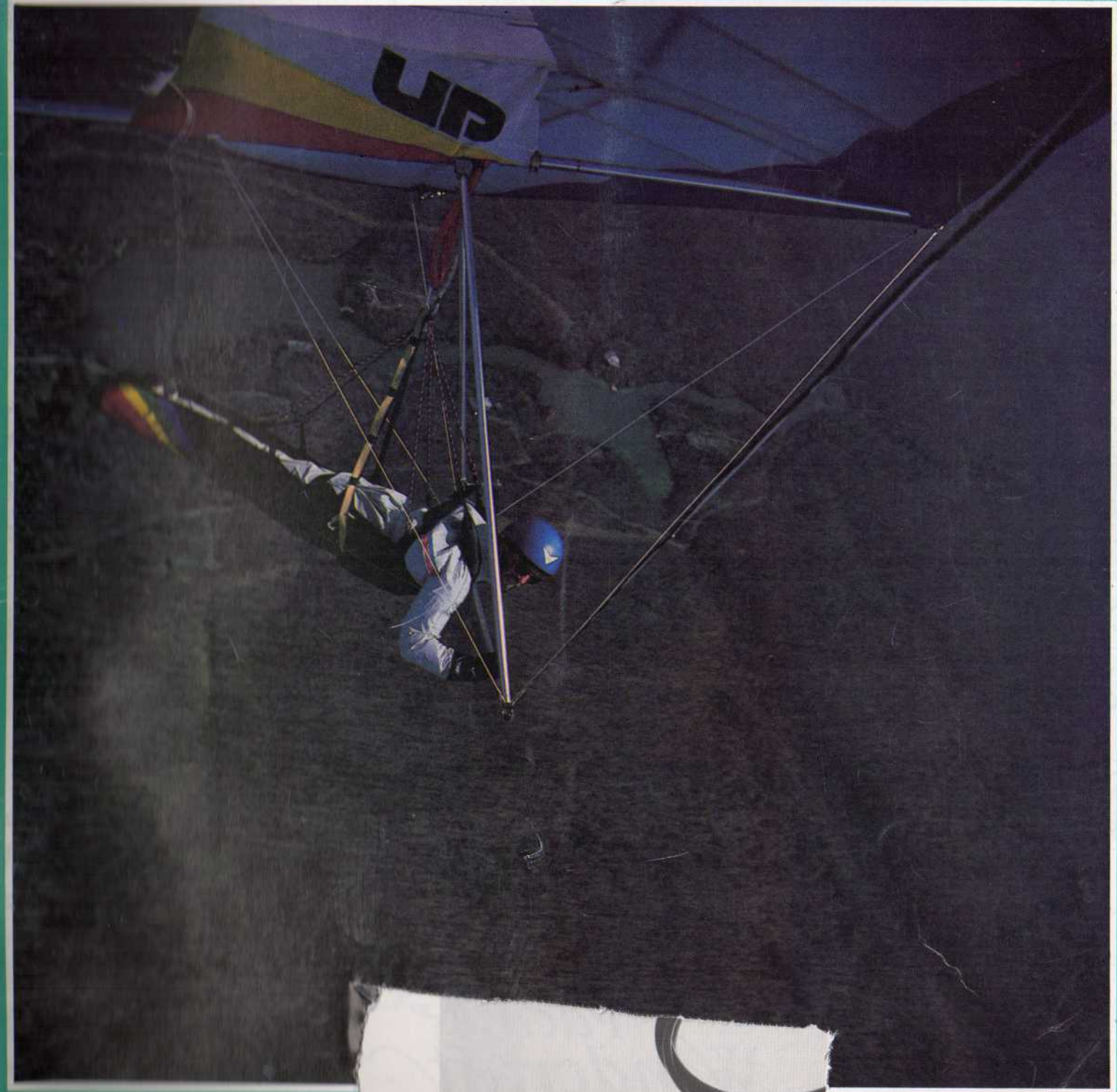


FIRST ANNUAL ACCESSORY BUYER'S GUIDE
FIFTH ANNIVERSARY ISSUE

WHOLE AIR

The Magazine of Hang Gliding and Ultralight Soaring

March/April 1983—\$2.50



PILOT: JOHN RYAN PHOTO/AD: J. ZURLINDEN

STREAK

IT'S A MAGIC COMBINATION THAT HAD TO HAPPEN! A DOUBLE SURFACE, HIGH PERFORMANCE GLIDER, THAT LANDS LIKE A TRAINER. ALL THE EIGHT 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.

WITH EVERY THOUGHT FOR PERFORMANCE, HANDLING AND PILOT CONVENIENCE,

THE STREAK IS DEFINATELY "STATE OF THE ART" FOR 1983.

FULLY HGMA CERTIFIED

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JAVELIN

SPECIFICATIONS

JAVELIN 168	
Leading Edge	18 Feet
Keel	12 Feet
Span	31 Feet 8 Inches
Nose Angle	122 Degrees
Sail Area	168 Square Feet
Aspect Ratio	6.1
No. of Ribs Per Side	7
Sail Billow	0 Degrees
Pilot Weight Range	115-195 Pounds

JAVELIN 208	
Leading Edge	18 Feet 4 Inches
Keel	12 Feet
Span	32 Feet 2 Inches
Nose Angle	122 Degrees
Sail Area	207 Square Feet
Aspect Ratio	5.2
No. of Ribs Per Side	7
Billow	0 Degrees
Pilot Weight Range	160-240 Pounds



JUST WHEN YOU THOUGHT . . .
 . . . that a glider couldn't be lighter — Flight Designs releases the JAVELIN. At 54 pounds flying weight, it is 14% lighter than the very popular Super Lancer series.

. . . that new gliders were getting too hard to land — Flight Designs presents the JAVELIN. State-of-the-art in every respect except one, it lands easily. Probably more so than your old intermediate does.

. . . that gliders got more complex as they developed — Flight Designs engineered the JAVELIN. Quick(est) set up going boasts an Easy-Slide, shifting crossbar, with all pip pins and no tensioners.

. . . that a glider which performed well could not also handle lightly — Flight Designs unveils the JAVELIN. Light as a hawk's feather, yet with a wide speed range. Optimized for sink rate performance, with its pre-formed ribs, 35% double surface, and spanwise sail cut, you'll just thermal and thermal.

. . . that new designs needed a few weeks to "get the bugs out," and even more time to reach stock levels — Flight Designs offers the JAVELIN, proven through the winter (at a number of our most professional dealers) and ready today for immediate delivery.

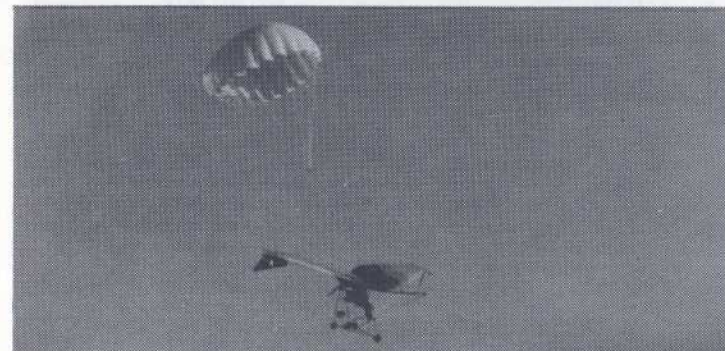
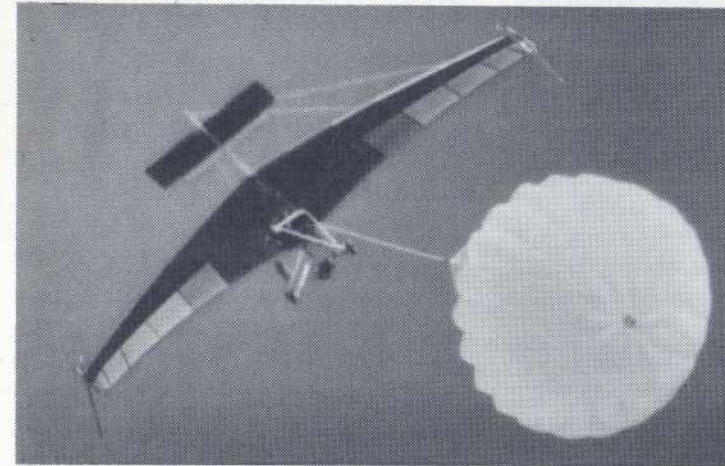
The JAVELIN is NOT just a cheaper version of the Flight Designs high performance glider. It IS a high performing glider that is deluxe in every way — like you have come to expect from Flight Designs.



FLIGHT DESIGNS
 Wings for Man

BALLISTIC RECOVERY SYSTEMS INC.

The Ballistic Recovery System is an emergency parachute device used by pilots of ultralight aircraft, and in the near future, on hang gliders. The BRS is designed to deploy at extremely low altitudes and deploy in minimal time, bringing the pilot and craft down together. The BRS was developed, not necessarily to replace hand thrown chutes, but to compliment them.



Why ballistics then? Two primary reasons:

1— Since most ultralight flying takes place at altitudes under 500 feet, a hand thrown chute would probably be of little value in most flying situations. Results from the Chattanooga chute deployment seminar (the *only* comprehensive test yet performed on hand thrown chutes) proved conclusively that hand thrown chutes averaged 7.4 seconds for deployment to occur. Hand thrown chute deployments have occurred at less altitudes, but in most cases, these deployments were in ridge lift of the glider was descending at a shallow angle.

Conversely, a ballistic system has documented in-air deployments of less than 1.5 seconds.

2— In throwing out a hand deployed chute, another problem presents itself . . . clearing the glider. Chute entanglement is a distinct possibility in both ballistic and hand thrown situations. A hand thrown chute requires multiple time consuming movements while looking for a clear space to throw the chute. Ultralights are notorious for having many wires, struts, etc., that could easily ensnare a chute. A hand thrown chute is surprisingly difficult to throw any distance with any kind of accuracy, especially when the pilot is in a state of panic.

A ballistic system, while not eliminating the possibility of entanglement, certainly lessens the chances. Because of the ballistic charge, full bridle and chute extension is immediate. This means the chute canopy is discharged immediately past the various obstructions on a typical ultralight.

A related advantage of the ballistic system is that a semi-conscious pilot would only have to pull an activating handle located near his body to discharge the chute. In a hand thrown situation, a conscious effort must be made, requiring concentration and dexterity at a time when little can be expected.

COMPLETE **BRS** UNIT WITH CHUTE, with cable
 bridle \$796.00
BRS UNIT *WITHOUT* CHUTE \$490.00

STANDARD FEATURES INCLUDE:

- A) Activating Unit
- B) Cartridge Assembly
- C) Ballistic Device Body
- D) Parachute Frame
- E) Fabric Chute Container
- F) Regular Size Chute (26 foot)
- G) Standard Locking Carabiner
- H) Miscellaneous Fasteners



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As of March 1983, there were 100 VISIONS soaring the skies of America, Canada, Japan, Brazil, Australia, and Israel.

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Our vow to only produce a fun to fly, custom-crafted, state-of-the-art ship has been a tremendous success.

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Listed below are the most professional schools and people you'll find in the sport of hang gliding today. They share Pacific Windcraft's commitment to quality. They have a VISION for you to fly today.

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Chandelle San Francisco 198 Los Banos Ave. Daly City, CA 94104 415/756-0650	Eagle Air Box 312 Dayton, WY 82836 307/655-9230	Eastern Ultralights 128 Richmond Ave. Lancaster, NY 14086 716/681-4951	Hang Glider Shop 8887 N. Ventura Ventura, CA 93001 805/649-2470
High Perspective RR #3 Claremont, Ontario L0H 1E0 416/294-2536	Kitty Hawk Kites East Box 386 Nags Head, NC 27959 919/441-6094	Kitty Hawk Kites West #136 Reservation Rd. Marina, CA 93933 408/384-2622	Mountain Wings Main Street Kerhonkson, NY 12446 914/626-5555
Mission Soaring Center 43551 Mission Blvd. Fremont, CA 94538 415/656-6656	Lookout Mountain Route 2, Box 215H Rising Fawn, GA 30739 404/398-3541	Morningside Recreation R. F. D. 2 Claremont, NH 03743 603/542-4416	Lite Flite 321 S. Butte St. Willows, CA 95988 916/934-7658
Peak Experience 9 River Road Hudson, NH 03051 603/889-1555	Windborne Hang Gliders Ravensburger Ring 9 8000 Munchen 60 83-59-94	Four Corners School of Hang Gliding Box 38 Hesperus, CO 81326 303/533-7550	Sun Coast Hang Gliders MSI 2071 Chevallum Road Palm Woods 4555 Queensland, Australia 61-71-45-9185
Sunrise Country Hang Gliders Rekku Shibakoen Mansion 1104 Shibakoen 2-11-13 Minato-Ku Tokyo 105, Japan 3-433-0063	Factory Representatives		Warren Cleeland 781 W. Palo Alto Ave. Fresno, CA 93704 209/439-6170
	Al Gibson 22106 Cedarview Dr. E. Sumner, WA 98390 206/897-8436	Larry Strom E. 814 Bismark Spokane, WA 99207 509/489-3692	

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WHOLE AIR

ISSUE NO. 30, VOLUME NO. 6, NO. 3, 1983

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FORUM

Hang Gliding Stagnation

Dear Editor:
Thanks for stating your concern about the static state of hang gliding membership. I read your editorial ("Publisher's Column") in the March/April issue of *Whole Air* with interest.

In my view there have been several thousand people who have come in contact with the sport but were not adequately informed about the services and benefits of membership in the national association for the sport, and dropped out not knowing that there is more to hang gliding than what they experienced. Hang gliding was experiencing rapid growth and the non-informed dropout factor was overlooked. It has caught up with the sport and made itself very apparent in this period of lowered growth rate. Hang gliding cannot afford to operate as it did in the past regarding communication to its participants.

USHGA is offering a program to schools and dealers that is designed to reach out to people when they first become associated with the sport as students. The Student Member Kit informs about the important and exclusive services of the Association and gets them onboard the program at the beginning of the fun. We believe that this can lead to a more satisfactory experience and a lasting relationship with the sport.

That will benefit hang gliding and all associated with it. I urge schools who are not participating in this new program to contact USHGA and request information about it.

Programs that meet the needs of hang glider operators and good service will help the sport grow, and will help it retain the continued support of those flyers already active in the sport.

Best regards,
Vic Powell,
USHGA Honorary Director

Dear Editor:
I'm sure I speak for many hang glider pilots who really appreciate the diversity of your material. It seems to be the only source of information on all of the various aspects of the sport.

I tow, trike, skyte, fly a Streak and love them all, so I especially enjoyed the March/April (issue).

Chuck Burgoon

ATTENTION Aero Tow Pilots!

Dear Editor:
Here in Houston we have been towing gliders during the last year with a constant tension winch (up to 1600 feet height). We tested three of the new "Center of Mass" bridle systems (3 different designs) and are amazed with the controllability — just like free flight!

We now feel we are almost

ready to take the next step of developing ultralight towing.

I am writing to ask you for names and addresses and phone numbers of everyone you know who has done any ultralight towing. We are not very concerned about the hang glider end of things (we believe we have that sorted out) but we need a bedrock of experience on the attachment of the tow line to the ultralight, strengthening to the air frame etc., (if such exists). In return we will, of course, keep you informed of developments here.

I am, in fact, from England, and one of my flying friends back home told me he had heard a rumor that they were "regularly towing by ultralight in Europe" (not England), so I have written to *Vol Libre* in France to see if they know anything. If I get any news from that quarter, I'll send you a copy of the letter.

Keep up the good work.

P.S. We are thinking of using a 2-place MX (without passenger) for the tug aircraft, because it's the only ultralight we know of which will fly slowly enough (with control!).

Bob Fisher

Thanks for your enthusiasm, for the benefit of your experiences, and for the offer of reports, Bob. Whole Air thrives on reader feedback.

We will put our Towing Section personnel, Tom Phillips (using an MX-II — solo — as well), and Donnell Hewett on alert. Please do communicate with them, through us or directly. We hope you hear from lots of interested pilots.

A successful tow group in eastern Michigan has been aero towing for some time now. They have had good luck with an Eagle as tug, but at last report were not using a skyting bridle. Contact them through Southeast Michigan Hang Gliders, 24851 Murray Drive, Mt. Clemens, MI 48045, phone 313/791-0614.

Reports have also filtered in from Mississippi, Missouri, Florida, New York, Arizona, California, Utah, and elsewhere in Texas (Dallas). These groups are also apparently successful with having accomplished at least some aero towing.

Vol Libre magazine is received at Whole Air offices, and we've not seen a thing regarding aero towing (though conventional is done, of course), but we will be interested by their response.

—Ed.

Dear Editor:

I enjoyed this issue more than any before. We are getting ready to tow in this area and the article on towing was very beneficial to us. However, your magazine is always great. I, too, wish it were

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monthly.
Carl Wiseman

Dear Editor:
Your March/April issue has information I have been waiting years for — all forms of towing and even kiting.

Now I want to do it. Hope to see you soon.
Bob Bautz

Dear Editor:
Towing, hey guys, everyone is interested in, or getting interested in towing. Why not interview the likes of Ray Foley of Tampa Florida, Jeff James of West Palm Beach, Matt Wagner of Atlanta. These guys have been doing it for years (in their own way). If a pilot from upstate NY, like myself, who averages 2 flights a month can go to Tampa and meet the best bunch of flyers this side of Istanbul and tow successfully with 10 minutes of verbal instruction... something is going right for them.

Hooked on tow.

Flip Purvis

Thanks for the suggestions, Flip. See Ray's March 28th letter below, and refer to the Nov/Dec

FORUM

Magnan Flap Info

Dear Editor:
Please give more on the Magnan Flap. Is this the answer to my double surface landing trouble?

Michael Haas

Probably, Michael, there is more to good landings than something like the Magnan Flap. But as we've received several comments about this and ideas like it, we will ask designers for more information in future issues.

—Ed.

Crystal Calendar

MAY 28, 29 — Ultralight Fly-in. Join Doug Lawton's gang of 15 X-C pilots as they ultralight in from Atlanta. Demo rides in the two-place MX-II; demo the new Pioneer FlightStar (qualified stick pilots only); demo Flight Designs JetWings (two available for Hang III or better pilots). Low-key competitions and good times will abound.

JUNE 4, 5 — Fourth Annual Balloon Race, featuring the Seven Up balloonists (and others). Sky Diving, Hang Gliding, Ultralighting, Food, Games, and plenty of people-watching in the warm sunshine.

JUNE 11, 12 — Real Air Parachute Deployment Seminar. \$25 per pilot for 2-3 deployments. Professional parachute Master Rigger will help learn repack process. Advance registration, please.

All above items, contact Crystal for further information at Rt. 4, Cummings Hwy., Chattanooga, TN 37409; call 615/825-1995.

Kitty Hawk East Calendar

MAY 7 — Ultralight Fly-in at our year-old Culpepper, VA facility. Contact John Harris.

MAY 13, 14, 15 — Eleventh Annual Hang Gliding Spectacular, heralded as America's oldest continuously held competition. In addition to the contest that attracts many "veteran" names, novices thru advanced pilots and friends are invited.

MAY 21, 22 — Hang III Rating Clinic. Contact Mark Airey.

JUNE 1, 2, 3 — Instructor Certification Program. Contact Mark Airey.

JUNE 11 — First Annual Rogallo Kite Festival. Awards in various categories. All kites and pedestrians are invited to share the air.

JUNE 12 — Parachute Clinic. Practice deployments with dummy chutes in our simulator and on the dunes. Contact Mark Airey.

JUNE 25, 26 — Mountain Fly-in. Contact Mark Airey.

JULY 4 — Fourth of July String

'81 Whole Air for some Florida Flyer tow pilots "There I Was..." stories, reports compiled by Ray Foley and the gang. —Ed.

Dear Editor:

Our soaring season is off to a good start with tows resulting in thermal gains of 3,000 feet and hour long flights.

Our group has for the past four years made thousands of tows safely with no injuries and only one slightly damaged glider.

We hope that those who attempt towing will not take it lightly and work toward doing it safely.

Keep up the good work.

Ray Foley

Thanks, Ray, for a word of caution from a highly respected expert tow pilot and group. We will try to keep up the good work — you work hard at keeping up

—Ed.

Dear Editor:

Sure do enjoy your magazine. Also fly ultralights, but don't go for their literature — you surpass *Hang Gliding* magazine by far.

I am one of three women pilots in Aspen — and the only one who ultralights. Will photocopy your glider survey and distribute to all pilots in club. You should get a bunch of responses. I can't wait to see the surveys in print. You can count on mine.

Joanne Perrault

Thanks, Joanne! We appreciate your help. The response to the survey has been terrific, we are very pleased to report. The total at press time for this issue counted over 350 surveys (nearly 8% of our paid circulation!) — a very high percentage by normal standards.

Glenn Brinks is currently working on the first articles in his thorough and knowledgeable way. Look for them soon.

Dear Editor:

I think you have a fine magazine. I especially enjoy "Product Lines," can you expand it to two pages?

I rely on it heavily to sort out the rumors (rampant) from the facts (scarce). For example, a recent rumor is that the last *Whole Air* was your final issue. Please tell me it's not true!

Dennis Owen

We have no idea where you got that one. Whole Air is alive and doing very well, with no intention of stopping a good thing.

Glad you, as many others, like "Product Lines." As it is the very last thing done, though, it really cannot be expanded without affecting its style.

—Ed.

Kite Fly. Join in filling the air with exotic shapes. Sale on selected kites.

JULY 16 — Kitty Hawk Kites/Sports Kids Day. Entertainment for the whole family. Kite building workshop, free ice cream, and clowns present.

JULY 23, 24 — Hang III Rating Clinic. Contact Mark Airey.

AUGUST 15 — 36th Anniversary of the invention of the Rogallo Wing. Francis Rogallo to speak Saturday, exciting films.

AUGUST 16 — Fourth Anniversary of the first transcontinental crossing by an ultralight. Ultralight demos.

AUGUST 27, 28 — Mountain Fly-in. Contact Mark Airey.

On all above call 800/334-4777, or 919/441-4124 in NC.

White Lake Tow Meet

MAY 19-22 — Eighth East Coast Tow Championships at White Lake, NC. Limited entries. Contact Tommy Faircloth, 5217 Hornbeam Rd., Fayetteville, NC 28304, or call 919/424-4302.

Kitty Hawk West Calendar
MAY 14 — Parachute Clinic, and Saturday night movies.

MAY 21-23 — Basic Instructor Certification Clinic.

JUNE 4-5 — Mountain Clinic.

JULY 16-17 — Mountain Clinic. All above contact David Shelton at P.O. Box 828, Marina, CA 93933.

Owen's Valley Calendar
MAY 7, 8 — Ultralight Fly-in, for motorized ultralights. Mitchell A-10 demo, fun fly-in, scenic flying.

MAY 20-22 — Second annual Dealer's Dive-in. Hang glider dealers and manufacturers fun fly-in.

JUNE 15-19 — Cross Country Open, competition open to all pilots. Entry Fee -- \$195.

JUNE 30 - JULY 10 — Cross Country Classic, world class cross country competition. Invitational, pilots seeking entry, send resume with \$5 filing fee. Entry Fee -- \$395.00

AUGUST 8-12 — Soaring seminar, advanced soaring instruction. Entry Fee -- \$275.

AUGUST 25-28 — Ultralight Soaring Trials, competition for motorized ultralights for soaring capability. Call for more information (ph. # below).

SEPTEMBER 12-16 — Soaring seminar, advanced soaring instruction in mellow fall soaring conditions. Entry Fee -- \$275.

ALL EVENTS — Reservations required, with 50% deposit where entry fee charged. Call 619/873-4434.

Free Spirit Flight Calendar
SEPTEMBER 3-5 — Sixth annual WELM/Free Spirit Flight Hang Gliding Festival. Draht Hill, Elmira, NY. \$1,000 purse plus trophies. Team and Open Classes. Beginner to advanced pilots welcome. Camping. Ultralight activities. Contact: Free Spirit Flight, P.O. Box 13, Elmira, NY 14902.

Golden Soaring Calendar

JUNE 4-7 & SEPT 7-10 — Novice and Intermediate pilot soaring clinics. Discussions are combined with practical applications at selected sites ranging from 300' to 4700'. Cost is \$175. (see below)

JULY 29 - AUG 1 — Advanced and Intermediate pilot soaring clinic at Summit Country will emphasize X-C and Mountain flying. Cost is \$225. (see below)

Bill Sloatman and Al Godman will be conducting these soaring and X-C seminars. They are designed to improve your knowledge and utilization of lift and lift sources.

The course(s) will combine your experience of ridge lift, thermal lift, and longer flights with knowledge of aerodynamics and micrometeorology. You will be introduced to different techniques of using lift effectively and safely in order to extend your flights and increase enjoyment of hang gliding.

Contact Al at 303/278-9566 or 666-4463, 15912 W. 5th, Golden, CO 80401 for further information and registration.

Muller Kites Calendar

MAY 14-15 Region 3 meet for Level I-III pilots at Peace River, Alberta. Contact Terry Thordason 403/624-4390.

MAY 21-23 — Saskatchewan X-C meet, Melville. Muller Kites will conduct an X-C Seminar plus video films during the weekend. Contact Muller Kites for info.

MAY 21-23 — McBride, B.C. Meet. Contact HGABC.

MAY 21-23 — Vedder Mtn. meet in Vancouver, B.C. Contact HGABC.

MAY 28-29 — AHGA meet. Fledgling meet for Level I and II pilots at Longview, Alberta. Contact AHGA.

JUNE 3-5 — Hinton, Alberta meet. Contact AHGA.

JUNE 11 — Organizational meeting for Cochrane meet.

JUNE 2-19 — 4th FAI World Championships, Tegelberg, W. Germany.

JUNE 18-19 — 11th Annual Cochrane meet. X-C and target landing. Contact Muller Kites.

JUNE 27 - JULY 10 — Owen's Valley X-C meet. Contact Muller Kites for information.

Chandelle Calendar

MAY 21, 22 — Dillon camp out and chute pack clinic.

MAY 27 - 30 — Owen's trip over Memorial Day weekend.

JUNE 4, 5 — Ten year party (Saturday) and chute clinic (Sunday at 10:30).

JUNE 8-12 — Regional competition at Dunlap.

JUNE 24 - JULY 2 — Hat Rim flying trip.

On all above items, call Chandelle at 415/756-0650.

Boris Popov

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Mark Windsheimer
 President

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New Wrist Altimeter By AccuPour

AccuPour Corp. of Ogdensburg New York has introduced a new wrist altimeter specifically designed for pilots of ultralight vehicles.

The new entry claims to be lightweight, easy to read, and quality built, with an ideal range for ultralight flying (0-8,000 feet with 100 foot increments). The altimeter carries a two year warranty with velcro wrist strap included for \$79.00.

For further information call toll free, 1-800/448-3835 (inside New York State, call 315/393-1710).



Eleventh Annual Hang Gliding Spectacular
 NAGS HEAD, NC — The 11th Annual Hang Gliding Spectacular will be held here at Jockey's Ridge State Park on May 13-15, 1983. This gliding spectacular is distinguished by being the oldest continuously held hang gliding competition in the U.S. Staged from atop the highest natural sand dunes on the Atlantic Coast, the non-profit event is sponsored by the Dare County Jaycees and Kitty Hawk Kites.

Duration, distance, and target competition for more than 50 gliders will be conducted on Friday, May 13th, and Saturday, May 14th, with Sunday as a rain date.

Mark Airey, Director of the Spectacular, explains, "Competition will consist of both duration/target events and

INDUSTRY NEWS

distance trials. Pilots will be trying to stay airborne as long as they can and still hit a target in the landing area about the size of a frisbee. Also, flyers will attempt to see who can fly the greatest distance from the peak of Jockey's Ridge."

Information about competition and registration can be obtained from Airey at Kitty Hawk Kites, P.O. Box 340, Nags Head, NC 27959.

Instructor Certification At Golden Sky Sails

Bill Sloatman and Al Godman will be conducting a Basic and Advanced I.C.P. clinic in Salt Lake City, Utah. The Basic will be open to intermediate pilots wishing to become Instructors and existing Instructors wishing to recertify themselves. The clinic runs May 30 to June 2 and will cost \$70.00.

The Advanced program is open to Certified Instructors wishing to upgrade or recertify themselves. The program will review modern techniques for teaching 180° turns through ridge and thermal soaring. This will be a hands-on seminar using students. The dates are June 3 to June 6, also in Salt Lake City. The cost will be \$60.00. Contact Al or Bill at 303/278-9566 or 303/666-4463, or write 15912 W. 5th, Golden, CO 80401.

Crystal Simulator Helps Teach Parachute Use

CHATTANOOGA, TN — While the one-of-a-kind Crystal Hang Glider Simulator has proven itself as a useful instructional tool for beginning hang glider students, advanced pilots can learn something on the unique device as well.

In a series of Real Air Deployment Seminars, the Crystal Air Sports Simulator has set new standards in learning to use the

emergency parachutes carried by over three-quarters of all hang glider pilots. The \$20 Seminars permit 2-3 flights down the Simulator. A time is specified by a starter gun — a time unknown to the pilot — the noise suggesting glider structural failure, mid-air collision, or other potential catastrophe. The pilot then reaches for his deployment handle and throws his 'chute. The times are measured by stop watch, and a pilot not only gets to actualize the experience, but can actively work on improving his/her performance.

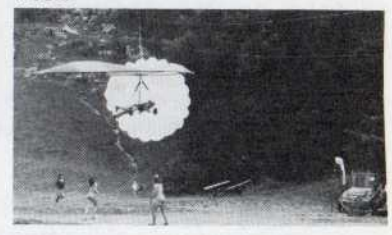
Average deployment times in the first such Seminar in 1982 revealed an average time to full deployment of 7.48 seconds. This figure includes what was described as "fumble time" (the time to seek and find the handle of the back-up system and take deployment action) as well as "deployment time" (the time for the chute to gather enough air to fill completely).

Several discoveries were made by pilots who participated in the Seminar. Most were surprised by the total time needed, as parachute ads usually quote just the "deployment time" and fail to consider "fumble time." The times were roughly equal. Many practicing pilots further found that the exercise improved their performance, as the awareness gained allowed some to dramatically decrease their "fumble time." All pilots felt much better about that "... \$350 lump on my harness, which I was not even sure would really work." Of course, all who were involved also got to repack their own 'chute, itself an educational as well as required effort. Manufacturers customarily recommend repacking the 'chute every 3-6 months. A couple pilots made

discoveries out of the ordinary. One such occurred when the pilot pulled the handle on his recently added emergency 'chute, only to have the handle come off in his hand, never deploying the 'chute. An improper sewing job showed itself, giving this pilot the chance to have repairs made so that it will work should the need arise in a life-threatening situation. Another pilot who had owned his system for many months, deployed his 'chute only to have it completely fail to open. All the lines extended normally, but the canopy itself remained packed. The likely explanation was dampness, causing a cohesion which did not allow it to fill with air. Periodic repacking will avoid this problem. Deploying in the environment of real flight — the Simulator can indeed "fly," that is, *not* be supported by the overhead cable — can definitely assure the back-up system will do its job when it is needed.

Another of the very popular Seminars is planned for June 11th and 12th. The charge is a nominal \$20.00, only about twice the common charge for a single repack by a professional. In addition, pilots may pay the fee, and proceed on their own on any day when the Simulator is in use for training, thereby avoiding the need to be present at the group Seminar. No timing will be available for these individual lessons.

All interested pilots may inquire further by contacting Randee Laskewitz at Crystal Air Sports, Rt. Four, Cummings Hwy., Chattanooga, TN 37409, phone 615/825-1995, seven days a week.




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Ron Hurst, Kurfürstenstr. 61, 8002 Zürich, Switzerland, AIRMAIL

Swiss Alp  **Safari**

Send \$1.00 for our 1983 Parts Catalog

NEWS

Pacific Kites Releases New Tempest Line

The Tempest is a high performance, high aspect ratio, state-of-the-art glider designed by Bob Schutte, designer of the Vampire. Schutte explains, "The Tempest has evolved from two years of research and development on the Vampire series of hang gliders. We have tried 90% double surfaces on the Vampire which increased the glide and sink rate performance, but made the handling really stiff. The 140, 164, and 185 Vampyres are a result of many changes in sail cuts and frame alterations."

The most noticeable advantage of the Tempest over the Vampire is climb rate; the Tempest climbs faster than the 185 Vampire in light or strong winds, and has a better glide at speed than the 162 Vampire.

The glider achieves finer handling by a four inch deeper control bar and a very tall keel pocket. The Tempest also uses a fiberglass batten on the tip which controls the leech tension and washout at the tips. The end of the leading edge tube is completely faired in at the tip by a specially shaped webbing sewn to the luff pocket of the sail.

The Tempest uses a very low stretch white sailcloth and a new lightweight, superstrong fiberglass batten for maximum sail tension. A complete series of pitching and load tests are being done on the Tempest in accordance to the HGMA certification program. Production began in February, with the Tempest selling for \$2295.00 (New Zealand dollars), or about \$1550.00 (U.S. dollars).

For more information contact Tommy Namias at Pacific Kites, Box 45087, Teatatu, Auckland, New Zealand.

Wind Lines Begins U.S. Marketing Effort

Wind Lines manufactures harnesses (both sunken and standard), backpack bags, fairings, and other flight accessories. The company's main line of cocoon harnesses incorporate numerous innovative features such as pin lock parachute closures and the internal bootbag, which acts as an in-flight storage compartment, capable of containing a glider bag and other foldable gear.

All Wind Lines harness designs have undergone drop testing adapted from the TSO standards for parachuting, and come with a 3000 kilo steel locking carabiner

necessary to meet those standards.

The two year old company located near Vancouver claims, "Because of the excellent exchange on the Canadian dollar, we can offer a very competitive product line." For more information write Wind Lines at 33469 Lynn Av., Abbotsford, B.C. Canada V2S 1E2, or call 604/854-5950.



\$5,000.00 For 200 Mile Flight

News of a 100 mile X-C flight is no longer an industry shaking event — it now takes over 150 miles to be considered a noteworthy flight; serious X-C pilots are setting their distance goals much higher.

With this in mind, Ultralite Products offered a large cash prize in 1982 to provide incentive and support for those pilots who share UP's desire of stretching the limits of the sport. Ultralite Products will pay the sum of \$5,000.00 to the first pilot who flies 200 miles in a UP glider and can prove it.

Peter Brock, president of UP, Inc., announced the prize in early 1982, but to date, no one has made any claim on the money. Whatever the reason, the fact remains that \$5,000 is still available. This means that it is still a wide open race and the world is still awaiting the exciting news of the 200 mile barrier being broken. In addition to UP's prize, others are now adding to it. Willi Muller, UP's distributor for western Canada, has offered an additional \$2,000.00 if the flight is made in Canada.

Contact Ultralite Products for further information by requesting their "\$5000 for 200 mile flight" brochure.

Lariano Triangle Contest Dates Changed

(Last *Whole Air* reported the Fourth Annual Lariano Contest, and described the dates to be May 15-22, 1983. The following announcement was received after the March/April issue went to press.)

Due to the fact that many overseas pilots who will attend the Lariano Triangle Cross Country Contest will be in Europe for the World Championships in Germany, we reconsidered the opportunity to have our cross country championship held from May 22 to 29, 1983.

Definitely World Class . . . CRYSTAL!

At Raccoon Mtn Flight Resort, Chattanooga



A few hang gliding centers are nearly a decade old. Many of these have achieved a World Class reputation. Not just for putting in their time, but for doing something especially well.

Crystal does training well. But we don't just put in our time either. We've developed training to a high degree. Our world's only one-of-a-kind, real environment hang glider flight simulator is a shining example of why **Crystal** is definitely World Class. Write or call for a brochure today!

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615/825-1995

NEWS

McConnellsburg Site Bought — Benefit Planned

The McConnellsburg site was recently purchased in a joint effort by the Capitol Hang Gliders Association and the Maryland Hang Gliding Association. The effort now is to develop the site to its fullest potential for all to enjoy. The two groups are asking each (user) pilot to donate \$15.00 to the McConnellsburg Site Development Fund.

"The Pulpit," as the site is affectionately called, has been used by local pilots for excellent ridge soaring and cross country flying for many years. It is rated a hang 2-3 site. It is 1000 feet high, employs a ramp launch that sits on a 20 mile long ridge line facing northwest, and requires a 4:1 glide ratio from launch to the landing area.

The First Annual Benefit Seminar weekend features not only scheduled lectures, workshops, rating tests, and flying, but to ease your headache from all this learning, pilots are invited to the on-site dance hall, where beer, pretzels, and a fireplace will supply the party. Those who wish are invited to bring film and slide shows.

Flight Designs Announces Special Low Pricing

In a strong spring drive, Flight Designs has made extra low wholesale pricing available to their dealers, so retail customers may expect some very considerable savings. Products benefitting from this special arrangement include the Demon and Javelin hang gliders, the JetWing trike

system, and the ATV (trike only) system, with optional packages for conversion to sea plane and airboat. Announced at the height of the selling season, the sale accesses a number of popular products at superb saving potential.

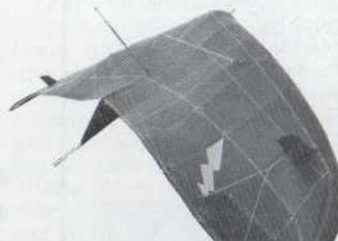
Flight Designs marketing man, Ken Brown, reported, "We asked Manchester (the parent company headquarters) for some price reductions, and they really delivered." The Salinas manufacturer has many units in stock after adding the large manufacturing capability of the parent parachute company in Connecticut.

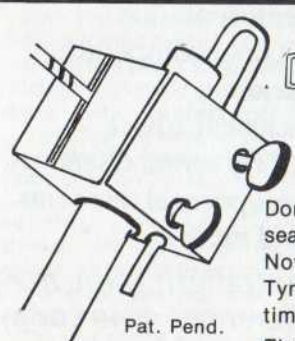
Many stock color patterns are available but popular designs may go early at the new prices, so interested pilots should see their local Flight Designs dealer soon.


Whitehawk Introduces New Glider

Craig Beck, President of Sierra Whitehawk, has informed us of the development of a new 160 square foot glider to be produced by the company this spring.

The glider has an increased span and aspect ratio over the 185 currently in production. Speed range of the glider is claimed to be 16-65 (no substantiation sent) and comes equipped standard with the winglets and elevons of the B package. Glide angle and cruise speed are said to have both improved over the larger 185 model. The glider, although somewhat stiffer due to new tip design, is very easy to maneuver and land due to the control surfaces and dive brakes.







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Don't miss any of the Spring flying season due to impaired downtubes. Now you can make your own with the Tymon™ Downtube Fixture and save time and money.

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CUSTOM.



New for 1983, the Wills Wing Flight Suit is designed specifically for the hang glider and ultralight pilot.

- Tough, 65% polyester/35% cotton fabric with Velcro wrist and ankle closures keeps out wind and dirt.
- Side vents allow easy access to inside pants pockets.
- Pouches at the waist and bicep store glasses, glider ties, etc.
- A large pocket on the back of each leg offers easy in-flight glove access.

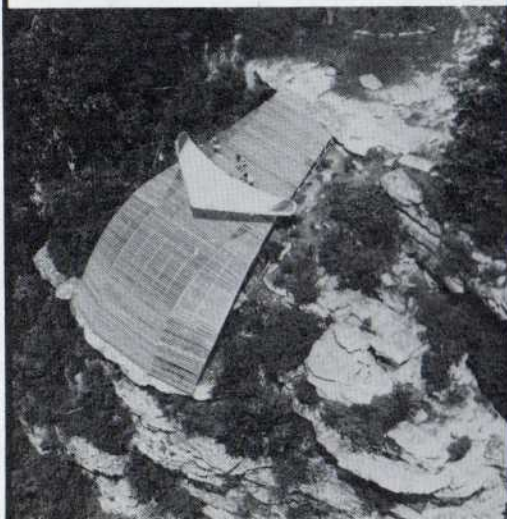
Best of all, because every suit is made here at Wills Wing, you can have one custom made at no extra charge, including your choice of colors for the suit and three side stripes.

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WIN ONE GRAND CASH



IN THE TENNESSEE TREE TOPPERS OLDEST X-C CONTEST

Question: Who holds the oldest cross-country contest in the world?

Answer: The Tennessee Tree Toppers Club, Inc., (TTT) has been running a continuous contest since 1978, even before similar ones began in California and elsewhere.

Now for 1983, the TTT is putting up *One Thousand Dollars* in great American green to the pilot flying the farthest distance beyond 100 miles, after a launch from a TTT site (some of the very best in the world; see above!).

With contingency prizes (some are still pending), the winner might pick up a cool \$5 GRAND... or even more.

You'll have to be a year member, tho. Cost: \$30/year. And even if you don't win the big bucks, we'll guarantee you'll have some of the finest flying in the USA.

Contact the TTT for details now! Write to: P.O. Box 136; Lookout Mtn., TN 37350.

NEWS

Rookie Of The Year Competition Pilot Awards

Delta Wing and Howe & Bainbridge (major cloth supplier to the hang gliding industry) are pleased to announce two Rookie of the Year Awards, in two classes — Sporting Class and World Class.

Delta Wing and Howe & Bainbridge will award the Rookie of the Year Award — Sporting Class. The award will be given to the highest placing pilot (regardless of exact rank) who has never previously competed in a national championship. The winner will receive a replica trophy and his or her name will be placed on a plaque on the perpetual trophy on display at Delta Wing or Howe & Bainbridge.

The purpose of the award is encourage new pilots to enter national championships, and will be awarded annually.

Because of the decision to have two classes (Sporting and World), Bill Bennett is pleased to add a second such Rookie of the Year Award for the World Class division. The particulars of the World Class Award is the same as those for the Sporting Class, with the winner receiving a replica as well as being added to the perpetual trophy.

Photo Contest Continues

YOU can win a free variometer (valued at \$200), or a set of FM radios (valued at \$160) by snapping the right photo of a Delta Wing glider.

Details of the contest call for interested photographers to submit photos to *Whole Air*, attention: PHOTO. Magazine editors will select the six best and send them to Bill Bennett for final choice. The winning photo will appear as a full sized centerfold in *Whole Air*. It is recommended that photographers use *only* Kodachrome 25 or 64, and that the camera be held or mounted in a *horizontal* format, due to the centerfold positioning. For more information, contact Delta Wing or *Whole Air*. ALL SUBMISSIONS, however, MUST come to P.O. Box 144, Lookout Mtn., TN 37350, Att'n: PHOTO.



RICH PFEIFFER & BOB ENGLAND

Pfeiffer, Bulger, Brown, Goodman . . . All Move To Delta Wing

National Champion, Rich Pfeiffer, U.S.

Team member, Chris Bulger, Flight Designs' marketing man, Ken Brown, and well-known and respected east coast pilot, Bubba Goodman, have joined the Delta Wing Flight Team, Bill Bennett announced on March 29th.

Rich Pfeiffer has just resigned from his position at Wills Wing to open his own specialty equipment business, to be known as High Energy. He will be producing special harnesses and other related equipment for the sporting industry. Delta Wing will handle Pfeiffer's High Energy products on a world-wide basis.

Rich will also compete in competitions including the World Championship in Germany flying a Streak.

Chris Bulger, known for his excellent performance in the previous World Championship in Japan, and last year's American Cup in England, has resigned from Flight Designs to become the West Coast Field Representative for Delta Wing. He will be competing in all available competitions including the World Championship on a Phoenix Streak.

Ken Brown, the energetic production person who was previously employed by Flight Designs, will also join the growing Delta Wing Team. Ken handled marketing aspects for Flight Designs during his employment as well.

Recognized for superior and consistent flying at demanding Grandfather Mountain, Bubba Goodman has joined the ranks at Delta Wing, and will be flying with Pfeiffer, Bulger, and designer, Bob England, as Factory Team Pilots.

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NEWS

Owen's Valley To Change X-C Classic Rules

(condensed from the Winter '83 Owens Valley Newsletter)

Thanks to all the people who took the time to comment on our competition newsletter! Many of the changes outlined for the XC CLASSIC and the rejuvenated XC OPEN will be implemented as planned. Changes will apply to both contests unless otherwise noted. Nearly everyone approved of the change to a long-distance race to a goal format, pilot option on choosing goal, conversion to a total elapsed time scoring system, only pilots achieving goal scored. Pilots best time for each goal is used for a total score. Open distance flying will be retained, and may be flown any day, but will be a special separate award, and not scored with the elapsed time tasks. Classes will be implemented as follows:

Class A must fold in the traditional manner, and the pilot must be able to self-launch the glider unassisted, no part of the glider may touch the ground as a launch aid.

Class B is everything else that fits under Part 103 hang glider definitions (basically under 155 pounds and single place).

Both classes fly at the same time, but are scored separately. Retrieval transportation dropped for the CLASSIC by nearly universal appeal. We will do our best, however, to help organize and match drivers, vehicles, and pilots so no one will be prevented from competing. Anyone wishing more details on the contest changes are invited to write for a copy of the few remaining fall '82 competition newsletters.

Great Western Ultralight Rally and Airshow

Lake Elsinore was selected as the site for the first of a five meet series of this year's Great Western Ultralight Rally and Airshows. The meets will consist of four competition events, a pylon air race, and an exciting aerobatics demonstration by Jack Britton.

All of the contests and the exciting aerobatics demonstration are designed for the enjoyment of the spectators and pilots alike. See the new 1983 ultralight models. Many sponsors.

The first of the series occurred at the end of April, and more are coming. Contact Richard Avalon, 1121-I N. Cosby Way, Anaheim, CA 92806; call 714/632-6661.

IMPORTANT Service Bulletin Flight Designs Demon 175

Pilots flying Demon 175 Hang Gliders should pay special attention to the cross bar junction bolt when performing pre-flights and when servicing the airframe. There is the possibility that the nut will work itself loose causing the bolt to fall out resulting in loss of cross bar tension.

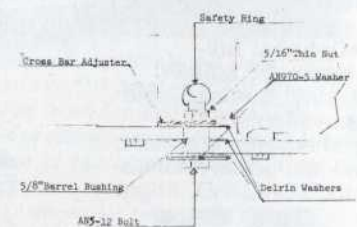
This area is accessible through the velcro opening in the bottom surface and should be inspected on a regular basis.

Recommended Service:

Remove nut and bolt. Replace with an AN5-12 bolt, a 5/16" thin nylock nut and safety ring.

Parts and further information are available through your Flight Designs dealer or directly from Flight Designs, Inc.

March 25th, 1983

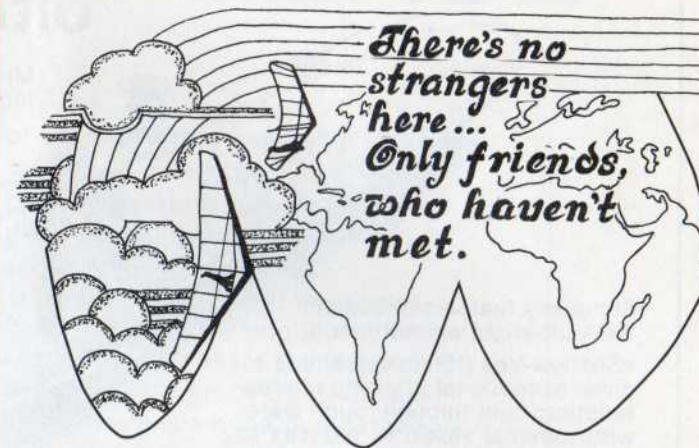


New LEAF Catalog for '83 Features Goods for Powered and Soaring

Leading Edge Air Foils, Inc., one of the countries leading suppliers of aircraft hardware and accessories for ultralight and soaring pilots, announces the release of their all new 1983 parts and accessories catalog.

LEAF's giant new catalog is the only one available specializing in both ultralight and soaring aircraft. The catalog features a complete listing of over 1,200 individual parts, hardware items, and accessories. The standard format (8½ X 11) catalog is printed in two colors and includes over 700 photos, illustrations, and diagrams, and over 300 detailed descriptions of most parts, hardware, and accessories that any serious pilot needs.

Cost is \$1.00 in the U.S., or \$2.00 outside the U.S. Please allow two weeks for delivery. Contact LEAF at 331 S. 14th St., Dept. PR-WA, Colorado Springs, CO 80904-4096, or phone 303/632-4959.



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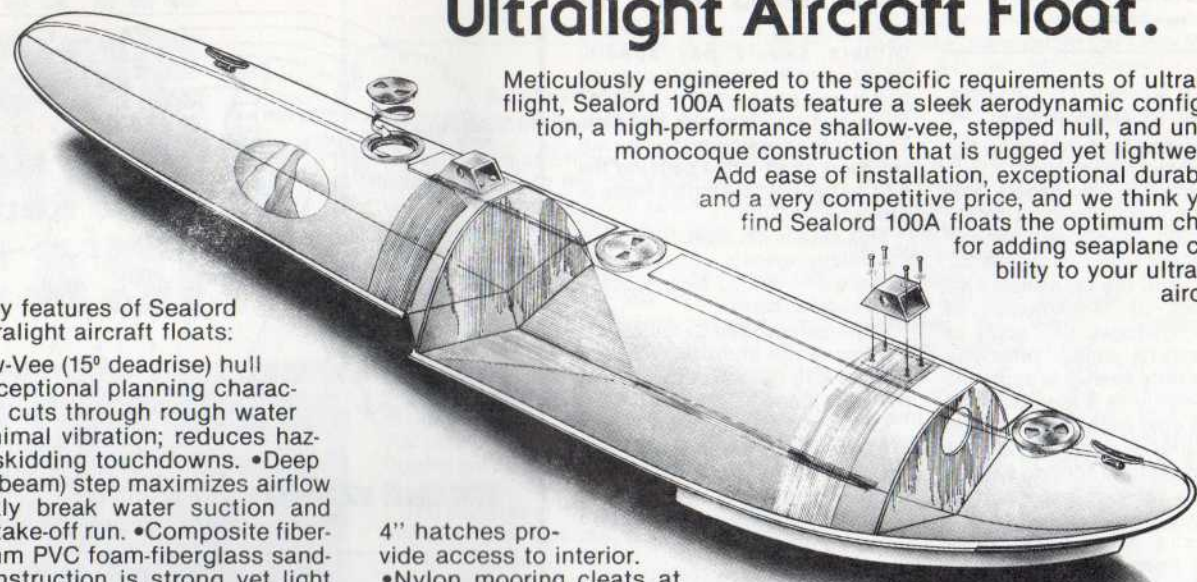
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State-of-the-Art... The Sealord 100A Ultralight Aircraft Float.



Meticulously engineered to the specific requirements of ultralight flight, Sealord 100A floats feature a sleek aerodynamic configuration, a high-performance shallow-vee, stepped hull, and unique monocoque construction that is rugged yet lightweight. Add ease of installation, exceptional durability, and a very competitive price, and we think you'll find Sealord 100A floats the optimum choice for adding seaplane capability to your ultralight aircraft.

Some key features of Sealord 100A ultralight aircraft floats:

- Shallow-Vee (15° deadrise) hull gives exceptional planning characteristics; cuts through rough water with minimal vibration; reduces hazards of skidding touchdowns. •Deep (10% of beam) step maximizes airflow to quickly break water suction and shorten take-off run. •Composite fiberglass-4mm PVC foam-fiberglass sandwich construction is strong yet light (less than 50 lbs./pair); outer gel coat gives glossy, attractive finish. •Walkway/mounting area reinforced with ¼" marine plywood, plus extra fiberglass layer. •Saddle reinforcement at mounting points; keel and step reinforced also. •Two interior bulkheads add strength; aft bulkhead divides hull into two watertight compartments. •Three

4" hatches provide access to interior.

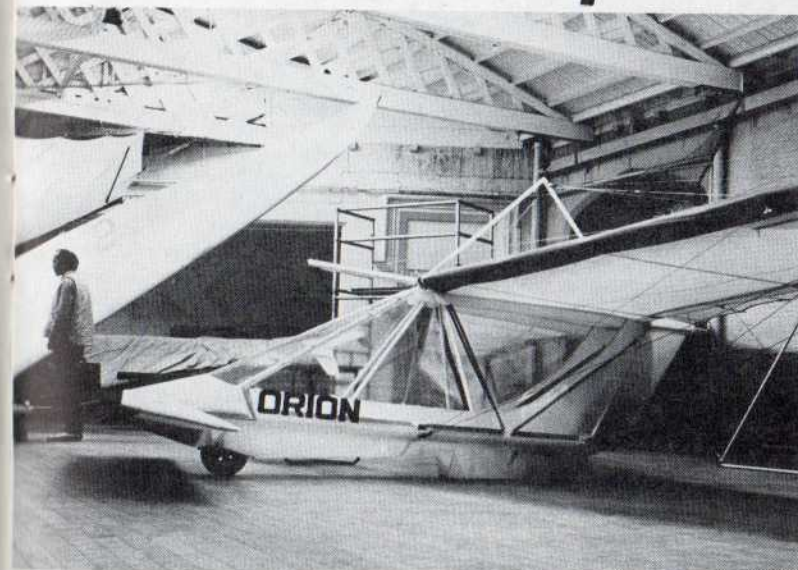
- Nylon mooring cleats at bow and stern. •Optional universal mounting brackets, splash suppression rails, vinyl bumper molding; other options available.

For a comprehensive brochure, specifications, and additional information, send \$2.00 to: SEALORD, Flight Systems Div.



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Telephone: (616) 243-7749

Your Opinion, PLEASE



After the May/June Whole Air had already gone to the printer, the following letter arrived from Mr. Bill Moyes. The page you are reading was to contain the 28th Edition of our popular Used Glider Bluebook.

But as Whole Air feels very strongly about supporting the emergence of the ultralight sailplane, we elected to stop the rolling of the presses to replace our Bluebook with Moyes' request for opinion.

While we feel the "rag wing" gliders we fly today will remain the backbone of our ultralight soaring sport . . . and while we view the rogallo-derived, highly-refined flexwing will remain as aviation's lowest cost "entry level" craft . . . we nonetheless wish to accent work in the direction of ultralight sailplanes and ultralight motorgliders.

With this in mind, please read Moyes' letter, and if you are so inclined, respond to him at the earliest opportunity. Time is limited.

HANG GLIDER CLASSIFICATION

The obvious decline in interest in Class II has caused sufficient concern to F.A.I., that there is a suggestion to remove this Class from competition. At the 1982 European Championships, only four Class II gliders entered, and two of these were Class I gliders with overdrive systems.

At the next CIVL meeting to be held in Germany following the World Championships, the subject will be discussed and a decision reached that will affect the future

of Class II. I have been given the task of soliciting opinions from those interested, and of presenting these at that meeting. I would like those opinions in writing.

I personally would like to see Class I left entirely unpolluted with Class II machines (as there have been suggestions of Open Class only). There is a huge gap between hang gliders and sailplanes, but we are all soaring people. Many sailplane pilots have expressed interest in our sport but are not satisfied with our performance.

The introduction of the Ultralite Products Arrow last year (and Skyhook's Orion this year) showed what can be achieved if the restrictions of foot launching and landing are removed. With today's composite constructions, a hill top launchable sailplane is possible; Class II could evolve to be an exciting Class if we allow it. This can be achieved by simply removing foot launch and landing requirements.

The CIVL meeting will be held on the 20th of June (1983). Those having an opinion should voice it now either by writing to me direct at 173 Bronte Road, Waverly, 2024, Sydney, N.S.W., Australia, or by writing to your CIVL delegate.

Yours faithfully,
BILL MOYES



Rally Sport A New Dimension in Fun Flying

Our engineers and production craftsmen have teamed up to produce the greatest display of Rotec's superiority to date. For two years "Ultralight Aerobatics" was just a dream "played at" by manufacturers for promotional use. Rotec was busy laying groundwork for a unique production aerobatic reality. The optimized Sport design gives the pilot a natural "feel of the sky" as his aircraft dances through each precision maneuver. The harmony of pilot and plane grow with every satisfying flight. Rolls are pure joy, while climb performance leaves other ultralights far below.



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Rally Sport Specifications

Cruise Speed	45 MPH
Maximum Speed (Vne)	60 MPH
Stall Speed (100% Power)	20 MPH
Rate of Climb from Sea Level (100% Power)	1000 ft/min
Max G-Load (Within Flight Manual Limitations)	(+6g) (-3g)
Maximum Roll Rate	150°/sec +
Empty Weight	238 lb
Maximum Payload (Pilot & Chute)	220 lb

* The Rally Sport is designed to withstand flight manual approved aerobatic maneuvers. It is strongly recommended that the pilot have at least 5 hours of aerobatic flight time in a certified aircraft prior to attempting aerobatics in the Rally Sport.

* Rally Sport is the only Rally designed for approved aerobatic maneuvers. Unauthorized aerobatic maneuvers in Rotec's Rally 2B or Rally 3 can result in structural overload.

Send \$5.00 for a colorful data pack or \$30.00 for an action filled V.H.S. tape to:

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Design aspects of Rotec's Rally Sport are protected by a number of patents or pending patents.



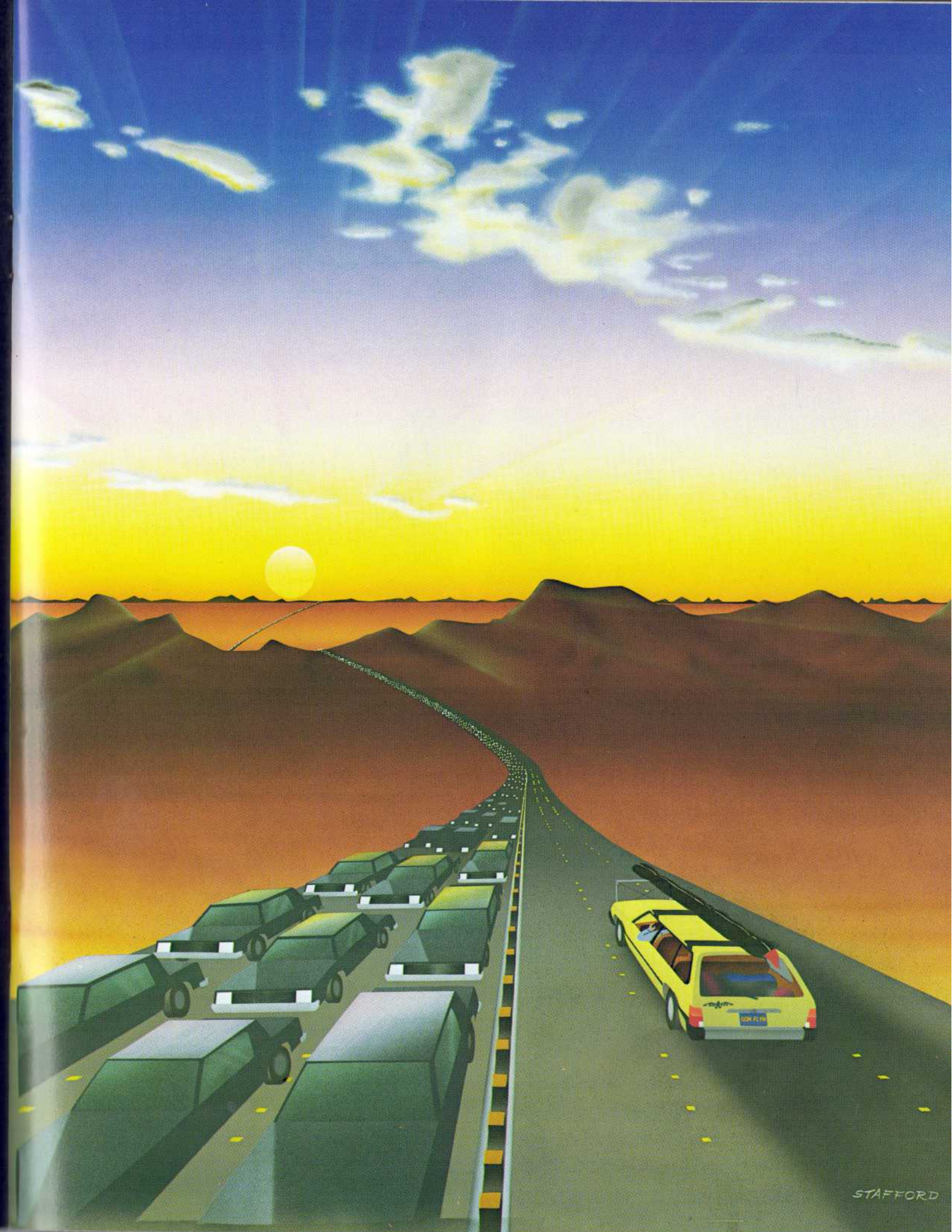
ex•cep•tion•al

adj - 1: forming an exception:
RARE, UNUSUAL. 2: better than
average: SUPERIOR.

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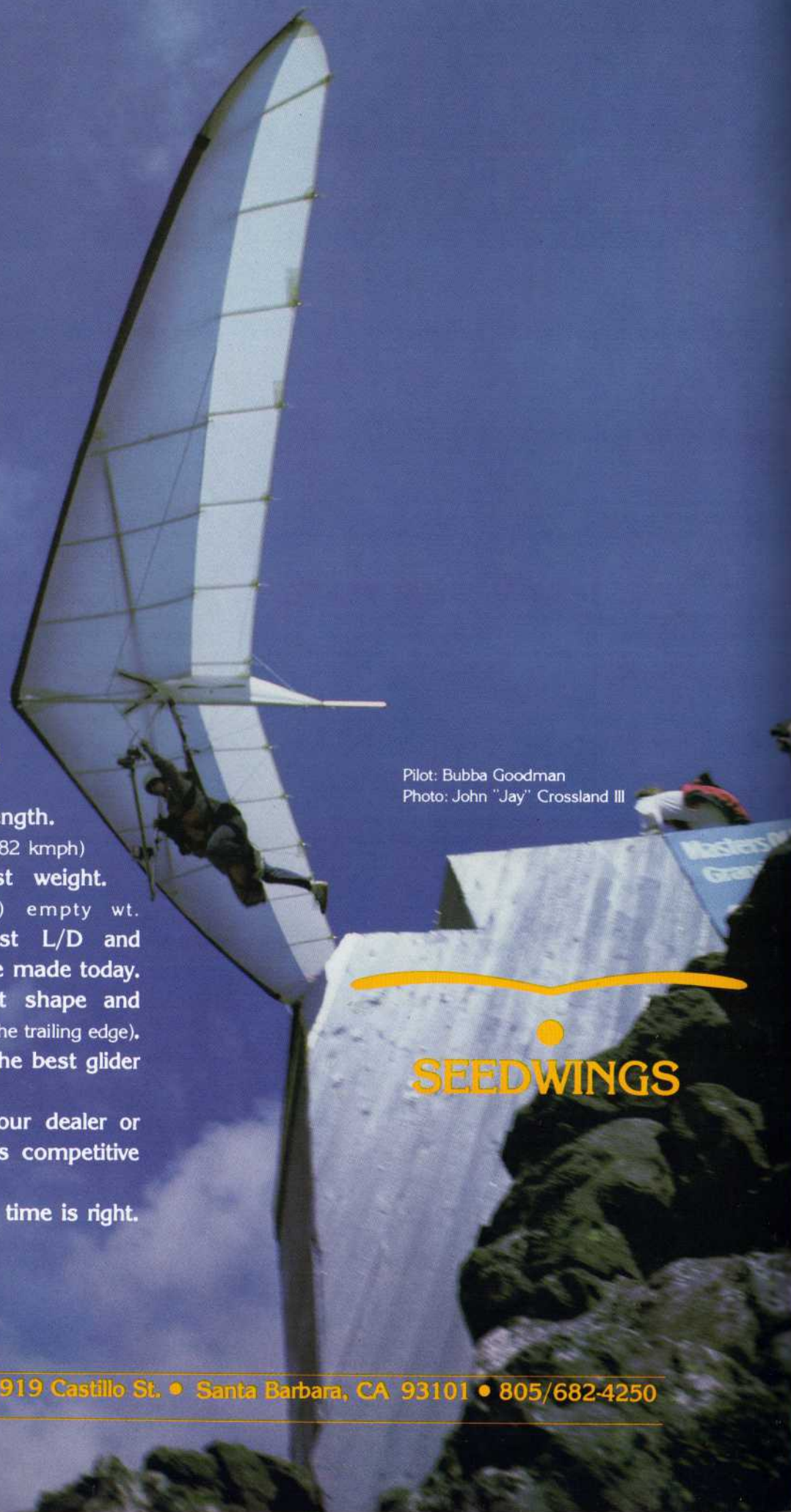
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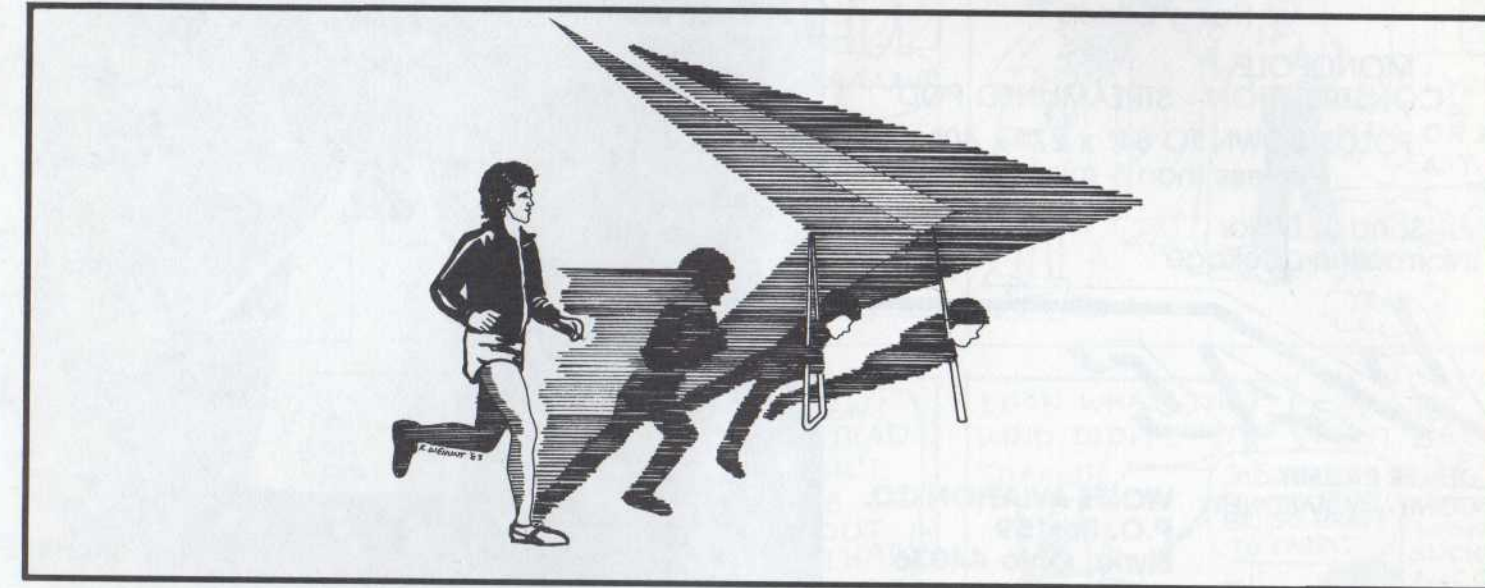


Pilot: Bubba Goodman
Photo: John "Jay" Crossland III

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How is your Mental Preparedness?



by Roger Coxon

Each spring when the weather finally cooperates, thousands of flyers head for their favorite sites. Many have kept their bodies in shape during the cold winter months, but few have prepared themselves mentally. They always have that one question in the back of their mind, "Do I remember how to fly?"

Though they may be in good shape physically — and don't get me wrong, physical conditioning is important — they have neglected a major part of their workouts . . . mental preparation.

These pilots may have looked at the latest hang gliding magazines, jealous of the pilots who can fly year-round, and longed for that first good day of flying. Maybe they went to the nearest hang gliding shop to drool over the manufacturer's latest temptations. But that is as far as it went! Most pilots just wistfully waited for the season to "hurry up."

At the other end of the spectrum are pilots like Rich Pfeiffer. Now, some may be amazed by his consistent victories, like back-to-back X-C Classic wins. We have heard how he prepared himself for this most grueling of all hang gliding

competitions by running, but little has been said about his mental preparation. I would be willing to bet my variometer it was every bit as intense as his physical training. When you think about that, his feats become more realistic. How many people have that much pure flying talent, but even more important, how many people without a good deal of mental preparation would have the determination to workout all year for one meet, or the fortitude to fly with a dislocated shoulder?

"Okay," you ask, "what can be done to improve my skills this winter?"

Well, the first thing to do is to put some mental workout in your physical workout. This accomplishes two things. It is much easier to work out when you know your goals.

Be specific about your goals! Running to improve your aerobic capacity is fine, but running to improve your launch is even better. As you run, feel the control bar on your shoulders, pretend that sign ahead is the end of the slope, then put all your effort into a hard run to that sign. You know what a takeoff run feels like, feel it in your mind. Try doing this several times during your daily run, and see if it does not make it easier to complete. Your launch will improve, too!

Prepare yourself mentally — you are not running, but flying!

The second part of your program to improve your skills is actual mental preparation or positive thinking.

Pick a pilot who flies the way you want to fly, get a good action shot of him and

place it where you will view it often. Remember when you were young and had your idol's picture on the wall? This is positive thinking. On the bulletin board over my desk are two pictures — one of Rich Pfeiffer, the other of Eric Raymond. Both of these pilots chose their goals, prepared themselves and achieved their goals. These are two pilots I emulate.

Another good exercise for the mind is to watch hang gliding films and use your imagination — that is *you* doing the flying!

Get action shots of pilots launching, flying one-on-one, spot landing, whatever facet of your flying needs the most improvement.

Read (don't just skim, but really read) articles on flying technique. Dennis Pagen's "The Art and Lore of Thermal Flying" is excellent.

Ask any psychologist and he will tell you that you are what you think you are. As the noted teaching theorist, Dr. Richard Farson, says, "We learn to swim in the winter and to ski in the summer." I might paraphrase him, "We learn to fly in the winter."

This is just a beginning, though. How many of your daily activities can be related to your flying and used to improve it? I am sure the number is limitless. My purpose in writing this article is to give you a direction to go in improving your flying during the off-season. The rest is up to you. Give some of these ideas and concepts a try and see if you don't fly better this spring.

Good luck to you in your flying, and good air always! §

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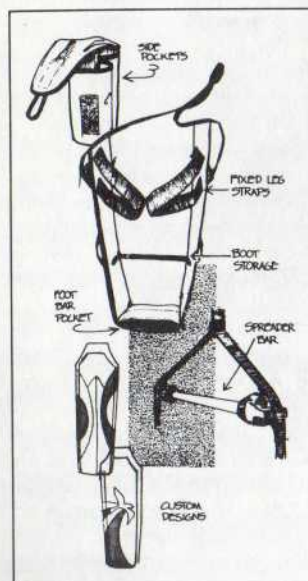
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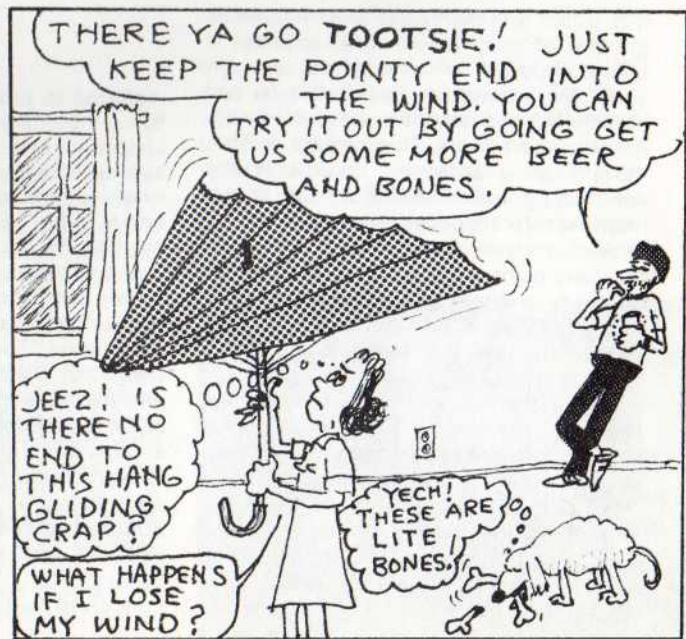
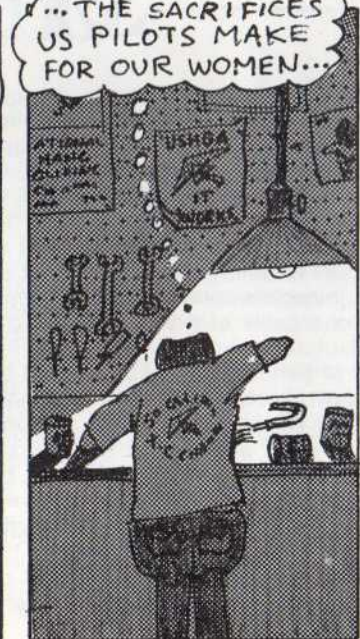


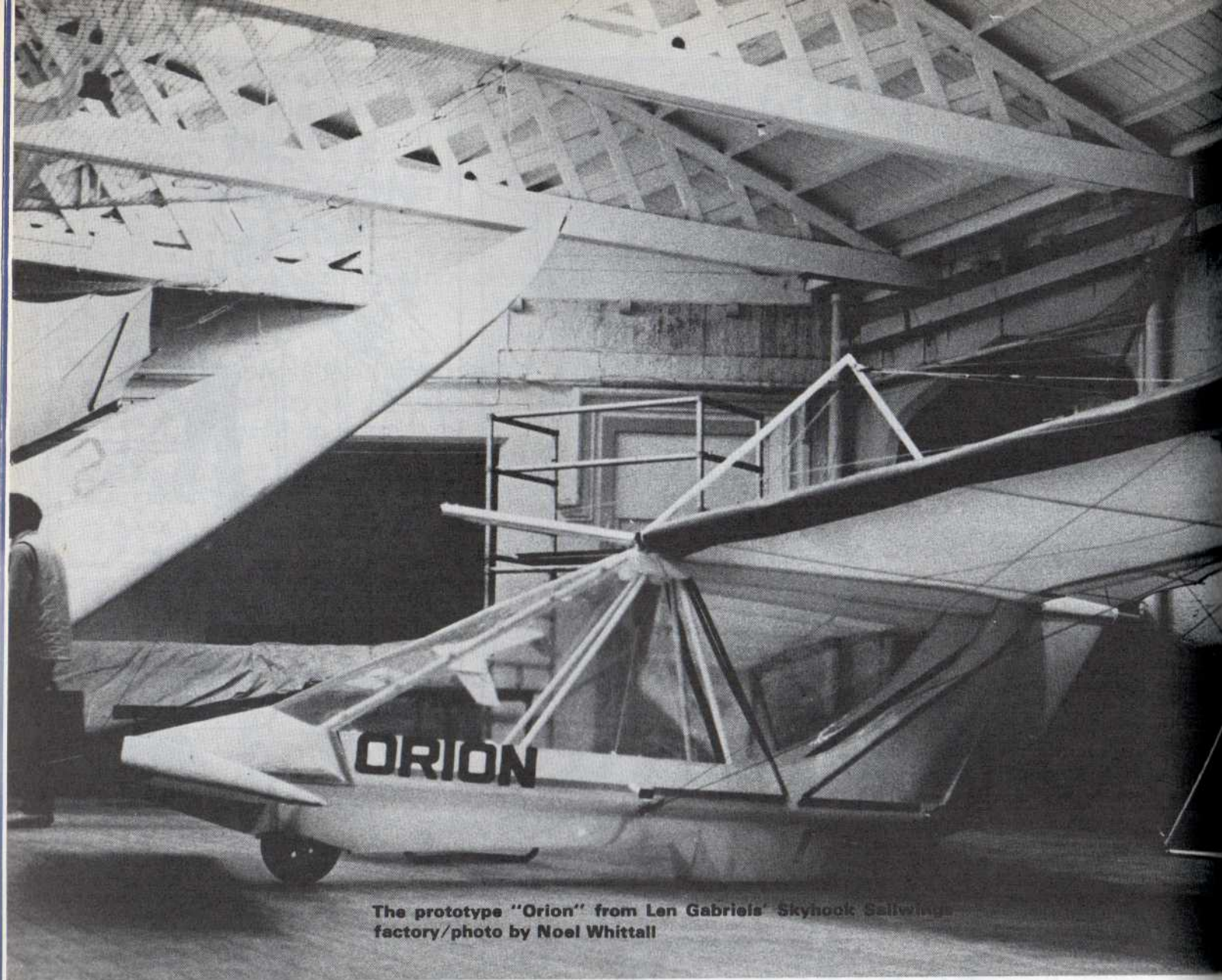
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The prototype "Orion" from Len Gabriels' Skyhook Sailwing factory/photo by Noel Whittall



The "Orion" prototype on display at the BHGA's Annual Meeting. Radio model on table at left/photo by Noel Whittall

by Noel Whittall

SPRING IN ENGLAND

It is a fact that the British Isles frequently get the leftovers when winter weather is being allocated — usually not enough snow for any winter sports, but far too much wind and rain for hang glider flying. Among sport flyers, this results in little more than a seasonal upsurge in the wifebeating statistics, but for glider manufacturers it poses severe difficulties. They must develop new models in time for the next flying season, but opportunities for exhaustive testing are few indeed. This rather reduces the odds on success for any company trying to introduce a radically new design.

Take the case of Hiway Hang Gliders Ltd. as an example — a highly professional setup with a history of fine machines such as the Super Scorpion and Demon. In 1981/82 they came up with "Alien," a superb looking glider with a hawk-like tail and the flattest wing in captivity. It flew well at first, but further testing would have shown that it was too highly stressed to

maintain its tune for more than a week of flying. By the time this became fully apparent, the big selling season had arrived, and Hiway was left in a somewhat exposed position. In 1982/83 they tried again. The "Explorer" was the most exciting aircraft to hit the UK hang gliding scene for years. Miles Handley, a designer of rare distinction, joined the company and rapidly produced the basis of the "sixth generation." The Explorer is virtually a rigid wing, but instead of defining the leading and trailing edges with tubes (Quicksilver style) Miles used the basic configuration of a bowsprit glider, but employed the forward bracing wires, padded with foam and mylar, as the leading edges. One hundred percent double surface of course, with the section set by stout preformed battens top and bottom. Originally conceived to turn via wing warping, the

Explorer ended up with large upper surface spoilers operated rather craftily from the control frame which is permitted to move sideways along the continuous bottom wire.

The glider is the most right-looking new design to appear on the hills, but its first competition outings have been rather disappointing. Although most experienced weight-shift pilots can fly it, it really needs learning to get the best out of it. Alas, there just have not been enough good days for people to learn it properly, and for the final stages of development to be completely polished.

For the moment, all this is history — Hiway collapsed financially last week, and the doors are closed on development for the time being. It is too early to guess what will be salvaged from the company, but surely the Explorer has too much potential

to be lost forever without trace.

On a more optimistic note, have a look at Len Gabriel's new "Orion." At the time of writing only the model has flown, but the real thing is ready for flight testing as soon as the weather permits. The photographs do not do justice to the Orion. It is the smoothest, genuinely collapsible craft I have ever seen, and at only 118 pounds, is obviously foot launchable. The tandem wheels are purely for insurance. Spanning 42 feet, the projected 14:1 L/D appears quite feasible. In service the drooping tip fin/rudder assemblies will probably prove rather vulnerable, but without much development the Orion looks as if it may well give the Arrow and its successors a run for their money!

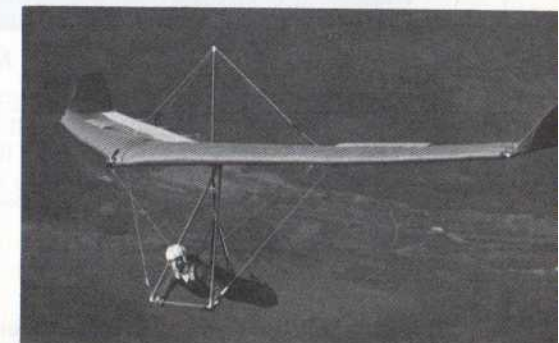
Our orthodox CFX (concealed, floating crossbar) gliders get better and better as the years go by. Current glider to beat over here is the Comet-derived, but

now greatly developed, "Magic 3," which is astonishingly fast while maintaining an apparently unbeatable minimum sink performance. However, Solar Wings new, "Blade" is looking good too. Early examples were tough to turn, but some thirty different batten profiles later is now reckoned to be rather good. The Blade will be the first volume production glider in the British market to use composite leading edges.

A welcome development is for some manufacturers to pursue the discipline of adding lightness. Most of the larger wings were weighing towards 80 pounds, and while being strong enough to bear the loads imposed by occasionally fitting a trike power unit, were a real pain to carry up the hills. The lightweights are coming out at around 62 pounds, and are strictly for hang gliding only. Enough of us will go along with that if it means less of groove in

the shoulder during a walk-up!

1983 is a World Championship year — the new machines should all be well developed by then. The contest in Germany this summer may well set the direction of the sport for the next few years. Will Orion type aircraft gain general acceptance, or will we still be happy with our familiar flexwings? Personally, I hope there will remain a place for both.



FORTUNATELY, most backup systems will deploy when you want them to.

photo by Bettina Gray



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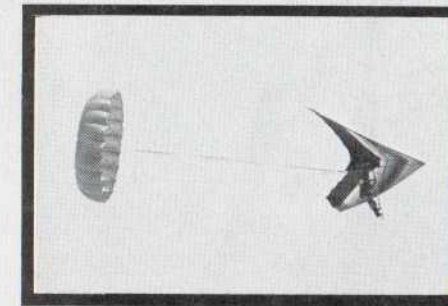
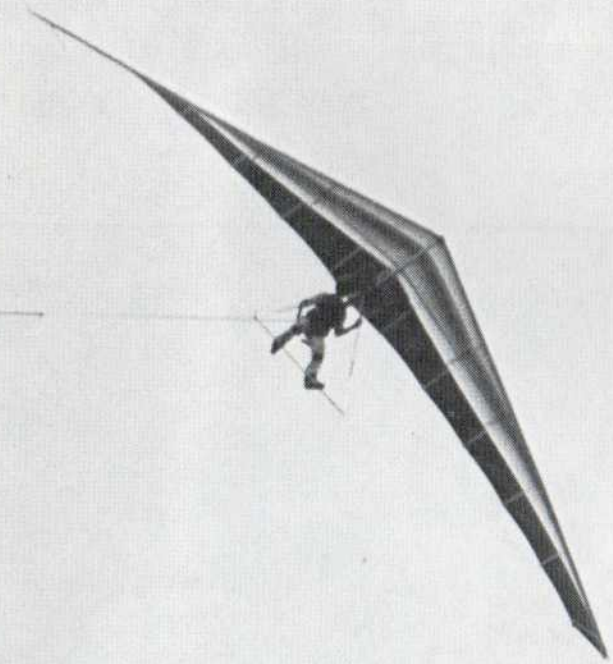
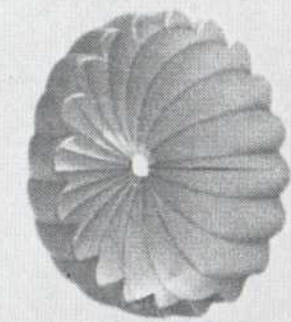
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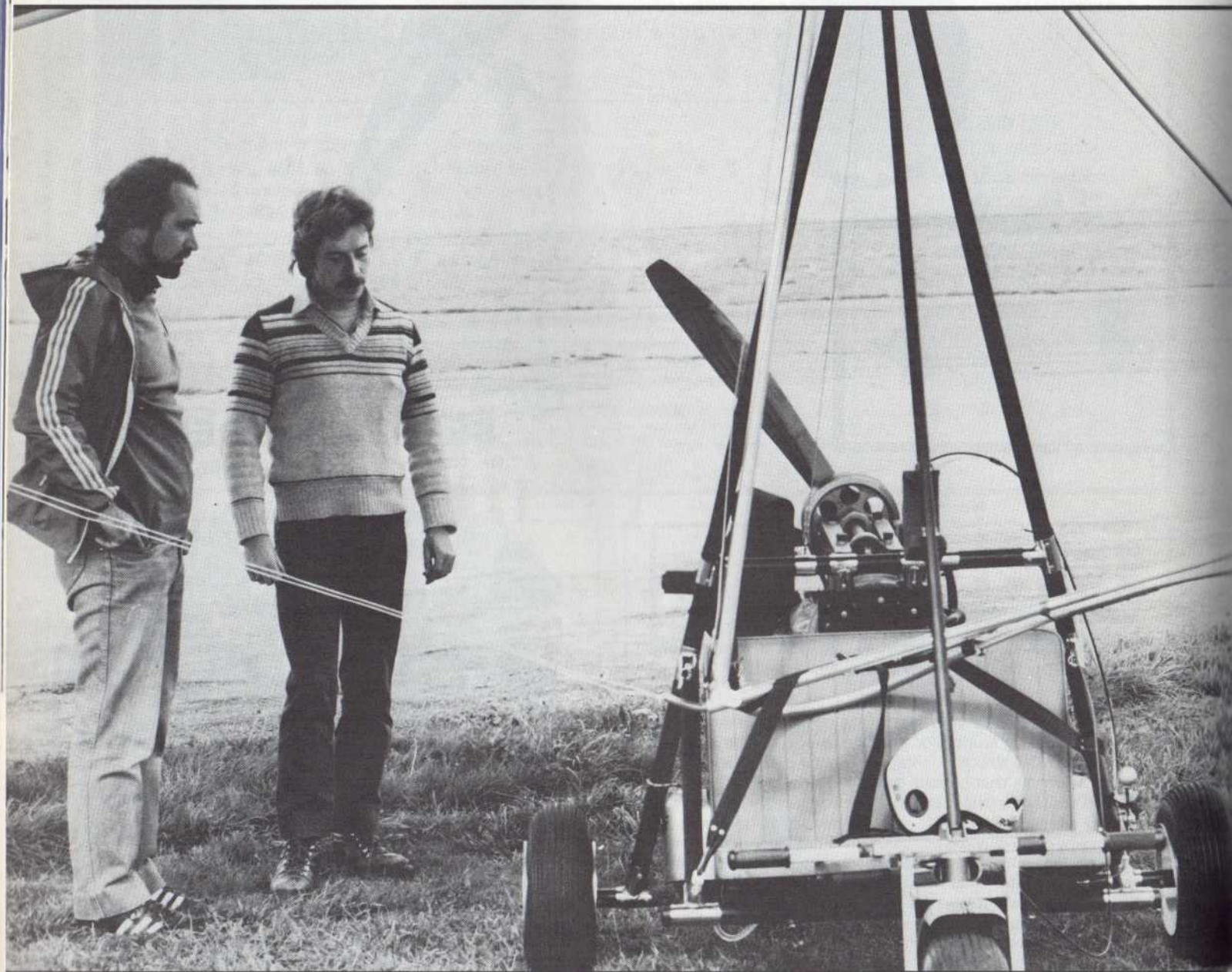
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TWO-UP TRIKES

by Noel Whittall



A year ago I was writing about the complete freedom enjoyed by British ultralight pilots: we were quite unregulated and our aircraft were unregistered. I also predicted that such an idyllic state of affairs was unlikely to persist, and sure enough I now hold Private Pilot's license -Aeroplanes Group D No. PP29763A and my Hiway trike has become Golf Mike Bravo Foxtrot X-Ray. Acquiring these tokens of respectability from the United Kingdom Civil Aviation

Authority has cost the equivalent of a couple of hundred dollars and involved me in a medical examination of considerable intimacy. These requirements became law on September 1st, and I am sure that quite a number of my associates were instantly transformed into criminals thereby. The funny thing is that they seem to fly just as proficiently as ever.

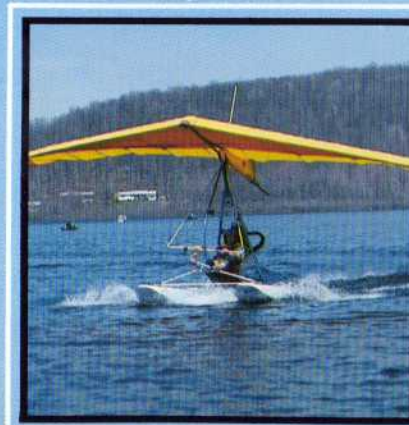
Anyway, along with these regulations came a definition of a Microlight Aircraft

(in the U.K. 'Ultralight' covers Pipers, Cessnas and similar 'planes), i.e. weight under 150 kg (say 330 lbs.), a wing area of not less than 10 square meters, and a wing loading not exceeding 10 kg per square meter, at empty weight, and designed to carry *not more than two persons*.

Yes, to the surprise of many, two seaters were allowed for any purpose—many of us had supposed they may be permitted for training only.

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Photo: Doug Barnette



For some months people had been experimenting with dual trikes: the advantages for training are obvious. Hang glider pilots could be sent off on single seaters with minimal ground instruction, but non-fliers or 3-axis merchants were quite a different proposition. No argument—the schools needed two seaters. A variety of power units were tried, but in the end the 440 cc Fuji Robin seems to have gained general acceptance. Strong wings became available such as the Puma, Striker and Cutlass, all of which work well and safely. However, one area of design has yet to be resolved—do the passengers sit side-by-side or one behind the other? Both systems have obvious attractions. One behind the other like motorcycle riders has the bonus of minimising drag and must score for sheer aerodynamic efficiency, but communication tends to be more difficult, and it is harder for the pupil to get the true feel of the controls from the back seat.

Side-by-side seems more companionable, and is preferred by many instructors. Sure, there's a lot more drag, but the co-pilot feels less of a 'passenger' and instructor and pupil do seem to be able to co-operate more easily. In neither configuration does a variation in weight of up to 100 lbs. between pilots produce the problems which might be imagined.

Of course, once the legal position concerning any type of two seater was cleared up, Joe Public often elected to buy a two-seater if he could afford the option, and some manufacturers now sell more duals than solos. The performance seekers naturally go for the tandem seating arrangements (John Hudson and Geoff Ball just won the 'Great Norfolk Air Race' together on a machine similar to the one illustrated, beating all the hot solos), while those who just want to tour around a little with the girlfriend tend to choose the side-by-side models.

At the risk of upsetting my manufacturer friends, my personal view about the general availability of two seaters is that I have certain reservations. For training yes, no doubts at all, but for general sport use then I feel we should gather further experience on long-term reliability and durability. It is relatively simple to enforce a sensible level of regular inspection for aircraft operated by registered schools, but rather more difficult on a general national basis. I hope my pessimism is ill founded.

As usual, all my comments concern weight-shift controlled 'Trike' type machines. The fixed-wing three-axis craft are a separate field in which I have little personal experience. There have been several fatalities this summer, but I do not believe normal Trikes have been involved in any of them. §



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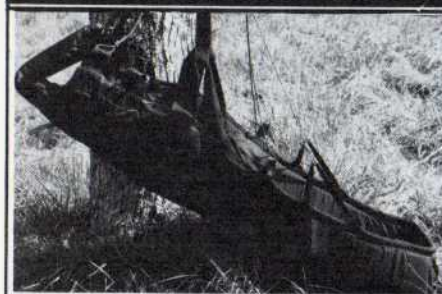


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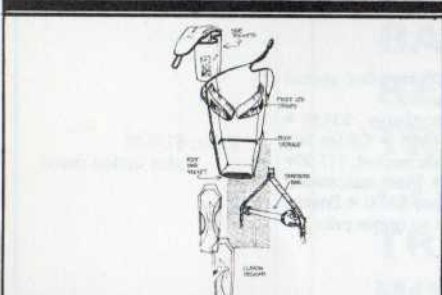


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Wildwood, GA 30757
404/820-1962

The add-on cocoon boot is designed to provide additional warmth and a measure of streamlining to your spaghetti harness suspension system. The boot secures to the harness using grommets and lacing at the upper corners of the boot and 2" velcro across the harness waistband. Boot includes large storage inside boot at the shins and aluminum kicker tube. Constructed from 8 oz. nylon with 1/4" insulating foam throughout at stress and wear points.

Price: \$65.00
Colors: Many available

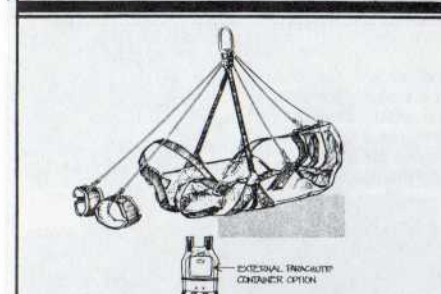


BODY HARNESS

Leading Edge Air Foils
331 South 14th Street
Colorado Springs, CO 80904
303/632-4959

The LEAF Body Harness with knee hangers comes complete with Velcro pocket, back strap, and karabiner as standard equipment. Materials: 8 oz. Nylon • 6,000 lb., 2" webbing • V207 thread • Aircraft buckles. Please specify Knee Hanger style (8-36, Leaf Body 1) or Knee Hanger with Stirrup (8-37, Leaf Body 2) when ordering.

Price: 8-36, \$94.50
8-37, \$102.00
Sizes: Small • Medium • Large • Extra-large
Colors: Blue • Red • Green • Orange • Brown

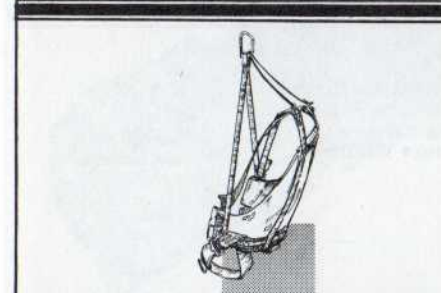


KNEE HANGER

Flight Designs
P.O. Box 1503
Salinas, CA 93902
408/758-6896

This harness is for the beginners needs featuring: • 1" tubular wrap-around construction • Parapak covered 1" layered foam • 4 point suspension to remove stress points • Rotating suspension lines to provide maximum mobility.

Price: \$105.00 (through dealers only)
Sizes: Small • Medium • Large • Extra-large.



TRAINER HARNESS

Flight Designs
P.O. Box 1503
Salinas, CA 93902
408/758-6896

This lightweight harness is for school use yet its rugged construction will provide many years of carefree service. Features: • Adjustable leg straps • Clear pouch for identification • New cut to provide maximum mobility.

Price: \$85.00 (through dealers only)
Sizes: One size only

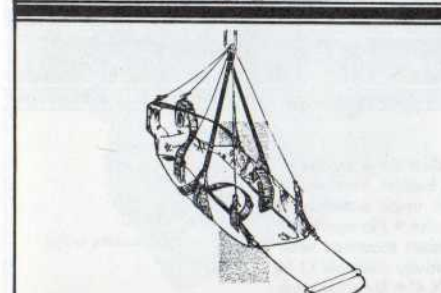


UP CLOUD

Ultralite Products
P.O. Box 659
Temecula, CA 92390
714/676-5652

The UP Cloud harness features a velcro closed wallet pocket and comes complete with a Chouinard locking karabiner. According to a survey by *Whole Air* magazine, this harness is the most popular knee hanger harness on the market, and has become the standard of the industry. UP always stocks a wide range of colors for immediate delivery to the customer through Ultralite Products world-wide network of professional dealers.

Price: \$125.00 (with optional stirrup), \$140.00




FOOT STIRRUP

Flight Designs
P.O. Box 1503
Salinas, CA 93902
408/758-6896


The ultimate harness for the intermediate soaring pilot includes: • Totally unrestricted leg movement • Optional internal parachute container • Optional side pockets • All harnesses made with standard Flight Designs quality construction.


Price: \$105.00 (through dealers only)
Sizes: Small • Medium • Large • Extra-large.


BUYER'S GUIDE

	<p>UP/RAYMOND SIERRA</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>This top of the line stirrup harness has all of the great features of the UP/Raymond Cocoon harness, without the cost of the Cocoon. Three color accent stripes on the chute container are standard on this ultra-comfortable soaring harness, with a price making it perhaps the best value on the market. Available with UP Pro-I harness bag, and Pro-I bag with UP chute.</p>	<p>Price: \$155 (with bag) — \$175.00 (bag & chute) — \$530 (through dealers only)</p>
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	<p>CLOUDBASE STIRRUP</p> <p>Cloudbase P.O. Box 144 Lookout Mtn., TN 37350 404/820-9269</p>	<p>Designed with soaring in mind. For beginner or expert. Extremely comfortable. Superb construction, top quality materials. Padded-adjustable leg straps without buckle discomfort. Plastic loop on stirrup for easiest entry. Past the knees length. Locking karabiner included. OPTIONS: Choice of 1/4" floatation or 1" open cell foam, N/C. Enclosed chute container — curved pin closure for added safety, \$50. Rainbow design — on shoulders or bottom, \$10. Glove pockets — 2-5/4" X 12" pockets, \$10. Storage/ballast bag — 12" X 14" X 2 3/4", \$25.</p>	<p>Price: \$125.00 Measurements: (bare feet) floor to shoulder, to inseam, to kneecap (inches); chest, waist, and weight. Shipping and insurance: \$7.00</p>
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	<p>UP/RAYMOND ECONOFLITE</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>The UP Econoflite is a good choice for the beginning/intermediate pilot on a budget. It offers lighter weight and less bulk than other harnesses, but retains most of the special features of the Sierra (see elsewhere in this section). Note that the parachute mounting must be external due to the thinner foam used in this harness.</p>	<p>Price: \$120.00 (through dealers only)</p>
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	<p>SUPINE with Backpack</p> <p>Leading Edge Air Foils 331 South 14th Street Colorado Springs, CO 80904 303/632-4959</p>	<p>This harness allows the pilot to lay back in flight and has two leg straps for added security. Features a spreader bar and adjustable height. Materials: 8 oz. Nylon • 6,000 lb. test, 2" webbing • V207 thread.</p>	<p>Price: \$95.00 Size: Universal</p>
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	<p>HARNESS KARABINERS</p> <p>Leading Edge Air Foils 331 South 14th Street Colorado Springs, CO 80904 303/632-4959</p>	<p>Two karabiners: OVAL karabiner that is precision made from a very high strength aluminum alloy with all stainless steel internal parts. Test: 3,200 lbs. LOCKING KARABINER no longer has the sharp clip behind the lock but a smooth ring which will not abraid rope or 1" tubular webbing. Test: 6,200 lbs.</p>	<p>Price: Oval — \$4.75 Locking — \$6.00</p>
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RADIOS

	<p>FM RADIOS</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Delta Wing offer 2-way FM radios for a variety of uses. V.O.X. and press-to-talk button. Features: • Ultralight weight • Hands free voice activated • Windscreen protected boom mike • No operators license • 9 volt battery • Headset mounted whip antenna • Audio and mike sensitivity controls • FM transceiver measure 3/4" X 2 1/2" X 4" • Ideal for hang gliding schools and cross country teamwork.</p>	<p>Price: \$79.00 (through dealers only)</p>
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INSTRUMENTS

BUYER'S GUIDE


	<p>SYSTEK VARIO</p> <p>Systems Technology P.O. Box 548 Oak Ridge, TN 37830</p>	<p>Compact instrument designed for hang glider pilots, uses a solid state pressure sensor, giving high sensitivity in a small lightweight package. Select 500 or 1000 FPM scale on black and white dial with an orange pointer. Features a variable threshold adjust for the up-only audio. Powered by a standard 9 volt alkaline, typically lasting 30-40 hours under normal use. Comes with an instruction manual and one year warranty.</p>	<p>Price: \$195.00</p>
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	<p>HUMMINGBIRD VARIOS</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>VE-10 — Now in its fifth season, the VE-10 has proven itself and has constantly undergone only minor modifications. Takes a 9 volt battery and uses it sparingly. Parts usually damaged by crashes are easily and cheaply replaced. VE-35 — New top of the line model, for the pilot who wants the ultimate in personal satisfaction. Uses proven circuitry of the VE-10, but with best available components where cost is no object.</p>	<p>Price: VE-10 — \$179.00 VE-35 — \$275.00</p>
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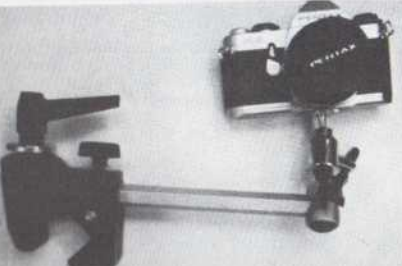
	<p>BALL/WINTER VARIO/AIRSPPEED</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Delta carries a full line of Ball variometers and airspeed indicators, and the Winter airspeed indicator line.</p>	<p>Price: Winter ASI — \$149.00 Ball 649 — \$470.00 Ball 651 — \$520.00</p>
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	<p>THOMMEN ALTIMETER</p> <p>Wills Wing 1208-H E. Walnut St. Santa Ana, CA 92701 714/547-1344</p>	<p>Imported from Switzerland for aviators, mountaineers, or anyone who needs an accurate, lightweight, and rugged altimeter, the Thommen Wrist Altimeter is a marvel of workmanship that will last a lifetime. Jeweled meter movement, impact-resistant case, and meticulous quality control make the Thommen an instrument that is more than a match for cold, heat, moisture, or dirt, with the greatest accuracy available in a wrist-mounted altimeter.</p>	<p>Price: \$169.00 (through dealers only)</p>
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	<p>F.D. ALTIMETER</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>Flight Designs Altimeters are available in Standard size to 15,000 feet; or Metric size to 4,500 meters. These sturdy and reliable altimeters are the most economical on the market today. With or without wrist strap.</p>	<p>Price: (without strap) — \$20.00 (with strap) — \$24.95 (through dealers only)</p>
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	<p>PWC S-200 Altimeter/Barometer</p> <p>Pacific Windcraft P.O. Box 4384 Salinas, CA 93912 408/422-2299</p>	<p>Surely the most economical way to fly with an altimeter! Available with wrist strap or instrument panel mounting. Usually in stock at your local Pacific Windcraft dealer. Contact him for ordering.</p>	<p>Price: See your dealer (through dealers only)</p>
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BUYER'S GUIDE

	<p>THOMMEN ALTIMETER</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>The Thommen Altimeter features: • Thommen 1000 in 50 ft. increments • Thommen 2000 in 20 ft. increments • the most reliable and accurate measurement of barometric pressure • Temperature compensated to insure accuracy in any climate • Cord lanyard • Various mounting brackets.</p>	<p>Price: 2000 — \$168.75 1000 — \$110.00</p>
	<p>HALL WIND METER</p> <p>Wills Wing 1208-H E. Walnut St. Santa Ana, CA 92701 714/547-1344</p>	<p>The classic Hall venturi Wind Meter is still the industry's best in a light, crashproof, easy-to-read airspeed instrument. Also from Wills Wing are prone and supine mounting brackets for the Hall Wind Meter, making it easy to use on any glider.</p>	<p>Price: Meter — \$21.50 Prone Bracket — \$6.00 Supine Brkt. — \$5.00</p>
	<p>WIND SPEED METER (with Wind Chill index)</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>Wind Chill and Wind Speed Meter is a rugged, dependable precision instrument. This durable airspeed indicator is easy to read and built to last. It can be used to measure the wind temperature and chill factor. Made of high impact plastic. Specify number 25-166.</p>	<p>Price: \$19.95</p>
	<p>INSTRUMENT DECK</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>LEAF's newly designed instrument deck is easily installed. The housing is constructed from high-impact plastic and features an attractive hardwood faceplate. It is available in a standard white color, or can be painted to match your craft. 12" long X 4" high X 7" deep, and accepts four 2 1/4" instruments, or two 3 1/4" plus two 2 1/4" instruments. Available with or without mounting brackets.</p>	<p>Price: (with bracket) #23-146B — \$75.00 (without bracket) #23-146 — \$62.50</p>
	<p>INSTRUMENT BRACKET</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>LEAF Air Instrument Bracket will work well on either 1" or 1 1/4" control bars. It has two large wingnuts for quick and easy assembly and disassembly. No tools are required for assembly. Constructed from aluminum. The bracket is 9 1/2" long. Specify #24-162.</p>	<p>Price: \$15.00</p>
	<p>CAMERA MOUNT</p> <p>Wolf Camera 410 Northgate Mall Chattanooga, TN 37415 615/875-9003</p>	<p>Heavy duty camera mount from Italy. Used by many professional hang gliding photographers. Features jaw style clamp for leading edge mount (will even hold over mylar pocket when mounted firmly). Has standard camera mount capability. Will hold in horizontal or vertical modes.</p>	<p>Price: \$49.00 (ask for Cliff Whitney)</p>

INNOVATIVE AERODYNAMICS



A hang glider is unlike any other craft in the air. That's why at Progressive Aircraft we take the finest aircraft materials and expensive Delrin plastics and go one step beyond, evolving innovative hardware systems to meet the specific needs of hang gliding alone. The resulting craft soar far above the

standards of all others. Each component is given critical attention. Each system of components is evaluated and reconsidered. Each glider is bombarded by new ideas and tested repeatedly to insure that every part combines into a superbly functional whole. To know — Fly One.



Progressive Aircraft Company of Simi Valley, California. Makers of the Breez, ProStar, and ProAir hang gliders.

photo - gary brown



Bob Thompson & UP Comet XC CHAMPIONS!

UP Comets sweep "Arizona Open" XC Championship!

1	Bob Thompson — 52.5 miles	165 UP Comet
2	Rik Fritz — 44.0 miles	185 UP Comet
3	Bob Thompson — 40.0 miles	165 UP Comet
4	Bob Thompson — 37.0 miles	165 UP Comet
5	Dave Evans — 33.0 miles	165 UP Comet
	Bob Thompson — 33.0 miles	135 UP Comet
6	Gary Brown — 30.0 miles	165 UP Comet





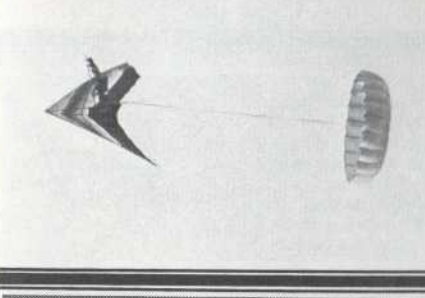
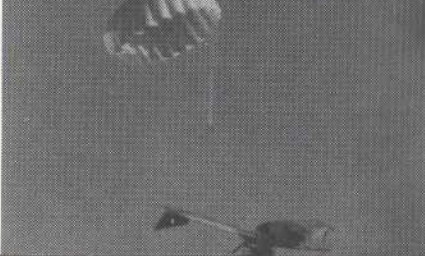
In a year long contest sponsored by USHGA Chapter 4 and the Arizona Hang Gliding Assoc. of Glendale, Arizona and open to all pilots and gliders, UP Comets again swept the field! UP Comets flew the five longest official distances of the event. Winning pilot, Bob Thompson, picked up \$250.00 in contingency money from UP Sports and a commitment from Ultralite Products to double the money for the 1982 event!

Note — UP Comets and Geminis are available for immediate delivery in all sizes and colors. Contact your UP Sports dealer today. For full information, specs, photos and price lists, send \$2.00 to UP Sports, P.O. Box 659, Temecula, CA 92390. 714-676-5652. All UP Comets and Geminis are HGMA certified.



PARACHUTES

BUYER'S GUIDE

	<p>HANG GLIDER CHUTE</p> <p>Wills Wing 1208-H E. Walnut St. Santa Ana, CA 92701 714/547-1344</p>	<p>Perhaps the single most important hang glider accessory is your parachute. The Free Flight Emergency Reserve chute, distributed by Wills Wing is a high quality, lightweight canopy for manual deployment. A shock-absorbing webbing bridle is standard, as well as the deployment bag and chute container for harness mounting . . . the best hang gliding insurance you can buy.</p> <p>Available in three sizes, measured by the number of gores (panels): 20, 22, or 24.</p>	<p>Price: 20 Gore — \$373.00 22 Gore — \$408.00 24 Gore — \$442.30 (through dealers only)</p>
	<p>PIONEER HANG GLIDER PARACHUTE</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>Parachute includes: • Tri-conical gore shape with bias construction • Interlocked threads which cannot "comb out" with remarkable F-111 fabric • Tested with 250 lbs. weight at 100 MPH • Low bulk dacron lines boast 300 lbs. tensile strength • Kevlar bridle offers twice the strength of common nylon bridle • Weighs only 4.75 lbs. • One size only.</p>	<p>Price: \$367.00 (through dealers only)</p>
	<p>S-26 HANG GLIDER PARACHUTE</p> <p>Pacific Windcraft P.O. Box 4384 Salinas, CA 93912 408/422-2299</p>	<p>Engineered specifically for the needs of the hang glider pilot, the recovery system is designed to recover both pilot and aircraft. Hand deployed with a throw-away bag, they have the option of either right or left hand pull/throw, and incorporate all the experience and commitment that Pacific Windcraft applies to our ever-growing product line of safety chutes and sport flying equipment.</p> <p>Flying Diameter 4.8M • Designed to recover 300 lbs. • 10" X 12" X 4 1/2" packed • Weighs 4 1/2 lbs. • 20 Gores of 3 panels/gore • Colors available • 4000 lb. Kevlar bridle.</p>	<p>Price: \$350.00 Colors: Red or blue (stocked); yellow or black (custom) (through dealers only)</p>
	<p>SUPERLITE B.U.S.</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Twenty foot, pull-down apex canopy. 3.75 lbs, with one step hand deployment. Lightweight, compact, efficient . . . the Superlite parachutes from Delta Wing.</p>	<p>Price: \$465.00 (through dealers only)</p>
	<p>SERAPH S-24</p> <p>Precision Parachute Co. P.O. Box 303 Signal Mtn., TN 37377 615/886-6417</p>	<p>The in-air tested Seraph model S-24 emergency recovery system features all the newest state-of-the-art innovations: • New F-111 24' canopy • 4.6 lbs. packed weight • Pull-down apex for fast deployment, highest drag • Fast, positive Seraph deployment system • Standard with curved pin closure system.</p> <p>Available container and deployment system for your existing chute, featuring tight, small pack with curved pin safety closure system.</p>	<p>Price: \$495.00 Container system only \$75.00; indicate make/size</p>
	<p>BALLISTIC RECOVERY SYSTEM</p> <p>Ballistic Recovery Systems 2277 W. County Rd. C St. Paul, MN 55113 612/633-1650</p>	<p>The industry's first ballistically deployed system is available now for ultralights, and in the near future for hang gliders. High technology emergency recovery system uses electronic actuation with manual deploy backup redundancy. Timed full deployments in 1.50 seconds gives exceptionally low altitude safety. Standard features include: • Activating unit • Cartridge Assembly • Ballistic device body • Parachute frame • Fabric chute container • Regular size chute (26') • Standard locking karabiner • All fasteners.</p> <p>Available with or without chute.</p>	<p>Price: \$796.00, complete with cable bridle \$490.00 without chute</p>

BUYER'S GUIDE

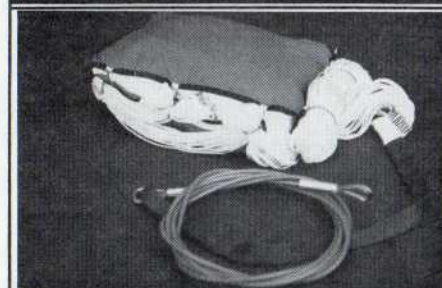


SUL-28 & SUL-38 ULTRALIGHT CHUTES

Engineered specifically for the needs of the ultralight pilot, these recovery systems are designed to recover both pilot and craft. Hand deployed with a throw-away bag, they have the option of either right or left hand pull/throw. SUL-28 designed to recover 400 lbs @ 11" X 12" X 3" • 8 lbs. weight • 20 gores of 3 panels/gore. SUL-38 designed to recover 500 lbs @ 12" X 14" X 3" • 11 lbs., 6 oz. weight • 16 gores of 4 panels/gore. Colors available.

Price: SUL-28 — \$425.00
SUL-38 — \$685.00
Colors: Red or blue (stock); yellow or black (custom).
(through dealers only)

Pacific Windcraft
P.O. Box 4384
Salinas, CA 93912
408/422-2299



ULTRALIGHT CHUTE

The Free Flight/Wills Wing Ultralight chute is a meticulously made, large area parachute for powered ultralights. A 20 foot steel cable prevents prop shear of the bridle and secures the system against the higher opening loads due to higher aircraft weight. A high quality emergency parachute system designed specifically for ultralights. Available in two sizes, by gore number.

Price: 24 Gore — \$465.38
28 Gore — \$596.15

Wills Wing
1208-H E. Walnut St.
Santa Ana, CA 92701
714/547-1344



28' RAPID DEPLOY (Ultralights)

28' Rapid Deployment Parachute System for Ultralight recovery. This unorthodox design features block construction and lines first deployment. The vented circumference slots give it a faster filling time and lower opening force, with the best stability of any round canopy. 10 lbs. total weight • 12" X 14" X 5" • Tested to 100MPH with 360 lbs., reflecting a 25 FPS descent rate.

Price: \$595.00
(through dealers only)

Delta Wing
P.O. Box 483
Van Nuys, CA 91408
213/787-6600

HELMETS



BELL HELMETS

The popular Bell® Trials Helmet is offered by Wills Wing in a wide assortment of sizes and colors. Tough multi-ply fiberglass/foam construction offers unmatched impact protection, and the soft fabric interior is comfortable even during extended wear. Positive twin "D" ring chin strap, rugged rubber edge protector, snaps in place for optional visor . . . the best protection for your head is a Bell helmet, and Wills Wing has the best from Bell.

Price: \$59.95
(through dealers only)

Wills Wing
1208-H E. Walnut St.
Santa Ana, CA 92701
714/547-1344



DELTA WING HELMET

A definite must for all hang glider pilots, these high impact poly carbon, new super lightweight helmets are D.O.T. approved and have special ear openings. Offering complete protection, they are comfortable and are available in all sizes and colors.

Polystyrene/polyurethane foam padding • Completely nylon lined • Chin protector — nylon web strap • Rubber moldings — hearing ports • Excellent temporal area protection.

Price: \$55.00
(through dealers only)

Delta Wing
P.O. Box 483
Van Nuys, CA 91408
213/787-6600



BELL HELMET

The well known Bell helmet is supplied through Ultralite Products and their dealers. Bell has a reputation for high quality construction, which meets the D.O.T. safety parameters. All sizes available.

Price: \$59.95
(through dealers only)

Ultralite Products
P.O. Box 659
Temecula, CA 92390
714/676-5652

CAR RACKS



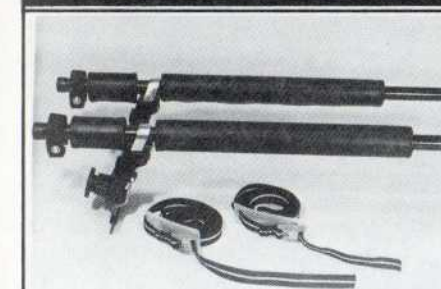
QUICK 'N EASY RACKS

By far the most popular rack component in hang gliding today, the sturdy, elegant Quick 'N Easy has no peers. It fits any vehicle with any sort of gutter, rail, or other such protrusion. It clamps with great force, and will endure infinite abuse with dignity. The most versatile system available for car-top glider transport, from Wills Wing.

Set of four.

Price: \$26.37
(set of 4)
(through dealers only)

Wills Wing
1208-H E. Walnut St.
Santa Ana, CA 92701
714/547-1344



TOWER CAR-TOPPING SYSTEM

Tower components are: • Injection molded in Zytel ST (super tough nylon), the body of the Tower won't peel, chip, corrode, or harm a vehicle's finish • Comes with 1 1/2" aluminum crossbars — or without — can also accommodate your own 2" X 4" crosspieces • On/off with a turn of the wheel, no parts to corrode or jam • Locking option — locks install in seconds without tools • Slim base for a tighter fit — tough baked-on vinyl coating eliminates awkward rubber flaps — gives maximum protection and clearance between door and rails • Comes in 4 sizes — 44", 54", 66", and 74".

Price: See your dealer
(through dealers only)

Pacific Windcraft
P.O. Box 4384
Salinas, CA 93912
408/422-2299

BAGS



AERIAL DYNAMICS AIRCRAFT CARRIER

This glider equipment tote bag is designed to be carried by hand or backpack style, such that the handles do not slip off your shoulders. Features include: • 34" opening for easy access • Concealed zipper with reinforced terminals • Padded handles to facilitate both modes of use • Concealed handle attachments • High volume end pocket for instruments • All raw seam edges trimmed with webbing • Double thick floor • Inside cinch clip and sliding handles (for back pack load).

Price: \$42.00

Aerial Dynamics
P.O. Box 151
Wildwood, GA 30757
404/820-1962

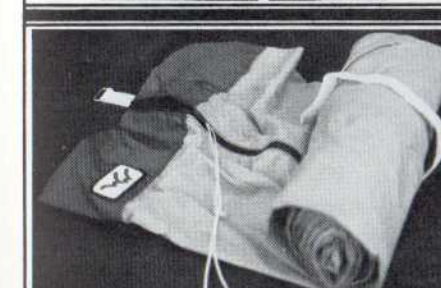


BACKPACK BAG

The Wills Wing Backpack Gear Bag is excellent for long carrying, retrievals, or regular use, with the same rugged construction used in our Regular Gear Bags. Backpack bags feature a semicircular zipper all around the bag making it possible to uncover all the contents at once for ease of packing. Transport your gear in comfort with a Backpack Gear Bag from Wills Wing.

Price: Large — \$32.50
Small — \$25.00

Wills Wing
1208-H E. Walnut St.
Santa Ana, CA 92701
714/547-1344



X-C BAG

Wills Wing now offers a lightweight, durable glider bag (less than 2 lbs.) to save on glider wear after off-field landings. The X-C Bag packs up small for easy storage in your harness or glider, and features a full length zipper as well as Cordura end doublers to prevent abrasion. An integral velcro strap secures the bundle. Now you can protect your glider where ever you go.

Price: \$40.00
(through dealers only)

Wills Wing
1208-H E. Walnut St.
Santa Ana, CA 92701
714/547-1344




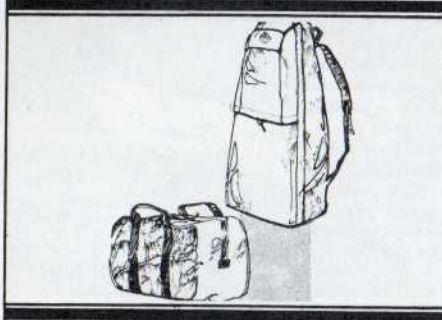




GEAR BAGS

To keep everything in the same place and well protected, Wills Wing Gear Bags are available in two sizes and all the colors you can imagine. Constructed of heavy Parapac nylon and high-strength webbing Wills Wing Gear Bags are durable enough for many seasons of rough use.

Price: Large — \$35.00
Small — \$30.00
(through dealers only)

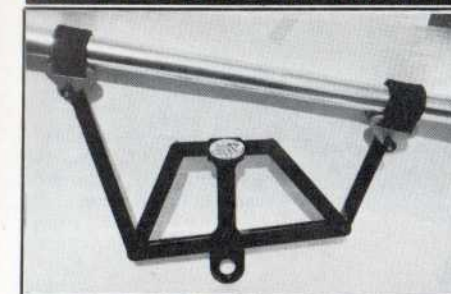
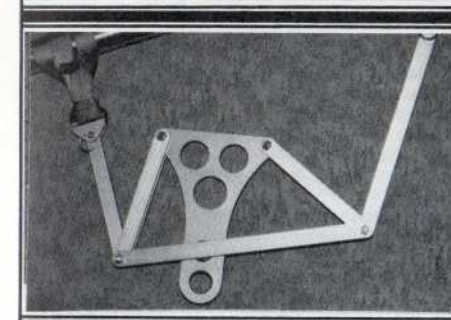
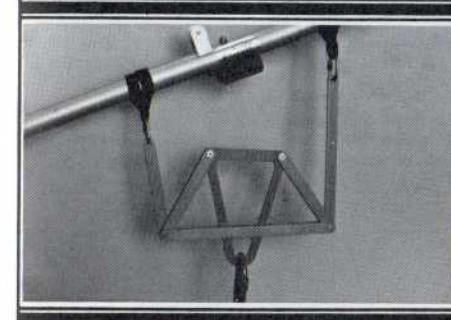
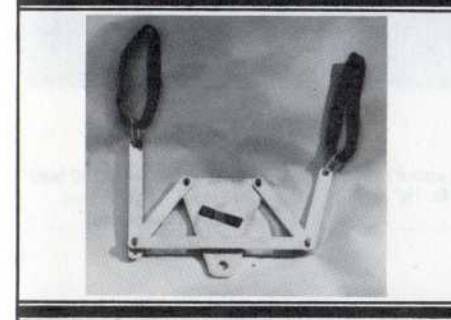
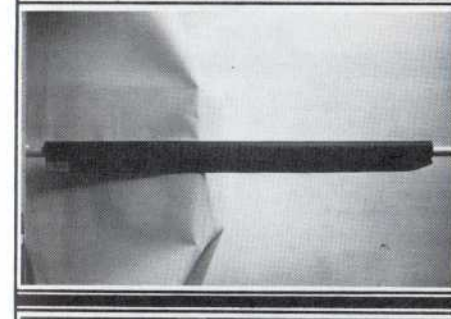
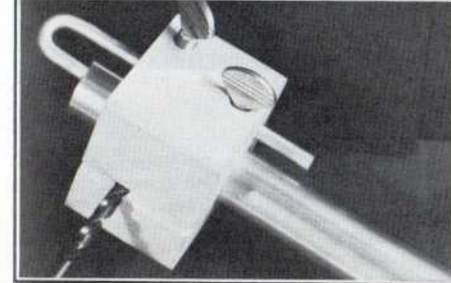
Wills Wing
1208-H E. Walnut St.
Santa Ana, CA 92701
714/547-1344

BUYER'S GUIDE

	<p>PADDED INSTRUMENT BAGS</p> <p>Wills Wing 1208-H E. Walnut St. Santa Ana, CA 92701 714/547-1344</p>	<p>With all that money invested in quality instruments, it makes sense to keep them safe from the hostile environment of cars and closets with a Wills Wing Padded Instrument Bag. This roomy, durable bag features a locking drawstring neck, inside pockets to isolate instruments, and plenty of soft foam padding. If you value your instruments, treat them right with a Padded Instrument Bag from Wills Wing.</p>	<p>Price: \$15.00 Assorted colors (through dealers only)</p>
	<p>FLIGHT & SPORT BAGS</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>All Flight Designs quality gear bags include: • 400 Denier Parapack • 1" and 3" flat shoulder straps • #10 double zippers • Conical shape top to fit any helmet • Easy access to compact storage areas. Many colors available, consult your dealer.</p>	<p>Prices: Flight Pack: \$32.00 Deluxe Pack: \$38.75 Sport Pack: \$29.95 Equipment Bag: \$27.50 Multisport Bag: \$39.95 (through dealers only)</p>
	<p>WINDRIDER FLIGHT PAC</p> <p>Pacific Windcraft P.O. Box 4384 Salinas, CA 93912 408/422-2299</p>	<p>Designed to accommodate and protect your harness, parachute, helmet, vario, and granola bar, the Windrider Flight Pac features: • Dual mode — backpack or duffel bag • Foam lined on bottom (optional) for shape and comfort • Sturdy delrin zipper around 3/4 circumference for easy access • Your color choices for main body, circumference band, and Eagle logo (standard) with stripes • Made of sturdy Parapack cloth • 3" lightweight shoulder/carry straps • Adjustable Delrin buckles • Completely wash- and dry-able.</p>	<p>Price: via dealers (through dealers only)</p>
	<p>UP PRO-I BAG</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>Nicely finished with color accents, this bag is ideal for smaller harnesses, with plenty of room left over for your helmet, instruments, and other flight gear. Wide adjustable back straps offer comfort while carrying the bag, and its light weight, make it easy to stow for carrying in flight. Available in a wide variety of single and two-tone colors. (13" X 27" X 5")</p>	<p>Price: \$29.95 (through dealers only)</p>
	<p>UP PRO-II BAG</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>The Pro II was specifically designed around the UP/Raymond Cocoon harness, with the helmet and flight gear fitting nicely into the package. A great feature of this unit is that your flight instruments are contained within the protective padding of the harness itself. This is all the bag that you will ever need, whether you are flying on the coast or making a fully prepared assault on the Owens Valley. Available in most colors for immediate delivery. (17" X 28" X 10")</p>	<p>Price: \$39.95 (through dealers only)</p>
	<p>DELTA WING BAGS</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Delta Wing Bags are roomy, functional, carry-all bags. Will hold one cocoon harness with parachute, helmet, flight instruments, and cold weather gear. Colors available.</p>	<p>Price: \$36.00 (through dealers only)</p>

REPAIR ALTERATIONS

BUYER'S GUIDE

	<p>DELTA WING FRENCH CONNECTION</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Turn your glider into a superlight and swift handling machine. Fits all certified, exposed keel gliders. Features: • Quick fitting and removal • Non-scratch webbing suspension • Nylon bearings at all pivot points • Adjustable for different keel angles • Smooth, silent action.</p>	<p>Price: \$85.00 (through dealers only)</p>
	<p>GLIDEMASTER PPE</p> <p>High Sports & Thin Air Ltd. 524 221st S.W. Bothell, WA 98011 206/481-5878</p>	<p>Aircraft quality blue anodized 6061-T6 aluminum • Inch tubular nylon webbing • Improved stability at high speed due to reduced bar pressure • Unit removed by 2 clevis pins, leaving no sharp surfaces to damage sail. Other colors (red, black) coming soon. Also coming is the R.A.P.E. (double french). Dealer inquiries welcome.</p>	<p>Price: \$58.95</p>
	<p>PACIFIC WINDCRAFT FRENCH CONNECTION</p> <p>Pacific Windcraft P.O. Box 4384 Salinas, CA 93912 408/422-2299</p>	<p>For those X-C and Competition pilots who demand the most in performance . . . features: • Pitch axis action (pitch and roll soon available) • Anodized, stamped aluminum struts • All moving parts mounted on steel bushings • All sliding parts mounted on delrin bushings • Minimal drag and weight • Excellent finish • Complete with quick links, webbing straps, mounting instructions • Hang IV or V pilots only on certified gliders after 1979.</p>	<p>Price: from dealer (through dealers only)</p>
	<p>COMPETITIVE EDGE C.G. CONVERTER</p> <p>Lubon Ultralight Aircraft Rt. 8, Enoree Hill Circle #17 Greer, SC 29651 803/244-5886 803/244-3329</p>	<p>Introducing the most outstanding CG Converter available today. This converter features: • Bright polished aluminum finish • Constructed of 6061-T6 alloy • Special precision Teflon washers for less coefficient of friction for smoothest operation. (DISCLAIMER): Not part of the certification of the glider and should be used at the pilot's own risk. Back up suspension should still be used.</p>	<p>Price: \$75.00 (Dealer inquiries welcome)</p>
	<p>FAIRINGS & STREAMLINING KITS</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>All kits consist of: • 10 mil mylar base • 1.9 rip stop spar pocket sewn with black dacron thread, and covered with 3.8 oz. dacron of your choice • Stock sizes and custom lengths are available to meet your needs • Webbing attachment points on top of all upright fairings • Telescoping two-piece sections for downtubes. Please state dimensions when ordering.</p>	<p>Price: Kingpost — \$15.75 Crosstube — \$52.50 Downtube — \$23.50 (sliding) (through dealers only)</p>
	<p>TYMON DOWNTUBE FIXTURE</p> <p>Tymon Corp. P.O. Box 2118 Florence, AL 35630 205/764-6161</p>	<p>The Tymon™ Downtube Fixture (for exact hole drilling of downtube parts) is made of 2024-T4 aluminum for long life and accurate reproduction. Satisfaction guaranteed on workmanship and material. Comes in complete kit form for 1" or 1 1/4" tubing.</p>	<p>Price: \$39.95</p>


BUYER'S GUIDE

	<p>ALUMINUM TUBING</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>This fine 6061-T6 seamless drawn aluminum tubing is available in either an unanodized (mill finish) or a Bright Dip, Pewter Blue, or Gold anodized finish. NOTE: Satin Finish is now available in 1" X .058, 1 1/4" X .058, 1 1/2" X .058, and 2" X .058.</p>	<p>Price: Varies with size and quantity — write for complete parts catalog to determine aluminum tubing prices.</p>
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	<p>DACRON SAILCLOTH</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>Howe and Bainbridge stabilized Dacron sailcloths are all deepset silicone, water repellent treated. They were designed exclusively to ensure the ultimate in dimensional stability. Through the use of new multi-ton hydraulic heatsetting methods, their stability is far beyond anything yet developed for ultralight or hang glider type aircraft.</p> <p>Available in White (#30-213), Solid Colors (#30-214, and specify color), and "Spectrum" — Rainbow (#30-215), Pennant (#30-216), or Sundance (30-217).</p>	<p>Price: White — \$5.40/yd. Colors — \$6.10/yd.</p>
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	<p>INSTABUSHES</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>The Standard of the Industry. Easy to install, no flaring tool needed. Instabushes can be installed in your tubing with just two blocks of wood. Four sizes available, using common "cap," usable for either 5/16" or 1/4" bolts. Can also "bush on" saddles. For tubing sizes 1 1/2", 1 1/4", 1 1/8", and 1 1/2".</p>	<p>Price: 1-99 pcs — \$2.00 ea. 100 pcs — \$100.00</p>
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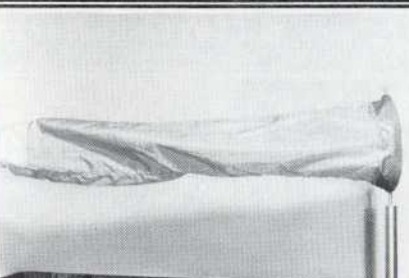
TRAINING AIDS

	<p>TRAINING WHEELS CONTROL BAR PADS</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>Gene Blythe demonstrates UP control bar pads and UP training wheels (made to fit 1 1/4" control bar tubes.)</p>	<p>Price: Wheels — \$30.00 (set) Pads — \$6.95 (set) (through dealers only)</p>
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	<p>DELTA WING TRAINING WHEELS</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>A very important accessory for every school! Smoother landings... prevents injuries to hands... no more sudden stops with these high impact, multi-directional long lasting urethane landing gear with nylon bearings. Available in all control bar sizes (1" & 1 1/4"). An inexpensive, professional aid to clean, classy landings and more fun in flying. Less chance of damaging your glider.</p>	<p>Price: \$33.00 (set)</p>
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	<p>WINDSOCK</p> <p>Hawk Airsports P.O. Box 9056 Knoxville, TN 37920 615/573-9593</p>	<p>This fully portable Windsok is ideal for clubs, schools, or just plain flying. Made of 1.5 oz. ripstop nylon, hot cut and double stitched at all stress areas. A durable polyethylene hoop and removable stiffener strut insure quick inflation in the lightest breezes. The 12 foot, 3 section aluminum pole with stakes and quick-disconnect guylines fits into its own stuffsack, as does the sock. 5'4" long with 11" throat; available in both solid and stripe patterns; larger models available on request.</p>	<p>Price: \$59.95 (stock colors) \$69.95 (custom colors) Colors: White, red, orange, gold, light blue, dark blue, and black.</p>
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	<p>WINDSOCK</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>Windsok features: • Highly visible signal orange ripstop nylon • 48" X 18" overall dimensions • Cable supported leading edge • 4 point polypropylene suspension • Available in one size only.</p>	<p>Price: \$14.95 (through dealers only)</p>
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	<p>WINDSOCK</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>LEAF's Nylon Windsok is made to be set up and taken down each day. It was designed to be portable and easy to assemble. Comes complete with its own pole (specify #34-257).</p> <p>LEAF's Dacron Windsok was designed and engineered to be left out in the weather on a permanent basis. The durable dacron will last for years. Comes complete with pole. (specify #34-258). Also available without pole (Nylon #34-259 or Dacron #34-259A).</p>	<p>Price: 34-257 — \$36.50 34-258 — \$42.50 34-259 — \$20.00 34-259A — \$22.00</p>
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CLOTHING







	<p>WILLS WING BELTS</p> <p>Wills Wing 1208-H E. Walnut St. Santa Ana, CA 92701 714/547-1344</p>	<p>The ultimate in practicality, a Wills Wing velcro belt keeps your pants on with a touch of class. Excellent finishing and an embroidered patch top off one of the most useful simple things you can own.</p> <p>Available in black, red, or blue.</p>	<p>Price: \$5.00 (through dealers only)</p>
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	<p>UP CLOTHING ACCESSORIES</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>Goodies from Ultralight Products to satisfy UP owners and other soaring enthusiasts.</p>	<p>Price: Shirt — \$12.50 Hat — \$9.00 Belt — \$3.00 (specify waist measurements)</p>
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	<p>FLIGHT SUIT</p> <p>Wills Wing 1208-H E. Walnut St. Santa Ana, CA 92701 714/547-1344</p>	<p>The new Wills Wing Flight Suit was designed to meet the needs of the hang glider/ultralight pilot with style... there are pockets even on the back of the legs for in-flight glove access. Custom sizing, colors, and side stripes are included in the purchase price.</p> <p>See ad, page 13</p>	<p>Price: \$125.00 (through dealers only)</p>
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	<p>CAPS 'N JACKETS</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Fresh, confident, strong... you are graceful in flight and you are noticed on the ground wearing a team jacket and/or hat from Delta Wing.</p>	<p>Price: Jacket — \$40.00 Hat — \$6.50</p>
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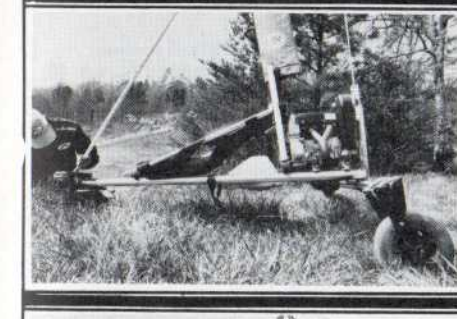

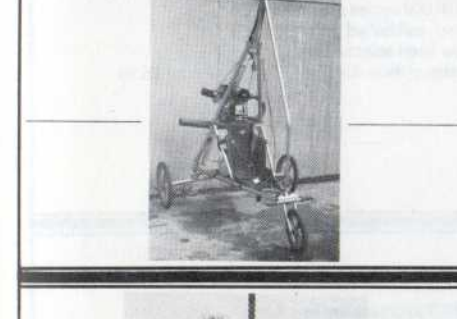
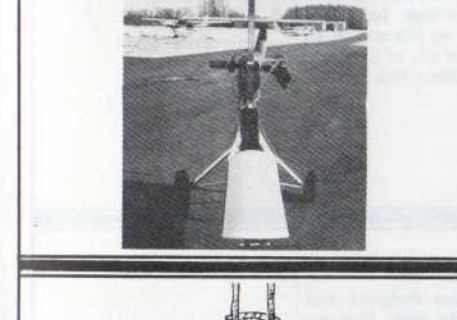
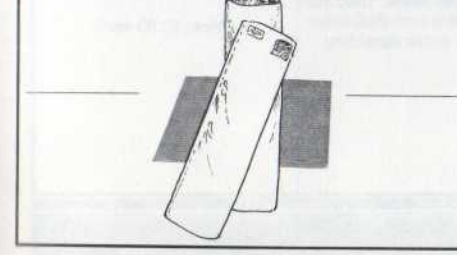
BUYER'S GUIDE







	<p>FINGER FAIRINGS</p> <p>The Airworks 3900 Van Buren NE Albuquerque, NM 87110 505/884-6851</p>	<p>A quality bar mitt providing exceptional warmth plus instant bare hand dexterity in flight. Convenience, comfort, and durability have been demonstrated during more than 1½ years of testing, use, and abuse. Constructed of ¼" neoprene, nylon bonded inside and out. Symmetric design cannot be improperly installed. Slide on bar easily. Room for liner if needed. One piece unit.</p>	<p>Price: \$32.50 Sizes: Small, Medium, Large Colors: Red and black</p>
	<p>HAND FAIRINGS</p> <p>South Coast Air Products 3875 Telegraph Rd. Ste. A-176 Ventura, CA 93003</p>	<p>Hand Fairings are the best control bar mitt available! Over 350 pair sold. Made of nylon-bonded neoprene, glued and sewn into a one piece, low drag unit that insulates your hand from the bar and the atmosphere. One size fits all. Available through most dealers.</p>	<p>Price: \$21.95 postpaid Colors: Blue or black</p>
	<p>PILOT SUNGLASSES</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>Manufactured by Brevete of France. Frame and lenses feature: • Rugged and durable construction • Provides optimum high wind facial gripping • Vinyl carrying case • One size only.</p>	<p>Price: \$21.95 (through dealers only)</p>
	<p>T-SHIRT & CAP</p> <p>Pacific Windcraft P.O. Box 4384 Salinas, CA 93912 408/422-2299</p>	<p>"Man with a VISION" shirt — multi color, custom airbrushed. 50/50 poly/cotton. "The VISION — A Labor of Love" shirt — available in red, navy, and yellow. 100% cotton. Pacific Windcap — comfortable foam-lined, adjustable band. Snazzy black, with sewn-on black/gold Pacific Windcraft emblem.</p>	<p>Price: see dealer for prices</p>
	<p>UP 50 MILE X-C SHIRT</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>As a means of validating those pilots seeking the rewarding experience of cross country flight in a hang glider, UP is offering their 50 Mile Shirt to any pilot flying a UP glider 50 miles or more. This is not just a T-shirt, but a very nice heavy-duty cotton 'rugby style' knitted shirt with gold embroidery. See your local UP dealer for the application form, and UP will send you one free along with their thanks for furthering the sport.</p>	<p>Price: FREE with 50 Mile flight in a UP glider</p>
	<p>THERMAL SEEKER SUNGLASSES</p> <p>Ultralite Products P.O. Box 659 Temecula, CA 92390 714/676-5652</p>	<p>Worn by action sports enthusiasts around the world, these unique new sunglasses with their wrap-around design are ideal for all sports from hang gliding to skiing to boardsailing. These sunglasses are polarized for maximum visibility, and with their contoured lines fit very closely to your face for good wind protection. A colored vinyl case is included with each pair.</p>	<p>Price: \$25.00</p>

BUYER'S GUIDE

	<p>HAND PAINTED SHIRTS</p> <p>Sky Gear Gifts (@ Crystal Air Sport Motel) 4328 Cummings Hwy. Chattanooga, TN 37409 615/821-2546</p>	<p>The State-of-the-Art in hang glider clothing is hand painted (airbrushed) shirts available in many designs, sizes, and shirt types from Sky Gear Gifts. Select one of the beautiful choices; even your non-flying friends will be most impressed. Short sleeve, Women's long sleeve, and Men's thermal wear are among the choices. When you are in the Chattanooga flying area, stop by and visit Shari's well stocked gift shop located at the famous Crystal Air Sport Motel — where the flyers stay!</p>	<p>Prices: Short sleeve — \$21.95 Women's long sleeve \$23.95 Men's thermal — \$27.95</p>
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TRIKE UNITS

	<p>LOW RIDER TRIKE</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Get laid back in a Delta Wing Low Rider Trike. Climb rate 800-1100 FPM. Engine and tuned exhaust are situated low on the frame. Noise level is reduced and handling is improved. Four quick pins for set-up or take-down. 34 HP Fuji Robin twin cylinder engine produces 180 lbs. of thrust (Blackhawk prop) or 220 lbs. (Delta Wing "Silver Wing" prop). Get high under a cloud street and soar to places you have never soared before!</p>	<p>Price: Consult factory or dealer</p>
	<p>LEAF TRIKE</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>LEAF's completely new design allows you to transform your hang glider into one of the hottest cross country ultralights anywhere. Takes just minutes with the use of tools. Features include: • Cuyuna 430D engine • 2:1 Reduction drive • Foot throttle • Firm seat with back pack • Strong fiberglass axle • 20" main "Tuff" wheels • Tachometer • Airspeed indicator.</p>	<p>Price: \$2,495.00 (standard) \$2,795.00 (with reduction)</p>
	<p>ATV TRIKE</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>The ATV Trike is constructed with AN bolts, aircraft quality tubing, brackets, and pilot support. The ATV is rapidly becoming the hang gliding pilot's escape from weather. It is adaptable to many 1980 or later HGMA certified wings. Features include: • Kawasaki 440A engine • Blue anodized tubing • Single seat only (Two seater available to dealers, separate pricing and purchase arrangements.).</p>	<p>Price: \$2,300.00 (through dealers only)</p>
	<p>WAT TRIKE</p> <p>Wolfe Aviation Co. P.O. Box 59 Elyria, OH 44036</p>	<p>The most advanced accessory power unit for hang gliders. Features include: • Monopole construction • Streamlined pod • Folds down to 84" X 27" X 40" in less than five minutes. Send for information package, \$2.00. Dealers inquire on company stationery.</p>	<p>Price: Dependent on options, consult factory. Starts under \$2,000.00</p>
	<p>ATV ACCESSORIES</p> <p>Flight Designs P.O. Box 1503 Salinas, CA 93902 408/758-6896</p>	<p>Flight Designs manufactures a full line of accessories available for the ATV Trike and many other ultralights.</p>	<p>Price: Nose wheel brakes — \$50 • Engine Cover — \$38.50 • Prop cover — \$27.95 (sizes available) • Strobe — \$230 • Quad gauge — \$250.00 • CHT gauge — \$19.95 • Electric start — \$207.00</p>

	<p>AOLI, COMET CLONES & POD PEOPLE</p> <p>Rick Masters P.O. Box 3094 Shell Beach, CA 93449 805/773-5935</p>	<p>The 1981 Cross Country Hang Gliding Competitions in the Owens Valley, ©1982 Rick Masters.</p> <p>Awarded the 1982 Gray Prize for "Best Media Representation of Hang Gliding." Rich Pfeiffer says, "Probably the best meet in the history of Hang Gliding." Free poster on request. 60 minutes.</p>	<p>Price: \$64.95 postpaid (foreign/PAL, add \$5) VHS or Beta</p>
	<p>THE SKY BLUE MOVIE</p> <p>Rick Masters P.O. Box 3094 Shell Beach, CA 93449 805/773-5935</p>	<p>The Quest for True Flight. NEW for 1983! Follow the extraordinary evolution of hang gliding from the first hang gliding meet to the 1982 X-C Classic. See the quest for the ultimate ultralight in the First Ultralight Soaring Trials in the Owens Valley. Dedicated to George Worthington. 100 minutes.</p>	<p>Price: \$74.95 postpaid (foreign/PAL, add \$5) VHS or Beta</p>
	<p>MANNED KITING</p> <p>Para Publishing P.O. Box 4232-BG Santa Barbara, CA 93103 805/968-7277</p>	<p>After a second revised printing, over 15,000 copies are in print. Selected by the USHGA for sales to its members. "Not just a training manual, but an encyclopedia of reference material," <i>Hang Gliding</i> magazine.</p>	<p>Price: \$3.95</p>
	<p>HANG GLIDING, The Basic Handbook of Ultralight Flying</p> <p>Para Publishing P.O. Box 4232-BG Santa Barbara, CA 93103 805/968-7277</p>	<p>After ten revised printings, over 130,000 copies are in print. It has been translated and published in a German language edition, and has been selected by the Library of Congress for transcription for the blind.</p>	<p>Price: \$5.95</p>
	<p>HANG GLIDING MANUAL with Log</p> <p>Para Publishing P.O. Box 4232-BG Santa Barbara, CA 93103 805/968-7277</p>	<p>After six revised printings, over 55,700 copies are in print. A Russian language version has been published in the Soviet Union by Konstantin K. Kobizev. "The least expensive of any of the basic flight manuals on the market," <i>Glider Rider</i>.</p>	<p>Price: \$1.50</p>
	<p>SPONTANEOUS FLIGHT POSTER</p> <p>Leading Edge Air Foils 331 South 14th St. Colorado Springs, CO 80904 303/632-4959</p>	<p>These high quality posters were designed and produced exclusively for hang glider pilots. They are printed on 100 pound cover stock in four (full) color and varnished as a fifth color for extra durability.</p>	<p>Price: \$2.00 each</p>

	<p>FILMS & VIDEO TAPES</p> <p>Delta Wing P.O. Box 483 Van Nuys, CA 91408 213/787-6600</p>	<p>Exciting tapes in Beta and VHS formats: • Three Mile High — Owens Valley • Phoenix Country — Around the world • Winning at Hang Gliding — Grandfather Mtn • Ultralight Parachute Deployment — Jim Handbury • Birdman Rally — Hilarious — Japan • Phoenix Country I — Early Towing — Cypress Gardens • Masters of Hang Gliding — Grandfather Mtn</p>	<p>Price: Various, consult Delta Wing</p>
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DIRECTORY

READER: This source listing is provided by *Whole Air* and all participating dealers. It will provide you with a geographically organized listing (by time zone, north or south) of reliable businesses with which to deal, and from whom everything from lessons to equipment can be obtained.

NORTH EASTERN

ECO FLIGHT HANG GLIDERS & MICHIGAN MOTOR-GLIDERS

493 Lake Street
Benzonia MI 49616
616/882-5070

Visit our Frankfort area shop in Michigan's hottest soaring area. USHGA and FAA Certified Instruction. Wills Wing, UP, Flight Designs, Sensor, Pterodactyl, Manta, Windsurfer represented.

AERIAL TECHNIQUES

Route 209
Ellenville, NY 12428
914/647-3344

Come visit Ellenville. Learn to fly at our new training facility or challenge the mountain with your thermalling and X-C skills. Complete inventory of gliders, accessories, and replacement parts. Quicksilver ultralight sales and instruction. Open all year.

SPORT FLIGHT

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

We're the pros in the mid-Atlantic area. Representing the most major brands. Complete line of accessories. Repairs. Beginner through Advanced foot launched.

SOUTHEAST MICHIGAN HANG GLIDERS

24851 Murray Drive
Mt. Clemens, MI 48045
313/791-0614

Dealer for: UP, Delta Wing, SoarMaster and the incredible Eagle. Tow instruction on the Yarnall Sky Hook. New SoarMaster Trike Gear in stock.

CONNECTICUT COSMIC AVIATION

14 Terp Road
East Hampton, CT 06424
203/267-8980

USHGA Certified Instruction. Dealers for Wills Wing and UP. Ask for Bart.

AIRWISE, INC.

15 Long Ridge Road
West Redding, CT 06896
203/938-9546

Stormville (NY); 919/226-6712
Hang gliding equipment by UP, Flight Designs, Manta, Pacific Windcraft, Delta Wing, Moyes. Ultralight line: FlightStar, Ascender, Mitchell A-10, Kasperwing, FoxBat, Mirage and Phantom. Quality service, certified instruction.

SWEET SKY, INC ULTRALIGHTS AND HANG GLIDERS

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CHATTANOOGA, TENN. — One top news story breaking after our "Industry News" pages were jammed, was the spectacular tumble/fall involving national 3rd ranked competition pilot **Jeff Burnett**. US Team member Burnett miraculously survived a fall from 1000 feet following a launch late Monday, April 4th. Jeff flew from popular Tater Hill near Boone, NC. After a crash that spectators believed had surely killed him, Burnett suffered two broken arms but is otherwise in good shape. He is a five year veteran **Grandfather Mountain** exhibition pilot and was once again scheduled to begin work on May 1st when Grandfather's season officially opens. But his injuries will postpone his start, and he will likely miss the World Championships in Tegelberg (see below, this column). Jeff was doing voluntary aerobatic spins a thousand feet above Tater's landing zone while flying the Bennett Streak he plans to use later this season. Fortunately, for accurate reporting, Burnett's accident was witnessed from the ground by Bob Crowell, another experienced Grandfather pilot (duration record holder who himself suffered a serious accident about three years ago. Crowell reports, "I was watching closely as Jeff was doing spins, and suddenly the glider went into a tail slide and then a forward tumble. The miracle that saved his life came when the glider came out of the tumble 150 feet above the ground, and from there on, it was in a series of high banked turns until it collided with the ground." He theorized, "Either Jeff was unconscious or the glider was seriously damaged, because he should have been able to fly it when it pulled out of the tumble." Other witnesses saw Burnett's glider bag cover fly out into the air, as he apparently opened his ballast container mistakenly while attempting to deploy his parachute. Later in the hospital, Jeff drew a blank about all that happened after his tumbling began. The following day, he was released from the Watauga Hospital to begin his recovery. While we're sad to hear of Jeff's injuries, we're real happy they were not worse. Jeff scored more competition points in 1982 than any other American pilot, and captained last year's American Cup Team in England. He will be sorely missed in Tegelberg if his injuries cause him to miss the World Meet. A word to the wise once again goes out with regard to aerobatics. They are **NOT** for everyone, and while it's very possible to do them safely in today's stronger craft, even an expert can do them incorrectly some times and potentially have a serious problem. But of greater importance is the need to be able to successfully deploy your emergency chute. We strongly recommend practicing chute deployment. Do it somewhere soon! Since we're thinking of Jeff and the World Meet, it will do to give some information on **Tegelberg**. The Fourth F.A.I. international contest which alternates years (the last in Japan, 1981) will take place in West Germany on June 2-19. We received some information on the site from **Otto Hofstetter**, Captain of the Swiss National Hang Gliding Team, and a competition pilot of 10 years. Otto writes, "Certainly Tegelberg (1720 meters or 5645 feet above sea level) is Germany's most beautiful flying site, and for that matter, one of Europe's finest. It offers unmatched scenic beauty, and convenience combined with excellent thermalling. The mountain itself is a massive granite outcrop covered with pine forests where ever the slopes allow. Flying along its cliffs, one soars over medieval castles, beautiful meadows and lakes, making for a wonderfully romantic setting for the 1983 World Hang Gliding Championships. The cableway to the top (800 meters or 2625 feet) is run by especially friendly people who themselves are enthusiastic hang gliding fans. The huge cable car provides pilots with a super-convenient way to get to launch, with the landing field just next to it in the valley below. Launching from ramps facing north and northwest, pilots have made over 2000 meter (6560 foot) altitude gains and have flown distances of over 100 kilometers (62 miles) on a regular basis. Probably the greatest convenience is that X-C pilots are never far from a telephone upon landing." We thank Otto for that insight, and take this chance to wish "our guys" best of luck, and a enjoyable visit to beautiful Germany. On a note of more concern, **USHGA President, Dick Heckman** called to tell us of an incident where a hang glider pilot (un-named just now) got crossed up with the **FAA**, in an encounter which we believe represents the first hang glider "test" of **F.A.R. Part 103**. The pilot in question was cited by an FAA man for flying tandem at San Diego's Torrey Pines. It seemed the intrepid lawman had spent some time observing soaring at Torrey

as he believed altitude gains of over 1500 above were happening which apparently would place pilots of such craft in violation of other airspace. Conditions evidently did not allow these kind of gains, however, and perhaps just to save face for all the futile effort, the G-man put the pinch on a tandem flight which occurred during the same time frame. It is illegal gang. While many of us have done so safely in the past, and while the odds of getting caught are quite remote, it *can* happen. Heckman's message was primarily to inform us that the **FAA** (Washington DC) is reportedly reacting very favorably to **USHGA's** proposal for a blanket waiver to permit tandem flying. Given that pilots follow the established **USHGA** guidelines, we may once again be legally able to take to the air in duets. Two rated pilots are specified, the lead flyer to hold a valid **Hang III** or **IV** while his "passenger" should be a minimum of **Hang I**. In the above stated case, the lead pilot was an advanced pilot, and his passenger had taken some lessons, so, in spirit, **USHGA's** policy was being adhered to, but . . . It is illegal, and more transgressions could upset the move to legitimize the activity thru normal channels. If you don't know what **Part 103** says, a copy can be obtained from **USHGA** at P.O. Box 66306, Los Angeles, CA 90066. One pilot is looking at up to a \$1000 fine. If he was a licensed airplane pilot, he'd likely also be given a suspension of those privileges. Use your heads, pilots! Don't spoil it for the rest of us while legal action is pending to permit tandem flying. Some other calendar items arrived after that section (page 9) was full. On June 24-26 the **Southern Nevada HG Ass'n** is sponsoring the 1983 Jean Ridge Open. It'll offer the competition, a barbecue dinner, camping, and lots of fun and fun flying. Contact Phil Sherrett at 820 Hemlock Circle, Las Vegas, NV 89128, or call 702/363-1140. The **Rocky Mtn HG Ass'n** elected new officers: Steve Sweat, Prez; Rich Annis, V.P.; Al Paige, Sec'y; and Lee Cole, Treas. The **RMHGA** also announced the opening of the 2nd Annual Colorado X-C Competition. Open to all Colo. pilots with a current **Hang III** or better, the task is to fly as far as possible from any point in the state. They've two classes — one for pilots who've flown 20 miles or more, and another for those who've not done so yet. The three longest in each class will be eligible for a cash prize based on a percentage of total entry fees. For more poop, write **RMHGA** at 80 Clear Creek Ln. #15, Golden, CO 80401. Rounding up this edition of "P.L." we figured to pass along some statistics we found interesting. First, from the recent **Sun 'N Fun**, **EAA's** figures are totalled. In the course of the week 25,000 **EAA** members and pilots registered. And 3,642 general admission tickets were sold. They had 5,100 aircraft on the field, and 822 "display" aircraft, an estimated 500 of which were ultralights. The sum body count thru the gates was over 85,000 (many entered more than once obviously — some several times). This number contrasts with nearly 750,000 at the major **Oshkosh** show. Helps give perspective to the giant happening at **Oshkosh** each summer. **Whole Air** has asked all the major hang glider manufacturers by letter if we (**Whole Air** and themselves) could join efforts and promote hang gliding to this vast crowd in Wisconsin. But to-date (1½ months later), not one manufacturer has responded to our letter, even though the proposed cost was under \$100 each. Looks like we're gonna have to push harder if our attempt to organize a "**Hang Gliding Outreach Council**" is to be a success. So let's look at success. A general aviation group called **GAMA** (manufacturers ass'n) has released sales figures for 1982. At the close of the year, annual billings of \$1.99 billion on the delivery of 4,266 aircraft were announced. The dollar figure is high (per unit sold) due to the sale of 259 jets and 458 turboprop aircraft. The whole **GenAv** industry sold only 2871 single engine aircraft. Almost everyone agrees the sale of ultralights is several times that number, but what about hang gliders?! After more than 10 years as an industry, and lots of growing up, we *still* have no sales figures for the industry as a whole. If we had such a statistic, and some idea for new student starts, we could gauge our success at growth much better, and could feel good about any year with "real growth." **Whole Air** is going to try to work out the methods needed to access these numbers, but as with our Outreach Council effort, we are not overly optimistic. Some strong and fiercely independent personalities are at the heart of this great sport. It may take quite some time yet, folks. Got news or opinions? Send 'em to Product Lines, P.O. Box 144, Lookout Mtn, TN 37350.



THE DREAM

AS LONG AS MAN HAS WALKED THE FACE OF THIS EARTH, HE HAS DREAMED OF FLYING. WE LIVE IN A TIME WHEN IT HAS BECOME POSSIBLE, AND IT IS, WITHOUT QUESTION, ONE OF THE MOST OUTSTANDING ACCOMPLISHMENTS OF MAN. TRUE, WE HAVE GONE TO THE MOON AND BEYOND, BUT SOARING FLIGHT IS STILL THE UNIVERSAL SYMBOL OF FREEDOM OF MIND AND SPIRIT. IT'S NO WONDER, THAT THE SPORT OF HANG GLIDING HAS CAPTURED THE INTEREST OF SO MANY.

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