374, moulded section, glass fuse w/canopy, landing wheel & easy servo access, full house (flaps, no spoilers), 6 servos required...** \$400.00. Gary Rake, (805) 493-1238 or (805) 488-8747, California.

Airtronics Infinity 1000, ch 52, complete w/extra 1100 mah TX battery, 10 ch PCM RX, new 700 mah RX battery, 5-94102 servos, case, charger, as much of the manual as Airtronics has received (enough to fully use the radio)... \$875.00; **NIB kits: Mariah 2m...** \$100.00; **Multiplex Schaump 3 (or 3.5m)...** \$375.00; **Falcon 600, Mark Allen version...** \$200.00; **Airtronics Sagitta 600...** \$85.00; **Airtronics Sagitta 900 w/extra wing kit...** \$140.00. Ready to fly: **Airtronics Swift, 2m, RG-15 custom 2-piece wing (transportable)...** \$300.00. Shipping on all items extra. Jim Thomas, (206) 488-2524, Washington.

Wik Grob CS-77 (Club Ship 1977), 1/4 scale, all white fiberglass w/servos installed for R-E-A-Sp & retract, mint condition, never flown, in storage for 10 years; **Wik Grob 109 Tow Plane, 1/4 scale w/Webra 60 4C & 3 bladed prop nicely broken in & quieted by 13" muffler, R-E-A-Sp, needs rudder and tail wheel installed, canopy heat distorted twin scale pilots; Multiplex ASW-22 1/4 scale sailplane, Acome 5 ch xmt & receiver w/servos for R-E-A-Sp installed or included, needs new canopy and wing painted, about 90% complete; Graupner New Wave Electric Speedster, Speed 600 BB motor w/folding prop, R & E w/2 micro aileron servos in silver & dayglo wing, almost RTF, needs battery and speed controller. Also, 10 finished and slope flown, pod & boom gliders. Send \$1.00 and long stamped addressed envelope for complete description, photos and prices to: Capt. Dale Willoughby, USMC Retd, 41560 Terwilliger Rd. #127, Anza, CA 92539-9666.**

NIB kits + UPS: Sagitta XC... \$275.00; **Constellation XC...** \$250.00; **Paramount...** \$200.00; **Gobbler...** \$125.00; **Cortina...** \$325.00; **Flamingo...** \$150.00; **Glas Flügel 604...** \$200.00; **Diamond...** \$175.00; **Akro...** \$225.00; **WA-23...** \$150.00. Craig Christensen, (612) 435-7406, after 4:30, CST, Minnesota.

Twin Acro III, 9 lbs., E203, 4 meters (Roebers), NIB... \$495.00; **huge towplane, 134" span, will tow the largest sailplanes, 1/3 L5 with Saks 8.4 twin and Futaba servos, mint condition...** \$2500.00; **German tow plane - Roebers Sky Wing, 99" span, suitable for 1/4 sized & larger gliders, NIB...** \$475.00. Robin Lehman, (212) 879-1634, New York.

Ultra GP, all molded slope pocket rocket, described in NSP catalog, NIB w/some construction already begun, includes new Airtronics 94735 high torque servo... \$300.00; **Cheetah, custom E374, 60" wing, w/full fiberglass under balsa, carbon spars, servo well reinforcements, extremely strong, very cool looking, built w/rudder, unbreakable fuse, extra tail components, 2 ea. HS-80MG servos in wing...** \$170.00 or \$100.00 w/o servos; **Super Visionary, 60" acro sloper w/glass & carbon reinforced obechi wing, glass & Kevlar™ wrapped fuse, extra large ailerons, elevator & rudder, good condition, switch, 500ma battery, 2 ea. E133 in fuse, 2 ea. HS-80MG in wing...** \$175.00 or \$50.00 w/o electronics. All shipped at buyer's expense. Don Whiteside, dwhiteside@aol.com, or (510) 227-3321, N. California.

Wanted

Fiberglass fuselage for Craft-Air Viking sailplane. Bob Parker, (408) 997-3417, California.

Alpina Magic. Ela, (415) 459-1877, N. Calif.

Right wing & canopy & frame for Graupner Cumulus. David, (309) 829-5564, after 7 pm, Illinois.

FM Vision 3.0. Jack Dorris, 1507 Canterbury, Richardson, TX 75082, (214) 783-1922.

Hobby Horn/Midway Models kits: Ultra Mk IV, Sensor. Bill Baker, 1902 Peter Pan St., Norman, OK 72072; (405) 329-1018.

Mike Reeves RF4 kit, or built. David Crutchley, (309) 829-5564, Illinois.

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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.

Rocket & Pocket Rocket

...from Fuse Works
Designer Mark Allen of Allen Development has sold his Rocket and Pocket rocket designs to Steve Hug of the Fuse works.

The Pocket Rocket, with its 62" wing and RC-15 airfoil, is an all molded, 7 cell hot rod. In 1993 and 1994 it was the 7 cell F5B Japan Champion.

The larger Rocket (also all molded), with its 7037 airfoil and 72 1/2" wing, was designed for 7 cell thermal duration, but also performs in 10 cell F5B. It took 4th place, flown by Ed Slegers, at the '95 KRC "All Up, Last Down"; in '94 it was the 10 cell F5B Japan Champion, using an Ultra 1800 3 turn and 10 1700 mah cells.

Mark and Steve both wanted to see the production of these planes continue, and since all of Mark's time has been taken in the development of other projects, they agreed that Steve would manufacture the kits.

One can order the kits directly from the Fuse Works at (707) 537-1588, or from Slegers International at (201) 366-0880. ■



ASW-19

...from Dream Catcher Hobby, Inc.
Dream Catcher Hobby, Inc. is now producing a 196" span, 1/3 scale model of the ASW-19, full scale glider. This model is being produced as a kit or as an almost ready to cover model.

Dream Catcher Hobby, Inc. was started to give the U.S. glider pilot an alternate source for large scale gliders. The ASW-19 builds up to 12+ pounds. Kit is complete with epoxy fiberglass fuselage, pre-trimmed canopy, fiberglass canopy tray, obechi wing sheeting, all required hardware, and factory assembled double deck spoilers. The almost ready to fly version has a white epoxy fiberglass fuselage, pre-sheated flying surfaces, with wing carry-through installed. Complete, covered, and ready for radio installation also available on special order.

Kits cost US\$405.00 + S&H; Almost Ready to Cover costs US\$880.00 + S&H; Ready for Radio cost on request. Visa & Mastercard accepted. Send #10 SASE for flyer to: Dream Catcher Hobby, Inc., P.O. Box 77, Bristol, IN 46507; (219) 848-1427. ■



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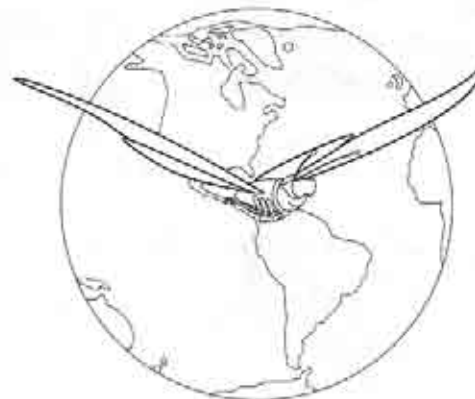
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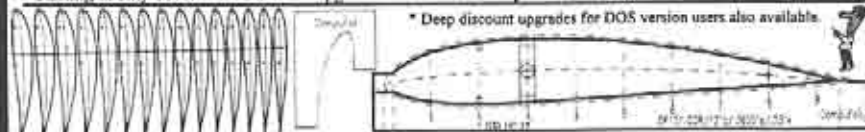
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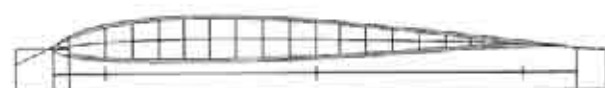
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Sub-kit Contents:
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The latch is built into
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SPAN: 48"
AREA: 260 sq. in.
LOADING: 9 - 14 oz/sq. ft.
SECTION: EH 2-10 mod.
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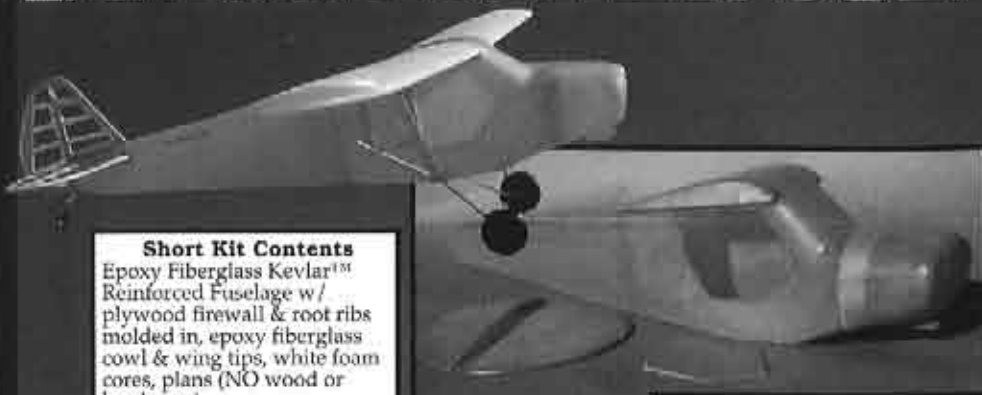
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1/4 Scale SUPER CUB



Short Kit Contents
Epoxy Fiberglass Kevlar™
Reinforced Fuselage w/
plywood firewall & root ribs
molded in, epoxy fiberglass
cowl & wing tips, white foam
cores, plans (NO wood or
hardware)
Price: \$250.00 + \$25.00 S&H
(2 boxes)

Design Suggestions
Wing Span 108"
Weight 12 - 20 lbs.
Controls Rudder, Elevator,
Ailerons, Throttle
Power Zenoh G-38 or Equiv.
Can be used for aerotowing, docile
to fly, quick and easy to build,
looks right.

Scale

Epoxy Fiberglass Fuselages	Price	S&H
1/6 Scale DFS Reiter V2 (120"/Scale/4) 46" fuse, canopy, plans	\$85.00	\$10.00
1/5 Scale ASW-19/20 (132"/RITZ III/4) 54" fuse, canopy, plans	\$85.00	\$10.00
1/5 Scale Nimbus (159"/Wortman/4-5) 54" fuse, canopy, plans	\$85.00	\$10.00
1/5 Scale Rhoenbussard (112.5"/Scale/4) 40" fuse, plans	\$80.00	\$10.00
1/5 Scale ASW-17 (135"/Mod. Eppler/4-5) 49" fuse, canopy, tray, dwg.	\$90.00	\$10.00
1/5 Scale Orlice (135"/E392/3-4) 49" fuse, canopy, tray, dwg.	\$80.00	\$10.00
1/5 Scale Ornith (142"/E392/3-4) 49" fuse, canopy, tray, dwg.	\$90.00	\$10.00
1/5 Scale Salto (90"/E387/3) 42" fuse, canopy, plan	\$80.00	\$10.00
1/4 Scale PIK-20 (150"/E203/4-5) 64" fuse, canopy, tray, dwg.	\$155.00	\$20.00
1/4 Scale DG-100/200 (147.5"/Wortman/4-5) 64" fuse, canopy, tray	\$155.00	\$20.00
1/4 Scale Libelle (154"/RITZ I/3-4) 58.5" fuse, canopy, frame	\$155.00	\$20.00
1/4 Scale Jantar (187" or 202"/Wortman/4) 67" fuse, canopy, plans	\$155.00	\$20.00
1/4 Scale HP-18 (147"/RITZ III/4) 69" fuse, canopy, plans	\$145.00	\$20.00
1/4 + 10% Scale Salto (142.5"/RITZ I/3-4) 61" fuse, canopy, frame, plan	\$155.00	\$20.00
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1/3 Scale ASW-19/20 (16.5"/Wortman/4-5) 89" fuse, canopy	\$250.00	Call
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Reinforced Fuselage, Hatch
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Design Suggestions
Wing Span 100 - 136"
Airfoil You Choose
Chord 10" Max.
Controls As Required
Bolt-on wing.

Fuselage designed to take a heat shrink battery pack in the nose, with a standard size receiver, on/off switch, and 3 standard size servos in tandem. Fuselage designed by Bernard Henwood. Recommended for thermal or slope, intermediate to expert.

Thermal or Slope

Epoxy Fiberglass Fuselages	Price	S&H
Aeolus III (60"/NACA 63A010/3) 43" fuse, plans	\$65.00	\$10.00
Condor 3m (bolt-on wing mount/ up to 10" chord) 52 1/4" fuse, nose cone	\$80.00	\$10.00
Contestant (148"/E205/3-4/10.5" chord) 60" fuse, canopy, tray	\$80.00	\$10.00
Elf 2m (bolt-on wing mount/ up to 10" chord) 44 3/8" fuse, nose cone	\$70.00	\$10.00
Factor (83"/E193/3) 41" fuse, hatch, plans	\$75.00	\$10.00
Oden (100-130"/S3021/ As Req./10.25" chord) 51" fuse, canopy	\$75.00	\$10.00
Raven 3m (119"/Mod. E193/ As Req./10.75" chord) 51" fuse, plans	\$80.00	\$10.00
Smoothie (100"/None/Var.) 49" fuse, hatch	\$70.00	\$10.00
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Stiletto II (100-136"/Any/ As Req./10" max. chord/ bolt-on wing) 49" fuse, hatch	\$75.00	\$10.00
Stiletto RG-15 (100-136"/RG-15/ As Req./ plug-in wing) 49" fuse	\$75.00	\$10.00
Stiletto HQ 2.5/9 (100-114"/HQ2.5/9/ As Req./10" root cord/ plug-in wing) 49" fuse	\$75.00	\$10.00
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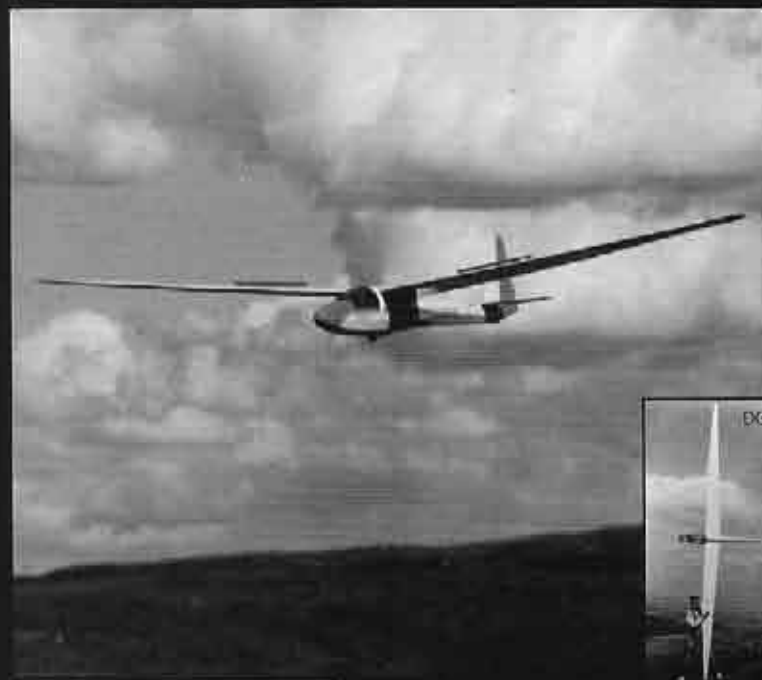
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