



The
MYSTIC...
is
MAGIC.

MYSTIC SPECIFICATIONS

MYSTIC	155	166	177
Wing span	32.8 ft	34.1 ft	34.8 ft
Aspect ratio	6.72	6.8	6.84
Optimum pilot body weight	100-180 lbs	140-200 lbs	170-240 lbs
Packed length	19.2 ft	19.8 ft	20.4 ft
Optional breakdown length	19.2 ft	12.8 ft	13.4 ft

**Fully
Certified
to
1985
HGMA
Airworthiness
Standards**

DELTA WING GLIDERS • Box 483 • Van Nuys, CA 91408 • 818/787-6600 • Telex 65-1425

HANG GLIDING IN KOREA

**NEW TOWING INFO: AERO TOW PIREPS
TRUCK LAUNCHING, EASY RISER TOWING**

WHOLE AIR

ISSUE NO. 45 (6th in 1985)

OCTOBER 1985 — \$2.50 (Can. \$3.25 / DM 8.00)



Address Correction Requested — Box 98786 Tacoma, WA 98498-0786

Bulk Rate
U.S. Postage
PAID
Tacoma, Wash.
Permit No. 440

**BALL & AFRO
FLIGHT DECK REPORTS**

THIS NEW WING OFFERS THREE IMPORTANT ADVANTAGES

WINNER OF THE 1985 MANUFACTURERS MEET FLOWN BY STU SMITH.
TOP GLIDER ON 1985 U.S. WORLD TEAM FLOWN BY MARK BENNETT.



Pilot: Stu Smith

BETTER HANDLING — With a higher pilot suspension point, the roll pressure is reduced and the rate is faster. The landing flare is also easier and when you pull in your body stays flatter to the wind.

MORE L/D — With a new control bar, king post, rigging and enclosed keel, the reduction in drag is significant. The result is a noticeably better sink rate and L/D especially at higher speeds.

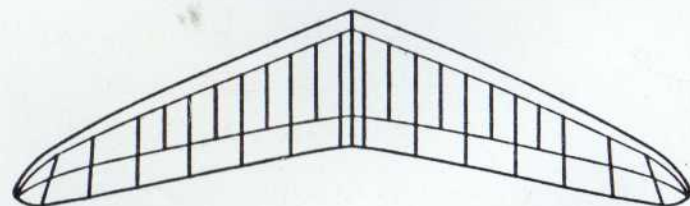
HGMA certified May 23, 1985 and in production.

THE NEW 510-B is the result of ten years of original research and development. The B-model design modifications have produced an outstanding level of performance and refinement.

We offer full factory support for our customers and our dealers. Call us for free information. Dealer inquiries invited.



Bob Trampenau Launching



The Sensor 510B 160 sail and planform.



SEEDWINGS

5760 Thornwood Drive #3 • Santa Barbara, CA 93117
(805) 967-4848

The Gray Prize 1985



for continuous excellent service to the sport
BHGA Magazine



— Bettina Gray

ED CESAR
for Oscar winning film
"UP"



Honorable Mention
Stan Abbott's
"SKY LIGHTS"

1986 Contest now open for International Award

— Join the many illustrious winners including Bill & Steve Moyes; Noel Whittall; Rick Masters; Wallace White of the *NEW YORKER*; William A. Roecker, "*HANG GLIDING*"; Ronald Faux, the London *TIMES*.

Now tell the world via words or video just how great a sport hang gliding is—

Send Entry Candidates (name & item) to: Bettina Gray • Gray Photo & Press • Box 32 • Rancho Santa Fe, CA 92067

The RENO ROCKET REPORT

NEWS TO SAVE PILOT LIVES

Vol. 106, No. 6

Fall 1985



SECOND CHANTZ ENTERS HANG GLIDER FIELD WITH NEW HARNESS-LOCATED ROCKET RECOVERY SYSTEM

TELLURIDE, CO - The first public display of the new product from Second Chantz was demonstrated at the major fly-in here recently. Company owner John Dunham was present to inform interested hang glider pilots about the new system.

The new hang glider system is designed for "mounting" in a state-of-the-art harness, and is designed to deploy in under two seconds during high-G tumble and spin situations, normal to most hang glider structural failure modes. The system allows for either hand deployment when that method seems best, and for rocket deployment, should the pilot be partially incapacitated or unable to deploy manually.

The rocket system has proven itself repeatedly when used on ultralight aircraft, and may represent a real boon to the hang glider community, when released early in 1986.

the American and World markets for hang glider rocket recovery systems (see other stories in this newspaper).

Owner John Dunham goes way back

RENO, NV - The Second Chantz company, founded by John Dunham and based here in Reno, Nevada, is now producing its third generation of ballistic recovery devices for ultralight gliders and airplanes.

These impressive systems that can save the lives of pilots in distressed situations, have undergone hundreds of static tests and more aerial tests to ensure the reliability of the systems. An independent engineering firm has also made unbiased analyses, and Second Chantz seems well designed to do as their name implies, "Give pilots a second chance!"

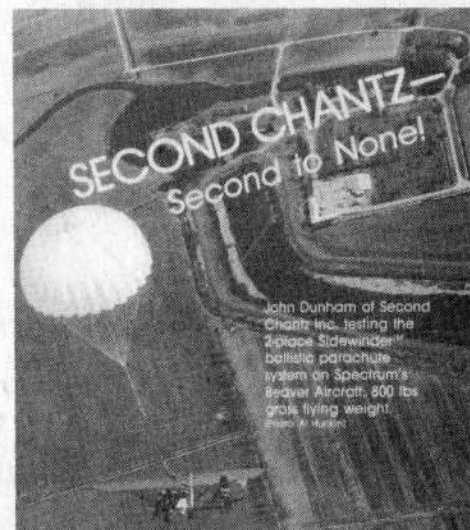
Approvals have been received from the U.S. Department of Explosives, the Bureau of Alcohol, Tobacco, and Firearms, and the Departments of Transportation in the United States, Canada, Australia, Italy, and most of Europe.

Ten actual in-flight deployments both in aerial tests and for emergency use resulted in highly satisfactory use and no system failures whatsoever.

The company is now planning to enter

ROCKET HOTLINE
for information

Call **702/329-9588**



in the hang glider movement, first flying competitively with Larry Newman's former Electra Flyer hang glider company. Now he enters the hang gliding market with intense knowledge of life saving technology in the mid-80's.

For more information, contact Second Chantz at P.O. Box 12671, Reno, NV 89510-2671, or call 702/329-9588.



P.O. Box 12671
Reno, Nevada 89510-2671

WHOLE AIR

ISSUE NO. 45, VOLUME NO. 8, NO. 6, 1985

PILOT'S PERSPECTIVE:

- 18 **OPINION**
Jules Gilpatrick gives us his version of "A Modest Proposal (1985)," submitting that commercial interests in our sport should appeal to kids, not remind existing pilots of problems in the sport.
- 38 **LAST BRITISH LEAGUE**
Our British Correspondent, Noel Whittall, returns with a brief review of a spectacular finish to the 1985 British League.
- 39 **HEDO LIFT YOUR DIVER**
A company in California makes a simple, low-cost package that can ease the back strain lifting modern gliders to overhead garage racks.

FEATURES:

- 20 **HANG GLIDING IN KOREA**
The first of two parts by Michael McCarley gives you some background on Korea as a hang gliding country. Korea will be the site of the 1988 Olympics.
- 22 **KOREAN SITES, PEOPLE, MEETS**
Part II of McCarley's thorough review tells you the where, who, when, and why of hang gliding in the Land of the Morning Calm.
- 26 **BALL & AFRO FLIGHT DECKS**
We review the two leading full-instrument flight decks for you, with a word about total energy compensation.

SPECIAL TOWING UPDATE

- 29 **AEROTOWING THE RISER**
An Ohio group took the Cosmos Aerotug for flex wings and made it work for the venerable Easy Riser, opening the door for aerotowing of rigid wings.
- 30 **PILOT REPORTS ON AEROTOW**
Karl Allmendinger authors the overview of a multi-part new section on aerotowing, which offers towing pilot reports on several popular brands.
- 31 **TEXAS TRUCK TOWING**
They do it their way in Texas, and Jerry Forburger tells us how that is. Read the report before you make up your mind on this radical looking, but efficient method of tow launches.
- 33 **MINI AEROTOW CLINIC**
For those who were not able to attend any of Skylines' aerotow clinics, Allmendinger explains how it feels to learn aerotow techniques.
- 34 **TANDEM AEROTOWS**
Learning the basic hang gliding skills takes on a whole new perspective when you fly tandem, and are aerotowed aloft.

- 35 **FIRST IMPRESSIONS**
Confessions of an ex-fighter jet jockey tell you what one experienced aviator felt when he sampled hang gliding via a tandem aerotow.

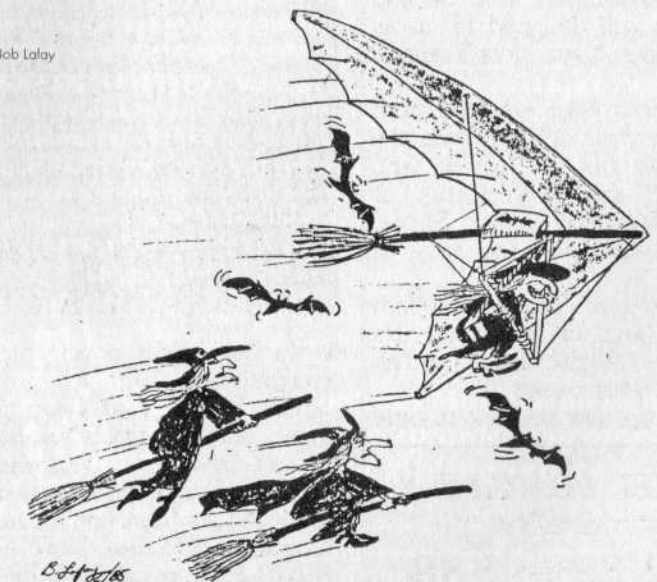
AERO TOPICS:

- 6 **PUBLISHER'S COLUMN**
Editorial—Survey Results & 1986 Plans In-Progress
- 8 **FORUM**
Reader Commentary
- 10 **NEWS**
News from Home and Abroad
- 40 **DIRECTORY**
Where to Buy What You Need
- 41 **CLASSIFIEDS**
For the Bargain Hunter
- 42 **PRODUCT LINES**
Industry Insider News

IN FUTURE ISSUES:

- Flying in Japan
Airwave U.K.
About Judy Leden
Pirep on the Polaris GZ
Flying Haleakala Crater

Cartoon by Bob Lalay



WHOLE AIR Magazine is published bi-monthly by Whole Air Inc., whose mailing address is P.O. Box 98786, Tacoma, WA 98498-0786, and whose executive, editorial, and advertising offices are located at 8415 Steilacoom Blvd. SW, Tacoma, WA 98498; telephone 206/588-1743. ©1985 by Whole Air Inc. All rights reserved. Nothing in whole or in part may be reproduced without written permission of the publisher. Publisher assumes no responsibility for unsolicited material. All photos, artwork, and manuscripts must be accompanied by a stamped, self-addressed return envelope. This publication is purchased with the understanding that information presented is from many sources for which there can be no warranty or responsibility by the publisher as to accuracy, originality, or completeness. It is sold with the understanding that the publisher is not engaged in rendering product endorsements or providing instruction as a substitute for appropriate training by qualified sources. **Change of Address & Subscription Inquiries** — Send to WHOLE AIR, P.O. Box 98786, Tacoma, WA 98498-0786. Expiration on mailing label indicates last issue to be received. Please give six to eight weeks advance notice of address change. Send both old and new address plus mailing label from recent issue, if available. Subscription rate: U.S. and Possessions, one year \$12.00; Mexico and Canada, one year \$16.00. All other countries, one year \$20.00; Air Mail available, write for rates. Single copy price \$2.50. **Back Issues:** Many past issues are still in stock. To order, send \$3.50 plus 95¢ postage to Back Issue Dept., P.O. Box 98786, Tacoma, WA 98498-0786. No orders processed without the proper funds. **All Payments:** U.S. Funds only, please.



Volume 8, No. 6, 1985
ISSUE NO. 45

Editor

Dan Johnson

British Correspondent

Noel Whittall

German Correspondent

Gib Eggen, D.O.

Towing Section

Tom Phillips

Donnell Hewett

Staff Photographers

BJ Schulte

Cliff Whitney

Doug Barnette

Art/Photo Contributors

Danny Utinske

Kim Jong-shik

Gallagher

Dr. Kim

Jerry Forburger

Mike Haley

Bill Dale

Noel Whittall

Dan Johnson

Warren Pucket

Rose Mullins

Michael Ward

Editorial Contributors

Michael McCarley

Jules Gilpatrick

Dan Johnson

Jerry Forburger

Karl Allmendinger

Bill Dale

Noel Whittall

Rose Mullins

Published By

Whole Air, Inc.

Cover Art

Michael Ward

On The Cover:

California artist Michael Ward presents a window into the future of the sport, with a super-tech flying wing of tomorrow.

Publisher's Column



ABE LINCOLN SAID IT some hundred years ago... "You can please some of the people all of the time; all of the people some of the time; but you cannot please all of the people all of the time."

Survey Responses

Had I started this column out with the old "Good news and bad news" line, I might have said that the bad news is that through *Whole Air's* survey in the last issue, I once again discovered that, try as we might, we cannot please all of you all of the time. The diversity of answers from our request that you rate our editorial coverage of, say, ultralight sailplane-type craft ran the entire gamut. Some snarled, "Hate your coverage of these things." Others glowed, "Love them. More, more, more!"

In reality, I expected nothing less. And to those who were good enough to respond, "THANKS a million!" As in every single such past effort (we have done many), the answers and comments provided by you respondents were extremely illuminating. Surveys returned to date numbered 172, just 30 days after the issue was mailed.

Most Valuable Magazine

Our primary question was the last one. We asked, "Which magazine is overall, generally the most valuable to you?" (Responses: *Whole Air*, *Hang Gliding*, or 'Other.')

Of 172 respondents, 6 percent of you had no answer. Another 26 percent said both publications had equal value to them. Of the remaining 116 respondents, 61 percent preferred *Whole Air*, and 39 percent thought *Hang Gliding* was the most valuable to them. All but 6 percent of

those making these choices did in fact receive and read both publications, so it was not a case of loyalty to *Whole Air* which produced the larger group. Additionally, several concerned pilots "voted" for *Hang Gliding* as they wanted to lend their support to a vital yet troubled organization that serves America with insurance and national representation. We applaud that support, however, since the total number of respondents was a reasonable sample group, we are very, very pleased that so many of you feel we are doing the more valuable communication service to the community.

The other areas of responses have not yet been fully tabulated, and since we have some time before our next regular issue (March 1986, with a small "newsletter" in between), we will wait till all survey forms have arrived and then prepare a statistics article of the more interesting trends. Some material will not be presented as it was intended just for our use in better marketing our communications product.

Rating Our Foreign Coverage

One area of especially keen interest to us, however, was the responses regarding our foreign coverage, and our now-imminent plans to begin a foreign section.

Confusion obviously existed. Firstly, we are aware almost no readers know exactly what we have planned for this much-touted "foreign section." (More on this below.) Secondly, the rating system we gave you was deliberately rather vague. We said to rate the editorial coverage questions on a 1-5 scale, with 1 being "lousy," and 5 being "superior." We did not say what 2-4 were to represent in words. Our guess was that 3 would be considered "okay-satisfactory-average," or values to that effect. A 2 response would be less than satisfactory, but better than poor; and a 4 answer would be better than average, but not the pinnacle of quality. You will have to decide if those values were the same as your feelings.

On your rating of the coverage of the foreign scene that we have already begun:

No Answer	6%
1 or Lousy	1%
2 or Fair	2%
3 or Satisfactory	20%
4 or Very Good	42%
5 or Superior	31%

What we judge from this is that you basically are enjoying what we are presenting from around the world, but feel we could do even a better job of it. Most of you do read the foreign material, and most of you find value in it for yourselves. The 73 percent rating of Very Good or Superior makes us feel that we need to continue to strive, but that, yes, we are headed in the right direction.

Comments augmenting the ratings typically said things like, "Best available in the USA; Almost my favorite section;" or "Too d--- much coverage; Have no interest; Don't care."

On your rating of our plans to try a foreign "section:"

No Answer	9%
1 or Lousy	4%
2 or Fair	6%
3 or Satisfactory	16%
4 or Very Good	24%
5 or Superior	40%

From this table, we can see that the overwhelming desire (80% "Satisfactory" or better) is that we do indeed continue along our path to do a foreign section. A 64% rating of Very Good or Superior, and the large plurality for Superior really encourages us. The larger "No Answer" group serves to identify the confusion surrounding what it is that we will be doing.

Comments on this question ran from, "Why?;" and "Will have to wait and see;" or "What for? Not many go there...;" to "Great, it expands the brotherhood;" and "I'd like more (foreign coverage) even if it doubles the cost."

What WILL We Be Doing?

Firstly, it is important that you realize that nothing will be deleted from a present *Whole Air* in order to accommodate the foreign "section." What we will basically be doing is translating selected articles or columns into German, in addition to the English language. We will also be receiving more material from an excellent German agent-kind of our man-on-the-scene. He will coordinate news, stories, flight evaluations, and serve as our contact for the German/European community.

Of course, we will also be selling subscriptions to German, Austrian, and Swiss pilots (plus those from other non-German speaking countries). We will also be featuring advertising from German and other European hang gliding gear suppliers—from gliders to harnesses, instruments and more. They will hope to sell to Americans of course, but have also expressed a strong interest in our becoming a truly international magazine for hang gliding.

On the globe today, English is the language of the world. Because *Whole Air* is the only english-language publication that is not affiliated with an association, we have the best chance to really serve the world community.

That's it, in very simple terms. It is a very, very complex undertaking, and we do not expect to be an overnight success from it. Matter of fact, we expect to struggle mightily with the effort, and figure it will take three years to really penetrate the European and world communities of hang glider pilots.

But we are most definitely encouraged that our loyal American readership (which will remain the largest and most important to us) supports the idea, as the figures above illustrate.

As always, we will accept your constructive criticism with the attitude that it can only help us become a better publication. But we will also accept your encouragement. It will be vital to help us through the difficulty of growing up enough to meet the needs of the worldwide community of our favorite people... hang glider pilots...

Thanks,
DAN JOHNSON

SOAR LOOKOUT

The complete professional flight park.

MOUNTAIN FLYING: Lookout Mountain is the premier hang gliding site in the eastern U.S., scene of world records, the Great Race and the American Cup. Launch from McCarty's Bluff, 1340 feet above the valley floor, and soar the 12-mile ridge. Abundant thermals and smooth ridge lift will give you plenty of airtime. Paved launch ramp and 22-acre landing field make Lookout an excellent Hang II site. Turnaround from landing to launch is a 10-minute drive up a paved road. Our launch faces the prevailing winds, but if it's tailing or crossed there are four major mountain sites within an hour's drive.

INSTRUCTION: Our unrivaled 100-acre training facility has grassy slopes facing all wind directions—we teach every day, year-round, weather permitting. USHGA-certified instructors take you from ground school to mountain flights; most beginners are ready for the mountain after six days' training. And to sharpen your skills, we hold clinics in beginning and advanced soaring, parachute use, flight instruction and competition.

SALES/SERVICE: We sell only the best! **ULTRALIGHT PRODUCTS**—there is no better reputation for superior quality and outstanding performance, with a proven competition record of consistent winners year after year to back them up. **PACIFIC WINDCRAFT**—the new manufacturers (they try harder!) superior quality and excellent performance, with a year's guarantee to back them up. We also represent **AIRWAVES' "Magic III"**, **DELTAWING** and a complete inventory of flight gear, instruments, parts and accessories.

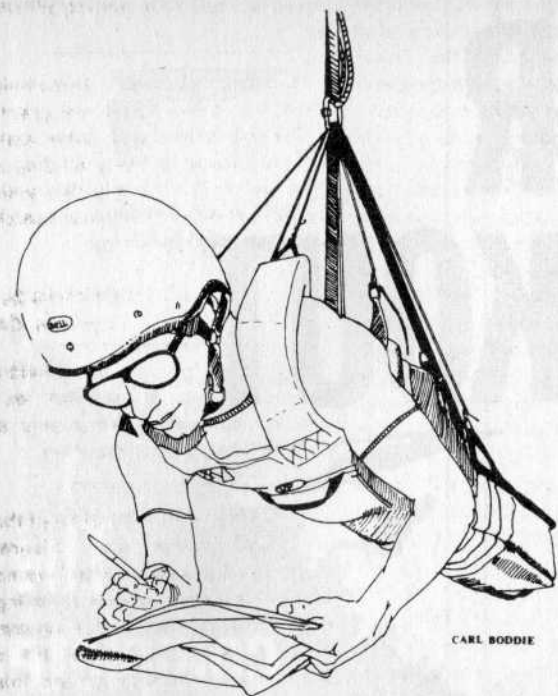
Demos and rentals available on request. Please send \$1 for brochure or call for more information.



LOOKOUT MTN.

Lookout Mountain Flight Park is the complete professional hang gliding center.

Rt. 2, Box 215H
Rising Fawn, GA 30738
(404) 398-3541



CARL BOODIE

FORUM

Airwave Safety Advisory

Dear Editor:

Airwave are offering a free update to all owners of Magic IVs to cure a potential hazard.

Airwave Gliders Limited would like to draw the attention of owners of Magic IVs built before August '85 to a potential problem with the stainless steel pins that hold the upright to the fork fittings. It seems that occasionally this stainless steel pin is binding with the aluminum fork and in a few cases unscrewing. This problem has been tackled by drilling a larger hole in the fork fitting and inserting a delrin plastic bush. There have been NO accidents because of this, but to be absolutely sure ALL 4 fork end fittings will be exchanged, free of charge. This will be done either by the dealer from whom the glider was purchased or directly by Airwave.

The Magic series of gliders have a worldwide reputation for quality, they last well and maintain their second-hand value. The latest in the series, the Magic IV, has broken new ground in hang glider engineering and design. The directors, dealers, and workforce with Airwave are proud of their product and are conscious of being

the best and intend to remain so.

For further information, please contact Ken Brown, US Airwave (206) 622-8132.

KEN BROWN
US Airwave Gliders
Seattle, WA

Not Far Enough

Dear Editor:

In your "Four on the Floor" article on the 1985 Chelan Nationals you reported that three of the four tumbled and failed gliders were Dawns.

Thank God for parachutes! But, it seems to me, through your disclaimers in this article you do not think it strange that out of all the different model gliders taking part in this event that the Dawn was involved in three mishaps!

As a magazine representing the hang gliding community, I feel you provided a valuable service in reporting these facts, but did not go far enough! Is it because these three pilots successfully deployed their chutes that we can just ignore the incidents?

Surely if there would have been three deaths on one model glider in

one event, some action would have been taken to alert the hang gliding community as well as request a recertification of the model.

Do we have to die to red flag a potential design problem with a production glider? Please take up these questions with the certification board and save your readership the reporting of any more tragic glider mishaps that could be avoided through a prudent inquiry.

BOB SCHWARTZ
San Diego, CA

Who's Got An Active Club?

Dear Editor:

Thanks for your interest in our club. We'll sell you a full-page ad for \$10.00 and also put you on our mailing list for one year.

Please note the change of address for our club.

I let my own subscription to *Whole Air* lapse due to a disagreement of philosophies regarding hang gliding. I'm a proponent of the "KISS" school of flying — "Keep It Simple, Stupid!" I feel that the pilot-enclosed, three-axis controlled, rigid-wing type of hang gliders *Whole Air* seemed to be encouraging isolated the pilot from the purity of bird-like flight. If I wanted to fly a sailplane, I would! However, *Whole Air* has lately undergone a tremendous improvement which if continued may cause me to renew my sub.

Keep up the good work!

RODGER HOYT
Rogue River, OR

Dear Editor:

As newsletter editor for the Houston Hang Gliding Association, I was pleased to receive your letter. Our advertising rates are \$15.00 per page. We would be more than happy to include an ad for your fine magazine in our newsletter.

Apart from the fact that most clubs can use more money, the Houston Club has tried to get local vendors of your magazine to include a flyer advertising the presence of our club. So far, no luck. We are very happy that you will include a complete listing of all clubs in a future issue. I feel that this is badly needed in order for the

sport to grow. The clubs of the U.S. are the lifeblood of this sport and always will be.

Thank you for your interest.
Sincerely,

HENRY M. WISE,
Editor, *Wind Writer*,
Houston, TX

Henry, we in turn appreciated your response to the inquiry we sent to all clubs listed in USHGA literature. We found that many—perhaps most—of the clubs on that list are defunct, or have changed addresses. While this was discouraging, we have heard from a number of clubs, though far from all that we are sure exist in America.

We could not agree with you more strongly that clubs represent the "front line" in the fight for a healthier U.S. hang gliding community. Our travels to Europe doubly emphasized this feeling. Thus, our plan to use one 1986 issue to really try and help promote our hard-working clubs in the good ole U. S. of A. Plus, we plan an ad campaign to help ourselves, but in a manner that can also assist clubs.

Those of you representing clubs that HAVE NOT responded to a recent *Whole Air* mailing, PLEASE DO SO. A.S.A.P!

—Ed.

ADVERTISER'S INDEX

Afro Electronics (varios)	25
Airwave Gliders, U.S.	13,19
Ball Variometer	19
Ballistic Recovery System	11
California Power Systems	25
CW Photographics	39
Classified Ads.	15,43(IBC)
Delta Wing Gliders	44(BC)
Demo Light Dreams	40
Flight Research (prone trike)	11
Gray Prize	3
High Energy Sports	35,36
L.E.A.F. (tubing)	39
Litek Variometers	36
Lookout Mtn. Flt. Park	7
Makiki Electronics (varios)	33
Mission Soaring (speed rail)	25
Northern Sun Gliders	39
Patterson (downtube fairings)	25
Second Chantz ('chute)	4
Seedwings	2(IFC)
Sky Life (clothing)	35
Skylines	17,33
Sport Flyer	37
U.S.H.G.A.	13
Whole Air subscription	15,37

Classifieds	41
Directory	40

A Few Words From Our British Counterpart

Dear Editor:

We editors too easily become "godlike" and it was heart-warming to see human failing in your May issue! (Tim refers to mistake by our printers; we hate to make mistakes, so we rarely do. Well, perhaps...) Through the monthly traumas of proofreading, copy fitting, mislaid photographs and printers deadlines, we risk losing touch with the realities of the flying that is going on OUT THERE even as I write. So, I feel I must congratulate you, *Whole Air* really is a magazine which hang glider pilots must find interesting and well balanced. Your enthusiasm for flying shows and so far you've steered clear of the utmost evil: talking down to your readers.

I hope you don't sell TOO many copies in Europe, you might just erode the strong readership *Wings!* has built up over the years.

I'll make a pact with you, I'll take off at least one weekend a month to go flying if you do, too!

Hoping *Wings!* reaches you regularly and that you read it!

TIM WILLIAMS
Cranfield, England

You bet we read *Wings!* Tim. Since it's in our language, but also since it has some really good information, we find it among the best of the hang gliding journals we receive.

We agree that our penetration of the European market will probably not erode your readership; matter of fact, it might even help gain more interest. The exchange of information on what one another's international hang gliding friends are doing, can only help our sport as a whole.

(To show our true interest in *Wings!* we proposed a plan to help distribute *Wings!* in the U.S., on a reciprocal agreement. This same idea will go out to Germany, France, Italy, and Switzerland. We wonder how many readers might be interested in such availability, and will survey the question at a later date.)

—Ed.

An American Pilot in Austria

Dear Editor:

I am a hang gliding pilot and I fly the Alps regularly; am also

American but permanently resident in Austria. I do get involved from time to time in some interesting aspects of the hang gliding world over here, so, since I know you're trying for the market in Europe, I'll keep my eyes open for anything you might be able to use.

I'd like to add that, although I get my *Whole Air* months late by slow boat, I still enjoy even the old news, and I read every inch you put down with great interest. The new layouts are dynamite!

All best wishes,

JUDITH CAMPBELL,
Salzburg, Austria

A "Fair" Response to Our Survey

Dear Editor:

I think your magazine does a good job of addressing areas that *Hang Gliding* does not cover, specifically foreign news and in-depth of competition "event" coverage.

I think your magazine has improved a bunch with the move to Washington and the summer-months publishing schedule. Before, you had important news coming out late and incomplete. Now your news is timely and in some instances more thorough than *Hang Gliding*, e.g. Nationals, World Meet.

I have formed the opinion over the past few years that your "leading edge" coverage of new ideas (specifically in the area of rigid wings, powered soaring craft, and towing) is somewhat irresponsible, in that there is a flavor of *Whole Air* leaping on an unproven bandwagon simply to maintain a progressive image. I guess you're not conservative enough for my tastes in this regard.

I'm glad you're putting the effort into it that you obviously are. We need two magazines in this sport especially since *Hang Gliding* is obligated to devote a fair percentage of its pages to USHGA business.

I wish you success and be assured I will urge all my friends to subscribe to *Whole Air*.

Best regards,

ERIC FAIR,
Santa Ana, CA

Eric, having received your survey and note, we first wish to thank you for the time you put into that.

Thoughtful responses, whether loving or critical, are exactly what we were soliciting. The "nice" letters offer encouragement—always vital in young businesses—and the "negative" ones provide chances for improvement and growth, plus aiding to point out weaknesses that are so close as to be invisible (to us) at times.

On your thoughts about our possible "irresponsibility," we feel that we can provide "leading edge" information, where *Hang Gliding* is limited by its affiliation with USHGA; for example, towing, about which it was felt that USHGA should remain at a "safe" distance. We certainly do not wish to be considered "irresponsible," and feel our coverage of "new" developments is sufficiently accompanied by disclaimers (see our "Texas Truck Towing" feature in this issue). But new ideas can offer great new sources of promise for growth and better flying, and we feel a compulsion to help struggling designers or developers communicate their ideas. For as "Skytong Father" Donnell Hewett has felt... only through the dissemination of the experiences of others can new ideas become established ones (our rephrasing).

But again, Eric, now that we're down off our soapbox, THANKS for the meaningful comments, AND for your strong support!

—Ed.

More Survey-Generated Comments and Ideas

Whole Air is more informative to experienced pilots. It seems a lot more current on developments in the sport than *Hang Gliding*.

Your coverage of ultralights is enough. Stick with hang gliding.

Question 10 (asking which was the more valuable magazine, overall) is unfair.

USHGA and their magazine are indispensable. But *Hang Gliding* cannot afford the coverage you provide. You are a very important source. But USHGA is vital to the sport.

I hate it when both magazines have the same stories.

I like the price of *Whole Air*. Keep using cheap paper!

I will not renew *Hang Gliding* magazine because of the price

increase. I will keep getting *Whole Air*.

Question 10 was extremely difficult to answer. Both are great. I like the layout and color centerfold pictures in *Hang Gliding* a little better, but I really like your new direction and continual search to please your readership.

KEN WILLSON,
Stockton, CA

Your coverage (of the Chelan Nationals) was good, but excessive. Most of us have only a passing interest in competition.

How about a blow-by-blow of the Nationals, rather than several short sidebar pieces? Also, we no longer hear about gliders tumbling since "they all can," but if several of one make do, I think it's a disservice not to disseminate this information, since the odds don't favor one manufacturer over another.

I chose *Whole Air* (as the more valuable magazine) because it is the most current. *Hang Gliding* magazine is slicker, but the news is 2-3 months late.

I'm stoked about your magazine. I feel it is much more well rounded than *Hang Gliding*.

We need the foreign coverage and the foot-launched sailplane coverage is valuable. I also really appreciate and respect a "tell it like it is" attitude in a magazine.

Any periodical which won't name names and give us the straight scoop on contests, protests, DQs, etc., isn't doing anyone a favor, and is doing the sport a disservice by making us all less familiar with competition. *Hang Gliding's* competition coverage is abysmal.

Keep up the good work.

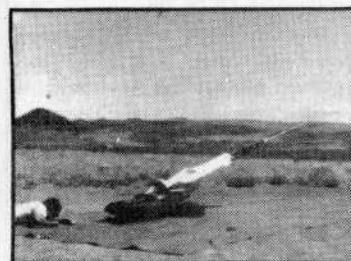
I like to keep up with what's happening in the industry, so "Product Lines" and "Industry News" are excellent.

I think the high cost of USHGA membership keeps some people from subscribing to a second hang gliding publication (and) I don't know what you can do about that.

Keep up the great work.

The only thing I miss in *Whole Air* is the color photos.

Second Chantz Prepares True Ballistic System for Hang Gliders



Second Chantz, Inc., announces the test development of the first practical rocket-deployed parachute for hang gliders. The company is one of the established manufacturers of ballistically deployed parachute systems for ultralight aircraft.

The system has been designed to deploy in under two seconds during high-G tumble and spin situations normal to most hang gliding structural failures.

The rocket system is built into a special state-of-the-art 'Keller-type' mummy type harness. When the pilot needs to deploy the parachute, he or she pulls a ripcord mounted on his chest, which fires a high-powered, six-inch-long, composite-fueled rocket contained in a fire-proof compartment in back of the pilot's feet. The rocket then pulls the parachute out of its container on the belly of the harness. The parachute can also be hand deployed when that method seems desirable to the pilot.

The rocket is built to military aerospace specifications, and has a dual ignition and dual power source for system redundancy. No recoil forces are present, and the company claims the systems has no fire danger to the harness components during deployment.

The entire rocket harness system weighs only one pound more than a similar harness. Effective immediately, pilots can send their present parachute to Second Chantz to be installed into the special rocket harness. Because of the special design necessary to contain the rocket and ignition components, existing cocoon and mummy harness cannot be converted.

"Approximate prices for the total system (harness with rocket and no parachute) will be around \$500.00," company spokesman, John Dunham said. "The total system price with a new FreeFlight Enterprises twenty-gore parachute will be around \$795.00."

The rocket system is still in development stages and is about to enter complete aerial testing, including simulated radio controlled flights with induced structural failures, in both positive and negative modes. A video film of these tests will be available soon.

For more information, contact John Dunham of Second Chantz, Inc., at P. O. Box 12671, Reno, NV 89510, or call 702/329-9588.

Afro Varios to Offer Radio Frequency Shielding



Afro Electronics announced recently that all its hang gliding instruments will have optional Radio Frequency Shielding available. The instruments are distributed in this country by Advanced Air Technology, Afro Electronics USA.

Because more pilots are using FM radios, and because of an increasing number of radio towers, it is necessary to protect hang gliding instrumentation from radio frequency interference. Those with existing equipment, and those considering the purchase of new instruments may wish to include this option.

For more information, contact proprietor Achim Hageman of Afro Electronics USA, at Advanced Air Technology, by writing to 486 Alan Road, Santa Barbara, CA 93109, or call 805/687-3119.

Wills Wing Announces New Service Manual



Wills Wing has announced the completion of a new Owner Service Manual. The new, updated, and expanded owner service manual is for their latest high performance craft, the HP.

The new manual features numerous line drawings detailing the assembly, preflight, and breakdown procedures, as well as an expanded text containing additional information on flying techniques, tuning, and service procedures.

The new manuals are available free of charge to all HP owners. They are being mailed directly to those pilots who have returned their customer response forms (which accompany the purchase of any Wills wing). Pilots who do not receive a manual by mail are asked to contact their dealer, or Wills Wing by calling 714/547-1344. Those pilots requesting a manual will be asked to give their glider serial number.

Arcade-style Hang Gliding Game for Computer

The Maui School of Hang Gliding announced their introduction of Windmaster, a hang gliding computer simulation.

This arcade-style game, designed for use with the Commodore 64 computer, presents what developer Samuel Nottage calls, "...an amazingly accurate simulation of one-on-one, closed course, pylon racing." According to instructions using the now-standard one-on-one format, you must thermal up and avoid various dangers while trying to beat your opponent. The hazards include clouds, dust devils, thermals, sink, and more. Up to twenty flyers may compete using wind/loss match-ups, or a king-of-the-hill style competition. A single flyer option has you fly in a T.E.T. format.

Another offering that might make a perfect Christmas gift, for flying during cold winter months while in the comfort of your home, the Windmaster game program is an interesting possible diversion. Nottage also reports, "Windmaster is close enough to the real thing to be used as a training aid for learning such techniques as speeds-to-fly, thermalling, and competition flying."

For more information, contact Maui School of Hang Gliding, at P. O. Box 1119, Paia, HI 96779, or by calling 805/579-8077.

The Original Ballistic Parachute System



CANISTER STYLE

PROVEN PERFORMANCE

- ★ 7 YEARS MANUFACTURING EXPERIENCE
- ★ MORE THAN 2,000 UNITS SOLD WORLDWIDE
- ★ OVER 200 DEALERS WORLDWIDE
- ★ 18 ~~13~~ EMERGENCY DEPLOYMENTS DOCUMENTED TO DATE

SPECIFICATIONS:

- Under 2 seconds to full opening • 501 sq. ft. canopy rates to 550 lbs. • 613 sq. ft. Two-Place rated to 750 lbs • 16" long x 6" dia. 16 lbs. (Approx. wt.) • Dual mechanical cartridge system for redundancy • Mounts for over 34 UL models • Includes combination nylon and steel cable bridle • Two styles available • Aluminum or Nylon weatherproof container

\$980⁰⁰ INCLUDES COMPLETE INSTRUCTIONS, MOUNTING BRACKETS & HARDWARE

TO ORDER, PLEASE CALL: (612) 731-1311 OR WRITE:

BALLISTIC RECOVERY SYSTEMS, INC.
9242 Hudson Boulevard • Lake Elmo, MN 55042

BRS . . . Designed to Fit Most Makes & Models of Ultralights.

NOMAD



British Patent No. 8317040
U.S. Patent Applied For

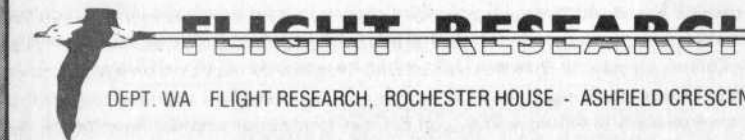
- Low in drag
- Low in weight
- Pitch stable
- Easy ground handling
- Top engineering quality
- Proven in Europe over the past 3 years

Still Some Dealer Zones Available

FLAT LANDERS HAVE NEVER HAD IT SO GOOD!

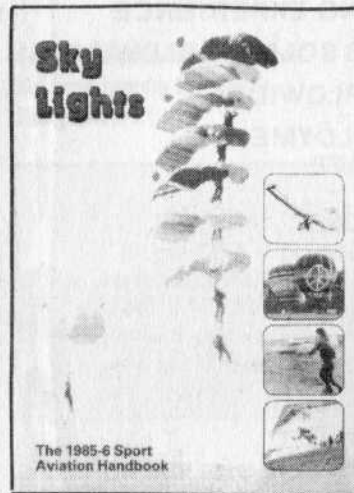
How many times have you driven miles and miles to your nearest site, only to find that the wind is off or too strong. Well now your troubles are over, the Nomad offers the flatland hang gliding pilot the ability to launch from a nearby field, power up and thermal. It makes sense to put gas in your hang glider instead of your car.

Contact Flight Research, or any Flight Research agent and find out how we have made hang gliding easy.



DEPT. WA FLIGHT RESEARCH, ROCHESTER HOUSE - ASHFIELD CRESCENT - ROSS-ON-WYE - HEREFORDSHIRE HR9 5PH - Tel. 0989 - 67678

Gray Prize Awarded



Bettina Gray, founder of the Gray Prize Awards, has announced the awards for 1984 in both National, International, and Honorable Mention categories. The prize is awarded for journalistic excellence in the sport of hang gliding, and will now be expanded to include video presentations.

The coveted prize was awarded to Ed Cesar, star of the Oscar-winning movie, "Up." The fourteen minute movie took seven years of labor to produce, using a wide variety of settings from Alaska snow-covered peaks, to inspiring and desolate Monument Valley. The movie, available in videocassette and 16mm film was produced by Pyramid Film & Video under the direction of Mike Hoover. In the film, Cesar towed on 400 feet of line behind a Bell Jet Ranger helicopter to access the mountain sites, and to create the film erie sequences. A very artistic endeavor, it seems a fitting winner of both awards it garnered. (For those desiring a copy, you may call toll-free 1-800/421-2304; libraries or schools—hang glider clubs?— should call 1-800/523-0118.)

The International Award went to *Wings!* magazine, presented to Tim Williams, Editor, for the BHGA, British Hang Gliding Association. *Wings!* was cited by Gray for continued excellence in the field of communicating hang gliding information. To many pilots, *Wings!* offers some of the best coverage in the worldwide hang gliding community. It is the official organ of the BHGA, and has been edited by Brian Milton, Stan Abbott, and now Tim Williams.

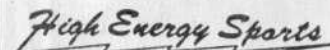
Honorable Mention went to Stan Abbott for his book, "Sky Lights," the 1985-6 Sport Aviation Handbook. It is published by Stan Abbott (Journalism) for Leading Edge Press and Publishing. As stated in its 'Cover Notes,' Abbott says, "Sky Lights aims for the first time to give the would-be aviator a sample of some of the activities there to be tried, interwoven with features of interest to the seasoned flier and valuable reference data."

Whole Air wishes to thank Bettina Gray for her continued dedication to the sport, both through her photographic work, and for her establishment of the Gray Prize, which serves to honor hard-working persons in the sport. Further *Whole Air* wants to extend congratulations to Ed Cesar, *Wings!* and Tim Williams, and to Stan Abbott.

Gray also plans to establish a European Award for 1985, and says "I may award the next Gray Prize to the person who earns the most contact with those not presently in the sport, or to the person who most reduces provincialism in hang gliding. Get as involved on the ground as you are in the air, for all of us who love hang gliding are in the air even when we are on the ground!"

Entries for candidates in the 1985 Gray Prize may be sent to Gray Photo Press, Box 32, Rancho Santa Fe, CA 92067.

High Energy Sport Solicits Accident Reports



In an effort to generate more information about parachute deployments, High Energy Sports, of Santa Ana, California, is offering a free Comfort Pack Parachute Bag to any pilot who has a parachute deployment, regardless of what equipment that pilot uses.

To obtain the free deployment bag, the pilot must first submit an accident report to High Energy Sports at 2236 W. 2nd Street, Santa Ana, CA 92703. The report should include as much of the following information as is appropriate to the deployment:

Date; location; conditions; brief description; name of parachute and container; sequence use for deployment; any previous clinic experience; feelings during deployment; inspection findings after accident; type and age of harness; back up strap; feelings about harness during deployment; harness inspection findings; any difficulties encountered and any suggestions for those difficulties.

High Energy says that all reports will be handled confidentially. According to owners Rich Pfeiffer and Betty Moyer, "The purpose of this offer is to help our company learn more about the effects of unusual stresses on current parachute harness systems, so that we can build the safest systems possible. Please do respond!"

Tina Jorgensen joins Airwave U.S.



Tina Jorgensen, 23, of Puyallup Washington, has joined the U.S. distributor of Airwave products, Airwave U.S., operated by Kenny Brown of Mercer Island, Washington.

Jorgensen will handle two important functions for the company, including accounting and customer service. She will also be fielding phone calls from dealers and other persons whenever Brown is in the field or competing.

Jorgensen has been flying for four years, and is a Hang IV rated pilot whose favorite flying sites include Chelan Butte, site of this year's Nationals, and Dog Mountain, site of the 1976 Nationals. Says Jorgensen of her Airwave relationship, "I love this sport, and working with Airwave will give me the opportunity to communicate with other pilots from around the world. Also, I'll enjoy the chance to gain first hand information on the hang gliding industry, which I will enjoy passing on to interested pilots who contact Airwave U.S." Recently Tina had the chance to meet Rory Carter, director of Airwave U.K., when he was in town to visit Brown.

All interested customers or potential customers can call Jorgensen regarding all matters concerning Airwave's Magic line of gliders, and dealers of Airwave U.S. can contact Tina about accounting matters, by dialing 206/537-2297.

MAGICS Win The World



PO Box 1153 Mercer Island, WA 98040
206/622-8132 Telex #296585
Accounting: 206/537-2297

World Meet Results

- 1st - John Pendry Magic IV
- 3rd - Randy Haney Magic IV
- 4th - Bob Calvert Magic IV
- 6th - Graham Slater Magic IV
- 8th - Michel Carnet Magic IV

U.S. Nationals Sporting Class

- 1st - Gerry Uchtyl Magic III
- 2nd - Rich Sauer Magic III
- 3rd - John Woiwode Magic IV
- 6th - Magic Johnson Magic III



Join these winners by flying the best glider for all conditions, the Magic IV. With undisputed performance, the Magic IV is still one of the most enjoyable gliders to fly in the world.

Nothing flatters a fine performing glider as much as a fine finish. The Magic IV sports the finest hardware and finish available on the market today. Check out a Magic IV at your local dealership or send \$2.00 for a complete info pack; \$3.00 for a dealership info pack.

As well as being certified to British, Swiss and German standards, the Magic line has endured the ultimate test... time. Over 2000 units sold.

Photo by Howard Handy

WE HELP YOU FLY!

We're the United States Hang Gliding Association.

Join us and get *Hang Gliding* magazine, the world's leader in the sport. We cover foot-launch hang gliding exclusively! Beautiful color photography, technical articles, contest results, feature stories, new products, equipment evaluations, how-to articles — all written by the sport's top names — fill our pages.

photo by Bettina Gray



I include my check or money order as follows:

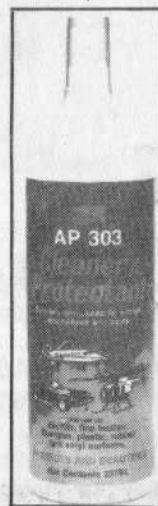
- \$39.00 FULL MEMBER (\$42.00 foreign) — as a full member you receive 12 issue of *Hang Gliding* magazine, pilot liability insurance, USHGA membership benefits.
- \$29.00 SUBSCRIPTION (\$32.00 foreign) for one year.
- \$53.00 SUBSCRIPTION (\$59.00 foreign) for two years.
- \$77.00 SUBSCRIPTION (\$86.00 foreign) for three years.

Name _____ Phone _____
Address _____ Age _____
City _____ State _____ Zip _____

Send check or money order to:
USHGA, Box 66306, Los Angeles, CA 90066

- \$500,000 pilot liability insurance
- Site insurance for chapter clubs
- Local, regional and national competition
- Pilot rating program
- Tandem and ultralight insurance
- and much more!

CPS Offers Free Sample



California Power Systems is offering a free sample of AP303 Dacron Cleaner and Protectant to any flyer wishing to try the product on his or her sail. The product has received extensive testing, and has been shown to be very effective in reducing ultraviolet ray deterioration of Dacron sailcloth.

CPS, a major supplier of parts and components to the ultralight field, is ready to send out a free sample of Ameritech's AP303 product to any requesting such from CPS or one of its authorized distributors. Hang glider pilots may find the product very useful for not only extending the life of their sails, but for general cleaning and renewing of the cloth.

Supplies for the free sampling are limited to the first 2,000 requests, so interested pilots will want to act early. Write to California Power Systems, 790 - 139th Ave. 4, San Leandro, CA 94578, or call during regular (west coast) business hours at 415/357-2403.

CPS feels the product speaks well for itself and is willing to let the user decide for him or herself with this free offer.

AP303, manufactured by Ameritech Industries of Redding, California, provides protection from sunlight or ultraviolet ray degradation to Dacron sailcloth, as well as fine leather, fiberglass, plastic, rubber, and vinyl surfaces. AP303 is an amino-based polymer that penetrates into the material being treated and restores the natural luster and shine to faded sun-baked fabric.

AP 303 is applied in a one-step application. Simply spray on to the fabric and buff lightly to remove dirt and grease. Because AP 303 is absorbed into the surface of the material treated, the tear strength is increased substantially. Treated fabric also repels water and resists detergent washings. No precleaning is necessary. Sailmakers will be glad to know that AP 303 can be removed to make sail repairs. Users not affiliated with the company have reported that Ap 303 is considerably better than Armour-all or other products used for similar reasons.

CPS wishes to state that Ap 303 is not to be confused with Armour-all brand plasticizer, which has no ultraviolet ray block, nor does AP 303 leave a greasy film to attract dust.

AP 303 comes in eight ounce spray bottles that retail for \$3.95; quart bottles for \$12.56; or gallon jugs for \$37.68.

More Hang Gliding Safaris Scheduled



The Santa Barbara Hang Gliding Center has scheduled three more hang gliding Adventure Tours. Destinations include Rio de Janeiro, New Zealand, and Europe, with travels to Switzerland, Austria, Germany, Italy, and Lichtenstein.

The trip to Rio leaves December 27th and will celebrate the New Year holiday in Rio with local pilots. Cost for this tour is \$1,095.00.

Last year's trip to New Zealand resulted in 15 days of flying out of 18 days, claims the Center. New Zealand scenery and the flying on both islands is reported to be "breathtaking." A flight of the "Remarkables," near Queenstown is planned with the ride to launch being provided by helicopter. Charge for this tour is \$1,995.00.

The "European Safari" will encompass five different countries, and Center operator, Achim Hageman reports that an average trip results in 20 hours of airtime, plus up to 3,000 miles of driving. Dates for this tour are May 20-June 10, which is classically an optimum time for European flying. Cost is \$1,795.00.

All tours include round-trip airfare, transportation, accommodations, repair facilities, and leadership by Hageman, who is a certified USHGA instructor. For further details, contact the Santa Barbara Hang Gliding Center, 486 Alan Rd., Santa Barbara, CA 93109, or call 805/687-3119.

Windseeker Design Provides Pilots License With Purchase



Windseeker, Inc., is a company formed by hang gliding pilots who plan to sell the world a hang glider toy wing that really glides well. Operators Carl Hermann and Tim Locke, of Falls Village, Connecticut, have already marketed nearly 30,000 of the toys, and have plans for a production run of 100,000. Sales outlets include the gift shop at NASA.

The two entrepreneurs have gotten write-ups in such prestigious journals as the *New York Times*, and seem to be having a load of fun selling something described by the *Register Citizen* as "...a cross between the old fashioned paper airplane and a hang glider." The two have invested a reported \$35,000 in their project.

The little craft indeed does closely resemble a hang glider, and flies amazingly well. One was sent to *Whole Air* to look closer, and various personnel in the office spent an inordinate amount of time launching it from desk to desk (though it is intended for flight outside).

For more information on an inexpensive item (about \$3) that makes an excellent Christmas gift, contact Windseeker at Sugar Hill, Falls Village, CT 06031, or call 203/824-0656.

WHOLE AIR GIVES YOU THE HANG GLIDING

FREE... Reply Mail or Phone Call



WITH *Whole Air's* next issue we begin our penetration of the huge European market.

Businesses wishing to sell small items can find excellent

response in a classified ad. Individuals with gear to sell will find our 20 words, 2 issues for \$5 offer to be most efficient as we reach the majority of

American pilots. WE PAY the postage or the phone call. See below. Act now!

PAID IN ADVANCE ONLY

Fill out form completely, and send with payment.

PHONE NUMBER AC () _____
 (We must have your telephone number for our computer files.)
 NAME _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP _____
 Please Type or Print Clearly - Help Us Avoid Errors.

MAKE YOUR AD MORE EYE-CATCHING
 Add a logo or photo for \$5 per inch.
 PAY ONCE - 2nd time FREE.

Tear along fold by holding spine.

CLASSIFIED ORDER FORM		Classification Name _____	Total No. of Runs _____
Classification No.	Total \$ Amount		
(1 - \$5)	(2 - \$5)	(3 - \$5)	(4 - \$5)
(5 - \$5)	(6 - \$5)	(7 - \$5)	(8 - \$5)
(9 - \$5)	(10 - \$5)	(11 - \$5)	(12 - \$5)
(13 - \$5)	(14 - \$5)	(15 - \$5)	(16 - \$5)
(17 - \$5)	(18 - \$5)	(19 - \$5)	(20 - \$5)
(21 - \$5.40)	(22 - \$5.80)	(23 - \$6.20)	(24 - \$6.60)
(25 - \$7.00)	(26 - \$7.40)	(27 - \$7.80)	(28 - \$8.20)

Start a 1-Year *Whole Air* subscription for me and bill it on my bank card -- \$8.88.

METHOD OF PAYMENT: Cash or Check MasterCard VISA

Card No. _____ Exp. Date _____

NOTICE: Please check your ad after its first insertion. We will be happy to correct any error called to our attention and rerun the ad without additional charge. Credit on classified errors is limited to a rerun of the corrected ad.

MAIL FORM To: P.O. Box 98786, Tacoma, WA 98498-0786
 (We pay the postage)

- OR...
- ① Fill out form (to prepare your wording)
 - ② Get out your Bankcard
 - ③ Call us Toll-Free at 1-800-426-8538
 - ④ Give us your ad...

This form photocopies well if you wish. Copy both sides for FREE mail.

SALESPERSONS / AREA REPRESENTATIVES

W A N T E D

For 1986, **WHOLE AIR** plans an entire series of "special issues," similar to our very successful Chelan Nationals issue. If you are interested in earning extra money (or furthering your hang gliding business), contact us as soon as possible. We are looking for motivated folks to sell ads to many kinds of businesses. You can earn \$500 or more for part-time work, right

near home (if, of course, you live where we're producing an issue). We are tentatively planning for issues in Canada - Grouse Mtn; the Southeast - Grandfather Mtn; Marina/San Francisco; Sylmar/Southern California. Or you may have a suggestion for another site/event. Send name, interest, ideas, etc., to: 1986, P.O. Box 98786, Tacoma, WA 98498-0786.

Fold No. 1



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 522 TACOMA, WA

POSTAGE WILL BE PAID BY ADDRESSEE

WHOLE AIR

Classified Order Dept.
PO Box 98786
Tacoma, WA 98498-9990



Fold No. 2 (flap over No. 1)

WHOLE AIR

SUBSCRIPTIONS
are a **BEST BUY** right now!
(Rates increasing for 1986 season).

\$888

gets you a full year of **WHOLE AIR**
Get your Bankcard ready and call Toll-Free...

1 (800) 426-8538 In Wash. **(206) 588-1743**
P.O. BOX 98786, TACOMA, WA 98498-0786

Tape closed

Tear along fold by holding spine.



The REVOLUTION CONTINUES...

From the People that Brought Aero-Towing in 1984
Comes the Most Exciting and Affordable Line of Gliders
and Soaring Equipment for 1985.

The ATLAS '85.
The World's Most Popular Glider Ever Built.

SAFETY RECORD?

The most envied one: Immaculate. Over 6,000 Atlases built to date! The Atlas was one of the first gliders to be certificated in Germany and Switzerland.



ATLAS 85
Fully Certified to Stringent
German & Swiss Standards

PERFORMANCE RECORD?

★ World Champion ★ ★ European
Champion ★ ★ French Champion ★ ★
Champion of England, Switzerland,
Italy, Norway, Brazil, Japan, and
Argentina ★

The Atlas has bigger double surface brothers which are more sophisticated and faster, but when it comes to pure sink rate, it often remains "top of the stack." In competition, when sink rate is primary, ATLAS '85 pilots are competitors to watch.



ANXIETY-FREE FLYING

Perhaps the easiest glider to fly currently in the U. S. from the quickest set-up time and easy preflight to light and predictable handling, this ATLAS '85 will treat you to hours and miles of fun.

guaranteed by
SKYLINES ENTERPRISES LTD.
(an American Corporation)

- Guarantees in writing. . . a full spare parts availability for a minimum of three years from the date of purchase!!
- Guarantees. . . USHGA Certified Instruction through its dedicated network of schools and flight centers!!
- Guarantees. . . Immediate delivery after March 1, 1985 (both gliders and parts)!!

...Who Else Offers These Guarantees?

At A Shocking Low Price. . . !!

INTRODUCTORY PRICE --- \$1395

Dealer Inquiries Welcome. Dealer Training and Certification Available.

For further information, please contact Skylines at:
404/398-3433 or 408/422-2781

...We're Bringing Fun And Affordability Back To Hang Gliding. . .



"A Modest Proposal — 1985"

OPINION

"HANG GLIDING HAS a problem."

For the past two years—the last in particular—I've heard this statement from nearly everyone in the sport with "press credentials" of one kind or another. Interestingly enough, the overwhelming majority of those possessing these "credentials" (read: "ready and easy access to print media catering to hang gliding") are people with a heavy commercial interest in the sport. Virtually all the rest are people with an artistic interest who are primarily concerned with the possible demise of one or more publications that have served as a showcase for their particular talent, be it writing, photography, or graphic arts. I fly a lot of sites and I have yet to hear one comment on the hill that hang gliding has a problem except maybe for, "How can I get this turkey to the house thermal before I get too low," or some variant of that theme.

I have been informed on several occasions that the "problem" seen so clearly by the aforementioned interests is really one that is all of our problem, because declining interest in the sport will mean higher prices for equipment and loss of sites which will affect all of us sooner or later. I have looked time and again for even a glint of concern in the eyes of "those about to fly." It wasn't there. The very few times I have heard the problem addressed, it has been in terms of, "Where can I get aircraft aluminum tubing?" ...or "My old lady is one hell of a seamstress. She repaired my sail after the last crash and I know she can make one if she has to!" ...or "Hey, I've bandito'ed sites before and I can bandito them again!"

What I am trying to say is that for most of us out here, the commercial interests are a convenience, but definitely not a necessity, and that includes the printed media generally associated with the sport. Speaking for myself, I look forward with much enthusiasm to my

next flight than I do the next issue of *Diver's Monthly*. For those of us out here who really want to fly, rest assured that we will find a way, so why don't you channel your efforts to distribute ownership of YOUR problem to the rest of us, into something much more productive... like some good, solid, basic marketing analysis, and action.

Some of you may recognize the title of this opinion. It comes from a tongue-in-cheek 19th century monologue which proposed that the solution to the problem of excess children was to eat them. As interesting as that may sound to a few harassed parents, my proposal is a little less sanguine, but nonetheless radical. Why not teach children to fly?

The basis for that proposal comes from basic market analysis. It doesn't take much brilliance to understand that people "wear out," or that their interests change. What this translates into marketing terms is "viable renewal of the market base," which means getting new blood into whatever activity you are trying to sell to, teach to, write to, photograph to or editorialize to... or else face extinction.

Market bases are defined in a number of ways. Sex, social class, economic status, and age, to name a few. Many products have market bases defined by several parameters, but generally one is dominant for each particular product. The dominant one is the one targeted for advertising and attention in low-budget operations, and the two or three most

The Hang Glider Simulator delivers flight to children, too.

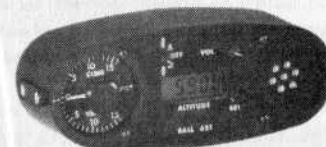
important targeted by more affluent (and often more imaginative) marketers.

Let's look for a moment at the efforts of the commercial interests in sports akin to ours: surfing, windsurfing (free rides on Mother Nature), skiing and water skiing (speed and potential danger). While they all have ancillary parameters unique to themselves, the purveyors of goods and services to these sports all actively appeal (and in the case of surfing, pander) to little kids!

And what is the essence of that psychology? It's not hard to figure out if you think back to your own childhood. Never in the lifespan of human beings is there such a magic combination of the ability to thoroughly enjoy pure sensory delight with a minimum or absence of fear and guilt except in childhood, generally before the age of twelve or thirteen. If you can't remember that then go to any ski hill or beach and observe it. Look at the studied concentration of a six-year-old on a boogie board, facing that "huge" one-foot wave. Look at the purity of the delight in that child's face when he or she conquers that wave, along with the fear and self doubt they might have had before the encounter. Watch a five-year-old on skis (many of whom I have personally observed to ski better than me) falling after hitting a bump at near breakneck speed, only to pick himself up, generally laughing and take off again. These little kids are proving to themselves, based on personal experience (the most powerful learning tool we possess) that there is little to feel frightened or guilty about in pursuing the pleasures of this activity. You see little kids on windsurfers, little kids on surfboards, little kids on skis and waterskis. Why not little kids on hang gliders, proving to themselves that there is nothing to fear in pursuing the wondrously unique sensory and psychological delights our sport has to offer humankind?

I believe the biggest problem for commercial interests in hang gliding is that they are attempting to target a market base (mid-teen and above) that has lost a considerable amount of its ability to try with lack of fear. The fear of falling and fear of height are generally pretty well entrenched in this market base, not

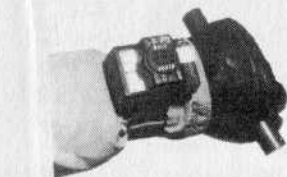
BALL VARIOMETERS INC.
5735 ARAPAHOE AVE., BOULDER, CO 80303 PHONE 303-449-2135



MODEL 651
VARIO/AUDIO/
DIGITAL ALTIMETER
\$495



MODEL 652
VARIO/AUDIO
DIGITAL ALTIMETER/
AIRSPEED \$590



MODEL M20
WRIST VARIO
\$200



BALLCLAMP
\$18



STREAMLINED TUBE
ADAPTER

Available from hang glider manufacturers and dealers

to mention the fact that this base is already claimed by marketers with a long head start on hang gliding interests. You just can't afford to do everything!

By the time an intrepid member of your present marketing base gets up the courage to try it, he or she is facing a formidable array of fears to conquer in addition to learning the basics. The fear of falling only one. There is fear of pain and suffering and fear of embarrassment because of failure. There is also a fairly well developed sense of self-doubt. Lots of things done by little kids are done because they don't yet understand that you can't do what you just did! Most of us in the current market base know too well what we can or can't do. Generally one good scrape or embarrassing crash and a lot of the current base moves on to "safer" activities. Those of us who hang in there are real, hard-core junkies who were driven to conquer all of the aforementioned because of the power of those unique sensory and psychological delights of flying. Unfortunately, there are not enough of us to make hang gliding a paying proposition.

But that can change. Why not a 50-80 square foot simple machine with turkey lines that can be taken off the ground with experienced supervision, kind of a tethered kite? A Glidezilette or a JP (Junior Performance)? C'mon Dense and Airwreck, how about a little kid's book of hang gliding? Can you imagine the media coverage the first 7-10 year old basic hang gliding class would get? Can you translate the wide-eyed enthusiasm of the

photo by Warren Pucket

thousands of 7-10 year olds not in that class into dollar signs as they watch their peers on TV or in the papers? Hey, Leroy, Pork, and Bettina! How about the illustrations in the above children's book. Few things I know of are more colorful than hang gliding. Hey Gil and Dan! How about promotional efforts to establish high school hang gliding teams? They have surfing, windsurfing, skiing, and even waterskiing. Hey all of you manufacturers! The heck with \$5,000 prizes for distance by some supermen on one of your advanced models. You want to continue to eat? How about \$50 for the first 100 foot (distance) flight by a 10-year-old? You diver shop proprietors. How about some thoughtful, well-dressed and presented



MAGIC III & IV AIRWAVE GLIDERS
SALES AND SERVICE

Airwave Gliders USA Dealer Service Centers
P.O. Box 1153, Mercer Island WA 98040. 206/622-8132

S.F. Windsports
3620 Wawona
San Francisco, CA 94116
415/753-8828

The Hang Gliding Center
4206 K. Sorrento Valley Blvd.
San Diego, CA 92121
609/450-9008

Lookout Mtn. Flight Park
Rt. 2 Box 215-H
Rising Fawn, GA 30738
404/398-3541

Aerial Voyages
705 - 90th Place SE
Everett, WA 98204
206/347-3844

Morning Side Flight Park
Rt. 12 RFD No. 2
Claremont, NH 03743
603/542-4416

MAGIC Johnson
2332 Jefferson
Duluth, MN 55812
218/724-2387

Boulder Flight
4110 Riverside Dr.
Boulder, CO 80302
303/444-5455

DEALER INQUIRIES INVITED Accounting: 206/537-2297

Oklahoma Airwave
11325 #D N. May
Oklahoma City, OK 73120

Treasure Valley H.G.
Box 746
Nampa, ID 83653
208/465-5593

Conn. Cosmic Productions
14 Terp Rd.
E. Hampton, CT 06424
703/267-8980

Oregon Airwaves
5454 SW Vacuna
Portland, OR 97214
503/245-2636

North Jersey School of H.G.
606 Moore St.
Hackettstown, NJ 07840
201/852-0211

Philadelphia School of H.G.
3343 Indian Queen Rd.
Philadelphia, PA 19129
215/845-5667

Carolina Airwave
P.O. Box 1011
Grandfather Mtn., NC 28646
704/733-2800

proposals to local Cub, Brownie, Girl, and Boy Scout groups? How about a Hang Gliding Merit Badge?

Get going, for God's sake and let me alone! I got my own problems...!

Like, how do I get this turkey to the house thermal before I get too low!

—JULES GILPATRICK

Jules Gilpatrick is an avid Hang III pilot and has made a decent living from Sales & Marketing for about twenty years. He still doesn't know what he wants to be when he grows up.

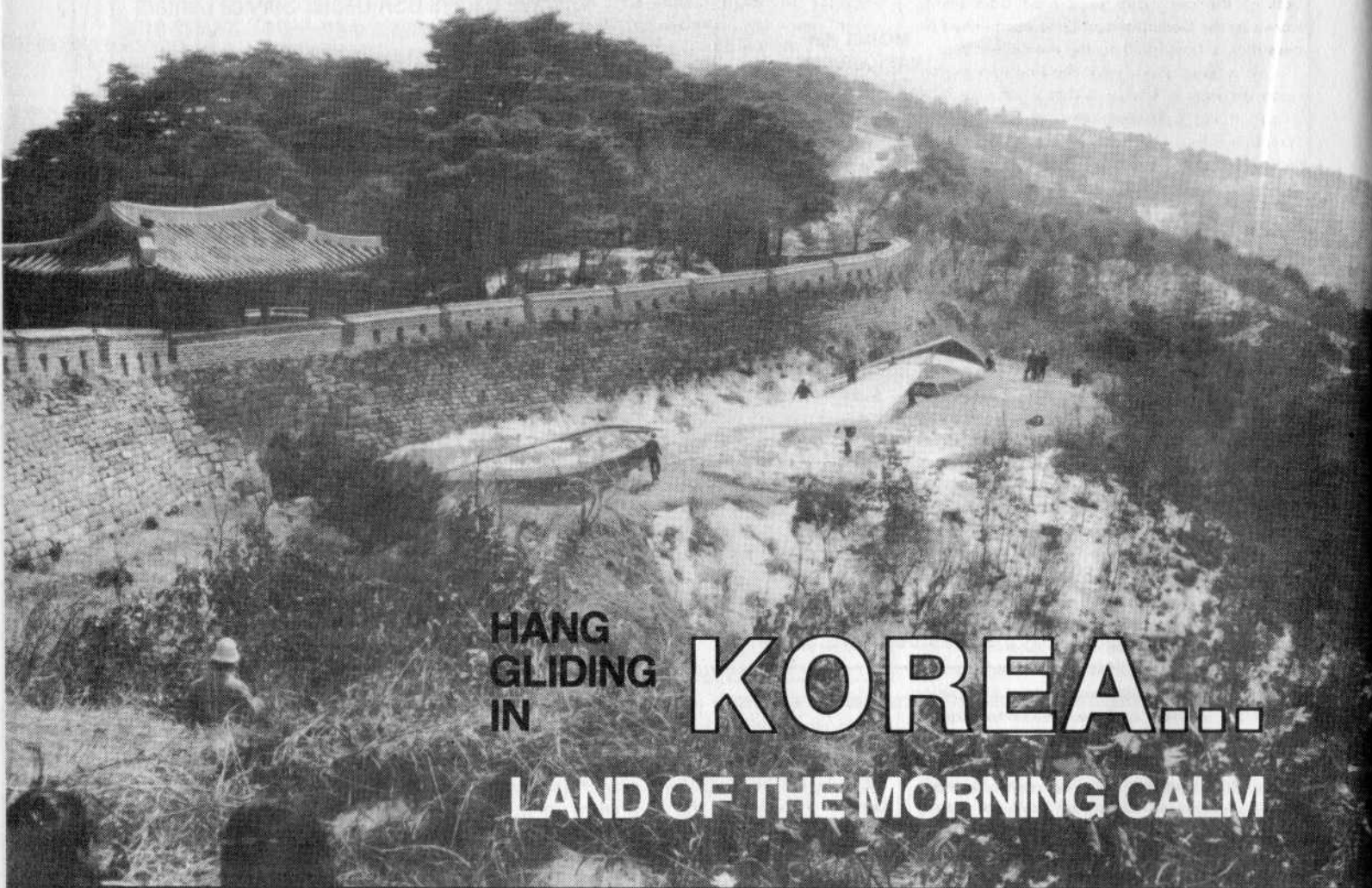
NOTE TO READERS

Gilpatrick's message is presented as part of Whole Air's continuing effort to make our present community of pilots and commercial interests aware of the difficulties besetting our industry. While we realize that Gilpatrick's thoughts do have problems—liability, logistical strains of getting small children on gliders at suitable training sites, parental permission, the lack of child judgement, insufficient safety devices and more—we nevertheless realize that he also has a point, and is entitled to voice it.

Other readers, whether individuals or businesses, are welcome to submit rebuttals or other ideas for consideration by this publication. Not all material will be published, but all ideas will indeed be considered with due respect.

—The Editors
WHOLE AIR • Page 19

HOST COUNTRY FOR THE 1988 OLYMPICS...



HANG
GLIDING
IN

KOREA...

LAND OF THE MORNING CALM

photo by Gallagher

KOREA. IT IS CALLED "Land of the Morning Calm" in the tourist brochures. On a cool October morning shortly after dawn, we were standing just off the expressway where we had stopped to get a cup of coffee. Looking into the distance where the highway curves along the river, through forested valleys defined by rugged mountains, morning clouds still hovering halfway up the slopes, you could feel it... the morning calm.

It was peaceful and quiet. But I knew that 100 miles north in Seoul, where we had left home that morning, the calm had already been punctured by the hustling of a city of almost ten million people gearing up for the day.

M*A*S*H is history. The chaos and destruction of the Korean War is long gone. Today, forty million Korean people stand among the world leaders in producing clothing of every variety, steel, ships, and color televisions. And soon, you will be seeing Korean cars on American highways. Korea's place in the modern world will be firmly established by hosting the 1986 Asian Games and the 1988 Olympics.

But Korea's development into a modern economy is another story. This story is about the hang gliding environment in Korea. That October morning calm was an interlude we enjoy frequently on our way to an outstanding hang gliding site.

The Korean peninsula extends off the continent of Asia, just south of the China/USSR border. The entire peninsula is about 600 miles long and generally less than 200 miles wide. The Republic of Korea occupies the southern half of the peninsula separated from north Korea by the Demilitarized Zone established at cessation of hostilities during the Korean War.

As a hang glider pilot the first impression upon arriving in Korea is that of tremendous hang gliding potential. Almost 80% of the terrain is hills and mountains. In the south and west you find mostly low hills, changing to higher mountains in the north and east. Although generally less than 4,000 feet, the mountains are often rugged and steep, separated by plains and wide river basins.

The climate is temperate, with cold dry winters, and hot humid summers. Spring and fall days are typically beautiful and generate the best hang gliding conditions.

Hang gliding, like Korea's economy, is developing quickly. However, some formidable problems must be overcome by the developing hang gliding community. Among these is the lack of aircraft quality materials for sport aviation. Anxious to fly, pilots have copied foreign-designed gliders and built "home made" models with inferior materials. No commercial manufacturers exist in Korea, and of course therefore, no manufacturing standards stipulate the quality of construction. Nonetheless, the gliders I have seen generally perform well, and I am aware of only one in-flight structural failure. Manufacturing problems are being overcome as quality material becomes available and knowledge is gained through experience and study.

A more serious hazard still exists in the many old "standard" gliders which can be found. And in the apparent lack of safety concern in flying them. The average American pilot would probably find it incredulous that some of these things are actually flown. I have seen sails attached to leading edges with duct tape, hang straps in which I would not do a hang check, severely rusted flying wires, control bars with more curves than Tina Turner in motion, and few parachutes. Most pilots are aware of the need to improve the quality of

equipment and are striving to do so. In fact, high quality harnesses and parachutes are now being produced in Korea.

Several Japanese and a few American gliders are in use. The American pilots have imported U.S.-built gliders with no trouble, other than the maddening frustration of dealing with the bureaucracy at the customs office. (It took twelve hours to clear my glider through customs.) However, we have heard tales of harassment and heavy duties being levied on the Korean pilots when importing foreign gliders. Still, the use of quality-made harnesses, parachutes, and imported certified gliders is increasing.

Pilot training can also be improved. Many competent pilots and some with exceptional skills give lessons. Korea has many clubs throughout the country which offer training programs. However, no standards—such as those established by USHGA—exist for instructors or for pilot proficiency. Progress has been made with the proliferation of books and magazines from the United States and Japan, serving as guides for training.

The lack of good training areas is another problem faced by Korean pilots. I have seen students take their first flight from a 300 foot hill, with consequences you might expect. Finding a good training site has proven almost impossible because of the intensive utilization of land.

The hang gliding clubs have hundreds of members in all the major cities and at many universities. A loosely coordinated national organization is linked with the FAI. The organization has sponsored pilots in each World Competition since 1981.

Transportation for pilots is another challenge. Private automobile ownership is not nearly as common as in the United States, for obvious economic reasons. Gasoline at \$4.00 per gallon and high taxes on vehicle ownership are also discouraging. Typically, a truck is hired to haul the gliders to the site. The pilots then take public transportation, train, or bus.

Getting to launch once you arrive at the mountain usually requires carrying your gear. The absence of roadways is probably one of the most frustrating obstacles we face. Sometimes

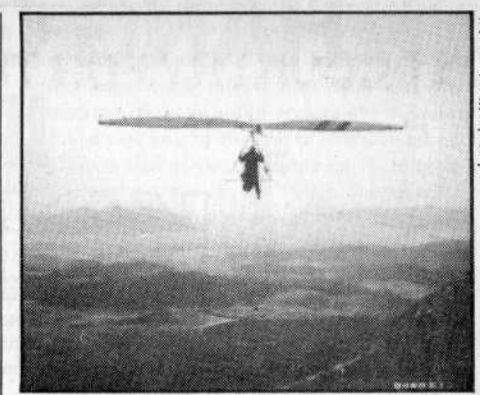


photo by Kim Jong-shik

beginning students or friends are around to assist, and occasionally you can find someone to hire as a porter. Other times it is a one-man operation. (As in the United States, female pilots are a rarity, but certainly a pleasant addition.)

Given all these obstacles, most of the pilots I know rarely get to fly. It takes dedication, and a real commitment, to accumulate airtime in Korea. I would guess less than a dozen flights per year is common, even for top pilots such as those competing in the World Meet.

I seem to have painted a pretty dismal picture here, and that was not my intent. All the Korean pilots deserve a lot of credit for their commitment to the sport. The good news is that some outstanding flying can be had in Korea. The country has coastal sites as well as interior mountain sites. Most of the launches are just under 2,000 feet, from moderate slopes. Landing areas are typically rice paddies, but these should be avoided during the summer growing season.

Ridge soaring is most common, along the ridges from 400 to 3,000 feet long. In spring and fall the barren rice paddies provide thermal generators. Altitude gains of 2,000 to 3,000 feet are common. Lacking a full appreciation for meteorological phenomena, we nonetheless speculate that extraordinary altitude gains may not be possible in Korea due to its geography—a narrow peninsula between two huge bodies of water.

Except for a couple of five to seven miles flights, I am not aware of any cross country successes yet. But the potential is clearly present. Mountain ranges stretch for miles... broad valleys full of active thermal generators... we have observed cloud streets... and wind and weather conditions are supportive. It is a matter of developing the proper sites and someone being around to go for it on a good day.

Korea has typically been off the path of most tourists visiting the Orient, but that is quickly changing. The 1986 Asian Games and the 1988 Summer Olympics will bring hundreds of thousands of visitors to Korea. It is a beautiful country, and a shopping paradise. Best of all, Korea is full of friendly, courteous people who generally, believe it or not, actually like Americans. And lots of opportunities will allow air junkies to get high.

So, if you are planning a trip to the Orient, don't miss Korea, and you might want to pack your glider.

HANG GLIDING IN KOREA

SITES • FLYERS • MEETS

The following account is intended to let the hang gliding community know that hang gliding is alive here in Korea, and to provide a brief introduction to some of the flying sites.

photo by Danny Utinske

I MOVED TO KOREA to accept a job with my poor Uncle (Sam). He is pretty deep in debt these days and I agreed to help manage some of the money he is spending here in Korea. After arriving in Korea, I met several members of a hang gliding club in Seoul who became good friends. With their help I have been able to enjoy some memorable hang gliding experiences. But first I went through a period of seemingly endless frustration and disappointment.

The only site which had provided soaring opportunities to the local pilots was down on the southern coast, near Chinhae, but it was closed off by the military just a few weeks before our scheduled trip to fly at the site. Not a good omen.

A new site, called Toham-san (san is the Korean word for mountain), near the southeastern coastal city of Kyong-ju was discovered. The site was pioneered by one of the leading pilots in Korea, Song Jean Suk. However, my efforts to fly Toham-san, as it turned out, required an unbelievable exercise in perseverance.

The first obstacle to be dealt with was the fact that it is a five-hour drive from Seoul down to Kyong-ju. So flying at that site required planning for a weekend trip. Our first attempt was in July, the rainy season in Korea, and it rained with a vengeance. By Sunday afternoon, eyes strained from staring through rain-streaked windows, boring into clouds trying to find the mountain top, we accepted defeat. To add injury to insult, on the drive home the rack on my old Bronco, built for one glider, but hauling six rain-soaked gliders, collapsed. Fortunately, everything stayed securely on the top.

A repeat effort was launched in August, which looked promising until we arrived in Kyong-ju. We found 50-MPH winds buffeting the mountain. Not exactly ideal conditions for hang gliding.

In September we drove forth once again to see what fate awaited us. It was a lovely day, blue skies, building cumulus, nice breezes from the east. Unfortunately, launch is on the west face. One would think that at this point our

spirits were sufficiently deflated so that it could not be my Bronco to which the gods decided to affix a very deflated tire. Affixed further with lug nuts so tight as to prove nearly impossible to remove. Indeed!

It has got to happen. Right? I mean, clearly we have paid our dues. So in October we initiated this ritual journey again. Click-click-click. Just when we are ready to quit plunking quarters into this one-armed bandit, it pays off. JACKPOT!

Two hours of soaring in smooth ridge lift, mixed with just enough thermal activity to keep things interesting. The lift seemed to peak at 600 to 1,000 feet over launch. Our souls are rejuvenated. Our faith in clean living is restored.

And what a beautiful place to fly. Kyung-ju was an ancient capital of Korea, about 1,200 years ago. Numerous historical sites of great significance to Korea are in this area. One of these is a resplendent temple, Bulguk-sa, standing at the base of Toham-san. The mountain rises to about 1,900 feet at launch, and has a grassy slope at the top and rice paddies in the broad valley for landing.

A road works its way most of the way up the mountain to a place called the Sokuram Grotto. This is one of the most exquisite images of Buddha in the world, carved in a cave in the side of the mountain. We unload our gliders in the parking lot near the grotto, usually surrounded by busloads of tourists. The hike is about half a mile and 500 feet up to launch. It is not too difficult in the early spring or fall, but is a killer in the summer.

The view from launch is fantastic and it gets better once you are in the air. Several miles due west is a parallel ridge. The valley defined by it and the mountain we soar is checkered with rice paddies and small towns and villages. To the north is a huge lake and resort area surrounded by several tourist hotels. To the east is the Pacific and a gorgeous view of the coastline. More mountains rise to the south.

Drifting just behind the ridge we can see the trail and hikers heading to the grotto. Soaring over the parking lot attracts friendly waves from the crowd of tourists, which usually consists of at least a busload or two of exuberant kids. Out in front of the ridge we enjoy the best possible view of the temples, shrines, pavilions, and gardens.

Since that first flight we have had other exceptional flights at Toham-san. Last spring we soared light ridge lift for about an hour,



(Above) Ms. Lee sets up to fly. (Below) Chris prepares for a cold weather flight. Note the Wall—same as on page 20. Launch is a precarious undertaking in winds over 15 MPH. (Right) The mandatory group photo.



topping out only about 200 feet above the ridge. The lift died out and those of us still left scratching headed out for the landing zone. At about 1400 feet, 500 feet below launch, my vario showed light lift. I made a slow wide turn and watched with fascination as the lift grew and I began climbing. A few 360s later I was back above launch, the vario chirping madly, and I was climbing fast. Down the ridge and out over the valley, I saw gliders, which moments before were sinking out with me, now all climbing rapidly. I flew along the ridge, then out over the valley always going up. The magic wind! Soon we were over 4,500 feet. As suddenly as the lift had appeared, it faded. But what a finish!

I met two other American pilots here in Korea, suffering from serious ADS (Airtime Deprivation Syndrome). Chris Gallagher, a Texas boy, came to Korea to supervise the construction of some kind of large steel object which is to be installed at the Dallas airport. Danny Utinske, from the Seattle area, was in Korea to help keep the Army's helicopters flying (Utinske has left Korea since this writing, but put *Whole Air* in contact with the author). It did not take much coaxing to convince them to ship their gliders over, although the air freight charges were a bit tough to swallow.

Together, the three of us have explored most of the best hang gliding sites in Korea, met some great friends, and shared some good times. Some of our best hang gliding was at a place called Nam-han San-song (South Han Mountain Fortress). It is located just a few miles south of Seoul and offers a fabulous view of the Han River winding its way through the city.

Nam-han San-song is a popular site for weekend hiking, picnics, and other outdoor activities. An extensive wall surrounds a semi-circular ridge running from east to north to west. The wall is the restored remnants of one used to defend the King and his entourage from invading Manchus about 350 years ago.

We spoke with several Korean pilots about using the ridge as a flying site. However, we were told that it was not possible for two reasons. First, we were near the edge of the controlled airspace at a nearby military airfield, and second, at the foot of launch is a Korean Army Special Warfare School—strictly off limits.

But last fall arrangements were made by MBC, one of the Korean television networks, to fly this site. MBC arranged for a bus to carry pilots and wuffos (also provided by MBC) up to

launch. The TV people even secured an Army truck to haul the gliders. A camera crew arrived and filmed all the proceedings and interviewed some pilots. All of this was then broadcast on an evening variety show. Danny Utinske was one of the pilots interviewed and we have video copies available for his fan club.

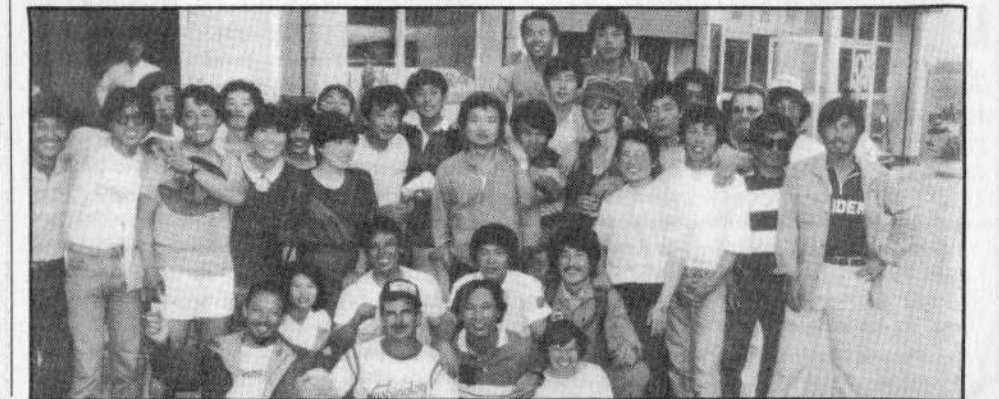
It was a great day for flying. The launch is about 1,600 feet, and the 15 MPH winds plus available thermals easily carried gliders up another 1,500 feet. Thermal activity allowed some pilots to venture several miles out beyond the ridge over the southern outskirts of the city.

Chris Gallagher and I missed the flying that day. I was away for the weekend with my wife, Robin, to compensate for all those weekends spent hang gliding (or hang waiting). A "marriage maintenance" weekend she calls it. Gallagher was back in America. When I got home Sunday afternoon I found a note from Utinske.

"Flying permitted at Nam-han San-song. Borrowed your glider. Thanks." (Utinske's glider was still on the way over from the U.S.)

Apparently, this had all come about rather unexpectedly. Well, I raced out to the landing area, a golf course near the base of the mountain, arriving just in time to watch my glider launch. How frustrating, seeing your glider sky out while your feet are glued to the ground. At least Utinske had a great time, getting about 1,500 feet over launch and flying for some four miles out over the valley during an hour-plus flight. With his opportunity to become a TV personality, I guess you could say he got another type of "air" time.

Flying was scheduled again for the next weekend. This time I was present with my glider. Unfortunately, the wind decided to blow about ninety degrees cross, approaching the launch from over a ridge and generating some terrific rotor activity. Even more unfortunately, many of the pilots decided to launch. Someone was looking out for those guys that day, because with so many out-of-control, save-your-butt launches, no one was injured. A few of us concluded that conditions were not acceptable and packed up our gear for another day. Most others were not interested in our assessment. Not a single glider made it to the landing zone. Most ended up landing in the Army post and, as expected, that was the end of authorized flying at Nam-han San-song. The displeasure of the military was demonstrated when guards approached some of the downed pilots with weapons drawn and invited them in



no uncertain terms to leave and not return.

But this site, only a few minutes from home and with great soaring potential, was too good to give up without a fight. Utinske, Gallagher, and I decided that a low-profile approach to hang gliding here might be acceptable. We established our criteria: (1) conditions must be excellent; (2) no flying over the Army post; and (3) under no circumstances land in the post.

With some trepidation and anxiety we approached the mountain a couple months later, without the fanfare of TV and crowds. The result: two hours of flight and 3,500 feet over launch in some cranking thermals. The land of the morning calm had become the land of the afternoon boomers. I am not sure, but when Gallagher broke 5,000 feet in his Sensor 510VG, he may have set a Korean altitude

devised for evading flak in a hang glider?)

Earlier this year, Utinske and I pioneered a new launch at 850 foot Baekun-san on Yong Jung-do, a small island just off the west coast near Incheon. After toting our gear to the top, we collapsed for an hour or so to recover. We launched into a late afternoon seabreeze that kept us just 300 feet above the small ridge for an hour. We took in a beautiful view of the island, and an aerial perspective of the mud flats along the coast at Incheon where MacArthur's troops made the famous assault during the Korean War. It was a scene far removed from the relaxed, peaceful flight I enjoyed on my Vision.

Another site in south central Korea is Unbong, near the city of Namwon. Located on a large cattle and sheep ranch, it has a rugged road up to launch and expansive pastures for landing. (But watch your step.) We first flew this site at the invitation of Dr. Kim, a gen-

\$120), Second Place—50,000—Won went to Hon Kyong Kee, and Third Place—25,000 Won—to Pak, "the farmer." Dr. Kim finished just out of the money in his Sensor 510. After flying, Dr. Kim provided free eats and beer at a picnic in the landing zone.

One of the most outstanding hang gliding events we have experienced here in Korea was this spring at Unbong. Again, a gracious Dr. Kim was the organizer, thus insuring that everyone enjoyed themselves. A group of pilots from Japan were invited over, so with the Koreans and three Americans, we had a legitimate international fun fly-in. With the full cooperation of the weather gods, we did indeed have plenty of fun, and plenty of flying. The first two days were similar to our earlier experience, soaring in generally weak thermals in mid-afternoon. A few of us went back up for a glassy sunset flight.

On the last day of this three day weekend it appeared nothing would happen. Barely a whisper of wind teased the windsocks. Gradually a huge cumulus developed over the ridge just above and behind the launch. The afternoon was getting late and still no indication on the surface of any air movement. Time was running out so we faced up to the opportunity to demonstrate our no-wind launch techniques. Two pilots demonstrated a definite need for improvement as they were clutched by that grasping bush just below launch.

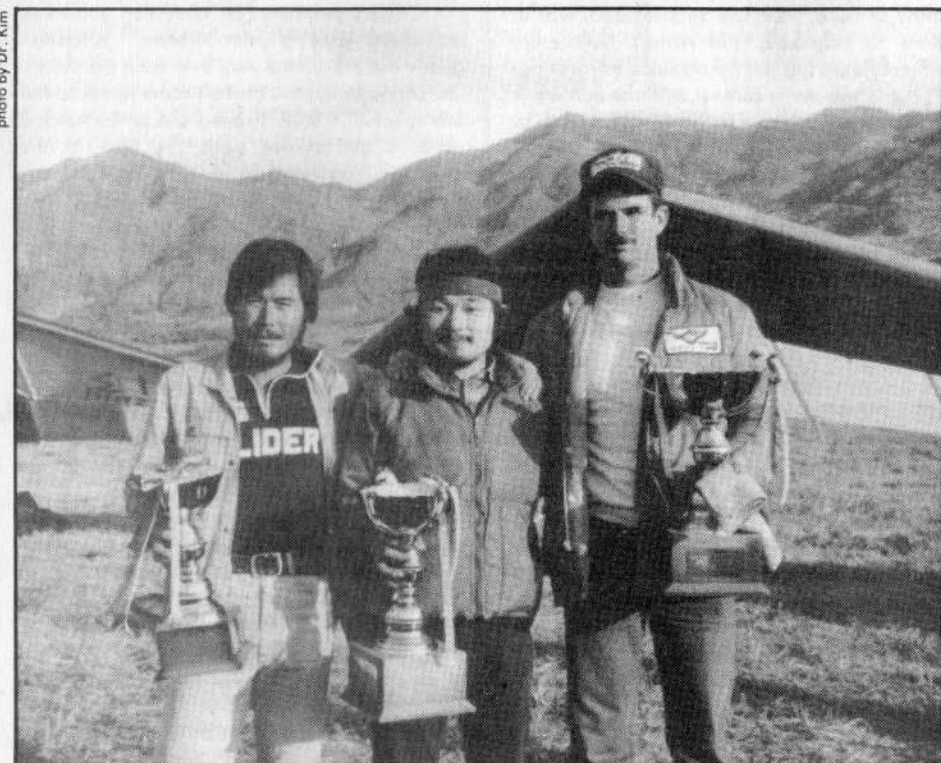
But that big cumulus proved to be doing its job. Just down the ridge everyone stepped on the up-escalator. Two thousand feet later, the wispy, ethereal world of cloudbase was entered. Several pilots struck out cross country, but conditions were not adequate to sustain much distance. Utinske made it out about five miles and ended up knee deep in a rice paddy. Not a good place even for an Attack Duck. Sloppy, but soft. Landing in rice paddies in the summer is to be avoided. However, if your spot landing technique is highly perfected you might set down on the narrow walkways between paddies. Generally only a foot wide, they present a real challenge, but the only alternative to landing in the muck. Wet and slippery, they also make walking your glider out a challenge of its own.

That was a weekend of experiences that will not be forgotten. Good friends and good flying. That's what it's all about, right?

Not much real cross country has been achieved in Korea yet. That weekend in Unbong where some pilots got a few miles and a flight of about seven miles that Utinske made from Toham-san are the only efforts of which I know. Utinske's flight may be the country's distance mark. But we think that the potential for cross country does exist.

Utinske and Gallagher have both gone back to the U.S. now and I will be leaving in a few months. Some sadness will accompany the parting, but I will harbor a lot of good memories.

Special thanks to all good friends in Korea. While we have too many to list, we would like to express our thanks to Song Jean Suk, Hong Kyong Kee, Choe Sun Gap, The Farmer, Oh Tae Suk, Dr. Kim, and Messrs. Shim, Yi, Kim, Pak, et. al. Good Flying!



The trophies awarded for Dr. Kim's Fly-in/competition at Unbong. (Left to Right) Pak "The Farmer," Hong Kyong-Ki, and Dan Utinske.

record. After some good fun flying, things started getting a little too nasty. Never has my vario been pegged so much, both up and down. As conditions were clearly getting too radical, we decided to call it a day. Once safely on the golf course, we found the winds suddenly gusting to 40 MPH-plus.

Since then we have flown the site on several occasions, including a terrific sunset flight in air as smooth as a baby's bottom, as the sun sank down behind the city skyline.

Some obstacles call for an alert attitude here, including an occasional stray helicopter, or F4s which sometimes make an approach through the area, and, although remote (perhaps not as remote as we would like to think), the possibility of drawing anti-aircraft fire. (Anyone interested in the tactics we

tleman who enjoys horseback riding, tennis, scuba diving, skiing, and hiking, in addition to hang gliding. He celebrated his 61st birthday by hosting a hang gliding meet.

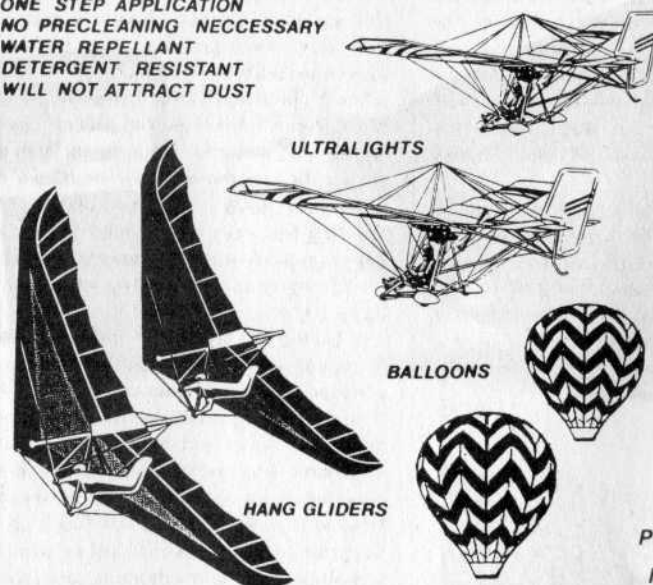
It took two trips to get all of us up the 1800 foot mountain with my Bronco groaning in four-wheel drive under the load of too many gliders and far too many passengers. A six foot target had been laid out in the pasture and Dr. Kim offered prizes for target landings. Light thermals provided lift. The better pilots got close to an hour by scratching every little bump, while most of us settled for 15-20 minute flights.

True to his word, Dr. Kim awarded handsome trophies and cash for the three best landings. First Place (lucked into by Danny, the Duck Driver) received 100,000 Won (about

AP 303 CLEANER & PROTECTANT

COMPLETE PROTECTION FROM SUNLIGHT DEGRADATION

- RESTORES COLOR & LUSTER TO FADED DACRON
- ONE STEP APPLICATION
- NO PRECLEANING NECESSARY
- WATER REPELLANT
- DETERGENT RESISTANT
- WILL NOT ATTRACT DUST



COMPLETE ULTRAVIOLET RAY PROTECTION

PROTECTS ANYTHING THAT
FADES IN THE SUNLIGHT!

MAKE THE SMART INVESTMENT MORE &
MORE EXPERIENCED PILOTS ARE MAKING

DOUBLE THE LIFE OF YOUR SAIL !!

- 8oz. SPRAY \$3.95
- QUART \$12.56
- GALLON \$37.68

Contact Your Nearest Distributor:
California Power Systems
790 139th Ave.
San Leandro, Calif. 94578
(415) 357-2403 - info
800-AIRWOLF - orders

Hawkinson Air Supply
519 North Montana
Miles City, Mont. 59301
(800) 341-6919

K.C. Ultralights
Barber Airport
13820 Union Ave. N.E.
Alliance, Ohio 44601
(800) 262-5748

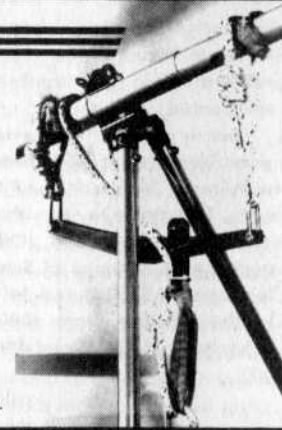
Speed Rail™

Looking for compact, simple,
stowable pitch control?
Get a Speed Rail™

Reduced pull-in effort. Flat
body attitude for less drag.
Static load tested to 10G's.

\$78⁰⁰ complete. Available from:

MISSION SOARING CENTER
43551 MISSION BLVD. FREMONT, CA 94539
(415) 656-6656 *add \$3 shipping & 6% tax in Cal.

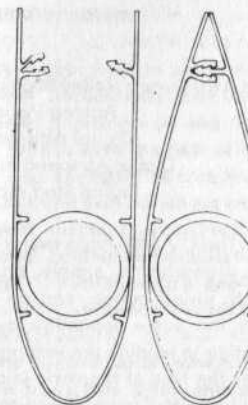


STREAMLITE

A RIGID VINYL FAIRING
FOR 1"-1 1/4" TUBING REDUCES
DRAG AND INCREASES
EFFICIENCY. WT. 2.2 OZ./FT.

Slide fairing over tube
and press edges together
5 FT. LENGTHS \$2.16/FT.
(Shipping chgs. C.O.D.)

Send check or money order to:
PATTERSON ENGINEERING CO
134-F Valley Rd.
New Canaan, CT 06840
Tel: (203) 966-4337



EXPLORING NEW DIRECTIONS (with Europe's finest soaring instruments)



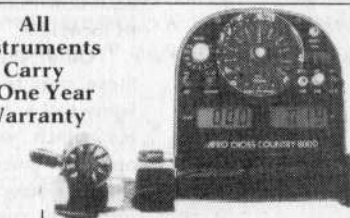
AFRO Owens Valley 8000

Total energy compensated, airspeed, digital altimeter, vario, McCready speed ring, stop watch.



AFRO Cumulus 8000

Vario, digital altimeter, 2 response times, auto zero point adjustment, temperature stabilized.



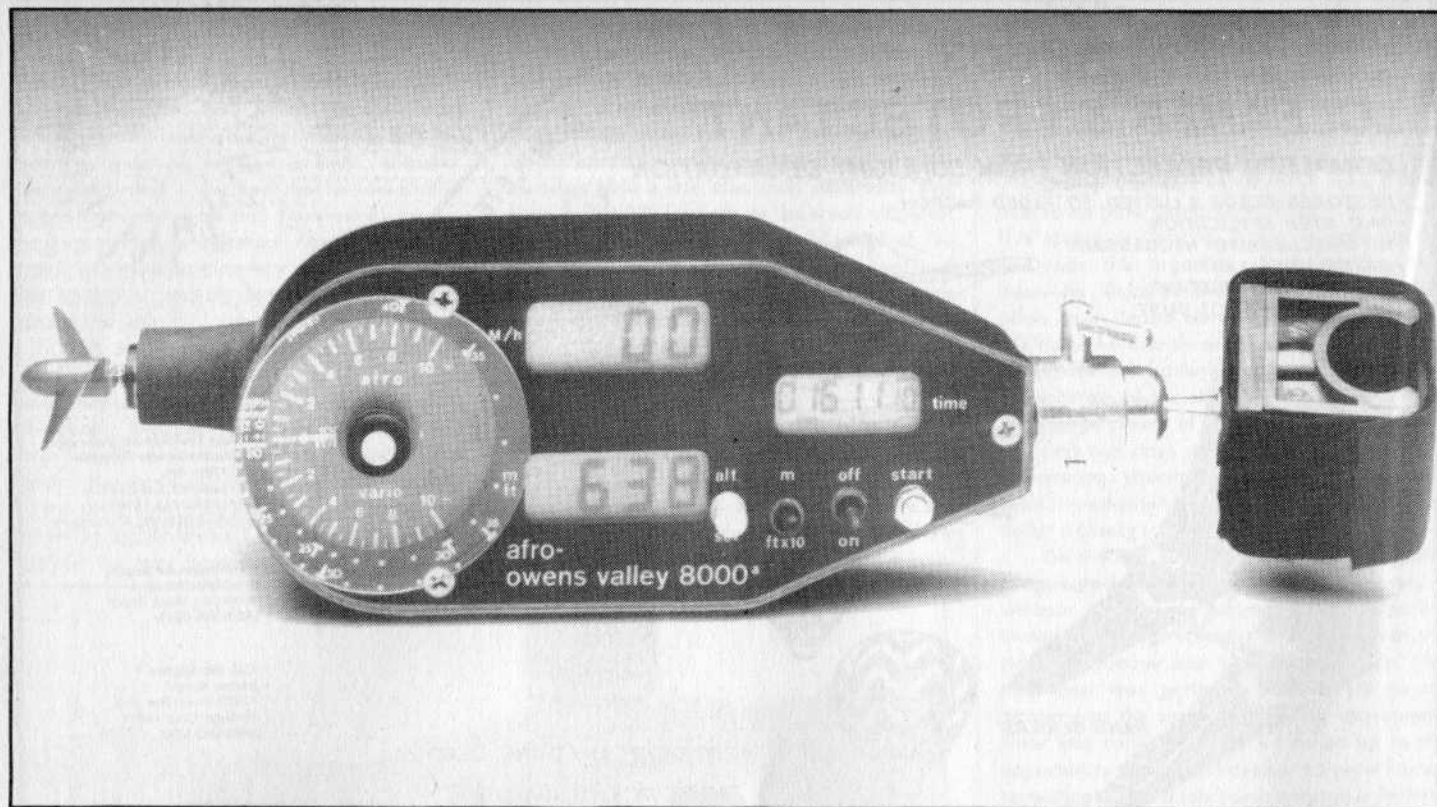
AFRO Cross Country 8000

Total energy, glide calculator, airspeed, vario, McCready ring, 2 response times, sink alarm, altimeter, stop watch.

ADVANCED AIR ELECTRONICS

Achim J. Hageman, AFRO Electronics U.S.A.
29 State St., Santa Barbara, CA 93101 (805) 687-3119

Call for more information. Dealer Inquiries Accepted.



AFRO & BALL FLIGHT

IN THE EARLY DAYS of variometer usage, the Colver audio system was one of the most popular. It shared the sales limelight with Makiki's pellet variometer. The latter was a visual only instrument whose shining quality was low cost, and very rugged construction.

The Colver was a wonderful addition to a new thermal pilot's arsenal against gravity; as was the Makiki. In fact, the little pellet job's cost was so low, some aviators hung one on each downtube, so as to facilitate reference to its faceplate.

Other systems were available. Several of these required you to carry bulky, although lightweight "cannisters" full of nothing but air, but which were needed for the vario to operate. Since one did not want relatively large, clunky-looking items dangling about from the control bar, pilots located them remotely. Therefore, plastic tubing had to be routed from that spot to the vario face.

Evolution of course continued, and shortly others besides Makiki and Colver were producing instruments that contained all the hardware in a single case. Then the process began to shrink the size of the case, till today we have products like Litek's and Ball's wrist-mounted systems, so tiny as to amaze those of us who remember the "old days."

In today's market, a number of instruments are available. While advertising in this publication has declined for several major

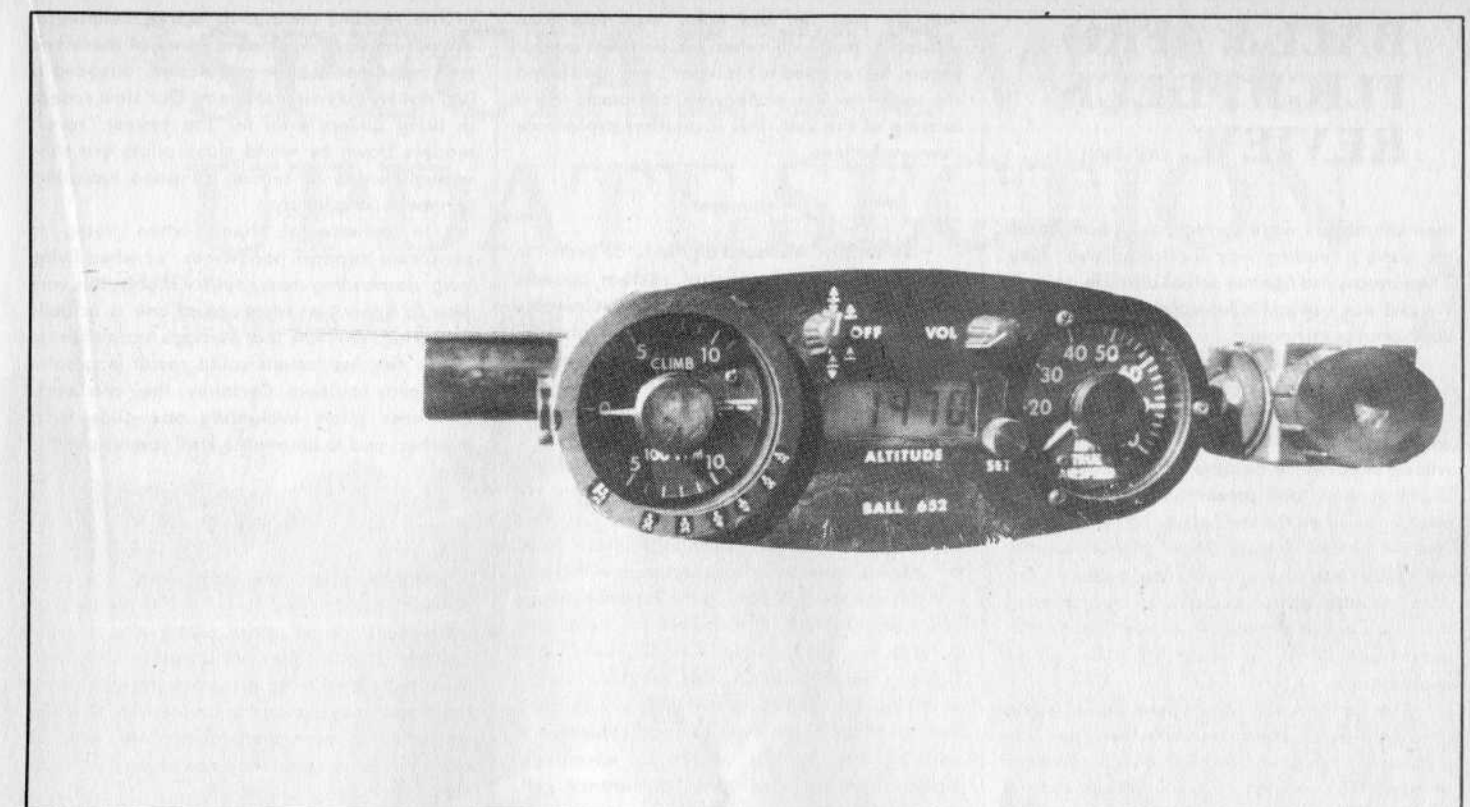
accessories—harnesses, parachute systems, etc.—vario companies seem to have proliferated (no less than four companies are represented in this issue).

But in addition, the devices have become more versatile, more streamlined, smaller, much more high-tech, and of course, more costly. This article reviews the offerings of Ball Variometers of Boulder, Colorado, and Advanced Air Electronics of Santa Barbara (Afro Electronics manufactured in West Germany). The two models were top-of-the-line flight decks: Ball's 652 deck, and Afro's Owens Valley 8000.

DECK FEATURES

The Afro Owens Valley 8000 is equipped with:
Analog Vario
Digital Altimeter
Digital Airspeed Indicator
Digital Stop Watch

The OV-8000 has a meter-to-feet switch for the altimeter, a simple on-off switch, stop watch on-off button, and an altitude set knob with the same capability as the Ball above, relative to holding the setting even when "off." Over the face of the vario is a transparent disk that has a McCready speed-to-fly face, which is adjustable like the Ball.



DECK REVIEWS

The Ball 652 is equipped with:
Analog Vario
Digital Altimeter
Analog Airspeed Indicator

The 652 has a volume control offering a good range of loudness control. It uses a set knob for the altimeter, but once adjusted, even when the deck is turned off, the reading continues to change with altitude movements. The on switch is a double two-way version, by which we mean that it has two batteries from which to operate, and each battery can provide up-only audio, or up-and-down audio. Over the vario face is mounted a McCready speed-to-fly ring, which is free to move on a rotatable bezel.

BASIC COMPARISONS

The Ball case is deeper (face to back) than the Afro, but other dimensions are very similar. The airspeed indicator on the Ball involves a "probe," which exits the rear of the case, turns ninety degrees and has a ducted-type wind vane. This extension out of the case makes the airspeed indicator probe rather vulnerable to damage, both while transporting and on hard landings. The Afro uses a propeller vane which, like the Ball, sticks out beyond the front of the deck. However, as the Afro propeller is held by a flexible mount, which can be folded back for transport, it is generally much less susceptible to damage from any source.

The Ball mount is a classic. Even the very popular Litek vario now employs the Ball mount, as owner Chuck Kanavle says, "It works great; what can I say?" It is superior to the Afro mount as it can be clamped very tightly, without undue strain on the hand. Its elliptically-shaped knob offers a good grip, even in a gloved hand. The Afro employs stretch velcro to hold its mount bracket to the bar, and in our experience, cannot be tightened as much. Overall, however, it works satisfactorily as the Afro is also somewhat lighter than the Ball. To further adjust the Afro's position, a ball joint is used, very similar to (if not indeed derived from) a camera swivel mount. The Ball mount uses a ball joint for the same purpose.

FEATURE COMPARISONS

Variometer

Both variometers are very effective, highly-developed instruments. Neither are quite as rapid as the Litek, if indeed rapid action is vital to you. Afro representative Achim Hageman feels though that a delay may be valuable when you wish to use only larger thermals. This becomes a personal preference in our opinion. The Afro, however, does offer two response times, with a relatively easy user-oriented adjustment inside the case. You may have a 2 second or 0.7 second delay, both still longer than the rather instant response of the Litek. For both Afro and Ball, the rates of climb seemed accurate in our comparisons, if

BALL & AFRO FLIGHT DECK REVIEW, CONTINUED

their altimeters were correct, as in both cases the vario's reading was confirmed over time when measured against actual altitude gained. We did not use an independent altimeter for additional confirmation.

Audio indications used different "noises," but were otherwise similar enough one to the other, with one notable exception. The Afro does not have a volume control, a feature whose importance became obvious when one found it was not present. At faster flight speeds, or when the battery has worn down (the Afro has only a single power source, unlike the Ball's secondary), the audio on the Afro became barely audible. In our opinion, this is a serious drawback, as we rely on the audio every bit as much as the visual presentation.

The Ball "noise" has come under some criticism, as it could be described as "unpleasant." We agreed with this choice of words at first; it is a kind of buzz, rather than a musical-sounding noise, like those used by Afro, Litek and other audio varios. Ball claims to have done considerable research on this sound with sailplane pilots. On long flights, they say this noise is less irritating than a tone. We also had a long-time Ball 652 user tell us

that he too, felt the noise was less than desirable. But once, when his unit was out for repair, he reverted to his older Litek, and found the tone-type noise annoying, compared to the buzzing of the Ball. This is another preference item we believe.

Altimeter

Generally, we found digital to be great! In most situations, the digital system appears easier to read, plenty sensitive, less vulnerable to impact damage (than an aircraft altimeter), easy to set, and can almost be used as a slow variometer, especially if one orders the altimeter with unit changes in ones of feet (rather than tens of feet).

Our units had the altimeter tens-of-feet settings, so the movement was very calm. We wished them that way before we acquired experience with their digital altimeters. Now, we can see merit to having the number change more rapidly. In both instruments, the display is large enough to be read easily, even while fighting rough thermals. And we think that by watching the trend change of the ones digit, the altimeter might even be more effective in working the lightest of lift to advantage. Again, here is a personal preference call, though.

Airspeed Indicator

The Afro digital airspeed indicator wins points over the Ball's analog version for some

of the reasons mentioned above, relative to altimeters. But, as several users of these two test instruments have mentioned, airspeed is just not terribly vital to them. Our slow speeds in hang gliders—even for the fastest "racer" models flown by world class pilots—are slow enough so as to render airspeed indicators somewhat of a luxury.

In defense of them, when trying to penetrate stronger headwinds, or when flying long, demanding cross country flights, it is very nice to know just what speed one is actually achieving. We think that perhaps more effort to utilize this instrument could result in greater popularity for them. Certainly, they are useful for those pilots evaluating one glider with another, and to determine stall speeds and the like.

Stop Watch

Hands down, the Afro wins this comparison; the Ball has no watch. While such an instrument can be useful, especially on cross country flights, the proliferation of wrist-mounted digital watches combining stop watch functions, may make the addition of this less valuable. However, the deck-mounted watch is more easily accessed than one on your wrist, at least when clothing covers it.

McCready Speed-to-fly Ring

Here is an attractive-seeming item that really falls short of one's expectations. Hang gliders are operating in too slow a speed realm, and are sufficiently unsteady (speed-wise) to make great use of a speed ring. It is a judgement call—or a personal preference item—we guess, but in all our experience, we made extremely little use of them. But, since their addition adds very little expense to the whole package, why not have one?

SUMMARY

We very much enjoyed the two decks. They are both attractively packaged, and offer a high tech appearance to one's instrumentation, improving the "quick and dirty" look of each instrument strapped onto a bar clamp, as many of us still use.

Having more features, as with stereos or VCRs, seems better, or at least more fun. But just as with those other "toys," you will have to lay out more money for them. So, in the last analysis, cost may be a determining factor. The Afro Owens Valley 8000 retails for \$595.00; the Ball 652 for \$590.00. The price for the Ball is \$18.00 higher when the total energy probe/feature is added (\$608.00), and should be used for fair comparison of each instrument deck. (In addition, the Ball 652 ordered with one-foot altimeter changes, or metric values costs \$615.00, or \$633.00 with total energy compensation.)

For prospective purchasers, the old adage about flying with the equipment yourself before you buy, still holds.

For us the digital altimeter is the best addition of all.

SPECIAL TOWING UPDATE SECTION

Articles and photos by Rose Mullins, Jerry Forburger, Karl Allmendinger, Bill Dale.

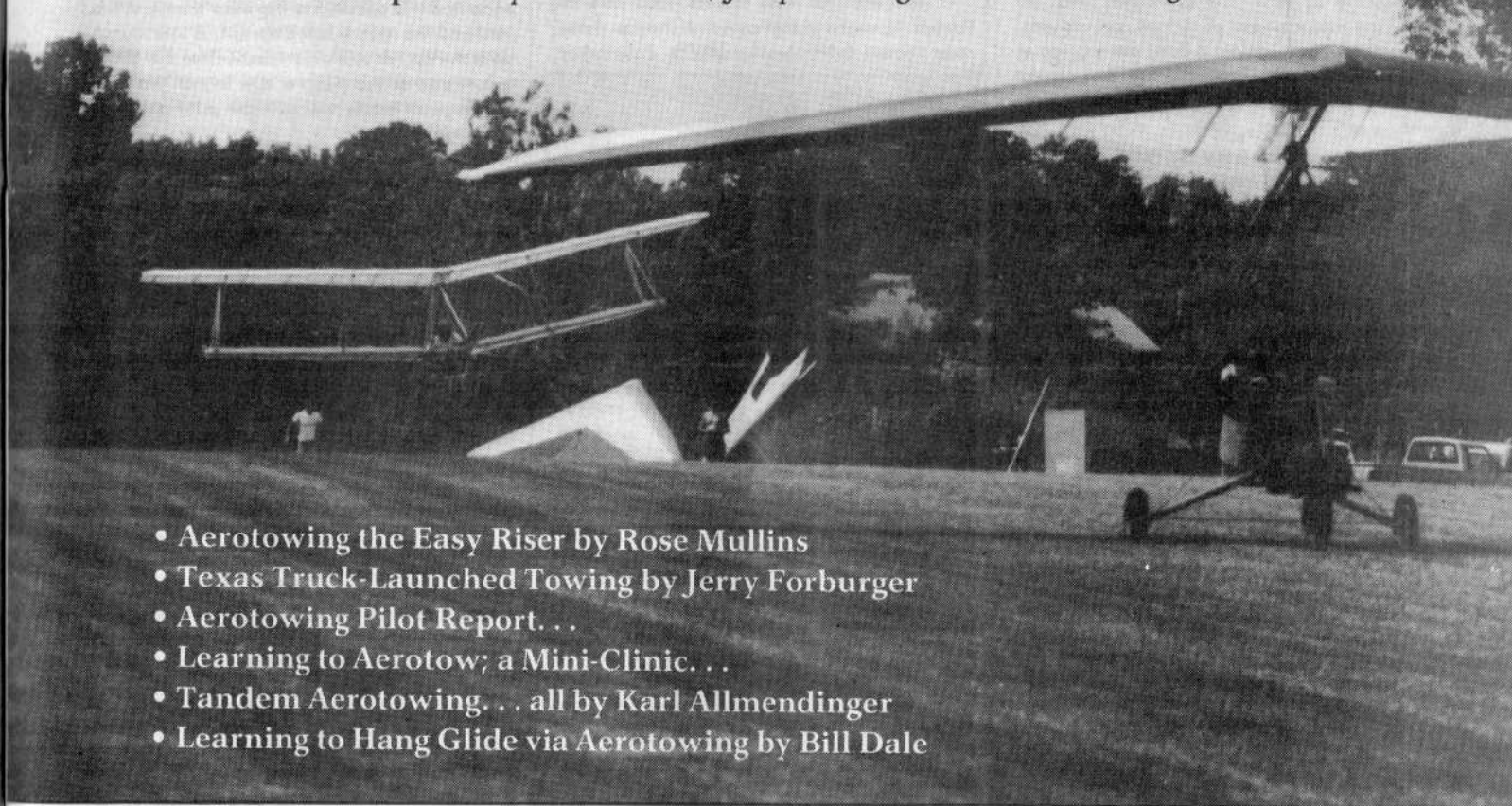


photo by Rose Mullins

- Aerotowing the Easy Riser by Rose Mullins
- Texas Truck-Launched Towing by Jerry Forburger
- Aerotowing Pilot Report. . .
- Learning to Aerotow; a Mini-Clinic. . .
- Tandem Aerotowing. . . all by Karl Allmendinger
- Learning to Hang Glide via Aerotowing by Bill Dale

TOTAL ENERGY COMPENSATION

What?

It is a question we once asked. What is it, and who needs it? You might.

We plan an entire separate article in a later issue on this much-misunderstood feature, but here and now, we think this addition offers great promise, and especially so in hang gliders.

Simply put, the total energy feature eliminates what some pilots have called "bar thermals," or "speed thermals," or "fool's lift."

If so equipped, a vario reads real lift, such as you are then experiencing. In rough conditions, it helps identify lift much more easily, and in cross country flying, you can pass up weak lift that may deceive you, or lull you into wasting time for little gain. We like it. But we also admit we do not understand it fully. Richard Ball, of his own company, concurs, saying that total energy compensation is very misunderstood, in his opinion. He feels this confusion is more common to hang gliders than to sailplane pilots. We suppose this could be so, as hang glider pilots are more "feel sensitive," than sailplane pilots, who rely on instruments and not wind-in-the-face feedback.

The Ball 652 we are using in this on-going evaluation was not initially equipped with total energy. A call to the factory got us an installation kit, which requires a minimum of effort to install. Those many pilots using Ball decks can easily add this item, without having to send their instrument back to Ball. But, if the airspeed indicator probe requires care in all handling modes, the total energy probe causes even more problems. It sticks out even beyond the airspeed indicator probe, must be mounted on the top of the case, and is quite hard to pack up in a gear bag without damage. Plus, it makes the flight deck bristle with extensions, esthetically hurting the Ball's clean lines. However, compared to its usefulness, and seeing as the deck already has the airspeed probe, we are glad to have it.

The Afro deck came already equipped with total energy compensation, and its case added no protrusion to support this feature. Knowing as little as we admittedly do about this feature, we do not know how the Afro supplies this function without the probe (used on the Ball), but the compensation is certainly present, and as valuable as stated above.

AERO TOWING IS in the news now, but here in Cincinnati we have added a new twist... aero towing the Easy Riser.

The Easy Riser is a bi-wing hang glider, graceful and precisely controllable with weight shift and tip rudders. Beginning life in the early Seventies as the Icarus II, the craft was redesigned to become the Easy Riser with 10:1 glide at a time when other hang gliders were boasting 4:1 glide angles. In spite of its rigid wing design, the Riser is known for mellow flying and landing characteristics. Now it is flown most often as an ultralight because it is not as easily transported to hilltops as conventional gliders.

In the Cincinnati area, four Easy Risers are in use as ultralights and two are foot-launched hang gliders. One pilot, Carl Bauknecht, owns two Easy Risers; one of which is a hang glider, the other an ultralight.

In February a group of local pilots purchased a Skylines/Cosmos Aero Tug trike unit to tow their conventional (rogallo) gliders. Two of the Riser pilots, Bauknecht and Paul Farina, decided to try towing their gliders, too.

CONTINUED ON PAGE 32

AEROTOWING PILOT REPORTS

Karl Allmendinger evaluates several popular makes and models on the towline.

BETWEEN THE FAA exemption and the USHGA guidelines, it might appear all the problems of aerotowing have been solved. If it was really that simple, everyone would be aerotowing by now. The guidelines only address the major issues of ratings, procedures, and safety. They contain a brief description of how to fly the glider and the tug, but cannot have details of how each tow system works with every glider. Several different tow systems exist. And many different gliders in different states of tune and plus an endless variety of sites and weather, all make for a situation that could hardly be spelled out in simple guidelines.

A pilot does not have to know about every tow system and glider to learn to aerotow. All one needs to know can be taught by an aerotow instructor who is expert with the tow system and gliders used. The complexity of aerotowing means it can be tuned, much like gliders are tuned, to make it easier to fly. The way to learn about tow tuning is to have a variety of experience and share that experience with other pilots.

We have towed several different gliders with two different tow systems in a variety of weather conditions. One tow system was the Skylines system with the Cosmos trike and single-point bridle. The second system employed a Foxbat with a Rotax 503 engine and center of mass—or Skyting—bridle. The gliders were 135 and 165 Comet 1s, a 165 Comet 2, 160, 180 and 200 Ducks, an HP, a 175 Shadow, a 160 ProStar II, and a 175 Dawn. How a particular glider handled on tow was determined by the type of glider, how the glider was tuned and the tow system used. The effect of the tow system was consistent from glider to glider, but tuning and handling differences between gliders made some models handle better with one or the other system.

The major difference in handling between the tow systems is caused by the different bridles. The Skylines single-point bridle attaches only to the pilot and not to the glider. It is "Y-shaped" with the two legs of the "Y" attached to the shoulder straps of the pilot's harness. The other end has a point ring release

triggered by a short length of cable tied to a length of cord. The glider end of the tow rope has a ring, a weak link and a second ring for the two-ring release on the bridle.

The center of mass system used with the Foxbat is more complicated. It has a pulley rope routed from the top of the downtubes,



(Above) The Manta Foxbat, modified for use in aerotugging, pulled two aloft adequately.

forward and down through a ring at the end of the tow rope, back to the pilot and then forward again to the end of the tow rope. Since the rope has the same tension on it everywhere, the pilot is pulled twice as hard as the glider. This ratio is similar to the ratio of pilot weight to glider weight, so the tow rope is actually pulling on a point near the center of mass of the glider and pilot combination. One release is at the top of the downtubes and another release is located where the rope loops back to the pilot. The first release is operated by the pilot with a cable and bicycle lever on the base tube. The other is automatically released by a line from the end of the tow rope to the release. When the pilot squeezes the bicycle lever, the upper end of the pulley rope is released and the rope runs through the rings until the lower release is operated by the line to the end of the tow rope.

With the single-point bridle, all the pull is on the pilot and none on the glider, while with the center of mass bridle, 2/3 of the pull is on the pilot and the other 1/3 on the glider. The difference in the way the two bridles launch and fly is caused by the way they pull the pilot and glider. Pilots are usually more than twice as heavy as their gliders, so the Center of Mass system pulls the glider a little harder relative to its weight than the pilot. The center of mass bridle accelerates the glider a little harder than the pilot during the launch, so the pilot has to be sure to keep up with the glider. The rope used with the center of mass bridle is 5/16 inch polypropylene, with little stretch, so the launch is quite rapid. Between the pull on the glider and the lack of stretch in the rope, the launch feels much like a steep hill. Flying speed is reached very quickly and the pilot does not have to pull the glider.

The single-point bridle does not pull the glider at all, so the pilot must launch the glider.

The rope used with the single-point bridle is 3.5 millimeter (about 1/8 inch) nylon with a good deal of stretch. The rope stretches during the launch, allowing the pilot time to run the glider up to flying speed. The tow tension builds up gradually during the launch run, then more quickly just as the glider lifts off. It feels like launching down a shallow hill.

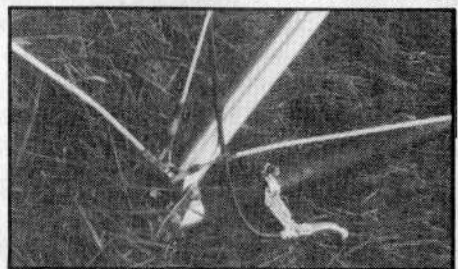
Timing the launch run becomes easy after a few launches. The tug takes a second or two to rev up from idle and the instant it starts rolling is the best time to launch. Launch too soon and it is possible to trip over the rope, too late and the launch is too abrupt. A late launch with the center of mass bridle will let the glider get ahead of the pilot, a late launch with the single-point bridle will pull the pilot ahead of the glider.

Cocoon harnesses have been a bit of a problem as far as getting a foot into the boot of the harness. If the tow bridle is attached to the shoulder straps of the harness, it pulls on the shoulder ropes and may raise the boot too high. Some tows were made with the center of mass bridle attached to the harness just below the parachute, to the main support strap. It was easy to get a foot into the boot, but the bridle rope touched the control bar. This was not a problem as long as the control bar was plain, slippery aluminum, but the rubberized non-slip control bar of the Comets tended to grab the rope and interfere with the control of the glider.

Launching into a flatland wind gradient proved to be a new experience. Large expanses of flat ground can have very shallow but severe gradients. Many launches were very smooth up to about 20 feet of altitude and then needed vigorous correction to maintain position. Towing into wind and turbulence can be done by skilled pilots, but is definitely an area for gradual progression. First towed flights must be done in calm air. Another new experience was towing up through an inversion, into ultimately smooth, clear air above the haze and turbulence of the lower layer.

Climbing with power is a bit different than climbing in lift. The best speed to climb in lift is minimum sink speed, but the best speed to climb with power is best glide speed. The tugs have more wing loading than the gliders, so their best climb speed is faster. The tug is flown a little bit slower than its best climb speed and faster than the best glide speed of the glider. At first it seems quite fast, but it does get the best rate of climb. The airspeed of the glider can vary quite a bit in turbulent air and a faster

CONTINUED ON NEXT PAGE



(Left) Skyting release on the glider. (Above) Base tube release.

PIREPS,

CONTINUED

tow speed keeps the glider from getting too slow and too low.

The bridles pull the pilot forward, so the glider tends to fly faster than its normal trim speed. They do not pull the control bar back, so

If you react as we did when we first saw the photos of truck launched towing, we shivered, and thought, "Yikes!"

The activity recalls a day when Larry Newman's promotion of the now-ancient PP-106 Soarmaster add-on power package for flex wing gliders involved the launching of that system from the bed of a pickup truck.

Forburger is aware of that history. When we spoke, we could fairly "hear" him smile over the phone in response to our reaction.

"Yeah, this technique got a bad name from those days, but we've been practicing this method, and have not encountered the horror stories others might imagine. We just want to put the information out... that we were able to accomplish a lot in this manner, and that folks should consider it."

Given the disclaimer that this is most definitely an experimental technique at this point in time, readers are indeed asked to review Forburger and company's methods, and determine for themselves what its practicality is.

THE PANHANDLE SOUTH PLAINS area of West Texas is not known for its towering mountain ranges or vertical ocean cliffs. Looking at a road map you will see cities

TRUCK TOWING

AS IS TYPICAL of new developments in our sport, the tow system devised by Forburger and Haley is evolving on an almost daily basis. Since the first piece was received in Whole Air offices, further discoveries were made by the truck towing duo. The information is summarized below.

The latest development in truck towing has been to eliminate the need for a nose man by attaching a webbing line to the nose of the glider. The lower end of this line has a ring sewn to it. This ring is connected to a three-ring release on the rack of the truck. It can then be activated by the driver.

The pilot now has the truck slowly accelerate until he sees the proper airspeed in the Hall windmeter mounted on the front of the truck. When he is ready, he says, "Clear!" When the driver hears this, she accelerates a little more and pulls the release line allowing the glider to rise off the truck.

We are now towing with a minimum crew (i.e., one driver, no nose man). This allows my partner and I to both launch within twenty minutes of each other. If the first pilot gets up, the second can safely launch and try to catch the first.

In the past month we have towed up Pilot

the increase in speed is not as great as if the pilot was pulling in with the same force. The bridle-induced increase in speed is not enough to match the speed of the tug, so the pilot must still pull in to maintain height, relative to the tug. The center of mass bridle does not pull the pilot forward as hard as the single-point bridle, so the pilot must make up the difference by pulling in harder with the center of mass bridle.



named Levelland and Plainview. This gives you an idea how serious we are about the word "Flat."

So it is, that a couple of Hang 4s began to experiment with other ways of getting airborne, namely via towing. The following information is submitted to spread information about safe flatland hang gliding. It is not intended to start a movement to excommunicate us from our beloved sport, simply because readers may think we have been "in the sun too long." The fact is, Truck Towing offsets many of the drawbacks we experienced in our initial search for weekend airtime. As you review "Truck Towing," just remember, they thought Lillienthal had been in the sun too long also. But regardless, we look forward to response.

The following equipment is required to Truck Tow:

The first item is a two door, load carrying

#1 as many times as it takes for him to successfully catch a thermal. After he does so, Pilot #2 launches as many times as he needs. Since you land where you take off, no need exists to break down the glider. We have found it is possible to release above 1,500 feet AGL three times per hour. Usually it does not take three tries to get up.

And now, tandem truck towing.

Flying tandem is the best way to let a non-flyer experience our exotic sport. Until we started truck towing, this was impossible, as West Texas does not contain many training sites for launching. Without the proper practice, we did not feel safe.

It is our opinion that a truck tow launch is a safer method of tandem flying than foot



The pitch pressure on tow is also determined by the type of glider. Gliders with less pitch pressure, such as the Duck and HP, have less pitch pressure on tow, while gliders with more pitch pressure, like the Comet, have more. The Ducks and HP towed with the single-point system had the least pitch pressure, tolerable on short (2000 feet) tows, but un-

CONTINUED ON PAGE 36

vehicle, commonly known in Texas as a pickup.

This truck needs a front-mounted winch. Ours consists of an aluminum drum with radiused end flanges. It carries up to 4,000 feet of rope.

The drum is powered by a 12-volt D.C. starter motor for line retrieval and a hydraulic disc brake to pay out line while under tow. The pressure gauge and control is remotely located at the end of a long flexible hose. This allows precision line tension adjustment from the drivers seat.

The bridle is a short, highly modified, fifth-generation version that attached strictly to the body (center of mass derivative).

Next is a competent nose man. Since the nose man controls the launch, he must be fully aware and familiar with launch procedures.

The driver's job requires a person who can drive and make adjustments according to the pilot's instructions. Our wives do a great job. Basically he or she drives fast enough to keep the winch paying out throughout the entire towing sequence.

A typical tow run begins with the glider loaded on the truck with the nose tied to the truck at a convenient angle. This allows the pilot to hook-in, do a hang check, and secure

CONTINUED ON NEXT PAGE

launching, because the pilot and student do no running. This means no tripping, no tangled awkwardness, and no fatigue from either running or ground handling the glider.

Although we have discovered some modifications necessary to the towing equipment (due to increased loads), we basically practice the same launch techniques for tandem as we do for a single pilot.

We are currently developing records of loads and pressures in an effort to offer safe tandem tows to a wide cross section of the "ground bound."

A note from the developers...

Anyone interested in this activity of truck tow launching is encouraged to contact Msrs. Forburger and Haley for safety instruction. They offer their equipment for sale, but are vitally interested in safe flying, so wish interested pilots to contact them before attempting this new development.

Readers may write: Airtime of Lubbock; 2013-68th Street; Lubbock, TX 79412. or phone Jerry Forburger (806/745-6039) or Mike Haley (806/794-4596). All readers are further advised to note the disclaimer at the beginning of this article. Truck towing represents a new activity, the dangers of which are not fully known. All pilots who are interested in practicing this method, as with many tow methods, are strongly encouraged to gather all possible information, and then to proceed with great caution. Thank you for your attention.

TRUCK TOWING, CONTINUED

his bridle to the tow line without the fatigue of man-handling the glider. After a radio check, all the pilot has to do is lay waiting.

The nose man then does a complete equipment and glider check. When everything is ready, the driver is instructed to accelerate to a predetermined speed. This speed is monitored by an airspeed indicator located in the driver's normal vision area.

At this point the nose man unties the nose of the glider and increases the angle of attack slightly. This will result in the glider "getting light." The nose man will then feel the tendency of the glider to rise off the platform in the truck. The glider now has enough airspeed to begin the launch sequence. The pilot will say "clear" and the driver accelerates as the nose

CONTINUED FROM PAGE 29

Both pilots have flown Easy Risers since 1979. Bauknecht flew his primarily as an ultralight, whereas Farina usually flies his as a glider. They are very enthusiastic about it as a glider, but they have been frustrated in attempts to foot launch it in the Cincinnati area. The narrow, gash-between-the-trees launch sites created conditions for ground handling problems and made for heart-pounding takeoffs. Even transporting Risers to launch (requiring a trailer) was Herculean labor. Aero towing was the answer to these problems.

Because they could find no one who had aero towed the Easy, Farina and Bauknecht were not even sure of the correct tow point. Bauknecht called Donnell Hewett, originator of center-of-mass towing, for advice. He suggested towing from the mid-point of the lower front wing connector, but urged caution.

To test this, Bauknecht first had us try hand towing him in the glider—which had tricycle landing gear attached. He attached the Riser to one end of a fifty foot tow rope and stationed five strong adults at the opposite end. Five husky tow persons spent a considerable amount of time charging up and down a 1,600 foot field, dragging the glider behind. They could not run fast enough, however, to get the pilot and craft airborne.

Next, using the same tow point with a two-ring release, the business end of the tow line was hooked to an elderly Datsun pickup. Bauknecht sat in the glider shouting instructions to the truck driver.

He wanted to try several short hops first. Cautiously, he made two flights at about three feet off the ground. A hail of cheers went up from the ground crew. Then four more flights, each longer and higher than the one before, were made. Bauknecht wanted to be sure that he had chosen the correct tow point. It seemed stable enough but we just could not believe we had picked the right location on the first try. Farina then flew several times and agreed to tow with the line at that point.

For the first aero tow, we chose a small airport which has only light traffic on weekdays. The runway is long and wide, with open fields on either side to provide lots of "Bail out space."

Rick Mullins (the tug pilot) and Rose

man begins the climb out by releasing his hold on the nose of the glider.

The pilot now has radio contact with his crew and through his radio commands he has control of the speed of the truck and the drag pressure of the winch. Both controls can be altered to suit conditions and to maximize the climb.

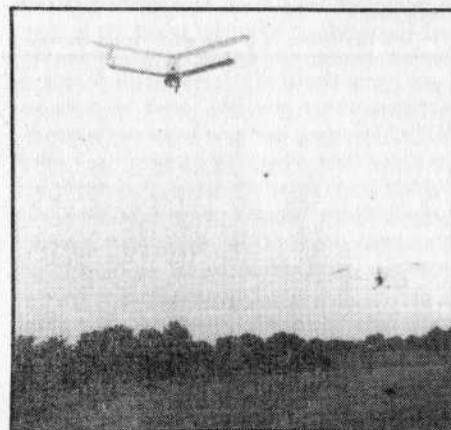
Our experience has been that in no wind or strong conditions the pilot strain is reduced greatly. The pilot does not have to run nor does he have to ground handle the glider. And he does not have to wait for the launch wind to straighten.

The launch wind direction is adjusted by the truck. The truck also creates the "wind," and can adjust its velocity. Since the control bar is sitting level on the truck, launches with a wing high can be virtually eliminated.

Mullins met Farina at the airfield late on a sunny and windless May afternoon. We wanted mellow conditions and it looked perfect that day.

After hooking in his swing seat harness and adjusting the tow release, Farina signaled to begin the tow. The Easy Riser rolled fifteen feet and then was airborne. It towed straight and easy up to fifteen hundred feet, where Farina released. He flew two more times that afternoon, each time with the same ease. He finally packed it up only because the axle on his "take-off wheel" assembly had been bent.

For towing, Farina designed "take off wheels," a lightweight set of tricycle gear. He rolls along on the wheels, lifts quickly to about ten feet off the ground, and then releases the



Cosmos Tug tows Carl Bauknecht

wheels from the glider. He reasons that since he is already accustomed to landing on his feet, wheels only add unnecessary drag and weight in flight.

The launch wheels are Yarnell Riser Runners to which Farina has added a four foot rear axle, a front fork, and three wheels. They are attached to the glider at four points; two in front and two in back. Only the front two attachments are "active," requiring a release mechanism. Farina pulls a ring which releases two clips in the front. The back attachment is simply a curved pin on each side which allows the wheels to drop away as soon as the front is released. Paul says that although the "takeoff wheels" are working well, "They are still experimental and need refinement."

We have truck launched in no (ambient) wind, in strong gusty conditions, in crosswinds, and even in "downwind." Every launch was about as difficult as a smooth "wonder wind" wire launch.

The pilot is already prone with hands on the base tube throughout the complete launch.

We have encountered much skepticism when we try to verbally communicate how to truck tow. Mostly we hear about the "demon turbulence" created by the truck. We have yet to see this "demon," but we have converted our most doubtful skeptics with a simple demonstration.

Now our week end airtime begins with a half hour drive to the tow road instead of a six-hour trip to the mountains.

Special thanks to our wire man "Klutch," and to Toni, Marshella, and Warner Sailsbury.

About the only problem encountered with towing the Riser has been in the timing to release the wheels. The back axle for the wheels got bent that first afternoon because Farina waited to release them until he was twenty feet or more above the field. If he waits too long the wheels are damaged on impact, while releasing too soon may cause them to bounce back up into the glider. He must also be ready to correct for a bit of altitude gain when the wheels are dropped.

Bauknecht, on the other hand, simply flies and lands with the wheels attached. As an ultralight pilot, he always lands with them anyway and feels it is simpler that way. Because he has found the Riser will only roll about ten feet before it becomes airborne, heavy duty wheels and suspension are not needed. He therefore uses the lightest gear possible.

Ground handling the Riser may be a problem when towing in a crosswind. If a wing should get high before the glider has enough airspeed for the tip rudders to function, a ground loop is possible. To combat that, someone steadies the wing which is most likely to rise prematurely. This "wing runner" will move with the glider until it is flying—usually only about three steps.

After months of towing we are still surprised at how easy the Riser is to aero tow. Because the glider is so pitch sensitive, no need exists for enhanced pitch control devices. It is very stable, with none of the yawing problems we have noticed in towing the floating cross-spar gliders. The fact that it is roll stable means it is easier for the pilot to control on tow.

Post Script

Other pilots of rigid wing craft, who have experimented with aero towing, are invited to write or call Whole Air and advise the magazine of difficulties, successes, and generally, of details, such as the best mount locations, speeds, and so forth.

It is the opinion of Whole Air editors that more of this type of aero towing (of "rigid wings") is likely in the future. Thus, information in this new area is vital for safety.

Send to: Towing, P.O. Box 98786, Tacoma, WA 98498-0786.

—Thank you.

What's It Like to Learn Aerotowing? A WHOLE AIR MAGAZINE MINI-CLINIC

Part I

YOU HAVE SURELY heard of aerotowing and you may have even read some of the articles about it. If you have not done it, you have probably wondered what it is like to fly the tow.

The first aerotows are much the same, in still early morning air. The launch feels like a shallow slope in no wind. As the tug accelerates to take off, airspeed builds up until it becomes like flying in strong smooth ridge lift, faster than best glide speed. After the launch, the tension of the rope is not great and your wing flies much as it always does at that speed.

The tow is not long. In five minutes you will climb nearly 2,000 feet. After you release the rope, it will take ten minutes to get down if you relax and enjoy the view. Take advantage of the smooth air to practice aerobatics and you can beat the tug down.

While aerotowing hang gliders is very new, you can do it without being a test pilot.

USHGA has obtained an exemption from the FAA which allows aerotowing and recently the association adopted a set of guidelines governing aerotowing. This means that it is perfectly legal to be taught to aerotow by a certified USHGA instructor who is further rated to perform aerotowing instruction. (Consult USHGA offices for the official guidelines about this!) However this legal method is by far the safest way to learn to aerotow. The instructors and examiners are pilots experienced in both aerotowing and teaching aerotowing to pilots who have never done it.

Aerotowing is much like any other hang gliding skill and is taught with a combination of ground school and flying. The first aerotows are in very calm conditions, usually early in the morning. Later tows are in more demanding conditions as the skill of the pilot progresses.

The skill level required to aerotow is about Hang 3.5, at the instructor's discretion. Any certified glider can be aerotowed, faster ones



generally better than slower ones. A pitch connection like a French connection or speed rail can help the glider trim on tow. This is all sorted out before the ground school.

The ground school is usually scheduled for an evening during the week prior to the first tows. It starts with a video that has a few minutes on equipment, and then several assorted launches. The launches are good for a bit of discussion and a few instant replays. Tow positions, both straight and in turns, plus release procedures and landing patterns are all in the video. The video is only half of it. Everyone must hang in the simulator and practice launching and releasing the tow rope. By the end of the evening, the whole business makes a lot more sense.

Getting out early enough will be a new experience for some pilots. The now mid-week ground school pays off. Little time is wasted setting up. The tug pilot takes off on a short flight to feel the air and make sure the tug is right. Since the tug pilot takes care of the tug, the only equipment the hang glider pilot is concerned with is the rope, the tow bridle and a set of control bar wheels. These are provided, so the glider pilot only has to become familiar with them.

The launch routine is the same as on the video. Carry the glider on to the runway, hook in, hang check and then hook up to the rope. It is too late to back down now! The tug rolls forward to take up the slack and then stops. Lift the glider, decide to launch, drop the flag and

CONTINUED ON NEXT PAGE

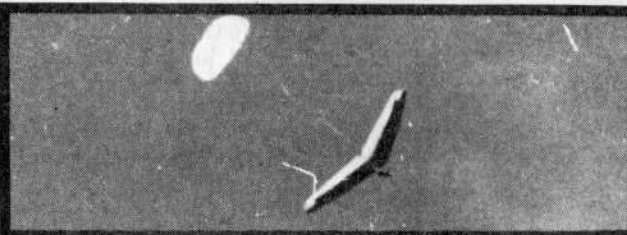


!PARACHUTES!

S-26

INSURANCE PACKAGE

The Only Certified Parachute You Can Buy!!
Available Through All Qualified Dealers
At Great Prices!!



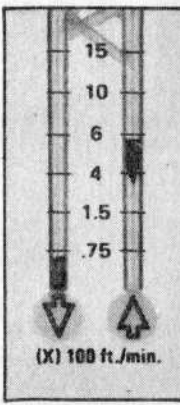
Contact Pacific Windcraft or Skylines
For The Nearest Qualified Dealer Today!!
Dealer Inquiries Welcome.

Pacific Windcraft Ltd. Skylines Enterprises Ltd.
408/422-2299 408/422-2781

We're Bringing Fun and Affordability Back Into Hang Gliding

MODEL 1F PANEL MT. VARIO METER

0-1500 ft/min scale with special insulated flask, static line filter and connecting tubing. Installs in minutes; needs only 1"x2" of panel space. No batteries needed. **\$85 (ACTUAL SIZE)**



MODEL 1 READOUT: ½ pint insulated flask and static filter needed to complete. Connecting tubing and full instructions included. **\$50**

MODEL 2 VARIOS

Actual size: 3 3/4"x4 1/4"
Weight: 11 oz.

MODEL 2T (above) Installs in seconds. Attaches to diagonal tubing of craft. (H-G,U/L) **\$85**

MODEL 2S: Attaches to horiz. cross tubing. Good for rear pilot of Schweizer 2-33 **\$85**

MODEL 4

Actual size: 3 3/4"x4 1/4"
Weight: 10 oz.

Fits standard 2 1/4" instrument panel cutout. Complete, no connections, no assembly. **\$90**

M A K I K I
P E L L E T
V A R I O M E T E R S

Since 1974, MAKIKI VARIOMETERS have been used in balloons, hang gliders, powered and unpowered aircraft and ultralights. Try us against our more expensive competition—we offer a 60 day, money-back guarantee; 1 year factory warranty against defects.

MAIL ORDER: Check with your dealer first. If you want to order by mail or phone (C.O.D. orders only-\$2.50 extra) use the address or number below. Air shipping included for U.S. shipments. FOREIGN ORDERS: Pay in U.S. monies by bank draft or money order, include \$5.50 for air shipping.

MAKIKI ELECTRONICS, Dept. WA, Box 629, Hauula, HI 96717
USA. TOLL-FREE (U.S.) 1-800-367-8047 ext. 203. ALL OTHER
1-808-293-9348. Dealer inquiries invited.

wait for the tug to spool up and start rolling. It is only a few seconds, but it seems like quite a while. The wheels on the control bar seem like a good idea, even if they are rarely used. With a good run, you are off!

Switch to the base tube and stay low until the tug rotates and begins climbing. Let everything settle down a bit before trying to climb in your harness. The tow speed is faster than best glide, but the glider flies much like it always does at that speed.

Vertical position is judged by the position of the tug relative to the horizon. The nose of the tug should be right on the horizon. It is different than flying relative to a stationary

object, because any change of position of the glider causes the tug to go in the opposite direction. If the glider climbs faster, the tug will climb slower. If the glider climbs slower, the tug will climb faster. So it is easy to overshoot the proper position.

Maintaining a horizontal position is easy when in straight flight. In turns, the best position is a little inside the tug with a little less airspeed. If you stray too far inside, airspeed gets too low; outside and airspeed gets too high. Staying in position is not difficult in still morning air, and the tug pilot can help by flying very smooth, wide turns.

If it begins to feel uncomfortable, the

release can bring an instant cure. As soon as the tow rope is released, the glider returns to its usual handling. The first tows are usually 1500 to 2000 feet, long enough to gain some experience but not long enough to get tired. On the second pass over the runway, the tug pilot waves, the signal to release. The glide down is long enough to relax and enjoy the scenery.

Impressions of the first tow are usually a bit confused, reflecting the fact that it is a new and different way of flying a hang glider. The second tow makes a lot more sense and after a few more tows it feels normal and you have a tow rating.

We have flown some tandem tows with a specially modified 200 Duck. The Duck has a chrome-molybdenum steel tube control bar that extends about a foot outside the down-tubes with wheels mounted on the ends, an aluminum tube reaching down from the rear of the keel to a third wheel. Two more aluminum tubes extend from the tail wheel to the corners of the control bar. This arrangement allows the Duck to take off from and land on the wheels, just like an airplane. Thus, one of the worst hazards of tandem flying is eliminated. Trying to land an overloaded glider on two sets of feet is most challenging, even for experienced tandem pilots. The Duck was equipped with a speed rail to reduce control pressures on tow and was towed with a center of mass bridle (see main article).

All the tandem tows were flown by a very experienced tandem and tow pilot, and no serious problems were encountered. The wheels worked fine for both launch and landing, and the Duck flew reasonably well tandem. One of the areas that could be improved was the rate of climb. With a medium to large size pilot and passenger the rate of climb on a warm, humid day was adequate, but certainly not spectacular. Fortunately, the tow site was very flat and surrounded by several miles of flat pasture. Without these safeguards, some of the heavier passengers would never have flown.

Double surface gliders, like the Duck, are often not suitable for training beginner pilots because of their weight and handling. The weight of the Duck was of no consequence because no one ever had to carry it around. But the handling was only suitable for more experienced tandem pilots. It served well when giving experienced pilots dual towing instruction and for taking passengers who were not interested in flying it. But it could not be used for primary instruction.

A tandem glider for primary instruction will have to be quite large, stable, and very easy to turn. Turn-around time with an efficient aerotowing operation is very short, so performance will be sacrificed for easy handling. Work is in progress on a glider that should prove more suitable than the 200 Duck, but it has not yet flown.

We would certainly appreciate hearing from anyone who has done work in this area. Please write Karl Allmendinger and crew, addressing your letters to AEROTOWING, c/o Whole Air, P.O. Box 98786, Tacoma, WA 98498-0786.

Learning To Fly...

Part II

TANDEM AEROTOWING

MOST PEOPLE ARE taught to fly by instructors who fly with them, rather than watch from the ground, as hang gliding instructors usually do. Lots of people have fun just riding in airplanes and never learn to fly. The only people who experience hang gliding now have put enormous effort into learning how to fly. If the sport is to grow and prosper, it must be made more accessible.

One of the ways this is possible is tandem flying, perhaps by aerotow launches. The

model for this is the typical sailplane operation, where aerotowing two-place gliders for rides and instruction account for most of the flights. The wait for a tow is rarely as long as it takes to set up a hang glider.

Aerotowing hang gliders is very new, and tandem aerotowing (aerotowing?) is even newer. So a lot of technique has yet to be worked out. Progress must be made safely—and slowly if that is what it requires for maximum safety.



A FORMER JET JOCKEY SAMPLES HANG GLIDING BY AERO TOWING

By BILL DALE

As an ex-Naval Flight Officer I have flown in every type of flying machine you can imagine. But when I was asked to go up in the 200 Duck towed behind an ultralight I had mixed feelings. An F-4 or P-3 this was not—it was not even as big as some parachutes I used to carry for those times when it might be necessary to "Jettison the Aircraft."

Not being a hang glider pilot I was forced to try this tandem ("sitting" in the right "seat" again). So Eric hooked me in and we both did a hang check and harness check. Now for the launch. It was not as bad as I thought.

The tow launch and flight were very similar to a sailplane tow I had long ago. With both Eric and I, the Duck was VERY heavy and it took a while to get some altitude. We made several wide turns as the Foxbat climbed out with us in tow.

As a passenger (and first-time hang glider pilot), it was hard to tell when we were turning—you hang directly below the Center of Gravity. The wing rolls right or left with little sensation transmitted to the pilot or passenger. Just a slight G-load increase told us of the turn's steepness. The tow to about 2,000 feet

ended when Eric let me pull the release lever (an NFO needs to feel useful).

Speed can only be felt by the wind in your face—real seat of the pants stuff! As Eric pulled the control bar in we would speed up and dive—push out and slow down and level out. It would blow on your face like on a slow motorcycle—about 25 to 35 top speed. Due to our high gross weight Eric kept our speed high and did not do any unusual maneuvers. Just staying in the flight pattern was a trick!

The view was spectacular. The totally unrestricted visibility makes enclosed aircraft seem claustrophobic. Laid out prone in the harness, I could look anywhere except through the wing, of course, and could easily watch the tug fly the pattern, drop the tow rope, and come around to land. By the time the tug was on the ground we were not far behind.

The landing was typical for a hang glider. With the tail-dragger landing gear we made a very normal landing approach and touch-down. Eric thought it was a little hard (there was no suspension system for the landing gear). I didn't mind. Eric obviously has never landed on an aircraft carrier or he probably would not have apologized. The roll-out was short on the gravel strip and we climbed out of the harness and began to drag the Duck back to the barn.

The overall impression was that of a sailplane ride except for the wind in the face and lack of roll sensation. As a new aspect of hang gliding it has great potential. Tandem training for the new hang glider pilot will greatly improve the logistics and time required to learn to fly. And just as the sailplane flyers know, a good tow into the right air can get you "way up there."

I am hooked! I am going to learn to fly these things even if I have to run up and down hills! Towing could be a much more fun way to learn. But that will require better training gliders and more tow pilots and tug aircraft. If hang glider manufacturers would invest in a few good flight trainers of this type it could open the sport to lots more people—and more new gliders sold too!



photo by Bill Dale

IF YOU WANT YOUR PARACHUTE TO HAVE...

FLAT CIRCULAR SOLID GORE CONST.

- High Drag Benefits
- Low Volume
- Faster Openings

VENT CAP COVERING APEX HOLE

- Quicker Openings
- Slower Descent Rates
- Reduced Risk of Apex Line Entanglement

1/2" TUBULAR NYLON REINFORCEMENT AT APEX

- Adds strength to area of greatest stress during opening shock

ALL SEAMS REINFORCED WITH TYPE III WEBBING

- Necessary for strength in the event of a high speed opening

V-TABS AT EACH LINE ATTACHMENT

- Helps to distribute opening shock load
- Important in the event of a high speed opening

400 LB. TUBULAR NYLON SUSPENSION LINES

- Stretch characteristics help reduce opening shock load on canopy, harness, and pilot

TYPE XVIII BRIDLE

- Sewn with 5 cord thread
- Strength rated at 6000 lbs.

DROP TESTS TO FAA C23B TSO STANDARDS

COMFORT PACK DEPLOYMENT BAG

- Safety locks
- Protective side line cover
- UV resistant material

... THEN YOU WANT A HIGH ENERGY SPORTS PARACHUTE!

For complete information on all High Energy Sports Products, contact your local High Energy Sports Dealer or:

High Energy Sports

2236 W. 2nd St. • Santa Ana, CA 92703

(714) 972-8186



□ HANG GLIDER NAVY WITH GREEN & GOLD SILK DETAIL



□ ULTRALIGHT NAVY WITH GREEN, GOLD & RED SILK DETAIL



Neck Ties By

SKY LIFE

Suitable for pilots and all other sky enthusiasts.

Price \$15.95* + \$1.75 Handling & Shipping
*N.Y. State Residents Add \$1.32 Sales Tax
Send Check or M.O. to:

SKY LIFE
345 W. 21st Street
N.Y.C., N.Y. 10011
Tel. (212) 929-4379

Name _____
(print)

Address _____

City, State, Zip _____

Allow For Immediate Delivery
Dealer Inquiries Welcome

WA

comfortable on longer tows. The Comet 2 towed with the center of mass system, had the most pressure, enough to be uncomfortable even on short tows.

Pitch pressure on tow can be greatly reduced or eliminated with a properly adjusted pitch connection, such as a Speed Rail, french connection, or Pitchy. Lowering the front of the connection to reduce the pitch pressure in free flight will also reduce the pressure on tow. At some point, the pitch pressure on tow will be reduced to nothing because the pull of the tow rope will make the glider fly at tow speed. Off tow, without the pull of the tow bridle, the glider will fly at its normal trim speed. The glider will fly at trim both on tow and off. A glider set up this way is much easier to fly with either bridle. It is very important that the connection is properly adjusted and the pilot comfortable flying with it before towing.

The Comet 2 was flown with a Speed Rail adjusted so the free flight pitch pressure was quite light. It flew hands off with the single-point bridle in smooth air. In turbulent air, it tended to sink below the tug, needing a little push out to maintain position. With the center of mass bridle, the C2 needed a slight pull in to maintain position. The speed rail on the 175 Dawn was set up and flew the same way. The Prostar II was flown with a Speed Rail and single-point system. At the time, the Speed Rail was being tuned and the glider needed either slight pull in, slight push out, or flew at trim on

tow, depending on how the Speed Rail was adjusted.

The two bridles fly differently in yaw and roll. With the single-point bridle, the glider is more stable in yaw but less maneuverable, while the center of mass bridle makes the glider less yaw stable but more maneuverable. The Comet 2 is quite stable in yaw and handled better with the center of mass bridle. The extra maneuverability made it easier to maintain position in turbulent air. The 175 Dawn was towed with the center of mass bridle and handled much the same as the Comet 2. The Ducks, and particularly the HP, are less stable and tend to yaw. The stability of the single-point bridle reduced yaw oscillations but did not compromise their maneuverability. The Prostar II was only towed with the single-point bridle and proved to be both stable in yaw and quite maneuverable. Gliders that tended to yaw at high speed also tended to yaw on tow, more so with the center of mass bridle than with the single-point bridle.

The tendency of gliders towed with the center of mass bridle to oscillate in yaw may well be worsened by the extra pitch pressure the pilot must hold to maintain position. The gliders with pitch aids could be flown with a much lighter touch which seemed to reduce that glider's tendency to yaw.

The weak links on both systems, as in the USHGA guidelines, are only strong enough for normal tows. Several were broken accidentally, usually about the time the glider pilot was out of position and reaching for the release. A couple were broken on purpose, to find that it was just like releasing with full

tension.

The best technique for releasing is to climb a little above the normal tow position and then dive to reduce the tension on the tow line to prevent the bridle from snapping back at the glider pilot. Even a release at full tension was no problem as long as the glider pilot remembered to turn away from the bridle during the release. The glider resumes its normal free flying handling at the instant of release, and flies just the same as if it had reached that attitude and airspeed without being on tow. A couple of times the tug pilot released when he decided the glider was a little too far out of position for comfort. The rope, draped over the control bar and trailing below and behind the glider, had little effect on performance or handling so the pilots flew back over the runway and dropped the rope before landing. Landing with the towline attached to the glider is something to be deliberately avoided.

Aerotowing is a pretty complicated business, and cannot be done casually or carelessly. The procedures in the USHGA guidelines absolutely must be followed for safety. Ignoring the guidelines can change aerotowing from a safe way to launch to a deadly hazard, as recent tragedy has demonstrated.

Many thanks to Jean-Michel Bernasconi, Dave Garrison, Wally Andersen, Sharon and Bones Strickland, Tom Low, Jim and Janet Lindberg, John Minnic, Ken Ward, Eric Beckman, Brian Robins, Don Piercy, Dan Buchanan, Mike Ward, Bill Dale and Scott Malerbi for their skill and patience.

We Build Our Harnesses & Parachutes to the toughest standards we can find...our own!



OPTIONS: ★ ½", ¾", or 1" Foam ★ Racing Boot No Foam ★ Steel Carabiner ★ THERMA/R™ Insulation Radio Holder ★ Ballast ★ Boot Stash Pouch ★ Extra Pockets ★ Higgins Hinge Fly Flap ★ Chevron Stripes You Name It! ★ Two Week Delivery

FLY WITH THE BEST SYSTEM AVAILABLE...FLY WITH

High Energy Sports

2236 W. 2nd Street • Santa Ana, CA 92703
(714) 972-8186

WHOLE AIR

Tell'em... "I saw your ad in

**LITEK'S
MINIATURE
VE-12 VARIOMETER**

- Price is only \$169.00
- Available with the -OV option (earphone jack) at \$179.00
- Adjustable sink alarm trip point
- Large easy to read meter face (we are known for that already) with the same dial face as before.
- The zero setting, sink alarm trip point, sensitivity calibration and volume of optional earphone jack are all adjustable from outside of the unit. There is never a need to disassemble it.
- Body of unit is 3½" x 2½" x 1½"
- Can be upgraded to -OV option at later date
- Can be glider mounted
- Long battery life as before
- Uses the same proven circuitry we have used for many years so it responds as quick and stable as previous models.

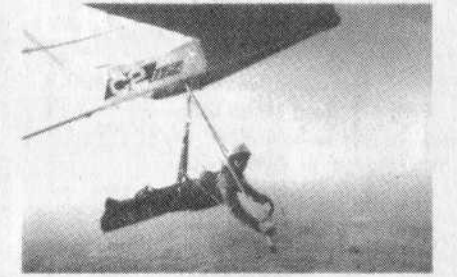
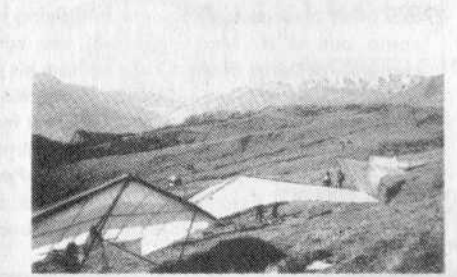
VE12 Variometer.....	\$169.00
VE12-OV Variometer.....	\$179.00
VE7 Variometer.....	\$169.00
VE35 Variometer.....	\$198.00
OV Earphone Jack Retrofit Kit.....	\$ 16.75

The Earphone Jack can be installed by you (needs a soldering iron) or by us on any variometer we made. It consists of a postage stamp size PC board with parts and 2 wires on it. We charge \$5.00 for 24 hour installation.

LITEK 4326 Fish Hatchery Road,
Grants Pass, OR 97527 503/479-6633



**BIG! COLORFUL!
REASONABLE! NOW!**



Available ... for your Christmas gift purchases. This calendar is a large 16" (wide) by 12" (deep) format, with 13 beautiful full color photos from all over the world. Act now. Supplies limited!

WHOLE AIR BOOKSHELF
P.O. Box 98786, Tacoma, WA 98498-0786

YES, Send me "DELTA 1986"
I've enclosed \$10.00 plus 95¢ postage for each Delta 1986 calendar ordered.

RUSH IT TO:
(NAME) _____
(ADDRESS) _____
(ZIPCODE) _____

(Washington pilots, add 78 cents sales tax.)

BRITISH LEAGUE FINALE



Final League winner, Graham Slater.

In early September, the final league meet brought a new 132-mile national record, eight pilots over 100 miles, and a total of 2,380 miles in one day of cross country flying. / Story and photo by Noel Whittall, Whole Air British Correspondent.

The forty competitors between them flew 2,380 miles that day. In a country as crowded as ours, where the soaring pilot always has to have one eye on the map in order not to violate airspace, this is a stunning achievement, and provided a great end to the official competition season.

This problem of airspace was responsible for previous League leader, Bob Calvert, sliding out of the awards; both he and Trevor Birkbeck zeroed after admitting to only a possible infringement, which lesser sportsmen would surely have gotten away with!

This last League contest was to be a four day event, but the weather reverted to type of the Saturday and Sunday, with plenty of rain and low cloud. It was impossible to believe that this was the same country which had been supplying such good thermalling just a few hours earlier. Monday was a little kinder, with a short XC task possible in a light South-westerly, but by comparison with Friday it was a pale imitation. Individual winner that day was Robert Bailey who worked his heart out to

get very close to the twenty-mile goal.

Overall winner of the 1985 League series is Graham Slater, well known in the States for his captaincy of victorious American Cup teams back when that event was held in Tennessee. After taking a year off competition, Graham has come back in with a bang to lift the British championship from the likes of John Pendry and Michael Carnet. He flies a Typhoon S4 Racer, and his win will be a big boost for the Solar Wings factory which manufactures the Typhoons. I guess it isn't a bad thing for the Magics not to have the field all to themselves.

The 1985 League, kept to only four meets because of the crowded international calendar, has been a success, and some fine flying has come out of it. Next year will see some changes, as Derek Evans is retiring from his job as Chairman of Competitions. Percy Moss, currently BHGA Chairman, is to take over from Derek. That move will surely leave British competition management in good hands: Percy has been the organising force behind our current excellent airworthiness test rig, and is a tireless worker for the sport.

OVERALL BRITISH LEAGUE RESULTS

1	Graham Slater	Typhoon	2559 points
2	John Pendry	Magic	2552 "
3	Peter Harvey	Magic	2435 "
4	Jes Flynn	Typhoon	2380 "
5	Bob Calvert	Typhoon	2356 "
6	Dave Rusbridge	Magic	2279 "
7	Robert Bailey	Magic	2275 "
8	Phil Huddleston	Magic	2270 "
9	Colin Graham	Magic	2227 "
10	Darren Arkwright	Magic	2158 "

Distance Record Holder Peter Hargreaves came 12th overall, and picked up the special prize for the pilot who had most improvement over their previous year's placing.

AT THE END of a summer of uncompromisingly sullen weather in the British Isles, the final round of the League started off on what seems to have been the one golden day we needed to convince ourselves once more that we do breed some of the best cross-country pilots in the world.

On Friday September 6th a cold front had just passed over Northern England. Noon saw cumulus forming above the Yorkshire site of Wether Fell, helped along downwind by a 25 mph west-north-westerly. That sort of breeze is no problem on our smooth treeless hills, and League chief Derek Evans had no hesitation in declaring the task 'open distance'.

Local site expert Peter Hargreaves (Magic) was one of the first to make a break for it once the window was opened, and proceeded to cruise across the hills of Yorkshire and on down thru the flatlands of Lincolnshire. He eventually ran out of land at the coastal resort of Skegness, more than 132 miles from take-off. You get extremely wet if you try and go any further from there. Only a mile behind him was Jes Flynn (Typhoon), and another six pilots beat the 100 mile mark. Peter's flight gave him the British national record for a second time - he held it a year or two back. This flight was two miles better than John Pendry's 130-mile mark set in 1984.

HEDO

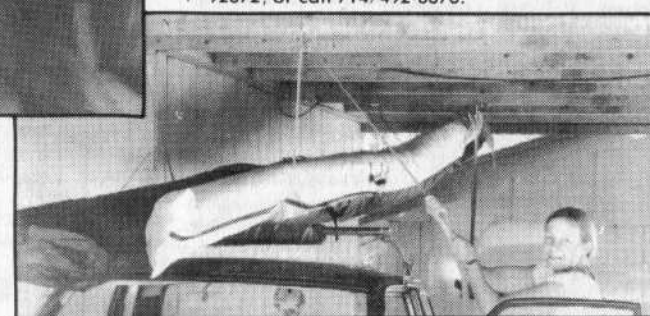
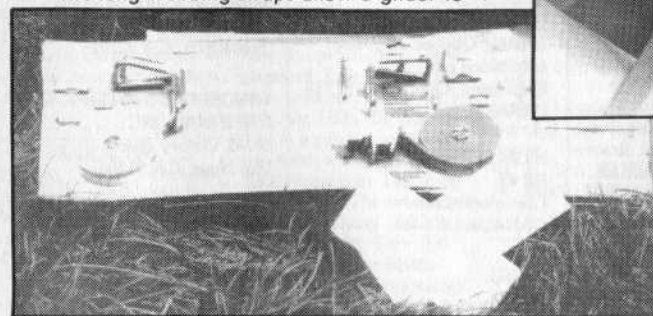
LIFT BACK-SAVING HOIST DEVICE

LIFTING GLIDERS OVER your head can be a difficult task, for all of us except for maybe a few supermen world classers. But a company in Germany—who largely serves the windsurfing community—and their distributor here in America, have made the weight-lifting chore a little easier on the old back, with their Hedo Lift.

Kroeger Imports, of San Clemente, California sells a nifty little package of hardware that allows one person—the sort without bulging muscles—to safely raise a modern 70-pound glider up to the rafters in a garage or other storage area.

The \$39.50 shrink-wrapped package comes with four zinc-plated steel fittings—two are fixed, two have adjustable safety clamps (see photo)—two thirteen-foot straps, lag screws, and instructions. Installation is simple.

The long webbing straps allow a glider to



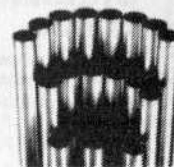
be inserted into loops, and lifted pulley-style up to the roof. The clamps are of a design that shut firmly on the webbing when you relax the pull. Lowering the glider requires that you maintain enough pressure on the webbing to hold the clamps open. The assemblies permit gentle lowering of the glider to a vehicle's racks.

Our test effort attempted to lift two gliders at once. This is more than the Hedo Lift is intended for, and in fact would not raise the gliders without another person to help lift the gliders (total weight 120 lbs.). However, the Hedo Lift holds the gliders easily, and still permits lowering of the two gliders with safety.

An excellent Christmas gift, or dealer accessory, contact Kroeger Imports for availability at P.O. Box 4178, San Clemente, CA 92672, or call 714/492-8676.

ALUMINUM TUBING

ORDERS ONLY TOLL FREE
1-800-622-8386, ext. 590



ANODIZED 2-19 LENGTH PRICE

7/8 x .058 x 12' — \$1.65
1" x .049 x 12' — \$1.75
1 1/8 x .058 x 12' — \$2.22
1 1/2 x .095 x 12' — \$2.90

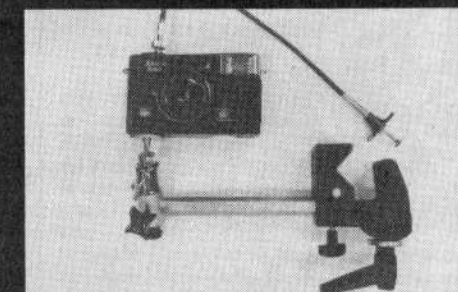
LEADING EDGE AIR FOILS

CATALOGUE
\$3.00

331 South 14th Street, Dept WA
Colorado Springs, Colorado 80904-4096
Customer Service (303) 632-4959

PHOTOGRAPHY
CAN BE FUN AND SIMPLE WITH THE

SUPER CLAMP



COMPLETE SUPER CLAMP OUTFIT INCLUDES
Clamp, Extension Arm, Swivel, 20 ft. Cable Release, Ansco 1080 Camera

THE ANSCO 1080 FEATURES Automatic Winder, Autoflash, Auto Focus Wide Angle Lens. ALL FOR ONLY \$139.95

Super Clamp Assembly Only \$59.95

Contact us for a full line of cameras & video:

Dealers for Ball Varios
The finest soaring instruments.
C.W. PHOTOGRAPHICS
A Division of
C.W. Domes and Unique Homes

Rt. 2 Box 210-B
Window Rock Rd.
Dunlap, TN 37327
(615) 265-1539

When Only The Best Will Do. Call C.W.

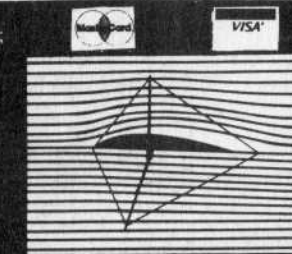
Dealers Invited



Boris Popov
Northern Sun, Inc.

612/731-1311

9242 Hudson Road
Lake Elmo, MN 55042



DIRECTORY

READER NOTICE

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

NORTH MOUNTAIN

HIGH SIERRA SPORTS
286 E. Winnie Ln.
Carson City, NV 89701
702/885-1891

Northern Nevada's complete hang gliding and windsurfing shop. All major brands available. USHGA Certified Instructor, Observer, and Region 2 Examiner. Sales, Service, Rentals, and Lessons.

WASATCH WINGS, INC.
12129 South 2160 West
Riverton, UT 84065
801/768-4500

Full service ultralight airport at Cedar Valley Airport. Featuring the Maxair Drifter and hang gliding aero towing. Dual instruction for both.

SOUTH EASTERN

KITTY HAWK KITES (EAST)
P.O. Box 386
Nags Head, NC 27959
919/441-4124 (in NC)
800/334-4777 (out of NC)
Learn to fly safely over soft sand dunes through gentle Atlantic breezes. Beginner, Novice packages and rating available daily. Complete inventory of new glider, accessories, and parts in stock.

NORTH EASTERN

MOUNTAIN WINGS
Box 1022/Main Street
Kerhonkson, NY 12446
914/626-5555

Ellenville area's most complete HG shop. Mtn & Training hills for all winds. Exclsv dlrs for: WW, Bennett, Pac, Windcraft, Manta, Seedwings, Cosmos trike. Also Dlr for: Airwave & Pro Air, USHGA Cert. Instr., towing, repairs, parts, access., ultralight instr. Phantom sails, camping, tours, bunkhouse.

MORNINGSIDE FLIGHT PARK
Rt. 12, RFD #2
Claremont, NH 03743
603/542-4416

Complete flight facility with camping and swimming. Top notch instruction, USHGA Certified. Precision repairs for airframe and sail. Glider & Accessories in stock. Dealer for Bennett, Moyes, UP, Wills, Wizard. Powered ultralight instruction available.

NORTH PACIFIC

SAN FRANCISCO WINDSPORTS
3620 Wawona
San Francisco, CA 94116
415/753-8828
For all your hang gliding needs, we sell and service all major brands. Send \$2.00 for Price List. Private and group instruction by Certified Instructors.

CANADA

FLY-WEST HANGLIDING LIMITED
2207-42 Street, SE
Calgary, Alberta
CANADA T2B 1G4
403/235-4653

Dealers for Progressive Aircraft Co., Polaris from Italy. Sales, service, rentals, and accessories. Certified Instruction: Radio equipped, beginner to mountain flight.

EUROPE

NOVA-AIR AERO SPORT SYSTEMS
Am Bahnhof
8531 Illesheim
WEST GERMANY
Tel: 09841-8883
We sell and service all models of equipment. School instructor is special-rated by USHGA (I-IV) and is German Instructor/Observer.

RON HURST HANG GLIDING SAFARIS
Im Brunni 10
CH-8152 Opfikon
SWITZERLAND
Tel: 01/810-26-48
Visit Switzerland and encounter the rapture of flying the Swiss Alps.

CANADA

MULLER KITES, LTD.
5-1303-44th Avenue NE
Calgary, Alberta
CANADA T2E-6L5

PRAIRIE WIND FLIGHT SCHOOL
B8 - 281 River Ave.
Winnipeg, Manitoba
CANADA R3L 0B7

AVIA SPORT
1655 Ave Lise
Granby, Quebec J2G-8C8
400 Racine est
Chicoutimi, Quebec G7H-1T4
CANADA

HIGH PERSPECTIVE
RR #3,
Claremont, Ontario
CANADA L0H-1E0

SOUTH EASTERN

LOOKOUT MTN FLT PARK
Rt. 2, Box 215H
Rising Fawn, GA 30738

HAWK AIRSPORTS
3743 Martin Mill Pike
Knoxville, TN 37920

NORTH CENTRAL

NORTHERN SUN GLIDERS
9242 Hudson Blvd.
Lake Elmo, MN 55042

SOUTH MOUNTAIN

ARIZONA WINDSPORTS
5245 S. Kyrene
Unit #4
Tempe, AZ 85283

NORTH PACIFIC

KITTY HAWK KITES (WEST)
P. O. Box 828
Marina, CA 93933

MISSION SOARING CENTER
43551 Mission Blvd.
Fremont, CA 90405

HANG GLIDERS WEST
20-A Pamaron Way
Ignacio, CA 94947

CHANDELLE HANG GLIDING CENTER
488 Manor Plaza
Pacifica, CA 94044

AEROSAILS
800 Mercer
Seattle, WA 98109

SOUTH PACIFIC

MAUI SOARING SUPPLIES
RR 2, Box 780
Kula Maui, HI 96790

HANG FLIGHT SYSTEMS
1202-M East Walnut Street
Santa Ana, CA 92701

WINDSPORTS INTERNATIONAL, INC.
16145 Victory Blvd.
Van Nuys, CA 91406

HANG GLIDING EMPORIUM
613 North Milpas Street
Santa Barbara, CA 93103

WILLS WING
1208-H East Walnut Street
Santa Ana, CA 92701

ORIENT

JAPAN SURFING PROMOTIONS
3-1-4 Tsujido Nishikaigan
Fujisawa City, Kanagawa,
JAPAN

EUROPE/Scandinavia

WINJE & COMPANY
Postboks 462
Lillehammer
NORWAY

CARNET SKY SYSTEMS
143 Loder Road
Brighton, BN1-6PN
ENGLAND

VOL LIBRE DIFFUSION
3, rue Ampere
94200 Ivry
FRANCE

NORTH MOUNTAIN

GOLDEN SKY SAILS
15801 W. Colfax
Golden, CO 80401

CLASSIFIEDS

600 FLEX WING GLIDERS

180 ATTACK DUCK
1984, 180 Attack Duck. Red, gold, and white. 2 flights, 2 hours airtime. New. Must sell. \$1,500. Clinch Mtn., Tenn. 615/828-4343. 44.45

PRO STAR I 160
Pro Star I 160, blue and white, custom inlay, good shape. \$600 or BO. 602/774-1654. 44.45

RAVEN 179
Raven 179 - rainbow colors, with wheels, \$400, great novice glider. U.P. knee hanger with parachute mounted, \$250. Litek vario \$100. Helmet \$10. Harness bag \$20. Except glider, all virtually new. Prices firm. Jim 201/342-8894 anytime. 44.45

DUCK 160
DUCK 160. Excellent condition, great handling, less than 30 hours. Will deliver in region 9. Dave 412/381-2284. 45.47

ATTACK DUCK
1984, 180 ATTACK DUCK. Red, gold, and white. 3 flights, 4 hours airtime. New. Must sell. \$1,200. Clinch Mtn., Tenn. 615/828-4343. 45.46

COMET 185
COMET 185. Blue and white, excellent condition. \$750 or Best Offer. Call Keary 617/476-3933 after 6 pm. 45.46

COMET 185
COMET 185. Good shape, flies great! \$700. Dan 216/543-8381. 45.46

COMET 165
165 COMET. Low time, orange and white sail, very good condition. Must sell. \$650 or B.O. Call Mike Neuman 412/898-3219. 45.46

HARRIER II-177
WANTED: HARRIER II-177. Send complete description to Scott Setterfield, PO Box 2294, Carson City, Nevada 89702; or leave message at 702/882-6807. 45.46

700 RIGID WING GLIDERS
FLEDGE IIB
Fledge IIB, good condition, dk. blue, lt. blue and white, \$650. 717/826-9883. Wanted: Fledge III. 44.46

EASY RISER
Exceptionally strong and maneuverable rigid wing now in production. New, improved Easy Riser Kits now available. Glide 11/1, sink rate 180's, 52 pounds. This is a proven aircraft you can build in four weekends. 3000 Risers built. Fun to fly. Send for "The Original Ultralight Flying Machine Catalog." UFM, Box 2967, Turock, California 95381. 44.45, BTFN(10/80)

FLEDGE III
WANTED: Fledge III E.T. or Fledge III. Call 608/249-7721 in Wisc. 45.47

750 SCHOOLS & DEALERS

SAN FRANCISCO WINDSPORTS
San Francisco Windsports (formerly Hang Glider Equipment Co.). For All Your Hang Gliding Needs. 3620 Wawona, San Francisco, CA 94116; 415/753-8828. 37B, BTFN(3/00)

SOUTHWIND HANG GLIDING SCHOOL
USHGA Certified Instruction. Call Gary 801/571-8535. PO Box 633, Sandy, Utah 84091. 42.46

800 ACCESSORY GEAR

"THE ORIGINAL" CALIBRATED WINDSOCK

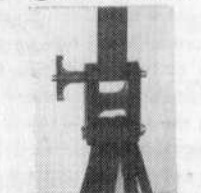


Now, four socks to choose from:
9 month guarantee:
WS 015 - 9" mouth, 4' length, indicates 0-15 mph \$27.50
WS 020 - 14" mouth, 6' length, indicates 0-20 mph \$32.50
18 month guarantee:
WS 325 - 9" mouth, 4' length, indicates 3-25 mph \$38.00
WS 330 - 14" mouth, 6' length, indicates 3-30 mph \$38.00
Order: Check or C.O.D., shipping paid on prepaid orders. Carolina Ultralites, Rt. 6, Box 473B, Boone, NC 28607, 704/264-9351. 31, BTFN(22/20)

TIE-DOWN STRAPS
QUICK RELEASE TIE-DOWN STRAPS 1" black nylon webbing 5' long, adjustable. Well made buckle assembly, off and on in just a snap, 2 for \$10, PPD, Qty/Disc. 12 VDC motors, about 1/2 the size of a starter motor. Like the one I used on my tow-line rewiner, \$20 ea. Bruce Mahoney, 3008 S. Norwood, Tulsa, OK 74114. 918/838-0638. 44.45

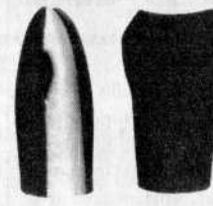
QUICK RELEASE
Quick release carabiner - \$24.95. THERMAL, 19431 Business Center Drive 41, Northridge, CA 91324. 40.45

QUICK RELEASE



Quick release carabiner - \$24.95. THERMAL, 19431 Business Center Drive 41, Northridge, CA 91324. 40.45

PRIMO AIR MITTS



New high density 3/16" Neoprene II. Silver, royal blue and red. New total-bond glued seams with same guarantee. New \$24.50 price includes shipping and handling. Call 501/851-4359 or write: Ozark Mountain Hang Gliders, PO Box 5091, Little Rock, AR 72205. Dealer discounts on orders of 3 or more pair. 35, BTFN(14/80)

WANTED: USED EQUIPMENT
WANTED: USED HANG GLIDING EQUIPMENT: GLIDERS, INSTRUMENTS, PARACHUTES, ETC. SAN FRANCISCO WINDSPORTS, 3620 Wawona, S.F., CA 94116; 415/753-8828. 37B, BTFN(4/80)

PRICE HARNESS
PRICE STIRRUP HARNESS with zip on caccoon. Lt. blue, dark blue, yellow stripes. Includes parachute bag and UP harness bag. \$130. 215/827-9462. 45.46

850 SERVICES

PARACHUTES SERVICED
PARACHUTES: ALL MAJOR BRANDS Sold Repacked - Repaired. Bridles replaced, used chutes wanted. S.F. Windsports, 3620 Wawona, San Francisco, CA 94116; 415/753-8828. 37B, BTFN(4/40)

900 POWERED AIRCRAFT

PTERODACTYL ASCENDER
Pterodactyl Ascender - very low time, many extras, excellent for Ptug. \$2,000. Nites 602/992-3183. 44.45

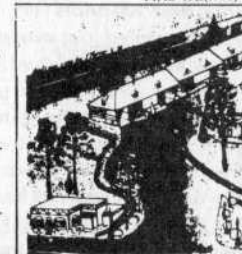
950 OPPORTUNITIES

HEY YOU

Fly when you want, learn about composite aircraft construction, change aviation history, and get paid too! I need you to help me build the ultimate in foot-launched sailplanes. (Whole Air, May '85). \$4.50/hr. plus benefits. Henry Cherry, POBox 667, Dallas, GA 30132. 404/445-1365. 45

975 MISCELLANEOUS

SIMULATION
COMPUTER SIMULATION-WINDMASTER, a simulation of one on one cross country hang gliding, arcade style. Thermals, dust devils, clouds, and lightning. For the Commodore 64 (disk). \$29.95 PPD. Maui School of Hang Gliding, PO Box 1119, Paia, HI 96779. 44.45, 49B(7/65)



BUSINESS OPPORTUNITIES
CRYSTAL AIR SPORT MOTEL - Male/Female HELP WANTED: 15 hrs./wk. Exchange for lodging in Original Flyers Bunkhaus. Call or write Chuck or Shari, 4328 Cummings Hwy., Chattanooga, TN 37409. 615/821-2546. Home of SKY GEAR, Apparel & Accessories. Also, vacationing? Private Rustic Rooms. Waterbeds, Video Movies, Color TV, Pool. 35B, MXB/BTFN(10/20)

975 MISCELLANEOUS

T-SHIRTS
"I ♥ HANG GLIDING". White, tan, blue, yellow, silver, and pink with navy lettering/red heart. Glider on back. 50% cotton/50% polyester. S, M, L, XL. \$9.00 Postpaid. Larry Haney, 1601 N. Shackleford No. 131-4, Little Rock, AR 72211. 501/224-2186. 44, BTFN(8/60)

SOAR THE GRAND CANYON



SOAR through "THE GRAND CANYON" right in your own living room! 2-hour spectacular helicopter exploration. Breathtaking music. Critically acclaimed. VHS or BETA. Details FREE. Beeger Productions, 3217-R Arville, Las Vegas, Nevada 89102. 702/876-2328. 42.47

STILL DREAMIN'?

Here's a special opportunity. So special you'll have to act quickly...while it lasts, before it's gone.

The last Delta Wing DREAM, with light demo use (involved in **Whole Air** evaluation).

Dream 160 — Only \$899 (Save \$696!)

Write: P.O. Box 98786, Tacoma, WA 98498-0786
or call 206/588-1743

QUIT DREAMIN' & START FLYIN'

WHOLE AIR CLASSIFIED ORDER FORM

20 cents per word (standard face), \$3.00 minimum.
phone numbers — 2 words; P.O. Box — 1 word; prices — 1 word;
make/brand/model/size — 1 word each; zipcode — 1 word.

Photos — \$5 (will be reduced to 1" height); Logos/other artwork — \$5 (will be reduced to 1" height); Larger photos and artwork, available at \$5 per column inch; CAPITALIZED words — 25¢ each; Bold words — 30¢ each.

Please enter my classified order as follows (exactly):

Send To: P.O. Box 98786, Tacoma, WA 98498-0786, Att'n: Classifieds.

PRODUCT LINES

TACOMA, WA - Howdy flying folks. Here we are again with yet another edition of good ole "Product Lines." This time, we've a collection of year-end-type odds and ends from home and abroad for you. So, sit y' back, and take in some more *Industry Insider* poop. Lessee, rounding up late contests, we have some results from Grandfather Mountain's 1985 running of the prestigious *Masters of Hang Gliding Championships*. Our contact for the event was Tom Phillips of Lookout Mountain Flight Park, who was invited for the second year. His description is summarized and paraphrased... It was a contest troubled by weather. This makes it a typical "Grandfogger" event, we'd guess. The standings were characterized by a lot of flip flops, pilots at the top tumbled to lower positions and some dragging around at first jumped up. Pulling the magician's rabbit out of the hat, **Rich Pfeiffer** ended up with his first Masters win, and took home somewhere around \$5 Grand. Not too shabby, the Masters remains (since the Texas Cup disappeared-remember it?) hang gliding's biggest purse. Pfeiffer, according to also-finalist Phillips, played the conditions just right, thanks to a bit of old lady luck's help, and max'ed out a shear condition to leap in the very last round from a fourth standing to Numero Uno. The final grouping was 1st, you-know-who; 2nd **Stew Smith**, always a tough competitor, and especially at what amounts to his "home site;" 3rd, **Mike Degtoff**, another Grandfather regular, and a guy never to count out till it's over; 4th, Brit' **Bob Bailey**; 5th, multi-time winner of the Masters, **Steve Moyes**; 6th, **Mark 'Curly' Dunn**, now flying for Tut Woodruff as a member of her hang gliding team (remember Tut 'Hang Glider Heaver' Woodruff?). Mark is pretty new among the Masters, and this finish is real successful. He should feel (and we're sure he does feel) very pleased. In 7th was our correspondent, **Tom Phillips**, performing quite well himself in only a second trial against some of the world's best; and finally, in 8th was World Champion, **John Pandry**. Another British pilot, **Peter Harvey**, was a finisher in the money (not a lot, but some). Harvey had to leave the contracted contest, as he was in danger of losing his job back in the United Kingdom. The weather scene at Grandfather does extract its penalties, as Harvey was doing well, our reporter said, and entered the finals in seventh place. Shooting from North Carolina to Colorado and the *Telluride* meet, we find a whole different event. Described to us by **Pat Denevan** of *Mission Soaring* fame as a big, fun deal, the fly-in drew over 200 pilots (11). The weather there was not so cooperative either, Pat revealed, but everyone had a great time in a beautiful place which has firmly established itself in the American hang gliding calendar. Next year, *Whole Air* is gonna try extra hard to make that event, and you ought'a consider it too. *Telluride* is one of those places you kinda gotta see to believe. But while we had Denevan's ear we asked him about an item in last "Product Lines" relating to OLD shops, as we knew his Bay area business has been around for ever. He said, "Yup," he had gotten going way, way back in March of 1973, just slightly edging out another oldie, *Chandelle San Francisco*, whose monicker mentions an old supplier (Chandelle) that they've long since survived. Denevan claims to have had the best year in *Mission Soaring Center's* history, so a loud, hearty congratulation is in order to Pat and crew. With reports like that, we can get excited about hang gliding in North America being alive and getting better. Any other shops out there with more than ten years under their belts? Let us know. As stated last time, we think there's a story in these old shops, and the service they contribute to our great soaring sport. I guess that was the good news. Here's some bad news. *Aerial Techniques* was a long-established New York shop, with some interesting history going back to Jim Aronson and partner Douka Kaknes, who was reported killed in a plane crash, which eastern writer Bill Allen called a "pot bomber." (We may have blown the spelling of each guy's name-sorry 'bout that.) Anyhow, *Aerial Techniques* just filed bankruptcy, so g'bye to that gang. Actually some of them had jumped ship, ending up in the *Mountain Wings* camp of **Greg Black** and staff, who will now be the main supplier in that neck of the woods. Since we're talking health of the sport again (will we never cease?)... here's an excerpt from the *Cochrane Club News*, home area of the still-going-strong Canadian shop of Willi and Vincene Muller (*Muller Kites*). "Hang gliding seems to be going through a 'low' period right now. This seems to be a problem throughout North America, but not in Europe. Hang gliding in Europe is quite different to North America, it's a much more social

affair. Not so much of this driving to sites tucked away in places with no amenities for the non-pilot. Many sites are accessed by aerial lift (trams) and the landing areas are in tourist centres. In contrast North American sites seem to be out in the 'boonies,' not the places to take the family for a fun weekend. Civilization and amenities are necessary for happy non-flyers, which means that your pilot will stay longer in the sport." It's a statement we can echo from our experience. Don't know what can be done about it, especially as towing remains stalled as an growing alternative launch opportunity which could have us gathering at more amenity-oriented places (like airports near town). Still thinking of Europe-and having mentioned towing-we'd like to excerpt another item from the *Cochrane Club News* to report that La Mouette Director/co-owner, **Gerard Thevenot** broke the current European distance record by flying 275 kilometers (just under 171 miles!) from Dijon-home of *La Mouette's factory*- to Grenoble, France after launching via aerotow. Well, since we're in Europe now-doing the familiar "Product Lines" ramble-we just heard from **Tim Williams**, editor of England's *Wings* magazine. He had some late-breaking poop from Britain. *Solar Wings*, builder of the quite successful Typhoon S4 (see Noel's story on the British League Finale on page 38), recently opened a new factory on September 21st. They and Airwave are England's two major manufacturers. Solar is cranking out a reported 8 units a week (400 per year rate), while Airwave's "amazing, huge factory" is doing 25 a week (1,300 per year rate!). Too bad we can't get such reports on American build rates. Might make interesting comparisons. Williams also reports, "**Eric Raymond** is working for Airwave at the moment on some new secret wing. Whilst at Mere I saw him deeply engrossed in a textbook of stress calculations." *Whole Air* received some nifty pictures of a new rigid-type wing that Airwave was working on... look for them in our March 86 issue, with a piece on Airwave. Hey, Airwave's name reminds of their American distributor, *Airwave U.S.* who reports they're planning on a strong winter and 1986 period. Delivery times are down, finally, to 6 weeks, plus they have stock gliders coming in, so if you've been waiting for a hot magic IV, get in touch with 'em now. After the staggering loss of friend/partner, Chris Bulger, Airwave man **Kenny Brown** says things are full steam ahead with old and new plans in progress. See the news item on **Tina Jorgenson**, who will provide a live voice on their phone, plus accounting services and more. Brown will be making an east coast tour in late October (contact him if you want details and/or a visit). Kenny also reports that he's had "many more inquiries from the east coast of late." Let's see now... some wrap-up items: **Jim Johns**, of *Kitty Hawk Kites-West*, announced a first annual Ladies Invitational contest at Marina State Beach on October 26th from 10 AM to 5 PM. It'll involve target landings in two divisions-I & II, III & IV-for fun and prizes. Contact Mary Ann Ferguson by writing P.O. Box 828, Marina, CA 93933, or call 408/384-2622. Next, Willi Muller was unable to get us a short piece on the *Canadian Nationals* as the weather was not good. After sitting in the rain for a few days-and after only a couple 3 minute flights-Willi beat feet back west to Calgary. However, as *Muller Kites* put it, our "gossip page" should reflect that Toronto pilot **Mark Bourbonnais** is the 1985 *Canadian Champion*, flying an HP. Congratulations to Mark! (Thanks to Vincene for the info.) Last, we got some fed-poop from USHGA National Coordinating Committee Chairman, and newly elected CIVL/FAI official (what a mouthful), **Dick Heckman**. He reports after conversations with Ron Byerly of FAA-honcho Mike Zachery's office, that, "Of regulations being considered by FAA, the words being used are 'powered ultralights,' with 'hang gliders' being exempted." Boy-oh-boy, there's some good-sounding news! The FAA is just about done writing new regs which will then go to DOT offices. But they're writing so as to have their rears covered if congress or the NTSB insist on regs. Fact is, the FAA is dragging its collective feet. They don't want to do any more regulating, and are not in any hurry. But their jobs dictate that they be ready with regs if congress insists. So, folks, this wouldn't be such a bad time to dash off a letter to your congressperson, saying, "Stay out of further regs; there is no evidence to substantiate that more rules will make things any safer. And even if you feel you must regulate further, LEAVE HANG GLIDERS OUT OF IT!" Well, that's it for 1985 (except for our little newsletter later on). Enjoyed another one. Thanks for your continued interest in *Whole Air*. Got news or opinions? Send 'em to *Product Lines*,

How can anyone buy your old gear if they don't know about it?

WHADDYA WANNA SELL DEAL

CLASSIFIED AD FORM

Fill out form completely, and send with payment.

PHONE NUMBER AC () _____
(We must have your telephone number for our computer files.)

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Please Type or Print Clearly -- Help Us Avoid Errors.

CLASSIFICATION NAME _____ CLASSIFICATION NO. _____

(1 - \$5)	(2 - \$5)	(3 - \$5)
(4 - \$5)	(5 - \$5)	(6 - \$5)
(7 - \$5)	(8 - \$5)	(9 - \$5)
(10 - \$5)	(11 - \$5)	(12 - \$5)
(13 - \$5)	(14 - \$5)	(15 - \$5)
(16 - \$5)	(17 - \$5)	(18 - \$5)
(19 - \$5)	(20 - \$5)	(21 - \$5.40)
(22 - \$5.80)	(23 - \$6.20)	(24 - \$6.60)
(25 - \$7.00)	(26 - \$7.40)	(27 - \$7.80)
(28 - \$8.20)	(29 - \$8.60)	(30 - \$9.00)

MAKE YOUR AD MORE EYE-CATCHING... Add a photo of your glider, or your business logo -- \$5 per column inch. Pay once with your ad and we'll run it FREE the second time.

TOTAL NO. OF TIMES _____ TOTAL \$ AMOUNT _____

Start a 1-Year Whole Air subscription for me and bill it on my bank card -- \$8.88.

METHOD OF PAYMENT: Cash or Check MasterCard VISA

Card No. _____ Exp. Date _____

NOTICE: Please check your ad after its first insertion. We will be happy to correct any error called to our attention and rerun the ad without additional charge. Credit on classified errors is limited to a rerun of the corrected ad.

WHOLE AIR

P.O. BOX 98786, TACOMA, WA 98498-0786
1 (800) 426-8538
In Wash. (206) 588-1743

PAID IN ADVANCE ONLY

20 WORDS

2 ISSUES

5 DOLLARS

Your ad will run for 2 issues at 20 words or less for \$5. Over 20 words is 20 cents per word, per issue.

NOTICE: \$2 charge for ad cancellations prior to first insertion.