

SLEGERS INTERNATIONAL

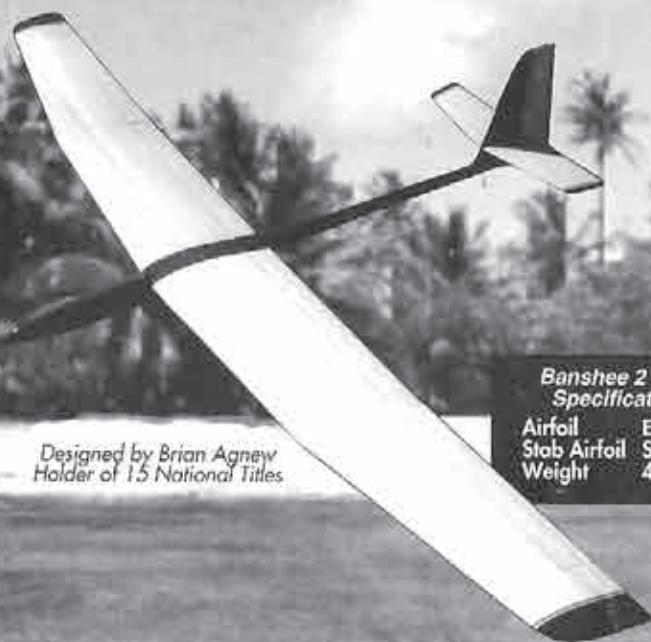
P.O. Box 364, Long Valley, NJ 07853

(908) 879-9964 - FAX (908) 879-8177

Shipping: 35 Hacklebarney Rd., Long Valley, NJ 07853

<http://www.slegers.com>

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



*Designed by Brian Agnew
Holder of 15 National Titles*

Banshee 2 Meter Specifications

Airfoil	E387
Stab Airfoil	SD8020
Weight	42 oz.

Return of the BANSHEE

*Back by popular demand!
Limited production run!*

- ✓ Fuselage is manufactured from the original plug, in fiberglass, and is Kevlar™ reinforced.
- ✓ The wing is manufactured using the original templates.
- ✓ Kit features plug-in, pre-sheeted and abachi wings, with ailerons and flaps pre-routed and servo pockets pre-routed.
- ✓ Plug-in wings are joined by a 3/8" carbon fiber rod.
- ✓ User friendly full flying stabilizer is also pre-sheeted.
- ✓ Kit includes complete hardware and instructions.

★ VISA ★ MASTERCARD ★ DISCOVER ★

R/C
Soaring
D I G E S T

June, 1997

Vol. 14, No. 6

U.S.A. \$3.50



LARGE Scale gliders at cost



1/3.1-1/3 K6E's



1/4 Wilga

1/3 ASK 18



1/4 Wilga



1/4.3 DG 200 ready to fly

In Stock

EMS / ready to fly

1/4.3 DG 800 (165" span)

Roedelmodell

1/4.5 ASK 21 (165" span) • (1/3.6) Ka6E (165" span)

Roke

1/3.5 DG 202/17 (191" span) • 1/3.85 ASK 18 (163" span)

Roebers

1/3.75 DISCUS (157" span) • 1/3.5 ASW 24/27 (157" span)

1/4 PILATUS B4 (147" span)

Krause

1/3 SALTO (177" span)

Ripo

1/3 DG 600/18 (236" span)

Büchelo

1/4.4 NIMBUS 4 (237" span)

Special Order

Schüler & Fleckstein

1/3 all-glass ASH 26 (235" span)

1/3 all-glass ASW 24 (196" span)

1/3 all-glass FOX (183" span)

PRIBek

1/3 Ka6E (197" span) • 1/3 ASK 13 (209" span)

1/2.7 ASK 18 (209" span) • 1/2.77 ASW 19 (212" span)

1/3 ASW 24 (196" span) • 1/3 ASW 27 (196" span) • 1/3 FOX (183" span)

Scale Towplanes

Frisch PZL 104 Wilga 35

1/4 2.78 meter span (109")

Roedelmodell Jodel Robin

1/4 2.18 meter span (86")

Rosenthal Rallye Morane

1/4 2.78 meter span (109")

Sailplanes Unlimited, Ltd.

63 East 82nd Street, NYC, NY 10028 Phone (212) 879-1634 Fax (212) 535-5295

<http://www.sailplanes.com>

R/C SOARING DIGEST

A Publication for the
R/C Sailplane Enthusiast!



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; (520) 474-5015.

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

RCSD Staff

Jerry Slates - Editor/Technical Editor
Judy Slates - Desktop Publisher, General
Managing Editor, Subscriptions
Lee Murray - RCSD Index/Database

[Material may be submitted via 3.5" Disk or e-mail, and is most appreciated!]

Please address correspondence to:

Jerry & Judy Slates
R/C Soaring Digest
P.O. Box 2108
Wylie, TX 75098-2108 U.S.A.
(972) 442-3910, FAX (972) 442-5258
e-mail: rcsdiges@aol.com

Feature Columnists

Bill & Bunny Kuhlman (B²),
Robin Lehman, Fred Mallett,
Mark Nankivil, Dave Sanders,
Steve Savoie, Jerry Slates

Artwork

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

Printing Coordination

National Print Source, Inc.: (972) 571-0052

Copyright © 1997 R/C Soaring Digest.
All rights reserved.



R/C Soaring Digest
is printed on recycled paper.

Chuck Anderson launching Spica during the winglet flight test program in 1979. Chuck is a retired Air Force Lt. Col. and Aerospace Engineer, with 32 years experience in wind tunnel testing. Chuck is the guest speaker at the Mid-South Soaring Championships in Huntsville, Alabama; his talk will cover 30 years of sailplane design, and where we go from here. Photo courtesy of Chuck Anderson.



TABLE OF CONTENTS

- 4 **Soaring Site**
Judy & Jerry Slates
- 5 **A Dream Retirement Community**
Lee Murray
- 6 **Jer's Workbench**
A Conduit for Wing Servo Wiring
Jerry Slates
- 7 **Non-Technical, Unscientific, Back to Basics**
Ernie Barter
- 8 **On The Wing**
Akaflieg Berlin B 11
Bill & Bunny Kuhlman
- 10 **An Interview with Dave Sanders**
Joe Chovan
- 16 **Gordy's Travels**
Cecil Haga & His Legionary Legionairs
Gordy Stahl
- 18 **Short Cuts**
Carbon Wings
Steve Savoie
- 22 **Hot Air**
To see or not to see? That is the question.
Great Wing Tape
Robin Lehman
- 24 **Wind Tunnel Tests of Wing Profiles**
Part II
Martin Simons
- 28 **Thoughts on Large Scale PSS Planes**
Dan Fulmer
- 38 **Live by the Wind & Die by the Wind**
William G. Swingle II
- 40 **Tidbits & Bits**
World Championship Thermal Duration (F3j)
Colin Thompson
Solar Records News Flash
Dave Beck
A Request from Singapore
27th Annual Sno-Fly
Ray DiNoble
- 44 **A Mindless Landing Is Called a Crash**
John H. Todd
- 48 **Documentation Sources**
Tom Polapink
- 50 **Contest Report - 23rd Annual**
Tangerine Soaring Championship
Terry Cusack
- 60 **Kit Review**
TG-3 Foamie Trainer
Roger Saville

OTHER GOOD STUFF

- New Products
- 34 Classified Ads
- 36 Schedule of Events
- 56 R/C Soaring Resources
- 63 Advertiser Index

The Soaring Site

New England Convention

The New England R/C Soaring Convention (NERCSC) is scheduled for November 15, 1997, as many of you already know. This month, Jim Armstrong, DownEast Soaring Club in Portland, Maine, provided us with additional information on the upcoming event.

The guest speakers are: David Garwood ("Slope Jets & Slope Foams"), George Sparr of Aerospace Composite Products (latest composite techniques, new materials, choice & use of composite materials), Bill Kuhlman (use of polars and making airfoil comparisons), John Derstine & Steve Savoie (aerotowing scale gliders), and Larry Lloyd of Airtronics (programming computer radios (e.g., Stylus and Radiant), provide an explanation of servo types (e.g., coreless), and discuss Airtronics services.) That's quite an agenda and, of course, there will be a hospitality suite that evening, just after the raffle.

As in the past, the day before the Convention will include flying, slope or thermal, at some of their beautiful, local sites, depending on the weather conditions over that weekend. For family members that are already beginning Christmas shopping in November, Portland is only 20 minutes away from Freeport, the home of over 121 discount shopping outlets, which includes the famous L.L. Bean.

For additional information, please contact Steve Savoie at (207) 929-6639; Jim Armstrong can be reached at (207) 725-5758. And, Jim's e-mail address has recently been changed to: jim.armstrong@juno.com. If you're planning to attend, there are special room rates at the Sheraton Tara; Convention seating is limited, however, and must be received by November 3rd.

Happy Flying!
Judy & Jerry Slates

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.



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
<http://www.iac.net/~feguy/VSA>

R/C Soaring Digest is usually mailed the first week of the month. This month, because of computer related stuff, it is expected that it will be mailed about a week later than normal. Please don't panic! We're chained to the keyboard, so expect to be around for awhile...

A Dream Retirement Community

...by Lee Murray
Appleton, Wisconsin

During a trip to Arizona in late March, I was very impressed with the beauty of Sedona, Grand Canyon and other high desert areas. My trip ended up in the Phoenix suburb of Goodyear. I stayed at Pebble Creek, a golfing retirement community with lush fairways, greens and winding golf cart paths. There was a gorgeous clubhouse, pool, a rigorous activity list, a security crew and more. My mind contemplated the prospects of living in such a community in my retirement, perhaps being able to fly almost every day, plus enjoy the amenities. The homes were affordable and they ranged in size from snug to very comfortable. Before my visit, I had the impression that no reasonable person would find that "hot and dry" area an attractive place to retire. Now, I am wondering why my retirement community vision cannot become a reality, if not in Arizona, perhaps somewhere else.

I understand from Judy Slates that others are looking for a retirement community, also. Why not put the idea up for some dialogue, and perhaps this dream will come true. Someone has said that if you can imagine something, it can become reality. This particular dream seems more achievable than most; perhaps it is only a problem of organizing interested people. In numbers, we can become a market to developers. Perhaps in combination with golfers, full size aviators, or power model flyers, the reality is closer at hand than we might think.

I believe there are R/C power flyer communities in Florida. There are also general aviation communities advertised at the EAA Fly In & Convention. Why not an R/C soaring community?

My vision of the **ideal community** would have many of the following attributes:

- Good weather with a long flying season.
- A thermal soaring site close by.
- Full size soaring available within a few hours' drive.
- R/C slope soaring also within an hour's drive.
- Reasonable access to highways and a commercial airport.
- Contain many sailplane modelers, enough to ensure that our interests are not going to be ignored by power flyers, golfers, full size pilots, etc.
- Have building covenants to insure that your home will remain valuable and the community will be regarded as a nice place to live.
- Cost of living, including taxes, should be conducive to retirement.
- Medical facilities available within two hours and EMT service closer.

Some suggestions I've heard thus far:

- Bob Johnson suggests Muncie, Indiana, which has mild winters (better than Wisconsin), it's close to AMA fields, and a community of modelers.
- Dave Beck suggests Ajo, Arizona, because it is ideal for solar powered flight, low cost housing, slope soaring from mine tailings, reasonably close to southern California.

The R/C soaring community is full of people of retirement age, or approaching it. Many of them have the ability to move to a retirement community and would be eager to find a community where they can soar with others. *R/C Soaring Digest* readers probably know of places where most of these desirable attributes are to be found. When we get a list made, we can put pencil to paper and provide information about the cost of food, housing, taxes and crime rates. We may even interest a developer into helping with the project. I look forward to your comments.

1300 Bay Ridge Rd., Appleton, WI 54915
E-mail: 74724.65@Compuserve.com
Phone (414) 731-4848



Jer's Workbench

Jerry Slates
P.O. Box 2108
Wylie, TX 75098-2108
(972) 442-3910
RCSDigest@aol.com

A Conduit for Wing Servo Wiring

This last month, I received an e-mail message asking how to cut a hole in a foam wing for servo wiring. There are two methods that I use.

Hot Wire Cutter

The first method calls for a hot wire cutter. Starting with a set of un-sheeted foam cores, determine where the servos will be installed. Once the decision is made, the hard part is done.

The hot wire cutter was constructed, as shown in the photograph, by bending a wire loop. The loop is .031 inch diameter, stainless steel wire, which was then installed into a wooden handle.

Before using a hot wire cutter such as this, be sure to begin by turning your power supply to its lowest setting. Using scrap foam, gradually increase the heat; make some test cuts on the scrap foam, until the heat generated by the foam cutter is about right, not too hot, but easily cuts through the foam.

Now, using a fine point marker pen, draw a line on the bottom of the foam wing core, exactly where the conduit should be placed. Heat up the cutter; at the end of the line, insert the hot wire cutter into the foam core. Very slowly, cut to the root. That's all there is to it!

Heated Steel Rod

The second method would be to use a heated steel rod to cut a conduit into the foam wing core.

Starting with a 3 foot long, 1/4 inch diameter steel rod, one end is ground to a rounded point. A hand held propane torch is used to supply the heat.

In this method, the servo wells are cut into each wing, before burning the conduit into the sheeted foam core wings. A hole is then drilled in the root rib where the conduit will be.

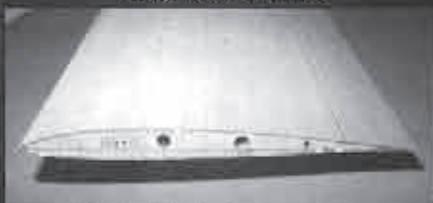
Page 6



Hand held, hot wire conduit cutter.



Wiring conduit; cut using hand held, hot wire cutter.



Center hole is wiring conduit.



Servo well with wiring conduit at edge of well.

R/C Soaring Digest

Heating the rounded end of the steel rod, it is inserted into the conduit hole. If all goes well, the conduit will exit at the edge of the servo well, as shown in the photo.

Should the rod cool down too quickly and stops before the conduit has been completed, just pull the rod out of the foam core wing, heat the rod again, re-insert it back into the foam, and complete the conduit. ■

Non-Technical, Unscientific, Back To Basics

..by Ernie Barter
Saratoga, California

A few years ago, my favorite airplane was a Falcon 880. It flew well, and I thought I learned a lot from it. But, the buzz word here is "THOUGHT".

I found that if I ballasted the 880 slightly, it flew much better than at its lightest unballasted weight. I don't remember the exact amount of lead I had added, but in the 4 - 6 oz range.

New day

I bought an RnR Genesis about three or four years ago. It has been my all-time favorite thermal airplane. The poor thing has become flexible through use. (Let's see... Flying ten flights a day, X two days a week, X 50 weeks a year, X three years...) Yup, about 3,000 flights into it, and it's tired. It has lost arguments with fences, trees and my shin bone so many times, it has patches on the patches. BUT, it is still my all time favorite. Boy will that thing thermal!

Now, for the "THOUGHT"; I'd learned a lot from the 880. Seven months ago, I bought a new Genesis SE, the latest that RnR has to offer, just in time for Visalia. It has larger flaps and ailerons, and I call it my "lander". It is very responsive to course corrections, and slows down nicely for landing. BUT, it would not thermal like my old bucket. I really worked at it, and thought it was the set-up, or just me not getting used to the new bird.

Back to basics, I checked the CG and flying weight of the old vs new. What a surprise. The weight of the new SE was 5 oz. lighter than the old girl, and I

June 1997



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

was flying the CG too far aft. On my scale (dubious accuracy) the old airplane weighed 77 oz., while the new SE weighed in at 72 oz. The old bird's CG came out at exactly 4 1/16" aft of the forward most point on the leading edge (measured from the forward most point at the wing L/E cut out).

Bottom Line

How did I make the SE fly as well, if not better, than the old bird? I added a 5 oz. ballast block in its belly, and corrected the CG to 4 1/16". What a difference a few ounces can make, and how critical the CG is. We all know these things, but how easy it is to forget just how important the basics are. By the way, both airplanes have a "trip" on the bottom of the stab. It's my pacifier. The propeller-heads will argue, saying that it makes no sense to trip the tail feathers, but "I" know it flies better that way. Anyone out there with a Genesis (old style or new SE), that wants the ultimate flying configuration and the "sweet point" for weight and CG, try my numbers: 4 1/16" aft of the L/E and 76 or 77 oz. all-up weight with a tripped bottom stab. You'll like it.

RnR Products
1120 Wrigley Way, Milpitas, CA 95035
(408) 946-4751

Page 7



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

E-mail: bsquared@halcyon.com
<http://www.halcyon.com/bsquared/>

Akaflieg Berlin B 11

The August 1962 issue of *Interavia* contained a wonderful article on sailplane construction¹. The multi-page article, which included a number of photos and diagrams, together with an extensive table of data for many sailplanes, outlined then current trends in construction technologies. Plastics, fiberglass and epoxy were just coming into widespread use at the time.

Perhaps the most fascinating glider depicted was the Akaflieg Berlin B 11, a high aspect ratio tailless design with forward swept wings.

Despite the structural difficulties and lift distribution problems associated with forward swept tailless designs, there are a few advantages to the planform, particularly for full size aircraft:

- A forward swept wing allows the pilot to be placed very close to the CG, while at the same time preventing the wing from obstructing the pilot's view of the ground. This is an important consideration during landing.

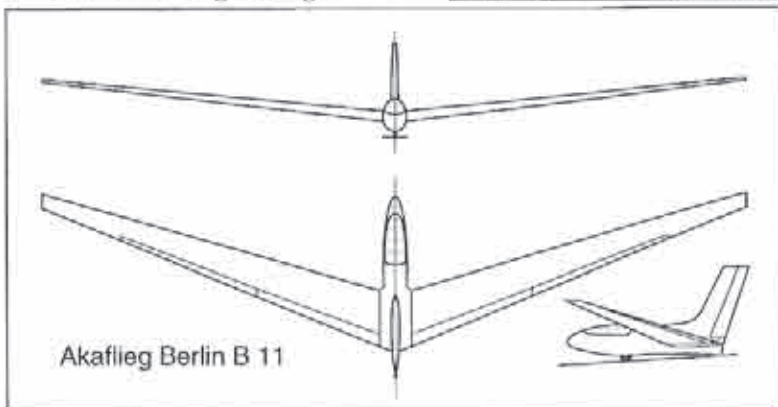
- Sweep is related to effective dihedral. Sweep back increases effective dihedral as C_L increases, while sweep forward does just the opposite. This means swept forward wings need more dihedral. The benefit here is that the wing tips are always high off the ground, free of obstructions.

- Swept back wings tend to drag wing tips during landing, when the angle of attack is high. This tends to drive the designer toward reducing the sweep angle, thus requiring more aerodynamic wing twist to maintain stability, or increasing the dihedral angle, which leads to too high an effective dihedral angle in thermal turns and other high C_L conditions.

- Forward sweep inhibits tip stalling, because the air flow tends to move toward the fuselage rather than toward the wing tips.

The Akaflieg Berlin B 11 went through a formal design process, and wind tunnel testing of a two-meter span model was carried out², but we know nothing more about this intriguing

Akaflieg Berlin B 11	
Dimension	Value
Span	17.325 m, 56' 10"
Wing area	15.0 m ² , 170 ft ²
Taper ratio	0.25
Sweep angle, c/4	18 degrees
Maximum weight	321 kg, 708 lbs.
V, landing	63 km/h, 39 m.p.h.
V, optimum glide angle	80 km/h, 50 m.p.h.
V, maximum	155 km/h, 96 m.p.h.



Akaflieg Berlin B 11

design. We do think a model would be beautiful in the air, and would very much like to hear from anyone with additional information.

1. From String Bags to Super-Kites, Trends in Sailplane Construction Today. *Interavia*, August 1962.

2. TWITT Newsletter. Andy Kecskes, Ed. No. 26, August 1988.

THE BIRDWORKS
P.O. BOX 1302
PORT ORFORD, OR 97465
(541) 332-0194

GEEK
ELASTIC SLOPER

*SNAPS!
SPINS!
POINT
ROLLS!*

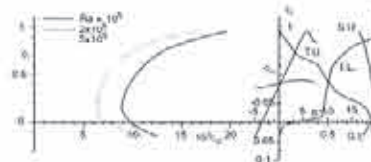
SPAN: 34"
AREA: 267 sq. in.
LOADING: 9 oz/sq. ft.
KIT: \$50 + \$5 S&H
DUCK MIXER: \$0

STANDARD RADIO W/2 OR 3 CHANNELS,
ELEVONS W/OPTIONAL RUDDER, PRESS
FIT RADIO COMPARTMENTS

FLEXIBLE FOAM USED THROUGHOUT,
BLUE WINGS, BLACK FUSE & TAIL

INSTRUCTIONS INCL.: OPTIONAL FULL
FLYING RUDDER, OPTIONAL SLIP-ON
NOSE CONE

**UNDERSTANDING POLARS
WITHOUT MATH**
A guide to getting the most from polar diagrams
by Bill E. Bunny (B²) Kuhlman,
with a special section by Bill Kubiak



US\$18.00, packaging and shipping included

B²Streamlines
P.O. Box 976, Olalla WA 98359-0976 U.S.A.
<bsquared@halcyon.com>
<<http://www.halcyon.com/bsquared/>>

WEST SYSTEM[®]

EPOXY

*Custom blend every batch to
meet your specific application!*

**One Resin
Four Hardeners
Seven Fillers**

THE SOLID SOLUTION

Send \$5 for Product Guide, Technical Manual,
CST Price List and Sale Announcement to:



**Composite Structures
Technology**

PO Box 642, Dept. MM, Tehachapi, CA 93581

Order Desk: 1-800-338-1278

Technical Information: 1-805-822-4162



Dave Sanders at Los Banos, 1996. Dave Garwood photo.

An Interview with Dave Sanders

Conducted by Joe Chovan
North Syracuse, New York
On behalf of RCSD

Introduction

On a recent trip to Southern California, I had the good fortune of spending some time with the Sanders, of Capistrano Beach. I toured the facility of "Dave's Aircraft Works" (DAW), and despite a flurry of activity in production, was able to corner Dave, the designer and manufacturer of an increasingly popular line of slope kits, for an enlightening and enjoyable interview. What follows is a sample of our dialogue.

(The statements from the interviewer (Joe Chovan), are denoted with "RCSD", and those from Dave Sanders with "DS".)

Dave Sanders on Flying

RCSD: How did you start out in R/C and when?

DS: I started off with power planes and a mix of gliders, about ten to twelve years ago. I had a hiatus for school, and got back hard into slope soaring six or seven years ago.

RCSD: You're now predominantly a glider pilot, correct?

DS: Right.

RCSD: What do you enjoy most about unpowered flight?

DS: Not having to mess with engines. Plus, I like the challenge of extracting my power from the air, instead of putting it on the plane. Looking for lift is its own adventure in flight.

RCSD: Most folks recognize Dave Sanders as a combat pilot, but you're now getting into thermal duration (TD) and handlaunch (HL) to a greater extent. Why?

DS: Well, for the business, it's a larger market. Also, I've found that thermal flying has become a lot of fun for me. On days when there is no lift on the slope, if I have thermal planes, I can still fly. I can rig up a hi-start, or I can throw off the slope and look for thermal lift. To do that, you need thermal planes. I've been sloping basically rubber airplanes, and wanted a plane that was just as tough for flying thermals, as I've been used to with my slope planes.

RCSD: So, it's just a natural progression to you?

DS: Yeah, I think so. I think that thermal flying is more challenging than slope flying, and as a flyer grows he learns to appreciate the harder forms. Slope flying I've pretty well got down. Thermal flying is still an adventure for me.

Dave Sanders on Airplanes

RCSD: It's no secret that you prefer modeling scale aircraft. What gives you this motivation?

DS: To me, the essence of aeromodelling is scale airplanes. The reason I build model airplanes is to have scale approximations of actual flying, full scale aircraft. So, to have a non-scale airplane just doesn't appeal to me. I want to be able to have a scale plane that has good performance that I can take out and fly enjoyably. When I see it fly by, I think it's a real airplane. (laughing)

RCSD: I understand. I've heard you use the term "tool planes". Can you please explain what this is?

DS: A tool plane is a plane designed to do a task, and that's it. It doesn't look like anything in particular. Its form is derived from its function in performing the task. This will be a non-scale airplane.

RCSD: So, while you do sell kits designed for certain flight tasks, we may rest assured these will be scale renditions?

DS: Always, well, almost always! (laughing)

Dave Sanders on DAW

RCSD: When did you start DAW, and besides the obvious income opportunities, what motivated you to become a kit maker?

DS: I started the company about 3 years ago, working out of my garage. I made a couple of models that I thought would be good sellers. Some of my flying buddies wanted copies of these models. I started there with the original wood fighter kits, that I've made all this time. It grew from there. The company became profitable after about a year. I decided then if I was going to pursue it, or not pursue it. I committed to myself that I would invest five thousand dollars in two years. If it didn't go into a profit making stage by then, I would close the doors. So, obviously, it's gone on and, with new products, has taken on a life of its own.

RCSD: You are still offering your original line of balsa kits?

DS: Yes I am.

RCSD: But the EPP is becoming more and more popular?

DS: Much more popular. People want planes that don't break.

RCSD: How did you discover EPP, and manage to employ it so successfully?

DS: The first EPP airplane I ever saw was a Bowman Hobbies "Ruffneck".

RCSD: That's Pat Bowman?

DS: Right. Pat Bowman is the granddaddy of the EPP planes. He's the first guy I know of to make a plane out of EPP. Steve Hinderks has made the "Rubber Duck" and the "Geek" out of another kind of foam for quite a while, which is a different kind of

June 1997

material, and has its own particular problems with manufacturing. EPP is almost as easy to work with as regular styrofoam. So, after I saw the Ruffneck, which gave good flight performance, proving itself a strong airplane, taking the stress and not losing its shape, I decided I'd like a plane that looked like a warbird. I came up with the Foam 51; that was the first foam warbird.

RCSD: And now you've got six?

DS: Four. I'm thinking of coming out with a couple more. Those are still evolving to this day. To me, combat planes are just like motocross bikes.

RCSD: In what way?

DS: They are going to be new and improved every year. If you compare a '97 Kawasaki to a '72 Buellco, there is no comparison. The '97 Kawasaki will jump higher, go faster, do more, and I think that's the way foam combat planes are going.

RCSD: And you're going to try to stay on that leading edge?

DS: I'm going to attempt to stay there, if I can.

RCSD: It's amazing the punishment your warbirds can withstand. It takes a tremendous amount of R&D to develop such an airframe, moreover, a good looking scale model. What challenges do you face today in keeping these planes "state of the art"?

DS: Weight is the biggest challenge. Finding ways to keep them light, keep the wing loadings down, and still keep them strong. For maximum strength, you need massive components, but massive components bring with them weight. The biggest thing I've done is to eliminate tape in the design as much as possible, and cover the entire airplane with iron-on film. I think this gives the best compromise between strength and weight.

RCSD: The construction methods you use for your EPP models can be quite a "culture shock" for some modelers. What do you feel has been most successful in breaking down this barrier?

DS: Probably sticking with commonly known materials, other than EPP. All my planes use wood spars and wood

trailing edges. I try to keep the adhesives used to things you can find in a hardware store. I try to do a level of prefabrication that takes care of most of the hard problems, other than radio installation.

RCS D: I understand you've taken EPP technology and applied it to TD models?

DS: The Schweizer 1-26 and Schweizer TG-3. Both make good models.

RCS D: I've seen your TG-3 and Schweizer 1-26 fly, and they definitely bring the forgiving qualities of your combat models to the flat land flyer. How are they being received?

DS: Pretty well. I've had a lot of club interest, especially in the TG-3. It's an inexpensive plane, that's simple enough to build for inexperienced builders. They can afford to have a fleet of two or three on hand for a beginner to pick one up and take his chances.

RCS D: So you're marketing it as a trainer?

DS: Yes, I do market it as a trainer. It's a fun plane for experienced guys. As a trainer, it's slightly heavier than a typical 2 meter trainer, and it's a little bit faster; but its crash resistance far outweighs its slightly hotter performance.

RCS D: What more could a beginner want?

DS: It will thermal easily; it can go up a winch without being "babied", which is a big factor. Most beginners explode their planes on winches, so this plane can launch full pedal on the winch.

RCS D: What can we expect to see from DAW in the future?

DS: Higher performance planes, aimed at experienced pilots who want something to fly in an area where there is nowhere to land. Larger aircraft, including unlimited sized planes, which are a real engineering challenge. So, that's kind of what I'm leaning towards. I also want to start developing some powered aircraft.

RCS D: Which would be a much bigger market for you?

DS: Much bigger market. That is a whole new place to explore. That may

grow to be a bigger company than I want to be at the moment, so I'll have to work into that.

RCS D: Is there anything else you'd like to say about your company?

DS: Yeah, actually, about "rubber airplanes" in general. This is a new way to build airplanes. We've had wood airplanes for decades; we've had composite planes for the last twenty years. We've had more advanced materials and technologies, and this is another one to come along — and it has its place. You may never see a foamie F3B plane, but you can easily see a foamie thermal duration plane. That's within the realm of the engineering and materials. You can make them light, and you can make them in a shape that will give you good performance, using advanced airfoils. It could change your life. I've repaired a lot of airplanes. I started flying models twenty years ago with free-flight planes. Free flight planes break. There's no question — they're going to break eventually. R/C models aren't so bad. Thermal planes actually don't get too much abuse until you get close to the ground, when you start shooting landings. So these, at the very least, make good sport planes and good practice planes. A lot of guys are reticent about practicing with their competition planes, HL planes in particular. You can take my Schweizer 1-26 out and fly it in areas with obstacles and rough landing zones, dogs, kids, you name it. You don't have to worry about the plane. You can still get satisfying performance. You can still catch thermals, land in your hand, and do all the things you want a handlaunch plane to do.

RCS D: So it looks like it's a new wave that's here to stay.

DS: Yes.

Dave Sanders on Authorship

RCS D: As your peers know, you've become not only a highly skilled craftsman, but an accomplished author. In addition to "Fighting Foam & Heavy Iron", we've seen your works in *Model Airplane News*, *Quiet Flight*, *Sailplane and Electric Modeler*, and *Model Builder*. I understand you've recently taken an assignment with *Model Aviation*?

DS: That's right. I'm doing the slope soaring column, bi-monthly.

RCS D: That was Wil Byers' column?

DS: That used to be Wil Byers'; yes, I've filled some big shoes there, from Daryl Perkins to Wil Byers to me. This is kind of like an ant walking up behind the elephants. *(laughing)* I think I can do a good job. My main thing is to try to stay focused on giving information that people can use, and especially aimed at guys who are not necessarily the best pilots — the guys who are just getting started in slope. Or, intermediate slope flyers, who want to find better products to make flying more fun, and learn techniques that can help them get more mileage out of their planes. Slope airplanes take a heavy beating; if you can minimize that, you'll get more flying time. I'll be covering slope events, including slope racing, which is probably the primary event you could do on a slope, so we'll be watching that.

RCS D: Great, we'll look forward to it. Where do you find the greatest inspiration to write?

DS: Probably from personal experience, and also feedback from my customer. Being a manufacturer puts me in a position where I hear directly about any of the problems people have with any airplane, be it mine or any other kit, or any set of flying characteristics. I get a good bead on what people are finding problems with, or what people would like more information about. That does guide my subject matter quite a bit.

RCS D: Which writing assignments have you enjoyed most and why?

DS: I like doing "how to" articles, because I feel there are things there that I can share. I'm a pretty good builder. I'm a better builder than I am a pilot. I know how to paint, and do glass over wood finishes; I understand foamie construction methods. I can usually get an airplane coming out looking good and straight. That's the stuff I like to share the most. I do have weaknesses there, as I've never built composite planes. I've never done vacuum bagging. The reasons for that are expense, and special shop setup.

June 1997

My shop is set up to build glass, wood and foam planes. I've never had the facilities to build full blown composite planes.

RCS D: Do you see yourself in the future?

DS: Possibly. I'd like to explore it, to just know how to do it. But there's really nothing that I do right now in flying regime, that I'm working in, that necessitates a composite plane. One exception there is scale sailplanes. I'm getting more into that now, and that may be a place where I start exploring composite construction — just to get a cleaner, lighter airframe.

Dave Sanders on Life and Business

RCS D: How would you describe your life and why?

DS: Strange and wonderful, and filled with fear.

RCS D: *(laughing)* "Strange and wonderful, and filled with fear?" Fear? Why fear?

DS: Well, I'm a regular guy. I've got a wife, two children, a mortgage payment, two cars. Anything can happen in your life. Your son can come home with a broken arm, your water heater can explode, your car breaks down, or computer server won't download your e-mail — anything. Most things are handled pretty well and pretty efficiently here. I get a lot of help from my wife in particular who handles most of the financial and business affairs of the company, which pretty much allows me to concentrate on manufacturing. And then there is family life, and soccer games. You never know what scheduling conflict is going to happen next. That's the main thing. It's getting enough hours in the day to do all the things you need to do to be a successful businessman, husband and father.

RCS D: So you do consider this your primary business?

DS: This has become my primary business. I still do my normal business on a part-time basis.

RCS D: Which is architecture?

DS: Computer aided drafting; it's production drafting, mostly custom homes.

RCSD: As a husband and father of two, the operation of a small business like DAW can be quite taxing. How do you manage?

DS: Well, I work long hours. My typical day starts about eight in the morning, and ends at eleven or midnight. It can definitely wear you out, so you have to know when to take time out. If you want to have a successful "toy airplane" company, you're going to work long hours if you expect to pay the bills. There's just not that much money. You have to do a lot of production, and a lot of sales.

RCSD: That's something most people don't realize

DS: That's where most people fail. And, also, they get tired of doing it. Part and parcel with being a kit manufacturer is being a workaholic. So, if you have that particular "disease", then it's the place to let it out.

RCSD: What gives you the greatest measure of satisfaction as a kit maker?

DS: Since I've released the TG-3 trainers, I've been getting stories back through e-mail, phone calls and letters from people who have taught really young kids how to fly sailplanes. That's definitely been the most rewarding. And, also, the occasional calls and letters saying, "I finished the plane. It flew great... I dove it straight into the ground from fifty feet, and nothing happened to it!" That's really rewarding, because a lot of these people have never seen a plane that can do that; they get hooked right away, because now they realize they don't have to worry about crashing.

RCSD: What gives you the greatest satisfaction as a businessman?

DS: Well, I've enjoyed seeing the bottom line get a little bit fatter every year. My original goal of so many thousands of dollars in so many years invested to make a profit, and it came through. Things went as planned, which is rare! (laughing) Having this become my primary business, which just snuck up behind me — it was never my intention to do this full time.

RCSD: Is there anything else you'd like to tell us?

DS: Yes. I'd like to say thanks to all

the customers and friends that have made this possible, and especially my wife and family. It's been a long, winding road and almost the entire trip has been great. It's been hard work and hours on the phone helping customers, but I really don't mind it. It's definitely made me a lot of friends. I never would have met so many in the hobby, if I hadn't become a kit manufacturer. I probably would have still lived in the small world of Southern California slope flyers. Now, I get opportunities to travel to events. I'm going to Elmira in June. Two years ago, it would have been out of the question, but now, it's a justifiable trip. I'll get a magazine article out of it, I'll make some contacts, see some friends, and extend the trip a few days and have a vacation — a flying vacation at Cape Cod with some of my good friends like you and Dave Garwood.

RCSD: We're flattered. And we'll be glad to have you!

DS: Thanks! It will be fun. I can't wait.

SLEIGERS INTERNATIONAL

<http://www.slegers.com> (90A) 879-0964
FAX (90B) 879-6177

*Now available from
Slegers International.*

The Bullet



**CATAPULT
LAUNCH
GLIDER**

WINGSPAN 38"
AIRFOIL PG-15
WEIGHT 11.5 OZ. W/SERVOS
LOADING 7 OZ./SQ. FT.

P.O. BOX 354, LONG VALLEY, NJ 07853
(SHIPPING: 35 HACKLEBARNEY RD.)

X PRE-SHEETED OBECHI WING W/CARBON X ONE
PIECE WING ROUTED FOR AILERONS & SERVOS
X DIHEDRAL PRESSED INTO WING X EASY RADIO
INSTALLATION X MICRO RADIO REQUIRED X PRE-
BUILT RADIO TRAY X EPOXY GLASS FUSE W/
Kevlar PRODUCED BY STEVE HUG X PRE-CUT V-
TAIL X PRE-SOLDERED ELEVATOR PUSHROD

VISA • MASTERCARD • DISCOVER

New from Trick R/C

The RAZOR, High Performance Slope
Combat wing. All EPP Foam Cores and
Beds, Carbon Fiber Spars with Steel
Joiner, Formed Balsa Trailing Edge and
Elevons, Coroplast Ramped Winglets.

Wing span 48"
Wing area 408 sq. in.
Airfoil Zagi 12/2
Loading 8.48 oz./sq. ft.
Weight 24 oz.
Radio 2 Channel
or Mixer



\$65.00



The ZAGI-LE COMBAT WING
with an expanded polypropylene
EPP foam leading edge
laminated to the tough 2 lb.
foam core covered with 2.4 mil
poly-tape. Available in six colors.
Only three hour building time.
The ZAGI-LE will keep its edge
so you can keep yours.

Wing Span 48"
Wing Area 2.83 sq. ft.
Airfoil Zagi 12/5
Loading 7.5 oz./sq. ft.
Weight 22 oz.
Radio 2 Channel
or Mixer

\$45.00

The Thermal EPP Foam 2 Meter Beater

With a Two Piece Wing
\$90.00



Wing Span 2M
Weight 35 oz.
Surface Area 673 sq. in.
Surface Loading 8 oz./sq. ft.
Airfoil HQ3513



The 2 Meter Beater is slope tough. An ALL EPP foam thermal airplane.
Every bit as rugged as the Razor, but it looks and flies like a composite.
Build it as a straight wing with ailerons, or polyhedral with rudder and elevator.

TO ORDER CALL: (310) 301-1614

Visit <http://www.Zagi.com>
Email: Zod@Zagi.com



TRICK R/C
938 Victoria Avenue
Venice, CA 90291

CA res. add 8.25% tax S&H \$6.00



SHUTTLE 100

Cecil Haga & His Legendary Legionairs

...by Gordy Stahl
GordySoar@aol.com
Louisville, Kentucky

My work travels take me to some strange places; this time, it was my Nostalgia sailplane curiosity that sent me in search of the designer of the famous Legionair series of sailplanes. My hunt began with some Legionair discussion on RCSE, and an address I had on a plan. One of my friends on RCSE found two Haga's in the town shown on the plan, which led me to Cecil's son and daughter, and finally to Cecil. More on that later...

The Nostalgia craze has been gaining popularity to the point that some of the pre-1980 soaring ships are being kitted again. There's something about seeing those fragile structured, majestic ships floating toward the clouds, that just embodies the spirit of soaring. I guess most of us yearn to experience the sweeter parts of the past, and the Nostalgia rules have been designed around that concept. The event focuses more on the aesthetics of the ships, and less on the points collected from competition.

Now, there are a few designs that echo through the ages, and one of them is the Legionair. This is a story about the ship, its designer, and some insight into the time when the nostalgia ships were the points-weapons of the day. I asked Cecil to tell it himself.

Cecil's Story

"I have always been a modeler, even during my stint as a bombardier living on an aircraft carrier in the 1940's. I dreamed about building flying model aircraft, but CA and Monocote was in short supply on board ship. In 1948, I found a job with Boeing, building B-

47's, and then, in '52, got a job in Wichita University's Wind Tunnel Research Group. Four years later, I was back at Boeing in their Wind Tunnel Model Design Group. I stayed in W.T.M.D., but with Vought Aircraft in '62, and then on to Bell. From there, I "retired" into my own business, designing

and building tilt wing and tilt rotor full-size aircraft. I am completely retired and flying mostly my own giant powered aircraft, now.

"The Legionair series sailplanes came about from my love of research and my very active involvement in sailplane contests. What follows are a few of the parameters I had in mind in designing the Legionair.

"I wanted a thin airfoil that was able to move around faster than the rest. I settled on an 8% section. I felt that a wing loading of around 8 ounces per square foot seemed about optimum for duration, believing that lighter than that wouldn't have the velocity profile (penetration) for day-in and day-out duration. Aspect ratio was also a significant item to consider. The 140" had an aspect ratio of 13.33. I knew that most good floaters are between 12 and 14.

"Wing area was next and, like cubic inches in an engine, the more the better. I have always believed that the airfoil section was the least important concern, but then what did I know? I had spent my career wind tunnel testing models. Airfoils are popular and fun to talk about today, and that's cool. I found that, until the Reynolds numbers got around 3 million, the air was turbulent and our models fly with numbers around 2 to 6 hundred thousand.

"I guess I was the first to use an aluminum tube spar with balsa ribs. I used it because it made assembly easy, and the wing was strong, but flexible on tow. Yes, it flexed on launch, but you could measure the towing forces during launch by counting the wrinkles in the Monocote on the way up! However, it didn't break on tow, and it did that without the usual spar material weight and construction

hassles. The tube was 1/2" diameter, with a wall thickness of .028". The fuselage was pod and boom; I used the aluminum tube for the boom, too.

"The next thing I incorporated was huge spoilers, not just long, but wide. Some of the boomer thermals we would get around Texas made it real hard to come down, without turning your ship into shredded balsa. I tested the spoilers (covertly) for proper position by taping a piece of sheet metal on a section I was wind tunnel testing for Bell. They were a little too big, but I still used them, because you could push over, out of the thermal, and come straight down with a bunch of back stick, and never exceed V-dive! It worked great, and caused a stink on the contest circuit as an unfair advantage.

"After winning a bunch of contests, and the 1974 Nat's in Lake Charles, Louisiana in unlimited duration, using a 140" ship built by my friend, soaring partner, and legendary thermal pilot,

Lemon Paynes, the pressure started for me to begin kitting the Legionair 140". "In 1976, Lemon and I extended a 100" version, and took second in the Illinois Great Race. That little ship beat huge Challengers and Birds of Prey.

"I could see that kit manufacturing was more trouble than it was worth, so I decided to standardize my future design components, to keep things as simple and cost effective as possible. The design evolution was market driven. First came the 140", then the 100", then the refined 132". The 132" was believed to be the best floater with speed, of its time, by many RC pilots.

"Production was based in the high tech facility known as my garage, and I continued for quite a while, adding a fun addition to the line which resembled a rocket ship! The Legionair Shuttle series used the same wing components of its namesakes. The fuselage was balsa and light ply, and very much rocketish looking. This series included a 132", 100", and a two meter.



LEGIONAIR 132



LEGIONAIR 140

"I had fun with the Legionairs', and am proud of its performance and popularity over the years. This new Nostalgia craze offers the great ships of the past a curtain call, and an opportunity for newer pilots to enjoy their mystique. Will I ever go back into production? Not me, but maybe someone will decide to take up the tools, so that Legionairs will fly again."

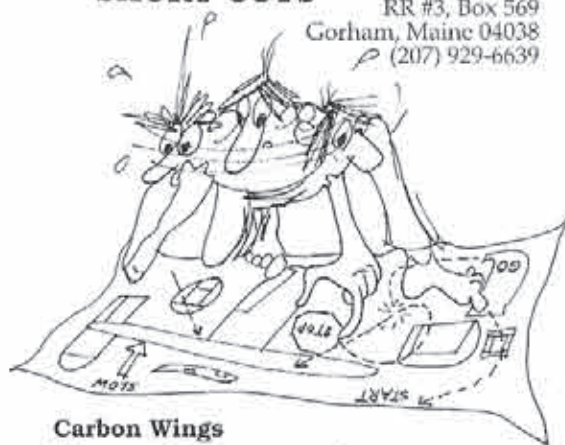
Take Up the Search

Well, there you have it, folks. Cecil is happy and healthy in Texas, remembering the good air of the past. Early in my soaring experience, I bought a two meter and 132" Shuttle, and regret that, as is usually the case, I didn't realize what I had, and the respect they were due. It was an honor and great fun to interview Cecil. Plans are out there, and someone has a kit or two on the shelf. Now, it's up to you to take up the search!

On the Road, again... ■

"SHORT CUTS"

Steve Savoie
RR #3, Box 569
Gorham, Maine 04038
(207) 929-6639



Carbon Wings

This month, I want to touch upon carbon bagged wings. The wings to my current scale project (1/5 scale Salto) will be used for this example. These 45" panels contain no spar, just a 3/16" plywood root and sub-root. The skins are 4.7 oz., 80/20 carbon/glass hybrid cloth, that's been vacuum bagged with West Epoxy on Spyder Foam cores. A 1.5", 1.7 oz. Spectra leading edge tape was positioned on the core with 3M 77 spay, and thoroughly wet out prior to placing core inside the mylar and cloth sandwich. Eppler 374 was used for the root and transitions to SD6060 at the aileron joint, then, it continues as a standard SD6060 to the tips, which have 1 degree of washout.

These were my first carbon wings, and I learned a lot during the lay-up and finish. Covering the wing with an electric blanket and setting the heat on high accelerates the curing process. In 12 hours, you'll get a tough wing that you can work immediately. Leaving the mylars on the wing, when it comes out of the bag, guards the surfaces when the leading edge flashing is trimmed with a razor saw. The trailing edge flashing is best trimmed with a dremel cut off wheel. The cut lines can be marked with masking tape for best visibility. The carbon is quite tough stuff, so I recommend the flashing be sanded to rough size with 80 grit sanding bars. The trailing edge can then be finish sanded with 220 grit sanding bars. Finishing the leading

edge is a snap because of the Spectra. Spectra is very tough; I've found it best to just sand through the carbon until you get to the Spectra. Once the Spectra is exposed, you're left with the original leading edge shape of the foam core, so make sure the cores are right on the money. Once the leading edge is finish sanded with 220 grit, go to 400 grit, and then 600 grit. The next stage is to carefully wet out the leading edge with thinned epoxy; then wet sand with 600 or 1500 grit.

As crude as it sounds, the tips were cut to size with a radial arm saw using a 200 tooth hollow ground 10" blade. Just make sure the wing is thoroughly taped to the lower bed and adequately position the wing trailing edge against the guide fence. The next step was to cut out the ailerons. Carbon is pretty tough stuff, so I tried to scribe through a scrap section with an exacto knife; it was not a pretty sight. I considered a band saw, but decided against it after I remembered the aileron cuts I saw on a carbon wing a few years back that had been cut by a band saw. What to do? I then tried a cut off wheel on the old trusty dremel, using a piece of scrap; it worked great, but I needed a guide.

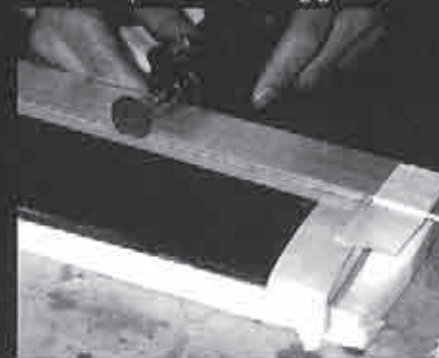
The first thing needed was to lay out the cuts with masking tape on the upper wing surface. The next step is to use the smallest drill available ($1/32''$), and drill a hole at the corner joints of the ailerons from the upper surface through the lower skins, preferable with a drill press. This will locate the cuts between the upper and lower surfaces. A length of 1/8" x 1 1/2" aluminum stock was securely taped and clamped to the upper surface (still sitting on the lower bed), 1/4" behind and parallel to the aileron hinge line. A dremel router base is then disassembled, and the piece that has two pinch clamps is then attached to the dremel. This item has a very flat blunt face just behind the collet nut when installed. Do you see where this is leading? This flat face is then guided along the aluminum stock and serves



Rough cut of T.E.



3/4" tape on T.E. (cutting guide).



Aileron being cut. Note 1/8" X 1 1/2" aluminum guide bar.

as a fence. The first cut should be made only on the upper wing surface between the two holes. The two side cuts can be made by hand, with the same cut off wheel, and should pierce through the trailing edge at about the last third.

The wing is then placed upside down on the upper bed and the process is repeated. The holes on the lower surface are used as a guide to position the aluminum stock. The cut between the holes (lower hinge line) is then made. The cutting wheel is repositioned in the dremel and a second cut, 1/8" back from the first, is made parallel to the first cut. This thin strip is later removed to quickly allow a bevel to be sanded in the aileron. The remainder of the lower surface side cuts are made, and the aileron can then be safely cut away from the wing with a sharp exacto knife.

The edge faces of the aileron and wing can then be finish sanded and sealed with thin UFO CA glue. Servo wells can be laid out with masking tape and the carbon skin cut out with dremel's #113 hi speed cutter. The remainder of the servo well can be cut with a standard straight cut dremel router bit. These wings will then get tip blocks installed, have the ailerons hinged just below the upper skin surface with flexible plastic hinges, and covered with ultra coat plus.

The V tails were cut out of pink foam and bagged with 3 oz. satin weave glass on the upper surface, and a special 3 oz. 90/10 carbon/glass hybrid cloth on the lower surface; total weight of each was 1.1 oz. The carbon was only used on the bottom, because bagged surfaces usually fail under compression. The lower surface of the V tails will be under compression in high speed flight and on an inverted landing. I mention the inverted landings, because that has been the only way I've managed to damage V tails on my slopers. The lower surfaces on both the wings and V tails will be left uncovered to reveal the black carbon, which should not be a problem as long as the plane is not left inverted in direct sunlight.

Carbon is definitely different to bag and trim out than glass, but its

advantages of strength and stiffness greatly outweigh any difficulties encountered during lay up and trimming. In fact, these really aren't difficulties, just a different way of doing things. In the months to come, I'll complete the Salto and incorporate the process in Short Cuts. Also in the works, is an interview with George Sparr of Aerospace Composite Products; the interview is done. All that's needed is some fine tuning before print.

"Til next time. ■

Closet Scale Stuff At Sailplanes Unlimited, Ltd.

1/3 Pribek ASW 27 - 5 meter span (196"), wing profile HQ 2.5/12, ca. 20 lbs.

1/3 Müller Discus - 5 meter span (196"), wing profile HQ 2/12, ca. 20 lbs.

1/3 Müller Nimbus 2 - 6.76 meter span (265"), wing profile E 68, ca. 25 lbs.

1/4.2 FiberClassics Nimbus 4 - 6.28 meter span (246"), wing profile E 68-66, ca. 18 lbs.

1/3.6 Roedelmodell DG 800 - 4.15 meter span (163"), wing profile E 207, ca. 11 lbs.

1/3.75 Roedelmodell Fox MDM-1 - 3.8 meter span (149"), wing profile RG 12, ca. 15 lbs.

1/4 Roebers Pilatus B-1 - 3.75 meter span (147"), wing profile Ritz 3, approx. 8 lbs.

1/4 Roedel Piper Super Cub (scale towplane) - 2.687 meter span (105"), wing profile Clark Y mod., approx. 15 lbs. This airplane is partially built. It requires additional building and covering. Suitable motors are OS 160 T, OS BCX-1, Briston 3.2, or similar.

1/4 EMS DG 800 with electric pop-up motor installed - 3.7 (145") to 4.2 (165") meter span, wing profile HQ 2.5/14, ca. 7.5 lbs.

1/2.77 Pribek ASW 19 - 5.4 meter span (212"), wing profile Ritz 3 mod., ca. 20 lbs.

1/3 ASK 13 - 5.33 meter span (209"), wing profile E 68-67-66, ca. 32 lbs. Completely built & ready to fly with all servos installed, brand new, unflown.

1/5 Krause SB 9 - 175" span, 9 lbs., mint condition, absolutely ready to fly with all Futaba servos and nose release, red & white, very pretty.

1/3.5 Roke DG 202 - 4.86 m span (168"). Completely built including all servos.

Oefa all glass ASW 24 (1/3.3, 4.50 m/177" span), mint condition, includes retract, nose release, all Futaba servos installed, completely ready to fly.

Please call for additional information: (212) 879-1634.



*Rough cut T.E. prior to sanding;
2' sanding bar.*



Servo well cut. Note bevel in aileron joint.



Ruddervators, guide, angle finder, and jig.



Wing tip is being cut to size.



Flamingo 2001

**Ready-To-Fly Model,
\$450.00 plus S&H, Part No. 21 4015**

**Almost-Ready-To-Fly Model,
\$375.00 plus S&H, Part No. 21 4018**

Technical Specifications:

Wingspan:	2,850 mm	Weight:	2300 - 2600 g
Fuselage Length:	1,345 mm	Wing Loading:	approx. 42 g/dm ² and up
Wing Area (FAI):	approx. 55 dm ²	Airfoil:	HQ 3, 2-11 modified

Almost-Ready-To-Fly or completely pre-covered in the optional Ready-To-Fly version, you are assured flying success with the Flamingo 2001. After you install the R/C equipment, you'll be ready for your first flight in no time at all. The model works equally well launched on a winch, for slope or in tow. With this plane, you'll be ready to handle any distance/duration contest.

Comes with:

Complete Hardware Set
Vacuum Molded Canopy and Frame:
Part No. 72-4108

Decal Set: Part No. 72 4029

10 mm diameter Wing Joiner: Part No. 72 4110

Options:

Completed Vacuum-Molded Canopy
Carbon: Part No. 72 4111
MULTIWinglet: Part No. 21 4016

CRITTER BITS & MULTIPLEX USA

(800) 375-1312

See us on the web: www.MultiplexRC.com



ALSO AVAILABLE FROM



\$10.00 PER SET OF TWO
COLORS AVAILABLE: RED, WHITE, BLACK & NATURAL
WEIGHING ONLY... 11 GRAMS

"Hot Air"



Robin Lehman
63 East 82nd St.
NYC, NY 10028
(212) 879-1634

To see or not to see? That is the question.

I recently found out, to my amazement, that I had been wearing the wrong sunglasses all these years!

For many years now I have been wearing polarized sunglasses - BIG MISTAKE! They are great for fishing when you want to see underwater, but they are not so great if you are trying to catch thermals!

If you fly very high you can certainly use all the visual help that you can get. When high enough (and there's a very thin line between high enough and too high), you are an eye blink away from disaster. I am sure that most of you have experienced that nasty disappearing act - now you see it, now you don't - when your lovely bird vanishes in a turn! When the airplane turns, it changes shape from your point of view, and sometimes becomes very difficult to see.

Some time back, I compared polarized sunglasses with "blue blockers". ("Blue blockers" are aviation sunglasses which filter out most of the blue light - they're generally brown or orange in color. All good sunglasses should filter out the harmful UV.) With the help of a friend - my second and most valuable set of eyes - I spent the entire day flying a sailplane as high as possible and switching sunglasses back and forth. For the day of our experiment, we picked a bright, hazy, sunshine day, which has proven to be

the worst possible visibility for high altitude flying.

What we found out was that, in every situation, I could see the glider better with the blue blockers than with the polarized sunglasses. A couple of times I totally lost sight of the sailplane while wearing the polarized sunglasses, but when I put on the "blue blockers" I could still see the glider!

As you all know, polarized glasses cut down reflections. This will minimize a flash of reflected light off your wing while you are circling. Sometimes that flash of light will help you locate your invisible sailplane! Also, the polarized glasses have a way of turning the sky a deep blue-black color when you are facing away from the sun. This also makes it very difficult to see your high-flying sailplane.

For those of you who enjoy your polarized glasses for every other use, I thought I would pass on this information, which I personally have found very valuable.

Great Wing Tape

Thanks to Asher Carmichael, I ran across some great wing tape: two kinds are available. One roll of either tape should last a very long time. One is made by 3M; it's excellent, stretchy, and peel-offable for taping your wings



R/C Soaring Digest

to the fuselage for a daily flight. The tape can easily be peeled off after a few hours, without damage to the wing surface. The tape comes in 1" width, and is used by full-size sailplane pilots for just that reason.

The second tape is imported from Germany. Approximately 1/2" in width, it is called Tesa. This tape is excellent for permanently covering over unsightly portions of your sailplane, or whatever.

This material can be purchased for around \$7.50 a roll from Knauff & Grove, Inc. at (814) 355-2483. (They sell full-size gliders, too, in case you're interested.)

WRAM Show

Sal Jasilli sent in the photos you see here, which he took at the WRAM Show. Those are most impressive planes. Thanks for sending in the photos, Sal!

Until next month, good seeing and good flying! ■



1/3 Ripo DG 600 at the WRAM Show. 2nd place winner, built by Sal Jasilli. Wing span - 6m (236"), airfoil - scale, weight - ca. 25 lb.



Pete DeStephano's Schweizer TG-2, scratch built, 1st place winner. 1/5 scale, 10.5 foot wing span, Clark Y airfoil, 9 lb.

1994 & 1995 A.M.A. NATS CHAMPIONS

Lasoar 1200

- ✓ Wingspan: 139"
- ✓ Airfoil: SD7037
- ✓ Wing Area: 1194 sq. in.
- ✓ Ready-to-fly weight: 100 oz.
- ✓ Wing loading: 12 oz./sq. ft.
- ✓ Full-depth laminated spar: 8 layers carbon fiber
- 7 layers balsa
- ✓ Uses 25-40 size electric motor on 10 or more cells
- ✓ Carbon fiber encased in brass wing rod

✓ Aspect Ratio: 16:1
✓ Winch launch capable
Price: \$395
Simply the best performing electric glider ever!

LASOAR 1200 AND LASOAR 650

Lasoar 650

- ✓ Wingspan: 92"
- ✓ Airfoil: Eppler 387
- ✓ Wing Area: 650 sq. in.
- ✓ Ready-to-Fly Weight: 50 oz.
- ✓ Wing Loading: 11 oz./sq. ft.
- ✓ One of eight launches in 45 sec. on .05 geared motor on 7 cell
- ✓ Effective spoilers for very precise landings

Price: \$240



THE HIGHEST PERFORMANCE ELECTRIC SAILPLANES AVAILABLE

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

- KITS FEATURE:
- ✓ Presheeted Obocha Wings
 - ✓ Epoxy glass, Kevlar, carbon fiber reinforced fuselage
 - ✓ Pre-cut flaps, ailerons & servo wire holes (650 has ailerons only)
 - ✓ All balsa, plywood, and hardwood included
 - ✓ Pre-fabricated motor mount

Wind Tunnel Tests of Wing Profiles

...by Martin Simons
Stepney, South Australia

(An expanded version of a talk given at the LSF Conference held at Jerilderie, New South Wales, Australia, Easter 1996.)

Part II

Reynolds number

The Reynolds Number (Re) is a measure of aerodynamic scale. The Re depends on the chord of the wing at each point across the span, and on the air speed. Obviously, there is no single Re number for a particular model. The Re varies from the root to the tip of a tapered wing, and varies exactly in proportion to the airspeed, as the trim changes during a flight.

Free flight model wings and those of hand launched gliders in the slow flying phases, operate at Re numbers around 40,000 to 80,000, but a hand launched glider, as it leaves the hand, is traveling fast through the air; so, the average Re of the wing will be much higher than when it has slowed down at the top of the initial climb. Note also that the tail unit, with small chords, will have Re numbers less than the wing. Larger and faster sailplane model wings run into Re numbers around 100,000 when soaring, and perhaps 600,000 in F3B speed runs. (Fig. 2. Note that the horizontal scales in this diagram and in Figure 4 are logarithmic in order to compress the charts into reasonable space. 10^3 is 10000, 10^6 is 1,000,000 and 10^9 is 100,000,000.)

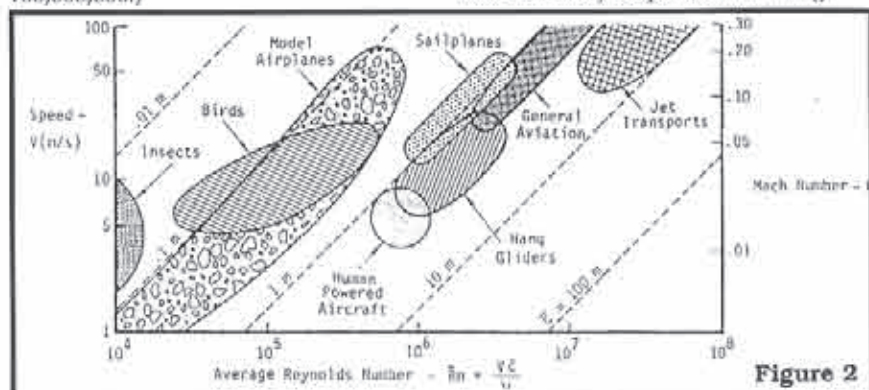


Figure 2

A full scale sailplane wing, when flying slowly at, say, forty or fifty knots, will be at about Re 1,000,000 at the wing root, and perhaps 500,000 at the tip. Double these figures when the sailplane is gliding between thermals at 80 to 100 knots. Needless to add, full scale aeroplanes operate at Re numbers much higher. Re between 2 and 6 million is likely for an ordinary, propeller driven aeroplane when cruising. (Mach number effects become important for jet driven aircraft.)

In 1934-5, the NACA (National Advisory Committee for Aeronautics, USA) published their **Report 586 on the Characteristics of Airfoil Sections as affected by the Reynolds Number**. It looked, at first, as if these results could be applied directly to models. There was nothing else, and many people relied on them. Frank Zaic included some of the R 586 material in his influential book, **Model Glider Design**, of 1944 (Fig. 3).

The turbulence present in the NACA tunnel airstream, at this time, was very high. This was mentioned in the report, but most modellers missed it or did not realize its importance. It was only just beginning to be understood what a drastic effect fine-grained turbulence in the wind tunnel air has on small test wings at low speeds. Nonetheless, the results in NACA Report 586, although unreliable in detail, did show that the effects of flying at low Re were quite drastic. Wings at model sizes and speeds stall very early, develop very high drag, and become worse and worse in every respect, as the wing

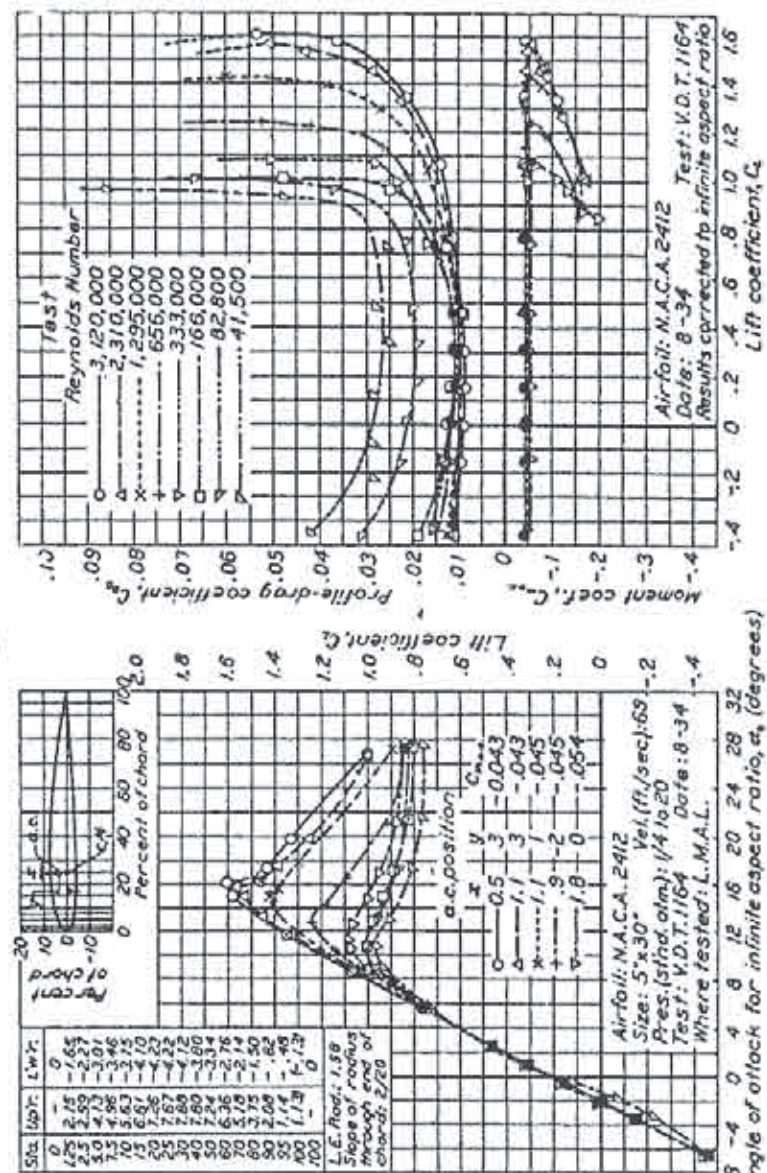
chords get smaller and flight speeds slower.

This remains true. There is no question that the bigger the chord of the model wing and the faster it moves through the air, the more efficient it will be from the aerodynamic viewpoint.

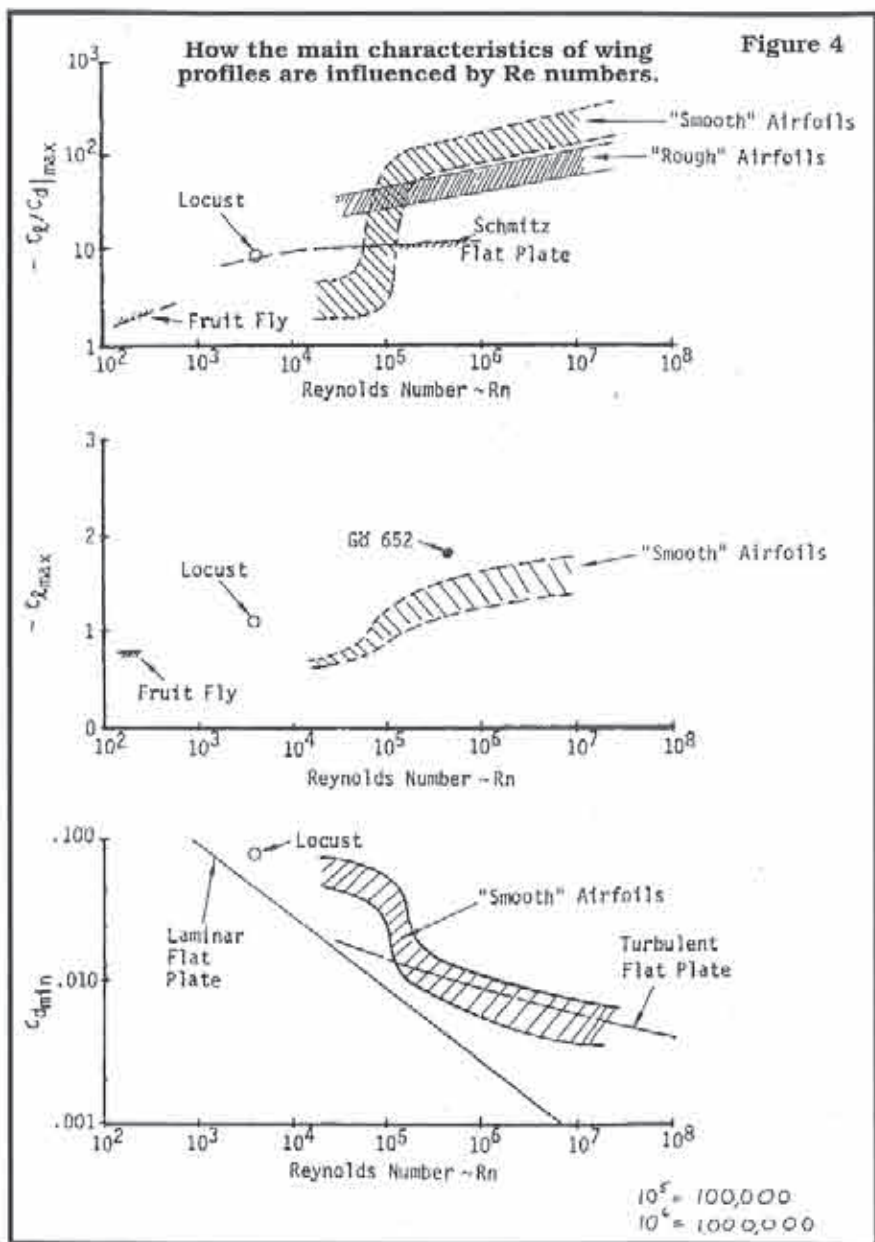
It is worth noting also that, on these NACA charts, the pitching moment coefficient for each profile was also plotted and, as expected, was found to be substantially constant and negative at all operational angles of attack below the stalling angle. At the stall, the pitching moment, of course, becomes much more negative, which causes the sharp nose down pitch of a normal aircraft when it stalls. (Lower right hand side of the chart in Figure 3.) This was not

seriously changed by wide variations of the

Figure 3



N. A. C. A. 2412



Re number.

After this Report, partly under pressure from the needs of military research in World War II, interest in low Re numbers faded in the big research institutes and practically nothing was done.

The critical Re number

Important results did begin to emerge when F.W. Schmitz at Cologne University in Germany undertook, single handedly, the first serious research programme aimed directly at model flight. He was chiefly concerned

with the small, free flight models of his time. His book **Aerodynamik des Flugmodells** was published during the war in 1942, and became available in an English Air Ministry translation about 1948. A translation was also done in the USA, and this should still be obtainable from the NASA Scientific and Technical Information Office.

Schmitz's chief discovery was that wing profiles have a critical Re number in the low end of the scale, different for each profile (Fig. 4). Below the critical value for the particular section, there is a general separation and breakdown of the airflow. The wing, in effect, becomes permanently stalled and normal flight is impossible. At the lowest speeds, for such aircraft as indoor flying models and small, slow gliders, only the very thinnest wing profiles succeed: flat and slightly curved or cambered plates, the thinner the better. The thicker profiles which, before publication of Schmitz's book, had been used on free flight models, were shown to be inefficient and, sometimes, hopelessly bad. The thicker they were, the worse they got. This, too, remains generally true. The thinner the profile the more suitable it is for a small wing. Insects have demonstrated this for billions of years.

A little more work, confirming what Schmitz had found, was done, mostly in Germany, when it was realized that the very narrow blade of a small gas turbine, in a flow of very low density and a very high temperature, has an operating Reynolds number similar to that of a model aeroplane.

The upshot of all this was that in 1974, when I was writing my book, I could find only about seventeen wing sections, including the five Schmitz had done, that had been reliably tested at model speeds in low turbulence airflow. These all went into the appendix. When the book appeared in print, I heard from Jaroslav Lnenicka in (what was then) Czechoslovakia. He had done a few tests of his own and sent me his book in the Czech language, which had been published a year before mine. ■

(Part III continues the discussion with Stuttgart Tests. Ed.) ■

F-14 Tomcat

Aero Model Design Slope Sailplanes

Span: 51" - Area: 240 sq. in.
Airfoil: Eppler-374
Weight: 30 oz. ready to fly



\$125.54

Fiberglass Fuselage
Pre-sheathed Wing

KITS: P-51D • AGM • AT6 • B-2 • F-14 • A-4 • F-4
F-16 • Zippy • Cyclone • Sail Lady II • Silhouette
QuickSilver • Beeze

PATTERICK'S INC.

Box 2031 Glenwood Springs, CO 81602
Phone 970-928-0947

email: 73774.3530@compuserve.com

NEW
PRICES!!

PJ's EPOXY

"I've used West Systems and EZ-LAM, and PJ's Epoxy is the BEST. It's all I use."

...Chris Boutlinghouse, CAB Designs
Maker of the Corn Dogger HLG

- ✓ PJ's Epoxy is a crystal-clear, low-viscosity epoxy, perfect for vacuum-bagged wings & epoxy-glass fuselages.
- ✓ PJ's uses a tri-functional hardener that gives it an edge in strength over other brands.
- ✓ PJ's cures as clear as glass, with a "crispness" that other epoxies never achieve.
- ✓ PJ's has a working time of at least an hour, even in 80°+ heat.
- ✓ PJ's is low odor, and not super critical on mix ratio (2:1 mix).

12 oz: \$10 / 24 oz: \$17 / 48 oz: \$27.50
96 oz: \$48.50 / 192 oz: \$79.50

(All prices plus shipping. Texas residents, add tax.)

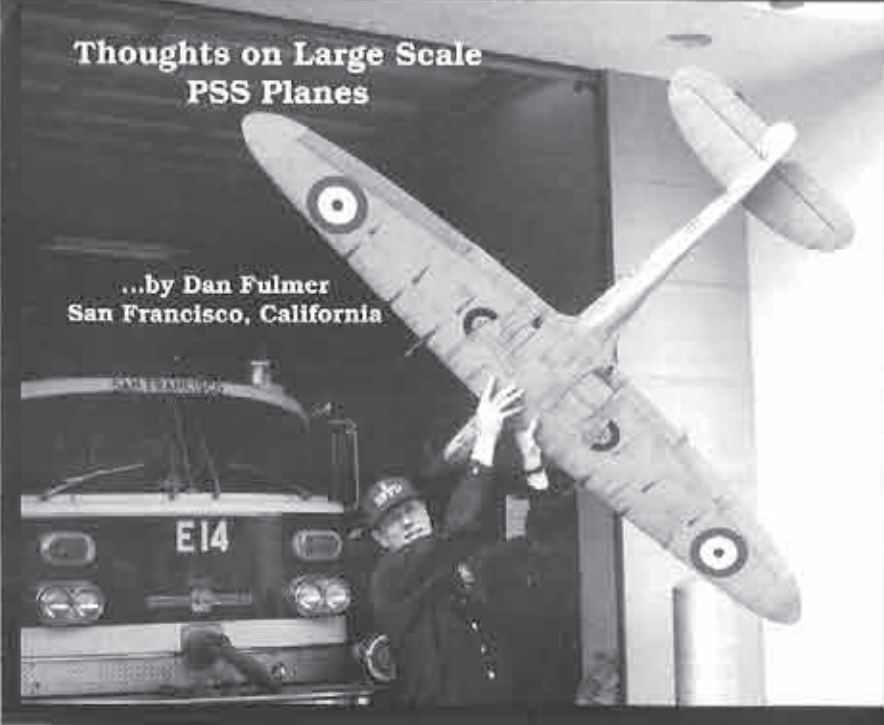
PJ's Epoxy: (512) 990-2858

P.O. Box 1118

Plufgerville, TX 78660

Thoughts on Large Scale PSS Planes

...by Dan Fulmer
San Francisco, California



Daniel Fulmer and his Spitfire. Dan says, "I do a lot of work on the planes, late afternoon and evening, at the Firehouse."

At the Los Banos Slope Scale meet last year, I saw many different and exciting new creations, from the monster wingspan scale gliders to the tiny red Messerschmitt 163 Comet model, which flew very well, despite its small size. One of the oddities was the large number of huge scale gliders, contrasting with the absence of a similar number of large PSS models. The site available at Los Banos is favorable to larger planes, as they can take advantage of generous lift, off reasonably high cliffs, with the added advantage of an excellent landing area. A large number of small span (30" - 48") PSS planes were tearing up the slope when it was their turn to fly and, except for Lynsel Miller's new Canberra bomber, Tom Overton's ME 109, and my Spitfire and P-38, there weren't any other large (over 75" span) PSS planes available to fly that weekend.

There are probably many reasons why there are not many larger PSS planes around, and most of the reasons have to do with why there are so many smaller size PSS planes in the skies. Let's take a look at a few of the major

obstacles working against these big birds. First is the cost of building one of these giants. Even if you could find a kit, you are probably looking at around \$200 - \$300 minimum.

Next, there is the time required to scratch build a one of a kind. I've built four of them so far, and the time required is truly staggering. No one has done any of the ground work concerning C/G, airfoil, etc., so you had better get it right the first time, or all your time and effort will wind up a big pile of balsa, foam and fiberglass. Next, on the agenda of hurdles to consider, is where are you going to fly this beast? Big planes need big slopes, big landing areas, and big wind to really get them going. More about this later.

So you see, from this incomplete list of reasons, why there are so few, truly large PSS planes in the air, and so many smaller ones. Enough of this negative talk about why there are so few around. Let's talk about some of the reasons why there should be more of these flying.

There is only one reason that really counts in the greater scheme of things

as to why someone who is interested in PSS should build at least one of these heavy irons in their slope soaring lifetime: because they are elegant!! That one word describes how they fly, how they look, and just about everything else about them. When one of these big babies gets ready to take to the air, everything else on the flight line sort of goes into a holding pattern, while eyes and minds fix on whether this metal replicated balsa, epoxy and foam monster will actually get airborne, fly, and get back to the ground in one piece! The whole process of designing, building and flying one of these brutes is rewarding in a way that is hard to describe. If you are considering this type of plane for your next project, I will try to give a few parameters to stay within to avoid disaster on your first toss. This information has been compiled from experience in designing, building, flying and sharing information with others who are so inclined to get into this phase of soaring.

The first task to accomplish is to get your thinking out of the small, lightweight highly maneuverable mode. Think BIC!!! Big slopes, big winds (20 mph and up) big deliberate maneuvers, big flat landing areas. These are large heavy planes that take up a lot of room to do anything! Gear up to think about how a full size of your model would fly; that is the type of mentality you have to develop to be successful with this type of PSS.

The next change on your agenda concerns weight, and oz./sq. ft. thinking. The basic problem with oz./sq. ft. loading on model planes is that it is only an approximation on how relatively similar planes will react to lift. Without getting too technical, suffice it to say that bigger, heavier planes need more weight per sq. ft. of wing area, to fly somewhat similar to their smaller counterparts. I found this out the hard way when I built my P-38, 106" PSS. I built this plane using all the tricks for light weight construction. The plane came out at about 7.5 lb., with a 1150 sq. in. wing area, for an overall wing loading of approx. 15 oz./sq. ft. The plane is built too light to withstand structurally anything greater

than 20-25 mph winds. It is too light to overcome the inherent drag of the fuselage, even though this oz./sq. ft. wing loading compares favorably with smaller P-38 PSS'ers; it is apparent that a different system needs to be developed for larger planes. Help is available through a relatively easy comparative wing loading target for similar planes of grossly different wing area sizes. It is called the WCL (wing cube loading) of a plane. $WCL = \text{oz.} / \text{sq. ft. of wing area, divided by the square root of the wing in sq. ft.}$ For a comparison, we will take a typical, small 32" span PSS of approx. 200 sq. in. wing area, weighing approx. 14 oz., and compare it with my Spitfire of 96" span, 1150 sq. in. wing area, and weighing 11.5 lb. The small sloper is 14 oz. divided by 1.38 sq. ft. for a 10 oz./sq. ft. loading; the sq. root of 1.38 sq. ft. of wing area is 1.17. Divide this into 10 for a WCL of 8.5. The Spitfire is 184 oz. divided by 7.9 sq. ft. wing area for 23.3 oz./sq. ft. loading; the sq. root of 7.9 sq. ft. wing area is 2.8; divide this into 23.3 for a WCL of 8.3!

So, the typical small sloper is just as heavily laden as its big brother according to the Wing Cube Loading formula, even though it has a oz./sq. ft. loading of less than half of its larger counterpart. What this WCL means is that the large Spitfire will fly in, and handle, about the same wind strengths as the little plane. What this does not mean is that the larger plane will fly in the same area, or be able to land in the same area as the smaller plane! Nor will it have the same crash survivability as its smaller brethren.

The main reason these big PSS'ers need weight is DRAG, major fuselage drag no matter how you slice it or build it. If you do not build the larger plane to match the wing cube loading of the smaller PSS'ers, you will wind up with a plane that flies like a rib and monokoted floater that gets blown backwards in anything over 15 to 20 mph winds. Do some simple math to figure out fuselage diameters, lengths, and areas; you will see what I mean. Narrow and slim down the fuselage and you will be rewarded with increased performance. Too much fuselage slimming, and the plane will

start to lose its looks; so be careful here.

Now we get to the main part of any airplane: the wing. I will come right out and say, contrary to popular practice, stay away from the super thinned and other trick, ultra fast airfoils!!! They flat out don't work for these large heavy PSS applications. Trust me and others who have experimented with SD 6060's, 7003's, thinned Eppler 374's, and a host of other really go fast, high performance airfoils, with less than stellar results. You will probably ask why these do not work very well, so I will try to explain the reasons I and others have found in the simplest terms possible. The two big culprits as I see them, are aspect ratio and fuselage drag. All of the super duper airfoils like to perform in a certain range of low attack angle (very narrow); they are usually matched to a pencil thin fuselage with a high aspect ratio wing to go along. I have seen some smaller PSS'ers with ultra thinned wings (7% range) doing some incredible wing overs and achieving outstanding heights. They are also performing these feats with very high winds and unbelievable wing loadings (20-40 oz./sq. ft. /WCL of 13 to 20!!). Unfortunately, these planes will only fly in near gale conditions, and have a hard time indeed doing anything in the type of winds that are usually found by most of us (10-20 MPH). They go real fast and so, as a result, stay in those favorable, almighty higher Reynolds numbers all the time. The little PSS'ers can get away with those thinned Epplers, and other go fast foils, because they don't have anywhere near the fuselage drag area ratio that a huge PSS'er has. The only way these trick type airfoils would possibly work on a large (90" + span) PSS'er is on a 500' steep slope with 40 MPH winds; not a common occurrence. The plane would have to weigh in the 20 to 25 lb. range to achieve such top speed performance. As the saying goes, the airfoil can't quite "Get Over the Hump" on most days, on most slopes. Also, the type of airfoils mentioned are not very lift/drag friendly at lower speeds and higher angles of attack.

What is needed, and I speak from sad

experience, is an airfoil like the SD 3021, Eppler 205 or the DF 101 (David Fraser). These types of airfoils are easy to build, and provide the needed lift at acceptable drag, associated with higher angles of attack, necessary to get the darn thing up there, so you can generate some dive speed for your maneuvers. The airfoils mentioned also have friendly stall characteristics and perform over a wide range of wind conditions. They are by no means the floaty type, and really move out when you put the nose down in higher winds. The last word on very high winds with your monster is that you can always ballast it up on the super windy days. Start with 5 lb. or so! I'm not kidding; these big birds can carry a load of weight if conditions are right. Just make sure you have a large landing area. Take my word for it; keep the Wing Cube Load between 7 and 9, and stretch the wingspan by 110% - 125% to get some efficiency with the aspect ratio; you will be rewarded with a more efficient flying model.

Another area of concern, during construction, is the absolute necessity to build strong enough, especially in the area of main wing spar and control surface actuation mechanisms. Remember that the forces generated during high speed maneuvers on a 10 lb.+ model in 30+ mph winds is considerable. As far as C/G setup goes, I have had no problems when setting up at 25% MAC to start with, and gradually moving back, little by little, until a favorable compromise between pitch stability and lively feel exists. I set the main wing in the fuselage up in front, about 5 degrees relative to the fuselage centerline, and set the horizontal stabilizer about 1 degree down leading edge, relative to the main wing. This setup has proven to work well with the type of airfoil used (SD 3021); the planes fly with a slight nose down attitude and require very little elevator adjustment for level flight.

Anyone who has flown small PSS planes should not have too much trouble flying something that is twice the size, and 5 times the weight, if a few suggestions are followed. First is

to give the plane more time and more room to do any of the maneuvers that you normally attempt. The big models will loop and they will roll; they just take their time about it. Keep turns smooth and avoid stalls at all costs. If you are in the habit of doing downwind turns and maneuvers, make sure you have adequate speed and space for the intended move. Not enough speed or space leave a huge lump in one's throat! Full stalls require at least 50' to 100' for a recovery, and in the time it takes to recover, your loving creation has become a 10 lb. lumbering, unresponsive, quivering hunk of jello!

Landing is greatly simplified by the addition of spoilers or some sort of split flap arrangement. The split flap type I have found work the best is described as follows. The trailing edge of the flap is made to set slightly ahead of the leading edge of the aileron. The flap is 15% of the cord and is set outboard of the horizontal stab, if possible, to negate the effect of disrupted airflow on the stab. Make the flap about 1/4 to 1/3 the length of the half span; use torque rods to actuate, to lessen the danger of servo damage on landing, if inadvertently left in the down position. These should be used at relatively low speeds when landing, and not used as dive brakes. This type of flap arrangement does not upset the pitch very much, really slows the plane down with complete roll control unaffected and, at very low speeds, provides just a little bit of lift cushion (unlike spoilers) to set the plane down easily. This type of split flap is easy to fit flush into the bottom of the wing, so as not to interrupt

airflow. The ground work for this type of landing aid for really fast slopers was done by a friend of mine, Al Morse, a man who has quite a bit of technical knowledge and flying skills and does not mind sharing his findings.

Initial test glides should be performed on a very shallow slope, with enough wind to let the plane feel as if it wants to lift off by itself. Trying to generate enough speed in too light of wind, by running with one of these huge planes, is a recipe for disaster! Wait for a wind of adequate strength before testing! Tossing the plane with your non transmitter hand greatly facilitates control in the first few seconds of flight. A few test glides should allow you to observe if the C/G and rear stab adjustments are close enough to warrant a full flight on a much higher slope. I can't stress the importance of having the C/G set far enough forward for the first few flights. A 10 lb. plane that is tail heavy is one of life's heart stopping moments! You can always move the C/G rearward on subsequent flights to get the desired handling characteristics as you become more familiar with the your plane.

I feel, if you follow these guidelines, you will be rewarded with a model that flies realistically and looks elegant in the air. I look forward to seeing some newer creations in this small niche of the soaring world. Any questions regarding this information, or concerning slope soaring in the San Francisco area, are welcomed. Feel free to contact me: Daniel Fulmer, 2495 27th Ave., San Francisco, CA 94116; (415) 731-1063. ■

SQUIRES MODEL PRODUCTS

NOMEX HONEYCOMB CORE

3.1 LB./CU-FT DENSITY, 285 PSI COMPRESSION STRENGTH. FOR COMPOSITE SANDWICH CONSTRUCTION OF HOLLOW CORE WINGS, ETC. FOR VACUUM BAGGING USE. ONLY. CANNOT FINGER DENT LIKE FOAM SANDWICH PARTS. INCREDIBLY LIGHT! INCREDIBLY STRONG! FANTASTIC PRICE! LESS THAN BALSA OR ROMACELL! ONLY \$2.00 PER SQUARE FOOT FOR 1/8" THICK CORE. PRICED PROPORTIONALLY. OTHER SIZES AVAILABLE.

CASE HARDENED STEEL WING RODS

ANY DIAMETER 5/32" TO 5/8", LENGTHS TO 35". GUARANTEED AGAINST BENDING ON THE WINCH OR IN FLIGHT. ONLY 10 REPLACED IN 8 YEARS! SEND SASE FOR FREE PRICE LIST.

SQUIRES MODEL PRODUCTS, 1039 IRIS AVE., SUNNYVALE, CA 94086 • (408) 296-4643

ELECTRIC STORM

ELECTRICS IS NOW!

*Electric Storm & Storm
designed by Mark Allen*

Wingspan: 78"
Airfoil: SD 7037 modified
Weight: 44-49 oz
Recommended for 7-10 cell
Fuselage will accommodate either
direct drive or gear drive.

- ✓ Fiberglass and Kevlar™ reinforced fuselage.
- ✓ Elevator servo located behind trailing edge of wing under a unique hatch.
- ✓ Wing comes pre-sheathed in obechi, carbon fiber reinforced.
- ✓ Wing hold-down bolts hard points installed under sheeting, eliminating crushing wing when bolting to fuselage.
- ✓ Ailerons pre-routed. Servo holes are pre-routed. Wing has flat center section with turned up outer panels, making it easy to install flaps; for nominal fee, flaps and the flap servo hole can be pre-routed at the factory.
- ✓ Conventional stab and elevator pre-machined.
- ✓ Complete hardware package and instructions.

STORM

A HIGH TECH, 2 METER AIRPLANE FOR THE INTERMEDIATE TO EXPERT FLYER THAT DOES NOT REQUIRE A COMPUTER RADIO!

A simple four-channel radio can be used for elevator, rudder and ailerons by using a Y-connector. As skill levels increase, flaps can easily be added.

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

JR RADIOS & ACCESSORIES
AIRTRONICS RADIOS & ACCESSORIES
HITEC RADIOS & ACCESSORIES
AERO-NAUT PRODUCTS
ASTRO FLIGHT
C. R. AIRCRAFT MODELS
DEANS
ELECTRIC MOTOR MOUNTS
FREUDENTHALER PRODUCTS
HINGE TAPE
KENNEDY COMPOSITES
LEVOE DESIGN
DOUGLASS BOYD BALL BEARING WINCH PLATES

**ONE STOP
SHOPPING
FOR ALL
YOUR
SOARING
NEEDS!!**

NEW CREATIONS RC
PARACHUTES
RETRIEVER LINE
RnR PRODUCTS
SERMOS
SERVO LEADS, EXTENSIONS,
SWITCHES, BATTERIES
SERVO WIRE
SERVO COVERS
SKYSHINE
SR BATTERIES
SQUIRES WING RODS
TEKO INC.
WINCH LINE
ZIEGELMEYER ENTERPRISES
AND MUCH, MUCH MORE!

FAZER 2-METER

**NOW AVAILABLE: S7035
(For Open Fazer & Condor)**

SPECS.	2 METER	OPEN
Airfoil:	SD7037 modified	SD7037 modified
Stab airfoil:	SD8020	SD8020
Weight:	41-44 oz	62 oz
OPEN CLASS FAZER wingspan: 112"		

- ✓ Fazer is an all new, 2-meter, which replaces our discontinued Laser. With subtle enhancements, we continue to improve upon our already well-proven sailplanes.
- ✓ Fazer features slight airfoil wing platform and wing area changes.
- ✓ Fuselage has been slightly changed to improve builder's radio installation.
- ✓ Kit features a fiberglass and Kevlar™ reinforced fuselage.
- ✓ Pre-sheathed obechi wings with flaps; ailerons pre-routed; servo pockets pre-routed; pre-sheathed obechi stabs; all necessary bass wood needed to complete the wing.
- ✓ Kit includes full hardware package and deluxe 19-page illustrated instruction manual.

**OPTIONAL COMPOSITE CARBON FIBER WINGS & STABS!
(FOR OPEN FAZER & CONDOR)**

BARRACUDA

Designed by Brian Agnew

- Glass, reinforced with kevlar, fuselage accommodates standard servos
 - Pre-sheathed wings & stabs
 - Wing incorporates a poly break sheeted with one piece of obechi without a seam
 - Full flying stabs
 - Pre-routed flap & aileron and servo holes
- Kit includes: full instructions, Squires wing rod; Byron Blakeslee control cables, Ziegelmeyer control horns and tow hook. All wood and hardware is of highest quality available.

Specifications

Wing Span 110"
Airfoil SD7080
Weight 59-61 oz.

SLEGERS INTERNATIONAL

PO. Box 384, Long Valley, NJ 07853

(908) 879-9964 - FAX (908) 879-8177

Shipping: 35 Hacklebarney Rd., Long Valley, NJ 07853

<http://www.slegers.com>

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

★ VISA ★ MASTERCARD ★ DISCOVER ★

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

PC-Soar Version 3.5 Sailplane Performance Evaluation Program Optional Sailplane Library now expanded to 54 models including: Alcyon, Anthem, Genesis, Mako, Probe, Thermal Eagle, and Synergy-91. Free Library Upgrades. PC-Soar Upgrade to Ver. 3.5 \$10, PC-Soar New Purchase \$40. New Libraries of Sailplanes and Airfoil Polars \$30. Please include \$3 P&H for all purchases & upgrades. Also available: 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; <http://dataex.com/~atkrn95/pcsoar.htm>.

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.

VACUUM BAGGERS! Build the unique, slick, aesthetic, competitive 140" GENIE sailplane by Harley Michaelis, LSF 023. Send SASE and \$1 for pics, details on ship and on parts package. 26 S. Roosevelt, Walla Walla, WA 99362; (509) 529-2562.

ThermalSpan - A tough, light, non-woven fabric. Heat shrinkable. Resistant to moisture, puncture, & tearing. White, like silkspan, but tougher. 2.2 mils thick, .9 oz./sq. yd., 14" by 16 foot pkg. \$10 + \$3 S&H. Harris Design, 2000 NW 84th Ave., Ankeny, IA 50021, (515) 965-5942.

PLANS - R/C Sailplanes - Scale, Sport & Electric. Old Timer & Nostalgia - powered, rubber, and towline. Scale - rubber. All models illustrated. Catalog: \$2.00. Cirrus Aviation, P.O. Box 7093 Depot 4, Victoria, BC V9B 4Z2, Canada.

RAHM'S, Winches, & Line Retrievers, (310) 866-2405.

For Sale - Business

PARACHUTES: \$10. Dale King, 11111 Highridge Drive, Wylie, TX 75098; (972) 475-8093.

Cronus Stopwatches, model C609 TCL, \$25.00 + \$1.00 S&H. NC Eagle fuses, new version w/ smooth nose cone, no skeg, \$100.00 + \$11.00 S&H. 7.75% CA sales tax. See www.ocpapsych.com/ml.htm for more info & photos. Manny Tan, 2490 S. Ola Vista #28, San Clemente, CA 92672, (800) 618-9176, taucm@kaiwan.com.

For Sale - Personal

Esteem 118 w/ nose cone fuse, gorgeous obечи wings with transparent fluorescent finish, carbon tube spars, all new servos installed (141s and 341s), new battery, never crashed, just one season old, a very sharp looking bird... \$495.00 plus shipping. Steve Pasierb, (410) 882-7396, Maryland.

The very last Dodgson "Windsong Classic", pre-sheated F214 wings (134"), NIB... \$350.00. M. Scott Borden, 3033 Shagbark Trail, Sellersburg, IN 47172; (812) 246-5314.

Airtronics Vanguard 4 channel FM system, brand new in box... \$100.00. Frank, (818) 790-1297, California.

Multiplex, 1/4 scale, all glass DG-300, top condition, w/5 Futaba dual ball bearing servos... \$900.00, or \$800.00 w/o servos. Paul Nauck, (909) 875-5461, S. California. Please leave msg. if no answer.

Prism, 117", RG-15, T-tail obечи version of Spectrum F3B, incl. 2 nose cones & titanium wing rod, NIB... \$220.00; V5 Sailplanes VMAX pitcheron, very fast & agile, 2 sets of wings, no servos, RTF... \$220.00; R/C Aerocopter flight simulator, programs for glider/pattern/ducted-fan/helicopter, Tx included, NIB... \$150.00. All items include shipping U.S. Rob, (619) 930-0616, <mjri@msn.com>, California.

Super-V w/servos... \$450.00, 2 Spectrums w/ servos (1 of them was Brian Agnew's)... \$500.00 ea.; D. Perkins F3B Prism w/ servos... \$450.00; Mirah 2m w/ servos... \$300.00; 2 Müller Comets, no servos... \$300.00 ea.; 4 Müller Kings, no servos... \$300.00 ea.; Climax PF w/ servos... \$175.00; Shadow, finished (perfect), no servos... \$600.00; Molded Spectrum (perfect) w/ servos... \$800.00; Thermal Eagle w/ servos... \$500.00; Multiplex Profi 3030, 10 channel transmitter... \$750.00; bunch of old kits. Ben DeMeter, (719) 495-2200 or 495-0849, <sun7Dog5@aol.com>.

Multiplex 5schaumpus set up for airtronics, RTF, 3m w/ tip extensions, scratch-built stab (half weight of original), airworthy... \$400.00 w/o servos, or \$575.00 w/ 6 standard servos. NIB kits: 2m Duck, S-3021... \$200.00; Std. Duck, S-3021... \$225.00; 2m TLI Scorpion, S12-7037, no wing sheeting... \$175.00; Falcon 600 (balsa skin full kit)... \$200.00; Wasp HL full kit... \$75.00; two Falcon 880 wing kits, S-3021, balsa... \$75.00 ea. All items plus shipping. Jim Thomas, (916) 984-5123, California.

1/4 Roebbers Pilatus B4, 3.75 meter span (147"), wing profile Ritz 3, NIB... \$495.00; 1/4 Roedel Super Cub (towplane), 2.687 meter span, wing profile Clark Y mod. (suitable motors are 160 T, 300 T, OS BGX-L, Brison 3.2 or similar), NIB... \$385.00; 1/4 Rosenthal Ralley Morane (towplane), 2.78 meter span (109"), NIB... \$495.00; 1/5 Wik Twin Astr, all glass, NIB... \$595.00. Contact Robin Lehman, 63 E. 82nd St., New York, NY 10028; (212) 879-1634.

PERFORMANCE COMPOSITES

Before buying your next glider, make sure to get our brochure on the many variants available of our popular Starling and Starship, 60" and 2m gliders. All feature rugged 100% Kevlar[®] fuselages.

PERFORMANCE COMPOSITES

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

e-mail: percomp@community.net



ZIKA

Advertising Note

Please note that the cut-off date for classified & display ads is the 1st of the month.

Announcing the FIRST ALL LASER CUT Sailplane Kit!

The precision of CAD-CAM Laser cut parts are far superior to previous methods of designing and manufacturing. Parts fit so well, it makes this complex kit easy to assemble. The strong, full

D-Box, double shear-web wing allows for super winch launches; the large flaps and ailerons add to the great SD7037 airfoil performance.

Terrific performance, style, accuracy of parts, and at an affordable price!

The Mystery Ship has ailerons, flaps, rudder, and full flying T-tail. The wings are plug-in; 2 micro servos for ailerons and 2 mini servos for flaps are required. Standard size gear will fit in fuselage.

Mystery Ship?

Retail \$169.95
only \$149.95

FREE shipping in continental U.S.

Wing Span	118 in.
Wing Area	873 in. ²
Airfoil	SD7037
Aspect Ratio	13:1
Fuse. Length w/rudder	53.25 in.
Wing Loading	8.8 to 10 oz./ft. ²
Flying Weight	62 - 68 oz.

Say you saw it in RCSD and save \$5.00 more! *The mystery is why pay more?*

Major Hobby, 1520 "B" Corona Dr., Lake Havasu City, AZ 86403

Orders Only: 1 (800) 625-6772 Info: (520) 855-7901 FAX: (520) 855-5930

WINGS BY FINNEY'S!

OBECHI & WHITE FOAM

RG-15 & SD7037
REINFORCED WITH
CARBON FIBER & GLASS CLOTH
NEW S4083 FOR 60" WINGS

1.5 METER 60"
7.5" ROOT CORD

4 PANEL POLYHEDRAL \$60
2 PANEL ROUTED AILERONS \$65
2 PANEL NOT ROUTED \$60

2 METER 78", 9" ROOT CORD

4 PANEL POLYHEDRAL \$75
2 PANEL ROUTED AILERONS \$80
2 PANEL NOT ROUTED \$75

BALSA LEADING EDGE
& WING TIPS ADDED \$20

NEW, TEMPERED, STAINLESS
STEEL TOW HOOKS 6/32"
SIZE! GREAT FOR UP TO 2M
GLIDERS! ...\$4.99 EACH

ADD \$10 SHIPPING PER ORDER IN
CONTINENTAL U.S.A.
PLUS TAX FOR GA RES.

FINNEY'S HOBBIES

3455 Peachtree Industrial Blvd.
Ste. 980, Duluth, GA 30136
(770) 495-8512 • fax (770) 495-8513
finneys@mindspring.com

VISA • MASTERCARD • DISCOVER

Schedule of Special Events

Date	Event	Location	Contact
June 15-21	SW Antique & Classic Soaring	Rally Moriarty, NM	(505) 832-0755
June 19-22	1997 MSSC	Huntsville, AL	Ron Swinehart, (205) 883-7831
June 21-22	Rosebowl Soaring Festival	Pasadena, CA	Mike Ratner, (818) 871-6891
June 28-29	1st Annual Sailplane Weekend	Washington, MI	Ray Hayes, (810) 781-7018
June 29	SC2/TPG TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
July 6	2 Meter TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
July 11-Aug. 5	AMA NATS	Muncie, IN	Competitions Dept., (317) 287-1256
July 12	CSS Club Contest	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
July 12	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
July 13	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
July 18-20	SHA Eastern Div. Workshop	Elmira, NY	Mat Redsell, (607) 569-2776 71750.2350@compuserve.com
July 19	CSS Family Fun Fly & Picnic	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
July 19-20	Masters of Soaring	Covina, CA	Don McColgan, (909) 626-1451
Aug. 2	HLG Contest	San Diego, CA	Tom Clarkson, (619) 486-4068
Aug. 2	Slope Combat	San Diego, CA	Arthur Markiewicz, (619) 753-3002
Aug. 3	2 Meter TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Aug. 9	RCHLG	Orlando, FL	Ed White, (407) 321-1863
Aug. 9	CSS Club Contest	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
Aug. 9	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Aug. 10	Gentle Lady	Orlando, FL	Rick Tichel, (407) 365-9795
Aug. 9-10	Summer Soar	Bristol, VA	Bernard Leonard, (540) 669-4387
Aug. 17	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Aug. 30-1st	SHA Western Div. Workshop	Tehachapi, CA	Dan Armstrong, (805) 822-8852 danarmstro@aol.com
Sept. 6	HLG Contest	San Diego, CA	Tom Clarkson, (619) 486-4068
Sept. 6	Slope Combat	San Diego, CA	Arthur Markiewicz, (619) 753-3002
Sept. 7	F3J	San Diego, CA	Mike Ziaskas, (619) 484-7596
Sept. 13	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Sept. 14	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Sept. 13-14	Sailaire One Design Contest	Cincinnati, OH	Paul Siegel, (513) 561-6872
Oct. 4-5	CSS Pumpkin Fly	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
Oct. 4-5	24th CVRC Fall Soaring Festival	Visalia, CA	Phil Hill, (209) 686-8867
Oct. 11	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Oct. 12	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Oct. 11-12	Fall Intergalactic HLG	Cincinnati, OH	Paul Siegel, (513) 561-6872
Oct. 11-12	Fall Soar	Bristol, VA	Greg Pinney, (540) 645-5772
Oct. 25	TPG Fun Fly	San Diego, CA	Don Richmond, (619) 587-0226
Nov. 2	2 Meter TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Nov. 8	CSS Turkey Fly	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
Nov. 8	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Nov. 15	New England R/C Soaring Convention	Portland, ME	Steve Savoie, (207) 929-6639 jim.armstrong@juno.com
Nov. 16	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Nov. 28-30	24th Tangerine	Orlando, FL	Don Cleveland, (407) 696-7516
Dec. 6	HLG Contest	San Diego, CA	Tom Clarkson, (619) 486-4068
Dec. 6	Slope Combat	San Diego, CA	Arthur Markiewicz, (619) 753-3002
Dec. 7	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Dec. 13	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Dec. 14	F3J	San Diego, CA	Mike Ziaskas, (619) 484-7596
Schedule of Special Events - Outside U.S.A.			
June 21-22	BARCS Inter glide F3J International	Aldridge Airport, Walsall, Staffordshire, England	Steve Holmes, +44 121 353 7487 steveman@cyberphile.co.uk
June 21	Großsegler-Wettbewerb, Steinau	Segelfluggruppe Steinau, Hans Müller, Seidenröther Straße 16, 36396 Steinau an der Straße	Ph: 011-49-6663 5182, fax: 011-49-6663 7200
June 28-29	Ontario Grand Prix Soaring	Cookstown, Ont.	Jack Nunn, (705) 728-4467
June 28-29	IGG Airtow Weekend - Switzerland	(Model Club Lichtenstein)	

Bendern Airfield, Leichtenstein

<http://www.interconnect.ch/customers/igg>

Peter Aeberli, 011-41-1-915 37 53
Jack Kagi, 011-41-1-926 2187

June 28-29	14. Großseglerwettbewerb ab Spw 3.75m, Wasserkuppe/Rhon	Marie Luise Lenarz, Bornbergstr. 2, 36115 Hilders-Dietes, Germany, 011-49-6681 8423
July 5-6	F3J	Brantford, Ontario, Canada Bob Sherliker, (905) 820-2799
Aug. 1-3	Akro Cup Semi-Scale Segler, FSV Dreieich, Germany, Deutscher Modellflieger Verband*	
Aug. 1-3	Int. DM Scale/Semi-Scale Segler, MFG Kranish Simmerath, Germany, DMV*	
Aug. 16-17	Scale Fun Fly (GNATS) Sailplanes/Motorgliders	Nigara Peninsula, Canada Gerry Knight, (905) 934-7451 Don Smith, (905) 934-3815 Mistral@niagara.com
Aug. 21-24	Int. DM Semi-Scale-Motormodelle, MSC Condor Göttingen, Germany, DMV*	
Aug. 23-24	IGG Slope Soaring Weekend Hahnenmoos, Switzerland (near Adelboden)	Peter Aeberli, 011-41-1-915 37 53 Jack Kagi, 011-41-1-926 2187 Winfried Olgard, or Bernd Wich 011-49-2 28 97 85 011 (direct line)
Sept. 13-14	DMFV Scale Masters Motor Glider - Germany	Turkey Turkey Aeronautical Association** Lars Biermann 011-49-5173 1377
Sept. 13-21	World Air Games	Turkey
Sept. 20	R/C Glider Euro-Cup	Uetze, Germany
Sept. 19-20	DMFV Scale & Semi-Scale, Germany	Bernd Stollenwerk Winfried Roder Bruchstr. 16 Schiffenborn 44 52152 Simmerath 52156 Monschau tel/fax: 011-49-2472/5148 e-mail: Winfried.Roder@t-online.de
Aug. 1-3	1st Aerobatic Scale Glider Contest, Germany	Frank Oeste, 011-49-6103/81801 Harold Seitz, 011-49-2236/67473 Jan Kurt Hoffman, 011-49-29042848
Aug. 1998	F3J World Championships, organized by BARCS	

* Deutscher Modellflieger Verband - tele. 011-49-2 28 97 85 00, fax 011-49-2 28 9 78 50 85

** Turkey Aeronautical Association - tele. 903123104456/903123104840

The Russians are **HERE!**

Combat Scale MiG 3
SD6060 airfoil
all EPP construction

\$54.95

Plus \$5.00 s&h in US

coming soon: epP-38 Lightning!

Visit our website -
<http://Planet-Hawaii.com/studioB>

Studio 'B'
design & production

We carry a complete
line of foamie combat
slopers

Foaminator
\$39.95

EPPee
\$49.95

both planes
\$4.00 s&h for
US delivery

P.O. Box 514
Kurtistown HI 96760
tel/fax (808) 968-8721
e-mail: studioB@ALPHA.net

Live by the Wind & Die by the Wind

...by William G. Swingle II
Pleasanton, California
bill_swingle@electro-test.com

One Sunday, a winter storm was battering my house. The local news was saying high winds; the trees in the backyard could say little except for an occasional, "Help." So, what could I do? I dashed to the slope!

It was howling. Have you ever noticed an inverse relationship with adjectives? Truly amazing events seem best described with few words. That Sunday, the wind was gale force. A friend measured it at a solid 50 mph, with gusts pegging the meter hard at 65 mph. His guess was that the gusts were in the 70 mph range. I didn't argue.

I put the 16" steel ballasting, pivot rod in my Foameron (Torque and Recoil Club). With the strong winds, I got just about no penetration; and, the most difficult part was the incredible turbulence! Right side up; then inverted; then, somewhere in between, all the while flying in and around what felt like black holes of sink. I was really having a rough time. I ended up flying DOWN WIND, into a barbed wire fence. Magically, neither the fuse nor wings were damaged, with the exception of a few holes from the barbs. Very impressive. However, it did break the wing servo wheel. I'd never seen a wheel broken before. I had always assumed it to be impossible. Live and learn.

I put in a new wheel (Thanks, Jerry!), and was stupid enough to try it again. This time, the wind seemed even stronger. It took 3 tries to get the plane airborne, and I launched with my thumb on the stick! I encountered the same problems as the last flight, but I began to get used to it. I occasionally got some real speed, and was holding my own.

I've always wondered why friends say the Foameron has a real fast roll rate. It never seemed that fantastic to me, though I'll admit, once it gets moving, it's certainly no slouch. That day, the Foameron made two rolls that were blinding; then, did something that I

can't really explain. It was a strange, tumbling kind of thing that struck fear in my gut. Then, as fast as it happened, it recovered. Nearest I can figure, one or both wings slid away from the fuse and got a huge increase in AOA. It would have been a neat trick, if I'd done it intentionally.

Then, after fighting the turbulence awhile longer, I worked my way back to the ridge to land. Things looked good but, egad, the rotor was hideous! At about 8 feet, I suddenly found myself inverted, pointing downward at a 45 degree angle. I was pulling just a bit on the elevator when it happened, and I was still pulling when it assumed this new attitude. My brain screamed, "PUSH!"

Right now I feel the need for a disclaimer. ***Yes, I have landed inverted before, on purpose. And, I have successfully recovered low and inverted before. Honest.***

I starkly remember having the conscious thought. Yet, Mr. Thumb just flat didn't respond. Option paralysis, perhaps? The ol' thumb couldn't hack it. If time had permitted, I can assure you, my brain would have launched a barrage of obscenities sufficient to persuade Bruno at the local penitentiary to do the hokey pokey in tights; sadly, life moves rather fast at the slope. The gale winds and the erroneous up elevator, still being held by the right thumb, worked in concert and, POW. Into the ground it went. The impact was severe. The ply doublers on the fuselage broke, breaking the wing servo mounting tabs in the process. A portion of the forward fuse was mush. The wings survived without a scratch. What impressed me most was that the foam and tape only, no glue, wings were able to bend the 16" steel (drill rod, I think) pivot rod! All without the help of resins, carbon or kevlar, I found this remarkable.

I hate the job of removing radio gear from a broken plane. Always makes me sad. But the fuse wasn't salvageable. I'd grown quite attached to Mr. Foameron. He'd made my car trunk his permanent home, traveling many, many miles with me. We'd seen a lot of air together, and flown with some great people.

Sigh. ...I will build a new fuse. ■



JOKER

Always in the lead!

The ace for any sailplane contest where thermal duration and spot landings are important!

\$550.00 plus S&H, Part No. 21 4080

Technical Specifications:

Wingspan:	3,333 mm	Wing Loading:	approx. 43 g/dm ²
Fuselage Length:	1,350 mm	Airfoil at Root:	HQ 3, 5-12
Wing Area (FAI):	approx. 71 dm ²	Airfoil - Middle:	HQ 3-11
Weight:	2600 - 3200 g	(Note: Weight depends on configuration.)	

JOKER combines low sink rate with a good glide angle, and has excellent thermalling characteristics due to the HQ airfoil, which has already proven itself on the Condor model. Flight characteristics are safe and docile, especially when coring a thermal; launch characteristics are first class, with plenty of strength for zoom launches from a standard winch. Accurate landings should not be a problem when using the competition-style "crow" glide control approach.

Kit Contents:

MULTIcontest-wing set: Part No. 21 4081

Obechi sheeted, with finished leading and trailing edges, and joiner tubes. Wing servo boxes/fairings to suit; Micro-mo servos are supplied. Servo wells are accurately machine cut.

Completed Elevator: Part No. 21 4083

Obechi sheeted with finished leading edge and joiner tube.

MULTIPOXY-fuselage: Part No. 21 4082

With a light, strong, brilliant white finish.

GFK Canopy: Part No. 72 4229

Accurate fitting for fast installation.

12 mm Wing Joiner Set: Part No. 72 3152

With MULTIhybrid-Joiner System; stainless steel/carbon 12 mm wing joiner rod.

Decal Set: Part No. 72 4230

CRITTER BITS & MULTIPLEX USA

(800) 375-1312

See us on the web: www.MultiplexRC.com

TIDBITS & BITS

Preliminary Announcement World Championship Thermal Duration (F3J) Gliders

(The following provisional information is from Colin Thompson, Chairman, BARCS, England.)

The United Kingdom has great pleasure in announcing that it will be holding the first World Championships for FAI Class 13J (Thermal Duration Gliders) in the United Kingdom in August, 1998. The offer to organise the Championship was made to the CIAM Plenary Meeting on Friday, March 29th 1996 and the event was awarded to the United Kingdom.

The event will be organised by the national body, the British Model Flying Association and their associate body, the British Association of Radio Controlled Soarers (BARCS).

All FAI member nations will be invited to compete for a new perpetual trophy, to be known as the "Neil Webb Memorial Trophy". This is being commissioned by BARCS, and will be presented for the first time at the conclusion of the championship to the first Individual F3J World Champion.

It is the intention of the organisers to present further information to the CIAM Bureau Meeting in December 1997, including all required details concerning entry fees and costs. The UK is very aware of the concerns about the escalating costs associated with such championship events. Every endeavor will be made to minimise costs, whilst setting the same high standards of organisation and management which were acclaimed by all nations who competed at the F3B World Championships held at York in 1983.

The flying site is located within a short walking distance of Upton-upon-Severn, Worcestershire. The flying site has over 20 hectares of level grass pasture lying adjacent

to the River Severn. It has been regularly used for thermal soaring for over ten years and is the site chosen for the F3B International event to be held in July 1997. The picturesque small riverside town of Upton-upon-Severn is 100 miles west of London and 30 miles south of Birmingham. It is connected, by motorway links, to five UK International airports: Birmingham, Bristol, London Heathrow, Manchester and London Gatwick. Camping facilities will be available on the flying site and the town has a number of low-cost hotels and restaurants and shops.

It is also proposed to hold an Open International F3J Event on the weekend immediately prior to the World Championships and on the same flying site. This will enable individuals, their helpers, supporters and others to compete during the same week as part of an International Festival of Thermal Soaring. Good slope soaring sites also exist nearby on the Malvern Hills, offering open slopes rising 300 metres with summits of 400 metres, suitable for most wind directions.

The climate in August is normally mild with good weather conditions. The average temperature range is 21.6 celsius (day) to 12.2 celsius (night). The average number of hours of sunshine in August is 177 and the average number of days with no sun is just one. Winds are predominantly from the west or south-west with a 21% chance of being calm or light and variable and a 68% chance of the winds being in the range 0 to 10 knots (0 to 5.15 metres/sec). Thermal convection conditions are frequent.

Proposed Schedule, 1998
International Event
Friday 7 August
Arrival and registration
Saturday 8 August
Rounds 1, 2 & 3

winters are long, cold, and cloudy here in Wisconsin, giving me a lot of time to work on the model. I have inspected the model for structural damage, and have repaired every defect that I have found. The light weight construction is strong, but still can get damaged. Each examination shows another weak spot, that I strengthen. As time goes on, the model gets stronger, and heavier.

Part of the preparation was coming up with a new covering for the wing. Tests showed that the 3M window covering does not add a lot of strength to the wing. So, Dupont was contacted and they supplied some optical grade mylar that was used for covering. This covering is almost as clear as the 3M covering, yet strengthens the wing by almost 50% in torsion. But it took 4 tries at covering to get the wrinkles out, since this covering does not shrink very well.

Weather in Wisconsin is not the greatest this time of year. I would have liked to try out the model in pure solar flight, but the sun would not cooperate. The best we could do was to fly the model with solar and battery. Two one hour flights were had with this combination, and the flights could have been longer, but time did not permit. The model will have to be flown under pure solar conditions in Arizona. I hope I didn't miss anything.

There will be four of us going out from Wisconsin. All 4 of us are people that have helped with these record attempts from the start. From the earliest, unsuccessful, altitude attempts from an ultralight, to the last successful attempts, these people have been there to help and join in the fun.

We will be leaving on Friday, May 9th, and arriving in Phoenix. The model will be waiting for us in Phoenix, having been shipped out today via truck. Shipping has

Sunday 9 August
Rounds 4, 5 & "fly-off"
World Championships
Sunday 9 August
Arrival and registration
Monday 10 August
Practice day
Tuesday 11 August
Preliminary Rounds
Wednesday 12 August
Preliminary Rounds
Thursday 13 August
Preliminary Rounds & "fly-off"
Friday 14 August
Spare day in case of bad weather. Local sightseeing.
Prize giving and banquet.
Saturday 15 August
Departure

Further information will be posted on the BARCS web site at regular intervals. The organisers can be contacted by the following means:

Letters: The Co-ordinator, First F3J World Championships,
Eynhallow, The Purlieu, Upper Colwall,
MALVERN, Wores, WR14 4DJ, United Kingdom.
Telephone: +44 (0) 1684 561160
Fax: +44 (0) 1684 572757
Email: nevc@globalnet.co.uk
http://home.clara.net/barcs/

Solar Records News Flash

(The latest news on the trek to Arizona to set world records for solar flight has been provided by Dave Beck.)

As many of you know, a team of us will be going out to Arizona to set some FAI world record for solar powered model flight. This news flash will describe some of the details of this journey.

In preparation for the journey, I have been spending a lot of time on the model. The

GALLERY OF GLIDERS

<p>DG-800 (\$899.95)</p> <p>Wing Span: 3488/4186mm Length: 1588mm Area: 63/59.7dm² Airfoil: HQ 2.5/13.5.11 W. Loading: 55/50 g/dm² Weight: 3500 gms</p>	<p>A.R.F.'S</p>	<p>DISCUS (\$1199.95)</p> <p>100% COMPOSITES</p> <p>Wing span: 4288mm Length: 1880mm Area: 67.2dm² Airfoil: HQ 2.5/12.10 W. Loading: 65 g/dm² Weight: 5700 gms</p>												
<p>ASW-19/24 (\$139.95/\$159.95)</p>	<p>PILATUS B-4 (\$149.95)</p>	<p>LUNAK LF-107 (\$159.95)</p>												
<p>Specs:</p> <table border="0"> <tr> <td>ASW-19/24</td> <td>PILATUS B-4</td> <td>LUNAK LF-107</td> </tr> <tr> <td>Wing Span: 49 in/124 in.</td> <td>55 in.</td> <td>64 in.</td> </tr> <tr> <td>Length: 28.3 in/72.3 in.</td> <td>28.5 in.</td> <td>28.3 in.</td> </tr> <tr> <td>Weight: 10 oz./12 oz.</td> <td>12 oz.</td> <td>15 oz.</td> </tr> </table>			ASW-19/24	PILATUS B-4	LUNAK LF-107	Wing Span: 49 in/124 in.	55 in.	64 in.	Length: 28.3 in/72.3 in.	28.5 in.	28.3 in.	Weight: 10 oz./12 oz.	12 oz.	15 oz.
ASW-19/24	PILATUS B-4	LUNAK LF-107												
Wing Span: 49 in/124 in.	55 in.	64 in.												
Length: 28.3 in/72.3 in.	28.5 in.	28.3 in.												
Weight: 10 oz./12 oz.	12 oz.	15 oz.												

HOBBY CLUB HOBBY CLUB

10 HUGHES STREET-STE. A-102-IRVINE, CA 92618 - PH. (714) 461-0336/FAX 461-0340


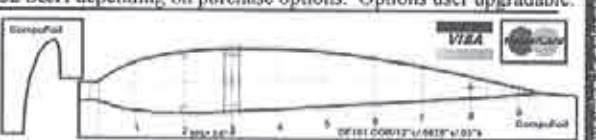
WEB SITE: <http://www.hobbyclub.com> E-MAIL: hobbyclub@hobbyclub.com or hobbyclub@earthlink.net

CompuFoil Professional for Windows

Phone/Fax: 313-299-7088
Eric Sanders 8pm-11pm EST
3904 Traine Dr.
Kettering, OH 45420

The most popular airfoil plotting and modification program has just gotten better. Fully reprogrammed in optimized C++ for speed, with enhanced features, wrapped in a professionally developed Windows interface. Available options allow you to: create full sets of lofted ribs in either straight taper, elliptical, or modified elliptical planforms, complete with spar slots, jig holes, leading edge, sheeting, foam templates with wire keel compensation, stations, ramps, airfoil transitions, etc., or leading edge shaping guides. Customize airfoils with a full host of modification functions, directly coordinate edits, or with the built in CAD utility while viewing overlays. Create DXF files and NACA 4,5 and 6 digit airfoils with the click of a button as well as true print previews and automatic tiling of templates. Email to compufoil@sol.com or log onto the CompuFoil web page and download a the working demo version of CompuFoil at: <http://ourworld.compuserve.com/homepages/CompuFoil/ftp/members.aol.com/compufoil>

Priced from \$35 to \$113, plus \$2 S&H depending on purchase options. Options user upgradable.

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

Wouldn't you rather be building and flying than drawing templates by hand? Let CompuFoil make it easy!

Your wing is only as accurate as your templates

been a major concern, since the model is very fragile with its 132 solar cells. I was lucky to find a shipper that will give my model special treatment, by allowing it to ride in their sleeper. I viewed the sleeper, and talked to the trucker today, and feel confident that it will make it out to Phoenix without damage.

Once we arrive there, we will pick up 2 rental cars, and drive down to Tucson. Here, our Tucson host Ian Douglas, Bob Reynolds, and others will help us with our attempts. We also will enjoy the help of Darwin Barrie, who will drive down from Phoenix to help on Monday, or Tuesday. Not all people will be available all days, but we should be able to put together 2 cars to follow the model. The tail car will be a convertible, and the lead car will probably be a pickup truck. The model will fly between the two vehicles.

We plan to try out our model on Friday, and then if conditions permit, go for it on Saturday thru Wednesday. There are 4 possible days to set records, but it is doubtful that the weather will cooperate all days.

Our goal is to fly the model on an east west route between Ajo and Tucson. Since there are two possible records we can go for (solar powered, and solar/battery powered distance in a straight line), we will declare one record for the east to west direction, and the other for the opposite direction. This way, we can pick which record to go for, depending on the winds. We have help in Ajo in the form of an active modeler, Joe Gulick, who will advise us on the weather conditions. This will help with the call for which record to go for. Unfortunately, Joe can not join us on these record attempts.

The route itself is on a very straight road through the desert. The road is posted at 55 mph, and offers good visibility, and flat

terrain the entire trip. The road is not traveled a lot, but what traffic there is will be traveling at a higher speed than the 25 mph that the model flies at. With the expected 10 mph tail wind, we hope to travel at about 35 mph. This gives a flight time of 3-4 hours.

Also, this stretch of road does not have a place to land, in case of an emergency. The road may be the best place to land. Better yet, is to not land at all, until the record is completed!

The landing site is in a vacant lot in Tucson. Although the site is along a fairly major road, there are only 4 stop lights to contend with on the way to the landing. The area is quite large, so if the winds are kind, it should not be too hard to land.

Assuming all goes well, we will increase the solar battery record from ~68 miles to 80-110 miles, and we will increase my own record for solar only flight to about the same level.

Also, whether or not all goes well, we will have had a great time trying for these challenging records. The people involved with this record are a great group of fun loving people, and that in itself is reward enough for the challenge. Just like with the last record, many more fond memories of the events that led up to the record, than the record itself!

What's next? Well, if the model comes back in one piece, and still flies well, we have a date with an ultralight pilot, to try and go for an altitude record. Using a two place ultralight, we hope to fly the model to a new altitude record.

A Request from Singapore

Martin Sng writes, "Our only hill in Bedok can be flown for three months during the year, between November and latest end of February. This hill may be the world's

smallest and most populated. We fly anything here from a Gentle Lady to a Mystery Ship. We never have a contest. Also, we have not tried winching, but I will try Hi Start, soon. I am interested in HLG, 'cause as we are in a tropical island, there must be abundance of thermal. Can you help me obtain HLG video/books strictly on HLG?"

Ed: To our knowledge, Martin, there are no books or videos devoted strictly to HLG. If there are, hopefully one of the readers will let us know. (Martin Sng is on the right in the photograph.)



27th Annual Sno-Fly

(The following update is from Ray DiNoble of West Bloomfield, Michigan.)

The Greater Detroit Soaring and Hiking Society held the longest continuous running soaring contest, Sno-Fly 27, on February 16, 1997. GDSHS and the Toledo Weak Signals worked in conjunction to have the Sno-Fly at the Weak Signals field in Monroe, Michigan, just north of the Ohio border. This year's CD was Dave Coryen from GDSHS.

The Sno-Fly is a must contest for us in the mid-west, and we had entries from Illinois, Ohio, Indiana, and Michigan. Gene Pastorie drove down from Michigan's upper peninsula, a 700 mile round trip. Several Michigan fliers had arrived, after driving up to 200 miles, including Mike Stump, Bob Robinson, Larry Storie, and Bert Maldonado. Richard Burnoski made the trip from Chicago.

We were greeted at the field with a heavy snow fall, predicted to be 1-4 inches, and a slight breeze from the east at 5 mph. We anticipated a wind shift from the northeast, and winds increasing to 25 mph. The temperatures approached 30 degrees in the afternoon, but combined with the strong wind, the wind chill was below zero. Ken Bates was overheard to say these were typical Sno-Fly conditions. The weather was typical Michigan winter with snow, wind, and a low ceiling.

Art Slagle, one of the earliest members of GDSHS attended again this year. Art is the only person to have flown in all 27 Sno-Flys.

We processed 33 contestants, who entered in Two Meter, Unlimited, and sportsman. The tasks were 6, 8, 7 minutes, with a 20 foot landing circle worth 25 points. The results were:

Unlimited	Two Meter	Sportsman
Richard Burnoski	Steve Martinez	Jim Gell
Larry Storie	Paul Sherman	Greg Nilson
Paul Sherman	Larry Storie	
Ken Shaw	Ray Hayes	

A big thank you to Mike and Don, who came to work, not fly. They ran the winch/retrievers all day. Jim Gell from M.I.S.S. also pitched in, whenever help was needed. Thanks, Jim.

GDSHS is already making plans for the 28th Annual Sno-Fly, to be held next February. Our offer of no entry fee to those attending from California or Florida will again be honored in 1998. See you next winter. *(Ed: There is a listing in the Resource section for GDSHS.)*



Unbeaten Path Imports
P.O. Box 271, Oconomowoc, WI 53066
414-569-5711 7-11:00PM CST M-Th
fax:414-569-5915 www.unbeatenpath.com

*Your Source for the Best Quality
European Electric Models, Gliders
and the Accessories You Need!*

• Voster: DG200/17, Libelle, LO-100, Pilatus B4, Hercules C-130, Transall C-160, Pampa Jet
• Simprop: Solution, Solution XL, Peppo, Fashion, L33 Solo,Raz Faz, Piaggio, Domier 328, Edago
• Others: PBY Catalina, He-162, B-25, P-38, Spitfire, Mosquito, MU-28 Swift S-1, Habicht, Skymaster
• WeMoTec Electric Ducted Fans
F3B/F1J F5B/D

*The Original: X-Models **Little Star***





only \$199!

Epoxy Fuselage, Bolt-on Wing w/Carbon Fiber Spars and I.E. plug-in tail, servo mounts, rods, Ora-covered; add radio unit fly!
See them all - order our new catalog!
Available TODAY from UPI!

We also carry a selection of proven power packages for the electric models, such as motors, CNC gearboxes, ESC's, props, and precision spinners. All kits include instructions in English, and we provide customer support. Dealer inquiries welcome.

Ruffneck





Comanche

Be prepared for Slope Combat Competition. The Ruffneck **Arrow** and Ruffneck **Comanche** are the choice of Champions and Champions-in-the-making. The **Arrow** and **Comanche** are known for their superb handling qualities and durable nature.

The **Arrow** and **Comanche** are also designed to be used as trainers on the slope and off, each can be fitted with a tow hook for high start launches in your neighborhood field.

Competition or training, think Ruffneck.

Arrow/Comanche Specifications

WING SPAN	48"
FUSE	21"
WING AREA	468 SQ. IN.
ARFCOL.	RG-15
WEIGHT	28.32 OZ.
WING LOADING	9.7-10.7 OZ./SQ. FT.
PRICE	\$59.95 ea. + \$7.00 S&H + CA Tax

Kit Feature includes: EPP Foam Wing with Carbon Fiber Spar, EPP Foam Fuse, Copo-Plast Tail Section, Hardware, including Control Rods/struts, Instruction Manual with Pictures.

Dowman's Hobbies

21069 Susan Carole Drive, Sausalito, California 94130 (805)296-2952 FAX (805)296-9473

© 1997 Ruffneck

e-mail Ruffneck1@aol.com

A Mindless Landing Is Called a Crash

...by John H. Todd

(This article was written for The Flightline (October 1995), the newsletter of the Bayside R/C Club, Inc. of Fremont, California. It is applicable to sailplanes, although intended for a power audience. The article was spotted by Jim Porter of SIG Manufacturing Co., Inc. who liked it so much that he typed it up and sent it in. Thanks to all. ED.)

These simple heuristics, rules of thumb, for all realms, for all times, so it even works for R/C, are nearly worthless without the effort to understand them.

Notice what's going on.
Choose to connect the dots.
Stay on target.
Ask powerful questions.
Update your behavior.
Check the feedback.

Enjoy yourself.
It's better to do than to watch.
A mindless landing is called a crash.
But you just might come to understand... And I will tempt the editorial fait accompli...

I learned some interesting things today about human perception and cognition while taking my second ever turn (self authorized) at the master end of an R/C buddy box. A longtime observation of mine, is that I can discover if I really know something by trying to teach it to another; and that teaching generates a burst of new insights. Very tasty stuff to play with your own brain and that of a friend. Those of you who know me will recognize my signature cutting back and forth between abstract and concrete; both nourish each other.

My friend is an accomplished R/C and full-sized Helicopter pilot; he flies smoothly and generally has good situational awareness. We can both do R/C helicopter autorotations. Beyond five years plus of R/C heli flying, I had barely more than a gallon's worth of fixed wing engine hours in the last two decades, the bulk of it in the prior four or five days doing incessant touch-and-go landings. So, I had the hubris and audacity to start him on fixed wing

touch-and-go landings, taking the counter-intuitive approach that the rest of the airborne maneuvering he would get nearly for free. In summary, we can both sustain heightened attentiveness, i.e., we can both concentrate; so let's do the hard stuff first.

Final approach to landing requires precise, controlled maneuvering and concentration. If you can do endless touch-and-go landings, then you have quite a good understanding of driving an aircraft.

Having spread out the forgoing visualization as a backdrop, I come to the nubbin of this article.

- 1) The things I learned from teaching my friend also applied to me, which astonished me hours later as I was chewing my mental cud.
- 2) My willing friend made systematic errors while flying. I made the same kind of errors at the same time, but from a different portion of the learning curve.
- 3) He would systematically not see the start of a too steep descent on each of the pattern turns, even if the downwind-to-short-final was done as a single, large half-circle.

The milk, cereal and fruit were definitely not to come out even. There seemed little problem with roll, and he made extensive use of airborne rudder, as does a good helicopter pilot. It was as if he did not see the pitch falloffs begin, did not extend the dots of the flight path, and would repeatedly fly the airplane right into the ground or trees, requiring my abrupt intervention, because I was not connecting his dots, either.

I was astounded! It was like stumbling into the midst of a scientific experiment I did not know I was conducting. And he made the same mistake working down through ground effect to touchdown, in the region of one wingspan of altitude. This is the same fellow who can do autorotations. And I let him doink it into the runway... The classic saw about novices being late and over controlling was true for both of us at the same time, but it needs elaboration and rethinking. Amazing. And in one sweep, I could actually see all of this and how to fix it.

...So I got him to get that he was making a systematic PERCEPTUAL error of not detecting the descent; and a PSYCHOLOGICAL error of passivity in not asking the outcome of the current descent; and that beyond that he had to initiate corrective action immediately, both conceptual and flight-control, i.e., we both (!) had to change our minds immediately, or the game would be over.

And then the flight error envelope began to rapidly shrink. We both got better, because we could see what had to be fixed. I began to anticipate where and when the aircraft might diverge toward destruction, and gently prompt him to see and fix the flight path. I stopped the lesson after he became early correcting descent problems, and when he had pre-rotated into a particularly nice, centerline touch-down; that would be the visualization that remained in his mind for another day.

Only now do I realize that would be my memory, as well. Incidentally, I had prepped him about braking to a stop by wheel steering (in gradually progressively sharper turns as the ground velocity bled off, bounded by tipping over onto a wing tip, and centered during runout) if he touched down on the front half of the runway; otherwise throttle up quickly and go around. Pretty good growth for one flight.

We looked at each other and grinned for a variety of reasons.

All of this leads me to believe that the main (and general case) problem confronting the novice is fundamentally a conceptual one. They must transform themselves into someone who looks out through their eyeballs better. The problem is in developing the neural net hooked to the optic nerve, not in corrective lenses. I think that it is more important to pilots and instructors to be able to recognize classic, novice flight path divergences very early, than to know the specific wigglement of the controls to correct the divergence. And these divergences should be discussed often between them. This thesis should also hold true for training trainers; and it should apply to learning most motor skills.

June 1997

A corollary issue is whether novices should learn-by-flying-out-of-control; or learn by flying a specific, precise flight task like touch-and-go landings. My strong bias is for the latter, precise flight tasks, because the touch-and-go feedback is unmistakable, while woggling around above 100 meters provides little if any precise, repeatable feedback, and hence very little learning. This bifurcation was pointed out to me by Karl Almundinger (Thanks!). Obviously, a balance must be struck between constraint-free flying and learning to fly while never exceeding a five meter altitude! The senior issue here is the rankings of the factors: what's dominant and important, and what's not. It is straightforward to assist a bright person with a long history of efficacious mental functioning, and quite another thing to do much with a person with a self-wrecked epistemology, impervious to updates.

My interest is in self-mastery, in being able to train myself; and playing in the sky with my friends, leap-frogging each other in ability. CHECK YOUR SIX. My motivation for writing this is to clarify my thoughts and perhaps spark some comments of discussion of these issues. Now for the two insights to which all of the above led me:

- a) That as a self-appointed guide, I was simultaneously making the same mistakes as my friend was, and
- b) That these were general-case mistakes that we make in most areas of our lives.

I think the essentials that differentiate better pilots from the rest of us is how they run their minds better, and drink a better class of victory beer. They look out through their eyeballs better. They relentlessly try to anticipate what's going to happen. These are cultivated mental skills and abilities. They can and do change their mind, mindful of recent data. They treat language and thought as a primary cognitive interface to reality, and secondarily as a vehicle of communication of that understanding. They take what they've learned in one part of the envelope and try to generalize it throughout the envelope. They use language as they would flight controls,

Page 45

carefully and with deliberation. Again, these are cultivated skills and abilities. Cooked into broadened formulation: Relentlessly **notice what's going on**, modulated by your current purpose. **Stay on target** to rational goals and purposes. Live life as a critter, living for its own sake, which means **enjoy yourself**. (Recall that life done with this intensity will require idle periods filled with replenishment, re-creation and wild story telling.) Further, while perception is mostly automatic, choosing to conceptualize is profoundly volitional.

Choose to connect the dots. And beyond that, **Ask powerful questions.** For example, if you don't know what's going on during the touch-down, ask yourself... What might that information look like? Airspeed? Angle of rotation? Timing? What might be its orders of importance? Angle of attack? Airspeed? What might be appropriate things to do about it? Pre-rotate and modulate?

And additionally, **check the feedback.** Did that change grease the landings?

To cook all of this down to simple

heuristics, rules of thumb, for all realms, for all times, so it even works for R/C:

- Notice what's going on.**
 - Choose to connect the dots.**
 - Stay on target.**
 - Enjoy yourself.**
 - Ask powerful questions.**
 - Update your behavior.**
 - Check the feedback.**
 - It's better to do than to watch.**
 - A mindless landing is called a crash.**
- (Do you get how this fits in now?) ■

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

1120 Wrigley Way, Milpitas, CA 95035 Voice/Fax (408) 946-4751 (408) WINGS-51



Also Distributed By SLEGGERS INTERNATIONAL (908) 879-9064

LOOK no further for your fully molded sailplane needs! At RnR we offer a selection of high performance sailplanes that will address your specific requirements in F3B, Thermal Duration, Slope, and Cross Country. The Mark Allen designed World Championship **F3B EAGLE** is now being produced by RnR at its new lower price. Each RnR sailplane enjoys design and construction enhancements for 1997.

RnR's composite molded technology provides a unique blend of strength and weight optimization. Noticeable results are found through increased durability, torsional stability and stiffness incorporated in the wing, fuselage, and tail section.

We also offer a selection of parts and juner systems for you scratch builders out there. To catch the latest visuals, specifications, and competitive pricing of RnR's sailplanes, contact RnR. At RnR, the sky's the limit.



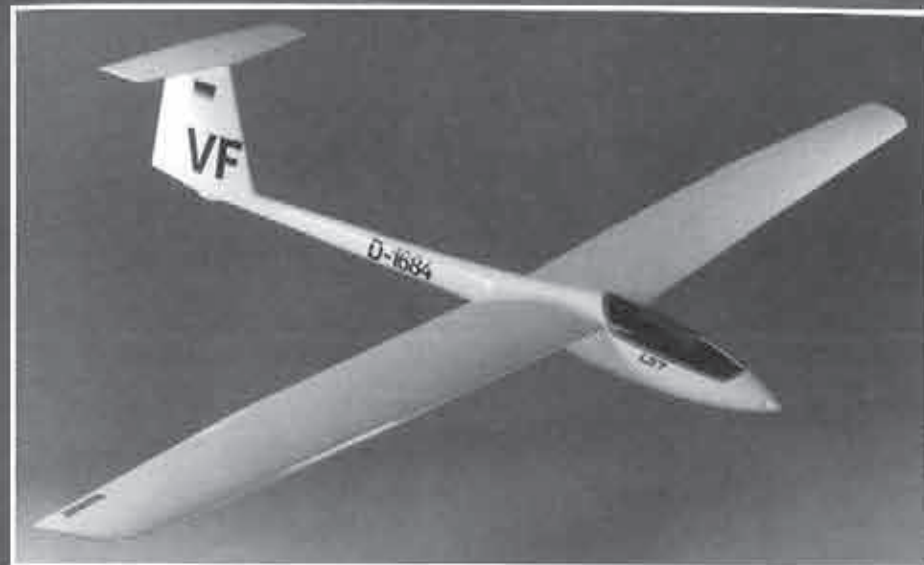
Disciplines	F3B	Thermal Duration	Slope	XC	SLC
* F3B EAGLE	X	X	X	X	X
* SYNERGY 91A	X	X	X	X	X
* SYNERGY 1	X	X	X	X	X
* SYNERGY II-SI	X	X	X	X	X
* SYNERGY 91-SI	X	X	X	X	X
* SPECTRUM	X	X	X	X	X
* GENESIS-SI	X	X	X	X	X
EVOLUTION	X	X	X	X	X
REVOLUTION	X	X	X	X	X
SB-XC				X	X

*New, **Available Soon, XC=Cross Country, SI=Silent Flight, SLC=Soaring

SYNERGY 1 Specifications:

WINGSPAN	114.75"
WING AREA	950 SQ. IN.
STAB AREA	789 SQ. IN.
AIRFOIL	RG-14
ASPECT RATIO	13.9:1
WEIGHT	87 OZ.
WING LOADING	12.4 OZ./SQ. FT.

ORDER DIRECT FROM RnR



MULTIPLY LS 7

Almost-Completely-Finished
\$450.00 plus S&H, Part No. 21 4164

Technical Specifications:

Wingspan:	3,300 mm	Weight:	2800 - 3200 g
Fuselage Length:	1,380 mm	Wing Loading:	approx. 47 g/dm ²
Wing Area (FAI):	approx. 68 dm ²	Airfoil:	HQ 3, 5-12 modified

The LS 7 is modeled after the legionary LS 4. It is especially interesting for model pilots, as it is not a commonly seen plane. The LS 7 is not only beautiful, and performs well, but it excels in both distance and thermal duration flying, as well as on the slope. At peak performance, LS 7 handles well and is very forgiving. Easy to transport, this model is beautifully scaled.

Kit Contents:

Wings: Part No. 21 4166

Obechi sheeted, with finished leading and trailing edges, and 10 mm joiner tubes. Ailerons and spoilers cut out.

Elevator: Part No. 21 4167

Obechi sheeted, pre-drilled, with finished leading and trailing edges.

MULTIPOXY-fuselage: Part No. 21 4165

With a light, strong, brilliant white finish.

Canopy: Part No. 72 4168

Clear canopy & canopy frame, with pilot.

10 mm Wing Joiner Set: Part No. 72 4110

Decal Set: Part No. 72 4170

Complete Hardware Set

CRITTER BITS & MULTIPLEX USA

(800) 375-1312

See us on the web: www.MultiplexRC.com



Tommy Polapink, WWI Scale Masters Expert, with his 84" span, award winning Sopwith Snipe.

Documentation Sources

..by Tom Polapink

Without solid documentation, chances for success in scale competition are limited. Static scores account for half of your total possible score, so if you can't adequately document your model, you probably shouldn't build it for the purpose of scale competition. I usually start my documentation search long before beginning any construction on any model. The first source that I refer to is my own personal "library" of books and magazines, which have accumulated over the years. I usually find most of what I need to get started right at home. The need for more detailed information often arises along the way, and looking at other sources becomes necessary.

One such source is the actual manufacturer of the aircraft to be modeled (if they are still in business). Some of these manufacturers are quite willing to help out, and can provide some excellent information. If you don't have the address of the company you want to write to, try your local public library. When writing, be specific about the information you are seeking. Enclosing a S.A.S.E. never hurts, but

don't expect to get exactly what you are looking for, if anything at all.

Another source of information is the owner of the specific aircraft you are modeling. Writing a letter to the F.A.A. Aircraft Registry can help locate the latest owner if you know the registration number of the aircraft. I have had great success researching aircraft through private owners. One such person was the famous racing pilot of the 1930's, Harold Neumann, who flew the Howard "Mr. Mulligan" in the Bendix and Thompson Trophy races. You shouldn't expect to get anything from private aircraft owners, because they have their busy lives, and quite often don't want to be bothered. However, without trying, you'll never know. Just be respectful and tactful, and you may wind up with a gold mine of information. Occasionally, they will refer you to other sources.

For instance, I contacted a Monocoupe owner several years back who referred me to the president of a club comprised exclusively of members who owned full sized Monocoupes. I'm certain there are organizations for full sized

"Tom Polapink has been an avid scale enthusiast for many, many years. His name frequently appears in model magazines, and he is well known for his meticulous and unusual World War I subjects. Not only are his creations works of art, but they are accurate in every detail, and Tommy has his back-up documentation to prove this accuracy."

...Robin Lehman

glider pilots who have members that would be willing to help guide interested people to other sources of information. Try your local airport.

If you have access to the full size aircraft, which you are modeling, take plenty of pictures... More than you think you will need. Try to get dead-on side and front views to see how they compare to your 3-view. Take pictures of control surface hinges, surface details, unusual fillets, marking, logos, and anything else that catches your eye. You will find yourself constantly referring to them when you build your model.

If you don't have access to the actual aircraft, or don't own a good camera, try Bob Banka's Scale Model Research. Bob offers over 6,400 (!) different FOTO-PAAKS, and 35,000 (!!) 3-view drawings of all types of aircraft from all over the world. Call or write to him for his huge catalog.

Museums can provide excellent information, but again, it is imperative to be specific about the information you are looking to obtain. Sometimes, museums will send you the information you request free of charge. Other times, they will let you know if there is a charge for reproduction costs. There are even times when they don't respond at all! If this happens, either try again, or try a different museum.

My primary interest is World War I aviation, and fortunately for me, available information on this era of flight seems to be at an all time high. There are so many publications coming out, featuring this period, it is becoming difficult to keep up with them. Unfortunately, the scale glider modeler does not have an abundance of readily available information to work with.

Hopefully, some of the sources mentioned above, and listed below, can be of some help for your next scale project.

National Soaring Museum
51 Soaring Hill Dr.
Elmira, NY 14903-9204
(607) 734-3128

F.A.A. Museum
P.O. Box 229
Hales Corners, WI 53130
(414) 426-4818

National Air & Space Museum
Smithsonian Institute
Washington, D.C. 20560
(202) 357-2700

Bob Banka
Scale Model Research
3114 Yukon Ave.
Costa Mesa, CA 92626
(714) 979-8058

Zenith Aviation Books
729 Prospect Ave.
P.O. Box 1
Osceola, WI 54020
1 (800) 826-6600
(Write for catalog.)

"Sailplanes! A Digest for Scale Modelers", Written by Ferdinando Galé and Aldo Calza (Currently out of print.)
B2 Streamlines
P.O. Box 976, Olalla, WA 98359-0976
e-mail: bsquared@halcyon.com
<http://www.halcyon.com/bsquared/>



International Scale Soaring Association

There is a growing interest in scale soaring in the U.S. We are dedicated to all aspects of scale soaring. Scale soaring festivals and competitions all year. Source for information on plans, kits, accessories and other people interested in scale. For more information, write to:

International Scale Soaring Association
37545 Oak Mesa Drive
Yucaipa, CA 92399-9507
e-mail: 70773.1160@Compuserve.com

23rd Annual Tangerine Soaring Championship



...by Terry Cusack
Deltona, Florida
Photography by Dave Veatch
& Rob Rierson

It may be a record year for winter temperatures and snow, but there is at least one warm place to test your soaring skill. It's the Annual Tangerine Soaring Championship, in the heart of Central Florida. The Annual Tangerine Soaring Championship offers three days of non-stop, flat-out, sailplane competition. The contest is hosted by the Orlando Buzzards Soaring Society, which does an outstanding job managing such a large event. The Tangerine contest drew 75 contestants from 14 states; registration sheets showed 160 entries; and the flightline count was over 100 airplanes. Although the sun was warm (average temperature around 70 degrees), the wind was a little less cooperative.

The contest is divided into two competition skill levels: Sportsman and Expert. The first day is two-meter thermal duration, while the remaining two days are open (unlimited) thermal duration. For landing points, pilots had to land within a designated circle. To accommodate the large number of flyers, there were four landing circles, each with a measuring tape segmented for points of 25, 50, 75 or 100. To earn 100 points, the nose of the aircraft had to be in contact with a 10-inch diameter foam disk. Although a couple pilots did score 100 points, the task was not an easy feat! A separate landing circle was provided for pilots who had a

(L - R) Joe Melchiorre, Curtis Smith,
Deanna Vignolini, John Masiello, Mark
Kummerow, Derek Khaw, and Ed Slegers.
Photo by Dave Veatch.

physical disability. This year's Tangerine also marked the inauguration of a new competition called the ProAm. The ProAm is a team event with each team consisting of four members, one of which must be a Sportsman. To win the ProAm, a team had to accumulate the highest total points for all four members in the two days of open class flying.

On the first day of competition the winds came early, but remained reasonably steady all day. Orlando Buzzard's President, Rick Eckel, was the Contest Director (CD). Rick announced that each task would be seven minutes with a four-minute task that could be declared at the pilots preference. A total of six rounds were flown. While the entries were mostly composite and sheeted-foam contemporaries, there was still a strong showing of Gentle Ladys and Spirits. Don Harris, from Westerville, Ohio, placed first in Expert. Don has completed LSS level V two times, and really worked the light lift hard with his Spectrum. The winner in Sportsman, John Masiello, is known as "Thermal King" to his fellow club members. John was flying his 2M Super-V.

On the second day, CD Garnett White reminded the flyers to support the contest sponsors, and announced that the first round would be a five minute task and the remaining rounds would be seven minutes. Again, there were six rounds flown. Weather appeared to be



Jim Stadafer releases silkspan-covered
standard class design. Photo by Dave Veatch.



Don Cleveland poses with his very competitive
Grand Esteem. Photo by Rob Rierson.



Rich Kiburis launches Prism.
Photo by Rob Rierson

calm, but by the time the first round was half over, the wind was gusting 10-15 mph. The wind became worse until late afternoon; then it was steady with less gusts. Max Hurst held on to first place Sportsman with his full-house Alcione. Also in Sportsman, the names Joe Melchiorre, Rob Rierson and Keith McCormick showed up for the second day in a row. Joe and Rob were still flying their two meter Spirits in Open Class! (Joe's had a Gentle Lady wing.) The Expert Class was a real battle, but Tom Tock of Dwight, Illinois bagged First Place with his Scorpion 100. Second Place Expert went to Florida Soaring Society (FSS) veteran John "Doc" Agnew, who is always first to the winch when a round is started. Following John Agnew was John Hauff (of New York) with his Millennium, Chip Vignolini (of Virginia) with his Thermal Eagle, and Herb Rindfleisch with a new Condor. Later that night, the FSS met for its annual dinner, and lucky attendees were treated to the words of guest speaker Woody Blanchard.

On the last day, CD Ed White called for an early start to beat the expected thunderstorms from a cold front. The rains held off until sunset, but the winds proved to be the strongest of the three days. Ed Slegers of Long Valley, New Jersey secured First Place Expert and was the only one to break 2000 points that day. He was flying a Condor, one of the highly competitive kits he manufactures. Right behind Ed was Derek Khaw and Mark Kummerow; both are Masters in the FSS; both excel in hand-launch glider competition; and both were flying large V-tail designs. Mark's V-tail glider is his own original design, while Derek's is a Saturn 2.8. In Sportsman, John Masiello, Joe Melchiorre, and Curtis Smith were there again! This time, two new names worked their way into the Sportsman Class; Frank Mangus captured First Place while Deanna Vignolini pulled-in Fifth.

Joe Melchiorre from Delaware took home the most hardware. He placed every day in Sportsman, making him the Sportsman Overall Points Champion. But Joe didn't stop there. He also won twice in the raffle, taking

DAY 1: 2-Meter Thermal Duration

1	Sportsman	John Masiello
2	Sportsman	Joe Melchiorre
3	Sportsman	Keith McCormick
4	Sportsman	Rob Rierson
5	Sportsman	Curtis Smith
1	Expert	Don Harris
2	Expert	Don Vickers
3	Expert	Don Cleveland
4	Expert	Carl Luft
5	Expert	Tom Tock

DAY 2: Open Thermal Duration

1	Sportsman	Max Hurst
2	Sportsman	Joe Melchiorre
3	Sportsman	Terry Cusack
4	Sportsman	Rob Rierson
5	Sportsman	Keith McCormick
1	Expert	Tom Tock
2	Expert	John Agnew
3	Expert	John Hauff
4	Expert	Chip Vignolini
5	Expert	Herb Kindfleisch

DAY 3: Open Thermal Duration

1	Sportsman	Frank Mangus
2	Sportsman	John Masiello
3	Sportsman	Joe Melchiorre
4	Sportsman	Curtis Smith
5	Sportsman	Deanna Vignolini
1	Expert	Ed Slegers
2	Expert	Derek Khaw
3	Expert	Mark Kummerow
4	Expert	Trey Wood
5	Expert	Mark Beiser

home a Futaba Skysport 4 Radio and some Bob Smith Industries CA Glue. Throughout the contest, Joe flew only one airplane: a "Spirit Lady". The fuselage was a Spirit and the wing appeared to be a Gentle Lady's with balsa sheeting (uncovered) on the tips. Radio was an Ace Micropro 8000. Don Vickers was crowned Expert Overall



Derek Khaw (left) converses with Ed Slegers at the end of the day. Photo by Dave Veatch.



Charlie Brecht shows great form off the winch. Photo by Dave Veatch.

Points Champion. Don did an outstanding job of flying way-out in search of thermals. Don had to switch airplanes after a low mid-air collision near the landing area. I'm not sure what he was flying (it may have been his Duck), but he was using an Airtronics Vision radio for guidance. Final award of the day went to the ProAm Team consisting of John Agnew, Charlie Brecht, Max Huster and Trey Wood.

Airfoil Plot Pro \$35



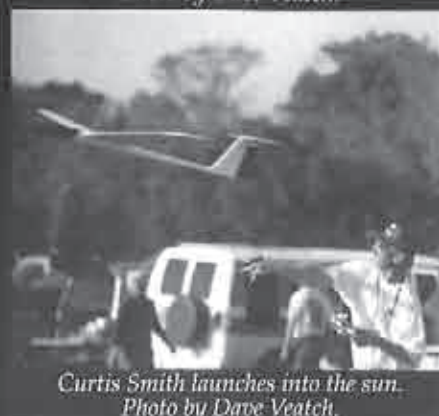
Everything you need to plot airfoils and Tecoa foam core templates for only \$35. Nothing else to buy. NACA 4-digit, NACA 5-digit, and Quabeck airfoil generators plus over 250 sport, sailplane, and FF airfoils are included. You can also enter coordinates, change camber, change thickness or combine airfoils. Airfoil Plot for power and scale filers includes over 30 sport, pattern, and scale airfoils for only \$25. Airfoil Plot Pro plus AFEdit Screen editor for \$45. Send #10 envelope with 55 cents postage for demo disk. Chuck Anderson, P. O. Box 305, Tullahoma, TN, 37388 Phone 615-455-6430

Also Available
Model Design \$40
Model Design Pro \$50
Design Pro + AFEdit \$60

Email canders@edge.net



Jerre Ferguson launches Olympic II. Photo by Dave Veatch.



Curtis Smith launches into the sun. Photo by Dave Veatch.

Then came the BIG raffle (And I do mean BIG!). Tom Beckman could hardly contain himself as his ticket number was called and he picked-up his brand new

Airtronics Stylus Radio! There were some great raffle prizes: JR micro servos, RCD Hi-Tec receiver, an Ed Slegers Super Vee Unlimited, Paul Perret Lasoar 960, Mark Kummerow two-meter original, and several Spirit kits provided by Great Planes, Grave's Hobby and J&B Hobby.

Pilot skill at Tangerine varies greatly, but the masters of the sport are very willing to assist new-comers. That is what I enjoy most about Tangerine; it doesn't feel like competition, it feels like fun! The challenge is personal; you against nature. Even a first-year Sportsman like myself has a chance of doing well. I've already marked my calendar for the next Tangerine Championship. If you'd like to participate in the 24th Annual Tangerine Soaring Championship, contact Don Cleveland, 1515 Cuthill Way, Casselberry, FL 32707; (407) 696-7516. ■

J & C HOBBIES

100 A Street, Penn Hills, PA 15235
ORDER LINE: 1-800-309-8314
INFO LINE: 412-795-9344

Everyday Low, Low Hitec Prices

Supreme Rx w/crystal	62.95
535 Micro Rx w/crystal	67.95
HS-60 Super Micro Servo	38.95
HS-80 Sub Micro Servo	26.95
HS-80MG w/Metal Gear	38.95
HS-101 Mini Servo	21.95
HS-101MG w/Metal Gears	32.95
HS-205BB Super Mini	25.95
HS-205MG w/Metal Gears	38.95
HS-605BB Ultra Torque	35.95
HS-605MG w/Metal Gears	46.95
HS-615MG Super Torque	46.95

CALL FOR OTHER LOW HITEC PRICING!
VISA/MASTERCARD/DISCOVER



1935 High Valley Trail
Grand Prairie, TX 75052

LITE ACCESSORIES

LASER CUT:

Let's!! CONTROL HORNS - RUDDER FLAP/AILERON
Let's!! BELLCRANKS - .2 OZ. 3/32" DIA. WIRE

972.602.3144
bkennedy@cyberramp.net



Maple Leaf 4

Two Channel Polyhedral HLG

Our super light floaters for maximum hang time.
Durable all composite construction with
carbon pushrods and Phil Pearson's X Tail.

Wing 7 1/2' Full Mail - 502 sq. in.
Flying weight: 6.5 - 10.0 oz.



Maple Leaf Design

Call Don Petersen at 510-234-8500
2215 California Avenue, Pittsburg, CA 94557 or mapleleaf@aol.com

IS YOUR EPOXY SETTING WORLD RECORDS?

PRO • GLAS Epoxy System



In Use Today By The **RAVEN**
An aircraft designed to break the world record for
human powered flight

<http://www.ihpva.org/Raven/>

We invite you to compare prices on our 2:1 system
12 oz kit \$12.38 ♦ 24 oz kit \$20.25 ♦ 48 oz kit \$31.19



Call or email today and Receive your **FREE CATALOG**
1-800-942-0660 or fiberlay@aol.com

FLIES LIKE IT'S CARBON/COMPOSITE • BUILDS LIKE IT'S FOAM.

State of the Art RG-14 Airfoil and Wingeron Control System combine to make a no-nonsense, no-compromise slope ship.

Virtually Indestructible
Builds With No Glue
Assembles in a FLASH

FOAMERON



\$69.95
+ Shipping

60" Wingspan
• NOTHING ELSE TO BUY BUT A RADIO
• All Assembly Materials, Hardware, & Your Choice of Colored Sheeting Included
• If You Don't Love How This Plane Performs, We'll Buy It Back! • Call For Details

Distributed By:

Torque & Recoil Club • 7004 Chinook • Austin, Texas 78736
Ph 512/454-0061/Fax 512/301-1782 • foameron@aol.com



Put some variety in your soaring!

Allure

78" span, 2 meter
Balsa, spruce, ply construction
Great first glider trainer
Only \$29.95

hitec RCD

The R/Con's Features
Call for prices

Toucan

43" span
No mixing required
Balsa, foam, ply construction
Kit price \$59.95

ASW-19 1/3 Scale

5 meter span, 196.5"
FG, foam, balsa, spruce, ply construction
Kit only \$475.00
ARTC kit \$880.00

Breezy

LSF nostalgia legal
88" span, 800 sq. ins. area
Balsa, spruce, ply construction
Very easy to build and fly
Complete kit \$79.95

Nomad

LSF Nostalgia Legal
98" span, standard class
Balsa, spruce, ply construction
Easy to build and fly
Complete kit \$79.95

Firefly

54" span, FG, foam, balsa
2 channel sloper/electric
Kit price \$95.95
Pre sheeted kit price \$159.95

Dragonfly

50" span sloper
FG, foam, balsa, ply construction
Perfect first slope glider
two channel, aileron/elevator
Complete kit \$79.95

T60R

60" span super sloper
FG, foam, balsa, ply construction
Has plug in wings for easy transport
Complete kit \$129.95

Viper-S

60" span hand-launch
FG, Kevlar, Carbon fiber
foam, balsa, ply construction
Complete kit \$119.95
Pre-sheeted kit \$179.95

Stryker

50" span super sloper
FG, foam, balsa, ply construction
Clear canopy and molded cockpit
Complete kit \$112.95

Obechi Sheets
1/32" X 16" X 105" long
\$8.00 ea. + \$8H

Super Dragonfly

70" span, big brother to our Dragonfly
FG, foam, balsa, ply construction
two channel, aileron/elevator, Complete kit \$119.95

Wind Weasel II

60" span hand-launch, FG, balsa, spruce
construction. Great first time hand-launch, plan
shows optional standard tail that requires no
mixing. Complete kit \$59.95

More kits to be
released soon.
Thank you for
your business.

We produce 9 custom FG, Kevlar, Carbon fuselages
for the scratch builder and/or replacements for
current owners that want a change. These range
from hand-launch to 5 meter sizes, many have slip
on nose cones. Photos of these fuselages are
shown in our catalog.

All kits come with complete hardware packs,
CAD plans, complete instructions, some kits
have photo illustrated instructions.

Please send \$5.00 in stamps for a copy of our latest photo illustrated
catalog and current price sheet. Call for availability, shipping and
handling charges. Prices & specs. subject to change without notice.
Indiana residents must add 5% Indiana State sales tax.

Dream Catcher Hobby, Inc.
R/C Glider kits & Supplies

P.O. Box 77 Bristol, IN 46607-0077, USA
Phone 219-848-1427
E Mail to DCHobby@Skyenet.net

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 Swinchart, 8733 Edgell Dr. SE, Huntsville, AL 35802; (205) 883-7831.

Alabama - Central Alabama Soaring Society, Ron Richardson (Treas.), 381 Stonebridge Rd., Birmingham, AL 35210; (205) 956-4744, e-mail: <r Richardson@wwisp.com>.

Alabama - Southern Alabama & NW Florida Aerotow, Asher Carmichael, (334) 626-9141, or Rusty Rood, (904) 432-3743.

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!

Arkansas - Northwest Arkansas Soaring Society, Tom Tapp (President), RT 2 Box 306, Huntsville, AR 72740; (501) 665-2201, eve.

California - California Slope Racers, John Dvorak, 1063 Glen Echo Ave., San Jose, CA 95125; (408) 287-0375.

California - Inland Soaring Society, Robert Cavazos, 12901 Forman Ave., Moreno Valley, CA 92553, RCAV@aol.com.

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

California - South Bay Soaring Society, A.J. Angelo, P.O. Box 2012, Sunnyvale, CA 94087; (415) 321-8583, fax (415) 853-6064.

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./Treas.), (609) 989-7991, e-mail JerseyBill@aol.com; Michael Lachowski (Editor), 448 County Rt 579, Millford, NJ 08848, e-mail mikel@airage.com.

Florida - Florida Soaring Society, Mark Atzel (President), 1810 SW Terrace, Ft. Lauderdale, FL 33312, (954) 792-4918.

Florida (Central) - Orlando Buzzards Soaring Society (www.specs-usa.com/-/ing/OrlandoBuzzards), Don Cleveland (Pres.), 1515 Cuthill Way, Casselberry, FL 32707, (407) 696-7516, <Dcleveland30@aol.com>.

Georgia - North Atlanta Soaring Association, Tim Foster, (770) 446-5938 or Tom Long, (770) 449-1968 (anytime).

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

Illinois (Chicago Area) - Silent Order of Aeromodeling 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 McLeave (Contact), 11621 Nantucket, Wichita, KS 67212; (316) 721-5647.

Kansas - Aerotowing, Jim Frickey, (913) 585-3714.

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

Kentucky - Louisville Area Soaring Society, Ed Wilson (Contact), 5308 Sprucewood Dr., Louisville, KY 40291; (502) 239-3150 (eve), e-mail jay_burkart@hp.com.

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@juno.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), Chris Bovais (Coordinator), 12504 Circle Drive, Rockville, MD 20850; (703) 643-5513.

Michigan - Greater Detroit Soaring & Hiking Society, Greg Nilsen (Sec.), 2163 Highsplit Dr., Rochester Hills, MI 48307; (810) 651-8598, GNilsen624@aol.com.

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; (816) 833-1553, eve.

Missouri - Mississippi Valley Soaring Assoc. (St. Louis area), Ken Trudeau, 3033 Plum Creek Dr., St. Charles, MO 63033; (314) 926-3537.

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

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

Nebraska - Ken Bergstrom, R.R. #1, Box 69 B, Merna, NE 68856; (308) 643-2424, <abergst@neb-sandhills.net>.

Nevada - Las Vegas Soaring Club, Jim Allen (President), 7117 Caprock Cir., Las Vegas, NV 89129; ph (702) 658-2363, fax (702) 658-1998.

New Jersey - Vintage Sailplane R/C Association, Richard G. Tams (President/Founder), 391 Central Ave., Hawthorne, NJ 07506; (201) 427-1773.

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

New York - Elmira - Harris Hill L/D R/C, aerotowing & slope, John Derstine, (717) 596-2392, e-mail 2076482@mcimail.com.

New York - aerotowing Long Island Area, Robin Lehman, (212) 744-1405.

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

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

New York - Syracuse area, Central NY Sailplane Group, Dave Zintek, Minoa, NY, (315) 656-7103, e-mail Zintek@aol.com.

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

Northwest Soaring Society (Oregon, Washington, Idaho, Montana, Alaska, British Columbia, Alberta), Sandie Pugh (Editor - NWSS Eagle), 1119 SW 333rd St., Federal Way, WA 98023, e-mail: parrot2luv@aol.com, (206) 874-2429 (H), (206) 655-1167 (W).

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 Schmoll, 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.

Oklahoma - Tulsa R/C Soaring Club (TULSOAR), http://www.mccserv.com/tulsoar

Oregon - Portland Area Soaring Society (PASS), Pat Chewning (Secretary), 16766 NW Yorktown Dr., Beaverton, OR 97006, (503) 645-0323, e-mail patch@sequent.com, web page: www.europa.com/~patch/

Oregon - Salem Soaring Society, Al Szymanski, (contact), (503) 585-0461, aszy@teleport.com, www.teleport.com/~aszy/sss.html

Oregon - Southern Oregon Soaring Society, Jerry Miller, 3431 S. Pacific Hwy. 17LR 64, Medford, OR 97501, e-mail Milljer@aol.com, ph/fax (541) 535-4410.

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

Tennessee - Tullahoma (Southern Middle Area), Coffee Airfoilers, Craig Logan, 147 Stillwood Dr., Manchester, TN 37355, (615) 728-5446, jclogan@edge.net.

Tennessee - Soaring Union of Nashville, Terry Silberman, PO Box 17946, Nashville, TN 37217-0946, (615) 399-0846.

Texas - aerotowing, Dallas area, Andrew Jamieson, 9426 Hillview, Dallas, TX 75231, (214) 349-9346, e-mail ajsleep@aol.com. Larry Sengbush, (972) 291-4840.

Utah - Intermountain Silent Flyers, Tom Hoopes, (801) 571-3702 (eve). "Come Fly With Us!"

Virginia - Tidewater Model Soaring Society, Herk Stokely, (757) 428-8064, herkstok@aol.com.

Virginia - Appalachian Soaring Association, Virginia's Southwest (Bristol area), Greg Finney, 106 Oakcrest Circle #5, Bristol, VA 24201; (540) 645-5772, e-mail <gfinney@naxx.com>.

Virginia - West Virginia & Western PA area, Chip Vignolini, 1305 Perry Ave., Morgantown, WV 26505, (304) 598-9506, ydnc30a@prodigy.com.

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

Wisconsin - Valley Aero Modelers, Lee Murray, 1300 Bay Ridge Rd., Appleton, WI 54915; (414) 731-4848, <74724.65@compuserve.com>.

Outside U.S.A.

Australia - Southern Soaring League, Inc., 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.

England (southwest) - Sean Walbank, Woolcombe Hays, Melbury Bubb, Dorchester, Dorset, DT2 0NJ, phone 01935-83316.

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

Japan - Dr. Paul "Sky Pilot" Clark, 2 - 35 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://chaos.fullerton.edu/~jclark/skypilot.

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

Seminars & Workshops

Free instruction for beginners on construction & flight techniques, week-ends (excl. contest days), "AJ" Angelo, South Bay Soaring Society (San Jose area), (415) 321-8583.

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. Check out the web site: www.ocpapsych.com/yellow.htm, or contact Manny Tau at taucm@kaiwan.com.

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 mikel@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.

R/C Soaring Web Site & E-Mail Addresses Directory, one stop search for URL's and e-mail addresses. Submit your cyber address free. Updated constantly: <http://mccserv.com/dozone/rcwebpgs/>

Hobby Shops that Carry RCSD

Finney's Hobbies 3455 Peachtree Industrial Blvd. Ste. 980 Duluth, GA 30136 (770) 495-8512	Hobby Hangar 1862 Petersburg Rd. Hebron, KY 41048 (606) 334-4331
Cummings Hobbies 550 San Anselmo Ave. San Anselmo, CA 94960 (415) 454-3087	Hobby Town U.S.A. 8060 S. 84th St. La Vista, NE 68128 (402) 597-1888
Gyro Hobbies 23052 Lake Forrest Dr. Unit C2 Laguna Hills, CA (714) 583-1775	Hobby Warehouse 4118 South St. Lakewood, CA 90712 (310) 531-8383
Gyro Hobbies 2 17431 Brookhurst Unit H Fountain Valley, CA 92708 (714) 378-8924	PEC'S Hobby Supplies 947 Shoreline Blvd. Mountain View, CA 94043 (415) 968-0800
Hobbies 'N Stuff 9577-L Osuna Rd. NE Albuquerque, NM 87111 (505) 293-1217	Tim's Bike & Hobby 2507 Broadway Everett, WA 98201 (206) 259-0912

Subscription Costs

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

Back Issue Cost

Back issues are available for 1995, 1996. All are mailed via first class or airmail.
U.S.A., Canada, Mexico: \$2.50 Per Issue
+ Tax (Texas Only: 7.25%)
United Kingdom/Europe: \$3.75 Per Issue
Asia/Africa/Middle East: \$4.35 Per Issue

Reference Material

"Summary of Low-Speed Airfoil Data - Volume 1" & "Volume 2", Michael Selig wind tunnel testing results. Cost for each: \$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 (757) 428-8064, email: herkstok@aol.com.

"Elmira Aerotow 96 Video" taken at the First Annual Northeast Aerotowing Fly-in, New York. Over 40 minutes of flying, interviews, and a special preview of the National Soaring Museum with Paul Schweizer. Check or money order, \$19.95 plus \$3.00 S&H (U.S.), payable to Harris Hill L/D R/C, c/o John Derstine, RD 3# Box 336, Gillett, PA 16925; (717) 596-2392. S&H foreign: \$6 Canada/Mexico, \$7 Europe, \$8 Asia/Africa, \$8.50 Pacific Rim. VHS format, NTSC standard.

RCSD Index/Database

Available from CompuServe's Modelnet Forum/General File Section, AOL Model Aviation Software Library (text copies, only), or web site: <http://dataex.com/~atkr95/pcsoar.htm>. Or, send 3.5" high density disks and SASE with stamps for 2 oz. Lee Murray, 1300 Bay Ridge Rd., Appleton, WI 54915; (414) 731-4848 after 5:30 pm weekdays or on weekends, 71724.65@compuserve.com.

THANK-YOU FOR KEEPING YOUR LISTINGS UP TO DATE!!



ZIRA

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

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

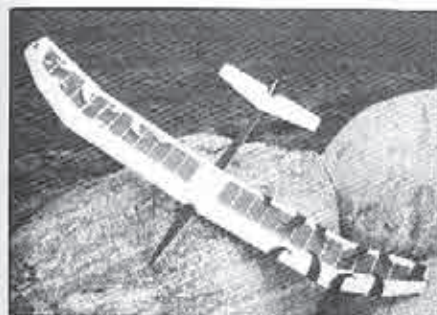
Name _____

Address _____

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

ILLUSION

Precision Hand Launch Glider Kit



You don't need to pay high prices to compete in Hand Launch events. The Illusion is "a poor man's hand launch glider" that took 4th place in its first competition. It delivers lots of hang time, is stable and turns on a dime. The kit comes complete with hardware, full-size plans and machine-cut parts. Try one yourself!

\$41.95

plus \$5 S&H, California

residents add \$3.46 sales tax.

SPECIFICATIONS

Wing Span: 55-1/4 in. Wing Area: 418 sq. in.

Cord: 8" Airfoil: SD7084

Flying Weight: 12-18 oz.

MM Glider
Tech

P.O. Box 39098
Downey, CA 90239
(310) 923-2414

CLIMMAX
NEW! PF
60" Span Hand Launch

Our New Poly-Fiberglass design for the ultimate in Thermal Hand Launch competition flying. Turns like a polyhedral with the speed, penetration and control of a flat wing.

CR
60" Span Slope Racer

One of the fastest, best handling and rugged planes flying the stores today.

Factory-Built Composite ARF

RR-15

Light-Fast & Affordable

60" Span, 4 Channel Bellco Wing Epoxy/Kevlar Body 18 lb oz flying wt.

FG Kit With Pre-Sheeted Wing
\$99.95

Fiberglass Kit
\$99.95

Pre-Fab
\$199.95

\$289.95

Shipping & Handling: \$2.00
California Sales Tax 8.25%

SEND S.A.S.E. FOR FREE CATALOG

619 / 630-8775

CR, High Performance Products • 205 Camille Way • Vista • CA • 92083

Aerospace Composite Products

Vacuum Bagging Video

NEW!



90 minutes
of How To
Instruction!

The video that shows you how.

- How to vacuum bag a set of obechi sheeted foam core wings.
- How to vacuum bag a set of big scale wings.
- How to vacuum bag a set of fiberglass skinned wings.

Plus, a run down on all the materials you need, helpful tips, techniques to let you confidently bag your own.

AEROSPACE
Composite Products

only **\$19.95**
plus \$5.00 shipping.



14210 Doolittle Drive, San Leandro, CA 94577 • Orders: (800) 811-2009 • Information: (510) 352-2022

TG-3 foamie trainer

from Dave's Aircraft Works

by Roger Saville, Training Coordinator
Harbor Soaring Society, AMA Charter # 128
Costa Mesa, California

The TG-3 doesn't "look" right. This was my first reaction, and the reaction of many other glider flyers at the field. However, after only two week ends of flying this "foamie trainer", we were convinced that this is the ideal training plane. The durability of the material, and the innovative TG-3 design, was beyond my expectations. As an added bonus, it is a nicely mannered glider and, when it finds a thermal, it climbs up very easily.

As the training coordinator for Harbor Soaring in Costa Mesa, California, I became aggravated by the lack of durability of the gliders that accompanied new flyers to our flying field. I was determined to do something to help "new guys" go home happy, rather than with a repair task. First, I made an electric powered fuselage for the club Paragon glider, to allow flying when the electric winch was not available. That served well for introduction and some flying time, but there was still a need for solo flying, launching, and especially landing of a more durable trainer.

Our friendly, local hobby shop, Gyro Hobbies in Lake Forest, responded to my plight and plea, and donated to our club their most durable glider: a \$70 Dave's Aircraft Works Schweizer TG-3 kit. I was amazed when I opened the box. There were only a few parts and pieces, not a stack of balsa. The manual was extremely well thought out. The kit included all the parts needed except for glue (shoe goo), spray adhesive, filament tape and covering.

I started building it on Monday evening, playing only 2 to 3 hours per evening; a total of about 12 hours for completion. As usual, I balanced the plane to the plan, with room to easily change nose weight and move the tow hook. Surprise! This is the first kit I have built that had the balance point and tow hook location on the plans correct for good flying. On Saturday it flew.

During the building, I made two mistakes. First, I was too lazy to find my soldering iron to cut (melt) the foam, spending at least an extra hour with saw and knife making holes for the radio gear, and trenches for the control rods. Second, I did not align the stabilizer when goo-ing on the tail; not having the top of the fuselage level with the top of the stab altered the incidence, which caused initial erratic behavior. In addition, I was generous with the goo and tape, since this was to be used for training. The weight came out about 37 ounces.

The instruction manual for building the TG-3 is the best I have seen. The manual is also a ground school for flying gliders, and even includes a glossary. The sheets of drawings are adequate in descriptions for an experienced builder to assemble the kit. The step-by-step instructions are thorough, fun, and include some good tips. In addition to suggesting a soldering iron for cutting, the manual suggests having a friend help putting the filament tape on the wings. I purchased a third roll of filament tape, because of folds in the tape, by attempting to apply it solo.

On its first day at the Harbor Soaring Society (HSS) flying field, I boldly did a mighty hand launch with the TG-3. It ballooned up into the wind to an altitude of about 15 feet, then did the predictable stall and dove straight down into the ground. Many negative thoughts rushed through my mind as I awaited the usual sounds and debris resulting from such a maneuver. To my amazement, the TG-3 bounced up about 6 inches from the point of impact. The nose covering was wrinkled and the wing was askew. I adjusted the wing and gave it a level toss, and it flew well. I was shocked and amazed; I was an instant believer in this spongy foam called expanded poly propylene.

I did some high start launches to adjust trim setting. Someone suggested I try the winch. I told myself, "Why not? Go for it." I tapped the winch foot switch as I do with my competition (built-up) 2 meter Spirit. The TG-3 scampered up the line. The flight was a little erratic, with good wing "wobble"



Photo of HSS training plane AKA TG-3 after 2 months of abuse.

"As photographed, the TG-3 has subtle repair markings. The nose was nearly torn off by using it as a trenching tool, while still under full winch power. The rip above the wing TE was a spectacular cartwheel injury. The latest noteworthy impact position was a slightly inverted, high speed landing, that popped the wing clean out of the fuselage. The trainee missed seeing his landing, as he thought he was flying a different glider.

"Another amazing aspect of the material, is the survival of the encased electronics; there has been no repair to the servos or receiver to date, although the battery pack did do a smoke job, apparently from a wiring short. The weekly repairs are usually done with the iron. Occasionally, I need to "goop" a rip, which appears to make it stronger than the original EPP.

"I think Dave Sanders has made a valuable contribution to our hobby with his TG-3."

...Roger Saville

through the lift. With adjustment to nose weight, I launched again with a dip at the top release, did a loop, and went thermal hunting. It took several experienced flyers to identify the incidence error, which was confirmed with an incidence meter.

The maneuverability is first rate. In thermals, it will stand on a wing tip and pull tight circles. Loops are easy. It has been flown inverted all around the field. I hand catch it or grab it, even when it is going too fast, since the nose is soft and the wings are strong. Rolls are not very aerobatic, but we have done a few.

Durability is absolutely astounding. On at least two occasions, it was winch launched into the ground, resulting in immediate re-kitting for most planes. But, after the tumbling stopped, the wing was slid back to the marks and it

was re-launched. It has been "full pedal" launched on the winch. (The wings do bend; it does zoom launches.) Loops off a winch line are now common launches. It is still strange to witness the amount of crash and abuse, and realize that the plane survives so well. I still enjoy dropping the plane at someone's feet, and watch their surprise when it bounces.

The repair work has been:

- 1) Re-shrink the covering (several times) to straighten the wing warp from abuse.
- 2) Goo the tears in the fuselage material from excessive abuse.
- 3) Align the tail incidence from thoughtless building.
- 4) Add filament tape around/under the fuselage at wing leading and trailing edges to tighten the wing saddle.
- 5) Add filament tape just forward of the tail feathers, around the fuselage, from doing cart wheels.

The covering gets wrinkles. The wing gets warped and causes quick turns during launch. A few minutes with the heat gun and iron and it is ready fly.

In the first month, the TG-3 has changed in perception by club flyers from ugly duckling to the best training plane that has appeared at our flying site. It is in demand for fun flying, and has become the standard teaching glider. The members have become much more active in doing novice training, since they get to fly it, too. It has been flown by at least 20 members and 10 novice flyers. It has thermaled right up through other planes, and has been a tiny speck in the sky (literally out of sight for my old eyes) on many occasions. I have not witnessed any plane attracting so much attention at the field.

Well what can I say in conclusion? I like it. In fact, I like the trainer so much, that I am building one just for me: the aileron option configuration. My reason for having my own is not for the primary feature of durability, but because it is a fun plane.

Dave's Aircraft Works, (714) 248-2773
104271.3352@compuserve.com

Superior Design... Superior Style...

LASOAR 960

Designed by Paul Perret

The wing is lightweight, stiff, and strong. Within its two-piece, triple-taper planform is a 1/2" carbon fiber wingrod mated to two 30" carbon fiber tube spars. The structure is further reinforced with carbon fiber spar caps, carbon fiber servo well reinforcements, and fiberglass at the wing roots and trailing edges.

These wings are beautifully and meticulously crafted by the designer with the flaps and ailerons cut out, servo wire holes drilled, and root ribs installed.

The fuselage is strong and durable—made for aggressive launching and landing. Yet it is lightweight. It is manufactured by the designer, using West Systems epoxy, fiberglass, a generous amount of Kevlar[™] and strategically placed carbon fiber and aircraft plywood.

The fuselage and canopy are not only aerodynamic and sleek, they are also aesthetically pleasing and uniquely stylish with a slightly descending nose, raised canopy and shapely tail.

SPECS:

Airfoil: SD7037 Mod & Thinned Tips
Wing Span: 118"
Wing Area: 960 sq. in.
Weight: 65 - 68 oz.
Wing Loading: 9.75 - 10.19 oz/sq. ft.
Planform: Triple taper/Two piece

Complete Kit
\$379 + \$15 S&H

Perret's Studio

1780 Prytania Street

New Orleans, LA 70130

(504) 524-3442

Advertiser Index

- 59 Aerospace Composite Products
- 52 Anderson, Chuck
- 9 B² Streamlines
- 43 Bowman's Hobbies
- 9 Composite Structures Technology
- 59 C.R. High Performance Products
- 21 Critter Bits & Multiplex U.S.A.
- 39 Critter Bits & Multiplex U.S.A.
- 47 Critter Bits & Multiplex U.S.A.
- 63 Dave's Aircraft Works
- 55 Dream Catcher Hobby, Inc.
- 54 Fiberlay
- 35 Finney's Hobbies
- 40 Hobby Club
- 49 International Scale Soaring Assoc.
- 53 J&C Hobbies
- 53 Kennedy Composites
- 46 League of Silent Flight
- 35 Major Hobby
- 54 Maple Leaf Design
- 59 MM Glider Tech
- 27 Patterick's Inc.
- 35 Performance Composites
- 23, 62 Perret's Studio
- 27 PJ's Epoxy
- 58 R/C Soaring Digest
- 46 RuR Products
- 4 Sailplane Homebuilders Association
- 2 Sailplanes Unlimited, Ltd.
- 41 Sanders, Eric (CompuFoil)
- 32, 33 Slegers International
- 14 Slegers International
- 64 Slegers International
- 31 Squires Model Products
- 37 Studio 'B'
- 9 The Birdworks
- 7 Thermal Talk
- 54 Torque & Recoil Club
- 15 Trick R/C
- 63 T.W.I.T.T.
- 42 Unbeaten Path Imports
- 4 Vintage Sailplane Association

T.W.I.T.T.

(The Wing Is The Thing)

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

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

DAVE'S AIRCRAFT WORKS

The Gunfighter's Choice

NEW! D.A.W. KILLER FOAMIE WARBIRDS!

	Foam51D	Span: 48"
		Length: 35"
		Area: 453"
		31 - 33 oz.
		S3016
		2 - 4 ch.

	Span: 48"	
	Length: 35"	
	Area: 453"	
	31 - 33 oz.	
		S3016
		2 - 4 ch.

THE ULTIMATE SLOPE COMBAT MACHINES!

You can have it all... Looks, durability AND performance; all in one airframe! Designed from the ground up with full-contact combat in mind, you will find these simple to construct slope killers the most satisfying warbirds you've ever owned. Wings and fuselage are constructed of the latest technology, combat proven EPP super-foam with Coroplast tail group. Designed to be covered with iron-on film coverings! Kits include airframe components, all wood materials, basic hardware and illustrated instruction manual. \$59.95 ea. + \$5.00 shipping in cont. U.S. (CA res. add 7.75% tax).

ALSO AVAILABLE:

We continue to offer our original wood kits! These are also suitable for Speed 400 electric conversion.

P51D- 34 3/4" W.S.
Ta152- 34 3/4" W.S.
P40- 31 1/2" W.S.
Hurricane- 31 1/2" W.S.
Mc109- 30 1/2" W.S.
Ki61- 35" W.S.



Complete kits \$35.95 + 7.00 s/h in cont. U.S. (CA res. add 7.75% tax). Send \$1.00 for complete catalog. See our reviews in July '96 Model Builder and QF1 21!

DAVE'S AIRCRAFT WORKS

34455 Camino El Molino, Capistrano Beach, CA 92624
(714) 249-2773 or E-mail to: 104271.3352@compuserve.com