

THE 1983 AMERICAN NATIONALS IN DEPTH

WE FLY ENGLAND'S AIRWAVE MAGIC III

WHOLE AIR

The Magazine of Hang Gliding and Ultralight Soaring

DECEMBER 1983 — \$2.50



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STREAK

IT'S A MAGIC COMBINATION THAT HAD TO HAPPEN! A DOUBLE SURFACE, HIGH PERFORMANCE GLIDER, THAT LANDS LIKE A TRAINER. ALL THE LIGHT HANDLING QUALITIES OF THE X-SERIES GLIDERS HAVE BEEN PRESERVED, WITH AN OBVIOUS BOOST IN L/D AND THERMALING CAPABILITY. THE SAIL COMPLETELY OPENS FOR TOTAL VISUAL INSPECTION OF ALL GLIDER COMPONENTS. THE FLOATING CROSSBAR USES A SHOCK ABSORBING, SUPER STRONG WEBBING RESTRAINT STRAP. BATTENS ARE 1/2" DIAMETER ALUMINUM AND LEXAN FOR MAINTENANCE FREE LIFE. A SPECIAL FOAM INSERT IN THE LEADING EDGE OF THE SAIL MAKES THE CAMBER SMOOTH AND CREASE-FREE, WHILE THE STEPPED LEADING EDGE CONSTRUCTION PRODUCES OPTIMUM AIRFOIL RADII. THE SAIL IS TIGHT AS A DRUM AND EXHIBITS THE FINEST WORKMANSHIP AND ATTENTION TO DETAIL YET TO APPEAR ON ANY OTHER GLIDER. SANDWICH AND HARD FINISH CLOTHS ARE AVAILABLE AS WELL AS THE POPULAR SPECTRUM AND RAINBOW PATTERNS. ALL WEAR POINTS HAVE BEEN COVERED, AND THE PADDED CONTROL BAR AND BATTEN BAGS GIVE EXTRA PROTECTION.

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THE MASTERS OF HANG GLIDING COMPETITION, 1983

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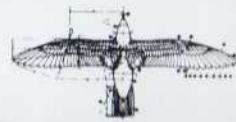
The Shadow's super-clean sail helps gain an excellent roll rate and an impressive top end speed.

The surprise? The Shadow's reasonable price tag . . . see your Flight Designs dealer soon!

- First Place — Region 6 — Derrick Turner
- 88 Miles — Unofficial East Coast Record
- Fifth Place — Region 1 — Scott Rutledge
- 5,000 foot Aero Tow — Paul Whitehill



SPAN: 33 ft.
 AREA: 173 ft²
 ASPECT RATIO: 6.3
 NOSE ANGLE: 128°
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 RIBS — BOTTOM: 6 per side
 DOUBLE SURFACE: 70%
 PILOT WEIGHT RANGE:
 140-220 pounds



FLIGHT DESIGNS

P. O. Box 631
 Manchester, CT 06040
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GET BEHIND A SHADOW AND GET ON TOP!!!

THANKS, BRS!



Dear BRS,
 Thank you, thank you, thank you, thank you -- I can't tell you how much I valued the BRS when I needed it Sunday -- It might sound very melodramatic but when I climbed out of the wreckage and saw my wife and 3 year old daughter running to me from across the field, I could have cried -- I absolutely wouldn't have ever seen them again if it hadn't been for your BRS -- I'm going to be the best salesman you've ever had.
 Forever Thankful,
 Jay Tipton

Just one week after installing his BRS-2, this pilot walked away unharmed from BRS deployment at less than 100' AGL! With the throttle still at 30% power, the 7/32" steel bridle destroyed the steel-leading-edge type prop with no damage to the bridle. These real-life testimonials not only show the advantage of having a ballistic system, they suggest the **necessity** of parachutes upon encountering emergencies induced by weather, structural failure, or pilot error. For more information, contact

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Photo by Bettina Gray



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WHOLE AIR

ISSUE NO. 33, VOLUME NO. 6, NO. 6, 1983

PILOT'S PERSPECTIVE

ONE FINE CHRISTMAS EVE
 Our staff cartoonist, Bob Lafay tickles your flight funnybone as Dan E. Thrasher waits while Santa "cuts up."

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ISSUE NO. 32

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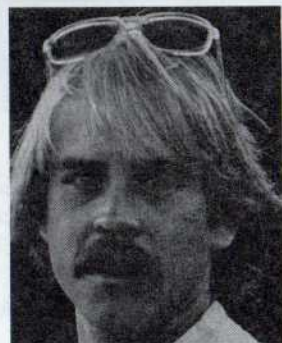
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Yosemite Spires by Greg Shaw



TURNING THE CORNER

After several issues of saying "Hang gliding is stagnant . . . needs new vitality . . . has a problem needing identification and solution, *not* avoidance and ignorance — we can see the positive and talented people in our great sport starting to take action.

Not that this means things are immediately going to improve, but it is very satisfying to know the capabilities of some sharp individuals (and companies therefore) are being unleashed in pursuit of changes and improvements.

Whole Air, I feel, can now attempt to do our small part of a large effort, to bring in new people, to tell them where to get quality instruction and equipment, to continue the flow of information which helps us all fly more hours in more safety and have more fun.

We will now be able to once again act positive, and be optimistic about our sport, having aided in "delivering" the "bad news" of decline and sluggishness. But to be honest and not forget the mistakes of the past, *AND*, to hear comments on *how to revitalize*, we will still be presenting information on this topic area.

To that end we once again refer to our faithful Reader Response Cards. Last issue in this column, we gave you initial statistics from 27 Early Bird Responders. Now, with over 135 cards counted, we find many of the percentages did not change significantly. But what may be very valuable is a sampling of the many comments we received in answer to the questions, "What *main* reason do you think is keeping *more* people from taking up hang gliding?"

First, here is a final summary of the primary reasons quoted. They appear *in order* with the most mentioned reasons first.

- 1) Fear of Injury . . . Apparent Risk
- 2) Lack of Lesson Availability
- 3) Difficulty of Pursuing the Sport
(Distance to Sites & Lack of Training)

- 4) Other Activities (e.g. ultralight flying)
- 5) Insufficient Publicity . . . No Recruitment
- 6) Cost of Pursuing (vs. a weak economy)
- 7) Insufficient Entry Level Equipment
- 8) Other Commitments (Work, Family)

READER COMMENTARY

[Some reasons are] image (i.e. hazardous) and practicality of learning and participation. [My] observation is [that] the nature of the consequences makes hang gliding only for the very enthusiastic! — Scott Whittet

Polyethylene was cheap enough to get people airborne on one week's pay. Now it takes several month's pay. Rash young men tend to be broke. Rich men tend to be very conservative, your basic fully paid up insurance types. Hang gliding therefore has very limited growth. —Steven Moore

I find a lot of people interested, but they are not willing to, or can not, come up with the money. The second factor I feel is time . . . too busy. —Ed McCullough

We are no longer a viable option for people who want the joy of experiencing flight in their spare time. The ultralights are more viable. Hang gliding has lost its simplicity, and with it has gone hang gliding's niche in aviation. —Unsigned

[The sport has] not enough public relations directed to new people, and gliders that aren't "fun" to train on. We need slower trainers, and more consideration for entry level pilots. —Aaron Swepton

[Hang gliding is] too esoteric . . . not enough "instant gratification." —Marilyn and Les King

What this sport needs is a *cheap* trainer, under \$1,000. Why can't someone resurrect the [Electra Flyer] Dove and sell it — no frills, no custom sails — for under \$1,000.00? A basic hang glider shouldn't cost any more than a sailboard! —Stewart Midwinter/Calgary, Alberta, Canada

I've only seen one dealer that would apply cost of lessons toward a new glider. I've seen a lot of people lose interest after [their] first lesson, due to [the] cost and lack of results. —Unsigned

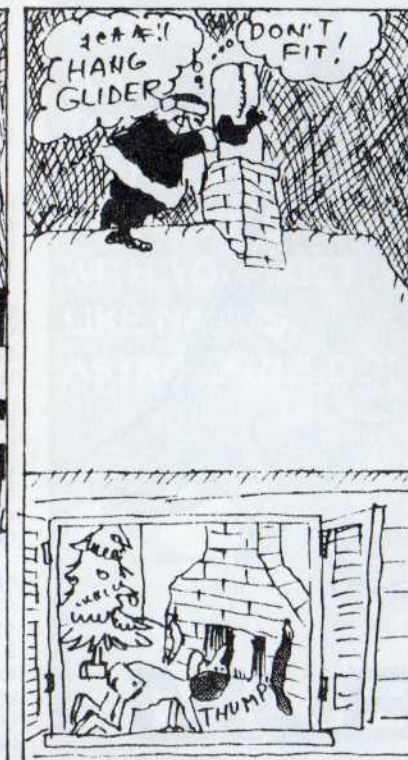
[The sport is] too expensive to try, and [to] find out that it is not for them! That counts for us here in *Norway*. —Arne Guldahl/Norway

[The sport has a] poor social structure, [with] no good mechanism for new people to satisfy their needs. —Unsigned

No matter how much I tell people hang gliding *can* be safe, the everyday person still considers it to be a *high* risk sport. Also, confusion with ultralights continues. The towing possibilities seem to be striking up more interest than anything in a long time. Not going off a cliff seems to lessen concern considerably. It may save hang gliding in the flatlands, [too]. —Warren Puckett

Thanks,
Dan Johnson

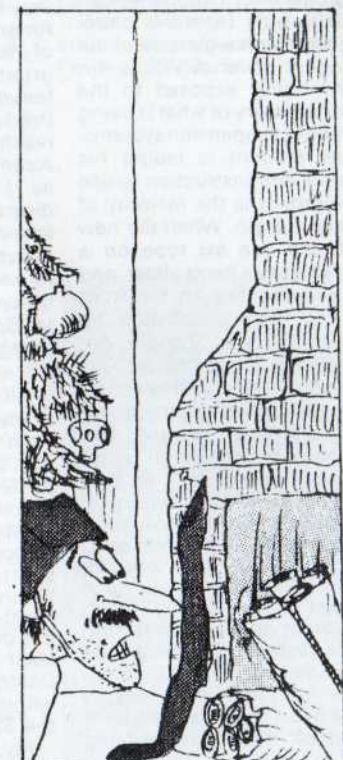
DAN E. THRASHER



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ONE FINE XMAS EVE . . .



AND A



FORUM

Dear Editor:

I think that it is really useful to look into the reasons why pilots are dropping out of the sport. It is certainly happening and is affecting the USHGA financially. But, in addition, both you and I want other people to share the joy of our experience and want to make it available to them.

The biggest reason that I see people dropping out of hang gliding, I think, is related to fear. [See *Publisher's Column* this issue.] Basically, it is the pilot's fear, finally recognizing that the fear and anxiety of flying is greater than the enjoyment benefits. Sometimes this is disguised as financial, loss of interest, interest in other recreational or sporting activities.

I also see family pressure as a cause. Sometimes the pilot is not afraid, but his spouse is and pressures him to give up the sport. Sometimes the family simply wants more attention to their activities, but this seldom results in totally giving it up.

Burn-out: One of my partners insists that everyone needs to change their hobby every seven years. It is true that most people's recreational activities change from time to time, undergo a high degree of interest, excitement, expansion, maturing phase, a declining interest phase and, finally, a complete cessation.

Financial: I think that this is the least important reason why pilots leave the sport, although, as stated, sometimes it is used to

cover up underlying reasons.

Social Stresses: This should probably be listed under Family, but divorces have affected the flying of some of my friends, as occasionally do job changes, or going back to school, et cetera.

In our area, hang gliding is not growing and [it] appears to be, as with the USHGA, a lack of new people coming into the sport. I think that this is because the "backyard instructor" is not as active around the country. It is difficult for a new person to get instruction. There is certainly no active recruitment going on. The only meaningful place is in the local community with some exposure to the general public. Additionally, there are no inexpensive second-hand gliders readily available [in this area — may not be the case elsewhere]. In particular, harnesses and parachutes are expensive.

But, I look at a decline in the backyard instructor as a significant factor. I do think that powered ultralights are taking some people who, a few years ago, would have moved into hang gliding, but I am not sure it is that big a factor.

I think that the USHGA must do its part, but I also think that each one of us in our smaller communities must supply advertisement and recruitment for the hang gliding movement.

One of my concerns, though, is that hang glider pilots, in general, would rather go fly cross country than spend lots of time marketing

and recruiting to their sport, so that even if we figure out what we need to do, I am not sure that we can do it.

Doug Hildreath,
USHGA Director (Reg. 1),
Medford, Oregon

Dear Editor:

New Student Protection

The photograph taken aloft while soaring Cochrane Hill is a pretty picture (cover Jul/Aug '83 issue). There is only one problem. The back up system is pure trash.

I am not one to raise much of stink about basics in hang gliding. However, whoever taught Chris Sali to hang glide should have taught him how important his main and back up loops are. The back is there if it's needed. In most hang gliding activity, the back up will never come into play. In Chris Sali's case, if the line isn't changed, hopefully he will never need it.

Polypropylene rope used on hang gliders went out with the non-locking karabiner back in 1974-75. It's hard to believe that a regulated site would permit him to use such a system on his equipment. As well, it's hard to understand how *Whole Air* would permit this photograph to be used on the front cover of [the] publication.

Knoxville's shop has a number of new hang gliding students in it every week. These new participants in our sport are constantly reading new information they can get locally only from this shop. When they catch a glimpse of the July/August cover of *Whole Air*, they are being exposed to the compete contrary of what is being taught about suspension systems. The new student is taught his equipment and instruction to use this equipment is the majority of his safety margin. When the new student can see ski rope on a pilot's harness or hang glider, and this is represented on the front cover of a major publication, he could draw the conclusion: Polypropylene is okay to use.

Another thought, if this young man on the cover had to deploy his parachute, would his suspension system hold? Also, how much weaker is a locking karabiner when it's hooked in upside down? Come on you guys, pull it together! The only reason to write is for the new pilot working towards becoming a safe competent pilot of a hang glider.

Use tubular and 7-10mm [rope] for these systems. Climbing rope was refined and has been available far longer than any of use have been running down from hills and off mountains in hang gliders.

Chris Sali would never [have] flown from either side of Clinch Mountain until his suspension was proper and he hooked his karabiner right side up. Wills Wing worked hard developing the Harrier and they sure don't want

pilot falling from them due to trash polypropylene.

The Shop
Hawk Airsports
Knoxville, Tenn.

You're undoubtedly right! Two hang loops are used for safety's sake, and polypropylene is neither strong enough to match Wills' beefy main loop, nor does it hold up well at all in exposure to ultraviolet rays in the sun.

We're not sure about the upside karabiner argument, as we've seen test results from three manufacturers which appear to indicate very little difference in the two configurations. BUT, if you know more than we do — and you might very well — research your information, and submit us an article. We promise to print any well-documented writing on the subject!

But then again, Wills, to whom you've given well deserved credit, only supplies the Harrier with a single (albeit massive) hang loop. What say you about that? —Ed.

Dear Editor:

On Sunday, August 28, 1983, I launched from a small 800 foot ridge facing southwest, four miles east of Lotus, California, which is halfway between Folsom, CA and Placerville, CA. In light southerly winds with a smoky haze and no clouds, the thermals that were produced were large in size although short in strength and very far apart. I drifted across the American River Canyon northeast of Auburn at 2,000 feet above ground level. I came within 900 feet of flat ground and 200 feet of the ridge tops as I crossed just north and east of the Auburn Airport leaving Route 80 behind as I ventured in a northerly direction. Reaching Route 49, I found myself quite near to the ground at Higgins Corner and lucked into a ten foot per minute up cycle which eventually took me to 3,900 feet. I ventured north along Route 49, speaking to some CB enthusiasts out of Roseville, CA for about the last 45 minutes of my flight.

Although I could see the 40,000 or so people gathered at the Grass Valley Fairgrounds, I am afraid I lost my last thermal located at or about the Alta Sierra Airport and came up just slightly short of the main part of Grass Valley, CA. I have measured the flight as 28 miles and believe that it is the longest flight to date (or at least in 1983) in Northern California which both originated within the State and ended within the State of California.

My 165 square foot Comet II performed flawlessly and its unbelievable sink rate and L over D proved their worth. Please send my thanks to Pete Brock.

Dick Casseta,
USHGA # 1122
Sacramento, Calif.

Skyting Success

Dear Editor:

On Sunday August 14, 1983, Butch Pritchett, a Finley, Tennessee Hang 3 pilot flying a UP Gemini 164, thermalled to 4,000 feet AGL over flat Northwest Tennessee near Reelfoot Lake.

Butch is an experienced mountain pilot, but recently began towing with the Donnell Hewett Skyting system with a pressure gauge of his own construction. Pritchett, along with Sherrill Williams, a Hornbeak, Tennessee pilot, had a mere three weeks experience with this method prior to this event.

Butch was being towed with 1100 feet of towline and released at 2:00 PM CDT. After accomplishing an altitude of only 500 feet AGL, Butch released over the now infamous "Black Hole," a freshly plowed black field, which either has great lift or glider-sucking sink. Upon release, Butch found a developing thermal over the "Hole" and began a laborious series of 360's. After 25 minutes, he topped out at 3,400 feet. The "powerful" 200 FPM thermal was spent and Butch began the search for another lift ticket over the same field.

Finally, after losing down to 1,200 feet, Butch found yet another stronger thermal over the "Black Hole" and took it up to 4,000 feet AGL. It took Pritchett 15 minutes to work this 150-500 FPM thermal to this, his highest altitude of the flight. After this thermal had lost its load, Butch again sought the "Hole" for altitude bearing lift, but found unwelcomed sink instead. After one hour and six minutes, at 3:06 PM, Pritchett landed. He had a full blown smile stuck on his face that couldn't be taken off with "Comet" cleanser. As of this writing, Pritchett's flight stands as a West Tennessee Unofficial Record in an unpowered ultralight aircraft.

[It is] living proof that the Skyting system does indeed work!

Submitted by,
John Stokes,
Ass't Curator of Birds,
Memphis Zoo and Aquarium

Excited about Towing

Dear Editor:

Thanks! for the tow articles. Keep them coming. How about an article on building your own tow system?

Scott Whittet,
Dallas TX

Dear Editor:

More on aero towing. Excellent article!

Larry Robinson,
Michigan

Dear Editor:

I'm glad to see you doing more on towing. It's badly needed in places like Houston.

I'd like to thank *Whole Air* for having the guts to tell the world of Donnell Hewett's towing bridle and system.

Henry Wise,
Houston, TX

Thanks to you, Henry! It was your Reader Response Card information many issues ago that made Whole Air aware of Hewett's system. Now, many more pilots than ever are towing, and Hang Gliding magazine has reinstated coverage of towing. We'll try to "keep the fire burnin'." —Ed.

Airtime Up or Down?

Dear Editor:

Why do you seem to assume that everyone is flying less?

Rob Kells,
Santa Ana, CA

We didn't assume (just asked via our Reader Response Cards), and they're NOT . . . 51% reported airtime is up! —Ed.

Masterful (Rick) Masters

Dear Editor:

Whole Air did it again — you had the best coverage of Larry Tudor's 221.5 mile flight — something every hang glider pilot was anxious to hear.

Jerry Dodgen,
Atlanta, GA

Dear Editor:

Rick Master's [Tudor flight] article was the best written piece I've read in *Whole Air*.

Chris Voith,
Atlanta, GA

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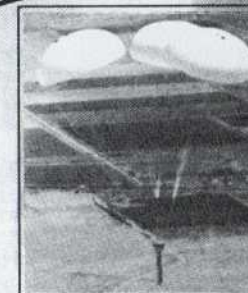
Dear Editor:

I'm glad to see you doing more on towing. It's badly needed in places like Houston.

GOING UP OR
COMING DOWN,
YOU'LL WANT
TO TAKE
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PARACHUTE
WITH YOU, JUST
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ASTRONAUTS DO!



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Crystal Simulator Used To Evaluate Ballistic Parachute

CHATTANOOGA, TENN. — CLICK...BOOM...AAHH!! The Crystal Hang Glider Simulator saves not the day, but the test pilot.

Its reputation well established as a training device for hang gliding parachute users and basic flight students alike, the unique Simulator has now begun the first of many in-air tests of the Ballistic Recovery System manufactured by BRS, Inc., of Lake Elmo, Minnesota.

In late July (1983), preparing video materials for BRS use at Oshkosh '83, the initial deployment tests were accomplished (see photo). At that time, four deployments were performed by ultralight pilot, Neal Harris.

Two video crews recorded the tests from differing angles, and

INDUSTRY NEWS

the "test pilot" activated on-board, motor-drive cameras by infrared remote shutter.

By calibrating motor drive speeds with timing equipment, it was demonstrated that the parachute is ejected with sufficient velocity to allow initial air fill in less than 1.25 seconds. Full deployment occurred in under 2.0 seconds. These times were calculated while the cable suspended aircraft flew at about 25 MPH, in a cable dictated 6:1 glide angle.

In actual usage, airspeed is expected to be higher (than 25), which can greatly reduce "fill time." Further, the distressed craft may be descending which will again amplify the rapidity of

deployment. Lastly, the late July tests were done with a comparatively light, weight-shift Yamaha powered Quicksilver.

In mid-August, the hang gliding simulator was used for more in-air firings utilizing a two-seat Quicksilver MX-II. Speeds were nearer to 40 MPH, and the second shot also used engine power to heighten the reality. Again, video and still shots recorded the efforts.

"We feel this is highly valid testing," claims BRS, Inc., owner, Boris Popov. "And it is much, much safer than true in-flight testing. Each time (four to-date) we've performed the tests off Crystal's Simulator, some problem has arisen which caused

us grave concern for the test pilot's safety. Using the world's only full flying Simulator at Crystal Air Sports offers us most of the reality with almost none of the worry. We plan on-going testing in this manner, evaluating propeller entanglements, simulated structural failures, and more."

The Crystal Simulator is in daily use at Raccoon Mtn., Tennessee, where over 4,000 students have safely begun hang gliding or ultralight flying. The training simulator device is undergoing patent processing as it remains the only machine of its kind on earth. Lessons are available seven days a week year 'round.

For more information on the Crystal Hang Glider Simulator, write: Crystal Air Sports, Rt. 4 Cummings Hwy., Chattanooga, TN 37409, or phone 615/825-1995.

3rd Place \$200

In addition, the remaining \$200 will be awarded directly to the Region 5 Club Treasury to help in the organization of the 1984 Region 5 events.

Pilots wishing to compete in next year's Region 5 competition should contact Mike King at P. O. Box 746, Nampa, ID, or call him at 208/465-5593. These contingency prizes will be paid at the U.S. Nationals when the pilots register for competition.

Rookie of the Year Awards Presented

To compete against the established giants in one's sport is really awesome. The intimidation, even when self-generated, is tremendous. To achieve and be recognized is very important to all of us. So with these facts in mind I have decided to reward the new faces in the competition arena with an award that is extremely coveted in other sports such as baseball, football, auto racing — the Rookie of the Year Award.

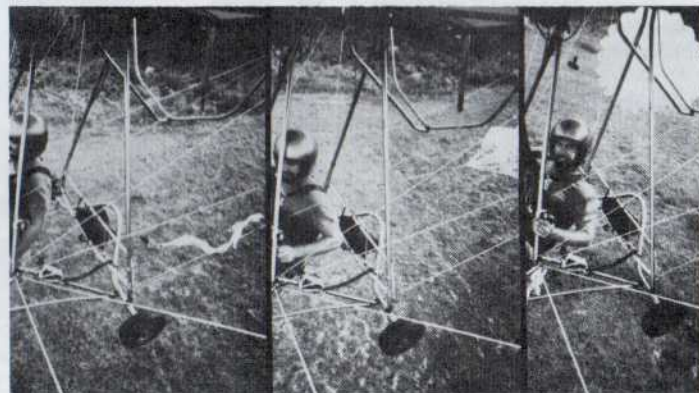
CONTINUED ON PAGE 11

BRS Now Has Dual Actuation

LAKE ELMO, MINN. — "Because reliability must be the foundation of any lifesaving device, Ballistic Recovery Systems is ready to introduce a revolutionary development in ballistic parachute systems," said Boris Popov, owner of BRS, Inc. This enhanced reliability is obtained via redundancy in firing cartridges, specifically two such cartridges utilizing differing dual methods of actuation. The improved system is named the BRS-2.

Following three years of successful marketing of the original BRS, the first true ballistic system offered to the ultralight aircraft industry, the Minnesota firm has released a "new, improved model." The BRS-2 incorporates the advantages inherent in both electronic and mechanical detonation. "Not a combined system, the BRS-2 has two independent cartridges, which provide an alternative means of parachute deployment if one should fail to detonate," explained Bruce Case, one of the two pilots doing in-air deployment testing.

Although no such failures have been reported on the original Ballistic Recovery System, the BRS-2 now delivers even greater assurance. The prior system was an aerospace electronic device only, with operational test features employed by the pilot himself before take-off. One important difference is that the mechanical actuation cartridge has a double acting firing pin — that is, the mechanical cartridge is "loaded" or "armed" only when the deployment handle is pulled. Unlike other ballistic systems, the BRS-2 must be deliberately fired when using either cartridge. It will not detonate by an accidental bump of the firing handle. The



new model was unveiled to the public at the 1983 EAA Oshkosh convention.

"The BRS-2 will carry a retail price of \$895, which does include the 28 foot equivalent parachute and the removable activating pouch," reported company representative Bill Young. Dealers for BRS have already received a bulletin on the changes made to the system.

The company is also providing retrofit capability for the older models, and Mr. Popov strongly urges all previous BRS purchasers to upgrade to the new dual system which he says, "... provides them with a second BRS for the retrofit price of \$118.00"

For more information, contact BRS, Inc., at 9242 Hudson Rd., Lake Elmo, MN 55042, or phone 612/731-1311.

Region 5 UP Pilots Awarded \$1200 in 1984 Nationals Support

UP President, Peter Brock, recently announced an award of \$1200 to the USHGA Region 5 Competition Committee for financial assistance to pilots qualifying for participation in the 1984 Nationals.

Over the past several years, UP rewarded regional winners on UP

gliders with \$250 to help defray expenses in attending the U.S. Nationals. It has become evident, however, that winners of some regions must put forth more effort and money to qualify. Region 5's top three contenders all wanted to participate but needed factory support.

But for 1984, instead of only one pilot qualifying for UP's award, the top three Region 5 pilots will be eligible for the following distribution of the \$1200 purse:

1st Place	\$500
2nd Place	\$300

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INDUSTRY NEWS

Lee Fisher Wins Bill Bennett Rookie of the Year Sporting Class Award

Lee Fisher is a 31 year old resident of Seattle, Washington. He has been flying since 1975, has logged over 500 hours and holds the USHGA Advanced (Hang 4) rating. Lee is a USHGA Certified Instructor and has held the position of Observer and Examiner in Region 7.

He is employed by American Hoist & Derrick of St. Paul, Minnesota, as a Field Representative.

Lee taught himself to fly in Duluth, Minnesota, but logged the majority of his airtime since his move to Seattle in 1980. He placed 4th at the Region 1 competition in 1982, and won the Chelan Cross Country Classic in 1983. He has a personal distance record of 48 miles and a gain of 8300 feet. He has been a flying buddy of Chris Bulger for the past four years.

Bill Bennett

(Please Note: The winner of the Rookie of the Year Awards does not have to be flying a Delta Wing glider. This is an Award of Achievement offered by Bill Bennett, and not a contingency prize)



Woody Woodruff Wins Bill Bennett Rookie of the Year Award

At the 1983 Nationals held in Dunlap, California, Woody Woodruff won the Bill Bennett Rookie of the Year Award in World Class. A trophy commemorating this achievement was donated by Bill Bennett. It was to be awarded to the highest placing competitor in the World Class division by an entrant who had never flown in the U.S. Nationals before.

Woodruff flew a 185 Comet 2 to a tie for 13th place. He showed class with distinction on his first attempt at the National Title. Woodruff also won the Open Class title at the 1981 Region 3 Championships, placed 7th at this year's Owens Valley XC Open, and has logged a 130 mile flight.

Professionally, Woodruff is a Lieutenant in the U.S. Navy with fifteen years service in Underwater Demolition Team/Seal Teams, has 2,100 plus parachute jumps, and holds a Master Riggers License and Commercial Pilot rating.

Everyone knows Navy Lt. Bill (Woody) Woodruff has the Right Stuff.

Moyes — California Tests Icaro 2000 "Double Connection"

Recently, the Moyes outlet in Canoga Park, California hired consulting engineer, Mark West (Delta Wing X-Series designer) to evaluate the Icaro 2000 double or two-way "french connection" on a Missile GT. The test was to enable them to advise users of this device about its limitations. The Icaro 2000 is built by Moyes — Europe.

West discovered that the connection would not stay centered under load. Both the airframe (primarily downtubes and keel) and the connection itself were showing significant distortion beyond that which was noted in an earlier test of the standard hang loop configuration on a stock airframe. This distortion occurred at 800 pounds of force, where considerably lesser distortion was

seen on the standard system at 1,200 pounds (which represents approximately 6 "G's" for a 200 pound pilot. The distortion was not permanent on release of the load, and thus West felt 800 pounds was an acceptable load limit for the device.

Based on this information, Moyes Gliders advises it not be used for tandem flights, and that it should be mounted as designed or directly to a fabricated keel mounted bracket.

"These tests were well within ultimate limits, but caused us concern that they may be fitted to other gliders without concern for the method of attachment," explained company representative Kim Butterway. Correctly fitted, the Icaro 2000 is said to reduce pitch and roll control forces considerably and make a normally rough flight much more pleasant.

For supply and fitting advice, contact Steve Moyes at 22021W Covello Street, Canoga Park, CA 91303, or phone him at 213/704-9132.



1983 Gray Prizes Awarded

Bettina Gray has awarded her media awards for 1983. The winners are:

Mr. Charles Douglas, in the *Times of London*, with "Easy Glider" by reporter Ronald Faux.

Honorable Mention to Ann Welch, with "Happy to Fly," a John Murray Publication.

In the USA, Rick Masters won with his 1983 Classic video.

In Australia, Bill and Steve Moyes won with their "Birdmen of Kilimanjaro" film by Orana Films.



Sky Instruments Offers Hang Glider LCD Instrument Deck

Sky Instruments company is recently announced the first deliveries of their new multi-function instrument deck for use on hang gliders.

Elements are an electronic variometer, altimeter, and clock housed in a rugged aluminum case and comes with its own mounting clamp and padded storage bag. Extra clamps are available separately.

Sky Instruments makes extensive use of liquid crystal displays including a bar graph vario readout — a sort of analog-digital — and the latest in electronic engineering allows for very low battery drain, the company claims. At 6" by 1 7/8" and weighing in at a mere 24 ounces, it qualifies as exceptionally small and conserving of airborne weight.

The easily read variometer features audio on the up scale only with inflight adjustable volume, while the LCD digital altimeter reads out in ten foot increments to 19,990 feet.

For further information, contact your local dealer or Sky Instruments Co., P. O. Box 7366W, Eugene, OR 97401, or phone 503/726-1512.

This year's Masters was agreed upon by all to have been the best ever. For the first time, the meet was directed by a local pilot familiar with the mountain's potential. If you have visited this part of the Blue Ridge and seen the rugged mountain peaks and dense forest lands that captivate the mind, you would know the courage it took to change the format of the meet from ridge soaring to cross country flying. Nationally ranked pilot Jeff Burnett brought more excitement to Grandfather than had been known before, and in doing so, earned respect from all those involved.

You can call it the Yosemite of the East for the sheer splendid beauty that abounds here. Thanks to the efforts of owner Hugh Morton, Grandfather Mountain has been preserved for the public to enjoy on a daily basis. Its roads and facilities should be the envy of the National Park Service. Hang gliding is very fortunate to be welcomed by such a generous man.

Twenty two competitors came from all parts of the country and abroad this year. Unfortunately, Canada, England, and France all had important meets overlapping the Masters, which reduced the number of pilots who were invited. In an effort to prevent this from happening again, the dates were decided upon for next year's meet (August 18-26), and the USHGA plus other countries are being contacted early. In the past, the meeting was held in September and the weather was not often favorable. The move to August this year was not without some bad weather, but most pilots were more than satisfied. Ten rounds were flown in twelve days. An invitation to compete in the Masters is one of the highest honors you will ever receive. With a total purse of \$12,000 and \$5,000 for First Place, your journey to North Carolina could very well be worth the expense.

The Delta Wing crew, with newly crowned USHGA Nationals World Class Champion, Chris Bulger, had arrived just before I did Thursday afternoon on August 18th. The winds were the same as when I had left the last time — straight in toward the front side at 25-30 mph. Determined to get some practice in, Mike Degtoff and Bruce Case soared high above as others looked on. By Friday evening the field of competitors had arrived. At 6:25, the first pilot's meeting was started.

Eight different tasks were slated:

- Foscoe & Return 15 miles total
- Pinola & Return 12 miles total
- Banner Elk & Return .. 12 miles total
- Frontside Triangle — 3 laps 15 miles
- Backside Triangle — 3 laps 13 miles
- Marion Goal 30 miles
- Deep Gap Goal 25 miles
- Open Distance Unlimited

MASTERS of HANG GLIDING

Task by task, flight by flight — the '83 Masters are all here in this thorough review by Doug Rice/photos by the author



It's the hottest day EVER on Grandfather, as Bob England shares shade under Steve Moyes' Missile GT. Also pictured, the "man," Hugh Morton stands with his monument in the background.

The finish gate for the Return and Triangle tasks was at MacRae Meadows halfway up the mountain, nine hundred feet below launch. A second ramp had been built on the southeast side. This was all a one-on-one competition. In order to get as many rounds as possible and to keep the flying in view of the spectators, the incentive was to make it to the Meadows for landing. A landing at MacRae earned pilots an *eighth* of a point on their score. There was a bull's-eye, but it was not a factor in scoring. It was used as an extra incentive to reach the Meadows — the pilot landing closest to the spot during the meet was awarded \$200.00

The gliders and equipment were slipperier and hotter than ever. It seemed as though Ultralite Products has been sleeping too long. The three C-2's finished tied for next to last place. By common opinion, the most popular and all around best glider in the meet was the Sensor 510. Each had the variable billow control but they were not allowed to use them this year. Bob Trampenau let me demo one, and I see it as an item of the future indeed. The Moyes Missile GT showed its approval of the Sensor's wing tip. Steve [Moyes] let me fly a 188 with the double French Connection, and even though my camera was mounted and counter-balanced on the wing, I had very nice roll control. The Sensor, along with the Wills Wing Attack Duck, had half-ribs inserted between the regular ribs to help support the leading edge at high speeds. [Editor's Note: Wills' advises this modification to the standard Duck primarily accentuates low-speed improvements.] The Ducks and Streaks all used air foil shaped Chrome Moly control bars that are thinner than production 1½ inch aluminum tubing. The Streaks also used TemperCoat sial cloth, which is not a standard item. The only other glider was flown by Planters Peanuts' pilot, John Pendry, from England. His Magic III did very well indeed.

AUGUST 20th — SATURDAY

The weather was beautiful for the opening round of competition. A sunny morning with light southeast winds quickly warmed up to nearly 80° with building cumies by 11:00AM. To satisfy the hundred of spectators, Burnett called for the Backside Triangle task which required a 500 foot gain to MacRae Peak for pylon one, flying one mile out from the mountain to pylon two on the Blue Ridge Parkway, then to the west of launch near MacRae Meadows for pylon three. The winner was the fastest to the most pylons and to the finish gate. If pylons were not achieved, it became duration.

The flying order in the first round put the top-seeded pilots against the other half. (Pilots had seeded themselves earlier.) Three-time Masters champion Steve Moyes held off Mike Degtoff in the

first heat as they both completed the course. The first upset was in the fifth heat when last year's champ David Ledford was beaten by Australian Russell Duncan. Duncan made the course twice and Ledford only once. In the next heat, Rick Rawlings was upset by Doug Lawton. The first heat was the only one Graham Wallin flew. After sinking out on launch, Graham's problems were not over yet. Upon overshooting the intended landing area in the Meadows, he hit a car which was parked in the wrong place. Damage was not good to either glider or car, but the pilot was all right. Graham had to withdraw from the competition. Ken Brown, for his first time in the Masters, was neck-and-neck on the first lap against Bruce Case and had the crowd excited, but Bruce went on to win.

The beautiful day overdeveloped by 3:00 and stopped the second round that was about to get underway. At 3:30, lightning knocked out the water pumps on the mountain but did not prevent the North Carolina Barbeque (roast pork) feast that went on in the "Let It Rain" shelter. It was mmm-mmm-good!

AUGUST 21 — SUNDAY

Much like the day before, there was a little more wind which helped since many officials and pilots did not have water for showers the night before. Hundred of spectators arrived, but this time, there were no rest room facilities. Somehow, everyone got by. Again, the Backside Triangle task was called and one round completed before the skies overdeveloped. Moyes and Ledford were close for three full circuits. Moyes won by one hundred yards. Stu Smith won again the second day by staying ahead of Jeff Huey from Alaska. John Pendry had to land on the [heliport] pad by the lake after two laps with Bulger. Chris had his second win. Case upset Pfeiffer. Duncan and Don Gordon each completed three trips. Duncan won the final two. Trampenau got his second win as he beat Lawton to every pylon. As the Southeast U.S. melted in a heat wave with blistering temperatures over 100°, Grandfather Mountain saw its all-time high of 85 degrees.

AUGUST 22 — MONDAY

A third soarable day in a row, this time with blustery west/northwest winds. Hugh Morton had graciously let pilots and officials use the shower at a guest house on the mountain. The pilots felt better but now this! "Windy, assisted cliff launch" got its name on this side of Grandfather Mountain with a sheer vertical drop of some 300 feet to the trees below. The winds were cranking in at 15-25 mph and at time up to 45° cross. The Frontside Triangle was called. First, MacRae... then the Pad... then Halfmoon Overlook... three times, if possible.

Ledford was first on the left ramp; Bob England on the right. We moved them

down the narrow ramps slowly. Dave Thompson was the nose man; I had Ledford's left side wire and another man was on the right. We got to the edge with the glider shaking. The wind was changing, almost straight, then left cross. The launch director would say "window open in two seconds" — count them down; then you had 30 seconds to go. We did not want to wait at the end of the ramp, but the wind kept crossing and getting stronger.

"It's sucking me off!" David said.
"Get a tail man up here!" I shouted. The wind got a little straighter.

"Pick your gliders up," came the command from the Launch Director.

Ledford was very nervous and was repeating, "I don't like it out here."

"You have four people holding you, David," I said.

"Pilot's ready?" was the cry.
"Ready," from both men.

"Launch window will open in... two... one... launch window open!"

They wasted no time and both pilots shot above the ridge. Ledford won this heat.

After some two hours of wire-launching the pilots on the left ramp, my hands were sore. This round was very consistent. The pilots seeded at the top of the list beat those seeded at the bottom. Again, over-development ended the day after one round.

AUGUST 23 — TUESDAY

Things were looking good. The water had been restored and this was the fourth soarable day in a row. With the same direction, the winds were a more steady 15 mph. The Triangle task was called.

The first exciting match-up was Smith against Case. From the launch, it was close the whole way. Stu was behind only a few seconds as they rounded pylons 1, 2, and 3, but then took the lead and made pylon 4 first with Case right behind. Case knew he had an upset if he could drag Smith down, so he forced a burn-out on the way to pylon 5. Smith could not allow Case to make another, so he had to stay with him as they both got too low. Both pilots scratched below the Meadows for almost a half-hour before landing at the Pad.

Another upset was Trampenau over Rawlings. Bob only let Rick have two pylons. At this point, Trampenau had only been beat by his teammate, Smith, and began a string of upsets.

The match of the day, and possibly the meet, was Nationals World Class Champion, Bulger against World Champion, Moyes. This was the only time these two met and Moyes beat Bulger by not much more than a keel's length around the entire course. It was the only time Bulger was to take a loss!

The morning round was completed by 1:00, and no signs pointed to over-development. I took advantage of the opportunity to fly between rounds. The



In sequence, Woiwode receives a beating by McCray Meadows landing area.

wind was light so I ran off. I soon worked thermals up to MacRae Peak to visit my sister and her husband who were working the pylon. The lift was great, and with 700 feet over the pylon, I decided to attempt the rest of the course. Almost to the lake I encountered lift that soon became a steady 200 FPM up. At 2400 feet over take-off, I got on my CB radio.

"Wind dummy to launch."

"Go ahead, dummy," came Joe Foster.

"The lift is everywhere; I would recommend some kind of cross-country task."

They decided on Banner Elk & Return and wanted me to try it. The pylon was 6 miles in front of launch. At 2800 feet over and still climbing toward a cloud, I left the lift and made the pylon easily. Coming back was a different story. I had found no other thermals on the way to the pylon, and now U had to back track. I had two more ridges to cross and then a flight up the valley. I just did clear the last ridge and had to settle for a landing at Invershield in a very small field.

Round two for the day started soon after my landing. Moyes got 3,750 feet over launch and behind MacRae Peak, then headed out for the pylon. Huey followed him with less altitude. They both made the pylon. Moyes landed in Invershield with me while Huey could not cross the final ridge and had to land at the Sugar Mountain Golf Course. Smith got past Invershield coming back and onto a fairway at Grandfather for the second longest flight of the day. His opponent, Pendry, landed at the turnpoint. Case also landed at Grandfather's Golf Course for the third longest flight, but his opponent topped them all. Bulger, with the most impressive flight of the meet, was the only pilot to complete the course and land at MacRae Meadows.

Also in the standings, another upset by Trampenau, this time over Pfeiffer. Both made the turn point. Trampenau got farther by making it to Sugar Mountain Golf Course. Pfeiffer's glide was within a few

feet of clearing the ridge that separated him from Sugar. Then his luck really turned bad. Rich quickly turned back for a field he had flown over and only needed to clear a power line to be safe. Just when he thought he had it made, Rich noticed two more smaller lines above the one he saw. He instantly tried to dive and sideslip his glider under them, but he was too close. His leading edge hit all three and he crashed below. Fortunately, he was not hurt badly, he had another leading edge and the only shock he received was from an electric fence while exiting the field.

At the end of this round, Moyes looked as strong as ever at 5-0. Bulger, Smith, and Trampenau were tied for Second with 4-1 scores.

AUGUST 24 - WEDNESDAY

This 'highest mountain in the Blue Ridge' is known for creating its own weather. Grandfather does not care what is happening thousands of feet below. For a short period in the morning, this was the fifth soarable day in a row. The winds were light coming up both sides of the mountain - a conversion. A cloud was building from the east and over MacRae Peak. Dave Thompson launched on the northwest side to see what it was like. He flew to the southwest end of the mountain and was



able to work the lift up to the forming cloud. For the next hour, he flew in and out the side and bottom of the seemingly gentle but thickening cloud. The cloud began to roll in from below and the southeast. As Thompson landed, he looked back to see the mountain socked in by the cloud. It stayed there all day.

AUGUST 25 - THURSDAY

The mountain continued to be covered in the clouds with drizzling rain all day. It seemed that we were paying for the first incredibly good days we had. The Moyes family treated everyone to their completed film version of 'Birdmen of Kilimanjaro'. The film is an outstanding father-and-son story that makes you take a second look at the accomplishments of Steve's father, Bill. You must see it. Later in the day, pilots drove along some of the courses they might take during the cross-country tasks. Others made the 19-mile drive to Blowing Rock to stock up on beer, since Grandfather is in a dry county.

AUGUST 26 - FRIDAY

The day began with light northwest winds and the last chance for the middle of the pack to make the cut for Saturday's fly-off. The familiar Triangle task was called but there was not enough lift to make pylon 1. This was the least popular round of the meet. The back of the pack flew first and had the best air. The first five heats had some good battles going, but then the wind began to converge and shut down. Russell Duncan had the best flight underway and had almost made pylon 1 when the lift stopped. He was drilled so fast that he was forced to land at the pad and take a loss. The front side was at best launchable as a fog bank started creeping around the southwest point from the back. Everyone who had been in the air was down now, and a third of them were at the pad. The two heats waiting to fly held the leaders and they did not like the conditions. The fog kept creeping closer and closer to MacRae Meadows. While there was still a chance, with Bulger on the left and Smith on the right, the two reluctantly launched. They had to turn toward the Meadows which put Bulger in front. The two flew straight into the fog and disappeared. Moyes and Trampenau launched and joined them. Everyone at launch rushed to a point where

they could see the fog monster. It had already eaten four gliders and it was still moving towards the Meadows! All eyes stared looking for signs of life. It was Smith out the bottom and headed for the pad. Stu refused to stay in the fog behind Bulger. Bulger appeared from the side and was high enough to make the Meadows and win. Then Trampenau was out hugging the ridge just below the Meadows while Moyes was lower and heading for the pad. Steve landed first, taking his only defeat so far.

In fogged-out conditions after the morning round, the Dave Murchison Award for Sportsmanship was presented to Ken Brown. Sportsmanship was evident with all the pilots. On every launch while in the ready position, they would look to each other's eyes and shout 'Have a good one, mate,' or 'Let's have a fun flight.'

Friday night Jeff Burnett and Scott Buchanan had everyone over for hors d'oeuvres, lobster, and beer. I don't think anyone ever had a better treat for only five dollars.

AUGUST 27 & 28 - THE WEEKEND

Rain and fog. It was very boring.

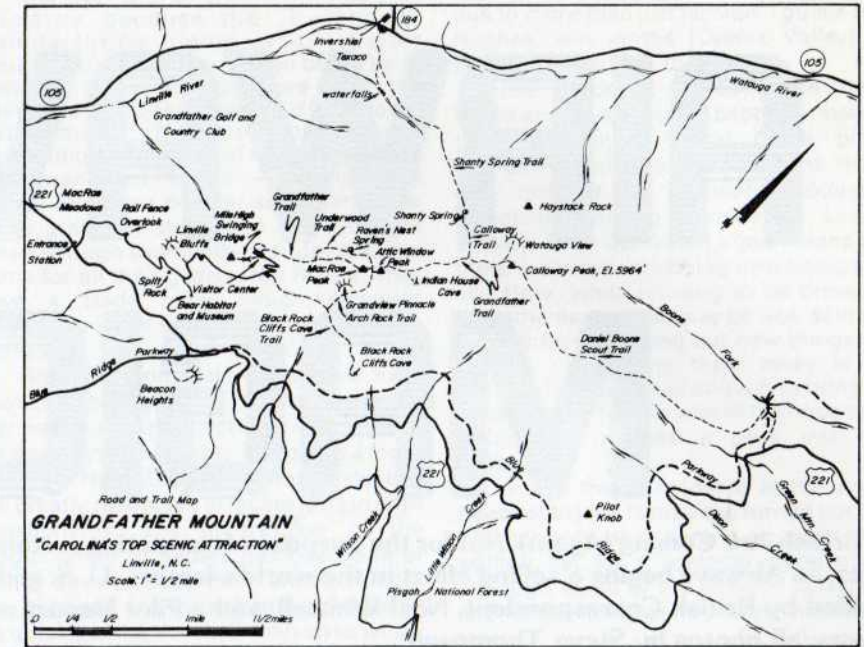
AUGUST 29 - MONDAY

Beautiful blue skies with fast-moving cumies. Winds were blown out - north at 25 - 35 mph. It was warm and a day to have fun. Bob Trampenau made bubbles instead of Sensors. David Beardslee played with his miniature hang glider in the parking lot rotor. Some visited Mildred, the bear, and her cubs, while others went hang driving to the areas lower mountains and flew.

AUGUST 30 - TUESDAY

The competition continued with partly cloudy skies and southeast winds at 8 - 15 mph. The pilots had been cut to the top twelve. Some of the officials had to leave, as the meet was now in overtime. Being short handed, only two pylons were used. One further north on the parkway, and the other at Point Sublime behind the Meadows. The lead contenders flew first. Smith quickly topped out over Moyes while the other heats continued to launch. Trampenau was on Bulger's tail. Rawlings rounded pylons ahead of Pfeiffer. Pendry stayed up while Gordon went down. Case beat Ledford and Huey beat Beardslee. A lull in the lift came during the round and pilots found new places to land. Smith had beat Moyes to four pylons when they both had to land on the parkway. Trampenau had to take it to the pad while Bulger stayed up. Rawlings won the first three pylons, then let Pfeiffer burn out on the way to a win at pylon 4 (Rich also landed on the Parkway). Pilots complained of not being contacted or flagged at pylon 1. Some pilots could not even find pylon 1. There were too many blue pick-up trucks!

Round seven had gone so fast there was time for one more. With conditions looking good again, Burnett called for the Pinola and Return task. Pilots would fly six miles to a southwest pylon and return to the Meadows. This was one of the most rewarding rounds of the meet after which a cut was made to the final eight. Don Gordon and David Beardslee scratched in



front of launch for a long time, then Beardslee suddenly climbed out to cloud base and Gordon didn't give up. He caught a thermal just two hundred feet over MacRae, climbed to cloud base, completed the course for a win, and left Beardslee at the turn point, the biggest come-from-behind of the meet!

Case climbed out first and headed for the pylon immediately only to burn out on the way. Huey waited for conditions to improve, got high, made the course and crossed the finish line with 1,000 feet of altitude. Smith was ahead of Trampenau when they each reached cloud base. Bob then took a more westerly course and got high enough to reach the pylon ahead of Stu. Bob then had trouble with the pylon and lost altitude flying too far past it. Smith took the lead and won by landing in an adjoining field to the landing zone. Trampenau landed in Linville two miles away.

Moyes and Pendry both completed the course with the closest race of the day. Staying together the whole way, Pendry made a good turn in a thermal at the pylon and got 100 yards on Moyes. He then held the lead to the finish line.

Clouds were becoming more abundant than sunlight as the lift grew weaker. Bulger got dumped by Rawlings' vortices on launch and momentarily had his glider begin to spin. Chris made a courageous recovery but was losing it as he got lower and lower below launch. Meanwhile, Rawlings was getting very high and appeared to be headed for an important win. Bulger continued to work. After some 15 minutes below launch, the lift turned back on and he found the elevator. When Rawlings saw Bulger coming, he decided it was time to head for Pinola. Rick stopped to work a thermal that was short of the pylon while Chris passed him and made the turn first. Bulger (on his way back) was then able to get in the tail

end of the same thermal and get enough altitude for the return flight. The thermal had ended by the time Rawlings got back, and he was forced to land out. Bulger streaked across the finish line with the bar stuffed.

Pfeiffer, Ledford, Case, and Beardslee took the cut leaving the rest in the finals. Burnett hoped for four more rounds which would have left it open to anyone. Bulger was alone at 7-1. Smith and Pendry were together at 6-2. Moyes had plunged into a five-way tie for third at 5-3.

AUGUST 31

WEDNESDAY, THE FINAL DAY

All of a sudden this was it. The weather was supposed to get bad for the next few days. Burnett had to wrap things up today if at all possible. There were high clouds and lower developing cummies. The winds were a west cross at about 15 mph. The stage was set for what would be a dramatic finish to this incredible competition.

Deep Gap - 25 miles away - was the goal. Bulger and Pendry launched at 11:57 with everyone else right behind them. At one point, the flock of eight all thermaled together some 1,500 feet over Grandfather's highest peaks as they headed northeast. The officials were on their way as I jumped in my truck and headed down the Parkway for Deep Gap. Burnett was to follow behind on retrieval. No radio contact had been made at the goal for over an hour. There was reason to worry. This is not farm land. There are miles and miles of trees over the back of these mountains. There are a number of golf courses and when radio contact was finally made, we found out that Trampenau had landed at another one, this time Boone Golf Course. I wondered if along with making 'birdies' he played golf, too. His opponent, Huey, didn't fly as far. Jeff landed at a mall in Boone with no intention of shopping. Gordon had been picked up also but where

CONTINUED ON PAGE 36

AIRWAVE'S MAGIC III

The British Are Coming (Again)! Not for the purpose of competing . . . this time we're seeing an effort to gain market shares, as Airwave begins a selling effort in the world's-largest, U. S. glider marketplace. Company background is provided by British Correspondent, Noel Whittall, and a Pilot Report comes from Hang Glider Emporium's Ken deRussy/all photos by Steve Thompson



by Noel Whittall
All photos by Steve Thompson

The Isle of Wight is an apparently insignificant chip of land which seems to have broken away from the bottom of England. The sheltered waters surrounding it have been the training ground for generations of sailors, and so naturally, sailmaking and the associated crafts are well established there.

Enjoying a mellow climate and benefiting from smooth hillsides and sea cliffs facing almost all wind directions, it is also an excellent place to be if you wish to embark on the precarious business of building hang gliders for a living.

Rory Carter and Graham Deegan got together little more than three years ago to form Airwave Gliders, and although both had an interest in hang gliding, they had not been involved commercially with the old flapping rogals of the early days.

The phenomenal success they have enjoyed in these three years proves that provided you can see your objective clearly, then a history of doing things the way they have always been done is not necessarily the best way.

Their first product was the UP Comet, the rights to build which cost the new company quite a large sum, and the royalties on the first one hundred units sold absorbed much of the profit. At the same time the Comet seemed to be being copied for nothing by a number of other factories throughout the world. This meant that Airwave had to be just that bit better, and a program of steady development

began.

The deal with UP eventually decayed, primarily because the "European" manufacturing rights which Carter thought he was buying, turned out to be at best the British ones. Before long the developed gliders were often outperforming the opposition, and competition pilots started to describe their performance as "Magic" — a catchword from a TV series popular at the time. The name gradually stuck, and Airwave were smart enough eventually to adopt it as the name for all their gliders. Net Result: They have a trade name which suggests something extra in almost any country in the world.

Both the principals of Airwave have nautical backgrounds. Carter is an extrovert naval architect with a reputation for designing fine yachts. Deegan is a more reserved New Zealander whose abilities are greatly respected in racing lofts in both hemispheres. The progression of the Magic range of gliders has been one of steady development. Early on the sail cut was changed and the airframe arranged to rig quickly in the normal British style, with a folding control frame plus nose catch. Under Graham Deegan's influence, repeated adjustments to sail lay have resulted in quite radical performance boosts, aided by Rory's consistent efforts to make the airframe more slippery — streamlined uprights and kingpost are almost standard options now, and mylar-coated leading edges frequently specified.

The British National League is a very intense competition arena, and Magics "deliver the goods" on performance

conclusively enough and often enough for their great popularity among pilots to be due to more than just fashion. I guess Tony Hughes' win in the [Owens Valley] XC Classic underlines that fact.

The factory at Cowes in the Isle of Wight employs about 25 people — many of them committed World Class pilots. Graham ruefully confessed to me that it was difficult to maintain production sometimes during periods of League activity. Their combined input means that there is always something new being tried and Rory, while refusing to be drawn on what the next Magic may be like, said that he was forever trying out new things and then " . . . putting them away in the cupboard until he had enough to bring out all together." I guess a lot of the opposition would like to take a peek into that cupboard!

So far this year [dated at the end of September] the factory has turned out over 750 aircraft, and there is an eight week waiting list for a custom made glider, although some of the Airwave dealers up and down the country keep models in stock.

I have flown quite a few of the Magic gliders at one time or another, but rarely in the sort of weather which allows a fair comparative test. The main characteristic I have noticed is an absolutely perfect static balance which engenders a great feeling of confidence in the pilot before launch. Also you can tune them for full speed without the roll control suffering as much as happens with some of the competition.

Nice aircraft, indeed!

by Ken deRussy

A MAGIC ENCOUNTER

I first noticed it as an unfamiliar blotch on an otherwise familiar panorama. After an hour of circling in the same place, seeing the scenery repeat itself, I rolled out on a west southwest heading to get a clear look. My eyes could now focus on the Goodyear Blimp! Only twice before in nine years of flying in the Santa Ynez mountains have I found myself in the air with this well-known dirigible. Once I got to within a quarter mile of it.

I took note of its position and heading and returned to a circling mode. The thought of flying alongside the Goodyear Blimp made my heart start to pound. A flurry of thoughts stumbled over one another.

How high is he? How high must I be to leave my resident thermal and still catch him? Damn . . . which way is the surface wind?

I calculated where I would have the best chance of intercepting it and continued to circle to gain as much altitude as possible since it was unlikely I would find any more lift after I left the mountains.

As I turned my Magic III out of the resident thermal and established my intercept heading, I could see the blimp

heading further away from the mountains. Setting what seemed to be my best glide speed and trying to be as "small" as possible, I began to imagine what it was going to be like to fly alongside such a huge, slow-moving aircraft.

How might the crew react to my waving and making faces? Would it be possible, as Santa Barbara hang gliding pioneer Steve Moore has suggested, to soar the bow wave that moves along in front of the blimp?

I continued to adjust my heading and speed as I passed over the landing area. It was beginning to seem doubtful that I could catch the blimp at his altitude and there were still several maneuvers I wanted to complete before landing. I hated the thought of losing this opportunity.

Here I am, flying a new glider for the purpose of writing a pilot report and I encounter a blimp! The perfect performance comparison. I can just see the magazine article showing two columns of figures with "Airwave Magic III" at the top of one column, and "Goodyear Blimp" at the top of the other!

But it was not to be. I realized I would be several hundred feet below when I reached the blimp, so I turned to head back to the landing area to complete the flight analysis. After the final maneuvers and landing, I reflected on what I might say about the Magic III in a pilot report.

THE TEST PILOT

I know from ten years of hang gliding and nine years of teaching hang gliding full time, that it is very difficult to describe the sensations encountered in flight. And yet, this is what I had agreed to do when I last spoke to Rory Carter, Director of Airwave Gliders. I certainly *should* be qualified to write this kind of report. I am a Master-rated Life member of the USHGA, a USHGA Examiner, Observer, Advanced Instructor, and an occasional competition pilot with over 1,000 hours of experience in nearly 100 different hang gliders and ultralights. This then, is my review.

THE COMPANY

Airwave Gliders, Ltd., have since 1980 been manufacturing hang gliders, high performance yacht, dinghy, and sailboard sails, and a wide range of fittings for the hang gliding and microlight industry. Airwave Gliders is owned by Rory Carter, Graham Deegan, and Patsy Carter. The factory is located on the Isle of Wight, just off the south coast of Great Britain. Originally licensed to build the Comet by Ultralite Products of the USA, they now are building a glider of their own design in their modern 5,000 square foot factory. They have a comprehensive dealer network throughout Europe, where they may very likely qualify as *the* major glider manufacturer.

...the Owens Valley XC Classic (1st and 4th) and their subsequent Official World XC record (John Pendry's 186 miles — Official FAI — see the Sep/Oct '83 *Whole Air*)... a decision was made to launch the Magic III into the North American market. In the fall of this year, Rory Carter, Managing Director of Airwave Gliders, Ltd., toured the USA to set up dealers and demonstrate his glider. Since his arrival, the Magic III further showed its capabilities by finishing 2nd in our Nationals and tied for 3rd in the Masters.



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THE SET-UP OF THE MAGIC III

The first thing I noticed in assembly was that the control bar is designed to pivot rearward while fully rigged by simply detaching the nose wire. This permits going from fully assembled to laying flat on the ground with greater ease and quickness than either the UP or Wills systems. After the wings are spread, the seven battens per side are installed with the red tips for the left and green for right, in accordance with international color coding. The tip batten plugs into a fitting on the leading edge that is no easier to find than on either the C2 or Attack Duck. The crossbar is anchored with a ball lock pin at the rear of the keel pocket. A cord is provided to retrieve the rear end of the anchor wire connector. With velcro to close the rear end of the keel pocket, a snap further secures anything that might be stored inside the keel pocket. Rather than attaching the rear kingpost wire at the keel, the connector is at the kingpost top. Somewhat disturbing to me is the fact that the shackle is secured to the kingpost top by rivets only. A velcro closure secures the right and left mylar pocket ends together, and produces a simple and effective means of streamlining the nose area as opposed to a separate nose cone piece.

THE SAIL

Except for the aforementioned unique characteristics, the Magic III assembles like a UP Comet. The overall appearance is

quite ordinary and upon closer inspection, you will even discover that it is generally set up loosely in terms of sail tension, batten tension, and double surface tension. Rory Carter explained that this is part of why the Magic III handles and performs so well. According to Carter, the looseness in the double surface permits undercambering all the way towards the tips at high angles of attack. As the angle of attack is reduced, the double surface billows downward to create a more symmetrical airfoil to reduce drag at higher speeds.

The tip area of the sail is reinforced with two-ply mylar cloth which no doubt contributes to a flutter-free sail when flying at maximum speed. The Magic employs a deeper mylar pocket which Airwave claims "delays the onset of turbulent flow and more rigidly defines the lift producing part of the aerofoil."

FLIGHT CHARACTERISTICS

I flew the Magic III on two occasions, both times in marginal lift where a good sink rate and good handling qualities would be tremendous assets. I found nothing unusual or demanding in launching. Even the airfoil downtubes did not provide the difficulty which I had anticipated. The airfoil tubing is inner sleeved so as to provide a total wall thickness comparable to typical downtubes found on popular gliders. These streamlined downtubes are available as an extra cost option. (No extra charge is made for the airfoil kingpost.)

Obviously, these downtubes will not bend so easily in the fore and aft plane, and will not treat your arms so well in a rough landing.

In flight I found roll response pressures mild and roll response fairly quick with no tendency to adverse yaw. It was easy to keep in a turn with neither a tendency to tighten up nor a tendency to roll out. I found, however, that with nearly full extension (bar pushed out) it seemed to be easier to stay in the thermal than at a faster speed (bar even with chin) where I

would have expected better roll authority. Pitch pressures were light and generally I found all aspects of handling to be easy and predictable. Like most popular gliders, the stall is mild and only pitches down after the bar is pushed out somewhat quickly. Roll authority is good down to quite low speeds allowing roll corrections up until the last moment before flare. The flare itself is easy and requires less precision in timing than other double surface gliders I have flown.

TAKE-DOWN

Fold down is like set up: quick and easy. The bag is padded where necessary and all internal wear points are amply padded with nut caps and rubber boots. In fact it is impossible to see some assemblies due to the padding.

THE BOTTOM LINE

Suggested list price is lower than any top-of-the-line glider sold in the USA. However, dealer cost is slightly higher than several popular gliders and you can be sure this difference in cost will be reflected in average selling prices.

Factory flight testing is unavailable and each dealer will perform any pre-delivery test flight.

This is a very solidly built, easy to assemble, good handling, and good performing (as evidenced by its competition results) state-of-the-art hang glider. From my nine years experience as a dealer and instructor, I can say confidently that anyone who chooses the Airwave Magic III will be rewarded with many hours of state-of-the-art hang gliding pleasure!

Ken deRussy is the owner of the well-known Hang Glider Emporium which he runs with Bonnie Nelson. Indeed one of the sport's true veterans, deRussy has always remained active in teaching. He is sought-after for his honest opinions, and *Whole Air* welcomes Ken to our slate of Editorial Contributors with pleasure. §

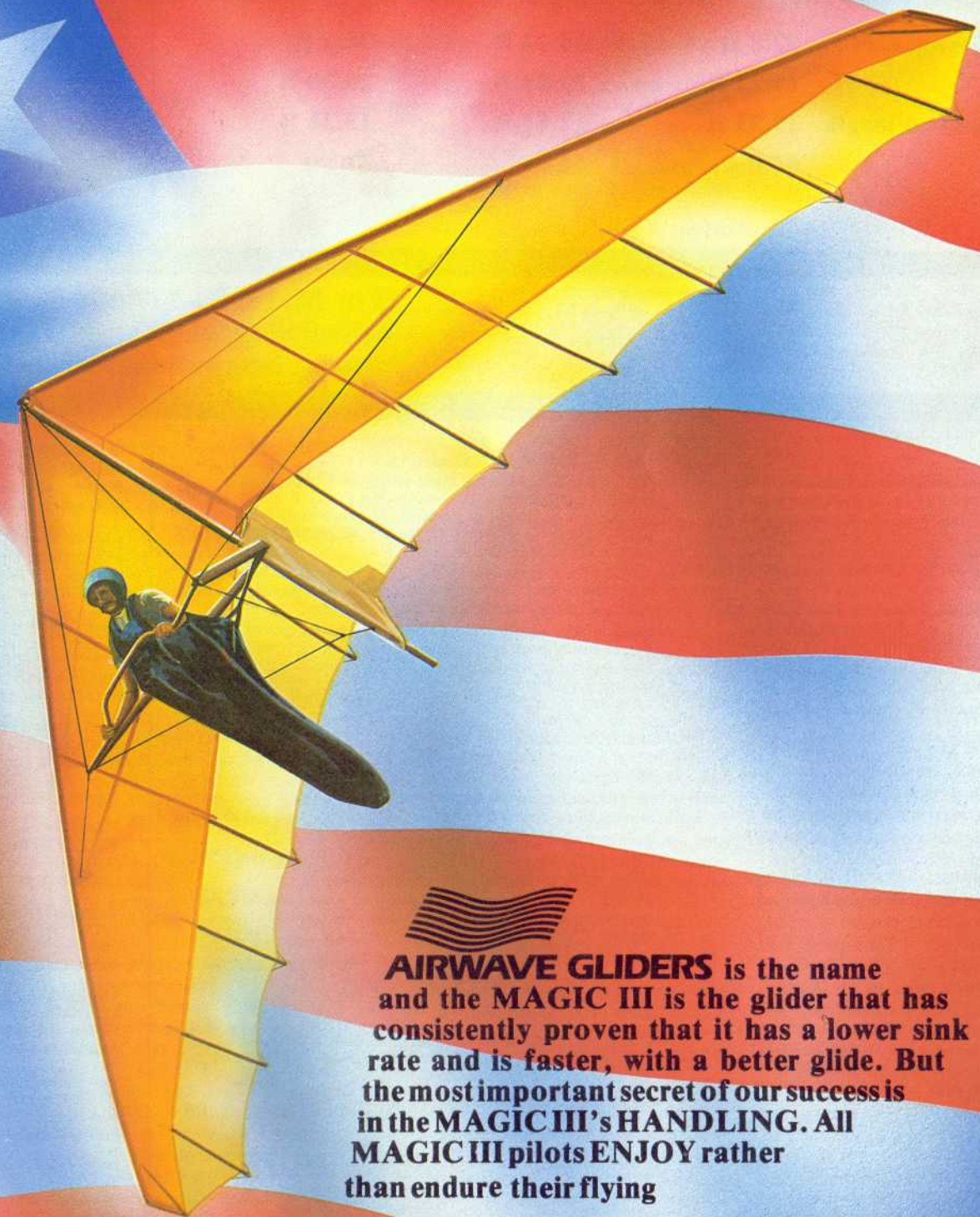


AIRWAVE GLIDERS

CROSS THE ATLANTIC



MAGIC III



Airwave Gliders have led European glider development and have been consistently winning top competitions and setting records for three years. They have an excellent record for sail design, sailmaking, and hardware design.

This year Airwave Gliders developed their Magic III and have won all the major British competitions, more than their fair share of European national championships and European events.

AND IN AMERICA at the OWENS VALLEY CLASSIC — 1st & 4th. Then with only one entrant at the Wyoming regionals — 1st, the U.S. Nationals — 2nd, the U.S. Masters — 3rd.

Understandably there are a lot of American pilots asking “Who are those guys?”



AIRWAVE GLIDERS is the name and the **MAGIC III** is the glider that has consistently proven that it has a lower sink rate and is faster, with a better glide. But the most important secret of our success is in the **MAGIC III's HANDLING**. All **MAGIC III** pilots **ENJOY** rather than endure their flying

In order to ensure that you are able to get a Magic III plus all the service, spares, advice, and extras that you may need, we have arranged a network of professional dealers. (See dealers list right).

And you can rest assured that the Magic III is fully certified and tested to British, German, Swiss and American standards. The placard supplied is accepted in National and International Competitions worldwide.

MAGIC SPECIFICATION

MAGIC III	155	166	177
Optimum Pilot body weight	140—160 lbs	155—175 lbs	175—200 lbs
Aspect ratio	6.72	6.8	6.84
Wing span	32.8 ft	34.12 ft	34.8 ft
Packed length	19.23 ft	19.81 ft	20.36 ft
Optional breakdown length	19.23 ft	12.81 ft	13.36 ft
Glider weight	64 lbs	66 lbs	71 lbs

MAGIC III \$1975

(For Magic III 177 add \$35).
delivered through customs to your
nearest international airport.

FRAME DETAILS

The airframe is built to outlast the demands normally associated with flexwing aviation. It folds neatly into a package that is easily shouldered by one person. Folding and unfolding the glider is a simple operation and is performed with the wing flat on the ground in windy conditions, or standing on its 'A' frame on rough or dirty ground.

The flexibility of the frame is carefully matched to the shaping and stretch of the sail. Both inner and outer sleeves are employed on the leading edge for this purpose. The MAGIC's hardware is of the highest quality and consists of the following materials:—

Aluminium tubes are anodised, drawn seamless, 6082 T6, and in U.S. sizes.

Control frame, kingpost and keel are all bright anodised. Aerofoil section kingposts are standard.

All fittings are stainless steel or aluminium alloy.

Bolts are American National series with Aerotight nuts.

Neverkinks and/or desnagglers are fitted on all wire terminals.

Chafe protection is used on all internal connections.

Rigging wire is stainless steel with a plastic coating.

Frame Options

Aerofoil uprights are less drag, but will still break in preference to your arms \$63.24

Breakdown leading edges are available for those who have a length restriction \$50.23

Speed bar, not only increases the maximum speed of the MAGIC, but is more relaxing to hold at more normal speeds \$17.28

Ball tips reduce drag \$27.28

MAGIC ROLLER, a built-in roll assistance, not necessary but nice to fly with \$151.57

Pitch French connection is not necessary, but some pilots like them \$50.23

SAIL DETAILS

All the MAGIC sails are made from the highest quality Howe & Bainbridge dacron cloth. We prefer to use a special type & weight of cloth on the main body which is only available in white, consequently we recommend the main body to be white.

At the tip the famous Airwave 2 ply mylar cloth reinforcement is standard and the sail is engineered to ensure a cleaner and more efficient structure.

Leading edge performance is enhanced by the use of a deeper mylar pocket. This delays the onset of turbulent flow and more rigidly defines the lift producing part of the aerofoil. Performance can be improved still further by opting for a mylar cloth leading edge panel, but this is prone to abrasion and is only recommended for the competitive pilot.

Sail Options

Shiny mylar cloth leading edge to improve laminar flow and reduce drag \$50.23

Rainbow or exponential striped double surface \$67.13

Shiny mylar main body and leading edge pocket \$235.32

Sandwich mylar main body and Shiny mylar leading edge pockets \$278.11

Choice of colour on double surface, leading edge, and keel pocket at no extra charge. For colours available see order form and cloth samples.

Choice of colour on double surface, leading edge, and keel pocket at no extra charge. For colours available see order form and cloth samples.

Airwave Gliders Limited
Unit 2, Three Gates Industrial Estate
Three Gates Road, Cowes
Isle of Wight PO31 7UT England
Country Code 44 983-296042
Telex 86886



ECO Flight Hang Gliders

493 Lake Street
Benzonia, MI 49616
616/882-5070

Aerial Techniques

Route 209
Ellenville, NY 12428
914/647-3344

Sport Flight

9041B Comprint Court
Gaithersburg, MD 20760
301/840-9284

Morningside Flight Park

Rt. 12, RFD No2
Claremont, NH 03743
603/542-4416

Crystal Air Sports

Rt. 4, Cummings Hwy.
Chattanooga, TN 37409
615/825-1995

Northern Sun

2277 W. County Road "C"
St. Paul (Roseville), MN 55113
612/633-3333

Austin Air Sports

5508 Parkcrest
Austin, TX 78731
512/451-2505

Hang Flight Systems

1202 E. Walnut Unit M.
Santa Ana CA 92701
714/542-7444

Treasure Valley Hang Gliders

Box 746
Nampa, ID 83651
208/465-5593

Golden Sky Sails

572 Orchard Street
Golden, CO 80401
303/278-9566

Aero-Sports Ultralight Gliders, Inc.

898 South 900 East
Salt Lake City, UT 84102
801/363-5508

High Sierra Hang Gliding & Windsurfing

Box 865, 1000 N. Plaza Street
Carson City, NV 89701
702/885-1891

Chandelle San Francisco

198 Los Banos Avenue
Daly City, CA 94014
415/756-0650

Rising Star Gliders

1023 S. Adams, Suite 107
Olympia, WA 98501
206/456-3441

Mission Soaring Center

43551 Mission Blvd.
Fremont, CA 94005
415/656-6656

The Hang Gliding Centre

4206K Sorrento Valley Blvd.
San Diego, CA 92121
619/450-9008

Hang Gliding Emporium

613 North Milpas St.
Santa Barbara, CA 93103
805/965-3733



THE '83 NATS

All you ever wanted to know about the '83 U. S. Nationals, and more/by Terry Ferrer

Photographs by Bill Bennett

"Ever wonder why they have mid-air here?"

"Hey Launch Director, how many more gliders you gonna allow in that thermal?" and "Dave's looking for more deaths". Finally, someone screamed out, "Dust devil in the set-up area!" It cleared the launch of grumbling pilots as they all ran for their gliders.

Pfeiffer was the first pilot to go for Granny's Knob with Peachy hot on his tail. They both made the knob turnpoint and both returned to the ridge very low. It was the same for all other pilots in the air once they knew they could make it across the valley and back.

Rich got the first pylon but Butch beat him to all the others.

Local pilot Ted Hill, flying a new Shadow, had to race against World Champion Steve Moyes. Steve beat Ted to the Knob but Ted beat Steve to all the other pylons. Imagine how an amateur pilot feels, beating the best in the world. The Flight Designs crew celebrated hard that night. Later, Steve would say, "Losing's dreadful, but that first guy I flew against showed me all the right clues — how to get up at Sampson and the 'house' thermals". It was Steve's first flight at a new site. Naturally, the pilots used to the site had the initial advantages — Region 2 pilots all won their first heats.

The 1983 United States Nationals ... this year at a "new" site. Dunlap has only been flown for a couple of years. This meet would show if Dunlap was a world class site. The only two competitions held there previously were the '82 & '83 Region 2 National Qualifiers.

Some of the Big Boys were there, but out of the seventeen U. S. pilots who prequalified, only seven could make it to Dunlap for the eleven days it took to decide our National champion. With ten top pilots missing, it gave hope to a lot of contestants of possibly being in the top ten after the flying was over. There was a feeling of anxious anticipation in the air.

FIRST DAY HASSLES
FRIDAY AUGUST 5
World Class, Round 1

Sport Class pilots were told they could not compete until the World Class had three rounds in...the task; nobody liked it!...Very low inversion layer...looked like it would be a duration event which nobody looked forward to. During the wait pilots tried to get the task changed but they were unsuccessful.

"Was this to be a five hour duration event?" someone asked.

After a three hour wait watching wind dummies sink out in light air, the first few heats began flying off at 1:30 pm. It still did not look like the first pylon was attainable because of the inversion layer.

Rich Pfeiffer and Butch Peachy were the first off. Rich in his keel pocketless, tempercoat Streak and Butch, flying his faired-to-the-max' C-2. But as was expected, a gaggle formed over the spine to the right side of Take off. By this time nervous, impatient pilots were kidding each other about the whole show — during the early rounds, the Region, the site and especially the Meet Director took a lot of heat from disgruntled pilots.

Local pilot Ted Hill, flying a new Shadow, had to race against World Champion Steve Moyes. Steve beat Ted to the Knob but Ted beat Steve to all the other pylons. Imagine how an amateur pilot feels, beating the best in the world. The Flight Designs crew celebrated hard that night. Later, Steve would say, "Losing's dreadful, but that first guy I flew against showed me all the right clues — how to get up at Sampson and the 'house' thermals". It was Steve's first flight at a new site. Naturally, the pilots used to the site had the initial advantages — Region 2 pilots all won their first heats.

The last ten heats were all duration events. No one could make a turnpoint or a pylon. Chris Bulger, flying a Streak beat Harry Mills, also flying a Streak. Harry sunk out crossing the valley while Chris went on to make three pylons. Other winners, the only flyers to make four of five pylons were: Gene Blythe, Rick Rawlings and John Pendry.

SATURDAY AUGUST 6
World Class Round 2

The pilot's meeting lasted an hour and a half. Protests were numerous, promises broken and no Fledglings in the World Class (Tommy Vayda's protest denied and Dudley Mead could not show up until Sunday the 7th).

There were heated arguments between World and Sport Class enthusiasts and meet officials. One snivler was actually given back his entry fee check by an angry Liz after the fool pilot began giving Dave a hard time. Boy was he surprised.

Gary Hodges (Region 2 Director) explained the difference between the two classes but it took Rob Kells' impromptu speech to "save" the sporting class from self-destruction. He explained the importance of the class to the future of amateur competition and to the future of hang gliding itself. Then, up the hill we went.

We left behind a bunch of angry Sport Class pilots in the RV park because their class would not begin flying until the World Class finished three rounds. Guys were mad: "I came here to fly with the Big Boys—I want my fair chance at 'em!", was the majority opinion. They had paid to compete, not to sit around in the LZ or wind dummy as I was doing.

There was a conspiracy brewing to get all the Sport Class pilots to drop out and take their collective three grand entry fees with them. I think I was the only one who did not care what class I was in. I felt lucky just to be there.

To quiet down the snivlers, Dave called for two fast World Class rounds that day in order to get the Sporting Class in the air the next day. This decision led to more than a few sour comments by World Class pilots.

The day was inverted too. A few good places of lift and great areas of sink caused half of Round 2 to be duration contests.

Ben Davidson, flying a Pro Star was the first pilot to stuff a launch during the meet but the launch is very forgiving of glider stuffs and Ben came out smelling like a dusty rose.

Local hot shot, Ted Hill, beat Rob Kells to Delilah by four minutes. Bob England beat Butch Peachy by two minutes. Mark Bennett beat Kenny Brown by thirty-three seconds. Rick Wade beat Eric Raymond by only four seconds. And Deke Cassetta beat Chris Bulger by two and one-half minutes. Chris' first of only two losses.



Date

August 5 to August 15

Site Elevations

4750 feet MSL to 2100 feet MSL

Pilot Entrants

64 World Class
28 Sporting Class

Flight Park Owner

Ms. Connie Bowen

Meet Director

Dave Bowen

Officials

Chief Scorer — Ms. Liz Sharpe
Launch Director — Duane Tessmer
Landing Judges:
Gary Hodges and Paul Whitehill

SATURDAY AUGUST 6
World Class Round 3

A build up of heavy overcast shut down any chance of strong thermals. Consequently, all thirty-two heats ended up being duration events. Again a big gaggle built up above the right spine in front of take off. I counted 18-20 gliders at one time. The calibre of pilots showed — everyone was turning in the same direction. Still, it was not easy or much fun: Ted Hill said, "It was a contest of nerves". There were more than a few near misses: Rick Wade, flying a Streak said, "There were three Comets all around me. I left them because I got tired of avoiding people." Those pilots with nerves of steel who stayed in the gaggle until the very end were rewarded with a victory that afternoon.

Chris Bulger out-lasting Rick Wade, Ted Hill beat Bob England, Rick Rawlings beat Deke Cassetta and Cindy Drozda, in her new Attack Duck, outsunk Debbie Renshaw in her new Shadow.

Luigi Chiarani and Joe Horton would have won their heats but they both landed beyond the foul line. This line separated the glider disassembly area from the LZ and landing beyond the line was just like landing out.

SUNDAY AUGUST 7
World Class Round 4
Sport Class Round 1

Luigi and Joe's protest was denied at that mornings' pilot meeting. After three rounds of World Class competition there was a cut of pilots with three losses to the Sport Class. Officials tried to get pilots to move from class to class voluntarily but only reluctantly did pilots move to the new class. An argument from existing Sport Class pilots (some who felt that they were

being treated like second class citizens) was that these new pilots in their class had a three round practice advantage over them. Then a couple of manufacturers offered cash contingency prizes to anyone winning the Sporting Class on one of their gliders. Some folks felt the Sporting Class should not have any money prizes attached to it. These events led Paul Robinson, with a record of 2-1 in the World Class to move to the Sporting Class in hopes of dominating it and winning a trophy and some bucks. There were questions raised as to whether this was fair or not. But it was a legal move and we all knew that Paul was the one to beat in the Sporting Class.

The World Class launched first. Conditions dictated the fortunes of the early heat pilots. They were all duration contests. Some pilots hated the task and complained to Dave about it. They had flown too fast and fell out of the sky in the light air. The pilots that won their heats loved the task.

"Dave's not perfect", someone said. "It's good that Dave's inflexible to the demands of the top rated pilots," said Ken Brown, "In the past, some meet directors have changed tasks to accommodate the flying styles of the big name pilots, but Dave treats everyone the same, so we all have an equal chance of winning."

The second round for the Sport Class was cancelled after it overdeveloped over the valley. Late that afternoon the clouds dissipated, the hot summer sun heated everything up and it got soarable again.



Pilots set up in the Dunlap assembly area.

MONDAY AUGUST 8
Round 5 World Class
Round 2 Sport Class

Late for the pilots meeting roll call, Claus Savier and John Pendry were given a choice of a loss versus a twenty-five dollar fine. Both chose to pay the fine and no one was late for a pilots meeting after that.

Luigi Chiarani, in a Streak and Mike Mills, also in a Streak, made protests that were denied, but caused meet officials to change pylon crossing lines for future rounds.

To get rid of the "death gaggles", a new, marginal condition task was amended and consequently run that day for both classes. The launch director was given authority to change the task after conferring with the meet director. Some pilots felt it was a little tough for Dave to call the task for the day and not be on launch at the time.

The World Class launched after the Sport Class while huge cumulo-nimbus crept up on the valley from the Sierras, eventually shutting everything off. There was some good soaring flights and races anyway:

Dick Cassetta: "I had my feet on the speed bar, my hands on the wires, my head at the nose plate and he (Rob Kells) still beat me!"

Chuck Boss: "But Dick, isn't that dangerous?"

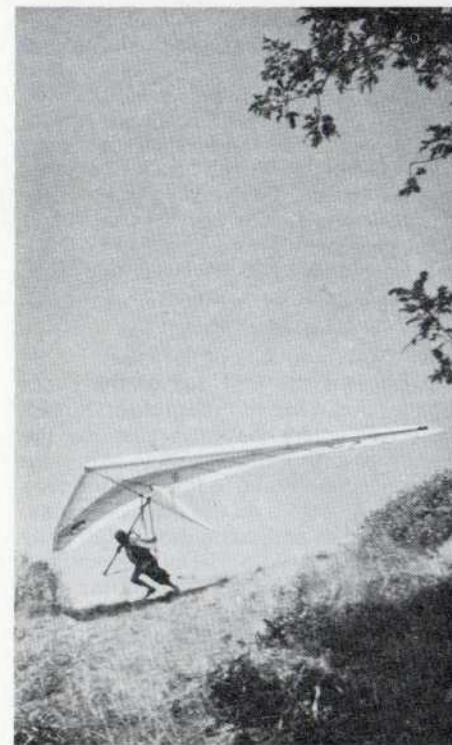
Dick: "I didn't say I wasn't scared."

Ken Brown beat Steve Moyes: "He waxed me," said Steve. Moyes was only a minute behind Ken at the first two pylons but Ken increased it to twenty minutes at Delilah.

Jeff Huey was ahead of Stu Smith by one minute at the first two pylons. Stu was first at pylon three but Jeff sunk out going from Delilah to Granny's Knob and landed out giving Stu the win. Kevin Kernohan beat Steve Pearson, who was flying an Attack Duck. Neither pilot got a single pylon, both landed out but Kevin won because he was closest to the LZ. Chris Bulger beat Ted Hill by taking all four pylons while Ted only got the first two.

There were a lot of close races in the Sport Class. Lee Fisher beat Andy Kozak, piloting a Pro Star 2, by taking the first pylon, then they both sunk out going from Sontag to the Knob and landed out. John Ryan beat Rick Jacob, Raoul Mazzone beat Dave Darling and John Woiwode beat Chuck Halemert.

A second round for the World Class was cancelled when it overdeveloped over the valley that day.



TUESDAY AUGUST 9
Round 6 World Class
Round 3 Sport Class

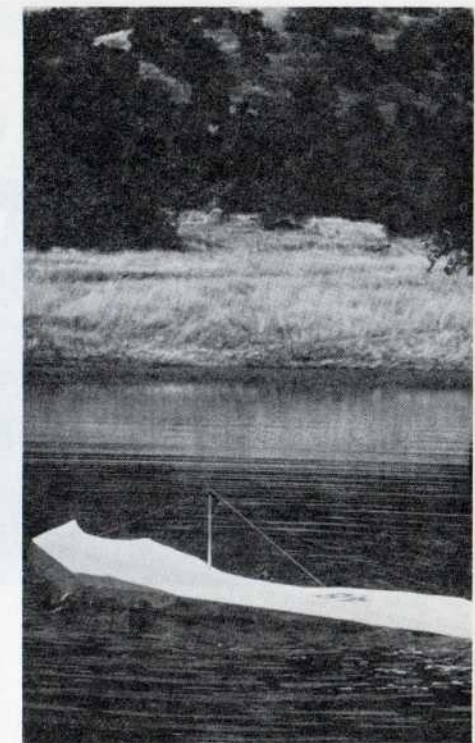
The day started out like gangbusters — great soaring conditions. Then it shut down into a sink rate contest. Consequently there were a lot of out landings. "You got gliders down all over the valley" a local woman said to Connie Bowen.

Stu Smith, just six seconds behind Kevin Kernohan at Granny's Knob, sunk out going to Sontag while Kevin made all pylons. The majority of pilots fell out of the sky going from the Knob to Delilah and most landed out while going for it! Kevin was the only pilot with six wins. Rich Pfeiffer beat Rick Rawlings in a close one, Gene Blythe beat Rob Kells, Jeff Huey beat John Pendry, Kenny Brown beat Steve Pearson and Chris Bulger got beat by Mark Bennett on a C-2. Mark beat Chris to Granny's Knob by four seconds before they both lost it and landed out.

Sport Class launched early into marginal soaring conditions. The majority of them sunk out going from Sontag to Granny's Knob and two-thirds of them landed out.

Paul Robinson won again betting Chuck Harlemet, Lee Fisher beat Rick Jacob by five seconds, Paul Clarke beat Terry Wilkins and Debbie Renshaw beat Howard Osterlund in a Pacific Windcraft Esprit. In fact, Renshaw, Clarke and Vayda were the only Sport Class pilots to complete the task.

(Left) Ken Brown gives his Streak a powerful launch run. (Right) Terry Ferrer dives in to save Rick Wade . . . thereby earning for himself the Marty Alameda Sportsmanship Award.



WEDNESDAY AUGUST 10
Rounds 4 & 5 Sport Class

World Class pilots elected to take a day off. Some of them chose to fly between Sport Class rounds while others went off hiking, swimming, rock climbing, to see a movie and fishing. John Dunham and Deke Cassetta returned to camp that evening with enough trout to feed themselves and them some! Meanwhile, Alaskan John Mucha saved Roy Haggard from potential serious injury when he caught Roy tumbling down a rock and threw his body on the rocks they were climbing to stop Roy's fall.

Back at the pilot's meeting while everyone was present, the grumblings about money and rip offs prompted an answer from meet officials. Lonnie Work explained the meet finances with a complete breakdown of categories. The Nationals took in \$12,000 worth of entry fees but had over \$17,000 in expenses. Dave really did not think he could get it together for this one, so he originally requested a sanction for the '84 Nationals. But the USHGA asked him to submit a bid for the '83 Nationals and here we were. There are some great sites out there in America but folks are leery of bidding for it because of all the hassles, politics and finances. It could easily come to pass that all our future Nationals would be held at the same site — probably Crestline in San Bernardino.

Also discussed were electric pylon devices that would eliminate the human factor in pylon judging. Yes, high tech has come to hang gliding!

Tommy Vayda's previous protest was answered by Liz. A maximum of five foreign pilots are allowed in our Nationals following a precedent set by other countries when they let American pilots compete in their Nationals.

It was a hot soarable day — there was lift everywhere. I had a "bye" so I joined up with the free flyers at cloudbase which was eight thousand feet MSL, to watch the races from above.

Chris Bulger, Ted Hill, Cindy Drozda, Derrick Turner and other World Class pilots thermaled out to Bear Mountain and back. Going out was easy, getting back was

not — some of them landed out.

Because of ties, gaggles and the bright sunlight, it was difficult for Sontag pylon judges to watch more than two gliders simultaneously. Pylon judge Chuck Boss was facing into the sun trying to distinguish who was who as a gaggle formed above the pylon when all of a sudden a low glider he had not seen swooped down above him, the pilot yelling, "Flag me you sonofabitch."

"Where the hell did he come from?" exclaimed a surprised Chuck. Numerous situations like that forced meet officials to move the Sontag pylon back up the ridge so it would be in the open and four hundred feet higher than Granny's Knob. Pilots approaching the pylons from out of the sun were urged to yell, scream and do anything to attract the attention of the pylon judges.

After a great soaring flight testing a brand new Sensor 510, Stew Smith, who had had some perfect landings by grabbing his rear flying wires to flare his kite, crunched the 510 when he came in low and hot, nicked his base tube on the ground, popped up thirty feet and fell off on one wing. Stew was unhurt as he went limp and let the glider take the punishment of smacking into the ground.

Paul Robinson kept up his winning ways by beating Paul Clarke, Tommy Vayda beat John Woiwode by six minutes and Dudley Mead won a close race with Quentin Fleurat. After round 4, the pilots with three wins were Robinson, Clarke, Vayda and Woiwode.



Rob Kells had an easy win today although at the time he did not know it. His opponent, Steve Moyes, was disqualified for launching too early. On the final open window countdown, Steve began running on the count of "four", popped up on "two", tried to drag a foot on "one", but was in the air as the launch window opened. Steve would have won by a few seconds if he had only launched a couple of seconds later.

In the battle of World Class leaders, Rawlings beat Bennett, Kernohan beat Pfeiffer, Bulger beat Smith by one minute, Huey beat Blythe, Pendry beat Brown and Pearson beat Cassetta. At this stage of the meet the lead was up for grabs. No one had any distinct advantage over anyone else.

In the Sport Class wars, Paul Robinson got beat again. This time it was Dudley Mead who did him in by only a scant three seconds. Fisher beat Clarke, Vayda beat Clock and Wilkins beat Ryan. The last heats of this round for Sport Class were all duration events.

"Tree landing, lake landing, power lines—the best pilots in the U. S.," said Tom Vayda. "What'd you expect?"

The second round that day was mostly sink rate for the Sport pilots. Only three of them came even close to completing the task and quite a few landed out.

Wilkins beat Fisher, Clarke beat Robinson, Mazzoni beat Mead, Woiwode beat Ryan and Vayda beat Burns. Sport Class pilots tied with seven wins were Clarke, Fisher and Wilkins.

The World pilots had some late afternoon lift available to them and they milked it for all it was worth. Even so, Rich Pfeiffer was the only pilot to achieve all five pylons. Then the task was changed, after seven heats had already launched to D/S/D but no one made the last Delilah

pylon except Butch Peachy.

There was another stuffed launch. This time it was Bruce Hedge and his Duck who embarrassed himself. He was okay, thanks again to the forgiving, easy sloping launch site. This left Butch's opponent, Dan Murphy, flying a Shadow, with a win for that round. "This is the very first time I ever had a bye or won on launch." Dan exclaimed excitedly.

There was a very close near miss between a foreign pilot and one of our American pilots (Hans and Dave):

Hans: "...my foot could've touched your kingpost."

Dave: "You didn't have to call me a sonofabitch."

Hans: "But you flew right at me; you almost hit me."



Dave: "But I didn't." Whew, that was as close on the ground as it was in the sky.

World Class results were: Rawlings beat Huey, Kells beat Kernohan, Pendry beat Bennett, Pfeiffer beat Pearson, Smith beat Mucha, Raymond beat Cassetta, Chiarani beat England, Moyes beat Woodruff and Bulger beat Blythe. World pilots with eight wins were Attack Duck team members Kells, Rawlings and Huey and Streak pilot Chris Bulger.

SUNDAY AUGUST 14

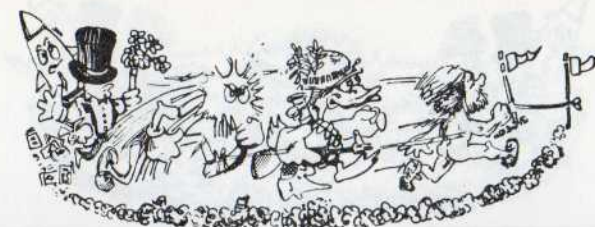
The tenth day of the meet

This was the first day of the entire summer that it was not soarable at Dunlap. There was a very heavy overcast over the Sierras and the entire valley. We were catching the leading edge of hurricane Ishmael. At 2:00 p.m. the day was called. Some officials and pylon judges got to fly before it began to rain. The launch director, Duane Tessmer, and his wife Martha each flew their gliders down on an extended sled run as did launch official Kelly Dearborn. But judge Tim Morley got rained on in the air.

Some pilots will do almost anything to get to the Nationals.

An extreme example was Region 5's Russ Kidder, flying a C-2, who paid his way there by doing strip routines at batchlorette parties. A brick-layer by trade, jobs were scarce, so for fifty dollars per ten minute act and many extra bills slipped into his camouflaged g-string (Russ begins his

(Top) A group of well-adjusted hang glider pilots load willingly on the launch-bound cattle truck. (Bottom) Looking very relaxed, the competitors gather for a pilots meeting. Latecomers were either charged a fine of \$25, or could elect to take a loss. Usually, they forked over the cash.



John Pendry, the Second Place finisher from England, launches his Magic III.

act in his 'Nam fatigues) he danced at two or three parties per weekend and here he was. No, we could not talk him into dancing for us.

After a day of partying and getting high, I returned to our camp in an inebriated stupor, sat down at our picnic table late that afternoon and placed my bare feet on a three and a half foot rattlesnake. Only after recoiling like a shot and smashing my bony knees on the underside of the table top did I realize the rattler was headless. Someone had killed it and given it to Dick Cassetta to skin and dry. There is nothing like a healthy shock to make one sober again.

MONDAY AUGUST 15

World Class Round 11 and 12

Sport Class Round 10 & 11

Sport Class launched first into real light air. The early heats were all duration contests. It got soarable after the fifth heat was launched.

Lee Fisher beat Tommy Vayda. "I swear I had him", said Tom. "But he was above and behind me and I couldn't see him. He snuck by me and beat me by a few seconds. Such strategy isn't unusual. It gets pretty sneaky at times. You can either try to cut the pylon real tight and save some time, or be safe. That's part of the strategy". Tom said. Paul Clarke beat Terry Wilkins. Lee and Paul, each with eight wins would fly each other for the second time later on that afternoon in Round 11. Close behind them with seven wins was Paul Robinson, Dudley Mead and Terry Wilkins.

In the World Class results that day, Pendry beat Smith, Kells beat Rawlings, Kernohan beat Moyes, Blythe beat Woodruff, Pfeiffer beat Raymond, Bennett

beat Murphy, Cassetta beat Sauvier, Brown beat Mucha, Yeomans beat Pearson and Bulger beat Huey (Chris was in the lead at every pylon!).

Everyone thought the championship match would now be between Chris Bulger and Rob Kells that afternoon. Naturally, a lot of us would be watching their flight.

As they were riding up the mountain in the cattle truck, Paul Clarke was kidding Lee Fisher about some friendly revenge for losing to him earlier in the meet. But it was not Paul's day and Lee beat him for the second time in the meet. We thought Lee Fisher would go down in hang gliding history as the first winner of the Nationals Sporting Class.

Now all eyes focused on Chris Bulger and Rob Kells. Around 6:00 p.m. they were neck and neck for their last pylon, Sontag. Too low to make it, they both scratched along the hill and worked weak thermals, the height advantage going back and forth between them. Chris slowly out climbed Rob. Then Chris made his move towards the pylon with Rob right behind him. But Chris had the height and a slight head start. He cranked a one-eighty at the pylon and a lot of folks at the LZ yelled and applauded him, sure in their knowledge that he was our new National champ, with Rich Pfeiffer as Number Two, both pilots flying a 180 Streak.

Then there was a rumor of another round or two the next day. Sure enough, meet officials announced that there would be a cut and a final round the next day, Tuesday.

TUESDAY AUGUST 16

Final Round 13 World Class

Final Round 12 Sport Class

There were two pilots meetings that morning. At the first one, meet officials announced a cut for both classes at eight wins. Someone asked what would happen if it ended up a four-way tie. Officials explained that there would be a fourteenth round which would begin with a shotgun blast air start. The pilot with the fastest time around the course would be the National Champion. Ten days of competing for the most number of pylons achieved first and now they were going to make it a *real* race.

There were complaints from the pilots about the proposed air start: "... an experimental method"; "... a crapshoot." Some pilots felt that Chris should just get the award not even hassle with another round. But meet officials wanted a definite winner and they were trying their best to be fair and valid at the same time. The top twenty pilots of the Nationals were being honored with another round to try to improve their place in the final standings. The first meeting was adjourned after Liz Sharpe read the list of pilots who had not been cut.

At the second pilot's meeting, very few pilots that had been cut showed up even though there were a lot of them left in the park camping area. There were more grumblings about the air start. The consensus of opinion was that the "fly-off" was a poor decision; that it could mess up the validity of the Nationals concept by trying something new at the last minute. But it was decided that a fly-off was the most valid tie-breaker.

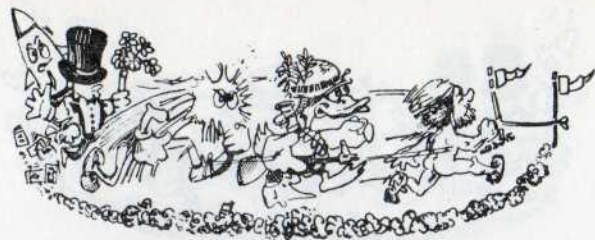
Then there was some heated discussions about losing CPS points for not making the cut. Liz explained that grounded pilots still get more points even though they did not fly because points were measured by how many rounds the winner flew. I am sure the guys left in camp would rather be flying in this round to gain their points instead watching it from the ground.

"There they go up the hill without me", said Dick Cassetta sadly, as he watched the pilot truck leave the Flight Park on its journey up the mountain.

"Circumstances beyond your control, Dick," I said. "They could've cut it at seven wins if they wanted."

It was Dudley Mead, flying a Fledge 3, against Lee Fisher, piloting a Sensor 510 for the Sporting Class championship. Lee got an early lead on Dudley and was ahead of him by less than a minute at the first two pylons. At the end of their flight Lee had increased his lead to twelve minutes, had beaten Dudley to four out of five pylons and he now goes down in hang gliding history as the winner of the very first U. S. National Sporting Class Championship.

Lee got a huge trophy but no contingency prize. Maybe this will set a



precedent to eliminate any money prizes from the Sporting Class and leave that class to the amateur pilots.

Raoul Mazzoni beat John Woiwode, Tommy Vayda beat Terry Wilkins and Paul (Redi-Kilowatt) Robinson beat Paul Clarke for second place.

Rich Pfeiffer vs. Chris Bulger for the National Championship—

We knew Rich and Chris would be the last heat to fly off the mountain but there was some pretty intense racing going on between the pilots who launched before them.

The top ten ended up like this:

Eric Raymond and Gene Blythe fought it out in their Comet 2's with Eric coming out on top. Steve Moyes and his Missile GT got the best of Stu Smith in his Sensor 510 and knocked Stu out of the top ten; Kevin Kernohan won his race in a C-2 and put Mark Bennett, also in a C-2, out of the top ten and in the aerial duel between the formidable Attack Ducks, Jeff Huey led Rob Kells around the course to win. But the hot flight was for second place between England's John Pendry, riding a Magic III, and Rick Rawlings flying an Attack Duck. Rick rounded the turn point only one second before John, then John got the first pylon by forty seconds. Rick caught and passed John to take the next two pylons by one minute each. This meant that whoever got the last pylon first (Delilah) would be declared Number Two. It was quite a race from Sontag to Delilah. They were close to each other the whole time, thermaling and racing, racing and thermaling. Reaching Delilah at the same time, John cranked his turn around the pylon only one second ahead of Rick! Rick was only one second away from being Number Two.

Meanwhile, the flight that would determine who was to be our new National Champion was in the air, high over Dunlap Valley.

Chris Bulger vs. Rich Pfeiffer: They were the final heat off the mountain, launching their Bennett 180 Streaks at 11:36 a.m. It was a stuff race to the turnpoint which was Sontag. Chris beat Rick around it by one second. Thermaling their way above the ridge past launch, Chris reached Delilah two minutes ahead of Rick. Then it was another stuff race across the Valley to Granny's Knob. Chris' slight lead got him there a minute and a half before Rich. Now Rich had his flying cut for him—he had to beat Chris to the next two pylons to win! But ninety seconds is almost an insurmountable lead for a World Class pilot. There was no way Chris would relinquish it and he banked a turn around Sontag again at 12:44 p.m. to



World Class Winner, Chris Bulger, collects his rewards, trophy and "otherwise."

become our 1983 Hang Gliding National Champion.

Chris continued to Delilah and finished the task. On his flight back, there was a formation of six gliders behind him, escorting him from Delilah to the LZ at the Flight Park. Chris spiraled in to the LZ and landed as a small crowd gathered around him to shoot photographs and offer congratulations.

"Thank God," said Dave Bowen as Chris landed. (There would be no ties, no extra round and no in-air starts that day).

"Didn't I tell you," said Luigi, watching the flight from the LZ. "The Champ was decided yesterday. All this extra round did was cheat Rick out of second place."

Some people are never satisfied. But after eleven days of soaring we finally had a clear winner.

The "Big Boys" came, saw and conquered. Tim Morley, pylon judge, summed it up pretty good when he said, "The locals take the first rounds, then the 'Big Boys' learn the site, even the score and leave the competition behind."

This Nationals had no overall favorite. Kevin Kernohan was the leader in the first rounds, Jeff Huey was the leader in the middle rounds and Chris Bulger in the final rounds. In thirteen rounds, Chris won

eleven of them!

"Great . . . really a good meet", said Kevin.

"Had a few hitches but overall it was good," said Jeff.

"I was very lucky," said Chris. "I was fortunate that the kite I was flying got me out of some tough spots."

Chris said Rob Kells was his toughest opponent and, "I felt I had something to prove after Germany — I feel I flopped there. This win does good for my (World Class) points." It also does good for his pride and the prestige that goes along with being the American National Champion.

The awards ceremony was at 2:00 p.m. There were some big beautiful trophies provided by Bill Bennett.

"Our truck is packed to the brim, we're ready to leave — where am I gonna put this thing," one of the finalists asked? How about Lee Fisher? He had two of the large trophies to carry home.

The top three pilots in each class got a trophy and a hug and a kiss from Miss Fresno. Other awards and prizes were:

Rick Rawlings was CPS points champion. After him are Stu Smith, Rich Pfeiffer and Rob Kells.

Woody Woodruff was awarded a trophy for a new category this year — Rookie of the Year in the World Class. Lee Fisher, the top pilot in the Sport Class also won the Sport Class Rookie of the Year award.

Howard Osterlund, flying a Pacific Windcraft Esprit, who lost his first five rounds then won his final six round, was the landing champ with fifty nine points. Out of all his landings Howard had two perfect bulls-eyes that gained him twenty points apiece.

Terry Ferrer was awarded the Marty Alameda Sportsmanship Award for diving in the lake to rescue his opponent who landed in the lake.

Round-trip tickets to the Camel Cup Hang Gliding Championships in Rio de Janeiro, Brazil were awarded by Camel Cup Director Gene Senter to Chris Bulger, Rick Rawlings and Steve Moyes.

Local gentleman, Don Pinta gave his fourteen pound Salmon award to Rick Wade for being the first pilot to land in the lake. Rick had the Salmon given to "Uncle" Bill Bennett because ". . . his gliders (Rick was flying a Streak) get the best 'sink' rate." And last but not least: proclaimed grandfather of the Nationals, local ol' timer Rod Hall, who retrieved so many pilots that landed out all over the valley for two weeks, got a Nationals t-shirt autographed by the winning pilots.

The meet director Dave Bowen was grabbed by all four limbs by competition pilots and thrown in the lake.

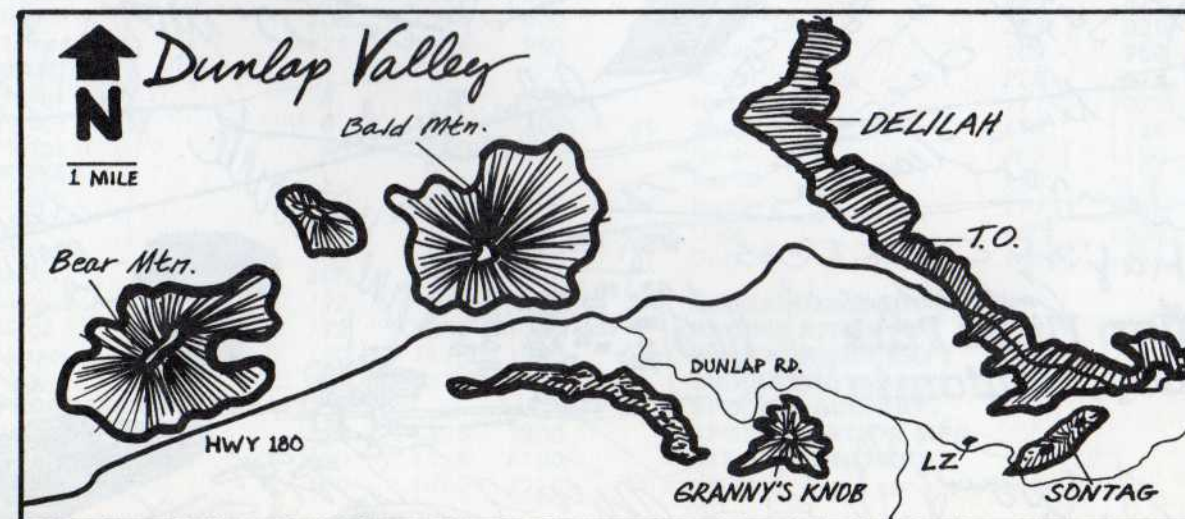
"Nice water," said Dave.

F I N A L S T A N D I N G S WORLD CLASS

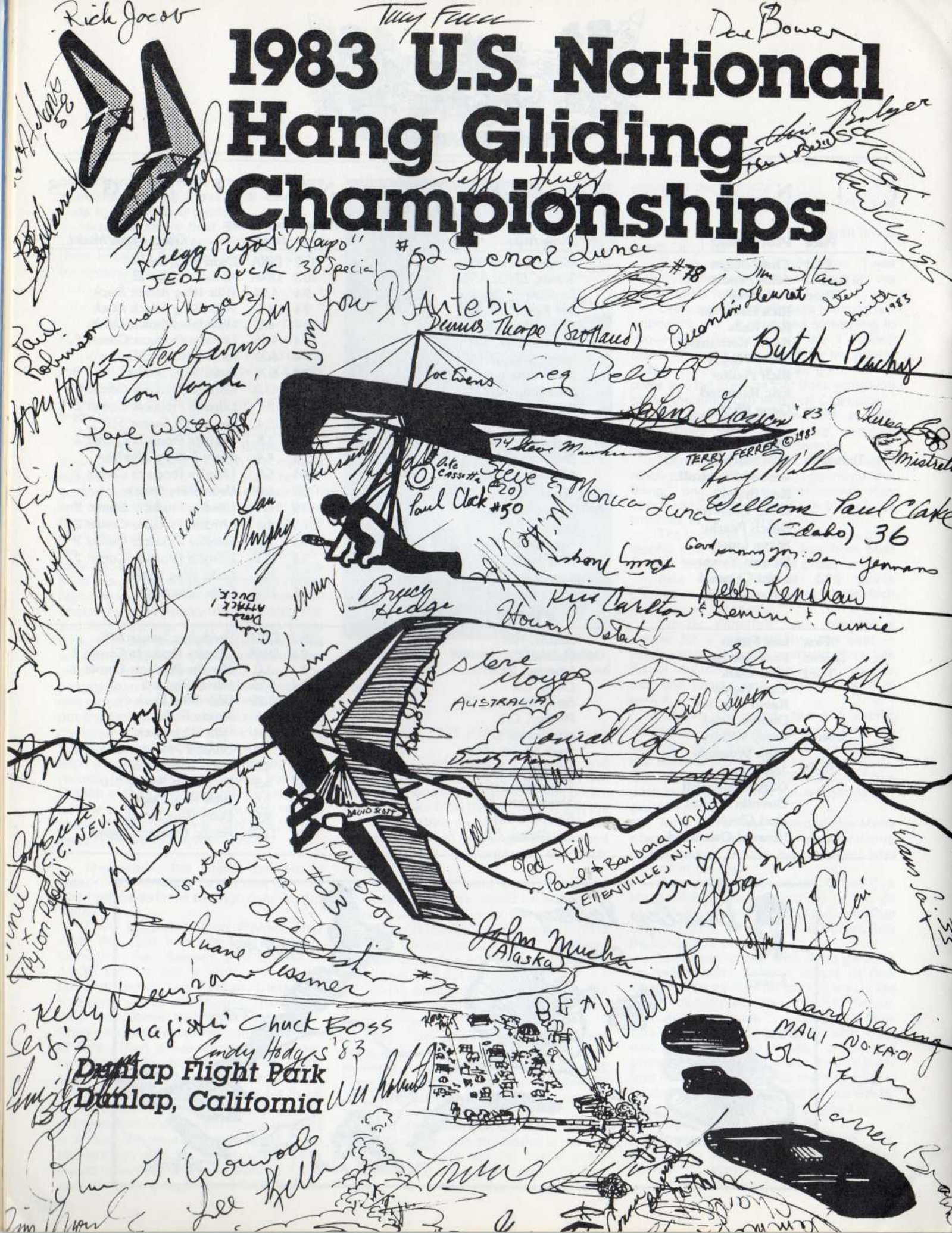
Place	Pilot's Name	Home Area	Primary Score	Secondary Score	Glider Make/Model
First	Chris Bulger	Mercer Island, WA	11-2	DNA	Delta Wing Streak
Second	John Pendry	Sussex, ENGLAND	10-3	DNA	Airwave Magic III
Third	Jeff Huey	Santa Ana, CA	9-4	4.25	Wills Wing Attack Duck
	Rick Rawlings	San Fernando, CA	9-4	4.5	Wills Wing Attack Duck
	Rob Kells	Santa Ana, CA	9-4	4.6	Wills Wing Attack Duck
	Kevin Kernohan	Canoga Park, CA	9-4	4.75	Ultralite Products Comet 2
	Steve Moyes	Sydney, AUSTRALIA	9-4	6.33	Moyes Missile GT
	Rich Pfeiffer	Santa Ana, CA	9-4	6.75	Delta Wing Streak
	Eric Raymond	Lake Elsinore, CA	9-4	17.0	Ultralite Products Comet 2
Tenth	Gene Blythe	Wildomar, CA	8-5	2.2	Ultralite Products Comet 2
	Stew Smith	Banner Elk, NC	8-5	2.4	Seedwings Sensor 510
	Mark Bennett	Escondido, CA	8-5	6.6	Ultralite Products Comet 2
Thirteenth	Dan Murphy	Los Gatos, CA	7-5	4.4	Flight Designs Shadow
	Woody Woodruff	San Diego, CA	7-5	5.8	Ultralite Products Comet 2
	Ken Brown	Salinas, CA	7-5	6.6	Delta Wing Streak
	Deke Cassetta	Sacramento, CA	7-5	6.8	Ultralite Products Comet 2
	Butch Peachy	Delmar, CA	7-5	8.4	Ultralite Products Comet 2
	Steve Luna	Alta Loma, CA	7-5	8.8	Ultralite Products Comet 2
	Dennis Yeomans	Lake Isabella, CA	7-5	11.0	Ultralite Products Comet 2
	Luigi Chiarani	Van Nuys, CA	7-5	16.2	Delta Wing Streak
	Greg DeWolf	Santa Monica, CA	7-5	17.2	Wills Wing Duck

SPORT CLASS

First	Lee Fisher	Seattle, WA	10-2	DNA	Seedwings Sensor 510
Second	Paul Robinson	Upland, CA	9-3	DNA	Ultralite Products Comet 2
Third	Paul Clark	Moscow, ID	8-4	1.0	Ultralite Products Comet 2
	Tom Vayda	Chico, CA	8-4	2.25	Manta Fledge 3
	Raoul Mazzoni	Santa Monica, CA	8-4	3.25	Wills Wing Duck
	Dudley Mead	Pacifica, CA	8-4	3.5	Manta Fledge 3
Seventh	Terry Wilkins	Alta Loma, CA	7-5	2.6	Wills Wing Duck
	John Woiwode	Sank Rapids, MN	7-5	3.4	Ultralite Products Comet 2
Ninth	John Ryan	San Diego, CA	6-5	4.6	Delta Wing Streak
	Gary Englehardt	Wildwood, GA	6-5	5.5	Seedwings Sensor 510
	Quentin Fleurat	Thornwood, NY	6-5	6.4	Wills Wing Duck
	Paul Clock	Bellevue, WA	6-5	9.6	Delta Wing Streak
	Howard Osterlund	Los Gatos, CA	6-5	11.25	Pacific Windcraft Esprit



1983 U.S. National Hang Gliding Championships



BLUEBOOK

EDITION NO. 30

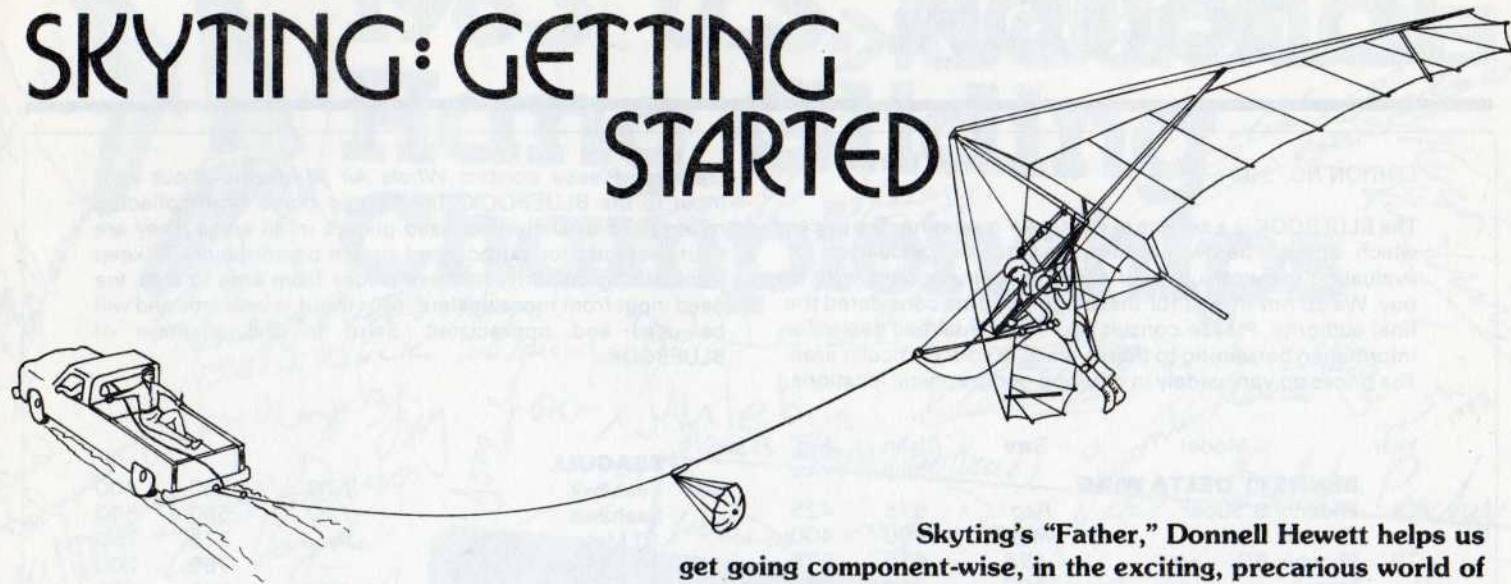
The BLUEBOOK is a service of *Whole Air* magazine. The prices which appear below are designed to be *guidelines* for evaluating the worth of your glider or one you may wish to buy. We do not intend for these figures to be considered the final authority. Please consult your local qualified dealer for information pertaining to these values in your particular area. The prices do vary widely in differing geographical locations.

Dealers: Please contact *Whole Air Magazine* about your input to the BLUEBOOK. The figures come from collected reports of *actual sales* of used gliders in all areas. They are then averaged for purposes of simple presentation. To keep from having disparity in these prices from area to area, we need input from more dealers. Your input is welcome and will be used and appreciated. Send to the attention of BLUEBOOK.

Year	Model	Size	Clean Price	Avg. Price				
BENNETT DELTA WING								
78	Phoenix 8 Super	Reg.	575	425	78	Seahawk	170	550 400
	Phoenix 12	Reg.	400	400		Seahawk	190	500 500
79	Phoenix 6D	185	675	575		10 Meter	---	775 750
	Lazor I	190	700	650	79	10.5 Meter	---	750 700
80	Phoenix 6D	215	725	725		Seahawk	180	800 675
	Lazor II	175	925	725		10 Meter	---	900 675
81	Phoenix 6D	185	900	775	80	11 Meter	---	900 650
	Viper	180	1000	750		11 Meter	---	925 725
82	X-180	180	1375	1075		SEAGULL		
EIPPER FORMANCE								
78	Flexi III	Lg.	500	375	81	Sensor 510	180	1200 1175
	Flexi III	Med.	600	525	82	Sensor 510	180	1525 1375
	Cumulus 10	Med.	575	575	SEEDWINGS			
	Antares	Med.	800	725	78	Osprey	175	675 400
79	Antares	Med.	850	650		Sirocco II	164	700 475
	Antares	Lg.	725	725	79	Osprey 2	175	600 425
						Sirocco III	189	825 400
ELECTRA FLYER								
78	Cirrus 5	C	425	425	ULTRALIGHT PRODUCTS			
	Cirrus 5	B	600	525	78	Spyder	176	800 575
	Cirrus 5	A	600	575		Condor	178	825 700
	Olympus	160	725	600	79	Mosquito	166	550 350
	Olympus	180	675	475	80	Firefly 2B	181	750 575
79	Dove	A	675	525		Comet	165	1150 800
	Cirrus 5	A	775	600	81	Gemini	164	1025 850
	Olympus	160	825	575		Comet	165	1275 1000
	Floater	205	800	650	82	Comet	185	1350 975
80	Spirit	200	900	725		Gemini	164	1175 1025
						Comet	165	1475 1175
						Comet	185	1500 1250
FLIGHT DESIGNS								
79	Lancer	190	775	600	WILLS WING			
	Lancer	170	850	675	78	Alpha	185	775 575
80	Super Lancer	200	825	625		Alpha	215	775 600
81	Super Lancer	175	950	650		X-C	215	750 500
	Demon	175	1000	825	79	Alpha	185	800 675
82	Javelin	168	1125	900		Alpha	215	775 650
	Javelin	208	1175	900		Omega	220	825 700
	Demon	175	1275	950		Raven	209	925 775
MANTA								
79	Fledge II	B	1075	675	80	Raven	209	950 775
80	Fledge II	B	1225	1100		Raven	229	925 800
82	Fledge III	B	1600	1450		Harrier	177	1075 875
MOYES								
78	Maxi II	200	600	500	81	Raven	179	1125 950
79	Maxi III	200	725	700		Raven	209	1150 925
80	Stingray	200	675	650		Harrier	177	1175 1050
	Maxi IV	200	825	650	82	Harrier II	177	1325 1100
	Mega II	172	1075	825		Duck	160	1500 1350
81	Mega II	172	1250	1000		Duck	180	1425 1225
	Meteor	180	1175	1050	AIRWAVE GLIDERS			
82	Missile	200	1375	1175	PACIFIC KITES			
PROGRESSIVE AIRCRAFT								
81	Pro Air, Series I	160	1325	1200	PACIFIC WINDCRAFT			
82	ProBreez	180	1175	1100	SIERRA WHITEHAWK			
	ProStar I	160	1400	1275	SPECTRA AIRCRAFT			
					SPORT AVIATION MFG			
					STRATUS UNLIMITED			

No used market values established at this time.

SKYTING: GETTING STARTED



Skyting's "Father," Donnell Hewett helps us get going component-wise, in the exciting, precarious world of Center of Mass bridle towing/illustrations by the author

If, after reading the article "SKYTING: THE PITFALLS" in the July/August issue of *Whole Air*, you are still determined to try out for yourself this new form of towing, then this article is for you. It describes several methods of getting started in skyting as well as a skyting system you may want to adopt as your first towing system.

THE BEST METHOD OF LEARNING

There is no doubt that the fastest and safest method of learning to skyte is to take professional skyting lessons from a competent instructor at a qualified school. Make sure your instructor is USHGA certified, and check the reputation of the school by talking to local pilots and former students. If possible visit one of the teaching sessions to make sure they really know what they are teaching and how to teach it well. Tell them you are still not convinced about the safety of towing and want to see it performed before trying it yourself. If they are not willing to cooperate, go somewhere else.

Check out their towing system, itself, and make sure it meets all eight of skyting's criteria. (*Whole Air* July/August 1982.) If it does not, then it is not a true skyting system and should be avoided. True, there are conventional and hybrid towing systems which can be operated safely if proper precautions are taken, but you want the odds stacked in your favor, not against you. You want as much room for error as possible, not narrow constraints on what you can do safely.

Once satisfied the school, the instructor, and the skyting system are of the highest quality, then use that system and follow your instructor's advice.

SECOND BEST METHOD

Unfortunately, certified schools and instructors equipped and qualified to teach the theoretical and practical aspects of skyting are few and far between. But there are a lot of good schools which are able to give professional quality instruction in conventional foot-launched

free-flight hang gliding. Find such a school and earn your USHGA Intermediate (Hang 3) rating. You then have sufficient experience and flying skills to learn to skyte safely on your own. You may not have the necessary knowledge about skyting to learn to do it safely, but you will have the necessary flying skills.

THIRD BEST METHOD

If it is impossible for you to obtain professional hang gliding instruction to the intermediate level, then it is possible for you to learn to hang glide on a skyting system by following skyting's gradual advancement provision. In this case, it is essential that you learn as much as possible about both hang gliding and skyting. Among other things, this means that you should study all the back issues of, and subscribe to, the *Skyting* Newsletter. (In the U.S. \$20.00 covers all the past and future issues of *Skyting* through No. 23, March 1983. Address: 315 N. Wanda, Kingsville, TX 78363.) You should also read a good book on conventional hang gliding. (Such as Dennis Pagen's book, "Hang Gliding Flying Skills", \$7.55, Dept. W/H, P.O. Box 601, State College, PA 16801.) And finally, you should learn how to repair hang gliders and make sure your life and hospital insurance are paid up.

YOUR FIRST SKYTING SYSTEM

Having decided to learn how to skyte on your own, the next thing you need to determine is which skyting system you plan to use. (*Whole Air*, March/April, 1983, illustrates the variety of options that are available.) At this time, I would recommend that you stay away from air towing and moored kiting, as these two areas are still very experimental. Since this is your first skyting system, you probably do not have a winch or reel available, so that leaves boat towing and land towing with a tension gauge. Each of these has its own advantages and disadvantages. Water towing is generally safer (if you do not mind the risk of drowning), but more is

known about skyting over land. Since most people do not have a boat readily available, I am going to assume that you have decided to go with the land towing system.

Having decided to land tow using a tension gauge, your next step is to assemble together your own skyting components. You can either construct these components from scratch or purchase home-made, prototype equipment from others. Currently I know of no professional quality skyting equipment which is commercially available. (Although I have heard rumors that some commercial skyting equipment is available today.) It might be wise on your part to wait until you can locate such equipment before actually trying skyting for yourself. (*It is your decision.*)

But assuming you have decided to go ahead and try skyting now, here is a list of the equipment you will need. Figure 1 illustrates the complete system.

CREW

Skyting is a team effort. It requires not only the pilot but also a driver and a spotter. The driver's responsibility is to keep the vehicle on the runway and to regulate the towline tension by speeding up or slowing down appropriately. The spotter should operate the C.B. radio, relay messages and signals from the pilot to the driver, watch for signs of trouble, and react properly in the event of an emergency (i.e. make the driver stop, cut the towline, get the crash on film, etc.)

VEHICLE

The tow vehicle can be anything from a group of people to a speedboat. However, I do not recommend "people towing" unless you know of a professional track team which needs plenty of practice. People towing also requires extremely precise coordination, technique, and wind conditions to reach any significant altitude. (Although altitudes to several hundred feet have been reported for hand towing experienced pilots under the

proper conditions.)

I also do not recommend boat towing unless you happen to be towing over water. For land towing, I suggest that you use something like a motorcycle, a car, a van, or a truck for your tow vehicle. The best tow vehicle is a pickup truck with an open window in the rear of the cab. This provides perfect visibility for the spotter, good communication between spotter and driver, and an excellent platform for hauling the glider back to takeoff when it lands elsewhere. Of course, if your glider has wheels (as it should when you are learning to skyte) you can roll it back to takeoff by hand, so go ahead and use whatever you have available for your tow vehicle.

TENSION GAUGE (\$150.00)

A good hydraulic tension gauge is relatively expensive, but it does an excellent job of indicating the correct towline tension on a gauge directly in front

hand.

TOWLINE (\$.05/ft)

An experienced hang glider pilot should begin with about 500 ft of elastic towline. I prefer to use parachute shroudline because of its strength and its protective sleeve, but 1/8 inch nylon or 1/8 inch polypro line will work. (An inexperienced pilot should begin with a different towline, as described in the back issues of *Skyting*.)

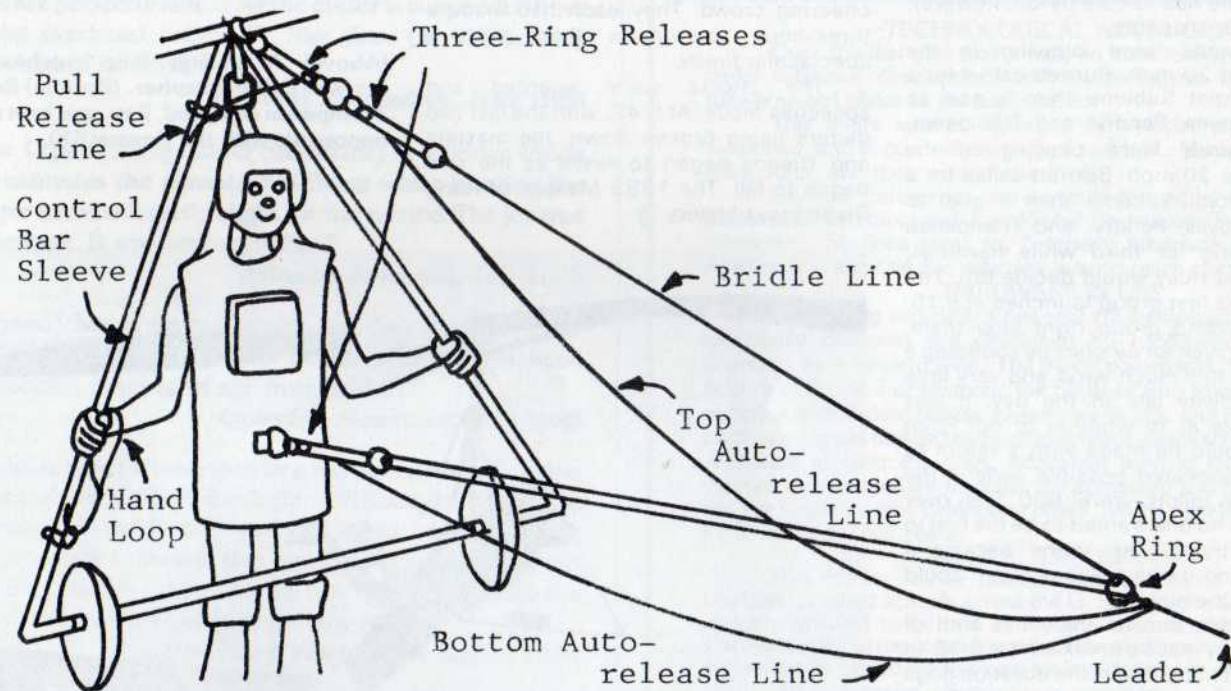
PARACHUTE (\$15.00 surplus)

A small parachute (3 foot diameter military surplus pilot's drag chute) is optional equipment. Its purpose is to prevent the towline from becoming tangled when it shoots toward the ground after a weak line breaks. Some pilots use a rubber band to keep the parachute closed until a weak link breaks. This reduces the drag on the towline during towing as well as the drag behind the glider in the unlikely event that the towline breaks.

of non-elastic line. We use 50 ft of 3/8 inch polypro water ski rope.

BRIDLE (\$50.00)

Figure 2 illustrates a typical skyting bridle you can make. (The one I use is slightly different and uses two-ring releases, but this one is easier to get parts for.) The three-ring release (See *Whole Air*, March/April, 1983.) has proven itself to be quite reliable in the sport of parachuting. Three of these releases are used on the bridle. The top release is activated by a pull line held in the pilot's hand or tied to the pilot's wrist. (This makes it easier to release in an emergency than placing the release activation point on a certain spot on the control bar or on the pilot's body.) The bottom release is tripped by the bottom auto-release line which becomes tight after the top release is tripped. If the bottom release is tripped first (either deliberately or accidentally) then the top auto-release line becomes tight



of the driver's eyes. It is more accurate than a spring gauge and easier to install during a flight session. It consists of a hydraulic tension gauge, you can construct yourself an inexpensive spring gauge from a truck hood spring (obtained from your local building supplier). Place the spring where the driver can see it stretch, or else run a line from the spring to an indicator located within the driver's vision. The spring gauge is not as accurate or as easy to install as the hydraulic gauge, but it is usually adequate for dynamic tension regulation.

SAFETY RELEASE

When land towing, it is almost always better to stop the vehicle than to trip a safety release. This provides a gradual, rather than an abrupt decrease in towline tension and allows the pilot a better chance of regaining or retaining control of his/her craft. In fact, our current system no longer uses a mechanical safety release, then the spotter simply cuts the towline with a sharp knife which he keeps in his

WEAK LINK (\$5.00/spool)

Experience has shown that a pilot can retain control of his glider as long as the tow force remains less than about one "g". Most pilots use a single loop of No. 18 nylon twine (which breaks at about 200 pounds). This twine is commonly used for trot-lines and can usually be found where fishing supplies are sold. Regardless of what you use for your weak link, test it in exactly the same configuration you plan to use it, so you will know exactly where it breaks. By the way, never tie the weak link to a ring or other metallic object, or that object may fly back and hit someone when the weak link breaks. Simply make a loop in the end of the rope and tie the weak link to that loop.

LEADER (\$10.00)

The purpose of the leader is to reduce the tendency of the bridle to fly back into the pilot's face when the weak link breaks and to provide spacing between the pilot and the drag chute. It should be made out

and trips the middle release thereby preventing the glider from nosing in. The length of the bottom auto-release line should be adjusted so that it becomes tight before the glider noses in on takeoff. The top auto-release line should become tight before the glider can overfly the tow vehicle, i.e. when the tow angle approaches 80 degrees or so. The length of these lines depend upon the geometry of the individual pilot and glider, so they should always be adjusted when changing pilots or gliders.

WHEELS (\$30.00)

Wheels should always be used in learning situations. Even experienced pilots tend to nose in on skyting takeoffs. This is because skyting takeoffs require higher nose angles than conventional launches. We will explain why this is so in our next article. In the meantime, you should go ahead and gather together your skyting components, but resist the temptation to go out and use them. §

was his man Moyes? By 1:45, I knew the rest of the pilots had to be down somewhere. I headed back down the Blue Ridge Parkway from the goal. Only five miles away I found an Australian sitting by the side of the road leaning against a marker that indicated this as being Daniel Boone's Trail. Surely he was not hiking with all the equipment he had. But of course! This had to be Steve Moyes. Stu Smith had landed next to him and beat Rawlings by a quarter of a mile. Bulger was with Rick Rawlings right down the road, but where was the Peanut Pilot? Once back at Grandfather, we learned that Pendry had decided to visit Tweetsie Railroad (a popular tourist attraction) and was being picked up.

Bulger was still in first place and Smith was in second. It was decided that the meet was over for them and they held those places. There had to be a fly-off, however, for the other six pilots.

The winds were blowing in the Frontside at 20 mph. Burnett called for a pylon at Point Sublime then a goal to Foscoe. Moyes, Pendry, and Trampenau were fighting for third while Rawlings, Gordon, and Huey would decide 6th, 7th, and 8th. The first group launched at 5:15, and the second group right after them. They were given an *air start* by sounding a horn. With this much wind and very little thermal activity late in the day, it was questionable as to whether or not Point Sublime could be made with a return to launch. It appeared possible early in the flight when pilots were 800 feet over launch, but no one wanted to be the first to go down trying. The round became a duration, and it was obvious that it could go on into the night.

Not being one to enjoy this kind of contest, Huey made a break for it at 6:35. In a gallant attempt, he left the duration dogs and made Point Sublime by himself. He made a desperate effort to get back up scratching at tree top level above the Meadows until finally having to land at 6:48. At 7:13, Trampenau left the pack with Gordon and Rawlings following him. They each made the pylon but had to land.

Rawlings came in right after Gordon.

At 8:00 both Pendry and Moyes soared over launch. The sky was covered with clouds and it was getting dark. No one was going home until they saw the end of this. All eyes strained to see the specks against the night. Burnett had gone back to launch to talk with the men on the bull horn. Officials rounded up cars at one end of the field, the their low beams were used for light. Fifteen minutes later it was announced that they had agreed to call it a tie for third and the pilots were coming down. In minutes we heard the swooshing sound of the pilots banking their wings. The lights then reflected Pendry as he flew across the field and landed on the north side. One minute later Moyes passed over the crowd, then completed a smooth 360° down to MacRae Meadows, landing 40 feet in front of the head lights and a cheering crowd. They each had made a three-hour, ten-minute flight with a spectacular finish.

The checks were awarded and speeches made. At 8:43, with the last two gliders being broken down, the masters and friends began to leave as the rain began to fall. The 1983 Masters of Hang Gliding was history. §



(Above) A smiling face catches our erstwhile photographer. (Bottom) Robert Trampenau designed, flew, and beat many opponents with the Sensor 510.



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	John Pendry	Airwave Magic III	\$1,050
Fifth	Robert Trampenau	Seedwings Sensor 510	\$700
Sixth	Rick Rawlings	Wills Wing Attack Duck	\$600
Seventh	Don Gordon	Seedwings Sensor 510	\$500
Eighth	Jeff Huey	Wills Wing Attack Duck	\$400

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Ultralight Aircraft Magazine, July 1983

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TECHNOLOGICAL ADVANCES

Over the last year and a half, an aero towing system has been under extensive development and successful use in Europe, using a trike-powered glider as the tug vehicle.

This entire system, including the vehicles involved, has been developed, and is currently manufactured by LaMouette, builder of the Atlas, Azur, and their newest, the Profil.

Skylines Enterprises was recently formed by Gerard Thevenot (LaMouette Director) and Jean-Michel Bernasconi (President of Pacific Windcraft). Skylines plans to, "properly introduce and distribute in America this exciting and safe new way to reach cloud street."

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Interested sponsors for a clinic can get more information from Pacific Windcraft/Skylines by writing P. O. Box 4384W, Salinas, CA 93912, or by calling 408/422-2781.

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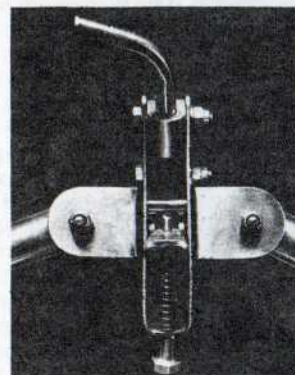
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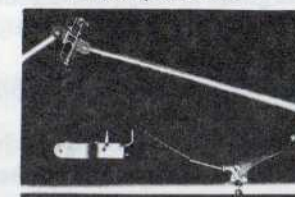
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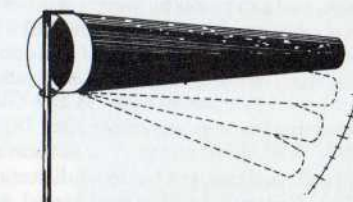
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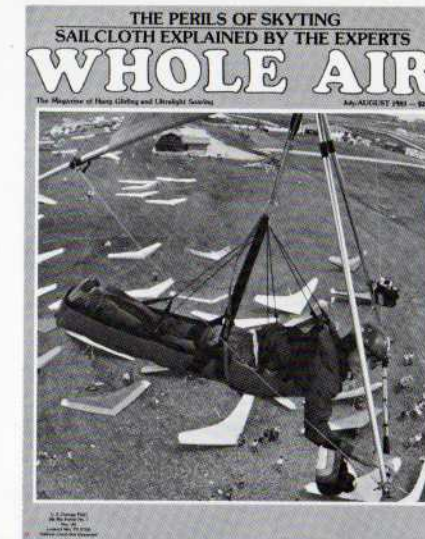
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PRODUCT LINES

CHATTANOOGA, TENN — We told you a few "Product Lines" columns ago that we hoped *not* to have to speak of more losses of life. But 32 year old **Scott Lambert** was another of "our guys" who was killed by catastrophic failure of his owner-built Pterodactyl-like II + 2 ultralight after a near miss with a Piedmont 727 airliner (though NTSB officials say it *wasn't* wake tip vortices!). Scott was wearing a parachute but when he apparently deployed, some malfunction evidently caused it not to open. He was enroute to a fly-in, and abiding by Part 103 guidelines for acceptable airspace use. The Charlotte N.C. airport tower never saw them and didn't know they were there till the Flight 84 pilot reported (according to the Charlotte newspaper), "I just went by two little gliders . . . yeah, I'm sure we left them a little wake turbulence. You might see if they're still there . . . we just barely missed them." Scott was Region 10's USHGA Director at this time of his death, and will be missed by his North Carolina community of flyers, and by the sport as a whole for his efforts to promote safety and the thrill of soaring flight. We here just can't help but say it again — those of you who've taken up ultralighting as, **be careful!** The Board of Directors for the USHGA, on which Lambert served, met in San Diego at the beginning of October. Flight Realities' **Steve Hawxhurst** is the new prez', taking over just six months into outgoing president **Dick Heckman's** turn. Heckman had successfully made the proposal that the newly elected head person take over immediately on election, rather than have a "lame duck" leader for three months of term. Ironically, Dick was the early and first recipient of this change, and thus served as USHGA Prez for only half of a year, too short a term to accomplish any *real* goals, he felt. At that meeting, non-Board members Rob Kells (Wills), Pete Brock (UP), and Bob Trampenau (Seedwings) were present. Besides a healthy interest in all USHGA matters, this group offered input to competitions as well. Brock is reported to have asked for the creation of a **sailplane class**. We've heard recently of the Arrow 2 [OUR name, NOT UP's!!], a further development in the craft all of us saw some time ago in the XC Classic of 1982. This "second prototype" [again OUR term] was built and had been towed as of last December, and from Brock's request, it seems the successful Comet/Comet 2 builder is continuing along the Arrow lines. We wish them well in the research, and frankly, would like to see more of this type of development. We also have our British Correspondent, **Noel Whittall** snooping around in Europe for their (Ultralight Sailplane) versions. As *real* news arrives, we'll be passin' it on to you! Now, *Hang Gliding* magazine will look into the use of "non-slick" paper similar to that which is used in *Whole Air*, in the pursuit of reducing costs. Sharply decreased ad revenues for both *Hang Gliding* and *Whole Air* have necessarily limited the amount of what's called "content" pages, and caused editors to look harder for ways to save expenses, yet present adequate amounts of good information, while the alleged "industry slump" continues. However, some pick up in trends is noted by Wills' prez **Rob Kells**, aided no doubt by their contest successes and market interest in the newest **Attack Duck**. Their 160 is now certified and being delivered. The one-size-down A. Duck has one less of the "half battens" as it also has one less upper surface batten. They say initial response has been very favorable. They've also doubled the size of their sail loft to help them speed deliveries (in "season") and better contain costs. And Wills has released their No. 2 Customer Newsletter, called "Wills Wing News." It's a nicely done collection of information, and can be had by owners of other brands if they wish to ask for it. A last bit of news involving Wills and the USHGA Board is Wills' receipt of Ex-Prez Dick Heckman's **Presidential Citation** for the work Wills did in developing the Traveling Instructor Certification Program, which **Jim Shaw** took on the road this past summer. **IT'S A GIRL!** for Mike and Linda Meier; Amelia Jane was born on September 10th. They've already begun planning on "A.J.'s" Wills Wing work saying, ". . . as soon as she develops a little manual dexterity, we'll probably put her to work sorting nuts and bolts in the supply room (Ha!). Congrats to Mike and Linda! Across a couple ranges to the southeast, UP reports a **fall season buying bonanza**. Just when they were planning for the usual winter slowdown, a rush of orders depleted inventory stock, and moved deliveries to 6 (!) weeks. If it continues they'll up their staff. Hard thing to forecast, this glider business. A good deal to their dealers makes **Gemini 184's** a special value to customers, continuing some "overwhelming response." Check it out with your local dealer at the new price of \$1795. Comet 2 fairings are still undergoing some frustrating delays; the culprit being

deliveries of moulded plastic ribs and end caps. They want 'em to be "just right." Probably the most interesting news at UP is what they title the "Billow Cruisers' Comeback." Many UP dealers have suggested bringing back the Condor line, to allow a significant number of less aggressive pilots to enjoy their particular *slow and easy* type of hang gliding. To quote the Dealer Newsletter, "It is felt [by the surveyed dealers] that maybe we are seeing a decline in the USHGA membership because only the young and/or aggressive pilots are being catered to in today's market. Not only are the advertisements and contests exclusively stressing X-C flight, but the pilots on the hill talk of little else as well." They ask for further feedback on the accuracy of this assessment, and point out the "other factory" is also working on ideas of this nature. A couple **HGMA** meetings have passed since our last issue. At the August 3rd meeting, the 180 Attack Duck addendum was reviewed and accepted; the Moyes Missile 170GT, Moyes Mars 170 [intermediate], and Progressive Aircraft ProStar II 160 were all reviewed and accepted. The Board also discussed the possibility of adding a drop test to HGMA Standards. The report also says, "It was pointed out that during the past year a number of HGMA certified gliders of the current generation have experienced in-flight abnormalities (tumbling) which may indicate the advisability of additional testing during certification." Before specifics can be finalized though, HGMA needs more data on which gliders, if any, were more or less susceptible to such problems. One test that was discussed was to drop a glider with a restraint rope looped around the rear end of the keel, from a level attitude, with a simulated pilot, to see whether the glider recovered to normal flight without tumbling or suffering structural failure. At the September 7th meeting, HGMA accepted an addendum to extend the certification on the 160 Duck to cover the optional use of a larger (E-70) control bar. Further, the Board accepted an addendum to cover the 160 Duck in the "Attack Duck" configuration. Just 'cause no one ever says it (often or loudly enough anyway), *Whole Air* wants to say "THANKS!" to all the HGMA members for so conscientiously adhering to and improving the Certification Program. Ultralighting, as an industry, is struggling very hard to achieve what HGMA has done, and part of the overall reason why "self-regulation" is working for ultralight gliders and aircraft is hang gliding's good self-reg track record. HGMA has played an important role in that commendable record. As mentioned in our last "Publisher's Column," and again this time, an entire new interest in towing seems to be gaining momentum. We here at *Whole Air* are very gratified at this development, and at *Hang Gliding* magazine's addition of this topic area, since we have been "on the towing bandwagon" for years. It seems the Center of Mass (Skyting) bridle is the primary trigger of this interest. We realize this system is *NOT* a cure-all, *NOR* does it totally *ELIMINATE* the lock-out . . . nevertheless, it seems to take a new idea to get the ball rolling sometimes, and it appears to us that most hesitating pilots were simply scared by the "dreaded lockout" resulting from "conventional systems." The Center of Mass bridle gave these pilots a reason to believe *THEY* could tow safely, and many more are now giving it a go. In the process of information dissemination, commercially available products are beginning to emerge. We hear Rich Pfeiffer's **High Energy Sports** is constructing harness bridles for Center of Mass systems, using the three ring release idea. Now a **Pneumatic Tension Gauge** is available from Butch Pritchett of Box 299, Finley, TN 38030, phone 901/285-9490. Pritchett's device is designed for use with the Center of Mass bridle and aids in controlling line tension and the "G" forces on the glider. He says that this cylinder and gauge react to changes in wind speed, thermal activity, changes in the tow vehicle's speed, and line stretch. For \$150 plus the cost of shipping, you can receive a cylinder, line, air filter, and the gauge, which will be calibrated. He invites customer and dealer inquiries. Contact Butch for some illustrated literature. Speaking of towing and to round up this "Product Lines," we recieved news of some fine Florida flatland flying. **Rick Whitlock** now holds *ALL* the Florida State records (from tow launch). He just recently eclipsed Steve Moyes' distance record by flying 54 miles — further actually . . . he just ran out of enough Florida . . . got to the coast and had to turn. Rick has also claimed the endurance record of 5 hours and 10 minutes (again, off tow!). AND, Rick gained something over 6,000 feet for the *altitude gain* record; thus Whitlock took this mark away from former holder, Campbell Bowen. Congratulations on some excellent achievement *off tow*, Rick! It is inspirational to the new contingent of would-be tow pilots. Got news or opinions? Send 'em to *Product Lines*, Box 144, Lookout Mtn., TN 37350.



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