

DAWN

A Picture of Things to Come



Glider: Dawn Comp. Photo by R. Grigsby

THE DAWN represents an important new innovation in hang gliding technology.

STRUTS. The most exciting of the Dawn's new features is lower side struts. This eliminates the need for top rigging and bridle lines.

RIGID WING. The Dawn can best be described in terms of a rigid wing. Like a rigid wing, flight loads are located around a central structural spar — in the Dawn's case the "cross-spar" (located farther aft than a conventional cross bar). With fixed battens supporting both the upper and lower surfaces, the trailing edge becomes fixed, eliminating mid-span twist and providing center section stability.

HANDLING. Since high trailing edge tension is no longer necessary to prevent mid-span twist, the Dawn retains excellent handling and landing characteristics. (See Dec-Jan '85 issue of *Whole Air* magazine for pilot evaluation of the Dawn.)

HGMA CERTIFIED. The Dawn 155 and 175 are certified to 1984 specifications.

COMPETITION. Soon to be released, the Dawn Comp will be 85's hot new glider for the serious competition pilot. Details and specs coming soon.

DAWN SPECIFICATIONS

Size	135	155	175
Area (ft. ²)	128	148	168
Span (ft.)	31.3	33.3	35.3
Root (ft.)	6.5	7.0	7.5
Tip (ft.)	2.5	2.5	2.5
A/R	7.65	7.49	7.42
Weight (lbs.)	55	62	73
Pilot (lbs.)	110-170	150-220	170-250
Rating	Hang 3-5	Hang 3-5	Hang 3-5



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HANG GLIDING IN RUSSIA
TWO RIGID SUPERWING REPORTS
TOWING WITH A ROLAND CONNECTION

WHOLE AIR

The Magazine of Hang Gliding and Ultralight Soaring

May 1985 — \$2.50 (Can. \$3.25 / DM 6)



ISSUE
NO. 41
(2nd in 1985)

MAGIC III PIREP
FIRST PREVIEW OF CHELAN

STILL THE ONE TO CATCH



photo by Pork Stew Smith Rich Pfeiffer

We can say the proof is in the winning, but we believe the Sensors real success comes with its climb rate and glide in marginal conditions. The 160 VG Sensor flown by Rich Pfeiffer remained aloft at the US Nationals when other strong competitors who were tuned for speed went down. Pfeiffer's lead over the next place was 6%, the largest spacing in the top 13 places. A total asset, the VG allows instant adjustment of roll rate and handling to match changing conditions with the desired maneuverability. The Sensor's highly developed VG makes greater performance not only possible, but easier to handle.

"This glider performs the best and it's easy to fly! Bar pressures and roll rate are no problem. The VG lets you fly it any way you want. It's perfect."

—Jon Lindburg, San Diego, CA

"To win major competitions a pilot needs the best performance available, with the ability to execute in all conditions. The VG gives the 510 top L/D performance while allowing the glider to thermal efficiently, even when good handling is mandatory. Other gliders may be able to perform equally at their specialty, but in world class competition and a variety of conditions the Sensor proves to be superior."

—Rich Pfeiffer, Santa Ana

"I have flown with many excellent pilots on state of the art equipment. The certified Sensor 510 160 VG has the best climb rate especially in light conditions, and the best L/D and sink rate in the 30 mph range. With the VG system, I can select the best wing tension to launch, fly and land easily, which gives me the safety and confidence I need to maximize the existing conditions."

—Stu Smith, Grandfather Mt., N.C.

"It out sinks everything, has a wider speed range, and the sail stays clean going flat out."

—Bill Liscomb, Leucadia, CA

"On my second flight with the 510 I pulled off 45 miles. I especially want to commend you on building a glider with an ingenious design and real integrity. The quality of workmanship and the sail work is the finest I have ever seen. I feel very confident and safe flying the Sensor."

—Jerry Nielsen, Washington D.C.

"The sink rate is absolutely amazing; it simply can't be touched. As for glide, I swear it's at least what your figures indicate. The wing simply surpasses all of my wildest expectations. Herses to your insight, sweat and perseverance."

—Bob Hofer, Fort Smith, Ark.

Recently, at the time of its HGMA certification, the Sensor 160 VG underwent improvements to its leading edges and upper surface air foil. The new 510 incorporates *extended half ribs* to the double surface line, a wrap around *nose fairing*, improved shape on the mylar leading edge inserts, a better supported upper surface root section with a close rib spacing of 1.3 ft (.4 meters) and higher leading edge sail tension. The new *wing shape* of the Sensor combined with the new aluminum faired tubes adds up to a performance gain that's a pleasure to fly.

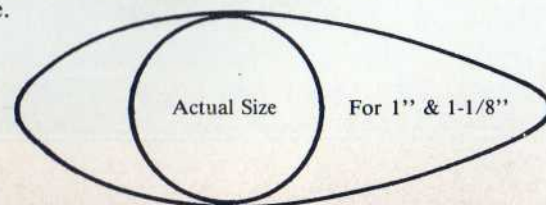
HGMA CERTIFIED* SPECIFICATIONS - SENSOR 510 — 160 V.G.

Span	34.8 ft	10.6 m
Area	161 ft squ	14.96 m squ
Aspect ratio	7.52	
Empty Wt.	66 lbs	29.9 Kg
Hook-in Wt.	145-255 lbs	65-102 Kg
Ideal Hook-in Wt.	175 lbs	80 Kg

*Includes new aluminum fairings, extended half ribs, Kevlar trailing edge and Variable Geometry.

Recommended skill level: Advanced.

Our new certified aluminum faired tubing. Fits most all Sensors made.



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Volume 8, No. 2, 1985
ISSUE NO. 41

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Published By
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Dan Johnson

On The Cover:

Getting high in flat Florida, Roland Alexander tows up behind Tony Nicorvo in what may be the first legal use of the FAA aero towing exemption. The site? EAA's Sun 'n' Fun Fly In at Lakeland, Florida. (Photo plane flown by Angel Matos of Advanced Aviation.)

Publisher's Column



WELL FOLKS, HERE we come again from Tacoma. As we settle in to a new headquarters for *Whole Air*, we're happy to put out a really packed issue for you. Forty four pages. Over twenty thousand words of information. Twenty three news stories. Nine feature-length articles.

A lot of thanks go to the owners and employees of the *Flyer* newspapers for taking us under their wing. I've said that before, and I'll probably say it again.

As the *Flyer* Folks have made new chances possible for *Whole Air*, one opportunity that has been created may bring greater foreign involvement. I'd like to relate some of that to you.

The American market has gone through a great metamorphosis since I first ran down a Michigan sand dune in my Chandelle hang glider. That was Memorial Day 1973. As you read this, the same date is nearing, a dozen years later.

In that decade and some, we've seen the departure of literally hundreds of manufacturers. America is now down to five, count 'em, five. *Whole Air* has a single parachute

advertiser, a single harness builder, a single component parts supplier, (though we have several in the accessory business). And the problem is not that *Whole Air* can't interest more businesses. There just aren't any more of them.

Why?

Clearly, the market has receded. The number of buyers will not support the same number of businesses as existed a dozen years back. Of course, many of them should not have lasted. Many perceived the market incorrectly in the first place -- saw it as bigger than reality proved it to be -- even in those heady days. Others produced junk, and the impersonal marketplace in turn junked them. Another group of entrepreneurs just got tired of their "hobby businesses," and left to take other "regular jobs."

Whole Air reflects this situation. And to compensate, we simply must go overseas. The German-speaking market alone is twice as big as the U.S. market. I hope the grand experiment works... and works well. But I have a concern.

Will our loyal American subscribers (you!!) accept the foreign news, the articles in German, or the German advertising we hope to attract? Will our loyal American advertisers feel undermined by ads from foreign manufacturers? And, very importantly, will the German hang gliding community buy the idea?

I'd like to hear from those of you who have an opinion. Write me (address on pages 3, 15, or 43). Maybe you're critical. Maybe you're thrilled. Either way, let me know.

I'm actually full of positive anticipation over the idea. I have to be. In order for *Whole Air* to succeed in business, and to help in promoting hang gliding, we need more support than the U. S. by itself can deliver. America's got great products put out by quality people, but too few of each. If we had every single business as advertisers, and every single pilot as a subscriber, we could provide some wonderful outreach for our sport. However, pleasing everyone all the time is not a realistic goal.

So, we're goin' abroad. Are you with us? We want to know. (Now the ball's in your court.)

Thanks,
Dan Johnson

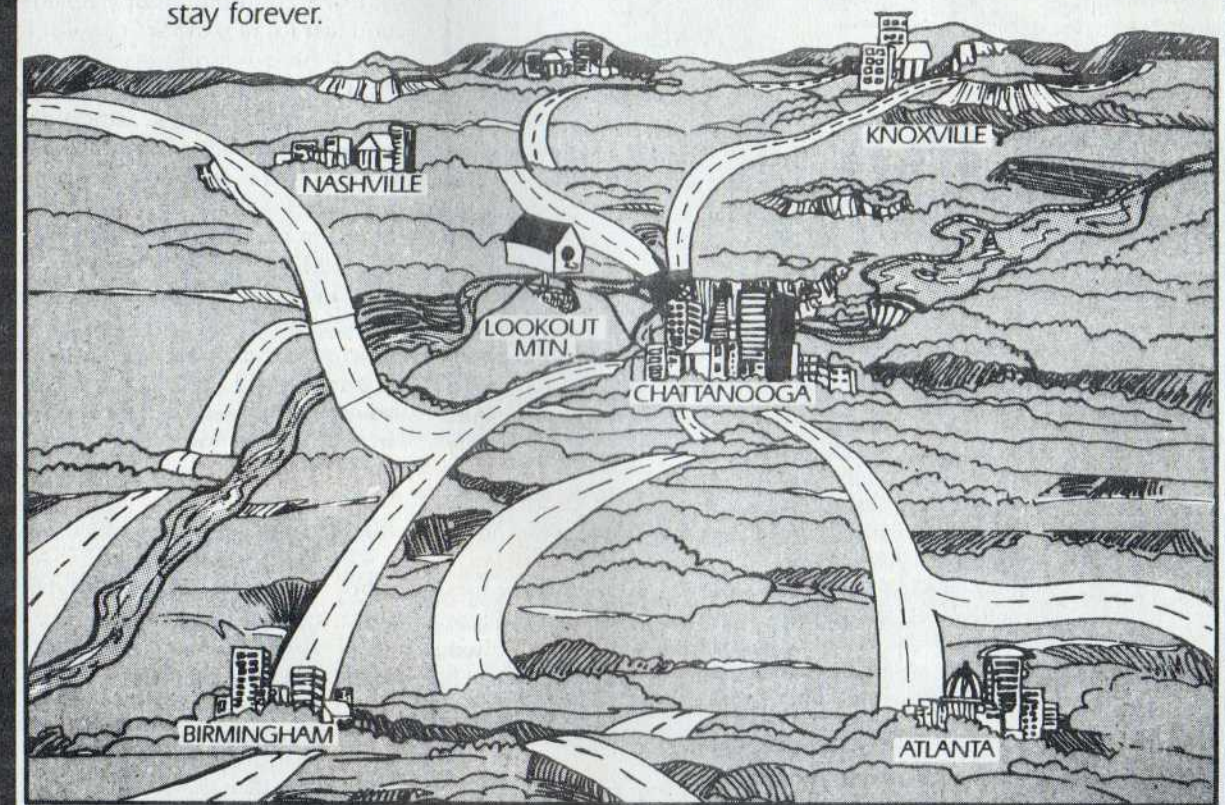
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Chattanooga Area
Convention & Visitors Bureau



FORUM

Foreign Soarin' Letters

Dear Editor:

Enclosed is a copy of the Hang Gliders Club (of Bombay India) newsletter produced by myself for our club. As far as possible I try to schedule it once a month, compiling news on flying in India.

I shall be extremely grateful if you permit me to reproduce (Xerox) news, articles, pictures from your magazine. This will certainly help us to spread the word in this part of the world.

Incidentally, out of our population of 720 million about 100,000 persons are in the right age, fitness, and finance group to fly hang gliders or ultralights. Fifteen or twenty actually fly with regularity, and 60 subscribe to this newsletter (for Rs. 50/year — about \$4). The rest are poor unfortunates.

Again hoping for your cooperation to further the cause.

DEEPAK MAHAJAN
Hon. Secretary
Bombay, India

With our compliments, Deepak, please do feel free to use whatever is of value to you. We offer the same opportunity to any hang gliding club, but do request that you give credit to Whole Air. --Ed.

would like to subscribe to *Whole Air*, in this case in a personal basis (the association is not exactly affluent).

DR. ARTURO YGLESIAS M.
San Jose, Costa Rica

Exception to two Skyting Safety Rules

Dear Editor:

While I enjoyed all three articles on towing, I have to take exception with two of the "Skyting Safety Rules" as stated.

(1) Pulling in on takeoff -- this is true *only* if you have your body line placed *under* the base tube (due to the strong nose-up force it imparts on takeoff). However, if you have the body line traveling above the base tube, you don't need to pull in on take off. As a matter of fact, if you start with your nose level to the horizon (as in normal mountain flying) you'll need to push out slightly or run like crazy to take off.

(2) Think air speed -- this is true, but constantly pulling in is wrong. Eventually you'll be flying so fast that the glider will begin to oscillate from side to side. If this happens to you, *slow down!* I believe that the optimum control bar position during climbout corresponds with the normal minimum sink position of your glider. If your glider oscillates with the bar at this position, then tell the driver to slow down. Failure to slow down could result in a worsening of the oscillations and a possible lockout.

If you follow the original eight Skyting criteria, you should have many fantastic flatland flights!

HENRY M. WISE
Houston, TX

Love My Airstream

Dear Editor:

After reading your comparison article (chart) on the Keller harness, I bought a similar one made by Bennett.

I noticed an immediate increase in high speed glide and suspect an improvement in minimum sink also.

Keep up the good work!

JOHN ERICKSON
South San Francisco, CA

Absolute Minimum

Dear Editor:

I am interested in the *absolute* Minimum engine on a foot-launched, high performance

whatever (sailplane glider, hang glider).

ROBERT BEHRENS
Pittsburg, CA

Oh No! Not California!

Dear Editor:

Your editorial column mentioned a possible move to California. That would really bum me out.

You see, I moved from Illinois to Los Angeles, and it sure is nice to get *Whole Air* because it has a flavor to it that I'm afraid will be lost if you move out here.

The frequent photos and news from Lookout and out east really add a lot to *Whole Air*. Flying isn't everything. We enjoy it here, but really miss the way people are in the midwest... the change of seasons and thunderstorms (it doesn't rock like it does in the midwest). Sound goofy? I hope not.

PAUL DEES

Redondo Beach, CA

Well, Paul, you can relax. *Whole Air is not moving to California, but to the northwest, up to Tacoma, Washington. And even so, after seven years of publishing from the east, we have a wealth of good contacts and friends in the east who have promised to continue to keep us supplied with information. Plus, we know the east. It's not a mystery to us as it is to so many westerners to whom everything east of Las Vegas is just "back east."* --Ed.

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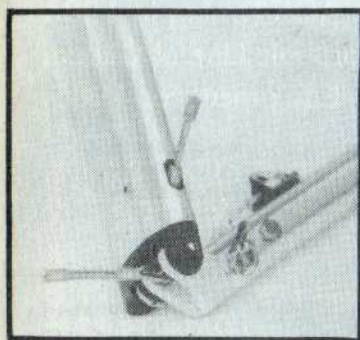
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INDUSTRY NEWS

Airwave Gliders U.S. Announces New Magic IV



Seattle, WA — Airwave Gliders' American affiliate announced that Isle of Wight manufacturer has released their newest model of the successful Magic line. The Magic IV has subtle changes in the sail design, but encompasses several significant improvements in the airframe hardware.

Most obvious are new fittings at the base of the control frame uprights. These involve some very clean injected molded parts which fit smoothly into the airfoil shaped legs, which themselves are new as standard equipment (optional on the Magic III). The molded parts house not only connectors for the flying wires, but permit a discreetly housed pulley system for the Magic Trimmer, a variant of the variable billow scheme.

An airfoil kingpost is also standard now, and more specially designed fittings now make the crossbar pull-back and connection much easier, plus new hardware is employed at the leading edge/crossbar juncture. Lastly, a new nose wire catch makes this attachment clean and easy to use.

Ken Brown, director for the Airwave Gliders U. S. unit lists the standard equipment on the Magic IV as: Airfoil shaped upright legs, airfoil shaped kingpost, injection molded ball tips offering a 50% weight savings, breakdown leading edges, expo and rainbow sailcloth patterns, and zippered access to the leading edge/crossbar junction. Optional extras include: Sandwich sailcloth for the main body, mylar leading edge coating, a speed bar, a Magic Trimmer (in-flight sail tensioner), and a Pitchy (french connection device).

For more information, contact Airwave Gliders U. S. at P. O. Box 1153, Mercer Island WA 98040, or phone 206/622-8132.

Ball Variometers Introduces New Small Wrist Audio/Vario



Ball Variometers has just introduced the newest model in their line-up of high quality variometers, the M-20 wrist audio/vario.

The tiny new instrument, only slightly larger than the altimeter worn by many pilots, offers an up audio variometer with adjustable sink alarm, a speed to fly scale, and can be fitted with a total energy probe. A small case and velcro wrist strap are also included for the retail cost of only \$200.00.

Featuring exact calibration from sea level to 20,000 feet, the vario uses a different tone than that on the other members of the Ball line. "It's a noise maker rather than a speaker," clarifies owner Richard Ball. An interrupted tone speeds up for increasing climb rate. The sink alert can be user adjusted by a screw inside the instrument, so that the factory set 500 FPM down alarm point can be anywhere in the instrument's scale (instructions for such adjustment are included with purchase).

A total energy probe is available (\$18 extra), and the factory recommends its use only with the vario clamped to the bar (Ball clamp also \$18 extra), as an eight inch steel tube must face into the wind. The speed-to-fly scale is right on the instrument's face, but Ball says, "This is for use on high performance gliders, as the scale depends on 12:1 or so performance." Battery life on the M-20 is about 50 hours says the factory, and a push-to-test button will show life remaining on a battery in use.

For more information, contact Ball Variometers, 5735 Arapahoe Av., Boulder CO 80303, or call 303/449-2135.

Advanced Aviation Offers Three-Axis Aero Tug



ORLANDO, FL — The second official entry in the supply of aircraft designed to work as an aero tug under the F.A.A. exemption released last October was introduced by Advanced Aviation just prior to the EAA's Sun 'n Fun Fly-in last March.

In development since early 1984, the Florida firm has been working closely with boat towing veteran of fourteen years' experience, Roland Alexander. Advanced Aviation chose to use their King Cobra two-seat ultralight, but equipped with only a single seat.

Further modifications to assure structural integrity included tail spar additions to more evenly transmit towing-induced loads to the stronger structural members of the Cobra (see photo). A release designed by another long-time boat tow veteran, Bob Bailey, is attached at the trailing edge of the new structural parts, at a position clear of and well behind the tail surfaces.

As the Cobra with the large engine and strengthening for two-seat usage is heavier, the forward speeds were slightly higher than in previous aero tow equipment. Problems with aerodynamic control of the hang glider under tow were resolved by the independent development of a High Speed Neutral Trim Device for the glider (see report elsewhere in this issue).

So successful was this new aero towing package (tug and trim device) that an hour and twenty five minute flight under tow was undertaken to demonstrate the new concept and equipment feasibility.

For further information on the Advanced Aviation Aero Tug, write the company at P. O. Box 16716, Orlando FL 32861, or call 305/298-2920.

HANG GLIDING Is Finalist In The "Maggies"

HANG GLIDING Magazine has been nominated as one of five finalists in the Oscars of magazine publishing, called the "Maggies." The event is sponsored by the Western Publishers Association, and includes two sub-categories for consumer and trade publications.

Hang Gliding Editor, Gil Dodgen, remarked at the recent Board of Directors Meeting in Boise Idaho, "I don't even know how they came to include Hang Gliding, but it is nevertheless quite an honor to be placed in contention with the other nominees, which are all significantly larger and better funded magazine efforts."

At a banquet to be held this month in Los Angeles, Hang Gliding will compete in its category of Most Improved Trade Publication of under 50,000 Circulation. The other nominees include Alaska Airlines magazine, Valley magazine, Ranch & Coast magazine, San Diego magazine, and Home & Garden magazine.

Best of luck from Whole Air to Gil and USHGA on this opportunity!

NEW IV 85



PO Box 1153 Mercer Island, WA
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Telex #296585

Pilot: Ed Ramey — Photo: Howard Handy

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New size Airfoil; Slick new fittings; New construction.

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Check out the New Magic In Your Area. Contact U.S. Airwave for the dealer nearest you, or to establish an Airwave Gliders dealership.

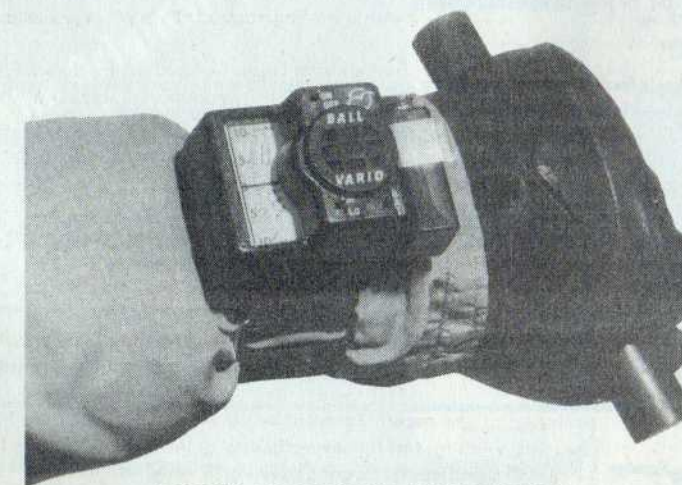
The Magic IV has been certified to the standards established by the German, Swiss, and British Hang Glider Regulation Boards.



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Crystal's Simulator Returns To Action



CHATTANOOGA, TENN — The good news is... the famous Crystal Hang Glider Simulator is back! There isn't any bad news. Leon Riche — director of the diverse outdoor sports organization, High Adventure Sports — has contracted with owner Dan Johnson to become a franchised operator of the Crystal Simulator. Riche will also be buying the component parts of the Simulator for the prototype installation at Raccoon Mountain.

High Adventure Sports, a well established Chattanooga company, gives lessons and organizes outings for many activities using the considerable outdoor resources of the greater Chattanooga area. Riche explains, "We are the Go-Anywhere-Do-Anything people, and we are now basing our enterprise at Raccoon Mountain, where we will be operating the Simulator on a daily basis." In addition High Adventure Sports offers sky diving lessons, hot air balloon rides, ultralight rides, canoeing, rappelling, cave exploring, white water rafting, and several more activities. The company also plans to put on a high adventure entertainment show at Raccoon Mountain, where the family can also enjoy the full service campground, water slide, horseback riding, Alpine Slide, Grand Prix Raceway, all in a park-like atmosphere.

Johnson reports, "We're very happy to have the Simulator back in action. A number of folks wrote lamenting the fact that it was shut down (having read this in the March 85 Whole Air). We've received requests for information to build a Simulator from many areas in the U. S., and from nine foreign countries. We hope to have several franchised operations going by the end of the decade, and one or two may begin this year. The Simulator really gives a good public exposure to the sport of hang gliding." Johnson is currently negotiating with four other potential franchisees.

For more information on the High Adventure Sports Chattanooga operation, call 615/825-0444, or 615-825-1995 (the former number for Crystal Air Sports). For more information on Simulator franchises, write P.O. Box 144, Lookout Mtn., TN 37350

Xylon Offers Miniature, Electronic Barograph

The Xylon Bar 350 is the result of applying the latest instrumentation and microprocessor technology to develop a barograph that sets a new standard in size, accuracy, and convenience of use.

A read-out is provided on tape similar to those on hand held printing calculators. Information includes turn-on altitude, field elevation (set by operator), timed actions expressed in minutes since turn-on (for such applications as motor on when aero towing), altitude gains, descents, landings and turn-off... all expressed in the time since turn-on. Altitude is measured every six seconds, for a period of up to twelve hours.

The device can be sealed electronically or by conventional wire and lead seal, of interest to those attempting record flights. The Xylon Bar 350 measures 2" X 2 3/4" X 6 1/4" and weighs a mere 25 ounces. With such diminutive size and weight, it may be valuable for use on hang gliders, being considerably smaller than more conventional barographs. Its primary drawback is the price: \$650.00.

For more information on the Xylon Bar 350, contact the company at P.O. Box 6252, Laguna Niguel, CA 92677, or call 714/499-2825.

Afro Electronics Introduces Cumulus 8000 and XC 8000 Flight Decks



Afro Electronics, formerly the Santa Barbara Hang Gliding Center, has announced two new instruments to compliment their line of imported German instrument flight decks.

The XC 8000 is billed as their top-of-the-line model, and sells for \$749.00. It offers a variometer with integrated glide calculator, total energy compensation, McCready Speedring, airspeed indicator with an 8-100 MPH range, an altimeter with 20,000 feet or 8,000 meter capacity, a stopwatch, sink alarm, and additional features.

The lower priced Cumulus 8000, which retails for \$395.00, comes with a variometer that has two different response times (0.7 and 2 seconds). Some pilots may be puzzled about the value of a longer response time. They explain the slower response time allows one to core only the larger thermals. The altimeter on the Cumulus 8000 has the same limits as the XC 8000 (above).

Both instruments come with a one year guarantee. For further information contact Afro Electronics, 468 Alan Rd., Santa Barbara, CA 93109, or phone 805/687-3119.

LEAF Offers 800 Service

Leading Edge Air Foils, one of the nation's leaders in the hardware and accessories line for hang gliders and ultralight aircraft, recently announced the availability of 800 number telephone service for orders only.

For the convenience of their many customers, they offer the toll free phone line between 9 AM and 5 PM Tuesday through Friday. Please dial 1-800/621-8386, extension 590. For technical or regular business calls they request callers use their advertised number of 303/632-4959 Tuesday through Saturday from 9 AM till 5:30 PM.

For additional information, or for a current catalog (ADD: \$3.00 in the USA, or \$4.00 foreign), contact Leading Edge Air Foils at 331 South 14th Street, Dept PRWA, Colorado Springs, CO 80904-4096, or call the number listed above.

INTERNATIONAL NEWS

Muller Kites Publishes First HANG GLIDING NEWS

The March 1985 issue is Volume 1, Number 1 for Muller Kites Hang Gliding News, a newspaper format publication telling of the many goods and services offered by the long-established Canadian hang gliding retailer.

Issue Number One is full of short reports on their line of products which includes the Profil and Atlas from France, the Wills HP from the USA, and the Keller (integral) harness from Switzerland. In addition, a back page "ad" gives a source listing of the large number of goods on hand at the Calgary, Alberta-based shop.

Another area recaps the long distance flights from the Alberta area, while yet another previews the company's instruction program. In all it's an impressive effort and package.

photo by Bettling Gray



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La Mouette Offers Spring Ejected Parachute System



With hang gliding aerobatic flying gaining in popularity, tumbling of the glider is occurring more and more frequently. During a tumble, the pilot is usually jerked and tossed about, flinging him/her toward the airframe and the cables. It can then be very difficult to throw a hand deployed parachute into the free air. Recently in Europe, some deployments have gotten tangled with the broken parts of the glider.

In order to increase the safety of pilots practicing aerobatic maneuvers, La Mouette has developed an extra safety system. It is a parachute with a mechanical extractor fixed at the aft part of the keel, well out of the way of the cables. A powerful spring throws a pilot chute, which in turn extracts the main canopy.

Weight of the complete system is 2.4 kilograms (5 1/4 pounds). Area of the parachute is 41 square meters (455 square feet), using 20 suspension lines. La Mouette advises that the hang point must be moved slightly forward to compensate for the weight at the keel's rear. For example, on a Profil 17 (medium size enclosed crossbar glider), a pilot weighing 185 pounds at hook-in must move forward about one inch.

For more information, contact La Mouette at 1 rue de la Petit Fin, 21121 Fontaine les Dijon, France, or contact the french company through their American affiliate, Skylines, P. O. Box 4384, Salinas CA 93912.

Ron Hurst's Hang Gliding Safaris Offer Lower Cost Package



A new season is coming soon, and for 1985 the highlight of Ron Hurst's Hang Gliding Safaris is the reduced price of Sfr. 650 per participant (about \$235.00, dependent of course on the exchange rate, which these days heavily favors the dollar). This price includes mountain transportation with cable cars and lifts (1 per day) to launch sites not accessible by road. Also included is radio communications, daily weather briefings, and the total organization of your day.

Hurst emphasizes, "We use ALL of Switzerland as our base. The country has four major geographical and cultural areas, each possessing its own unique character and weather. It is our goal to launch at least once a day even if we have to turn Switzerland upside down." Their record is good. In three years of safaris, Hurst has only cancelled eight flying days due to bad weather.

As hang glider pilots are made up of individualistic persons, overnight accommodations are left to each pilot. Hurst advises, "Bring your sleeping bag, or stay in luxury hotels, as you wish." This also applies to food, about which he comments, "Eat out of your backpack or dine with kings." Hurst assures he will try to do everything possible to make your safari fun, exciting, and easy on your budget. If it is not convenient for you to bring your own glider, Hurst can rent a state-of-the-art double or single surface model for Sfr. 100/day plus damages (about \$36/day). Groups are limited to seven persons.

For more information, contact Ron Hurst by writing him at Im Brunli 10, CH-8152 Opfikon, Switzerland, or by phoning 01/810-26-48.

French Hang Gliding Federation Promotes Casual Interchange

In order to promote an intermingling of pilots from other countries at the french competition and training outings, the FFVL, French Federation of Hang Gliding, has invited several nations to tell their pilots that the FFVL will accept some of their best pilots in the french events at no entry fee to those pilots.

The FFVL organizes for their forty best pilots a number of competitions and training days. The competitions score points toward the french championships; the training days do not, thereby allowing the testing of new techniques. They believe that it will be interesting for all involved if a mixture of pilots could fly and learn together. So, they offer to waive the entry fee, and hope for a reciprocal opportunity from other countries.

The events are to be kept quite informal, meaning a pilot may merely call and ask for the chance to attend, that is to say, an invitation is not necessary. They wish to exchange lists with other associations so as to ascertain who can attend. They plan to extend this system for lower-level pilots in other meets.

It seems a good method to promote understanding between nations, especially those located so close to one another in Europe, and also to aid a pilot recently interested in competitions.

For more information on this idea, please write J. M. Coursimault (Koor-SEE-mo) — who can deal with English and German in addition of course to French — at 24 rue du Vivarais, 26320 St. Marcel les Valence, France, or phone 758-86-35 (evenings).

Aero Sports Society of Himachal, India to Host Rally

The government of India has begun an organization, the Aerosports Society of Himachal, to promote and develop aero sports like hang gliding, gliding, and ballooning. This Society is now planning an International Hang Gliding Rally in the Kangra Valley in the Himachal Pradesh to occur from the 3rd week of May till the 1st week of June (about the same dates as for the World Meet in Kossen, Austria). Organizers report, "This Rally is organized on a state level, and has nothing to do with the Rally last year, organized by the Western Himalayan Hang Gliding Association — a private group." Exact dates will be announced in a brochure to be issued shortly.

The entry fee for participation in the competition is \$800, which covers boarding, lodging, and transportation from the arrival at and departure from Delhi throughout the competition period. This does not include expenditures for personal reasons, alcoholic or other beverages, phone calls, laundry, and the like.

Prize monies are reported to be \$10,000 payable in foreign currency subject to permission from the Reserve Bank of India. Amounts of this nature typically draw leading pilots quite well, but conflict may arise due to the simultaneous scheduling with the World Meet.

For more information on the Aerosports Society's Rally, contact chairman Virbhadr Singh, Chief Minister of Himachal Pradesh care of: Himachal, Tourism, Ritz Annexe, Simla-171001, Himachal Pradesh, India.

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Beppu, Japan Site To Host World Open

About as this magazine is being read by some American pilots, the 1985 Yamaha Sky Grand Prix World Open is being run.

The meet, recognized by the Japan Hang Gliding Federation, was slated for May 1st through the 6th, and flying was from the Mt. Tsurumi and Sagiridai sites used by the World Meet in 1983. Prizes were offered for the ten top placing pilots and another Cross Country Prize for the longest distance flown. The total value of prizes was 2.5 million yen (however, much as that sounds to be, it exchanges to about \$10,000 -- still a most respectable sum).

Sponsors of the well endowed contest included the Japan Aeronautic Association, the City of Beppu, Nippon Gakki Co. Ltd., (Yamaha), and Yamaha Motor Co., Ltd. With this impressive list of sponsors, the entry fee for competitors was only 5,000 yen, or a modest \$20, which included the costs for local transportation as well as insurance premiums for third party insurance during the competition.

1985 NATIONALS UPDATE NEWS

Two and a Half Months Till the 1985 Nationals



The 1985 U.S. National Hang Gliding Championships will be held in Chelan, Washington (state) from July 13th through the 21st. Chelan is widely thought to be one of the best hang gliding sites in the state, and is also felt to be one of the best flying sites in the country. Chelan is a cross country site with proven 100+ mile potential. The planned tasks for this year's Nationals are cross country racing to a goal.

Flying at Chelan starts with taking off from one of the many launches on Chelan Butte at 2,800 feet AGL (see Chelan story elsewhere in this issue, too). This is followed by a thermal gain of at least 3,000 feet in order to cross the Columbia River Gorge. Once the gorge has been crossed, obstacles are few as one follows abundant retrieval routes surrounded by farm fields all available for landings. "Chelan is flatlands cross country flying at its best," reports Planning Committee Chairman, Mark Kenworthy.

Chelan is also a major Washington resort town nestled near one of the largest lakes in the state. Kenworthy continued, saying, "Opportunities for recreation before or after flying are great and vary from nightclubs to waterslides. The town is very positive towards hang gliding, symbolized by the monument to the sport in the city park listing the best flights from Chelan over the last several years. The town is very excited about being the host city for the Nationals.

For pilots interested in flying this year's Nationals, some procedures are specified below.

All pilots who have prequalified due to national ranking, or other means, must have their entries in by June 28th. This is also the cut-off for entries from regional qualifiers. For pilots who are not prequalified, early entries are going to be received to fill all slots not filled by qualified entries on June 28th. These empty slots will be filled first by entries received from pilots ranked in the top 100 CPS points in the order of their rank. After this procedure all other slots will be filled on a first come/first served basis. Entries for this procedure will be sorted by postmark date on the entry. Organizers explain, "Since we are unsure of what the final entry fees will be, at this time, all early entries must be accompanied by a pre-registration fee of \$100.00. This will be the entry fee if sponsorship of the meet is procured. If no sponsor is found entry fees will range from \$250 to \$100 depending on the distance a flyer must travel to participate. On June 29th, all registered pilots will be notified of their entry status.

Kenworthy finishes this update report saying, "This year's Nationals is going to be great. We are going to supply the campingspot and transportation during the meet. All you have to do is get to Chelan and enjoy the flying. Don't miss out on the 1985 U. S. Nationals!"

Contact Cloudbase Country Club, the sponsor organization, by writing P. O. Box 629, Issaquah WA 980278-0629.

CROSS COUNTRY NEWS

XCPA T-shirt Fund Raiser Underway



In an effort to spruce up the Association's headquarters clubhouse, XCPA member and artist Kris Doe has drawn and printed a T-shirt which Association president Rick Masters says, "...really captures the sense of adventure and challenge we feel when we pass through that launch window into the great unknown."

The shirt is done in a six color printing and is available in white, skyblue, and tan in short sleeves with a breast pocket or pocketless long sleeve.

Those interested in ordering a shirt — and thereby helping out the organization that is keeping flying in the Owens Valley alive and well — must first join the XCPA. Then select your size (S,M,L, or XL), color, and style. Finally include your payment of \$20 (short sleeve) or \$24 (long sleeve), and send to XCPA, Box 458, Independence, CA 93526. You'll be helping XCPA a lot, and have their gratitude in advance.

The final results of the Fort Smith Hang Gliding Association's 6th Annual Region VI Cross Country Challenge officially terminated with the end of the calendar year.

Finishing in first place flying a 165 Comet 2 was Troy Fant of Tulsa, Oklahoma. Fant managed 83 miles from Buffalo Mountain near Talihina. His flight is a new Region VI distance mark.

In second place also on a 165 Comet 2 was Warren Flatte of Ft. Smith, Arkansas. Flatte flew 75 miles from Poteau near Heavener, Oklahoma.

Fant received the "Perpetual Order of the Eagle" award and \$136 in cash from the Association, plus another \$83 from UP (one dollar per mile). Whole Air congratulates these two men and their cross country flying accomplishments.

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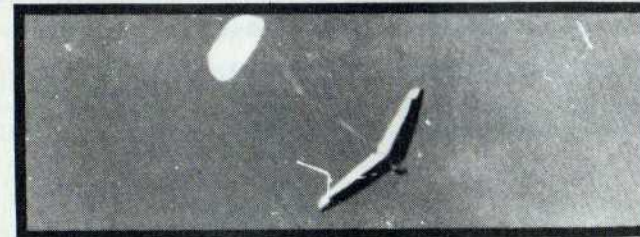


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**Cochrane Cup
Established**

The Cochrane Cup has been established in commemoration of the birth of hang gliding in Canada and the development in the current direction of cross country flights.

The aim of the competition for the Cochrane Cup is to establish new Canadian and world records. Last year's competition within the Cochrane Cup established a new unofficial Canadian Distance Record by Stu Cameron of 145 miles. The official record was accomplished by Cliff Kakish at 109 miles. This was subsequently broken by Willi Muller who managed 126 miles. The official Canadian Altitude Gain Record was set by Kakish when he reached 10,150 feet. The official Canadian Out and Return Record is held by Muller with a 78 mile trip, and finally the official Flight to Goal Record of 60 miles is also held by Cliff Kakish.

The competition for this year has been extended over the calendar year. For a flight to be eligible you must: (1) Takeoff within Canada (one witness required); (2) Provide flight documentation by photo of (A) takeoff, (B) two in-flight views, (C) landing area, and (D) a landing area witness; OR (3) in lieu of the above, submit a barograph chart. One landing witness must affirm the actual conclusion of the flight.

The minimum requirement to be invited to participate in the 1985 Cochrane Cup was a flight of over 70 miles during 1984. The calibre of pilots in this year's competition is the highest ever and each pilot is capable of winning the Cup and the \$1,000 prize.

CALENDAR

**Kitty Hawk
Summer Calendar**

The following dates have been announced for Kitty Hawk Kites in Marina, California:

May 18 — Chute Clinic; MAY 25-27 — Mountain/Rating Trip; JUNE 15-23 — Owens Valley X-C Tour and California Cup X-C Competition. Please note that these dates were changed from June 22-30 (as listed in the March 85 Whole Air).

The following dates are for Kitty Hawk Kites East:

MAY 6-12 — USHGA Week. support for the association, donations will be made from each hang gliding lesson taken this week. Fund raising activities and partial entry fees will also raise money for USHGA. MAY 10-12 — 13th Annual Hang Gliding Spectacular. Be part of a tradition. Hang 3-4 division and Hang 1-2 division competitions. JUNE 3-5 — Hang Gliding Instructor Certification Course, includes an instructor First Air course. JUNE 15-16 — Boat Towing Clinic, for which participants must have at least a Hang II.

**Region I
Championships**

The 1985 Region I Championships will be held over the Memorial weekend (5-25 to 5-27) at Chelan, WA. Hang III is required. X-C Open Distance Task. Registration deadline is at the pilot's meeting at launch at 9 AM on 5-25-85. Contact Lee Fisher or Dan Uchytel at 20118 1/2 23rd Ave. NW, Seattle, WA 98177, or phone 206/546-4094.

**Fourth Annual Chelan
Classic Scheduled**

The fourth running of the popular Chelan Butte Open Distance Cross Country Tournament has been scheduled for July 4-9, 1985. It will be held at the same site that will later host the 1985 U. S. Nationals. Entry fees are \$40 or \$100 in donations. Those wishing to compete must register at the pilots meeting at 9 AM on July 4th at City Park.

Contact Jon Dawkins by writing 14580 6th Av. NE, Seattle WA 98155, or by calling 206/367-2434. It should be noted that in the 1984 event this benefit competition raised \$1,900 for the Special Olympics and earned 344 CPS points for the first place pilot. Plus, organizers feel this will be a good opportunity to get warmed up for the Nationals only a few days later.

**Snake River XC
Challenge Opens**

The 5th Annual Snake River X-C Challenge opens March 1st and runs to October 26th, 1985. The open distance cross country contest is for flights beginning in Idaho. The organizers have elected to permit tow launches, one of a growing number of groups doing so.

The \$5 entry fee must be paid prior to a competition attempt. Pilots with less experience can compete on a more even par with other pilots in a division for those who have logged no previous 50 mile flights. "The purse now stands at \$350, with growth forecast," says Director Mike King.

For information contact Treasure Valley Hang Gliders, Box 746, Nampa ID 83653, or call 208/465-5593.

**Tow Instructor Clinic
& ICP Announced**

Region 5 Director Mike King has announced some tentative dates for an Instructor Certification Program (ICP) on June 6-9, 1985. Open to all instructors needing USHGA certification, the three day event will include tow instruction techniques, and itself be a state-of-the-art towing seminar.

Hosted by Region 5, the fee is \$50 per instructor. The location is planned for Hastings, Nebraska, but for more information please contact King at Box 746, Nampa ID 83653, or phone 208/465-5593. Interested persons may also contact Program Administrator Lou Heinonen at 11880 Overland Road, Boise ID 83709, or by calling 208/376-7245.

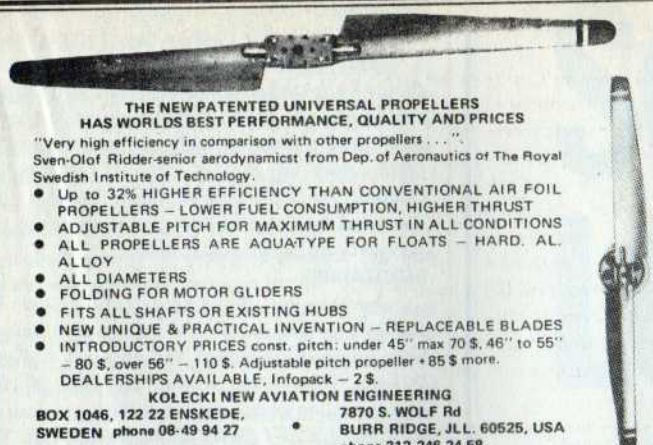
**U.S. Nationals
UPDATE INFORMATION**

For pilots who will be competing in the 1985 U. S. Nationals, here is the preliminary information.

The site is Chelan Butte in Chelan, Washington (see story elsewhere in this issue), and the dates are July 13 till July 21st. Free tent camping will be available to competitors. For alternate accommodations, contact the Chelan Chamber of Commerce at 509/682-2022. The entry fee will be \$100 to \$250, depending on the success of an effort to obtain a major sponsor for the event.

A \$100 pre-registration fee — which applies toward the entry fee — is required of all qualifying pilots. These persons must be pre-registered by June 28, 1985 in order to hold their slots. Pre-registered, non-qualifying pilots will then be given the remaining slots on a first come/first serve basis and notified by telephone.

For further information or to pre-register, contact Mark Kenworthy at 17630 162nd Place SE, Renton, WA 98058, or call 206/255-0202.



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USHGA's Aero Towing Standards for 1985

THE FAA HAS granted the USHGA an exemption that allows aerotowing of hang gliders according to these guidelines. Aerotowing is a new and different way of flying hang gliders and must be done according to these guidelines for safety and legality.

I RATINGS

AEROTOW GLIDER PILOT: This is the rating that allows a pilot to be aerotowed without being observed by an aerotow instructor.

1) Must possess at least a USHGA Intermediate rating.

2) Demonstrate 5 aerotows under supervision of USHGA Certified Instructor qualified to teach towing. Each flight must demonstrate proper procedures, including smooth, clean launches, proper position in straight flight and turns.

3) Pilot must pass the oral test.

Until a pilot receives this rating, all aerotows must be sponsored by and under the guidance of an aerotow instructor.

AEROTOWING INSTRUCTOR: This is the rating that allows a pilot to teach other pilots to be aerotowed and to teach other pilots to be tug pilots.

1) Must hold a USHGA Instructor card for at least six months.

2) Successfully pass a towing instructor certification program, demonstrating capabilities in the form of aerotowed flights in different conditions and experience teaching pilots to be aerotowed.

TUG PILOT: This is the rating that allows a pilot to tow pilots with an aerotow rating or under the supervision of an aerotowing instructor. It is given by a Aerotow Instructor who has witnessed a pilot who has flown a minimum of ten aerotows, demonstrating proper procedures, including smooth takeoffs, straight flight and turns, and passed the oral test. Until a pilot receives this rating, all aerotows must be sponsored by and under the guidance of an Aerotow Instructor. A Tug Pilot cannot tow a pilot who has less than five tows experience.

II AEROTOWING EQUIPMENT

1) The tow line connection to the towing vehicle must be arranged so as to not hinder the control system of the towing vehicle.

2) A pilot operational release must connect the tow line to the towing vehicle. This release must be operational with zero line force up to twice the rated breaking strength of the tow line.

3) A weak link must be placed between the towline and the release at both ends of the tow line with the forward link ten percent stronger than the rearward weak link. The weak link must have a breaking strength less than 85% the weight of the hang glider and pilot combination, not to exceed 200 pounds.

4) A release must be placed at the hang glider end of the tow line within easy reach of the pilot. This release shall be operational with zero tow line force up to twice the rated breaking strength of the tow line.

5) A drogue device must be placed midway to ¾ back from the tow vehicle on the tow line to prevent the tow line from reaching the tow vehicle propeller.

6) The tow line must be at least 150% as strong as the weak link in use.

THE AERO TUG: The ultralight used as a tug should have a wing loading so that its best climb speed is 25 to 38 MPH (in thermal conditions, best climb speed must be over 30 MPH). It must have enough power to tow a hang glider at a rate of climb of at least 300 feet per minute. The tug must have a concave rear view mirror so the tug pilot can see the glider at all times. The tug pilot should be able to operate the forward release without releasing the throttle or any of the flight controls.

THE AEROTOW GLIDER: The towed vehicle must meet or exceed the Hang Glider Manufacturers Association Airworthiness Standards. A pilot's first aerotowed flights should be with a glider familiar to the pilot with control bar wheels installed. A pitch enhancement device may be installed for improved pitch control on tow. Pitch devices must be installed and tuned according to the manufacturer's specifications. Extreme caution must be exercised when towing gliders

possessing forward components that can contact the tow line (such as bowsprit gliders).

THE AEROTOW BRIDLE: The tow bridle should be tested to a tension of 300 pounds and should release easily at that tension. It should also operate properly with zero tension and be constructed so that it cannot release accidentally. Aerotow bridles should be of a type approved by the manufacturer of the aero tug system or an aerotow Instructor.

III OPERATIONS

Aerotowing is complex and must be properly organized to be safe and efficient. Each aerotow operation should have a Flight Director who may be the tug pilot or the aerotow pilot whose responsibility is to consult with the tug and glider pilots, decide how the operation is to be managed, make sure all the pilots know what they are to do and make sure they do it. The Flight Director should have at least an aerotow or tug pilot rating and should be familiar with the site. The Flight Director is responsible for deciding where the tug and glider will launch from, the flight plan they will follow and the landing patterns they will use. The flight plan and landing patterns should not be complicated, but it is important that the tug and glider pilots know what they are going to do.

In practice, a particular site and weather pattern will have a standard routing and most pilots will know what to do. It is the Launch Director's responsibility to make sure everyone knows what to do. Considerations for establishing a routine include pilot skill, surface winds, winds aloft, runway direction, areas of turbulence, lift and sink, emergency landing zones to be used in case of line breaks or engine failures and separation between gliders, obstacles, tug and line. Training flights should be made in calm air.

PREFLIGHT PROCEDURES: Check the tug for adequate fuel supply. Preflight and test fly the tug. Preflight the line by stretching it out on the ground and inspecting its entire length including weak links, all knots, splices and fittings. Worn lines should be replaced. Test the tug release. Hook in to the glider and do a full hang check and then hook on to the tow line. The proper order for hooking in is as follows:

- 1) Hook in to the glider
- 2) Hang check
- 3) Hook on to the tow line

If it becomes necessary to unhook:

- 1) Release the tow line
- 2) Unhook from the glider

Test the tow bridle release. Pilots are warned to turn their heads to avoid being struck by the release.

LAUNCH PROCEDURES: The tug pilot must take care to avoid causing problems for the glider pilot due to prop wash. Tug and glider pilot must have an established communication system for determining launch initiation. In all cases the glider pilot initiates launch. Slack line takeoffs should be avoided during training flights. Visual contact in the rear view mirror must be maintained at all times. The tug pilot should release the rope if there is any problem. The glider will lift off before the tug and the glider pilot will immediately transition to the base tube for optimal control and fly level

about 12 feet above the ground until the tug lifts off and starts climbing.

AEROTOWING FLIGHT PROCEDURES: As soon as the tug lifts off and starts climbing, the glider will also climb and should remain in a position recommended by the tug pilot. If the glider is too high, the glider pilot should correct the relative position of the glider if necessary. Control inputs should be reduced under tow because energy exchange between tug and glider exaggerates response to control inputs.

In turns, the glider will maintain a position slightly inside the tug, so that it can fly at a better, slower climb speed. Glider speed varies with position in turns, with inside slower and outside faster. The glider pilot will tend to point at the tug because of the tow tension and should fly the glider so that its keel always points directly at the tug.

If arm signals are used, the following are suggested: A stationary arm signal means the glider pilot should move in the direction the tug pilots arm is pointing. An arm pointed up means the glider should go up relative to the tug, down means the glider should go down, left - left and right - right. A waving arm means the glider pilot should release immediately.

While minor deviations from the proper position are no problem, it is easier to maintain the proper position than to let the glider wander and have to make larger corrections. Major deviations from position can be cause for releasing. It is better to have the glider pilot release, but the tug pilot should also judge the situation and release if necessary. This is to be considered an emergency situation. If the tug pilot releases or the rope breaks, the glider pilot should release the rope or what is left of it before landing. In a situation where the glider is so far out of position as to be hazardous, release even at the cost of outlanding.

The normal release procedure is for the glider pilot to pull in to reduce line tension, check traffic to the right, then release. After releasing the glider pilot should turn to the right. The tug should turn left and descend to achieve maximum separation as quickly as possible. Both tug and glider should fly the predetermined landing patterns.

A site with lots of room and a non-abrasive surface may allow the rope to remain hooked to the tug, while other sites may require the tug to drop the rope on the first pass and then fly a short pattern and land.

AEROTOWING POSTFLIGHT PROCEDURE: The glider end of the rope should be checked for accidental knots and untied if necessary. Never tow with a knot in a line because they weaken the rope, cause premature wear and can be very difficult to untie. If the tug has released the rope, beware the prop when hooking it up and shut off the tug engine if safety requires it. Extreme caution should be exercised when operating with a rotating propeller. Prop clearing procedures should be followed at all times. Be especially vigilant to keep children, dogs and spectators well clear of operations at all times. Only the glider pilot and launch assistant should be within the vicinity of the glider during launch to avoid confusion.

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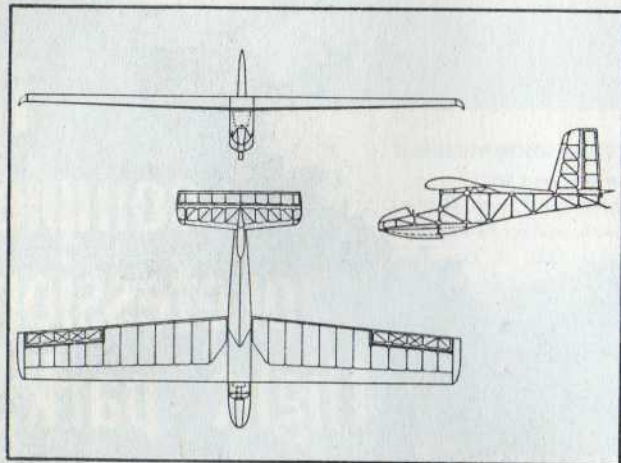


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The ULF-1



OPERATION

Launching the ULF-1 requires a slope of more than 15 degrees. The pilot supports the weight of the wing on shoulder straps and uses the joy stick to maintain pitch control and roll authority while ground handling. As the pilot begins the takeoff run, the stick is held slightly forward to lift the horizontal tail. When a pronounced seat pressure is felt, the control stick is pulled back until the ULF-1 lifts off. This usually occurs around 20 MPH indicated air speed. A high or low wing during take off can be easily corrected by a move of the stick in the direction of the high wing and thus activating the ailerons to lower the high wing.

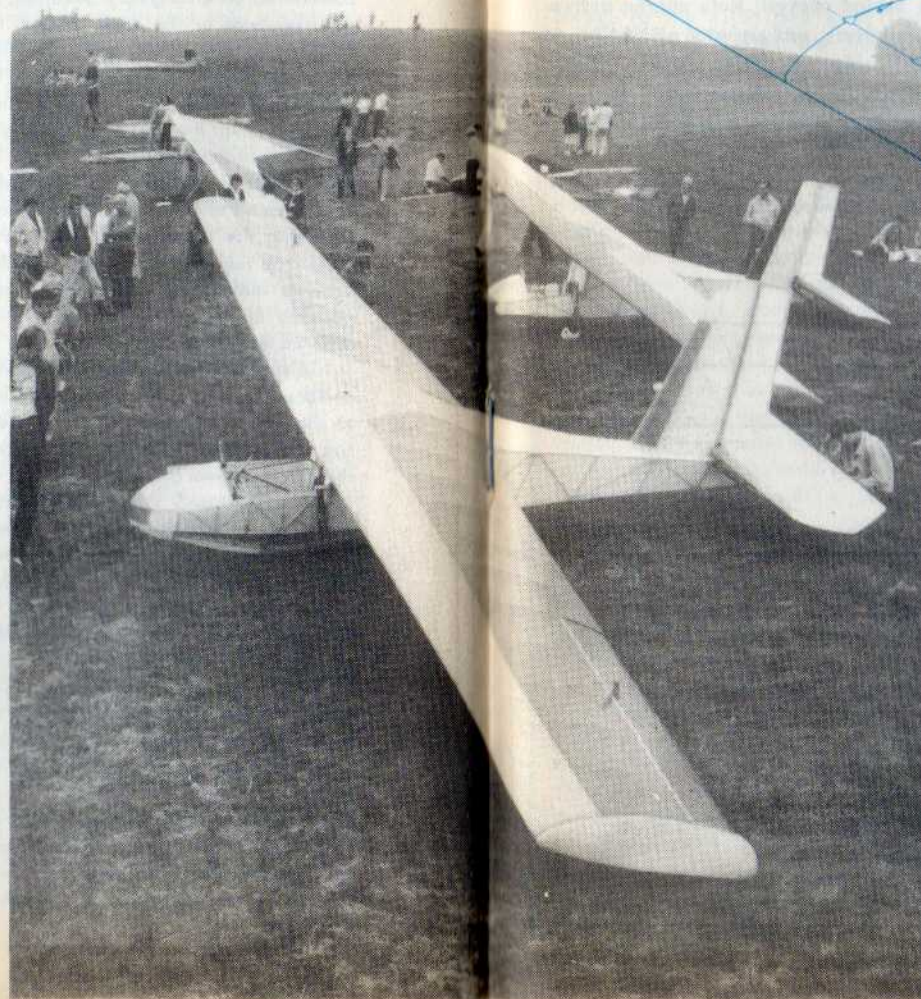
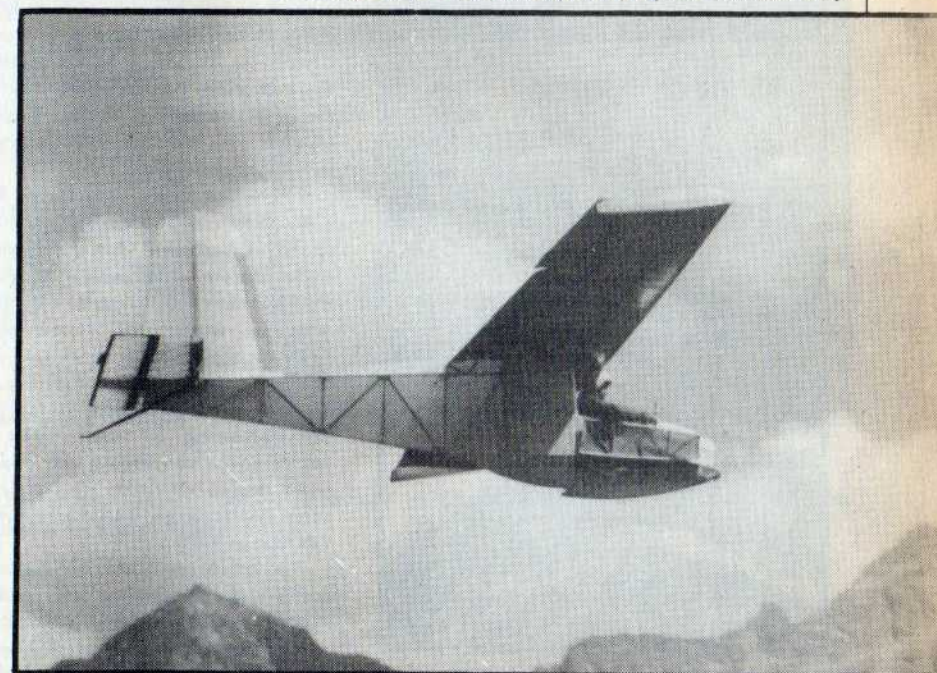
After take off, the pilot swings his legs up and places them on traditional rudder pedals, thus commencing full three-axis controlled flying. Increased pilot comfort is obtained by adjusting a sliding jalousie-type seat behind the pilots back once flying. Finally, the "bomb bay" doors are closed manually greatly reducing the aerodynamic drag of the fuselage.

The 0.8 M/SEC (approx. 160 FPM), sink rate at maximum takeoff weight, listed at 136 KG (300 LBS), allows excellent performance even in marginal thermal conditions. Best L/D (given as 16:1!) is achieved around 53-57 Km/hr (33-35 MPH). A closed plexiglass wind screen is recommended for those that desire optimum performance. Neuman and Reich estimate a 10-15% improvement in L/D with closed bomb bay

Story by Chuck Rhodes

Art and Photos supplied by Dieter Reich

(Below) A ULF-1 soars the Tyrolian Alps in Northern Italy



doors and the wind screen, boosting the L³ to over 18 to 1. The pilot that flew the ULF-1 on the 80 kilometer flight had installed a wind screen and felt that it was a real performance boost, playing an important role in allowing him to fly that far. Additionally, its +6 -4 g-load factor will provide plenty of confidence in the structural integrity of the ULF-1 during those strong thermal days.

HANDLING QUALITIES

The full three-axis control of the ULF-1 will greatly ease pilot physical exertion when enjoying those long cross country flights. The use of rudder pedals alone will free up one of the pilots hands allowing much more ease in snapping photos of the flight, eating whatever snacks that were brought along, and waving at fellow flyers.

Stall recovery is reportedly smooth with the nose dropping straight down after stall during dynamic pull ups to 20 degrees pitch attitude. The designers do claim however, that flying in turbulent air near stall speed may result in a stalled turn. This could develop into

a spin which should easily be recovered from using the standard spin recovery technique: pushing the stick slightly forward, followed by application of opposite rudder to stop rotation. Once the spinning has stopped and both wings are flying, the pilot eases back on the stick to regain level flight.

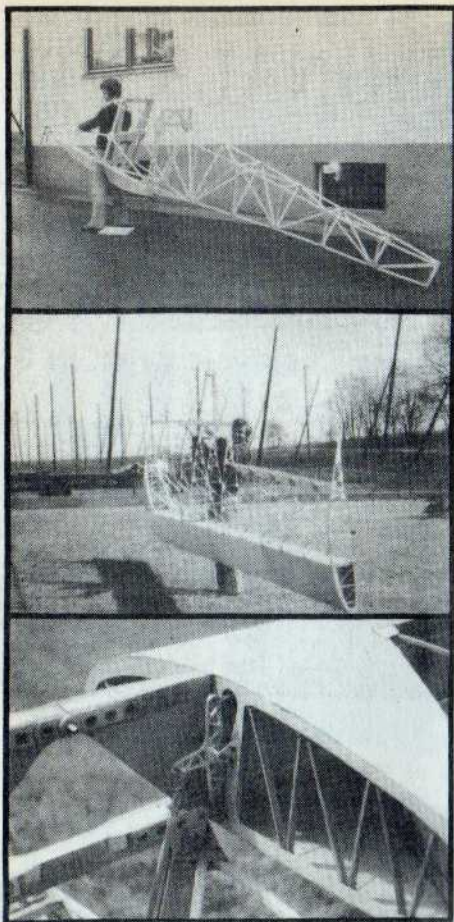
Landing the ULF-1 is done sailplane style on the nose skid located beneath the pilots seat. This alleviates any danger of injuring the pilot or wing in a low wind foot landing attempt.

Overall, the designers state that glider pilots will have no problem flying the ULF-1 but normal hang gliding experience alone is not sufficient to handle the aircraft. They recommend sailplane lessons up through solo before attempting to foot launch the ULF-1.

Hand deployed hang gliding parachutes have been used on the glider but it would seem that a ballastic recovery system could easily be fitted into the ULF-1 for that added safety margin.

CONSTRUCTION

Here is the main drawback to the ULF-1, a listed 800 hour construction time. Most experienced builders say you should add 100 hours of so to that, maybe more or less, depending on your personal skills and experience in this type of aircraft construction. The glider is built in classic wooden aircraft construction style out of aircraft spruce, birch



(Above, top to bottom) The ULF-1 fuselage airframe. Note landing skid between pilot's legs. "Two fingers" hold up a wing. Note classic wood truss construction detail. Right wing attached to fuselage. Note right aileron activation mechanism and overall fine craftsmanship.

plywood, and balsa wood. The airframe is covered by heat shrunk and doped dacron fabric and various metals and fiberglass materials are also used in the building of the ULF-1. Material costs will probably run about \$1000 to \$1500, plans and instruction manual being an additional \$125.00.

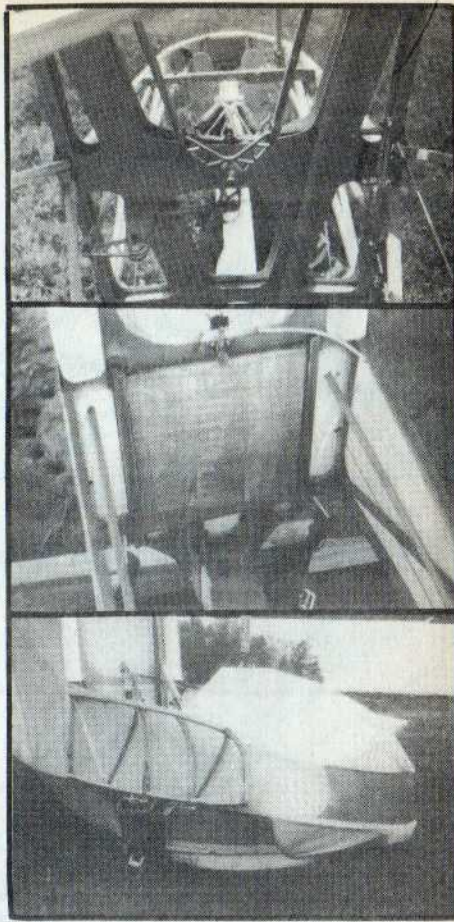
The "blue print" drawings and instruction manual are extremely well drawn and of a highly professional nature. The instruction manual is clear, concise, and easily followed as well as being full of helpful photographs to aid the builder. Definitely here's a nice project for the enthusiastic home builder and well worth the cost, considering the tremendous amount of time that must have gone into preparing such high quality work.

A recent letter from Dieter Reich states that a ULF-1 meet is being planned this summer at the Wasserkuppe. Ten ULF-1's are expected to be present! That should be an impressive sight, imagine a gaggle of ULF's soaring overhead. Dieter also stated that they are experimenting with a winch tow release unit attached near the center of gravity. This should open up the flat lands to the ULF-1 cross country soaring. No mention has been made yet however concerning the applicability of aerial towing behind an ultralight tug. It would seem that its design would lend itself readily to this type of towing.

In conclusion, the ULF-1 should be an outstanding performing, and really fun to fly foot launching sailplane. Building it will require an extensive commitment, but working with the exceptionally well drawn plans and a determination to see the project through to the finish will provide you with a beautifully designed and unique aircraft. Yes, you will have to put up with the common rigid wing glider hassels but after all, it is still one of the highest performing foot launchable aircraft in the world today. Hopefully, several ULF-1's will be built and flown here in the United States soon. Just imagine yourself stopping to circle the 14,500' summit of Mt. Whitney and enjoying enclosed cockpit comfort, while soaring down the Owens Valley at 18:11.

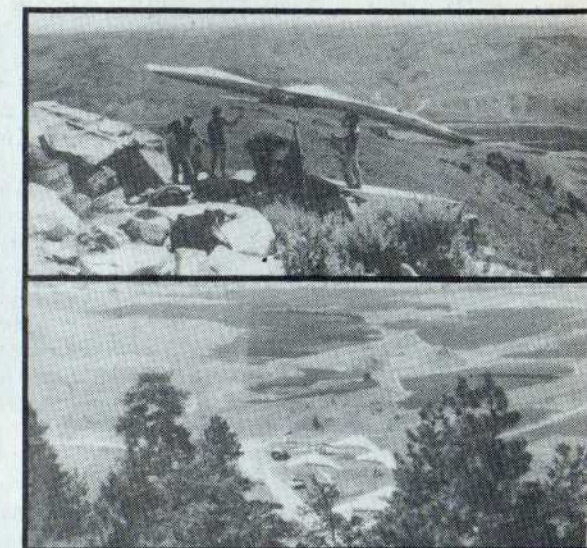
Sound Good?

Additional information and plans are available from Dieter Reich at: Anechostr.16, 8000 Munchen 82, West Germany.



(Above, top to bottom) Main spar support directly behind cockpit. Note aileron activation mechanisms, and elevator activation, at far right side of photo. ULF-1 sliding jalousie-type seat. "Bomb Bay" doors in opened position. (Below) Tyrolian Alp Flying.

CHELAN BUTTE: 1985 U.S. NATIONALS SITE



CHELAN BUTTE SITS in the eastern foothills of the Cascade Mountain range. It's a rather unobtrusive hill, sloping to 2800 feet (3835 ASL) above the city of Chelan, Washington.

From the top of the Butte, the smog-free air allows an unrestricted view of the snow capped Cascades to the west, including Mt. Rainier and Mt. Baker, each over 100 miles away. To the south and east, beyond the Columbia River gorge, are the "Flats..." a patchwork of rolling farm fields as far as the eye can see, interspersed with small communities of the friendliest people you'll ever meet. To the north are rolling foothills and green valleys loaded with orchards. Orchards also cover the base of the Butte. One word of caution to pilots flying the Butte: the farmers take their crops seriously. Don't land in or smoke near their orchards or fields. The designated landing area is only a 3:1 glide from the Butte and small emergency fields abound.

Chelan Butte is, more or less, a peak with sloping launches in every direction. There is a top landing area within walking distance of any launch. The designated landing area is large but gently sloping. The road to the top is steep two-wheel capable, with a fifteen minute turnaround.

A typical July day on the Butte begins with ridge soaring from 5 to 9 a.m. thanks to the Katabatic winds flowing off the Cascades and up the north face. This is a great time to top land and tune your glider.

By 10 a.m. the winds have usually subsided and the first light thermals of the day start popping. As you set up your glider, keep an eye on the increasing numbers of dust devils on the Flats to the east and south. The temperature continues rising from the overnight low of 55 degrees Fahrenheit toward its high of 85 or 90 degrees Fahrenheit. By 11 a.m. it's marginally soarable. Thermal frequency and intensity are steadily increasing.

If the winds are light and variable as they

Seattle's Lee Fisher describes flight conditions at Chelan Butte; site of several 100 mile flights / photos by Sherry Kindel McMinn

usually are, you'll have to get away from the Butte by noon if you want a 100 mile flight. The big problem is the Columbia River gorge, 2000 feet deep and 5 miles across to the far rim and the Flats. It's a real glider eater before 1 p.m. You may decide to risk it and launch at 11:30. A little work puts you 5000 feet over by noon where you get a good look at the gorge. You watch all the dust devils out on the Flats. The closest ones are two miles east of the far rim (they never seem to form any closer). If you could only get to them you'd have it made! Your 5000 feet over the Butte puts you 5800 feet higher than the Flats.

So you have 5800 feet of altitude and seven miles to the nearest dust devil. It's a real crapshoot but you head out anyway. Midway across the gorge you're really getting drilled. The dust devils are now out of reach and the sink is so bad it's doubtful that you could make it back to the Butte. So you continue east. As you approach the east rim the sink diminishes and you find a few "bubbles" but nothing workable. When you finally reach the rim you're only 1000 feet above the Flats. The five mile crossing has cost you 4800 feet.

You look back toward the Butte. You guessed it: nobody followed. You're wind dummy for the day. You head east along one of the canyons that cut into the Flats. You're now down to 400 feet AGL. You could head back to the rim of the gorge. That would give you another 2000 feet to work with, and if you did sink out you could land along the river for an easy retrieval. You finally find a small thermal. It's really broken up and drifting you onto the Flats. If you lose it you'll have a two mile walk to the nearest road, but even worse you'll have to watch those other pilots above the Butte fly over you. But if you're lucky today, the thermal turns into a boomer and you're 5000 feet AGL and 12 miles down range before anyone leaves

the Butte to follow you.

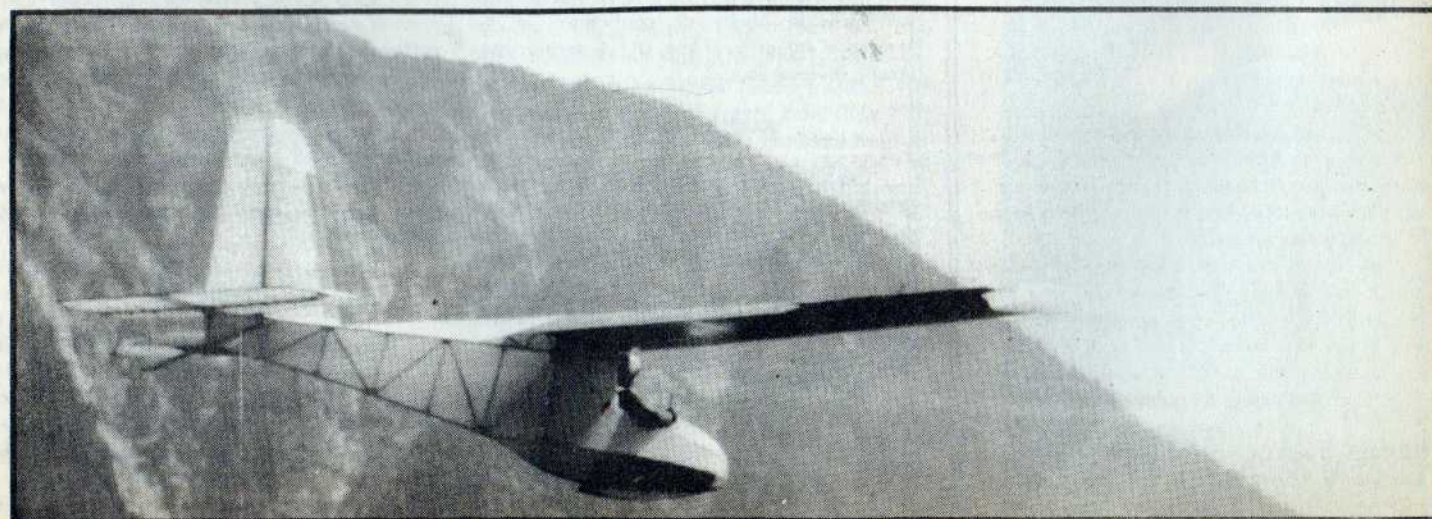
Flying the Flats is pretty uneventful. The usual route is along Hwy 172 to Sims Corner, then southeast across Banks Lake. When you join up with Hwy 2 at Almira (47 miles) the wind direction on the Flats is usually light and variable or westerly, making this route very popular. And Banks Lake is the only major obstruction until you reach the Rocky Mountains (155 miles).

Banks Lake (35 miles) has cut many cross country flights short. It's intimidating, but not nearly as bad as the gorge. You usually reach it between 1 and 2 p.m. when conditions are stronger. The lake is three miles wide and 1500 foot sheer cliffs down to its surface. You can land, at water level, on the east side only, along Hwy 155. Nothing but farm fields stretch for three miles on either side, leaving you a nine mile gap to cross. It's not as bad as it looks.

The cross country record from Chelan Butte is 109 miles, set by Joe Evens during the Chelan Classic meet in 1984. There were six flights exceeding 100 miles and over 20 exceeding 70 miles in 1984.

If you plan to attend the 1985 US Nationals in Chelan, July 13 to 21, here are a few things to remember:

1. Bring warm flying clothes. It's not unusual to get to 12,000 feet MSL.
2. The Chelan Classic Cross Country week, a good warm up for the Nats, is scheduled for July 4 to 9 (344 CPS points in '84).
3. The city of Chelan is a resort community located on the tip of 50 mile long Lake Chelan. There are waterslides, jetskis, windsurfers, parasailing, fishing, golf courses, bars, and lots of friendly people. This is a great place to vacation even if you don't fly.



HANG GLIDING IN RUSSIA

FLIGHT FROM 18,575 FOOT ELBRUS MOUNTAIN

By Aloiz Fil

EDITOR'S NOTE: THIS STORY FIRST appeared in the October 1984 issue of *Soviet Life*, a monthly magazine published by the Embassy of the Union of Soviet Socialist Republics in Washington. It is published by reciprocal agreement between the governments of the US and the USSR, which provides for the publication and circulation of *Soviet Life* in the US and the magazine *America* in the USSR.

We've added editorial notes where we are sure another phrase is more illuminating to present hang glider pilots. Keep in mind this rare story on Russian hang gliding was probably penned by a non-pilot. -- Ed.

A good beginning is crucial to any undertaking, especially a hang gliding flight from Elbrus, an 18,575 foot mountain in the Caucasus range between the Black and Caspian Seas. It is important to catch a moment between gusts of wind and to run quickly, in a burst of speed, toward the abyss. The pilot also must guess the angle of approach (attack?) to avoid simply falling onto the rocks. In a gently sloping dive in air which is rarefied at this high altitude, the pilot has to gain the speed necessary for a controllable flight.

It is always cold here. If you stand still for a long time, the icy wind penetrates even through fur overalls. And catching the proper moment for a flight means standing still for a long time while fully prepared to take off. The pilot's body is tied to the suspension by belts (harness?), and his hands squeeze the control trapezium. The fabric of the delta-shaped wing is tense over his head, threatening to tear him away from the slope before the right moment. Perhaps in a second. . . .

He takes a quick look around. The world is strange here. There are no smells or sounds, only the blue sky and the white snow, which are welded together by the uneven seam of the main ridge of the Caucasus. The sun is blinding. Its unremitting glare comes up from the eternal

snow below.

It is time. The wind has abated, and everything surrounding the pilot seems to have disappeared. Will and muscle have now become one and are rushing away from the ground following a precisely calculated trajectory. The only thing that the man hopes for during the next several seconds is to find some support in space. Here it is. The belts of the suspension are pulling softly, but strongly. This means that the wing is being supported by an air current. Now he has to move the trapezium slightly away from his body (push-out?). He makes a smooth exit from the dive and turns into the wind.

This is Alexi Butenko's eighth hang gliding season and his fourteenth flight from Elbrus. He knows from experience that there is always a strong wind from the west here. But the nearest ground suitable for a landing lies in a southeasterly direction. That is why the pilot has to maneuver subtly, with proper allowance for the drift.

He glides at a height of about 1,300 feet over the white slopes. The paths blazed by mountaineers are clearly visible in the hollows filled with fresh snow. Not all alpinists can make it up them even without a load because the dangerous ascent takes a lot of time and immense effort, and the shortage of oxygen quickly exhausts them. And Butenko has to carry his hang glider, which weighs 55 pounds, to the peak of Elbrus. It's good if the weather is favorable and stable for enough time for the pilot to rest after the ascent and make a flight on that same day. But Butenko's flight is taking place on the fifth day after ascent. He had carried the hang glider close to the top on his first day there, but the weather has been

deceptive. At night the stars would shine in the sky; and Butenko would leave the warm hotel before daybreak with the climbers and go out into the cold and silence of the mountains. After overcoming all the difficulties of the ascent to the place where he had left the hang glider, he would see that it was too dangerous to fly in that weather. Either a storm would be raging or clouds would be crawling along the slopes. If you dove into them, nobody would ever find you. He would descend with the regular group of mountaineers.

Now he's approaching the three-story building of the hotel named Refuge of 11, which is situated higher in the mountains than any other hotel in the world. It resembles a metal airship. Climbers in multicolored jackets are crowding near the entrance. They are looking at the sky and waving their hands. Butenko is flying 500 meters or so above them, accompanied by their encouraging words in German, English and Czech. He remembers that a group from the international mountaineering camp came to the hotel the previous night. He wants to shout something in reply, but he has enough time only to smile. The cylinder-shaped cottages of the summer alpine skiing center have already appeared below. The skiers are stopping on the slopes, producing snow fountains with their skis, pointing at him with their poles and shouting, "Slow down!" Some joke!

The instruments attached to the pillar show that the horizontal speed is 32 MPH and the vertical descent velocity is 23 feet per second (surely incorrect as this equals a 1,380 FPM sink rate?). Everything is all right.

And here is the edge of the snow line. The supports of the aerial tramway rise over the stone peaks. Its passengers also are doing their best to encourage the pilot by merry exclamations and jokes. This encouragement comes in handy because a really serious moment is approaching. But there is still time to prepare for it.

Butenko is now flying over a building resembling a hangar. It is the upper station --

Mir -- of the switchback aerial tramway. The bell is ringing to signal a departure, and a bright red gondola emerges from under the hangar's awning and starts gliding smoothly along the thick steel lines. He made two flights from Mir in the summer of 1980. At that time he didn't risk ascending to a greater altitude. The news that a group of Leningraders had flown from the double peak for the first time a month later reached Butenko at home and had dampened his ambition.

He'd fly, too, he thought, but it was a pity that he wouldn't be the first to do it. And he did indeed fly after that. Each summer, engineer Butenko spends his vacation on Elbrus, or, to be more precise, over it.

And now he is already flying over Krugozor, an intermediate station of the aerial tramway. Three ravines converge in this place. They operate like three air tunnels and make it very difficult to catch the wind (work the lift?). There is no place to land in an emergency -- only rocky abysses and stony screes can be seen. Furthermore, there are no upward thermal currents, and all the currents are dynamic -- along the ravines and downward, toward the Baksan Valley. This is where a real struggle against the elements is waged, and there are no rules to guarantee success. Everything depends on your nerves, on the intuition developed by experience. Along with the wing, even the pilot's face and his forehead, wet under the helmet, catch the vibrations of the air jets. With an instantaneous and soft feline movement of his hands and his whole body, he controls and directs the glider, preserving stability and strictly following the calculated line of gliding.

The wind literally blows him away from the Krugozor station to the Azau ravine. The air current is smoother and not so unpredictable here. The snow, ice and bare rocks of high mountains have been replaced by green alpine meadows. Leafy bushes grow along a merry river.

Making relaxed turns from one slope of the ravine to another, Butenko is getting ready to land near the Azau tourist hotel. The area is a bit narrow but suitable for his purpose. Cars are parked close by. One of them is his Lada with a spacious roof rack for carrying the hang glider -- after it has been disassembled, of course.

People are running toward the landing strip. Butenko recognizes among them his friends from the hang gliding club. They are not experienced enough yet to make flights from Elbrus and for the time being will fly from the neighboring Cheget, the height of which is just more than half that of Elbrus. The aerial tramways carry them almost to the top. These tramways were built for alpine skiers. In winter there are too many people on the mountain slopes. But in summer the area is used by hang gliders.

There are already hundreds of hang gliding clubs and thousands upon thousands of hang gliding pilots in the USSR. Their number has been growing rapidly, but only a few of them have made flights from Elbrus. This is just the beginning, and there are still only a few



trailblazers.

Butenko is making an approach for the landing, the last meters of the flight. He sharply moves the trapezium away from his body, and the hang glider seems to prance, losing speed. The ground is rushing up under his feet. It's not easy to keep your balance, but a good hang glider always manages to do it.

The landing. . . .

Alexi is soaked with sweat and weak but happy.

He looks at his watch.

The flight from Elbrus lasted 37 minutes.

(Editorial Note: After we came across this hang gliding story in Soviet Life we also read a (mostly photographic) story in our German counterpart, Drachenflieger magazine. More information was contained in those pages, which we've paraphrased below.

Due to Russia's military interest in anything that flies, hang gliding was brought into the sporting club -- DOSAAF --which includes many diverse activities, such as car and motorcycle racing and sailplane soaring. Hang Gliding, through the Russian Aeroclub, is a

member of the world recording body for aviation, the FAI.

Though the Russian government apparently does subsidize hang gliding, modern materials are difficult or impossible to obtain, as in other eastern bloc countries. Therefore, old gliders are usually repaired when damaged, as new construction is so trying. Much of what raw materials are available come from the west.

Most of a claimed (east bloc) pilot population of 10,000 (?) live in an area called the European part.

Though Russia has not participated in international competitions -- unusual with their customary keen interest in winning --they do have "internal" contests. However, as the next European Championships are slated for Hungary in 1986 (the first time ever for an FAI-sanctioned meet in an eastern bloc nation), the Russians apparently will field a team. It will be fascinating to see how they fare in that contest, and perhaps even more interesting to see how their equipment may develop after such an exchange. --Ed.

"IT'S MAGIC MAN"

Evaluation of the Magic III by Mark Kenworthy



WHEN THE AIRWAVE "invasion" started a year or so ago, I greeted this new wing with a lot of skepticism. I mean, after all, it was just a warmed over Comet, right? Then I started to notice how well it was doing in international competition, and thought, "Well, maybe it is better". Shortly thereafter, I had the opportunity to fly with several Magic III's at a local site. I was flying a fully faired 165 Comet 2, and the Magics were all 177's equipped with all the racing equipment. The pilots flying the Magics had about the same hook-in weight as I had and, as I expected, their sink rate performance was better than mine. What I didn't expect was the difference in speed. They kind of ran off and left me in their dust (wake?). Well, four days later the C2 was sold and I was the proud owner of a new Magic III Racer.

My first flight on my new wing was fantastic. My launch was great, and right after launch I hooked a 400 FPM thermal and climbed right up to cloudbase at 4800 AGL. I was up for over two hours and kept amazing myself with the glide performance. All I could think about was how great this glider was going to be for cross country.

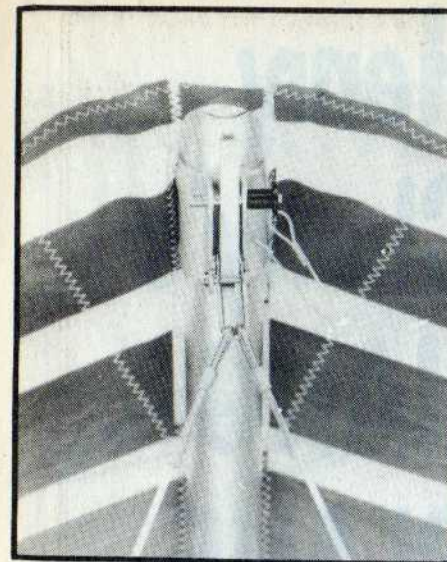
The glider which this evaluation covers is a Magic III 177 in the "Racer" configuration. This is the stock glider with the addition of faired downtubes, a speedbar, the spring tip ribs, a sandwich main body, and mylar leading edges. These additions to a stock Magic stiffen the handling of the glider significantly. After owning the glider for a while I added a Magic Trimmer, a device for changing the crossbar tension in flight, and its effects on the handling are noted below. A stock Magic is much mellower in the handling department.

Launching the Magic is a breeze. The balance of the glider is only very slightly tail heavy, making for easy ground handling and launching. All that is required for launch is a good strong run off the hill. No handling quirks seem to exist. I've launched the glider in many different conditions and varying degrees of cross wind without any problems.

The glider thermals well, but a couple of characteristics of the glider were obvious from the first flight. As I had heard, the Racer models are stiff in the longitudinal axis. Rolling into the thermal is more difficult than with a C2, but not so much as to be a problem. When thermalling in light or tight thermals, the glider does require input to keep it from steepening into the thermal. In stronger thermals, the glider is neutral and just heads skyward. The glider works well in all sizes of thermals, from the small, broken ones to the big powerful ones. The sink rate does not fall off radically with bank angle like some gliders. I have never felt like I was at any sort of disadvantage while thermalling with the Magic.

I have flown the glider several times in ridge lift. The sink rate is as good or better than other gliders with the same wing loading. The most significant thing that I noticed about the glider in ridge lift was how much faster it was than the other gliders. More on this later. The handling in ridge lift was very predictable and mellow.

Having flown in the 1984 Nationals with this glider, I've had good opportunity to compare the performance of this glider with several other types. The top gliders, for the most part, have comparable sink rates with equal wing loadings. The real differences between the gliders shows up in the speed at which they can maintain a good glide slope. The Magics seemed to have a significant advantage over the C2s and Ducks, a lesser advantage over the Sensors, and a virtually indistinguishable difference from the HPs.



(Above and middle below) Some of the new 1985 hardware on the Magic IV. (Top and bottom below) The Magic III has a reputation for being a fast performer; the top view shows a Magic pilot using his speed bar to zoom, below the Magic displays a flat trailing edge.

I'm sure some of you are saying, "So what does that mean for us non-competition pilots?". Well, one thing is for sure: A faster glider will go further than a slower glider in cross country situations. Being able to fly faster at the same glider slope not only saves time between thermals, but also saves lost altitude in the sink between thermals. I'm still amazed at how much less time it takes to cover the same distance with this glider.

The glider's landing characteristics are a mixed story. The Magic flares better than any glider I've ever flown. There is a broad speed range at which it can be flared without any significant climb out. When you push out the flare, the glider rotates rapidly and just stops. The hardest thing to learn in flaring a Magic is not to flare too hard. Flaring too hard can result in an excess of rotation and the glider standing on its keel (or worse in windy conditions). No step landings are the rule.

Approaches are somewhat more difficult due to the heavier roll input required and the glide slope at speed. You can forget bleeding off any significant altitude by speeding up on final. The glider seems to glide significantly once in ground effect, and at this point shows off its worst handling characteristic. Once in ground effect, the directional stability is significantly reduced. Turning while in ground effect can start the glider "sliding" in the direction of the turn, and this sliding is difficult to stop, once initiated. This is a characteristic of a Magic III Racer, not a stock Magic.

About four months ago I retrofitted my Magic with a Magic Trimmer and found that landing with the Trimmer at its loosest setting seemed to completely eliminate this sliding tendency, along with making the approaches easier due to better roll response.

The workmanship on the Magics is very good. The hardware is simple and clean. The

BOX SCORES

AIRWAVE'S MAGIC III

(1 = Poor; 2 = Fair; 3 = Good; 4 = Very Good; 5 = Excellent)

GENERAL CHARACTERISTICS

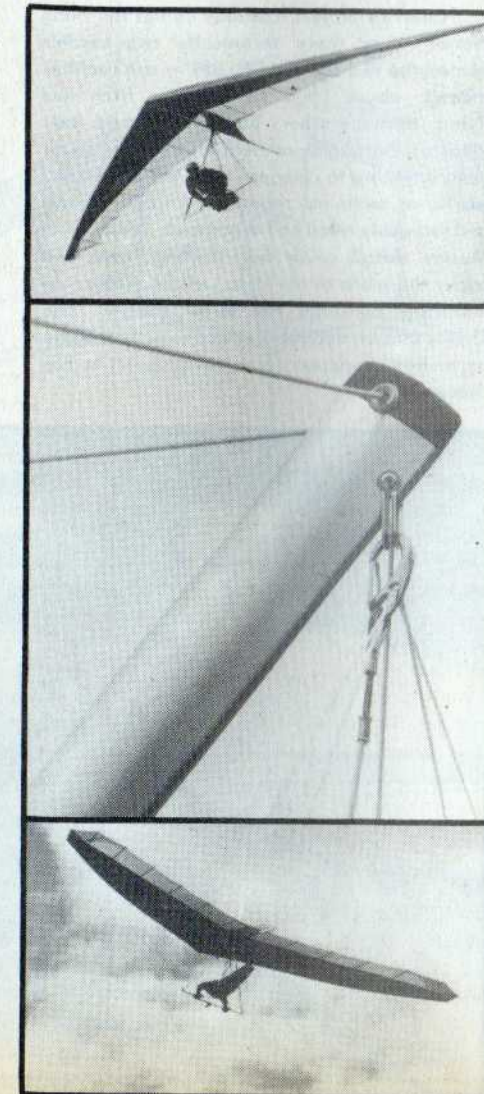
Set up Time/Ease	4
Ground Handling	5
Static Balance	5

FLIGHT CHARACTERISTICS

Bar Pressure — Roll	4
Bar Pressure — Pitch	5
Roll Control Initiation	4
Roll Reversal (45° to 45°)	4
Yaw Stability	5
Turn Coordination	5
Speed Range	5
Sink Rate Performance	5
Glide Angle Performance	5

LANDING CHARACTERISTICS

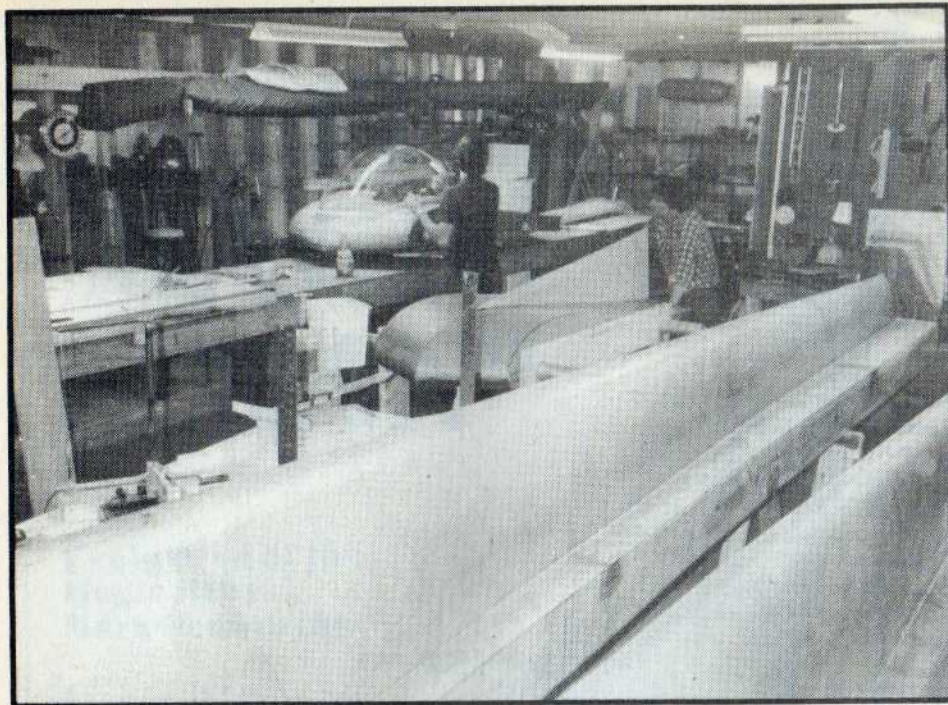
Flare Authority	5
Parachutability	4
Directional Control at Mush Speed	4



sail work for the most part is very good. On several Magics (including my own) I have noticed wrinkles in the upper sail cloth, just aft of the leading edge from about midspan out most of the way to the tips. These wrinkles can be eliminated by replacing the four outboard rib bungsies with non-stretch cord. This modification does not seem to degrade handling significantly.

With the announcement of the Magic IV, this pilot report becomes a little dated, but most of it will still be valid for the Magic IV's. Just recently I got to see one of the new Magics. The sail looks identical to the Magic III. The frame and hardware, though, have been significantly changed. The new Magic has very clean hardware with many simple but effective improvements. The base of the downtubes have these trick injection-molded, streamlined plugs in them and the wires just sort of disappear into the fittings and downtubes. The base tube attachment is a plug hinged off the downtube plug. It just slides into the end of the base tube and is secured with a pin. I think Airwave has set new standards for cleaning up the downtube/basetube connection hardware. The other hardware changes are less spectacular, but are all well-thought-out and look very clean and simple. The factory guys are claiming a better sink rate than the Magic III.

Overall, I think the Magic is an exciting glider. If you want a glider with mellower handling, then a stock Magic may be your choice, but if you want to compete or optimize your cross country miles, go for the Racer package (order it with the Trimmer option - the ease of handling it adds for taking off, landing, and working in tight spots is well worth the cost). I guess I can sum up my feelings on the Magics by saying that my order is in for a new Magic IV.



Henry Cherry's HANG PLANE

A Rigid Superwing On the Build, Horten style / story and photos by Dan Johnson

Henry Cherry's shop is "neat as a pin," and reveals the current state of construction; leading edge molds and center plugs are completed.

WHEN HENRY CHERRY first passed some mechanical drawings around depicting a radical-looking flying wing of the Horten variant, only a few flyers gave it serious attention. That is not to say they weren't fascinated with the concept. Or the exciting lines of what looked to be a real, honest-to-goodness rigid superwing. But drawings, however nicely rendered, are one thing, and an actual product quite another. Skepticism is understandable when it comes to any hang glider that proposes to go way beyond anything that currently exists.

You've got to meet Cherry to get a sense of his determination. He is not new to the idea of designing a hang glider. He's done it before, but the experience was very frustrating. As with other pilots we know who have design ideas, the task of building something significant before southern California introduces essentially the same look is a difficult, rarely achieved goal.

Many times I've heard reactions to newly announced designs which typically go something like this: "Gosh, I had that same idea four years ago." Long-time designer Tom Peghiny used to react to such statements, quipping, "That's nice. Where is it?" Again, ideas are one thing, however noteworthy; actual aircraft are very much another.

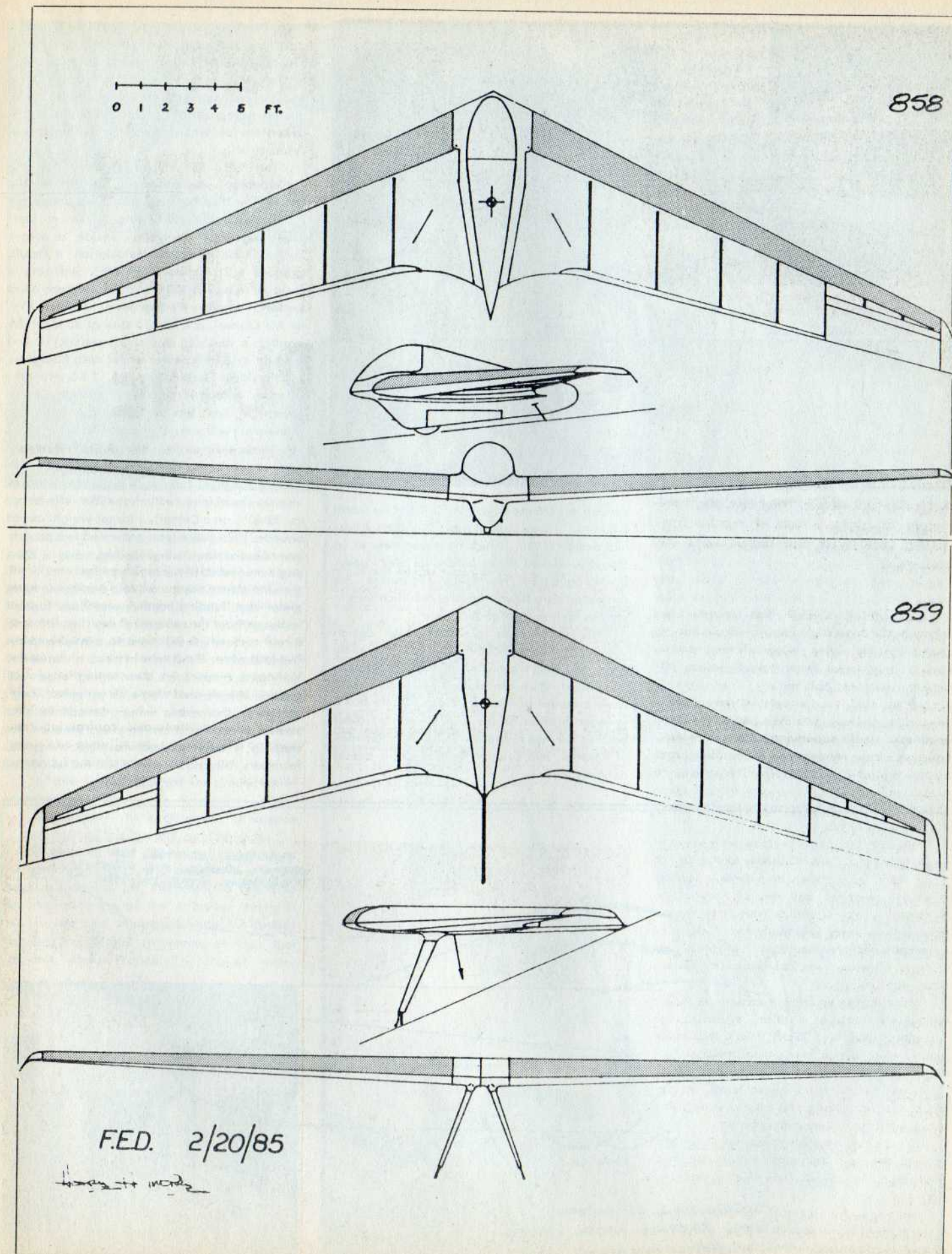
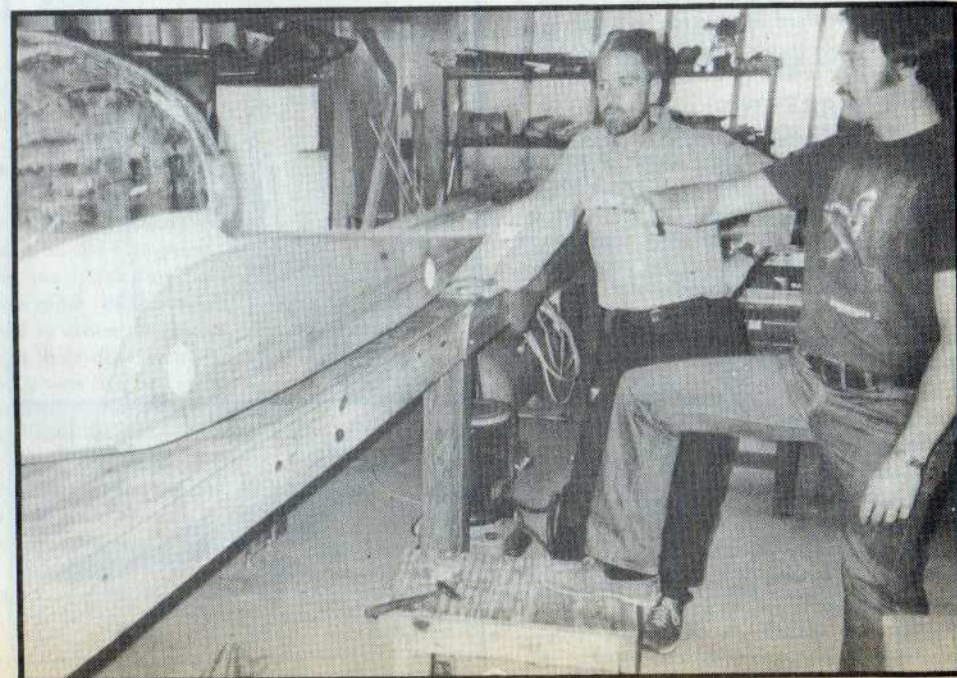
Henry Cherry built his idea, but it seemed he was always a half a glide point too late. "Not again," he vowed, "this time I'm going all the way."

We were still skeptical right up until we stepped into his purpose-built shop. All doubt promptly evaporated at that point. We'd heard he had a nice facility, but seeing is believing, as it's often said.

Cherry's project, casually called the Hang Plane — or more technically two models named the FED 858 and FED 859 — are realities indeed, about 1½-2 years away from test flying. Perhaps others have researched their ideas as thoroughly as Henry, but we've never seen anything to compare with the stacks and stacks of technical reports, all neatly bound and tediously titled and organized. Drawings in precise detail cover his drafting table and paper the walls of the shop's office. Reference materials consume ten large shelves, and Cherry can immediately select exactly the one he wishes to support some design point he has chosen.

It isn't all paper, though, or our skepticism would still be nagging at us. Out in the work shop are completed molds for leading edge D-tubes, and center plugs for each of the two models. One is a hang glider transition concept, where a cantilevered wing will fly above a hanging pilot in a spacey rendition of Tim Morley's prone B-10 Mitchell Wing (see May '84 *Whole Air*). Another is a prone, inside-the-wing, canopied, three-axis control job that would no doubt put an eternal smile on Reimar Horten's face. These are real-time projects, painstakingly developed and constructed.

Cont'd on Page 32





The office where the Hang Plane developed.

Cont'd from Page 30

The shop itself would do justice to any workshop in Horten's home country of Germany, where the phrase "neat as a pin" may have received its first definition. Cherry spent more time (we suspect) building his work tables than most armchair designers have spent on their entire projects. It simply looks like a place from which should come a 20:1 composite rigid superwing.

Thirty five year old Cherry began designing his wing in November of 1983. Prototype construction began in March of '84. In the past he gained knowledge from an Icarus II (1973); a plastic sail Flexi Flyer (1974); a Sun III

version in 1976 (he says of it, "It didn't fly worth a damn... it was a deathtrap."); and an Atlas-like design (1978), which he never flew as La Mouette offered theirs before he was ready. Discouraged by his design tardiness, he contented himself with several modifications to various factory-built gliders since.

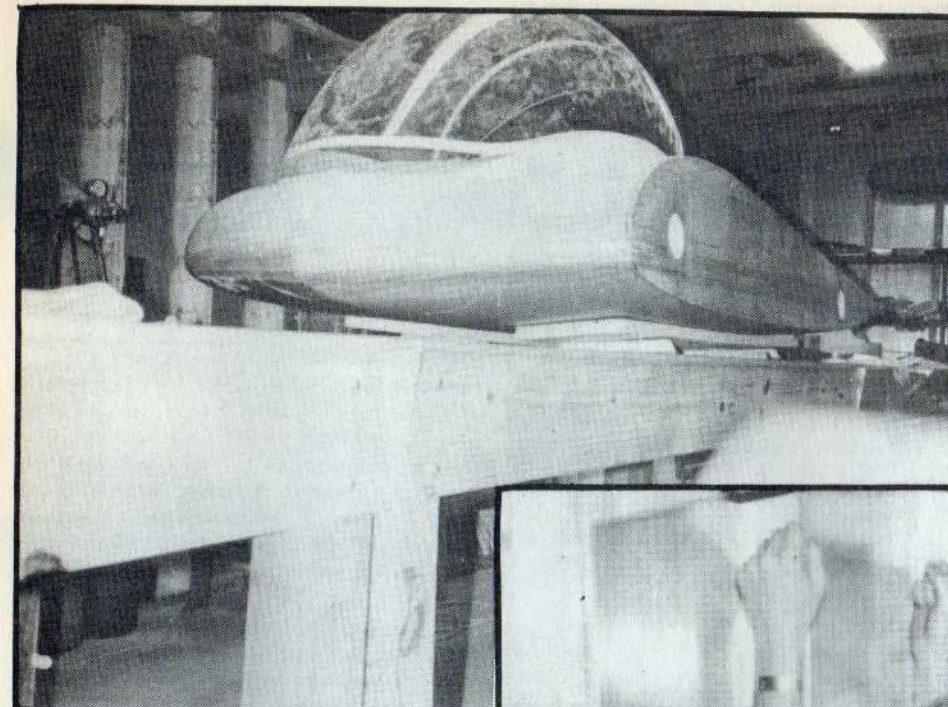
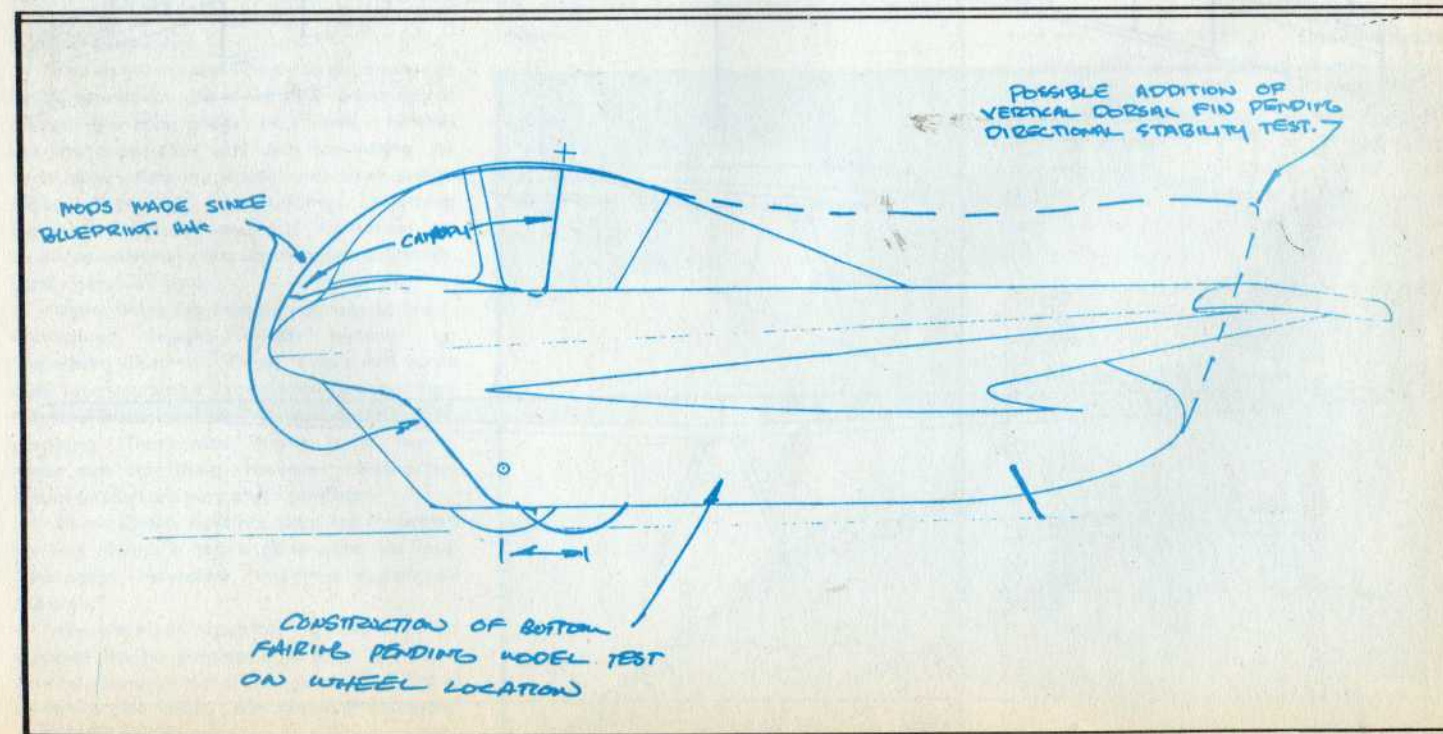
His father was assistant chief design engineer on the behemoth Galaxy C5A trailing edge, and Henry acquired his father's drawing equipment when the senior Cherry died. He's been a model builder since age 10. He has a younger brother who's a pilot and an older brother serving in the Air Force with the rank of Colonel. His aviation heritage thus comes honestly to him.

After the purchase of Horten's book in April of 1983, he got the bug all over again, and promised himself to take the design aspiration to the limit, so he wouldn't be beaten once again by factory production. He thought, "Hang gliding must progress... at least to World War II (when Horten was active)." So he began his research effort.

The FED 858 (Flight Engineering and Development—his company—the 8th version in 1985), which has begun to take shape, is, "...an enclosed plan wing, with a foot-launching pilot completely inside a center section." Via nomogram calculation, it should produce a 21:1 glide at 38 MPH. Sink rate is forecast to be 125-130 FPM at 28, perhaps a tad better. It employs six degrees of twist (vs. 18+ on his Comet), and should stall at 25 MPH (he predicts a mushing stall characteristic). It will land on a 16 inch center wheel with fiberglass rod tip skids. Plans call for +6, -3.8G strength, offering aerobatic capability, though Cherry says, "It has lots of stability, so some maneuvers will just not be possible."

Those even more technically oriented may wish to know the Hang Plane uses a 37 foot span, 3.2:1 taper ratio, a 76 inch root chord, 24 inch tip chord (planned to have 75% efficiency, vs. 55-60% on a Comet), a target weight of 115 pounds, 157 square feet, projected two pounds per square foot wing loading, and a 26+ angle measured at the leading edge.

The entire design will fold neatly—in hang glider-like, leading edges swept back fashion—but without the removal of any ribs, fitting to a roof rack which will have to measure about five feet wide. The D-tube in front, and a kevlar V-shaped support on the trailing edge will provide the desired shape to a dacron "bag" enclosing the entire wing, except for the slotted aileron and center plug. Because the shaping is accomplished via rigid composite members, the craftsmanship will not be critical



on the sailmaking, as it is on today's super-ships.

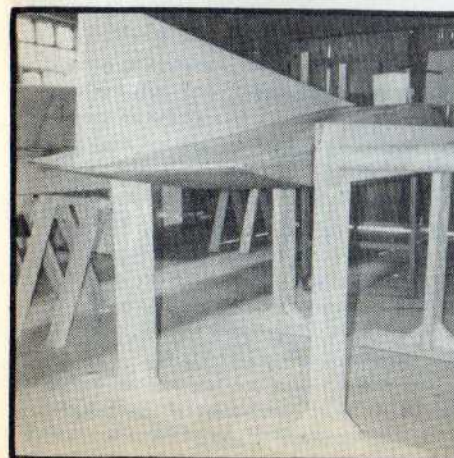
Controls are via dual sticks — one for each hand — articulating specially slotted ailerons (for enhanced low speed efficiency), with a good likelihood of spoilers for small landing field ability. An eighth scale model has flown ("extremely well," he reports) and quarter scale model plans are completely drawn.

Here, Cherry requests assistance, however. Though he is a former modeler, he cannot spare the time from the complex project to construct the quarter scale model. Anyone with talent and desire in this area is encouraged to contact Henry (address: P. O. Box 667, Dallas GA 30132).

"Is this indeed planned for production?" we asked hopefully.

"Absolutely!" he exclaimed. "Otherwise I'd have built all this in wood, not fiberglass."

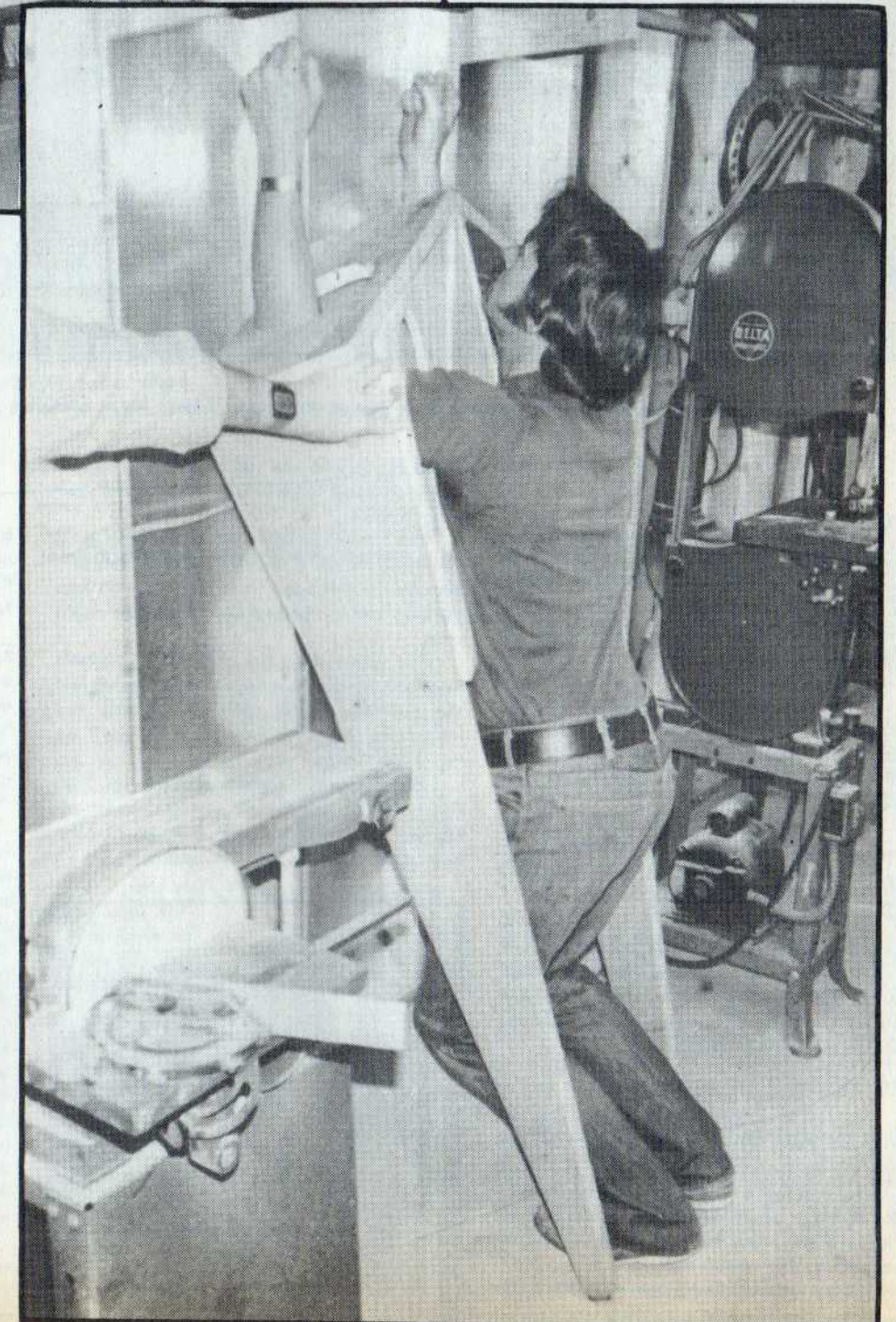
He plans at least 100 hours flying time on the prototype first, and though two years seems a long way off, the project is big, very big. As evidence of the direction Henry is headed, he has planned pricing. Originally targeting for \$4,500, it became obvious that wouldn't work. Probably — though many



variables still lie in the path — \$5,500 will be the retail cost for the enclosed version.

Cherry works full time for the Norfolk Southern railroad line, and is thereby limited in hours available. In spite of the job, plus family and home obligations, Henry has devoted over twenty hours a week for two years (2,000 hours) to the effort. He also requested we give his thanks to seven people who have supported him, and given of their time to-date: his wife, Valerie, Cliff Johnston, Dale Payne, Charlie Payne, Marty Crispell, Karl Heinez, and Mike Nash.

You haven't heard the last of Henry Cherry, or his FED 858 and 859. As work progresses, expect to read more on the Hang Plane in the pages of *Whole Air*.





The HSNTD... or The ROLAND CONNECTION

Florida towing expert adds a new wrinkle to aero towing and makes it more fun in the doing / story and photos by Dan Johnson

YOUR OBLIGATIONS ARE forgotten as you relax into the idea of a few wonderful hours of soaring. You've packed up your gear, loaded your vehicle and driven to your favorite mountain site. Cummys are strung out in streets as far as the eye can see. It's a cool, but bright sunny day.

Your walk has a brisk step as you approach the launch with your Hall wind meter in hand. You assume your World's Best Soaring Pilot look and stroll to cliff's edge for a closer look-see at the conditions.

Hmmm? The trees are leaning over and the roar of the wind dominates. The faster road up the backside didn't reveal the strength of the wind. Better get a reading.

At the edge, you hold up your meter to record a steady but powerful 35 MPH of wind. Too, too much. *I'm good, you think to yourself, but 35 MPH is well beyond my safety limit.* And it's no fun anyway, launching in and dealing with so much wind. What to do?

Has this situation faced you?

You do have options, of course. You can trim your glider faster, within limits. Thirty five may still be too strong. And even if you could trim for that fast a speed, how will you handle the flare-out pressures in that configuration? Plus, will you enjoy the flight with the control bar back by your abdomen?

Would you fly in this case? Really!? Or would you unhappily (but intelligently?) resign yourself to more hours logged in hang waiting?

Those of you who are still around to read this would probably force relaxation and cool your winged heels.

But... Now consider that aero towing in all likelihood means a nearly duplicate scenario. Remove the cliff edge from the tale and swap the mountain for the end of your local ultralight strip.

The wind may be light, the thermals beginning to form. But once the tug fires up and the tow begins, 35 MPH is precisely the magnitude of the "wind" in which you'll be flying. What to do?

Why, install a *High Speed Neutral Trim Device*, that's what! Or, as it's been affectionately renamed by friends of the developer — the "Roland Connection."



INFLIGHT

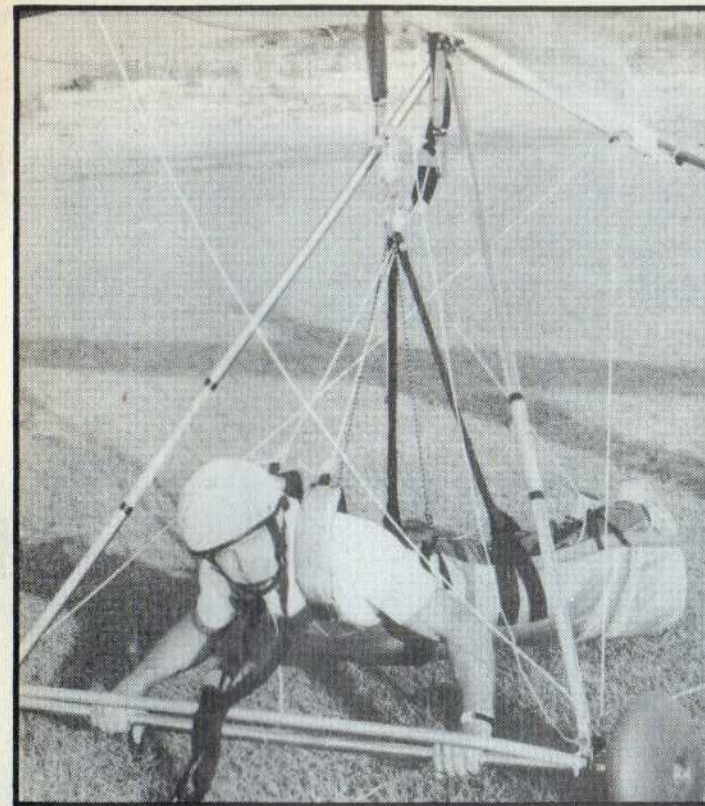
We had heard the reasoning for its use, but as Coke used to remind us, "There's nothing like the real thing." So we traveled to Roland Alexander's home in Orlando, Florida for some real experience.

Alexander has been aero towing for nearly a year now. And he's been boat (base bar) towing for nearly fourteen years. He feels aero towing is the future, that boat towing is far superior. But in the year since Skylines began promoting aero towing in America, the growth of participation has been minimal. "Why?" we asked him.

Explains Alexander, "It's just not fun, aero towing at 35 MPH. Bar pulled to your waist just to keep up, yawing about with the need for lateral correction while the bar is rearward a couple feet, your arms tiring... just isn't fun." Who would give up mountain launching or boat towing for that unpleasant work-out? Perhaps a few motivated aviators, but not the masses.

So Roland set about the design and construction of his device. After several trials to get the amount of forward displacement and the determination of good speeds, the High Speed Neutral Trim Device, or Roland Connection, was ready for other pilots. Roland had also added a second forward base tube bar, so that controls would seem very similar, albeit at a fast trim speed of 35 miles an hour.

Lying prone, using a wheel launch, hands on the front bar, a moment of pre-takeoff peace allows a small space of time to recall anxious occasions in past aero tows. Now it may be different.



On the left Roland Alexander hang checks the HSNTD, or Roland Connection. Note the forward and locked position of the device. On the right, Roland releases the HSNTD for our photographer. Also note addition of the forward control bar member, which places the control bar in the normal relationship to your body while in 35-40 MPH towed flight.

Signals are given, the engine on ultralight airport operator Tony Nicorvo's Cobra Aero Tug roars to life, the line tightens and we're off.

The first inclination of the effect of the High Speed Neutral Trim Device is witnessed when the glider stays on the ground nearly as long as the tug. We applied *too much* nose down. Easing back to trim position, the glider lifts off rapidly but smoothly.

The climb out is uneventful except for a constant yawing of Alexander's 165 Comet 2 at 35 MPH (to 40 at times). The important statement here is that a 35 MPH tow is more than bearable. It's very reasonable, with the High Speed Neutral Trim Device relocating the hang point. Two facts are most salient; one follows the other.

PITCH AUTHORITY

You can speed up with only light muscle exertion, enough so as to gain on the ultralight. Not that gaining by itself is valuable, but you can *control altitude on tow* precisely and at will.

While a french connection, or pitchy or speed rail, permits such forward CG displacement, you must still pull yourself forward, and hold yourself there. Yes, these devices do the same job, but only with constant application of control input. Fatiguing in a long

tow. Alexander has successfully remained on tow for one hour and twenty five minutes. Think you could sustain 35-40 MPH that long?

LOW TOW

The second fact is the chance to low tow. "Oh no," you say, "that's improper technique." Says who? On our first two flights with the High Speed Neutral Trim Device, we towed well below the wake, comfortably. We could ascend above the wake, and then go right back down, easily. Ask anyone with ultralight aero towing experience and see if they could much more than hold level flight. In the past any relaxation of pull in, and you'd shoot back up above the tug. So what, eh?

For those still waiting on their first aero tow, we can tell you the climb rate is greatly enhanced if you do not climb too high (thereby slowing the tug, and perhaps causing the tug's nose to drop). This naturally means less risk of control loss for the tug pilot.

Further the tow pilot will attest to a much reduced work load when ever the glider pilot is low on tow. He'll feel better (read to mean: safer), the climb is stronger and more consistent, and the constant, inevitable exchange of energy between tug and glider will be smoother and more dampened.

IS FASTER BETTER?

On initial flights you can expect to find roll control a sensitive affair. At 35 MPH a modern wing is extremely roll responsive, yet possessed of a distinct lag. Just as with the first keel-pocketed, fast rolling gliders of the Raven era, you may badly over control on earlier 35 MPH tows. That's a minus. Pluses also exist.

Though a 35 MPH airspeed assures a better climb condition, the ability to handle speed isn't the entire goal of the High Speed Neutral Trim Device. While it does obviate the need for a lengthy job of "improving" the aera tug — a task few soaring pilots were interested in — another benefit is the primary gain.

If one has adequate, even generous pitch authority, one can aero tow in exactly those conditions we seek... thermally, convective, unstable days. While Alexander's hour and half tow is *not* the goal of a soaring pilot, the ability to tow successfully for that long, with sufficient control, in good soaring conditions, to an altitude that permits release for an extended soaring flight is most certainly the objective.

The corner is turned. Intermediate and advanced pilots can now aero tow, regularly, consistently, safely, and in the right air. We should also be able to achieve all this behind a great many (suitably equipped) ultralights.



WORLD'S LARGEST: LA MOUETTE?

Are they or aren't they? / story and photos by Dan Johnson

EVER EXPERIENCED DEJA VU? I did last Friday.

Long ago, back in the dark ages before the wings of Rogallo came down from the mountains, I rode motorcycles for sport. Financial limitations meant that the bikes I rode were usually rather small and rather slow, but I enjoyed every minute. Then one day a friend with a rush of generosity and a touching faith in my ability, invited me to launch his blown Triumph drag bike at a quarter mile meet.

You may know the type of machine: running a rich diet of nitromethane, engine life is measured in minutes if you judge everything right and microseconds if you don't. Handling is enduring in a dead straight line, but lockout likely if you fancy a deviation to left or right. A thoroughly ill-mannered device. As I pulled that bike up to the staging lights for the first time, I was aware that I was about to do something I have coveted for a long time, but wasn't altogether sure I was going to enjoy now that it was here!

Last Friday I again found myself with a

crash helmet on, experiencing exactly that same feeling. But this time I was attached to a hang glider and it was a tow-line rather than a dragstrip which stretched in front of me.

The apprehension was understandable. Tow launching has not enjoyed a good record here in Britain, with far too many accidents in the early days. That was before we had learned that centre-of-mass towing was the route to go. I had seen some of the early incidents and accidents, but had no personal experience.

As part of the BHGA's current cautious program of encouragement for the newer systems based on variations of the "Skyting" equipment, I was experiencing Tony Webb's conversion course to high towing by pay-out winch. As it turned out, the ride was undramatic, and apart from highlighting my lost skill in hitting the stirrup (I've used a cocoon for the past year), I found no problems and felt "easy" with the system. The strangest part as far as I was concerned was in pushing out enough when flying up through turbulence — years of speeding up a little to be sure of plenty of roll control — took a flight or two to unlearn.

Tony does a great job of the teaching, and insists that every pilot start at stage one,

regardless of previous experience. Stage 1 is man-towing on a short line and is a good safe way of getting you used to the feel of the pull on harness and glider simultaneously. Stage two is fixed line towing, again at low altitude, but using a vehicle, and maintaining flight long enough to pull the release. The vehicle we used was a Suzuki all-terrain machine of only 125 cc, but it performed the job beautifully on the rather rough pasture of the tow field. For these flights the short tow line is hand held by the observer in the vehicle, who is close enough to the pilot for shouted instruction to be clearly heard.

Stage three takes us on to the winch, towed in a trailer behind a Kawasaki 200 cc ATV trike. Tension is set by a hydraulically applied brake to a pre-set limit, and a couple of hundred yards of line laid out back to the glider. After the slack is taken up and the pilot is ready, he signals "all out" by lifting his right leg out to the side and back, and away goes the towed winch. Into a light breeze the take-off is completed in very few paces, and the rest of the effort goes into optimising climb.

This was the first time Tony has tried the system in a rough pasture, and Ian Branson, Keith Cockcroft, Mike Mavin, Trevor Birkbeck



and I were the guinea pigs. We didn't get above 500 feet because of the size of the field, but the potential of the method was clear.

Normally Tony operates from an airfield, and uses a station wagon on the runway. We were all surprised and pleased at how well the little motorcycle-based off road buggies coped with the towing task, although a few more cubes in the cylinder would have been an asset, particularly if the extra torque could have eliminated the gearchange which we found necessary on most runs.

After a cold day in which about 40 launches had been made, we found ourselves back in Ian Branson's nearby stone farmhouse. Replete with soup, cheese, and wine we all sat around his log fire and discussed how towing might change the British flying scene. Surely the sport will grow in the flatlands of Norfolk, Suffolk and Lincolnshire, while in hilly regions hitherto unlaunchable ridges will be accessible via a winch start.

We are some way from the expertise of some of our European neighbors in the towing field, but at least some progress is being made in the British Isles again.



(Opposite page) Low and slow, just like in the old days! A newcomer to towing gets her feet off the ground for the first time while the rest of the team work up a sweat. (Left) Keith Cockcroft just airborne, while Tony Webb runs alongside. (Below) The pay-out winch ready to go. The dog is present in a purely supervisory capacity.

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THE CLAIM, "WORLD'S LARGEST Glider Manufacturer," is a boast that many readers will immediately discount. American readers anyway, who have become understandably jaded by hearing six month old companies bragging, "World's Largest This or That."

La Mouette of France actually doesn't go around making any such statement. Their dealers and distributors may, but we've never read it on any literature. And if they did so state, the more amazing fact is that it would likely be true.

La Mouette (French for "Seagull") is an eleven year old producer of hang gliders and ultralights, formed in 1974 by the two Thevenot brothers, Gerard and Jean-Marc. Everyone seems to know the former; almost no one knows the latter sibling. And outside of Europe, almost nobody knows much about the Dijon-based manufacturer. A tour of the plant may change that.

In 1974, Jean-Marc and Gerard, caught by their interest in a new flying sport, became dissatisfied with available equipment in those early days. At 22 and 20 years of age respectively, the two took over a little-used garage of their father's. Their first glider, the La Mouette A, was basically a copy of the famous curved leading edge Seagull III.

As with many designs, the early La Mouette went to a Swallowtail appearance

when that Wills glider became "the new look." From this point a tale of development began which is familiar enough to all of us who dare call ourselves veterans of hang gliding.

The Swallowtail La Mouette evolved to the Ibis (truncated tips), which begat a no-batten Cumulus V type with shaped keel, which changed to become the Exo-7, a Moyes Maxi

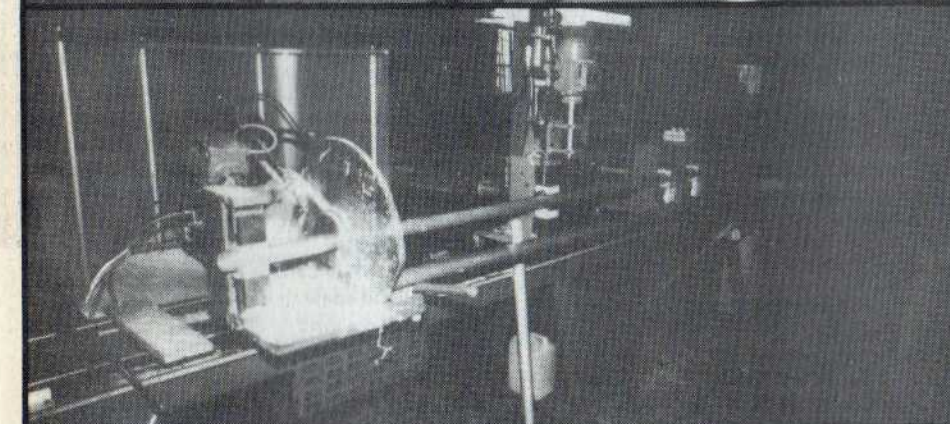
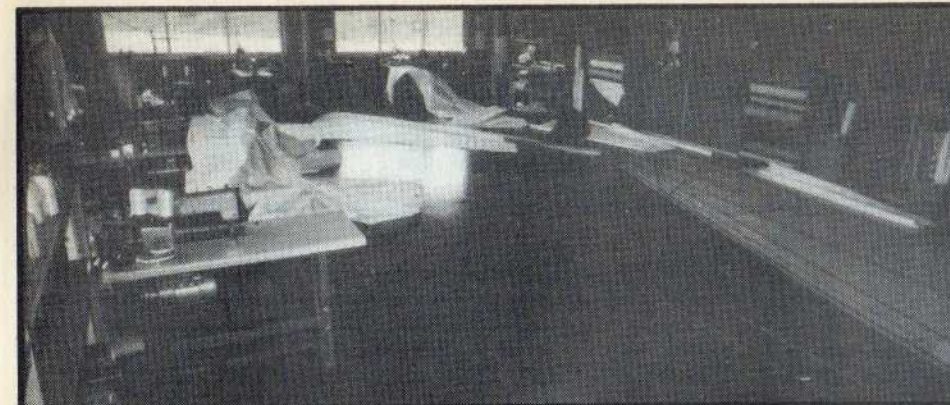


clone with lots of battens.

But next came the Jet. It did two things. It became La Mouette's first truly original design. And it almost destroyed the company's developing image (at least in the USA). At that point in the evolutionary history of design, an impasse became evident. To go further with design, parameters had to be stretched beyond the then-current knowledge. Yet no HGMA program, or DHV Gutesiegel (German certification seal of approval), or British C of A lighted the way to safety in technical areas of design. At best it was a learn as you go, trial and error system, subject to harsh discovery. The La Mouette Jet had several fatal accidents before the problems were solved.

After three difficult months of Jet production and re-engineering, the Jet was put to pasture and the Atlas was born in early 1978. As evidence of how well the Thevenots did their homework, the Atlas is still in production — as the Atlas 85 — and some 6,000 units have been produced. During this seven-year, longest of all production run, the Atlas has won every major category of contest in many countries. Sales have occurred in more countries, western and eastern bloc, than company officials can recall without references.

Since the Atlas' emergence, La Mouette has developed the X-ray, an Atlas with enclosed floating crossbar; the Azur in 1981, and finally the Profil in mid-1983, which remains



their highly refined state-of-the-art offering.

In addition, La Mouette has been involved with production of trikes since the early '80's. It is a smaller and decreasing portion of the business. But significant to hang glider enthusiasts, one development from the trike company has been the now well-known

Cosmos aero tug (see March '84 Whole Air).

Some thirty full-time employees work at the rue de la Petit Fin address of La Mouette. Half of these are engaged in work in one of the firm's three sail lofts. All but one of these sail builders are female, and Gerard says they have three lofts from what had been one large

loft to keep peace among the competitive and individualistic seamstresses and sail cutters.

Five more persons are involved in the offices of La Mouette, and three men run the Cosmos trike production. The remaining employees are used in a harness loft, in frame fabrication, in final assembly, and in shipping and receiving.

Jean-Marc Thevenot is the primary administrator of the company. The two brothers are most agreeable partners, and both are active pilots. While Gerard is the designer-inventor, he is quick to give credit to Jean-Marc saying that he, "...helped make my ideas work better." Though Jean-Marc flies gliders, he does not pilot the trikes, an interesting fact since his avocation is involved with race cars.

Gerard Thevenot is the more visible co-owner, as his function for La Mouette has him traveling frequently, and flying in competitions. In this latter effort Gerard has elevated himself to world class stature, with many victories to his credit. This is in clear evidence, as trophies were everywhere in La Mouette offices. When we remarked at the large number of awards and plaques, Gerard smiled and showed us a closet literally packed with more. In fact he says still more adorn his mother's fireplace mantel. All this has obviously been good for business.

The company reports producing 140-150 gliders per month in 1984, and planned to maintain that production through the winter, stocking up for 1985. In '85, La Mouette added its newest country for international sales on an organized basis: the United States. La Mouette formed a partnership with Franco-American Jean-Michel Bernasconi, owner of Pacific Windcraft, to have Skylines Ltd., distribute products to America. This began in 1984 with Cosmos trikes, specifically aero tugs. In 1985, that effort has added the Atlas 85 and their Profil.

The factory is very businesslike and well organized. It is housed in a spacious L-shaped building which the Thevenots own outright, with handsome offices and a showroom for the Cosmos line. In the frame fabrication department a pneumatic auto-feed drill jig system allows spar construction with up to seven or eight adjustable stations. In the sail loft, La Mouette plans to add a computerized laser dacron cutting system to streamline production. About twenty sewing machines handle those chores in the three sail lofts and one harness loft.

While we visited, Gerard fielded calls switching languages with fluency (so far as we could discern). This multi-lingual approach is apparent in their literature, too, as they produce several brochures in as many as seven different languages. We were impressed.

Overall, "impressed" is a good description of our reaction to La Mouette... the place and the people. Whether they are the world's largest or not — it does seem very possible — the point is that the international sport is fortunate to have a La Mouette doing its best to keep a lot of pilots in the air, regardless of what their race, creed, color, or language spoken.

At La Mouette, they speak "flying."

DIRECTORY

CLASSIFIEDS

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Santa Ana, CA 92701

WINDSPORTS INTERNATIONAL, INC.
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Van Nuys, CA 91406

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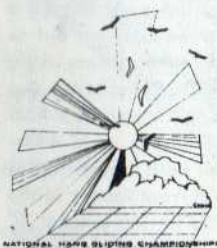
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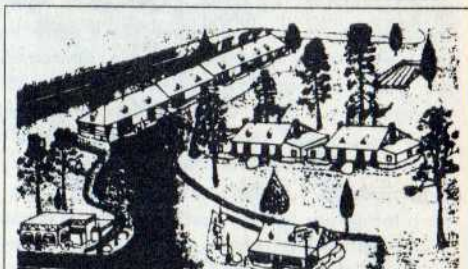
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PRODUCT LINES

TACOMA, WASH. — As you can see from even a cursory glance at this issue, while enroute to this column, *rigid superwings* (RSW's?) are in our pages. We feel this is only the beginning. While we've had Mitchell Wing coverage (May 84, Dec 84, Mar 85) and other stories even earlier, we think the time has arrived for a steady diet of RSW reports from here forward. Aero towing is part of the catalyst for this timing -- a very important aspect indeed. But we'll demand one important requirement... that the project(s) must be underway to actually *build* RSWs before we report them. Several RSW projects (besides the two in this issue) are now in development. The point of progress varies dramatically but we started keeping a list and are up to TWENTY such projects. Yep, 20!! Most are still in early conceptualizing stages, so are not yet story material. But others -- Morley's prone B-10 and U-2, Thalhofer's Bluff, Cherry's Hang Plane, the ULF-1, Gytis Tamulaitis' Horten wing-derivative, Loup's Nimbus (see next issue of *Whole Air*), the Orion from England, and even UP's Arrow -- are well beyond just drawings and talk. No doubt about it folks, the newest "cutting edge" is here in 1985. We want you to know beyond any doubt, that *Whole Air* will be covering any such projects as soon as (1) we hear of 'em, and (2) they become developments in construction. If you know of any project even loosely related to RSWs and/or ultralight sailplanes, let us know. Call 206/588-1743 and inform us... we'll call you back as soon as possible on our dime to hear about it more fully. DO IT NOW! Okay, lessee what's happenin' in our industry that you'd like to know. Gary Engelhardt, the pilot who logged the first over 100 mile flight east of the Mississippi has now set a new east coast distance record of 130.1 great circle miles. An interesting tale surrounds this event and pilot. When Gary set the 100 mile mark, he was prez of the Tennessee Tree Toppers (y' know... the USHGA Chapter of the Year for 1984 group?). Just before he did the distance, the TTT Board of Directors elected NOT to continue the club's \$1,000 cash prize for the first flight over 100 miles (from a TTT site). Thus Engelhardt narrowly missed a handsome prize which everyone felt he truly deserved anyway. But as prez, he stuck to the decision righteously. Now, in a manner some might characterize as "poetically just," he's done another hot flight, but this time looks to be in the bucks again. Remember in the March 85 *Whole Air*, Wills announced contingency prizes for XC flights (and other achievements). Well, Gary flew his same Duck on both flights, so as Wills has stated, "(this flight) qualifies him as the current leader in the quest for the \$2,000 Wills Wing XC Contingency Prize for the longest XC flight in the U. S. in 1985 on a Wills Wing glider. Congratulations, Gary!" It's a lotta year left yet, but 130 miles is a good distance -- even when Owens Valley flights are considered. So maybe Engelhardt's in the green this time. Our fingers are crossed for ya, Gar'! We got a copy of the Oscar-winning movie "UP," and saw it five times already. Produced and directed by Mike Hoover of Pyramid Films, the fourteen-minute-long winner of the Live Action, Short Subject award took seven years to finish. It stars Ed Cesar, who was enlisted while still employed at UP (not intended to be "punny"). Almost no dialogue is used, but some good action will rivet your attention. Especially true of Ed's apparent attempt to land on a towering pinnacle rock in Monument Valley, the scenes depict some exciting and beautiful flying sequences. Locations include Alaska, Hawaii, Yosemite, Arizona, Utah, and while we're no film makers, it looked very well planned and created. The settings are awesomely attractive, desolate, and no other distractions are present. Ed had a number of comments, among them, "It's the best damn saga... a very positive film, strong for the sport." and "It provided some of the neatest times in my life; testing and trying... I flew in places I would never have otherwise; I took calculated risks." The fear factor was evident -- especially so in order to reach some of the film's settings -- where Cesar

towed behind a Bell 257 Jet Ranger helicopter on 400 feet of line! He says of this part, "The towing was very, very, very turbulent; I aged 14 years." UP is not a documentary, as viewers will readily see, and frankly, we're not sure yet what the message is. It is an artsy effort and we were a bit confused by a couple sequences, namely the one depicting a loosening wing nut (un-safety-wired) on an upper rigging point. Eventually the wire lets go, and for some reason, the event causes Cesar to be released from his hang point. He plummets end over end and falls behind some trees with no sign of a chute. Evidently though, he's just dreaming, which explains the otherwise inexplicable cable failure. With each of the five viewings we saw things we didn't see earlier. This improved our opinion each time. It's really a hot story, and we think Hoover made significant and appropriate use of artistic license. Whatever our relatively uninformed opinion, however, the award presentation and short description was seen by a reported billion TV viewers, and that's gotta be good for our sport all by itself. Winning the Oscar makes it Big Time, we understand, as some 120 film festivals worldwide have requested its appearance. Pilots will all enjoy it immensely if they don't judge it prematurely. And non-pilots will probably perceive it as good stuff for hang gliding. Elsewhere in the sport, *Airwave U. S.* reports the sale of 120 units in 1985, which we figger is an excellent performance. It causes us to wonder if more foreign hardware may begin arriving in the USA. Of course, *Skylines Ltd* will be trying to add to that pile of foreign goods with their sale of Atlas 85s and Profils. Initial response is most pleasing to Jean-Michel Bernsaconi. Back orders have been steady all thru the winter and into spring, so according to JMB, "85 looks to be a very good year for Skyelines and Pacific Windcraft." Back to *Airwave* for a moment, we heard from the ole horse's mouth that *Airwave U. S.* is gonna be in Ken Brown's hands for a spell as Chris Bulger leaves Washington for Florida. The college-bound world class pilot plans an extra-curricular activity of aero tow training of students who will go tandem in an un-powered trike with Chris doing the teaching. We think this is a very, very hot development which we've been interested in since aero towing first hit on the scene. Others of us have talked about it -- as a way for the sport to appeal to many would-be pilots who don't wanna jump off cliffs, or lay prone, or run around with a diver on their shoulders. But now it seems imminent to happen. The first place may be at *Dave and Judy Rodriguez's Wasatch Wings*. They've just bought a Skyelines/Cosmos aero tug and expect to do this style of training, having been gaining heaps of experience with ultralights over the last few years. We'll be bringing you a story on this effort just ASAP. One guy who's also got a strong interest in this is Kent Officer (and wife, Nina), proprietors of *Sooner Ultralite Corp.* Who? Kent's the fellah who bought out all of Pioneer's holdings of Flight Designs Inc. The buy included various hang glider gear, hardware, Demon sails, tubing, various, Winter ASIs, and wrist altimeters... a lot of which diver gear is gone already. But, as you might expect, JetWing trikes were the "lion's share" of the loot. Kent 'n Nina have been selling 'em to "qualified buyers," a welcome change from the wholesale dumping of trikes on a relatively un-knowing public. Sooner UF is holding the bargain prices, tho! However, out of it all, they'll end up with several units for which they don't already have engines and other drive train components. So they may soon have just the market for all that stuff, selling unpowered trikes for aero tow instruction. At least we hope to see further development along that line! Hey... we had some other poop from around the industry but we're outta room, so we'll update those items and bring 'em to ya next month. That's right, don't fergit *Whole Air* is MONTHLY from this May issue through August this year!! Got news or opinions? Send 'em to (our NEW address of) Box 98786, Tacoma WA 98498-0786.

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