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# whole air catalog

JAN./FEB. 1979



**NASA and the USHGA?**  
an exclusive **WAC** interview with  
**Region 10 Director, DICK HECKMAN**  
inside

- **NEW** consumer action line
- **USHGA** Board of Directors
- crystal corner on Parachutes

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## New Gliders

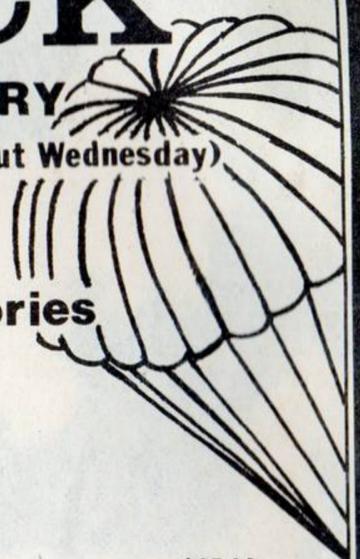
10 Meter	r, tb, br, g, y, w	\$1255.00
Easy Riser kit	white	900.00
Super Seahawk	170 g, p	965.00
Super Seahawk	170 w, w, br, tb, br, w	965.00
Super Seahawk	170 tb, w, tb, w, tb, w	965.00
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Super Seahawk	140 w, w, g, y, g	965.00
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## Used Gliders

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Quicksilver B		525.00
Seagull III Z	r, b	500.00
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Seahawk 170 '77	with prone/seated rigging and harness	750.00
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Bennett Mark IIA	\$315.00
Freeelite 24	330.00
<b>Instruments</b>	
Theotek Variometer	\$160.00
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Thommen Altimeter	119.00
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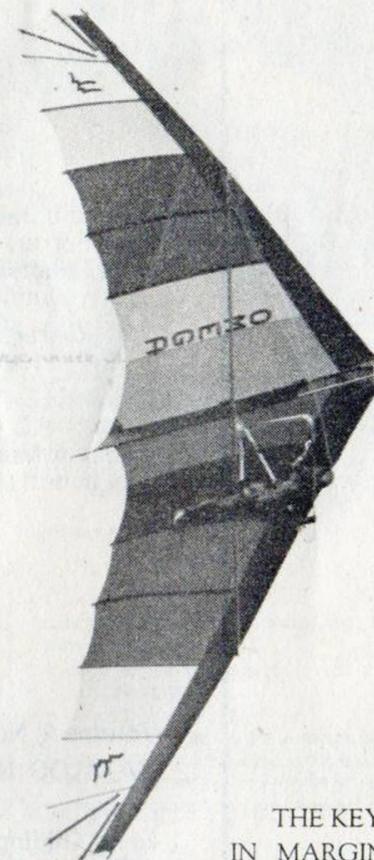
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# INTRODUCING THE WILLS WING OMEGA

THE "SUPER FLOATER" WITH MORE SPAN, MORE AREA, MORE SPEED, MORE PERFORMANCE AND MORE STANDARD FEATURES



## SPECIFICATIONS

	260	220	180
Span	40.5'	38'	35.5'
Area	260 ft. <sup>2</sup>	220 ft. <sup>2</sup>	180 ft. <sup>2</sup>
Aspect Ratio	6.3	6.6	7.0
Nose Angle	120°	120°	120°
Pilot (Flying)	200-	165-	130-
Weight	265	220	175

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- QUICK BREAKDOWN FRAME
- CUSTOM SAIL COLORS
- ALL CABLES COATED
- QUICK DEPLOY TRIPLE DEFLEXORS
- VELCRO BATTEN RETAINERS
- VELCRO SAIL TIES
- WASHOUT CONTROL TIPS
- COMPREHENSIVE FACTORY FLIGHT TEST

THE KEY TO GOOD SINK RATE PERFORMANCE IN MARGINAL LIFT IS LIGHT WINGLOADING, LARGE WINGSPAN, AND QUICK CONTROL RESPONSE. FOR YEARS WILLS WING HAS SPECIALIZED IN DESIGNING LARGE GLIDERS WITH EXCEPTIONALLY QUICK AND DEPENDABLE HANDLING. IN 1976, WHEN A MAJOR MANUFACTURER WAS ADVERTISING THAT THE MAXIMUM WINGSPAN FOR A FLEX-WING WAS 31 FEET, WILLS WING WAS FLYING A GLIDER WITH A 37 FOOT SPAN! IN 1977, WHEN OTHER MANUFACTURERS WERE PUSHING SMALL GLIDERS AS THE KEY TO RESPONSIVE HANDLING, WILLS WING WAS CERTIFYING A DESIGN WITH 265 SQUARE FEET OF AREA WHICH COULD BE EFFICIENTLY THERMALLED BY A 145 POUND PILOT! IF YOU'RE LOOKING FOR A GLIDER THAT'S OPTIMIZED FOR MARGINAL LIFT, HOOK INTO A WILLS WING OMEGA. IT WON'T LET YOU DOWN.

**WILLS WING, INC.**

PHOTO BY STEVE PEARSON

1208-H E. WALNUT - SANTA ANA, CALIFORNIA 92701  
(714) 547-1344

## PUBLISHER'S COLUMN:



Welcome to 1979. As a new year begins, we hope for great improvements in the aviation sport of hang gliding. Our foundation is broader and stronger than ever; the future can be bright if we make it so.

The **Whole Air Catalog** will carry its share. We have spent the winter weeks as most manufacturers, designing and improving. As you page through the '79 **Whole Air Catalog**, we think you will find much new information. It is done in an uncomplicated style we believe you will enjoy. And yet, this is just the beginning.

Gone is the catalog format for a more helpful, more entertaining consumer magazine. We will serve the industry better than ever by fostering communications between the buyers and the sellers. The approach will seek to remain positive and useful.

**WAC** now has several columns, which will appear regularly as Departments of the new **WAC Magazine**. You will find them easily, grouped near the front of each issue.

This issue has a main feature interview with Region 10 Director, Dick Heckman. Hang gliding is enriched by having this NASA engineer as one of its enthusiastic and hard-working proponents. Every pilot will want to read what Heckman has to say . . . about our national organization (or lack of it), and many other areas concerning our favorite pastime.

As our sport hovers under the dark cloud of uncertainty regarding governmental regulation, Dick's words may offer wise advice to all who delight in the freedom we currently possess.

You can help. Get involved. We list the USHGA Regional Directors and the means to contact them as a follow-up feature. It is toward the rear with our Crystal Corner column, speaking on the safety of back-up-systems. Help yourself, and all of us, by examining both articles. Last, use your Reader Inquiry Card — it's free!

Dan Johnson



## WHOLE AIR CATALOG

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# IF YOU'VE GOT THRUST,



## PROVE IT!

And that's what we did at the EAA Sun-N-Fun Fly-In in Florida. We hooked our newest design reduction drive power unit to a thrust gauge and showed everyone that we are getting a solid 90 to 95 lbs. thrust.

## 95 lbs. THRUST

With thrust like that behind you, there's no question about taking off! Our Mo-Glider power pack is completely thrustworthy . . . and we're the only ones to prove it publicly. Being the originators of the reduction drive system for hang gliders has given us a slight advantage. We've had time to develop powered hang flight to its fullest.

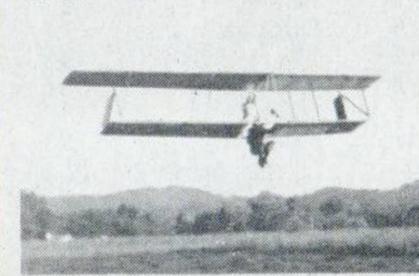


**CGSAVIATION**  
4252 PEARL RD., CLEVELAND, OH. 44109/(216) 398-5272

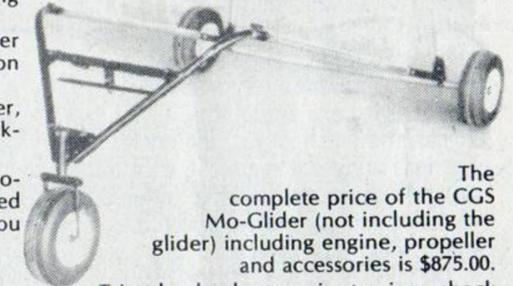
### Consider this when looking at power systems:

- West Bend Engines (Mac 101 conversion available)
- Large Diameter 42" Prop
- Muffler as standard equipment
- No wing amplification of sound
- Faster takeoffs and climb rate due to more efficient, large, slower turning prop
- Four bolt mounting with eight rubber mounts to isolate engine vibration from airframe
- Mounting systems for Easy Riser, Mitchell Wing, Icarus V, and Quick-silver

That and a lot more makes the CGS-Mo-Glider power pack the engine you need to get you into the air fast and keep you there.



Our new design in tricycle landing gear has made take offs and landings a lot nicer. With the steerable nose wheel, you can taxi to takeoff and land on all three, or you can be a purist and use your feet. Either way, you can count on the CGS Mo-Glider power pack to get you up and back with the greatest of ease.



The complete price of the CGS Mo-Glider (not including the glider) including engine, propeller and accessories is \$875.00.

Tricycle land gear is torsion shock absorbing which means no need for external bracing cables. Has been drop tested to 4 G's; truly aircraft design. Complete with steerable nose wheel . . . \$190.00.

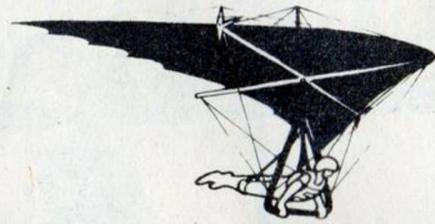
CGS Power Flight Harness \$65.00.

For further details, send \$4 for a complete information package and find out how easy it can be to get into the air with Chuck's Glider Supplies.

Circle #5 on reader service card.

# HANG GLIDING STATISTICS

By Dan Johnson



As "Hang Gliding Statistics" continues for 1979, we have some new findings to report. But first, we would like to offer some brief explanation for the Brand Market Share.

This attention-getting topic has generated some inquiries into the nature of the Ranks and Percentage Shares. Very simply, the figures are derived from our reader surveys. You are familiar with our Inquiry Cards. These Cards had a specific question asking all responding readers to identify the make and model of glider they now own.

When the surveys were evaluated, the resultant percentages were developed, and a rank emerged. They do not necessarily relate to manufacturers' "build" rates, nor to any sales reports, except those which might organize a national picture measured over a long period. So far as we are aware, our surveys represent a very real view of who is flying and what. After all, it comes straight from you, the reader. The lone argument against it, as a totally accurate assessment, relates to the size of the samplings, and the period over which they were gathered.

That brings us to February 1979, following eight months of the **Whole Air Catalog** surveys, and several repetitions from thousands of reader-pilots. This edition, we show the results from surveying our November/December '78 issue, plus a cumulative tabulation combining all previous surveys. These Statistics are increasingly reliable, and we believe our cumulative Rank and Market Shares are more correct than any preceding efforts. Here it is.

BRAND MARKET SHARE Nov/Dec WAC			
RANK	MFR.	% SHARE	LAST RANK
1	Seagull Aircraft	15.5	3
2	Electra Flyer	15.0	1
3	Wills Wing	12.5	2
4	Bennett Delta Wing	9.0	6
5	Sky Sports	7.5	5
6	Eipper-Formance	7.0	3
	Ultralite Products	7.0	10
8	Manta Products	5.0	12
9	Ultralight Flying Machines	3.5	7
10	CGS Aircraft	3.0	7
11	Moyes Delta Wing	2.0	10
	Peregrine Aviation	2.0	12
13	Sunbird Gliders	1.5	—

All other brands had less than 1% Share

BRAND MARKET SHARE Cumulative Results		
RANK	MFR.	% SHARE
1	Electra	15.2
2	Seagull	12.0
3	Wills	10.3
4	Eipper	8.3
	Bennett	8.3
6	Sky Sports	7.5
7	UP	3.8
8	UFM	3.5
9	CGS	3.3
10	Manta	3.0
	All other brands	24.8

Notice Electra Flyer and Seagull are consistent industry leaders. Wills and Ultralite have pulled up sharply due to their success with the Alpha and Condor respectively.

## MOST POPULAR MODEL (from WAC No. 4)

Here is a good topic which may surprise you. See if you would have guessed these results. Models spanning more than one year without noticeable design alternations were figured as a single model. Same for multiple sizes.

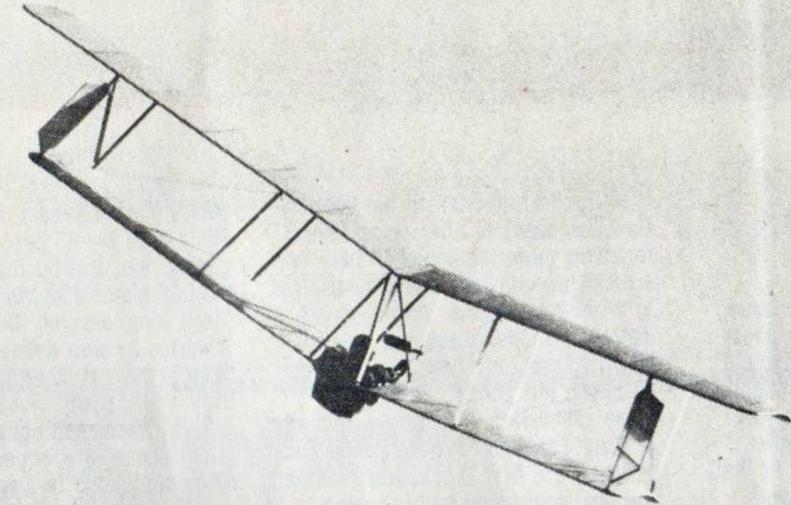
1. Seagull Seahawk
2. Wills SST
3. Electra Olympus
4. Electra Cirrus 5
5. Ultralite Condor  
Seagull 10 Meter
7. Wills Alpha  
Bennett Phoenix 8

Other top finishing models, in order, include: the Cirrus 2/3, the Phoenix 6 B/C, the Easy Riser, the Falcon 5, the Fledge 2, the Sirocco, the X-C, the Flexi 3, and the Owl.

## INJURY UP-DATE

As said earlier, injuries will be a regularly surveyed topic, as it can be relevant to our public image. Last issue we reported that 18½ percent had suffered a broken bone at least once. This equals nearly one in five. The Nov/Dec issue survey improved greatly to a reported 10½ percent, for slightly more than one in ten. The cumulative results now show 14½ percent for one in seven. We hope the trend persists, but, as the surveys continue, they include more pilots, and it seems reasonable to see the injury rate stabilizing in the low 'teens of percentage. Of course, we are still learning a lot; perhaps we can drop injury rates further. Please do your part — fly safely.

# "THE RISERS"



## WHAT'S RISING?

Popularity. Sales. New owners.

Quality. New dealerships Available

accessories. Continuing research in  
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You can still own the **EASY RISER**  
for only \$900. Rise above  
it all with **EASY RISER!**

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SEND \$1.00 TO:  
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2960 CORVIN DR.  
SANTA CLARA, CA 95051  
OR CALL (408) 732-3165



Pilot: Dave Kilbourne at Mission Peak, Cal.

# CONSUMER ACTION LINE, the introduction

In our November/December issue, we asked whether hang glider pilots wanted a service which sought to aid consumers in their purchase difficulties. Using the **Whole Air Catalog** as the forum, we felt a communications exchange could be established as **WAC** deals with both sellers and buyers.

The response was so overwhelming, exceeding 99 percent in favor, that the "Action Line" will become a regular Department of **WAC**. A few requests already arrived, but some instructions are mandatory if we are to try extending genuine help. Failure to give all information, or writing illegibly, will render it impossible to do much at all for you. Here are the instructions:

1. Provide your full name, address, zip code, and phone number.
2. If you wish a written reply, send a stamped, self-addressed envelope.
3. Do not attempt phone calls to the "Action Line," please.  
Do not request progress checks. We will work on all the cases that we are able.
4. Provide full details of your problem, like:
  - a. description of item(s)
  - b. prices and discounts
  - c. date of order
  - d. quoted delivery dates
  - e. proof of payment
5. If your problem does not involve a purchase, give all related information so we can pursue it knowledgeably.
6. We will only be able to print a few of the problems. And for those printed, no issue dates will be quoted.
7. Remember, we may not be able to help at all.

In this introduction to the "Action Line," we want to offer some advice regarding motor equipment. Some consumers have already found themselves in difficult situations. As if sympathetically, our reader surveying showed interest in motor advertisements was declining, not gently. Why?

We called Jack Hutchinson, recently of Hang 'Em High Flight Systems. Jack designed the first Quicksilver motorized unit, and sold many before having to close the doors right at the end of 1978.

Jack assured us that all units ordered were delivered. Alright, that is good, but why did this major factor "go under"? And where is he going next? Where will his potential customers go?

Hang 'Em High was a small, new firm, even though it was in the vanguard of motorized progress. Demand did not fall to the fatal point. In fact, Hutchinson claims, "I could have had orders in-hand, if only I'd been able to take delivery on gliders." It seems Hang 'Em High was selling ninety percent out of the hang glider community. Jack further stated that most of his sales were to customers who had never flown anything before. All customers wanted wheels.

He will now head a new company, Aerosport Products of Florida. Once Hang 'Em High creditors have been satisfied, his new company will market an improved undercarriage for motor gliders. The tricycle wheeled arrangement will feature a steerable tailwheel. His customers, desiring units like he once produced, must go to Lone Star Hang Gliders. They power the Eipper Quicksilver with the Soarmaster system. Hutchinson gives it high points in all areas.

CGS Aviation, possibly becoming the U.S. leader in motorized sales, reports a "slight boom," in sharp contrast to

**WAC's** Market Report, illustrating decline. Their sales are 85 percent out of hang gliding, too. But business is good. As the CGS Motor Unit fits all popular (fixed wing) designs, they are not thwarted by slow delivery. CGS has also been in business long enough to be truly established.

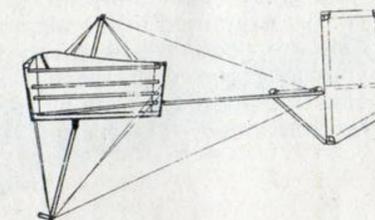
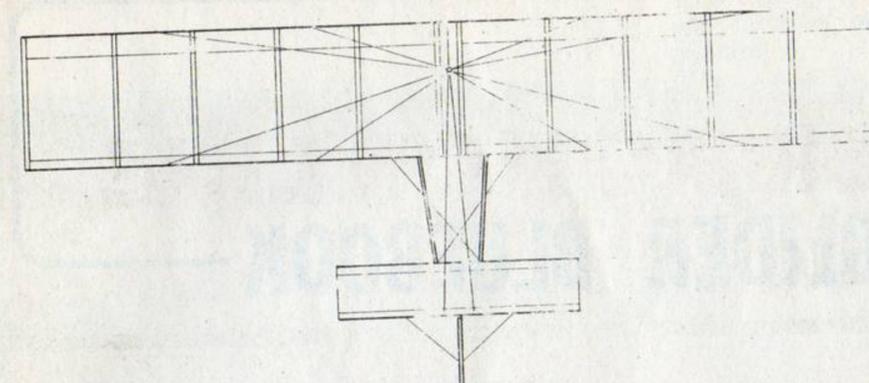
Jack Hutchinson believes the hang glider community is becoming polarized by motorgliders. This would seem accurate if sales are so rarely within hang gliding, and since **WAC** reader interest in motors is slipping. Hutchinson views the future scenario as 99 percent wheel equipped, especially designed gliders, called Ultralight Aircraft, not motorgliders. He may be right.

Eipper has their eye on the fully set-up Ultralight Aircraft market. They will likely release a new design, expressly aimed at power. No dates or details are set, so don't send orders, but the situation appears worth it to the California manufacturer. Sky Sports, in the northeast, is also involved in a thorough investigation, and may enter the market.

What does the owner of a now defunct motorglider company advise the pondering consumer to do?

1. Stick to an aircraft design that is safe. Jack felt good with the Quicksilver.
2. Buyer beware of the motorglider Manufacturer.
3. Assure yourself the supplier provides adequate safety protection from motorized dangers.

Where do you find out more about motor equipment? Still in hang glider publications. Until the public no longer considers ragwings and powered 'Risers as the same animal, the only logical place for motor companies to advertise is via the hang glider media. And glider shops will remain motor outlets as well.



The Eipper 'Quick,' in production since 1972, is still a sought-after glider. Safe, and proven safe.

Expensive? Only \$975.00 for colored sail kit.

Now preferred by many leading power manufacturers like CGS, Lone Star, and Rotec.

Easiest to learn to fly motorized because of slow take-off speeds. Plus, simplicity of repair.

## QUICKSILVER

# Eipper

## FORMANCE

1070 Linda Vista Drive  
San Marcos, CA 92069



Circle #5 on reader service card.

# USED GLIDER BLUEBOOK

EDITION NO. 5

**CONSUMER NOTE:** The prices we present are not the last word in used glider value. Each craft must be closely inspected, and evaluated on its own merits. A dealer can very likely help you a lot, but, of course, some fee is then deserved, or a commission in the case of a dealer sale.

In these days of prices continually increased by the pressure of inflation, used gliders may hold great opportunity for savings. Used gliders can be examined in the air and on the ground. If they are good, it's relatively easy to see. If not, you can save your money. Student pilots may also find good use from a used glider. But care is recommended. The market is still buyer beware.

MANUFACTURER	YEAR	MODEL	SIZE	CLEAN PRICE	AVG. PRICE
ALBATROSS SAIL GLIDERS	76	ASG 20	C	600	375
	76	ASG-21	C	625	500
BENNETT DELTA WING	76	Phoenix 6B	Jr.	500	350
	76	Phoenix 6B	Reg.	475	400
	76	Phoenix 8	Reg.	475	450
	77	Phoenix 6C	Sr.	650	550
	77	Phoenix 6C	Reg.	650	575
	77	Phoenix 8	Reg.	675	475
	78	Phoenix 8 Super	Reg.	850	750
CGS AIRCRAFT	76	Falcon V	225	550	450
	76	Falcon V	185	575	400
	77	Falcon V	185	650	500
EIPPER FORMANCE	75	Flexi II	240	400	200
	75	Cumulus V	180	500	325
	76	Cumulus VB	180	450	375
	77	Flexi III	185	675	500
	77	Cumulus 10	Med.	675	525
	78	Flexi III	Lg.	750	625
ELECTRA FLYER	75	Pathfinder	20-18	200	150
	76	Nimbus	20-17	250	175
	76	Cirrus	3	475	375
	76	Cirrus	2	500	375
	77	Cirrus	3	600	425
	77	Cirrus	2	650	475
	77	Olympus	160	650	500
	78	Cirrus 5	C	775	600
	78	Cirrus 5	A	750	625

MANUFACTURER	YEAR	MODEL	SIZE	CLEAN PRICE	AVG. PRICE
MANTA PRODUCTS	76	Fledgeling	1A	700	475
	77	Mirage	175	700	550
MOYES DELTA WING	76	Mini	180	525	400
	76	Midi	220	700	600
	76	Maxi I	200	750	600
	77	Maxi I	200	800	725
SEAGULL AIRCRAFT	75	Seagull III	220	325	250
	76	Seagull III	220	350	275
	76	Seagull VII	174	500	350
	77	Seahawk	170	700	550
	77	Seahawk	190	725	600
	77	10.5 Meter	—	950	850
	78	Seahawk	190	800	600
	78	10 Meter	—	1075	800
SKY SPORTS	76	Bobcat II	204	450	250
	76	Kestrel A	185	450	350
	76	Kestrel A	220	525	475
	76	Merlin	160	500	375
	77	Bobcat III	Lg.	775	600
	77	Sirocco I	156	775	600
	77	Sirocco I	175	700	600
	78	Osprey	175	875	775
ULTRALIGHT FLYING MACHINES	76	Easy Riser	Compl.	1125	850
ULTRALITE PRODUCTS	76	Dragonfly Mk. II	174	575	375
	77	Firefly	174	650	500
	77	Dragonfly Mk. II	196	700	550
	78	Spyder	176	850	675
WILLS WINGS	75	Swallowtail	22-20	200	175
	76	SST	90	600	400
	76	SST	100A	625	450
	76	SST	100B	600	475
	77	X-C	185	800	650
	78	Alpha	185	975	775
	78	Alpha	215	1000	800
	78	X-C	215	1025	800

Is it asking too much that a hang glider can be purchased one year without being obsolete the next? The people at Seagull think so.

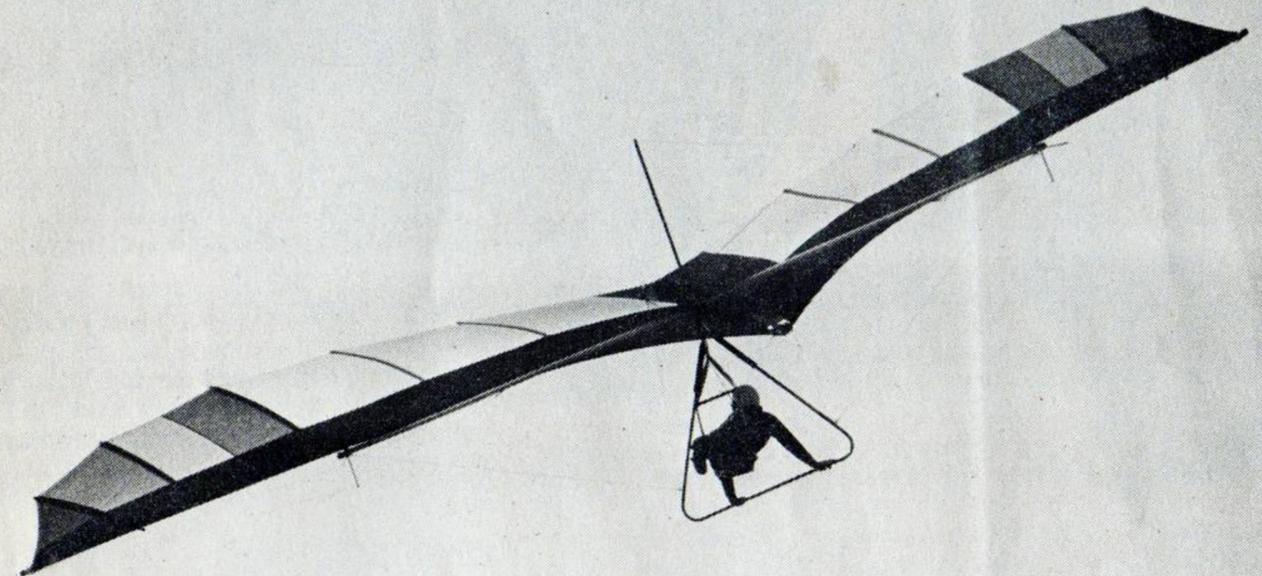
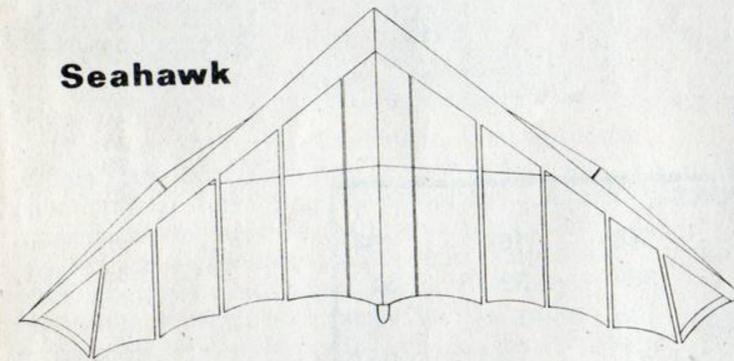


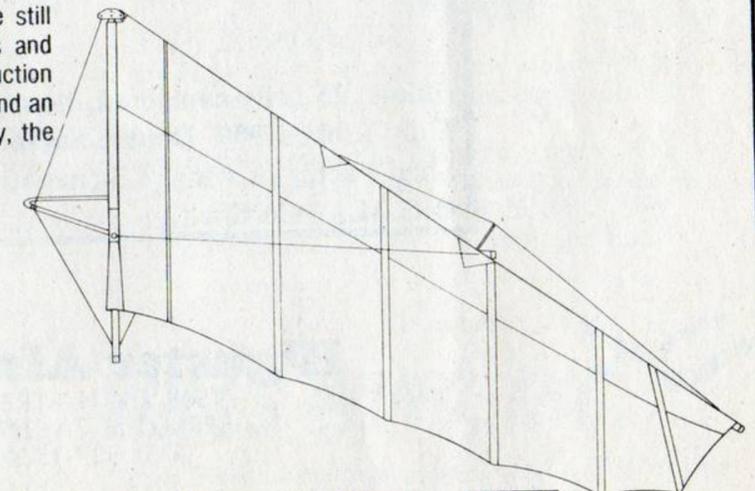
Photo: Sterling Stoll

## Seahawk



As with all Seagull gliders, the SEAHAWK exhibits a positive pitching moment at all angles of attack. In fact, the SEAHAWK is unequalled in all flight realms. The SEAHAWK has undergone extensive balloon-drop, ridge, and inland thermal testing and evaluation.

As much a Seagull trademark as curved leading edges is our safety record. Years ago, when most standards were experiencing design and safety problems, the Seagull III was recognized as the safest, highest performing glider of its time. And Things haven't changed with the TEN METER. We still pride ourselves on our strict adherence to a cautious and deliberate design phase and our traditionally rigid construction techniques. Big tubing, FAA certified aircraft materials, and an attention to detail unrivaled in the industry. Quite simply, the safety record of Seagull gliders is unmatched.



# SEAGULL AIRCRAFT

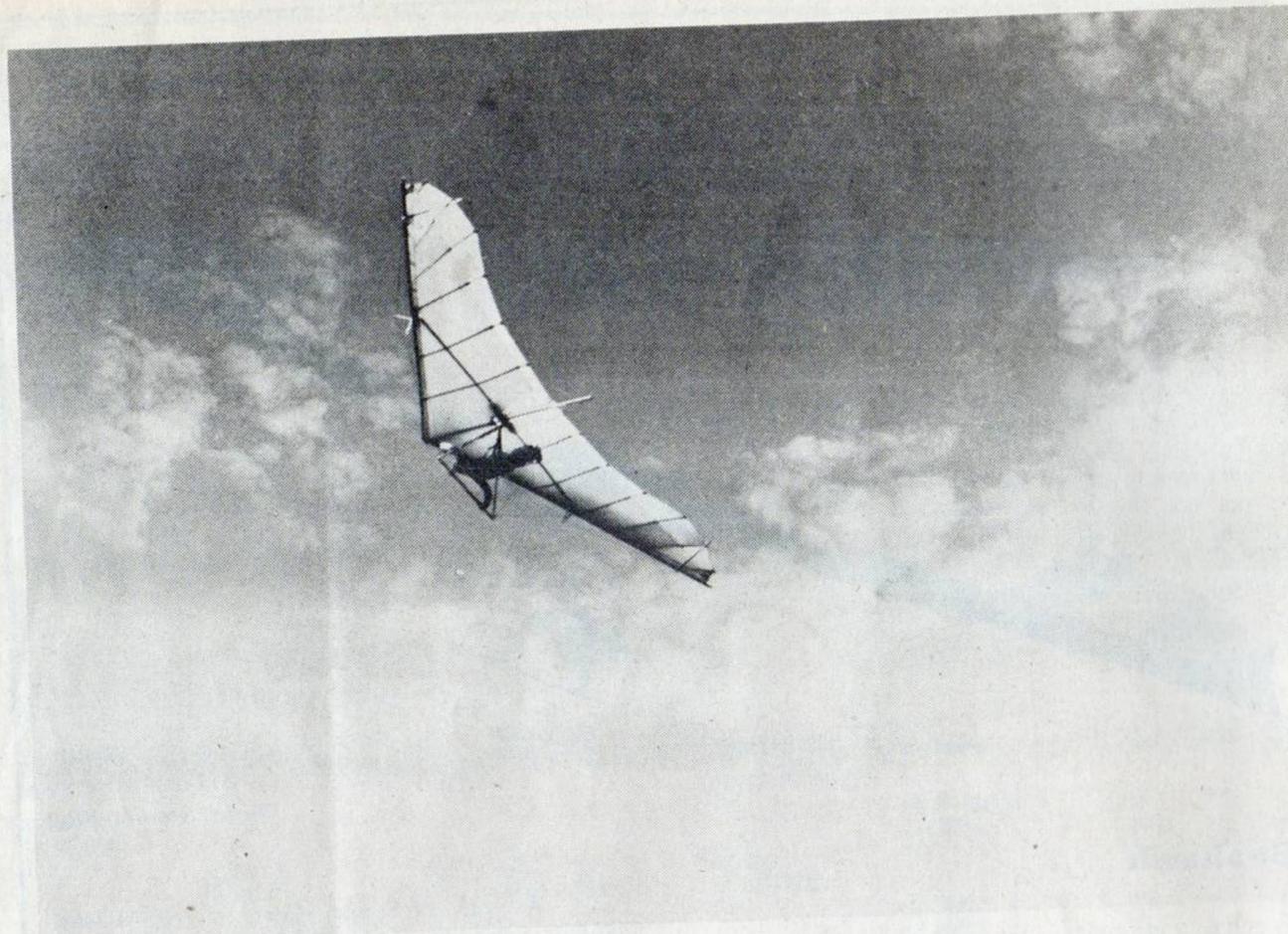


Photo by Albia Miller

HIGHSTER SPECIFICATIONS			
Model	148	164	184
SPAN	30'	32'	34'
AREA	148	164	184
ASPECT RATIO	6.1	6.24	6.28
ROOT CHORD	9.5' on all models		
NOSE ANGLE	110° on all models		
EMPTY WEIGHT	49	52	54
PILOT WEIGHT RANGE	105-	150-	170-
	155	180	up

Billow .25 fully cambered, floating keel  
 Fully Ribbed 90% Double-Surfaced Sail  
 Load Factor of wing: 4.5 (negative) 6.5 (positive)  
 H.G.M.A. Certified

**Highster Aircraft**  
 1508 SIXTH STREET  
 BERKELEY, CA 94710  
 (415) 527-1324

Circle #7 on reader service card.

# There's more to performance than a good glider.

Hang gliding requires a high degree of quality and performance from its equipment. A hang glider alone is not sufficient to produce high performance results. The difference is accessories. To get maximum lift, control and support, Wills Wing offers a complete line of professional hang gliding accessories to complement gliders and allow top soaring performance.

## Soar in Comfort.

When Chris Price designed the Price Harness he developed a quality harness for pilot comfort, support and safety. Three-inch aircraft type webbing, fully padded shoulder and leg straps and a foam filled body ensure durability and comfort while soaring.



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Pilots have the option of soaring in standing, seated or prone positions. A standing position enables the pilot to plunge into an aggressive, controlled take-off run and later prepare for a final approach to landing. While in a seated position, the pilot maintains a lower center of gravity which allows greater glider control in turbulence and while thermaling. Pilots locked into prone position possess a positive relationship with the glider for maximum comfort.

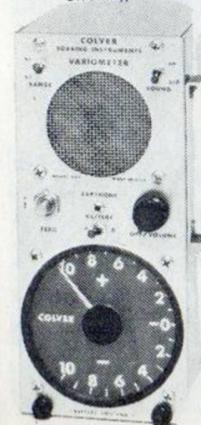
The Price harness is standard in six sizes and four colors. Comes complete with adjusters, stirrup, locking carabiner and two control bar hang loops.

Custom features are also available on request.

## Responsive and Sensitive.

Designed by Colver Soaring Instruments and exclusively distributed by Wills Wing, the latest Colver Variometer (5XC) offers hang gliding pilots a complete dual range audio and visual instrument to get the most out of lift conditions.

Circle #9



It comes equipped with a dual range switch that provides a choice of sensitivities for mild and strong lift conditions. A super sensitive audio delivers the quickest possible response to lift. And, a damped visual dial permits easy reading and a slight averaging effect.

Choice of either "continuous audio" or audio for "up only" is possible from a front panel toggle switch.

Colver Variometer (5XC)

For optimum soaring flight, the Colver (5XC) is entirely self-contained and streamlined for minimum drag.

## A Lift in Performance.

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Thommen Everest Altimeter



Circle #10

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By consolidating the three most important flight instruments into one streamlined lightweight deck, the new CHAD AVT™ Flight Deck allows easier viewing, faster reference and better soaring performance.

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CHAD AVT™ Flight Deck

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\*Front panels to accommodate the Theotek and Ball Variometers and the Altimaster III are available also.

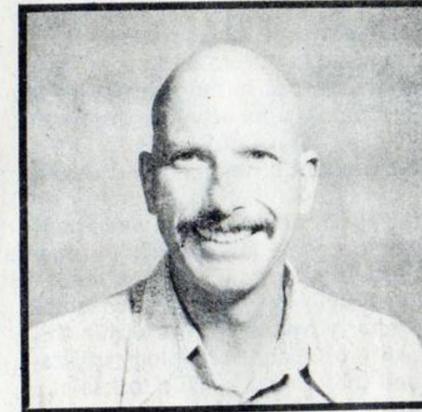
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## an exclusive WAC interview with Region 10 Director, **DICK HECKMAN**

An Engineer for the Marshall Space Flight Center in Huntsville, Ala., Dick Heckman works in the area of spacecraft systems analysis and flight crew equipment design. "Spacecraft interior designer," he jokingly refers to himself. Actually, he helps the mechanical and electronics engineers fit everything into the limited amount of space available, to provide the necessary information in the most efficient and reliable manner.

Dick has had an interesting career while at NASA, leading him on quite a variety of different projects. Early in the SkyLab project, he was a volunteer for a study on the effects of man couped up in a hazardous, confined environment, such as a "tin can" in space. This led him to the TEKTITE II project, run by the Dept. of the Interior, as Habitat Engineer for 30 days in an underwater habitat. He was also on a research submarine studying the Gulf Stream for a couple of months. His present involvement is on a joint European/NASA



project called SpaceLab. It will be a manned, scientific research laboratory, sort of a next generation SkyLab.

With such a close insight into NASA operations, we felt Dick could offer reputable assistance with our questions about NASA and the possibilities of that organization performing some of the aerodynamics tests for the HGMA. For example, could NASA resume Dr. Rogallo's testing programs in the low speed wind tunnel? This data could then be used by the manufacturers, the USHGA, and possibly the hang gliding public. Also, from a newly acquired vantage point as Region 10 Director for the USHGA, Dick might also be in the position to help us offer a retort to Brian Milton's recent criticisms in the January issue of Glider Rider, with regards to the USHGA's structure, or lack thereof.

We taped the following interview with Dick, via telephone, while he was in Brigham City, Utah on special assignment for NASA.

**WAC:** Out of curiosity, Dick, what has been your favorite project at NASA?

**Dick:** It would have to be the SkyLab project. I was in charge of a group given the job of developing the hardware and the equipment for the crew to use to go outside the spacecraft to exchange film in the telescopes . . . Extra Vehicular Activities equipment, it's called. This was fun in itself because it involved a lot of testing, wearing spacesuits. When the SkyLab was launched, a protective shield was torn off and a solar array failed to extend, threatening the entire mission. My group and I were the team called on to come up with an EVA method of solving both problems. Working 8 days around the clock with the astronauts who would use it, we designed, built, tested and launched a shield that worked. A week later, we radioed up procedures which extended the solar array. I feel very lucky to have been a part of that effort. It was a once in a lifetime experience. After the last SkyLab splash-

down in Feb. '74, I took a months vacation to go skiing in Colorado and ended up flying my first hang glider.

**WAC:** Well, tell us how you became involved in hang gliding.

**Dick:** I wanted to be a pilot when I was 5. I started flying aircraft in high school and have flown some 30 different aircraft and sailplanes, up to a DC-3. While on that Colorado skiing vacation I just mentioned, I was standing in a lift line in Aspen, Colo., when John Totman of Get High, Inc., flew off Aspen's Ajax Mtn., and landed next to the lift line in which I was standing. I decided I had to find out more about that, so I went over and talked to him. He told me they were giving lessons. I took a few lessons from he and Cal Minor, then came back to Huntsville, ordered a glider and have been flying ever since.

**WAC:** Have you had any contact with Dr. Rogallo while at NASA, either in a NASA related project or on anything relative to hang gliding?

**Dick:** No. Dr. Rogallo was with

Langley Research Center, and retired a few years ago. I never really have had any dealings with Langley myself, since I have basically not worked in Aerodynamics. Dr. Rogallo was chief of the low speed wind tunnel while he was there. But, I do work near a man named Frank Bugg, who worked with Dr. Rogallo. He and I have talked about a number of tests they ran and in fact, before I decided to really get into hang gliding, I talked with Frank about their stability and the various glider designs. I got a pretty good idea what I was getting into and what the pitfalls might be before I decided to buy one.

**WAC:** Dick, since Langley Research is a part of NASA, and they have a low speed wind tunnel there, what would the chances be of them conducting say, pitching coefficient tests? This would certainly only help give credence to our sport.

**Dick:** Well, that's hard to say. NASA is a big organization. There are two Aerodynamic Research Centers, Langley and Ames, that work in the general regime. I have

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talked with Gary Valle at HGMA and know that they have made some contact at both of those places to discuss their program with personnel, at least on an informal basis. HGMA has been interested in getting the best information they can. You have to

**"When you have equal skills and equal equipment he who is best organized wins."**

remember that to run a low speed wind tunnel, like the one at Langley, is a very expensive process. Both the Manufacturers and the HGMA are really not in the position to try and fund an activity like this themselves. When NASA has to look at the amount of tax dollars it would have to spend and the number of people it would serve, I assume it would have a low priority in regards to their performing the testing. Possibly if they were approached properly by the HGMA within the realm of space technology utilization they might be able to assist them in some way.

**WAC:** Have your views on Motor Gliding changed since your Glider Rider article "Beauty and the Beast"?

**Dick:** My attitude in that article was not opposed to motor gliding, I'd still like to fly to work. I merely pointed out that there were problems as well as new horizons. Just attaching a motor opened up a whole new world and any new world has problems. Not only with the public, but inherent structural and dynamic instability problems. I think motor gliding is recognizing some of these.

If an incident should occur with another aircraft raising public dissatisfaction in either foot launch or motor gliding, it could cause the FAA to become involved with our organization in a regulator role. Pilot rating programs, instructor certification clinics, are all ways to become organized internally, so we don't see FAA intervention. It would be very naive of us to reason, that since we don't have wheels, that we could never be regulated by the FAA. This is something we will probably discuss at the next Board of Directors meeting.

**WAC:** Since you mentioned the USHGA Board of Directors meeting, and in light of your being appointed Region 10 Director, what are your goals in this area and what do you feel is expected of you?

**Dick:** As Region 10 Director I want to see that we try to make sure

that we provide a structure that protects our individual members and helps provide increased opportunities in the sport of hang gliding. This is a prime goal of the USHGA and therefore is one of the areas I want to work on. I want to see to it that the organization is responsible to its members in this area. I have asked for feedback. In fact I put up notes both at Crystal and at Air Space. I also talked to the TennTreeToppers and the folks in Knoxville, about what they wanted or how they felt, and requested them to write me and let me know. Frankly, I got very little feedback from people. Let's face it, we pilots are a very independent sort who don't like to deal with organizations very much. It is one of the problems we have within the sport.

**WAC:** This brings us to Brian Milton's comment saying that there are over 50,000 American pilots and yet only around 10,000 or so are members of the USHGA. We don't feel these figures are exactly accurate, but certainly not everyone is a member. What do you think?

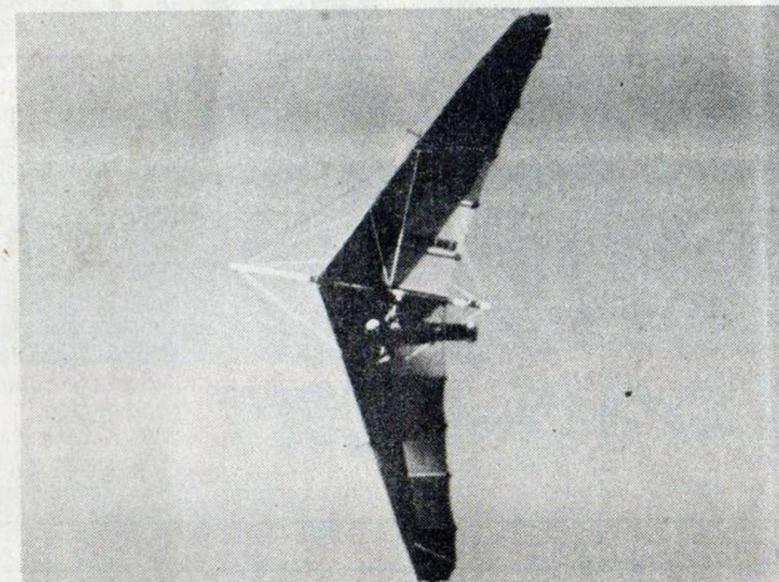
**Dick:** It's just like in skiing. There are millions of people that ski but not everyone belongs to the United States Ski Assoc. But skiers don't have a federal government agency that could regulate them out of existence; we hang glider pilots do. Many people who are in the sport don't really recognize the amount of work that has been done, and is being done, in contact with the FAA to keep the level of involvement by the government in our sport at a minimum. I think it would be nice to get folks to enjoy their organization because of this. I believe it would certainly help us.

**"Most of our members are not competition oriented and I feel that although competition is an important part of hang gliding, USHGA has other areas in which it must devote time and energy in order to support ALL our members."**

**WAC:** Let's get back to Brian Milton's rather sharp criticisms of the USHGA and its structure. What do they mean?

**Dick:** In all fairness to Brian, he recognized the difference in getting folks together in this country versus one the size of Tennessee. It's very easy to talk about having a Board meeting every month, when it is only a 4 hour drive to that meeting each time. I think he has done an excellent job with the British Hang Gliding Association and I'm sure there's a lot we can

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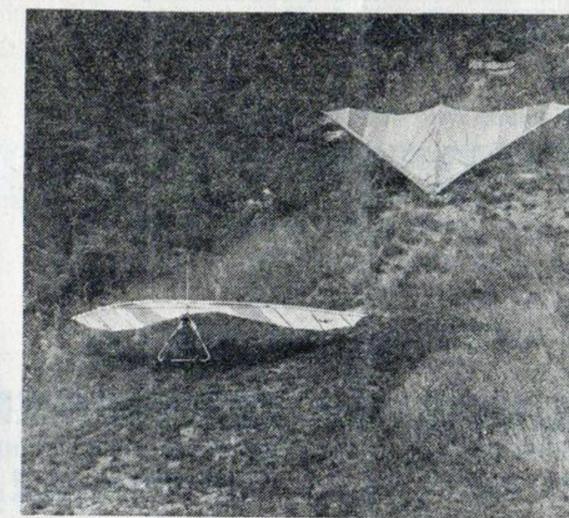
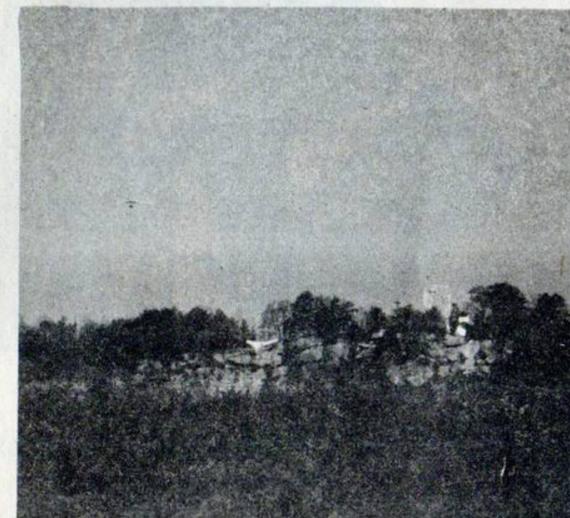
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Leading Edge	18 ft (5.5 m)	19 ft (5.8 m)	20 ft (6.1 m)
Wing Area	155 sq ft (14.4 m <sup>2</sup> )	172 sq ft (16 m <sup>2</sup> )	190 sq ft (20.5 m <sup>2</sup> )
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Aspect Ratio	7.25	7.25	7.25
Nose Angle	130°	130°	130°
Root Chord	7 ft (2.1 m)	7.5 ft (2.3 m)	8 ft (2.4 m)
Empty Weight	53 lbs (24 kg)	55 lbs (24.9 kg)	57 lbs (25.8 kg)
Pilot Wt Range (Est)	130-165 lbs (59-75 kg)	150-185 lbs (68-84 kg)	170-210 lbs (77-95 kg)
Billow	.25°	.25°	.25°

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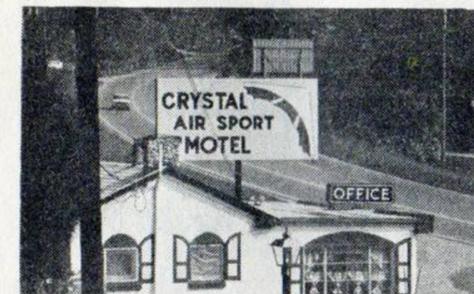
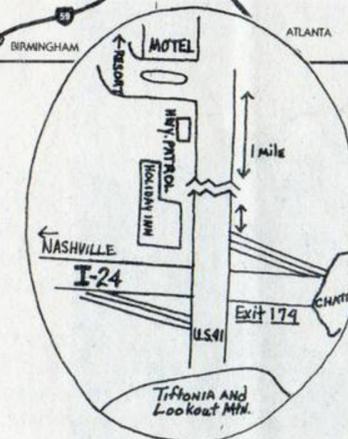
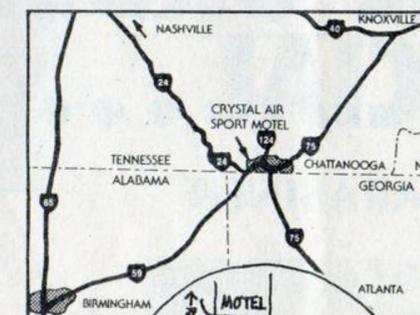
# CRYSTAL '79

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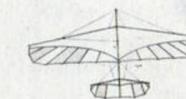
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Heckman Interview

learn from them on organization. The point is well taken, but is something with which we have a very basic problem. A major part is money. I feel we as Directors should receive some compensation for expenses involved with traveling, but it can be very expensive in terms of subsidy from the USHGA. You could see dues going up quite a bit.

I don't know BHGA's financial setup, but National Sports Federations in most European countries, receive subsidies from their governments. That's quite different from here and allows a lot of freedom we don't have.

Brian's comments were also generally dealing with competition. Most of our members are not competition oriented and I feel that although competition is an important part of hang gliding, USHGA has other areas in which it must devote time and energy in order to support all our members.

WAC: Could we get away with less Directors, Dick?

Dick: The big thing to remember is that it is volunteer work and only serves the members to the extent

the members serve it. For example, we had Rob Kells and Barry Gordon come to the last Board Meeting and they did an excellent job. They came in and had very good comments on the competition rules. They worked for the Competition Committee and with the Safety and Training Committee to help us revise the whole Master Hang Rating. It was work that was invaluable. That was two guys, we need a dozen folks like that. They're always welcome. The Board of Directors meeting are not closed to the members, they are not some huge caucus. I've been a part of a number of different organizations both in skiing and sports car racing and I was really impressed with the caliber of people that were on the Hang Gliding Board of Directors. I was pleased and impressed by the objectivity they retained during their discussions. That is critical to having a good organization.

WAC: What do you think about the HGMA test program? Is it a reliable series of tests from a consumer's viewpoint?

Dick: I do know that it has forced

many design changes and has furnished a lot of data which manufacturers are now using and is certainly better than no testing. But to be realistic, if you're not very careful on what you're trying to obtain, you could cause gliders to cost \$6-8,000 each, because of testing costs.

WAC: Dick, the USA didn't win the recent American Cup competition as many thought we would. England showed a commanding position in this international contest. Was it their equipment, pilot skills or commendable organization? Why did they win?

Dick: It was all of the above. When you have equal skills and equal equipment he who is best organized wins. Also, he who studies the rules and plays them for his advantage has a mighty big edge. I think this is going to happen in Hang Gliding competition. The British showed it. You have to do it, especially if you want to win and you're competing against good people.

WAC: Thank you for this opportunity to speak with you.

Dick: Thank you.



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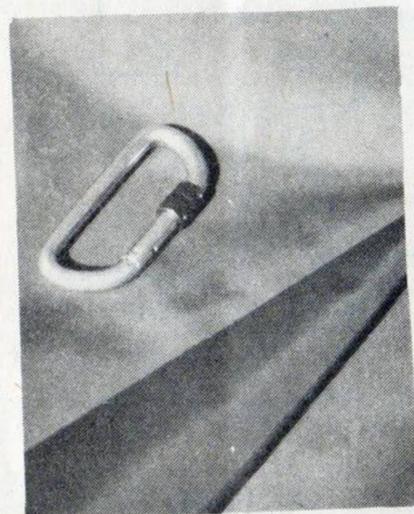
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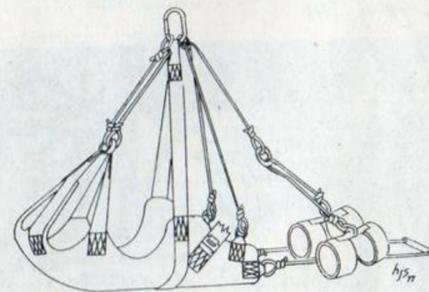


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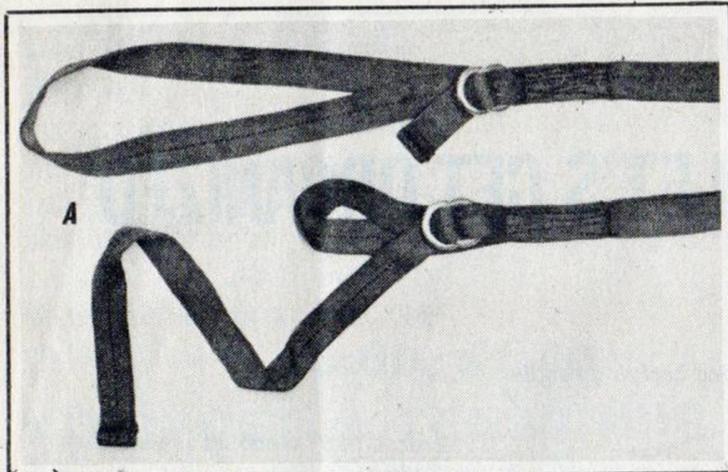
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**CONSISTENCY** — Crystal Flight Resort flies nearly 80% of all days. Less days lost to poor winds, and with our eight year lease, we will be consistent for a long time.

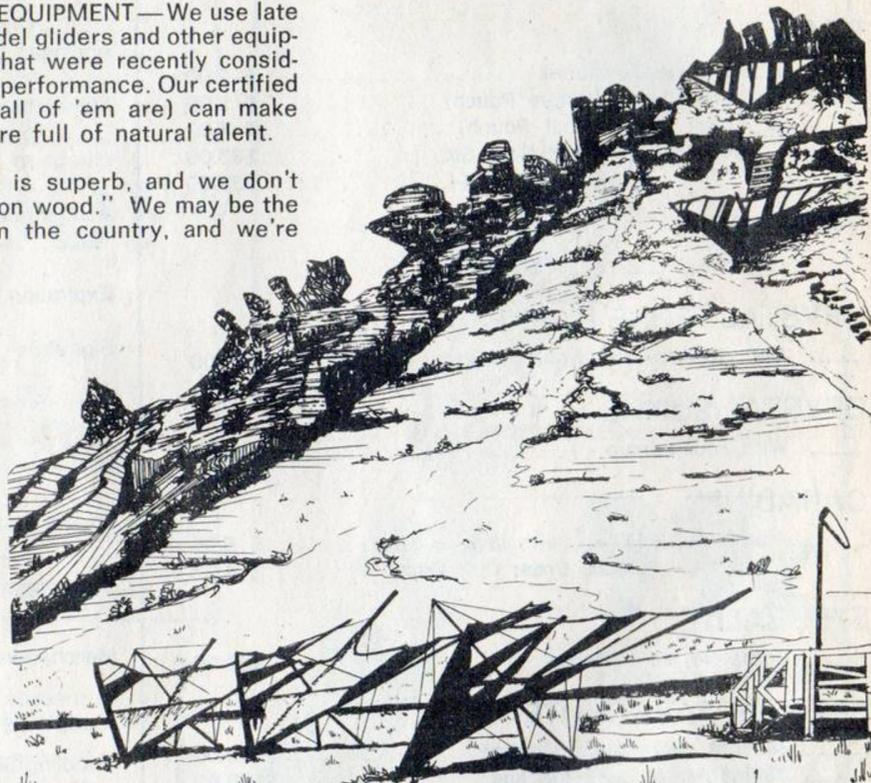
**THOROUGHNESS** — We won't just train you to get off the ground. If you can stick with it, we'll have you flying off an 800 foot mountain, like 50% of our students from 1977. Many students come to

us after getting the basics from other schools.

**EQUIPMENT** — We use late model gliders and other equipment that were recently considered high performance. Our certified instructors (all of 'em are) can make you think you are full of natural talent.

**SAFETY** — Our record is superb, and we don't think we need to "knock on wood." We may be the most conservative school in the country, and we're staying that way.

**LESSONS 615-825-1995**



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**BASIC INTRODUCTION**

**\$40.**

(Prices Increase May 1, 1979)



**IT ALL EQUALS SUCCESS**

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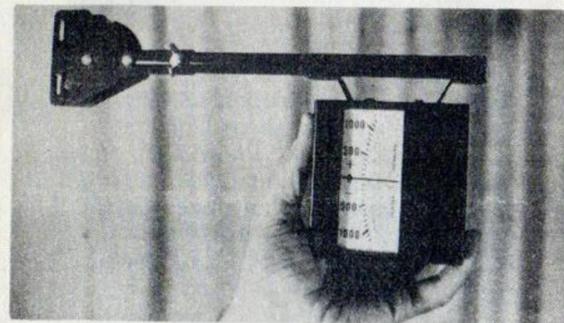
**SINGLE INTERMEDIATE INSTRUCTION DAYS**

**\$30.**

**FLY CRYSTAL**

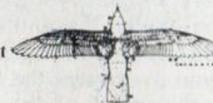
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EASY MOUNTING  
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Excellent Response • One year warranty  
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## WAC CONSUMER NOTE

In a recent announcement (newsletter, Tom Milke), Laminar Systems has bowed out of the fairing business. The company says this is due to the newly offered Drag-Foilers from Bennett Delta Wing. They have made it sound final by putting their fabricating machines up for sale. ©Feb 1979

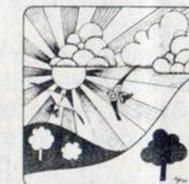
### WE STILL NEED USED GLIDERS!

\$350.00 Trade-in allowance off the following gliders; Sunbird Nova, Falcon 5.5, Phoenix 6D and 12, Up Condor, and Leaf Supreme!  
Offer good until May 31, 1979

Contact: **Leading Edge Air Foils, Inc.**  
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Unique greeting cards of our distinctive logo. These prints are from a hand carved block, printed by the artist, Hank Syjut. They are each hand numbered and signed. Card with matching envelope on premium paper for only \$9.00 plus postage.

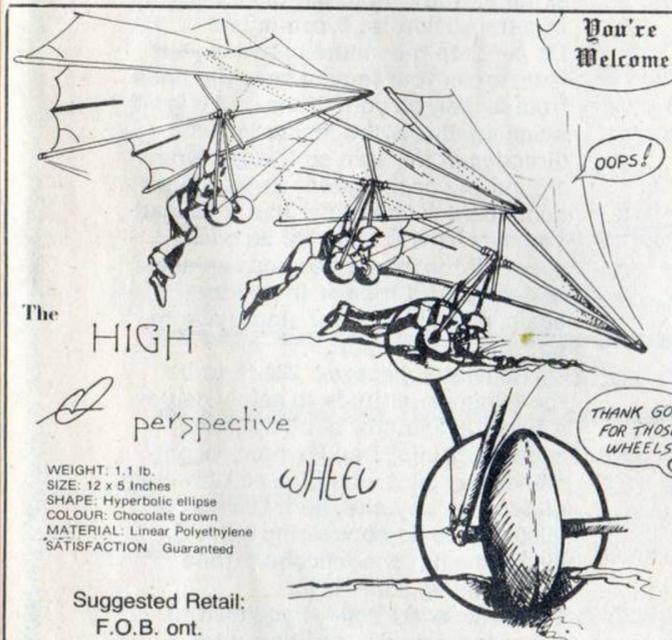
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**PLEASE INCLUDE FULL PAYMENT PLUS 50c POSTAGE**

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**franklin mfg. co.**  
rd. 2 glen rock, pa u.s.a.  
717 235 5512

Now available to fit 1 1/8" curved control bars.  
Please specify 1" or 1 1/8" when ordering.

**michael robertson r r 2 claremont ont canada**

DEALER INQUIRIES INVITED

Circle #26 on reader service card.

by Michael Smith

Flying in mountains generally involves ground clearance of well over 1000 feet. The Tennessee Tree Topper sites at Hinson Gap and Whitwell, Tn. are both over 1400 ft AGL sites with altitude gain possibilities nearly every time you launch.

The first time you find yourself riding the wind a thousand feet or more above the ground, the thought may very well cross your mind, "What if something goes wrong?! I NEED A PARACHUTE!" Indeed you do my friend.

No matter what argument you may have for not using a Back-Up System; it costs too much, it's heavy, it isn't pretty, it robs you of your "freedom," there is one for sure reason. It gives the pilot, that's you, a second chance in the event your glider should ever fail, for any one of several reasons.

Mid-air collision seems to me to be the most obvious reason for using a Back-Up-System, especially after flying the crowded skies of Chattanooga last year. Along with medical-type emergencies — fainting, hypoxia, vertigo, severe air sickness and heart attack to mention a few, the chance of structural failure should not be ignored since it has occurred for various reasons, including faulty design, poor maintenance, improper set-up, and turbulent air. While the chance of any of this happening to you is, of course, very small, it does exist. It *can* happen to you.

Once you have purchased your new Back-Up-System, be sure to carefully read the manufacturers' instructions on care and be sure you have it affixed to your harness properly.

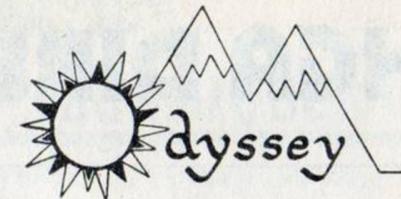
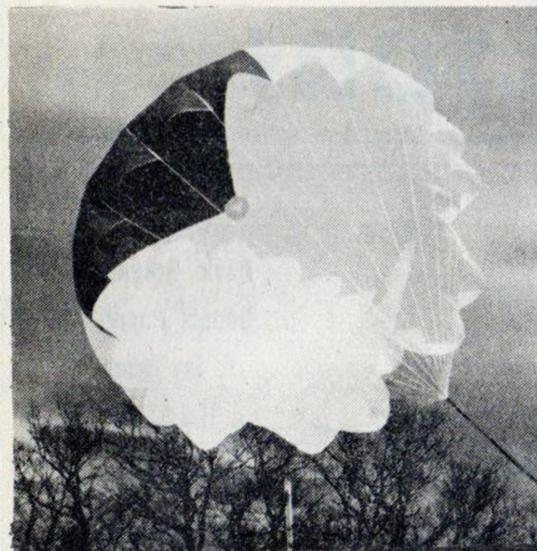
The standard way of mounting the 'chute is to sew the container directly to your flying harness, making it a permanent addition. I have seen some pilots who have the container mounted to their harness with a zipper instead of being sewn on, for use with or without the B.U.S., but I recommend flying with your 'chute every time you fly — I do.

If you fly prone, be careful to position the container on your harness so that the bottom of the container is no lower than your waist. Wear it any lower and you will severely restrict your running ability when launching or landing. For supine or seated flyers, be sure you can get to the opening device if you intend to wear the B.U.S. on your back.

Should you ever have the misfortune of finding yourself in a situation where you need to deploy your 'chute, deploy as quickly as you can by pulling the handle, velcro fastener, or other opening device and throw the 'chute as far as you can, to get the canopy into the airflow so it can inflate. *Do not* drop the 'chute between your legs; cross your legs to keep the lines from fouling on you. If the glider is spinning, throw the 'chute into the direction of the spin so it won't wrap around you or the glider as the spin continues. If the glider has collapsed you may have to hunt for an open space. If the 'chute becomes entangled in debris, haul it back in and try again, quickly! *Do not* stop trying to get that 'chute open.

I understand approx. 200 ft. to be the minimum altitude to safely deploy a Back-Up-System, but parachute expert and pilot Dan Poynter, recommends *any* pilot who flies an Ultra-light glider from any site, be it 200 feet or 2000 feet to do so wearing a B.U.S. everytime he/she launches. (See *Hang Gliding* Jan. 1979).

I agree, and I hope if you plan to enjoy the serenity and absolute beauty of Ultra-light flight in 1979 that you wear a Back-Up-System, in case you ever need that second chance.



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## HANG GLIDING PARACHUTES

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Highest Coefficient Of Drag, (CD = 1.38)  
Tri-Conic Shaped Gore = *Low Profile*

### CANOPY

### DEPLOYMENT

"Easy-Feel" — "Easy Grab" — Actuating Handle  
Exclusive Apex-Vent Restrictor System,  
(REDUCED CANOPY OPENING TIME)

### ONE-STEP

### CONSTRUCTION

TSO'd. — Stressed To Take 180 lb. Loads @ 175 MPH  
Reinforced Radial Seams — Circumferential Bands —  
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Reinforcement Bands At Canopy Skirt & Apex-Vent

### SUPERIOR

### MATERIALS

All materials meet military specifications & in most instances, exceed them. They are all of high strength/low weight ratio. The canopy fabric is the tightest rip-stop weave available & has *ZERO porosity*, which makes the filling time the fastest possible. It is technically designed for parachutes of this caliber & contains the highest thread count & soft hand, thus allowing for a smaller packed container. The bridle is tested to exceed 4,000 lbs. tensile & the canopy lines are tested to exceed 425 lbs. tensile (per line).

### EXCEPTIONAL

RETAIL PRICES: 24 FOOT — \$325.00      26 FOOT — \$349.00

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Bob Gester — Reno, Nevada

"The Odyssey reserve functioned perfectly to such an extent that I was able to do a Stand-Up Landing."

### ATTESTATION

Brad Kogi — San Diego, California

"I pulled my Odyssey reserve chute at about 190 feet and I had about a five second descent. I'm glad I had it."

??? THE BEST ???

Is it any wonder that throughout the World,  
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## GLIDERS IN STOCK:

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Highster 164 .....	600.00 (D)
Firefly 194 .....	600.00 (U)
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Olympus 160 .....	700.00 (U)
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ASG-21 180 & 160 .....	500.00 (U)
Cirrus 5 175 .....	800.00 (D)
Easy Riser Comp .....	900.00 (U)
SST 110G .....	1,195.00 (N)
Phoenix 12 .....	800.00 (N)
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Firefly 174 .....	1,100.00 (N)
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Seagull 4 .....	450.00 (U)
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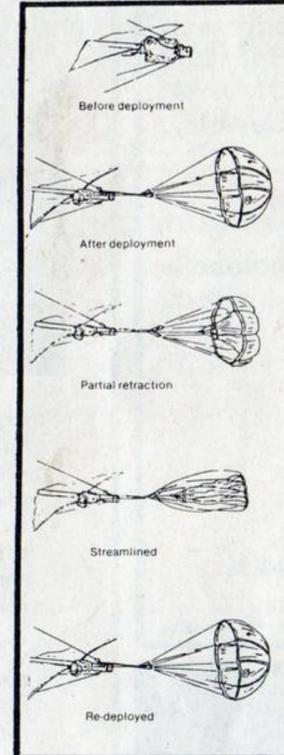
(D) — Demonstrators  
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Thommen Altimeters ..	119.00
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## Hummingbird Drag Chute



## ACCESSORIES:

Hummingbird Drag Chutes	\$ 45.00
Bennett Drag Chute .....	19.95
Windhaven Drag Chute .....	17.95
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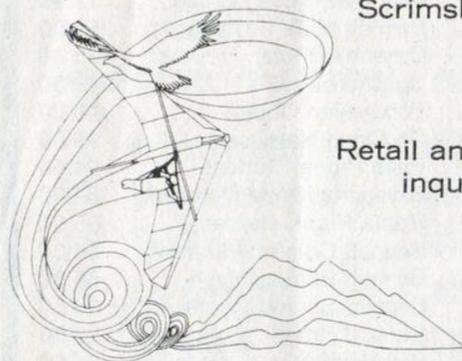
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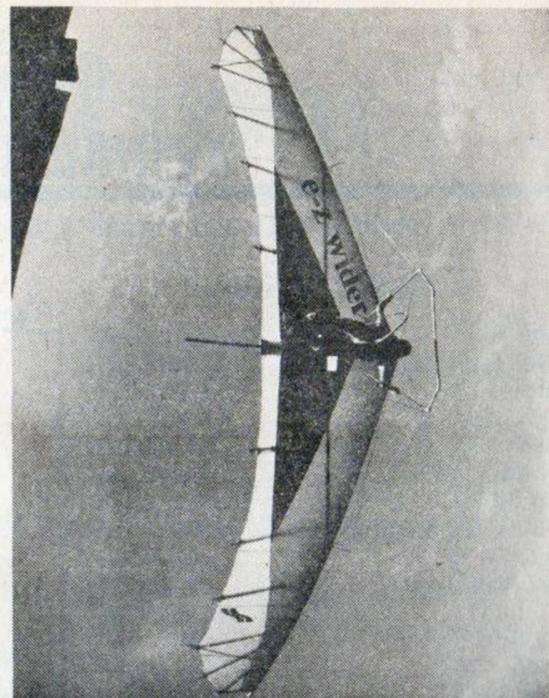


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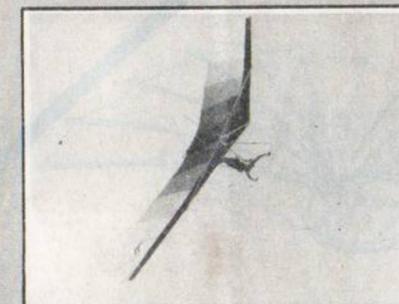
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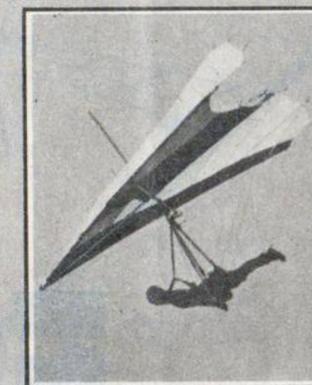
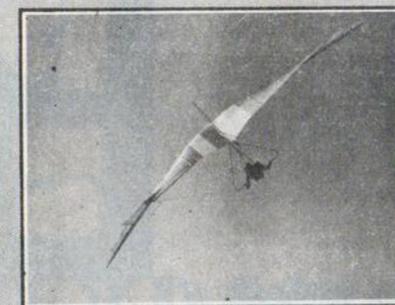
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