

# Too Much Fun!

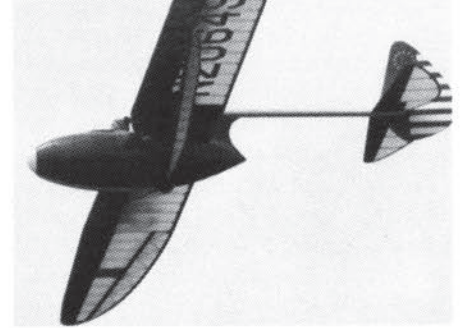
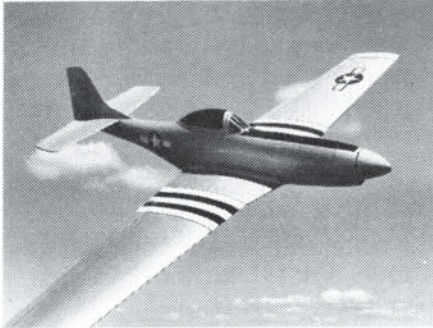
Special Expanded Coverage of the  
Tri-City Soarers' Scale Slope Soaring Fun Fly

# Slope Soaring News

Vol. 1, No. 8

June 1989

\$1.50



(Left) Gene Cope tests the lift before launching his TG-8 Piper. The full-scale version is a military training glider made from a converted power plane.

(Top, left) That's a Cliff Hanger Models P-51 Mustang.

(Top, center) Scale detailing on the vintage sailplanes included complete cockpits and pilots.

(Top, right) Erik Eiche scratch-built this striking quarter-scale Baby Albatross from a three-view drawing and some documentary photos.

- Hans Weiss Memorial Slope Race ● Have You Heard About The Torrey Pines Scale Slope Soaring Fun Fly? ● Exclusive! First look at Michael Selig's SD6060 Airfoil – Will It Replace The Eppler 374? ●

# Wingin' It

**LIFE IS TOUGH...  
...and then you fly!**

Sitting numb-brained in rush-hour traffic, or enjoying a rare idle instant at work, I often flash back on moments spent flying. Mini-memories, encapsulated like video snapshots in my imagination.

Like flying inverted. Just imagine it for a second. Down pressure on the elevator, leading the plane through the turns with transmitter movement, aiming the antenna like a beginner, concentrating on maintaining level flight and airspeed so as not to stall out or drop into an inverted dive.

I'm still not comfortable with extended periods of flying around upside-down. I haven't developed the right reflexes yet. In a panic situation, my impulses still scream: Pull up! Only intense concentration allows me to make the correct move instead. Well... usually. So, I practice, both on the slope and by visualizing it at times when I can't be out there.



**Hard at work on another SSN story!**  
Sitting down on the job, Charlie guides the Snipe around a Mexican cove accompanied by *Top Gun* tunes on Jarel's CD player.

It's a good mental respite, a relaxing break from life's everyday cares. And I'll bet it's something we all do.

And then there's the 250-foot stall turns at Richland the day before the scale fun fly... The Snipe had its day there. We'd never seen such lift! It would whistle past, go vertical and climb and climb and climb some more! My biggest glider would turn into a speck, arch over slowly, then dive vertically, pull mega-Gs in front of my nose and launch up another 250 feet for another stall turn. It was incredible!

Ah, the Snipe... May it rest in peace. Two days later, I put it into Eagle Butte's craggy face at 150 mph with my thumb apparently up my nose instead of wherever it should have been. Its disassembly was total, right down to ripping the bottom off the Airtronics wingeron servo, stripping its gears and breaking a chunk out of the servo wheel when the left wing snapped. That heavy fiberglass fuse had previously survived a vertical spike into a gravel road, but those Washington lava chunks shredded it like lettuce in a food processor. Memories aren't always giggle-inducing.

I'm still wandering off into daydreams about the Mexico trip pictured here. Nothing but happy memories from La Bufadora. Telos designer Richard Jarel organized an entourage of slope soaring nuts and their "significant others" and led us on a long weekend of camping, relaxing, campfire activities, good south-of-the-border food and superb slope flying. He's writing a story about it, so I won't ramble on with the details, but let it suffice to say that it was a much-appreciated break from life in the overpopulated Los Angeles smog basin.

Slope soaring. Its contradictory hectic/peaceful, thrilling/relaxing nature is demanding yet rewarding. The confinement of the workshop is repaid by the absolute freedom of flight without artificial power. There's something about that melding of technology and the natural power of the air around us that's intriguing beyond explanation. There's the feeling of accomplishment that comes from building an efficient,

capable, attractive flying machine, and from controlling it through a series of intricate aerobatic maneuvers. There's the pride in harnessing the natural power of the wind...and playing with it as a toy. And there's that pure feeling of happiness, the same one a little boy experiences when he climbs to the top of the highest hill around and tosses his simple balsa glider into a thermal for the longest flight of its short life.

After a day of flying, even the freeway traffic seems almost bearable.

**Charlie Morey**

## CONTENTS

### Slope Racing!

Every year, the Hans Weiss Memorial Slope Race is run at Hughes Hill in memory of Wilshire Models' original owner. SoCal's top racers wouldn't miss it. Neither will you!.....4

### Too Much Fun!

Wil Byers and the Tri-City Soarers presented their Second Annual Scale Slope Soaring Fun Fly. More than 130 scale gliders flew over Eagle Butte on Memorial Day Weekend, and SSN was there!.....6

### Selig's SD6060

Michael Selig took a truckload of model airfoils into the Princeton University wind tunnel. When he came out, there was a new, faster, cleaner Eppler 374: the SD6060. Try it out, and see what you think!.....12

### Departments

Wingin' It .....2  
Air Mail/Want Ads.....15  
Coming Soon! .....16

### STAFF

#### Charlie Morey

EDITORIAL CONTRIBUTIONS are welcomed. Unfortunately, we can't pay for them. Editorial material is selected based on its perceived value to the slope-soaring community, and the publisher assumes no responsibility for accuracy of content.

CLUB CONTRIBUTIONS are welcomed. Please keep us notified of your club's events and/or fun flying activities. Material printed will be selected at the discretion of the editors.

ALL CONTRIBUTIONS should be addressed to SSN, c/o Charlie Morey, 2601 E. 19th St., #29, Signal Hill, CA 90804. All contributions requested for return must be accompanied by return postage. The editorial deadline is the 15th of the month preceding the cover date. All material is subject to editing and revision as necessary to meet SSN requirements. We can accept Ascii text files over the phone or work with your IBM-compatible 3-1/2" or 5-1/4" disk. Please call first for details at 213/494-3712. Don't get depressed if you get our answering machine. Just leave your name, phone number and the purpose of your call, and we'll get back to you.

ADVERTISING inquiries should be addressed to SSN, c/o Charlie Morey, 2601 E. 19th St., #29, Signal Hill, CA 90804, 213/494-3712.

SUBSCRIPTIONS are \$15.95 per year in the U.S.; \$24 U.S. currency per year in Canada/Mexico; \$32 U.S. per year in Europe/England; \$40 U.S. per year in Asia/Pacific/Middle East.

SLOPE SOARING NEWS is published monthly, conditions permitting. Copyright 1989 by Charlie Morey. Reproduction of any material with the publisher's permission only.

Fly with San Diego's Torrey Pines Gulls at the

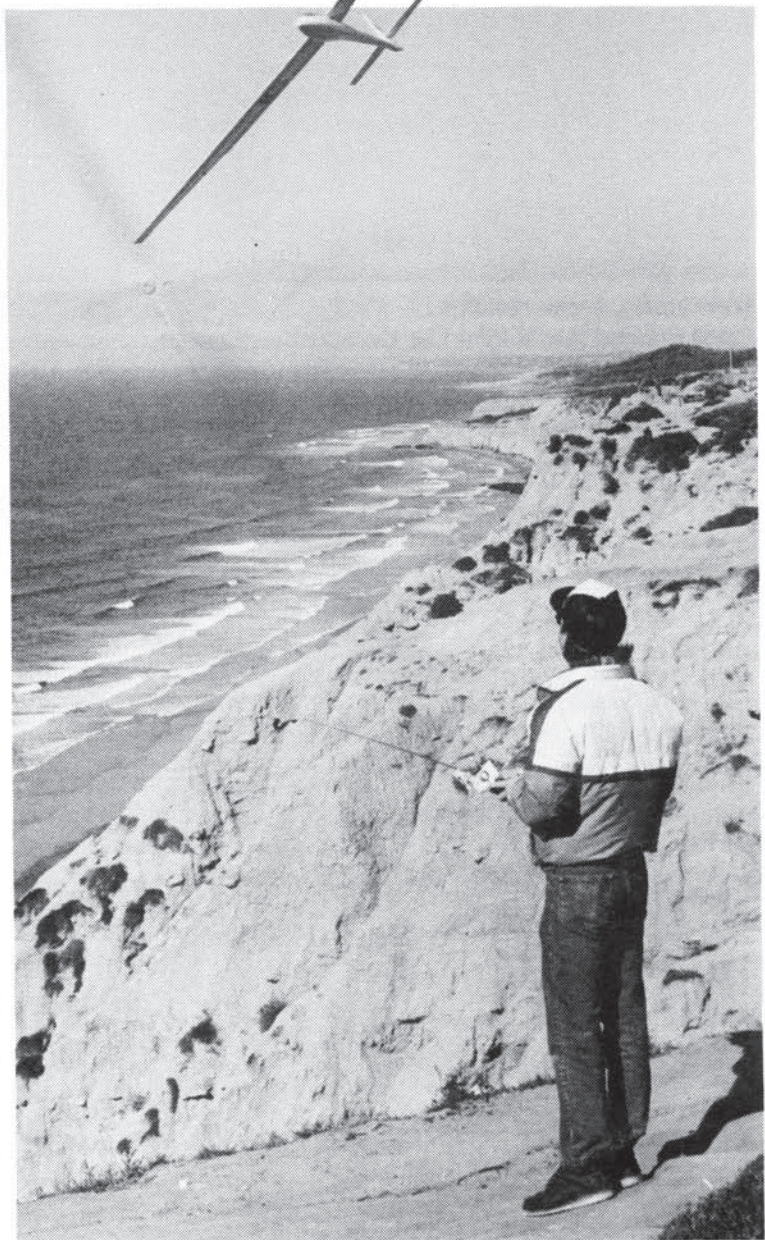
---

# TORREY PINES SCALE FUN FLY!

---

Thanksgiving Weekend

● November 24-26, 1989



**Make sure you're on our mailing list for full details!**

**Send your name, address and phone number to**

**Charlie Morey**

**Slope Soaring News**

**2601 E. 19th St., #29**

**Signal Hill, CA 90804**



**New plane, same results...**

Daryl Perkins flew a Flite Lite Composites Falcon 880 instead of his Mueller Comet and won again!

**The Falcon in flight.**

The big yellow bird outpaced the others convincingly. Note poly tips.

**Hans Weiss Memorial Slope Race**

**The Falcon has Landed!**

By Charlie Morey  
**HUGHES HILL, MAY 20-21**

**D**aryl Perkins brought a new plane to Hughes Hill and proceeded to run away from the competition in the annual Hans Weiss Memorial Slope Race. Although he'd been campaigning a

German-made Mueller Comet when he won at Davenport last month, this time Daryl was flying Mark Allen's made-in-the-USA Falcon 880. It proved to be the right slope weapon; Perkins aced six consecutive heats, winning outright with no fly-off!

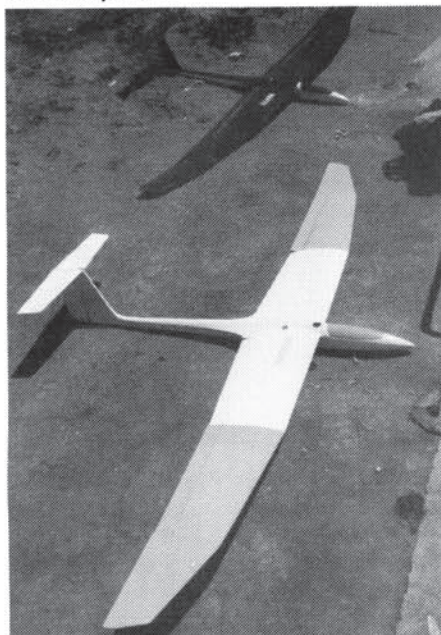
At first glance, the Falcon 880 seems an unlikely contender in slope racing. Mark Allen of Flite Lite Composites designed the ship as a high-tech, thermal-competition machine, and it even has a mild polyhedral break in the wing. Allen gave the Falcon full-house con-

**Wild Indians!**

Mark Grand's Super Comanche took second place.

**Team Super Comanche.**

Slope racing isn't a one-man game. Craig "Kid" Currie gets assistance from mentor Mark Grand.



trols: rudder, elevator, ailerons and flaps, all mixed electronically, F3B-style. He utilized two of Michael Selig's amazing airfoils, starting with the S3021 at the root and transitioning to the S3014 at the tips.

The Falcon 880 that Perkins raced was beefed up and ballasted appropriately. It weighed over eight pounds, news that Mark Allen found "interesting" since he'd designed the plane with a 6.75 lb. maximum weight in mind! The wing was 'glassed, and it sported arrowshaft hinges; otherwise it was Allen's original thermalling design. It's truly a beautiful glider, but it did look out of place beside the straight-winged slope racers when sitting on the ground. In the air, it was another story!

Second place—with five wins and a second place—went to Mark Grand and his modified Super Comanche. Mark put his "home court" advantage to work and found both lift and speed to outdistance all but Perkins.

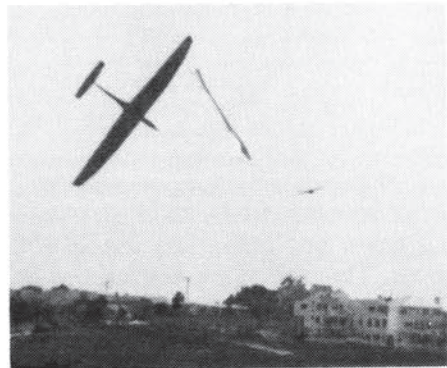
RCM Magazine soaring columnist Don Edberg placed third, one point behind Grand. A fly-off decided fourth and fifth place when Estancia regulars Tony Martin and Jason Perrin tied with nine points each. Tony's one-off fiberglass design and Jason's Snipe collided in the fly-off with the Snipe going down and Martin's ship taking fourth overall.

Jerry Bridgeman was unanimously voted winner of the Pilots' Choice trophy for losing the most planes. Jerry went through his new slope/electric design and two standard Snipes to earn this coveted award.

Special thanks goes to Contest Director Ray Kuntz for organizing the event and to Chuck Allen at Chuck's Model Shop in Hawthorne for the trophies.

#### A tap in the turn...

...and Jerry Bridgeman's tailless Snipe earns the Pilot's Choice Award.



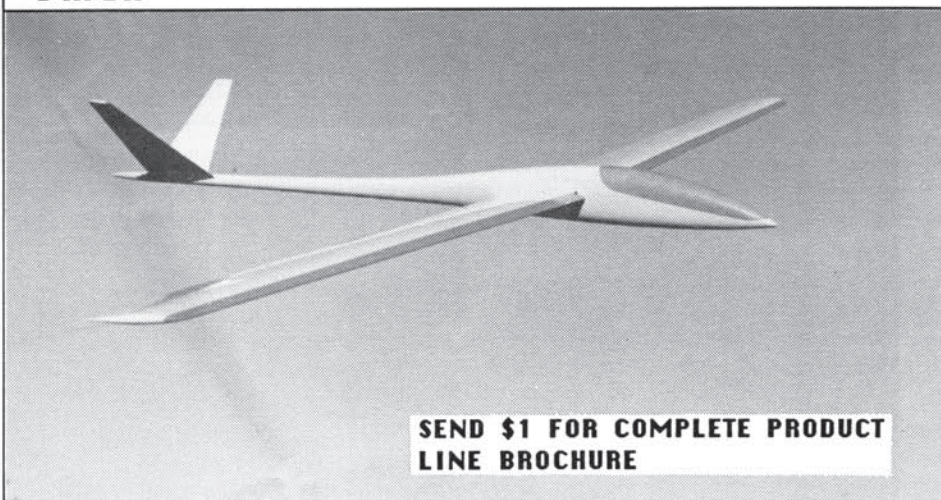
faster

higher

easier

# US sailplanes

## Umax



**SEND \$1 FOR COMPLETE PRODUCT LINE BROCHURE**

Category : Slope soarer - light to moderate lift  
Aerobatic - order with 1/64 th ply wingskins. Still good for light lift and very rugged!  
Strictly light lift and/or thermal - order balsa skins. Use medium hi-start or medium winch.

Controls : 2 channel (pitcheron) use either electronic or mechanical mixer (electr. shown on drawing)- this gives aileron and elevator control.

Structure : Fuselage - Epoxy/glass/kevlar composite molding . Seamless, pressure laminated. Hatch pre-cut, holes drilled, tail mount holes pre-drilled. Weight 7ozs. Lay-up equivalent to 5 layers 4oz. cloth.

Status/Pricing : Available 3/31/89 \$112.95(balsa) \$119.95(ply)  
Pre-skinned cores(ply version only) add \$30.00  
Washington state residents add 8.1% SST

#### Dimensions :

Span = 78.75 ins / 2M Length = 44.5ins  
Root chord = 5.7 ins Tip chord = 3.5 ins  
Area = 362 sq. ins. / 2.5 sq.ft.  
Weight = 18-20 ozs. ( airframe only)  
28-30 ozs. total  
Wing loading = 12 ozs/sq. ft.  
Airfoils : Eppler 374

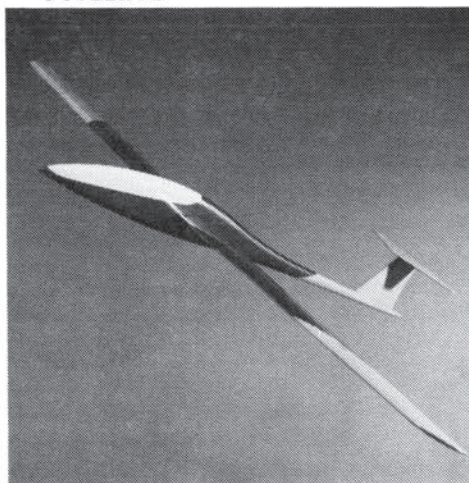
#### Wings : Blue foam cores

1/64th ply skins (aerobat-cruiser)  
1/16th balsa skins (light lift; spars for winch/hi-start optional)

#### Tails : Sheet balsa, plug on.

## ROTOR

### NEW! REDESIGNED, STRONGER FUSELAGE



**AVAILABLE JULY/89- GLASS/KEVLAR MOLDED FUSELAGE**

#### Category : Dedicated slope soarer

Options : 2m light lift wing kit-plugs on to same wingrod-fuselage.

Dimensions : Span = 58 in ( 2m light lift )  
Root/tip chords = 6.5/4.5 ins  
Aspect ratio = 11 ( 14 light lift )  
Area = 305 (441) sq.ins.  
Weight = 31 (36) ozs.  
Wing loading = 15 (12) ozs/sq. ft.

Controls : 2 channel , Pitcheron  
2 servos of 50 oz.-in. torque minimum  
Electronic or mechanical mixing ok  
Wing section : Eppler 374 @7.5% ( 9.5%)

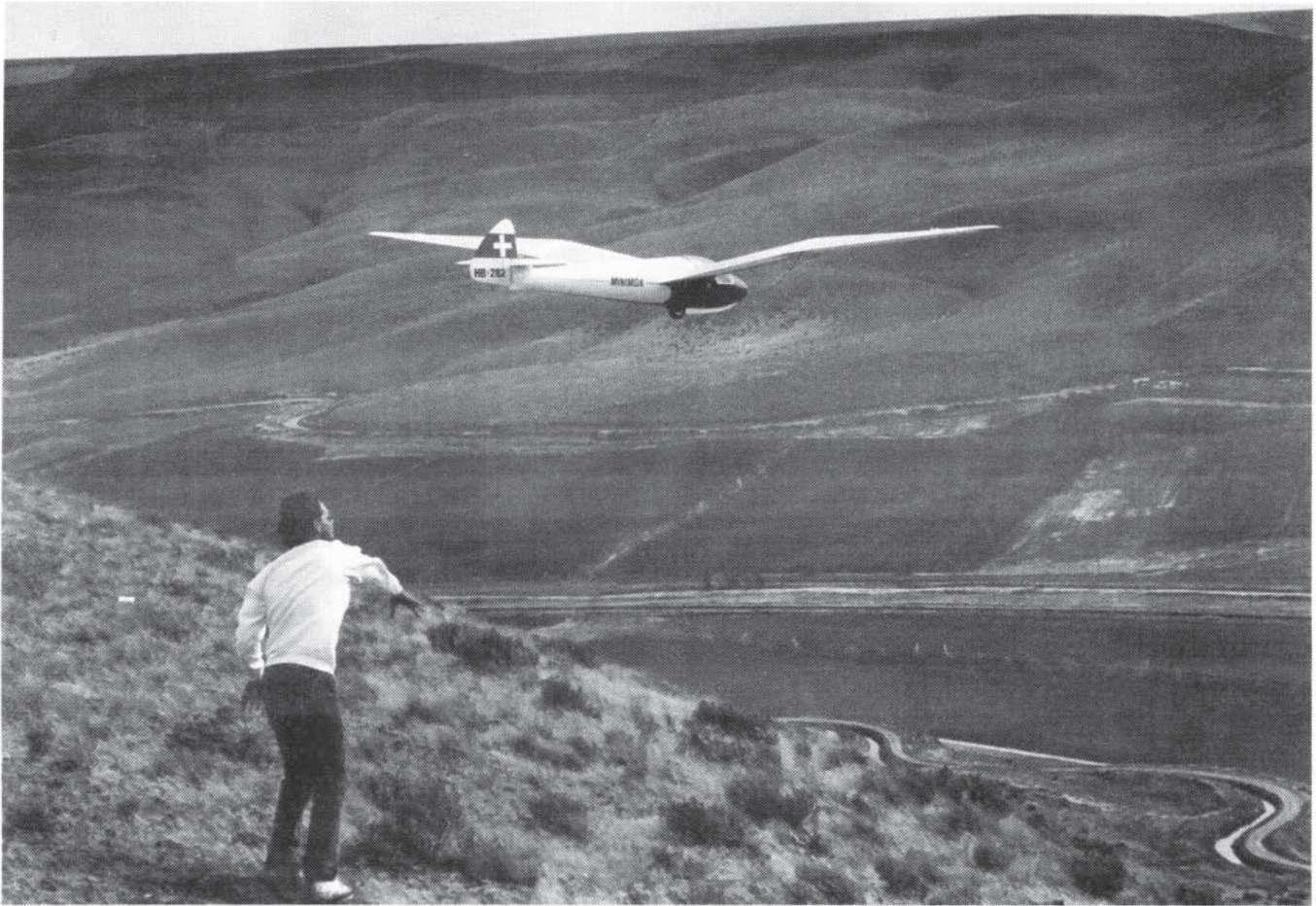
Structure : Fuselage - light ply and bass , no glassing required.  
Wing - Standard : blue foam cores , dense obechi skins, spruce LE.  
- Light lift : balsa skins  
Tail - all balsa , nylon bolt mounted

Pricing : Standard ROTOR kit \$64.95  
Light lift wing kit \$24.95  
Pre-sheated wings add \$25.00  
(avail. for standard wing only )  
Shipping \$ 3.00  
Wash state res add 8.1%sst

#### ORDERING

send check or money order (cash COD OK) to

US sailplanes 2317 N63rd Seattle , WA 98103 206 525 5776



**Big sky, big sailplanes.**

Contest Director Wil Byers launches Bill Brokaw's quarter-scale Minimoa vintage sailplane. Beautiful detailing and workmanship, and it flew perfectly!

## Too Much Fun!

### Tri-City Soarers' Scale Slope Soaring Fun Fly

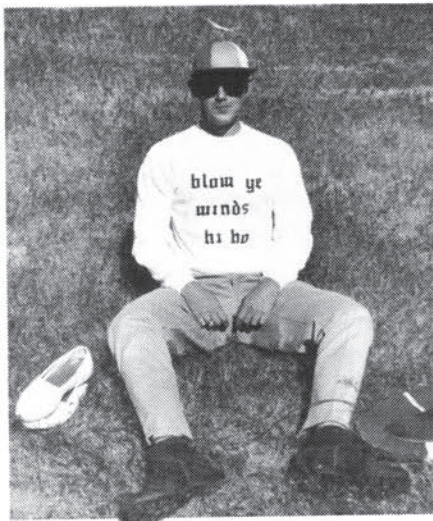
SoCal slope nuts aren't used to organization. Typically, we fly on sites that are questionably legal, we practice only token frequency control, and we land wherever there's a few square yards of relatively rock-, bush- and people-free space.

Then, Marty Silberstein of Cliff Hanger Models and I drove to Richland, Washington to participate in the Tri-City Soarers Scale Slope Soaring Fun Fly (try saying that three times real fast!).

I showed up at Marty's shop late Tuesday afternoon and picked up (1) Marty, (2) about 14 tons of his stuff, and (3) my brand-new power scale plane—a Cliff Hanger P-40 Warhawk built and beautifully painted by Mr. Silberstein himself. We then drove straight through (1,100 miles, 18 hours), arriving at the Clover

**What...me worry?**

Even the serious, high-performance sailplane designer Ken Stuhr succumbed to the fun-fly attitude.



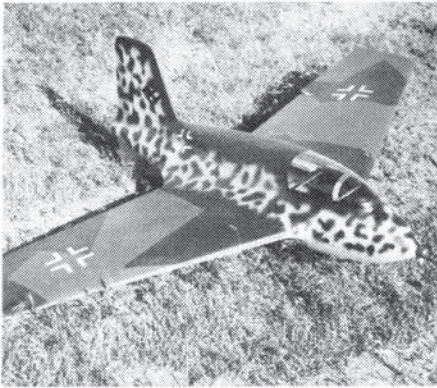
Island Inn at about 1:00 p.m. the next afternoon.

The first order of the day after checking in? Get directions to the hill! Let's go flying! A quick call to Contest Director Wil Byers' home and a pleasant chat with his wife Mary Jo told us how to get to Eagle Butte.

**Beach Boys in the Desert**

Imagine our amazement as we stood for the first time atop this towering butte, 20-30 mph wind in our faces, overlooking the valley floor hundreds of feet below. Here was a superb flying site—with conditions equal or better to anything we'd left at home—and behind us were hundreds of acres of open field: no trees, no rocks...just lots of soft grass. The only thing missing was St. Peter guarding the gate (luckily for us).

We tossed off a couple of planes and



### German rocket plane.

Here's VS Sailplanes' new soon-to-be kit, the ME-163 Komet, a WWII rocket-powered fighter.

proceeded to discover that "big sky" flying (as we came to call it) is a whole lot different than our SoCal coastal cliff flying. You see, at Point Fermin and Bluff Cove, we fly close, right in front of our faces most of the time, in a relatively small tunnel of vertical wind. No thermals, just smooth, clean wind straight off the Pacific Ocean, funneled upward into concentrated lift by our curved-walled coves.

Eagle Butte is another story entirely. For one thing, there's nothing but open sky for miles in any direction, and there's lift everywhere, thanks to those weird inland things called thermals. And in Washington, thermals can get big!

Marty and I discovered our first thermal while flying SoCal-style, back and forth in front of our noses. One second, we were leaning into a 30 mph wind blast, the next second, it got mysteriously calm yet our planes picked up speed and altitude instantly!

"Wow! What happened? This is hot!" we exclaimed to each other, grinning and dialling in more down-trim to stay in the spirit of things.

A minute later: "Wow! What happened? Where's the lift?" the tune changed as we discovered the downside of thermals: the sink that surrounds 'em.

The good news about Eagle Butte (in addition to all the excellent conditions I've already mentioned) is that you can usually wait out poor lift. The hill is huge, and there's a large, soft field below. We got well below the ridge line several times, scratching for lift, and it always came back, allowing us to regain altitude and land in that big, beautiful field behind us.

During the weekend, not everyone was

as fortunate. On Sunday morning, the wind was not cooperating at all, and three large scale sailplanes took the long, downward trip to the valley floor. Even heaven has lousy lift sometimes.

### What's a Fun Fly?

The Tri-City Soarers' Scale Slope Soaring Fun Fly was the most relaxing, interesting and enjoyable time a guy could possibly have with his clothes on. There's no official competition. It's like a great day at the slope when all the

other guys bring out their best stuff and do a massive show-and-tell-and-fly.

There was plenty of flying time for all. And when we weren't flying, we were having so much fun talking with others and looking at their planes, that there were no dull moments throughout the entire three-day event.

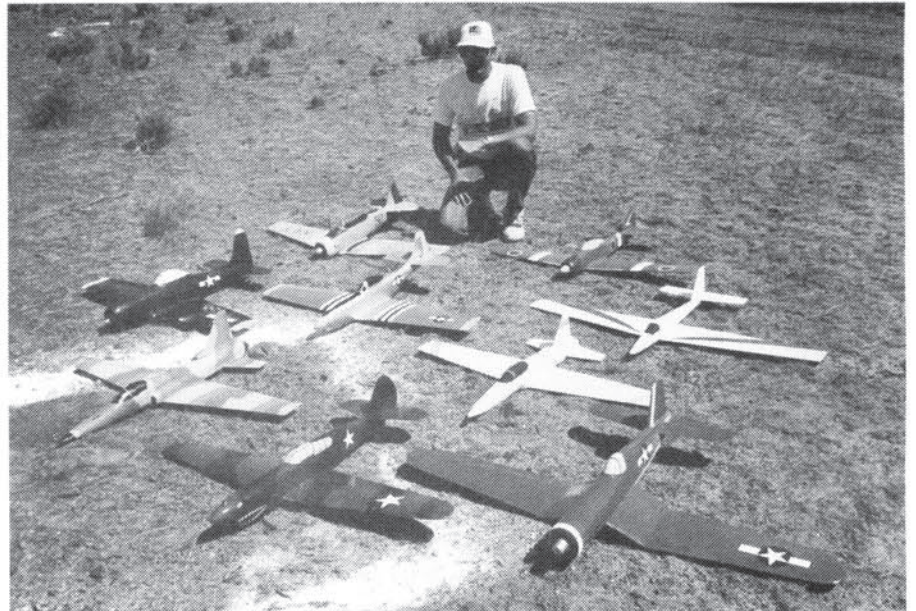
Some truly impressive models were on display, as you can see from the photos and captions. Hundreds of hours went

*(Continued on page 10.)*



### Bad Company.

Watch out for those power-scale guys! (Above) Meet the Idaho gang, left to right, that's Hal Weber (F-82, Staggerwing Beech, P-51), Larry DeCoux (P-38, Stiletto/P-51), Ed Mason (Corsair F2G, "Stega" Penetrator), Wayne Stanford (Rockwell P-51, F-82) and Dave Wilms (pit crew). (Below) That's Marty Silberstein and his line-up of Cliff Hanger Models power scalers, plus one non-scale glider, the Cliff Hanger.





**Fourteen feet of Northrup Flying Wing.**

This masterpiece built by the Seattle Soarheads was introduced at last year's event. It didn't fly this year, but the mere presence of the behemoth was worth the price of admission. Different slope, by the way, on a showery Sunday.

**Top Gun performance in a small package.**

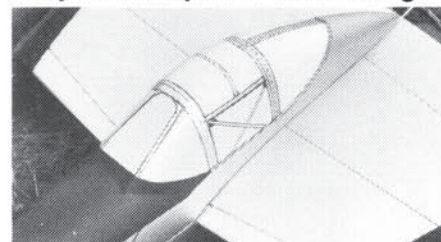
Byron Bruce of Combat Models introduced his new Russian MiG-27 and American A-4 power scalers.

**We're talkin' FAST!**

Canadian Peter Marshall and his hot Combat Models F-16.



**Tony Palethorpe's P-38 detailing.**





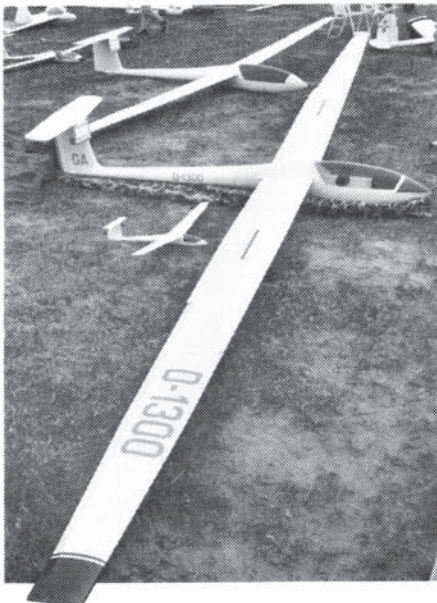


**Want a ride?**

Gary Anderson of American Sailplane Designs stands ready at the sticks as Ken Stuhr prepares to toss (heave?) Gary's ASW-20 over the brink. The huge 21-foot wingspan sailplane flew beautifully, even in light lift!

**David and Goliath.**

Here's the American Sailplane Designs ASW-20 on the ground with its new little brother, the Phoebus. Gary Anderson had the distinction of flying both the largest and the smallest planes at the meet.



**Scaleheads.**

Andreas von Schoenebeck (left) of Fiber Glas Flugel Unlimited came from Germany to attend the fun fly. He was amazed at the way Bill Liscomb of Scale Glider Components flew the big ships. "I have never seen my planes do such things!" he exclaimed.



(Continued from page 7)  
into designing and building many of them, and the Tri-City Soarers provided rigid frequency control to assure the big beauties' survival.

### Radio Free Washington

All transmitters were placed in an impound area. While that may seem unnecessary, it does prevent interference when an unthinking pilot turns on his radio in the pit area to quick-check a function on his model. And believe it or not, it does happen!



### A smile in spite of it all.

Wayne Stanford (left) pauses for a breather on his way back up the hill with flying buddies Ed Mason and Dave Wilms after losing his magnificent F-82 twin Mustang to suspected radio interference.



**South Bay Soaring Society's John Dvorak...**  
...and his yellow and blue, quarter-scale Schweizer TG-2.

### Vintage sailplanes exhibited superb workmanship and detail.

Bob DeShields and Erik Eiche display two of the vintage gliders. Bob's SG-38 is built from the Krick kit, available at Hobby Lobby. Erik scratch-built his Baby Albatross, carrying the detail right down to the mahogany-stained pod, from the three-view he found in Martin Simons' book *The World's Vintage Sailplanes*.

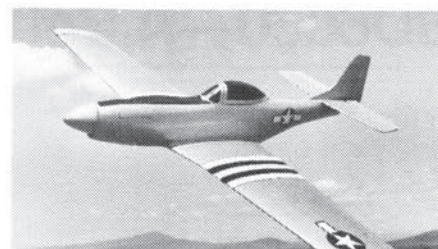




F-20 Tigershark



P-40 Warhawk



P-51 Mustang

## Cliff Hanger Models

“When you’re ready for the real thing!”

Choose one or more of these exciting fighter planes!

F-5E Tiger II  
P-40 Warhawk  
Cliff Hanger

F-20 Tigershark  
KAI-100 (Zero)  
F-8F Bearcat

F4U Corsair  
T-6 Texan  
P-51D Mustang

F-18 Hornet

COMING SOON!

F-16 Falcon

Complete kits, \$89.95, include fiberglass fuselage, foam cores, all wood.

Send \$1.00 for our catalog. DEALER INQUIRIES INVITED. See your local dealer or contact:

**Cliff Hanger Models, P.O. Box 9081, Torrance, CA 90508; (213)320-4530**

The rule is simple: If you don't have the frequency pin, don't turn on. When we wanted to fly, we'd take our planes up to the impound area and check to see if the pin was available. If it was, we'd pick up the transmitter and pin and proceed to the frequency scanner. The operator would select our frequency on the scanner and check to assure that it was clear. Then, he'd turn on our transmitter causing the scanner's alarm to sound. That assured that (1) the scanner was reading correctly and (2) we actually were on the frequency we'd selected (yes, it's true; sometimes

people actually do pick up the wrong pin). With security like that, the valuable planes were relatively safe. I'm aware of only one loss throughout the weekend that appeared to be a frequency problem, and even that's an unsolved mystery since the pilot went through the proper procedure.

### Fly Till You Die

Three days of virtually unlimited flying at one of the country's finest sites; how can you top that? Well, it's great, but wait (as they say on TV), there's more!

On Saturday night, there's a banquet.

A no-host bar (perhaps we'll change that next year; how about a *Slope Soaring News*-sponsored Happy Pilots' Hour?), a sumptuous buffet, a guest speaker and a drawing for dozens of prizes donated by the model industry provided fun for all. Among the prize donors was Tom Kikuchi of Circus Hobbies in Las Vegas who donated three top-of-the-line JR PCM radios. (He also was soliciting input from the soaring pilots so he can tell the factory how to produce a special glider radio!)

Thanks for a great time, Tri-City Soarers. See you next year!



## COMPOSITE MATERIALS

BORON – .004 dia.  
KEVLAR CLOTH – 1.0 oz –1.7 oz – 3.6 oz  
KEVLAR THREAD – 22 lb test x .010 dia.  
CARBON FIBER TOW – 6,000 and 12,000 strand  
CARBON FIBER PAPER – 0.5 oz per yard  
CARBON FIBER UNIDIRECTIONAL CLOTH – 36 in wide  
CARBON FIBER TAPE – 5 in wide  
CARBON FIBER SHEET STOCK – .008 and .016 thick  
CARBON FIBER SPAR MATERIAL – unidirectional – .035 thick  
CARBON FIBER FIBER ROD – unidirectional – .250 dia.

MICROFILM – Rodemsky's best gold film – .00000012 thick  
INDOOR MYLAR – .000059 thick  
MYLAR HEAT SHRINK COVERINGS – only .0015 thick with adhesive  
METALIZED MYLAR – .0005 thick for gas bags  
ALUMINUM WING SKINS – .0015 thick for FAI free flight models  
FOAM CUTTING WIRE – .020 dia Stainless Steel-200 Ft Rolls  
REAL SANDING SEALER – worlds best glider polish  
3M's #465 WING SKINNING TAPE – acrylic adhesive in tape form  
ENGINES – COX – ROSSI – PICCO  
AND THE BRAND NEW LINE OF *e.s.* COMPETITION ENGINES

FOR COMPLETE CATALOG SEND \$2.00 TO

*Curt Stevens*

Model Research Labs

25108 Marguerite, #160, Mission Viejo, Ca. 92692

the leading supplier of composites  
to all the world's modelers

WORLD WIDE SINCE 1980

# SD6060 — A Better Eppler 374?

By Charlie Morey

The Eppler 374 semi-symmetrical airfoil is a slope soaring standard. It's fast, and it offers good inverted performance for aerobatics. It's one of the most popular airfoils used in specially-designed slope racing ships.

It's also one of the most modified airfoils in Dr. Eppler's stable. Almost every sailplane designer who's played with the 374 has found one way or another to "improve" it. It's been thinned, tweaked, tossed, turned and tilted, all in the interest of making it even

## SD6060 Airfoil Coordinates (Eppler/Selig style)

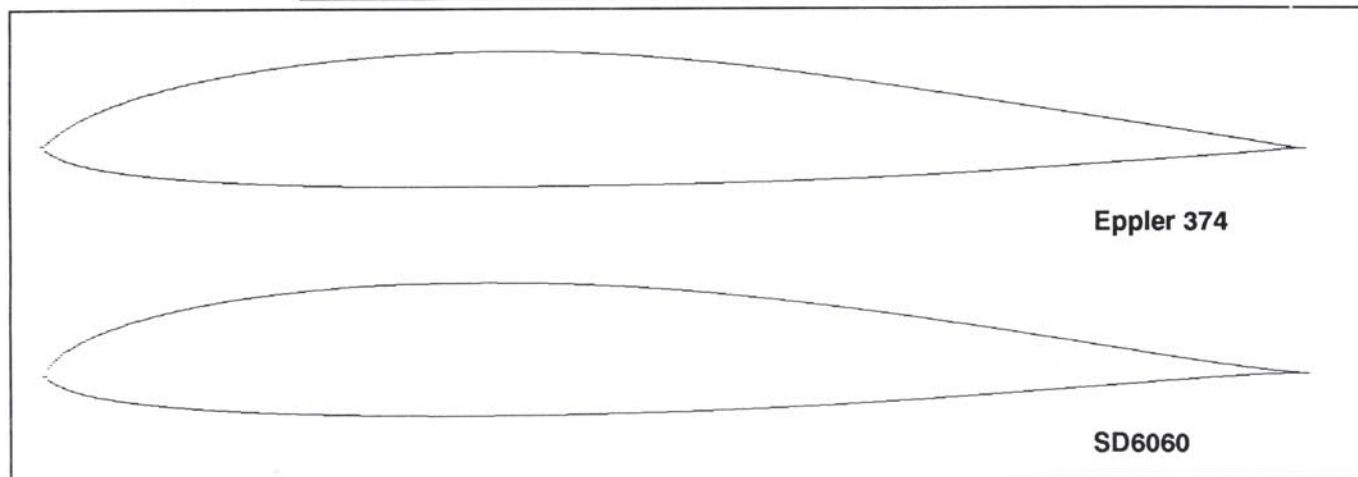
Line	Stn.	Coord.	Line	Stn.	Coord.	Line	Stn.	Coord.
1	1.00000	0.00000	22	0.20883	0.06402	43	0.31347	-0.3354
2	0.99661	0.00023	23	0.17076	0.05988	44	0.36306	-0.3338
3	0.98660	0.00108	24	0.13589	0.05480	45	0.41413	-0.3273
4	0.97033	0.00283	25	0.10456	0.04887	46	0.46614	-0.3159
5	0.94829	0.00559	26	0.07700	0.04218	47	0.51852	-0.2995
6	0.92100	0.00941	27	0.05344	0.03486	48	0.57073	-0.2784
7	0.88905	0.01419	28	0.03399	0.02710	49	0.62223	-0.2527
8	0.85301	0.01977	29	0.01879	0.01913	50	0.67254	-0.2231
9	0.81346	0.02595	30	0.00790	0.01132	51	0.72116	-0.1906
10	0.77096	0.03248	31	0.00148	0.00411	52	0.76761	-0.1568
11	0.72602	0.03912	32	0.00025	-0.00159	53	0.81133	-0.1236
12	0.67917	0.04563	33	0.00495	-0.00647	54	0.85176	-0.0922
13	0.63091	0.05177	34	0.01525	-0.01148	55	0.88838	-0.0638
14	0.58174	0.05738	35	0.03068	-0.01612	56	0.92070	-0.0399
15	0.53222	0.06225	36	0.05114	-0.02025	57	0.94818	-0.0214
16	0.48283	0.06606	37	0.07648	-0.02381	58	0.97032	-0.0090
17	0.43386	0.06866	38	0.10645	-0.02678	59	0.98661	-0.0024
18	0.38566	0.07003	39	0.14078	-0.02919	60	0.99662	-0.0002
19	0.33862	0.07020	40	0.17909	-0.03105	61	1.00001	0.00000
20	0.29316	0.06922	41	0.22096	-0.03238			
21	0.24976	0.06715	42	0.26592	-0.03321			

Reynolds number aerodynamic design, taken the 374 into the wind tunnel, analyzed its shortcomings and made specific corrections to eliminate them.

### MIKE WHO?

Perhaps you've heard of Michael Selig's airfoils? Selig's S3021, used on Mark Allen's Falcon 880 (in conjunction with an S3014 tip) and on Mike Reed's Slopar slope racer, is one of his most popular. Again, it's an "improved" Eppler, this time the popular 205.

In both cases — with the 205 and now with the



better than it already is.

### HI-TECH TINKERING

Although everyone tinkers with the 374, most of our attempts are limited by our resources. Typical tools and techniques include: Trial and Error, Seat-of-the-pants Design, Eyeball Engineering and the ubiquitous TLAR (That Looks About Right) approach.

Only in recent months has someone with a higher education in engineering and, more specifically, low

## SD6060 Airfoil Coordinates ("Foiled Again" style)

Line #	Stn.	Upper % coord	Lower % coord	Line #	Stn.	Upper % coord	Lower % coord
1	0.03	0.159	0.03	18	53.22	6.225	62.22
2	0.15	0.411	0.50	19	58.17	5.738	67.25
3	0.79	1.132	1.52	20	63.09	5.177	72.12
4	1.88	1.913	3.07	21	67.92	4.563	76.76
5	3.40	2.710	5.11	22	72.60	3.912	81.13
6	5.34	3.486	7.65	23	77.10	3.248	85.18
7	7.70	4.218	10.65	24	81.35	2.595	88.84
8	10.46	4.887	14.08	25	85.30	1.977	92.07
9	13.59	5.480	17.91	26	88.90	1.419	94.82
10	17.08	5.988	22.10	27	92.10	0.941	97.03
11	20.88	6.402	26.59	28	94.83	0.559	98.66
12	24.32	6.715	31.35	29	97.03	0.283	99.66
13	29.32	6.922	36.31	30	100.00	0.000	100.00
14	33.86	7.020	41.41				
15	38.57	7.003	46.61				
16	43.39	6.866	51.85				
17	48.28	6.606	57.07				

**Max. Thickness:**  
10.3% at 34% chord  
**Maximum Camber**  
1.9% at 43% chord

374 — Selig decreased the amount of drag produced by the Eppler airfoils while maintaining an otherwise similar profile.

### HIGH-BROW HAPPENING

On June 5-7, 1989, the Conference on Low Reynolds Numbers Aerodynamics took place at the University of Notre Dame. At that conference, a paper called *Low Reynolds Number Airfoil Design and Wind Tunnel Testing at Princeton University* was

presented by J.F. Donovan and M.S. Selig.

Mr. Donovan is a research scientist at McDonnell Douglas Research Laboratories in St. Louis. Mr. Selig is a graduate student at Pennsylvania State University with an extensive background in model aircraft airfoil design.

Michael Selig was kind enough to provide *Slope Soaring News* with a copy of that paper. So, with dictionary in hand and a six-pack close nearby, I've attempted to summarize and translate his technicalese into modelers' English. Here goes...

### SO...WHAT'S A REYNOLDS NUMBER?

Okay, let's start at the beginning. What's a Reynolds Number? It's a means of specifying the airflow over a wing. Reynolds Numbers are stated in scientific notation, like this:  $3.0 \times 10^5$ , and it refers to the number of air molecules flowing across the wing. Simply put, the larger the number, the

#### About these airfoil plots...

I used a computer program called "Foiled Again" to plot this airfoil. It's available for \$39.95 from Bernard Crowe at Cygnet Software, 24843 Del Prado, #141B, Dana Point, CA 92629. Bernie's in the process of developing another program called E2F, a program that will take Eppler-style coordinates (like the ones listed in the table at the top of the opposite page) and automatically convert them to "normal" coordinates like the ones in the bottom table (which can be used to print out the airfoils with "Foiled Again."). He sent me a development copy to experiment with, and that's what I used to generate the print-outs and the coordinates in the bottom table.

more air flows over the wing.

Scientific notation allows us to write very large numbers in a relatively brief manner. The example ( $3.0 \times 10^5$ ) is three times 10 to the fifth power, or 300,000. As you can see, it's not particularly useful with such a small number, but if you get up to where the whole number has about 72 zeros after it, it's much easier to write  $3.0 \times 10^{72}$  than to list all 72 zeros every time you write the number.

Low Reynolds numbers are defined in the Selig-Donovan paper as 500,000 or less, and in the wind tunnel tests, slow, medium and fast readings are taken at 60,000, 100,000 and 300,000. All these numbers are very low compared with full-scale, powered aircraft, hence the

# SR Batteries Hot Line

Save this new Hot Line phone number to order or ask technical questions about the finest R/C battery packs made!

# 516-286-0079

Call Monday to Friday between 9 a.m. and 2 p.m. Eastern time. We now accept Visa, Mastercard, and U.P.S. C.O.D. orders. Send a self-addressed, stamped business size envelope for full details.

SR Batteries, Inc. Box 287 Bellport, New York 11713

## BANZAI mk II

*Aerobatic Combat Slope Soarer*

**FULLY AEROBATIC**

**RUGID, AND DURABLE: Great for combat**

**QUICK AND SIMPLE CONSTRUCTION**

**MACHINE CUT AND SANDED PARTS**

**CAN FLY IN LIGHT LIFT**

**GREAT AILERON TRAINER**

**Introductory Price: \$28 US, S&H: \$3.50**

For more info. or to order, write to:

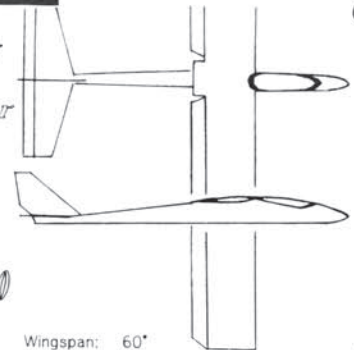
**BANZAI ENTERPRISES,**

2997 Anderson Ave.,

Port Alberni, B.C.,

V8Y 2V3.

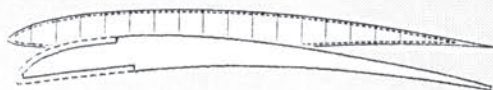
*Cheetahs check your six !!!*



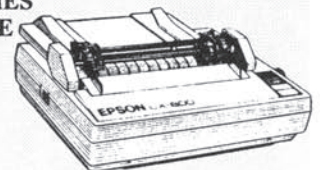
Wingspan: 60"  
Wing Area: 450 sq. ins  
Airfoil: Eppler 374 (mod.)  
Length: 36"  
Weight: 26 to 34 ozs.  
Radio: 2 chan. min. (stand. size)

turn your printer into a plotter with...

## FOILED AGAIN!!!



**PLOT AIRFOILS IN ANY CHORD UP TO 24 INCHES  
MODIFY THICKNESS, CAMBER, TRAILING EDGE  
PLOT SKIN THICKNESS FOR SHEETED WINGS  
ENTER DATA EASILY WITH BUILT-IN EDITOR  
EASY TO USE, MENU-DRIVEN OPERATION  
18-PAGE ILLUSTRATED USER MANUAL**



## \$39.95

CA residents add 6% tax  
Overseas: \$50 bank draft  
Requires IBM compatible  
and dot matrix printer

CYGNET Software 24843 Del Prado #141b Dana Point CA 92629

### Please do your hobby shopping at these authorized Slope Soaring News Dealers!

**Covina Hobby Center**  
140 North Citrus Ave.  
Covina, CA 91723  
818/331-1910

**Chuck's Model Shop**  
13505 Hawthorne Blvd.  
Hawthorne, CA 90250  
213/644-5000

**Hobby Warehouse**  
4118 East South Street  
Lakewood, CA 90712  
213/531-1413

**PEC's Hobby Supply**  
947 N. Shoreline Blvd.  
Mountain View, CA 94043  
415/968-0800

**San Antonio Hobby Shop**  
2550 W. El Camino Real  
Mountain View, CA 94040  
415/941-1278

# GLIDER RETRACTS

Precision units made in USA from aircraft quality materials. Two 1/4 scale size units to choose from: Std. - up to 10 lbs., H.D. - over 10 lbs. \$50.00 each + \$3.50 S&H. CA res. add 7% tax.

Send Sase for information on glass 1/4 scale DG 202 fuselage. 1/3 & 1/5 scale retracts available soon.

## Scale Glider Components

7034 FERN PLACE  
CARLSBAD, CA 92009

**(619) 931-1438**



A monthly publication covering the International RC Soaring Scene.

In US: \$17/yr. (21/yr. 1st Class)  
In Canada/Mexico: \$22/yr. US funds.  
Asia & Pacific: \$28/yr. US funds.  
Europe and U.K.: \$28/yr. US funds.  
Surface Mail Foreign: \$18/yr. US funds.

RC SOARING DIGEST  
P.O. Box 1079, Payson, AZ 85547

**Please tell  
'em you saw  
it in Slope  
Soaring  
News!**

low Reynolds Number Aerodynamics conference.

### BUBBLES? WHAT A DRAG!

"The distinguishing characteristic of an airfoil operated at low chord Reynolds numbers ( $Re < 5.0 \times 10^5$ ) is the formation of an extensive laminar separation bubble on either the upper or lower surfaces or both. This bubble can significantly increase the drag."

That quote just about sums up the entire story of the SD6060. As the air flows over the top of the Eppler 374, it breaks away from the surface just past the high point on the wing. It reattaches later, back near the trailing edge. In the middle, beneath this layer of "detached" air, a bubble of turbulent air forms. That bubble is a source of drag. Selig's awareness of that bubble on the Eppler 374 and his ability to design a new airfoil that minimizes it, determined the new airfoil.

By reshaping the 374 slightly, Selig decreased the size of the bubble and moved it forward so that the laminar airflow could reattach to the wing surface sooner.


The result? A decrease in drag, and improved airfoil performance.

That, in a nutshell, is the story of the SD6060. Will it replace the Eppler 374 as the new slope soaring standard? If it performs as well on the hillside as it did in the wind tunnel, I think it will. Please try it, and let us know about your results.

### STAY SHARP!

Selig's windtunnel tests also confirmed that leaving square edges on the trailing edges of a model's flying surfaces will increase the amount of drag. The best shape for a trailing edge is sharp.

That's been a topic of conversation at local slopes lately, with strong support for each side. Due to my experience with the Vader planes where Dick sands his trailing edges paper-thin, I've learned to like the sharp edges. But other glider designers have insisted that square trailing edges actually have less drag. They mention automotive design, where the squared-off tailends of race cars break the airflow suddenly to reduce drag. According to Selig's wind tunnel tests, the square-edge theory is not the hot setup.

Do you suppose that'll put an end to the amateur aerodynamicist arguments? (I'll bet not!) 

## Scraps...

### Bag a Snipe!

Got one of Jerry Bridgeman's fast little slope racers? Good! Now, you need a bag to carry it around in. Jared Stalls, another Snipe fanatic, has designed a special padded bag that holds the fuse and wings during transit to and from the slope. You can get in touch with Jared at 714/722-1846. Please mention *Slope Soaring News*. Thanks!

### Rotor Updates

I talked with Ken Stuhr recently, and he told me about some improvements he's

making with his high-performance Rotor sailplane. He'll now offer three wing options: (1) the modified Eppler 374, (2) a new Quabeck 1.5/9 and (3) a new SD6060. The built-up fuselage has been redesigned to be stronger, and he'll also offer a Kevlar fuse in about a month. The kit will be offered with either fuse, at different prices. The light lift wing, a two-meter Eppler 374, is still offered and remains unchanged.

### J.A.D.E.'s New Address

Jarel Aircraft Design

and Engineering has moved. Richard and Jan now reside and do business at 12136 Brad-dock, Culver City, CA 90230. The phone number hasn't changed; it's still 213/390-1348. J.A.D.E. currently produces the Telos canard kit, and there are some very exciting new slopers coming.

### Chuck's New Address

Did we mention that Chuck's Model Shop has also moved? You can now find his well-stocked store at 13505 Hawthorne Blvd., Hawthorne, CA 90250; 213/644-5000.

# Air Mail

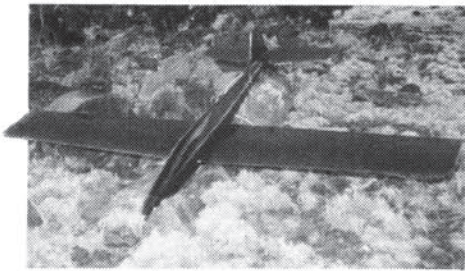
## TOUCHÉ SUBJECTS

I hear you went on a Snipe hunt while you were in Washington and came home with a dead one. I was thinking I'd like to get one, but all the fliers I know who have them are also killing them off. Let us know if the problem gets fixed.



**Rick Palmer's Phoebus.**

I heard that Gary Anderson of American Sailplane Designs had his new Phoebus glider at the fun fly, but that his helper crashed it. Here's a picture of mine taken by my friend Mike Holland. I'm going to use it for the



**Touché!**

slope; it's just too hard to thermal.

Also enclosed is a picture of a slope plane called a Touché. I got it from an article in *RC Soaring Digest* back in January '86. Looks familiar, doesn't it? Ron Carter designed it. It has an 11% root and 15% tip TLAR airfoil.

I just finished building a Mini-I or Mini-1. I don't know for sure on the name. It's put out by K&A Models. Do you know them? Their address is 5990 California Ave., Long Beach, CA 90805. The write up says it's designed by Ken Williams, span 28.5 inches, area 167.4 sq. in., suggested flying weight 9.5 - 10.5 ounces. Mine is 10.5 ounces. I haven't flown it yet, but hand throws at the ballpark look good. By the way, it took about six hours to build.

One last thing, and I'll let you go. I got my newest Hobby Lobby catalog, and in there is an electric plane called the Race Rat. Oh, what the heck, I'll rip out

the page and send it to you. It's got a nice "slope look" to it, doesn't it? If I ever get some time in between kits, I'm going to try and make something like it.

Till later, MEET THE DEADLINE.

**Rick Palmer  
Springerville, AZ**

*Boy, I'm sure getting a lot of local flak about that Snipe kill. Now, it's coming in from Arizona, too. I can't blame the plane, though. I was flying it in pretty high wind - 35 to 40 mph, I'd guess - and I got sorta out of shape (I ride a dirt bike the same way). Then I either brain-glitched or the wingeron servo stripped. It was stripped when we went to pick up the wreckage, but it could have very easily happened on impact. I've already talked with Jerry Bridgeman about getting another kit. He says he's never heard of a wingeron servo stripping before, so I may have to take the brain-fade award on this one. Sometimes you just run out of excuses...*

*I didn't see or hear about a Phoebus crash in Washington, but it must not have been terminal. I watched Ed Mason just about fly the wings off it on the last day up there. It's a cutie (see the photo in our fun fly coverage this issue), and Gary should sell a lot of 'em.*

*The Touché looks neat! So does the Mini-I. (There are several zipping around our SoCal slopes, and we've been calling 'em "mini-ones.")*

*Hey, since you've got time to write abusive letters to dumb-thumbed editors, you must also have time to write contruction stories on some of these little gems you've been building. How about starting with the Mini-I? No pay involved, but you'll become semi-famous beyond your wildest dreams.*

*Funny you should mention the Race Rat. Silhouette designer Doug Hertzog apparently just got his new Hobby Lobby catalog, too. He and I have been talking about electrics, and he phoned to tell me about the Race Rat. It looks neat! Just like a little pylon racer, except for the T-tail. Doug's working on a larger Silhouette, called the Quicksilver. As soon as he's done with that, he'll probably come out with an electric version. High performance electrics should be the hot set-up for days when the wind won't cooperate. I want one! - Charlie.*

## NO ROOM FOR ERROR

I've been flying slope for about 16 years

or so. About six fliers enjoy what in my opinion is one of the best flying sites in the U.S. It's five miles south of San Francisco. It's on the ocean and really high; my guess is over 400 feet. Great west winds 10-30 mph almost every day, May through September. The bad part is the small landing area, only about 50 feet wide, then houses with lots of rotor. That keeps most fliers away. New guys always ask the same question: Where do you land?

I love slope flying but don't get to see much of what other people are flying. I saw a copy of *Slope Soaring News* and couldn't believe what a great publication! Please send me a subscription.

**Daniel White  
Belmont, CA**



*Thanks for the subscription order, Dan. Are you the same Dan White that John Benson mentioned in his letter in our March-April issue? John said, "I flew at Daly City with a couple of lunatics called Jerry Freck and Dan White..." Also, did you use to sign on to The Hanger BBS computer bulletin board? If so, c'mon back. We're getting a few more slopeheads on there now, and the conversation's improving. - Charlie.*

## Want Ads

### 1/4-SCALE VENTUS

Kit by Roebers. 4-meter span obechi-sheeted wings. Gelcoat fuselage. MPX spoilers included. \$425. Bill 619/931-1438. (2/89)

### YOUR WANT AD HERE!

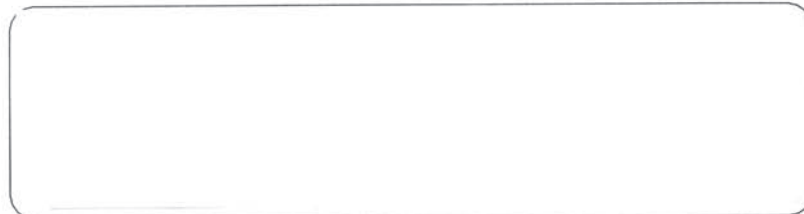
SSN Want-Ad rates  
Per word charge - 25 cents.  
Minimum charge - \$5.00  
Bold Headline\* - \$1.00  
Total the amount, then multiply times  
number of issues ad will run.  
(\*20 characters maximum)

# *Slope Soaring News*

2601 E. 19th Street, #29, Signal Hill, CA

BULK RATE  
U.S. POSTAGE  
PAID  
LONG BEACH, CA  
PERMIT No. 5187

PRINTED MATTER



## Coming Soon in Slope Soaring News!

Check it out!

All The News From California's Finest Slope Sites!

Learn All About Advanced Radio Techniques!

High-Performance, High-Tech Slope Ships!

How To Build A Fiberglass Fuselage!

Vacuum Forming Process Shown!

Wing Bagging Explained!

Building Techniques!

Scale Sailplanes!

Combat!

Fun!

!

(pssst...only \$15.95 a year.)

Name \_\_\_\_\_ Age \_\_\_\_\_ Male \_\_\_\_\_ Female \_\_\_\_\_ (JUNE89)

Address \_\_\_\_\_ No. of planes owned \_\_\_\_\_ No. of radios? \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip code \_\_\_\_\_

I'm interested in \_\_\_\_\_ Building techniques \_\_\_\_\_ Flying techniques \_\_\_\_\_ Planes and the people who design them  
\_\_\_\_\_ Scale sailplanes \_\_\_\_\_ Combat \_\_\_\_\_ Power scale \_\_\_\_\_ F3B-style planes \_\_\_\_\_ Other? \_\_\_\_\_

Favorite Hobby Shop(s) \_\_\_\_\_

Slope Soaring News, 2601 E. 19th St., #29, Signal Hill, CA 90804. Check or money order only, please.