

**WHOLE AIR
CATALOG**

**1978
SEPT/OCT**



WHOLE AIR CATALOG

Publisher: Idea Graphics
Dan Johnson

Editor:
Starr Tays

Contributors:
Michael Smith, Tim Dunlap,
Merry Wall, Terry Ferrer

Cover Design:
Starr Tays

WHOLE AIR CATALOG
P.O. Box 144
Lookout Mountain, TN 37350
Phone: (615) 825-1995

VOLUME 1, NUMBER 3, 1978

Publishers Column	2
High Performance	3
Intermediates	4
Motorgliders	5
Used Glider Bluebook	8
Harnesses	9
Services	10
Hang Gliding Statistics By Dan Johnson	12
Accessories	14
Crystal Corner	21
Gifts	22

© 1978 WHOLE AIR CATALOG • ALL RIGHTS RESERVED • REPRODUCTION IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION IS STRICTLY PROHIBITED

PUBLISHER'S COLUMN:

The Whole Air Catalog is NOT a news publication. It is a buyer's sourcebook, a place to find out what is available. We try to make this process very easy, hence this short article to help you get the most from WAC.

We consider that our efforts are in the interest of the consumer. Some say we just run ads like you see elsewhere, but that is not entirely true. WAC is a catalog; our main objective is to provide product and service information. Much effort has and will be extended to have our ads be different from those regular versions in the news publications. We ask our sponsors to run ads with more specifications, comparisons, detail photos, and test results. In WAC we hope to give you more information useful to you in selecting merchandise for purchase.

Notice how the products and services are grouped together. For example, we think putting all the harnesses

in the same area not only makes them easier to find, but facilitates your comparison.

The little number on every ad makes it easy for you to get more literature and order forms, without any expense. All you do is find the reader card we have inserted, and keep it handy while you are paging through your new WAC. Then, with every product or service that interests you, just circle the related number on the card. Of course, you must allow about three to six weeks for delivery of the information. We have to process literally thousands of such requests each issue, and do not use a computer to do so. If you are in a hurry, you are invited to write the sponsor direct, but please mention WAC in your letter. Advertisers are always desperate to know where you found out about their products.

While examining the products in the catalog, you will come across a growing number of consumer-oriented

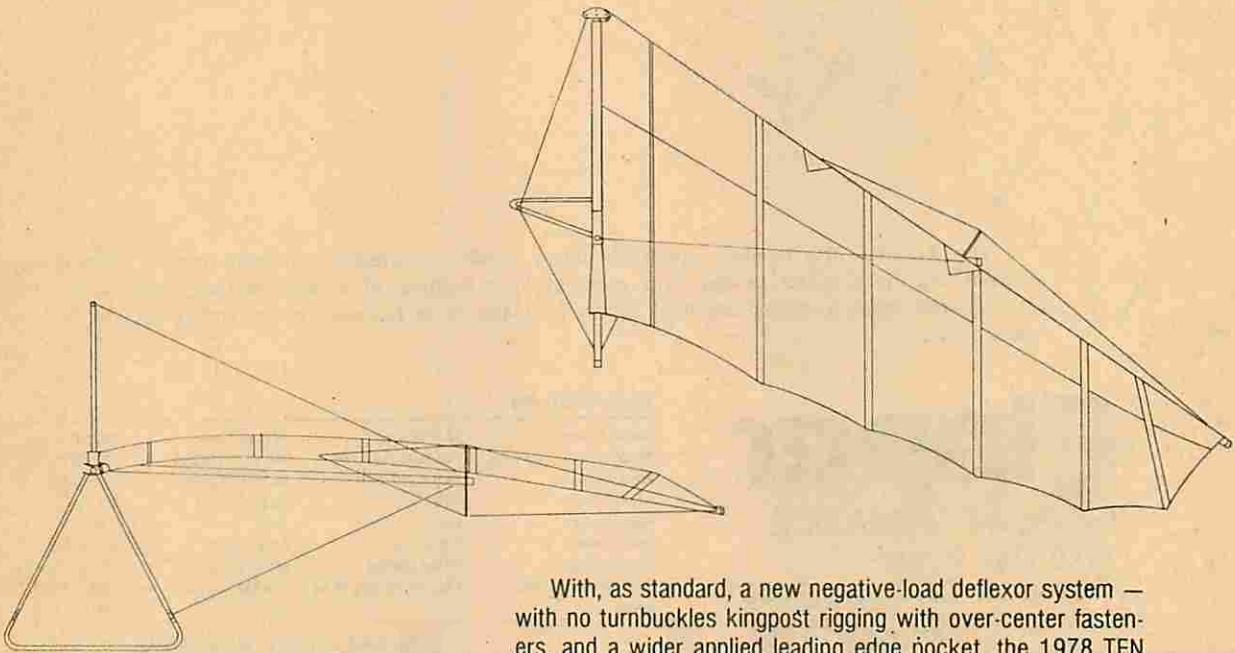
features. The "Used Glider Bluebook," a popular original feature, can help determine the value of your glider or one you may want to buy. "Hang Gliding Statistics" was so overwhelmingly well received that we are going to keep it in each issue with new and fresh statistics. This service is new to hang gliding. We are honored to be the people with the raw information to use in building statistical surveys. In our 'regionalized' Calendar of Events, we try to make vacation planning as easy as possible. That is why we separated activities into geographical headings. The "Crystal Corner" is a safety column, new this issue; if you respond favorably, you will see more of it.

Well, that's WAC for September-October. Your interest and support is appreciated! Hope you can find WAC the source that gives you the most.

Dan Johnson,
Publisher

HIGH PERFORMANCE

The Seagull 10 Meter



With, as standard, a new negative-load deflexor system — with no turnbuckles kingpost rigging with over-center fasteners, and a wider applied leading edge pocket, the 1978 TEN METER is a subtle refinement of a proven design.

10 METER

SPECIFICATIONS

At Seagull, we don't rush a design, but rather, we find a good one and stick with it.

If you're considering a supership like the TEN METER, then you've been around long enough to know that the Seagull name means quality, performance, and safety.

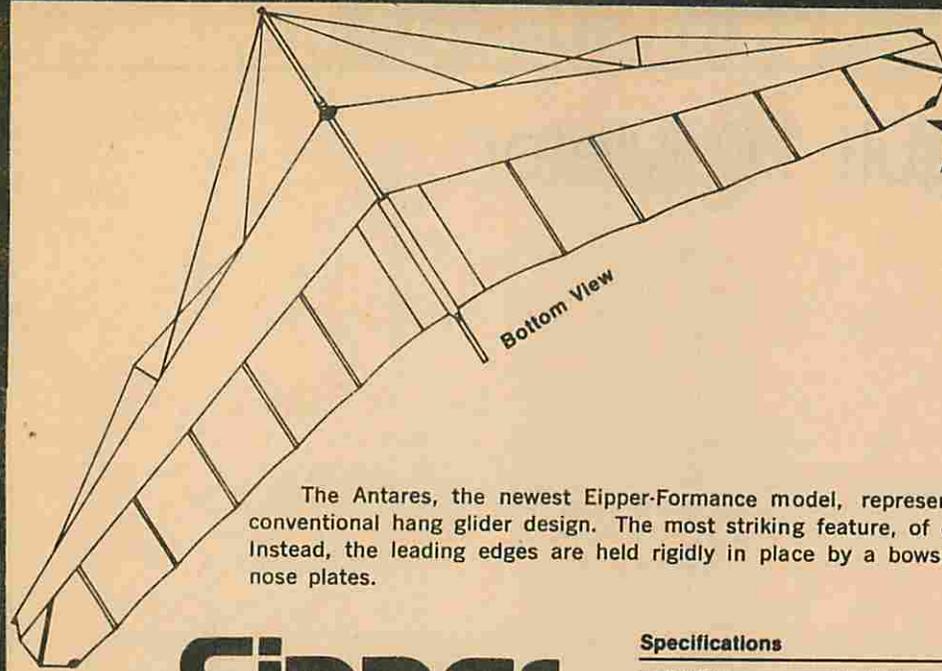
Quality that can best be appreciated through comparison. Walk around the landing or set-up area and take a look at the various brands of gliders — then take a look at the TEN METER. No gimmicks or flashy "here today, gone tomorrow" gadgets. Just solid aerodynamic logic gracefully incorporated into a structurally sound design. The TEN METER features superb detailing throughout with an all-anodized airframe, vinyl-coated 3/32 cables, and foam-fiberglass battens.

	10	10.5
Leading edge length	20	21
Keel length	8.5	8.5
Nose angle	111	111
Aspect ratio	6.3	6.4
Sail billow	1/2	1/2
Stall	14	14
Top speed	47	47
Actual sail area	174	190
Span	33.1	34.8
Rec. pilot weight	130-175	170-220

SEAGULL AIRCRAFT

3021 Airport Avenue, Santa Monica, California 90405

Circle #1 on reader service card.



★ ANTARES

The Antares, the newest Eipper-Formance model, represents a truly radical departure from conventional hang glider design. The most striking feature, of course, is that there is no crossbar. Instead, the leading edges are held rigidly in place by a bowsprit or extended keel in front of the nose plates.

Eipper
EPPER-FORMANCE
 1840 Oak Street
 Torrance, California 90501
 213/ 328-9100

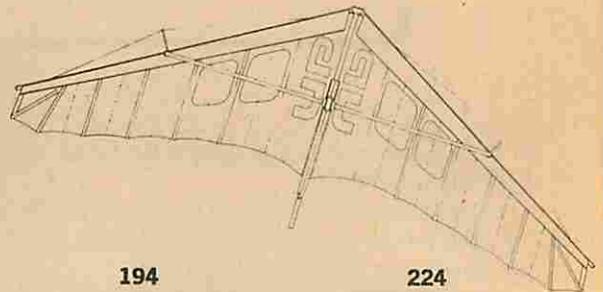
Specifications

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 ²)	172 sq ft (16 m ²)	190 sq ft (20.5 m ²)
Wing Span	33.5 ft (10.2 m)	35.35 ft (10.8 m)	37.2 ft (11.3 m)
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)	130-185 lbs (59-75 kg)	150-185 lbs (68-84 kg)	170-210 lbs (77-95 kg)
Billow	.25°	.25°	.25°

Circle #2 on reader service card.

INTERMEDIATES

UP CONDOR

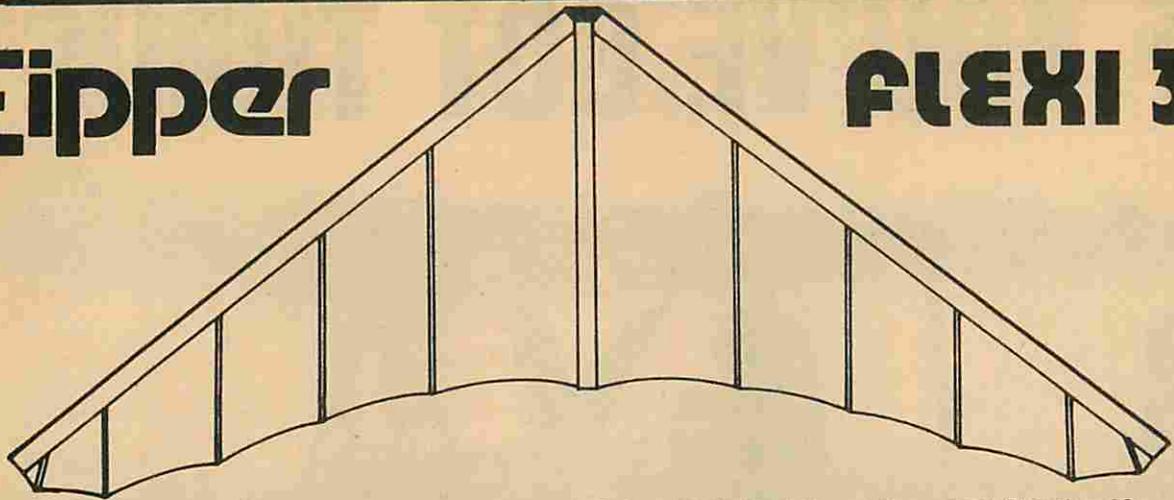


	151	178	194	224
AREA	151 Sq. Ft. (14.03 M ²)	178 Sq. Ft. (16.54 M ²)	194 Sq. Ft. (18.02 M ²)	224 Sq. Ft. (20.81 M ²)
LEADING EDGE	17' 9" (5.41 M)	19' 4" (5.89 M)	20' 3" (6.17 M)	21' 9" (6.63 M)
KEEL	11' 5½" (3.5 M)	12' 0" (3.66 M)	13' 0" (3.96 M)	14. 0" (4.27 M)
NOSE ANGLE	118°	118°	118°	118°
BILLOW	.75°	.75°	.75°	.75°
WEIGHT	45 Lbs. (20.45 Kg.)	50 Lbs. (20.45 Kg.)	54 Lbs. (20.45 Kg.)	59 Lbs. (20.45 Kg.)
BATTENS	5 Per Side	6 Per Side	6 Per Side	6 Per Side
WING SPAN	30' 6" (9.3 M)	33' 3" (10.13 M)	34' 8" (10.57 M)	37' 4" (11.38 M)
ASPECT RATIO	6.2	6.2	6.2	6.2
PILOT WT. RANGE	106-175 Lbs. (48-79 Kgs.)	130-195 Lbs. (59-88 Kgs.)	145-210 Lbs. (66-95 Kgs.)	165-230 Lbs. (75-104 Lbs.)
GLIDE RATIO	9:1+	9:1+	9:1+	9:1+
MINIMUM SINK	170 Ft./Min. (.86 M/Sec.)			
SPEED RANGE	15-40 MPH (24-65 KPH)			
STALL SPEED	15 MPH (24 KPH)			
MAX. L/D SPEED	22 MPH (35 KPH)			
RETAIL PRICE	\$1280.00	\$1300.00	\$1320.00	\$1335.00

All sizes of the Condor are H.G.M.A. certified as of May 4, 1978.

Circle #3 on reader service card.

UP, Inc. (Ultralite Products) P.O. Box 582 Temecula, CA 92390 (714) 676-5652

Eipper**FLEXI 3**

The Flexi 3 bridges the gap between the novis/intermediate Flexi 2 and the expert Cumulus 10. The Flexi 3 incorporates many design features proven in our Cumulus series. We are proud to offer a moderately high aspect ratio (5.4), high performance glider with incredibly docile and predictable flight characteristics.

SPECIFICATIONS

Leading Edge	18'	20'	22'
Wing Span	28' 7"	31' 9"	34' 11"
Wing Area	150	185	220
Aspect Ratio	5.4	5.4	5.5
Nose Angle	105°	105°	105°
Root Chord	10'	11'	12'
Empty Weight	38	40	44
Pilot Weight Range	100-145	135-185	175-220
Price	\$925.00	\$950.00	\$975.00

PERFORMANCE:

1840 Oak Street
Torrance, California 90501
213/ 328-9100

Circle #4 on reader service card.

MOTORGLIDERS

SOARMASTER POWER NOW AVAILABLE FOR QUICKSILVERS

Beat the Rush---Order Now!

CALL OR WRITE EITHER,



The Great American
Glider Corp.
P. O. Box 400
La Place, LA 70068
(504) 652-9052

Lone Star
Hang Gliders, Inc.
2200 "C"
S. Smith Barry Rd.
Arlington, TX 76013
(817) 469-9159

This unique power unit balances the glider so that all of the natural handling characteristics are returned when in flight. Power on or off, the glider still handles the same. You'll be amazed with the simplicity and power this system provides.

EXCLUSIVE DISTRIBUTORS FOR THE SOARMASTER QUICKSILVER UNIT

Circle #5 on reader service card.

IF YOU'VE GOT THRUST,

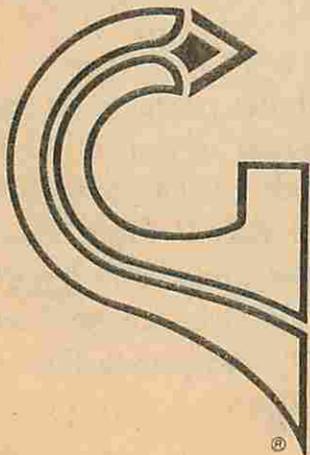


PROVE IT!

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.



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.

CHUCK'S GLIDER SUPPLIES 4252 PEARL RD. CLEVE., OH 44109 (216) 398-5272

Circle #6 on reader service card.

WE HAVE THE POWER YOU NEED!

**INTRODUCING: THE HANG-EM HIGH
BELT DRIVE**

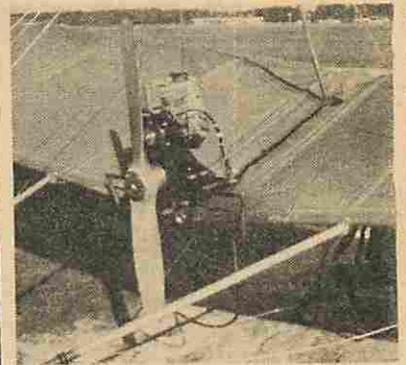
AFTER 1½ YEARS OF EXTENSIVE RESEARCH WE HAVE PERFECTED THE MOST SOPHISTICATED UNIT ON THE MARKET.

WITH OUR UNIQUE SYSTEM WE HAVE REDUCED NOISE LEVELS AND PROP SPEEDS DRASTICALLY — WHILE INCREASING PERFORMANCE BEYOND THE REALM OF IMAGINATION.



**BELT DRIVE
PERFORMANCE — QUICKSILVER C**

CLIMB RATE . . .	250+ FEET PER MIN.
MAX. THRUST . . .	75 lbs. STATIC TEST
REDUCED STRUCTURAL VIBRATION	
EMPTY WT./GLIDER	65 lbs.
POWERED GLIDER WT.	90 lbs.
CRUISE SPEED	25-30 mph
MAX. SPEED	40 mph
STALL SPEED	16 mph
FUEL CONSUMPTION	0.8 gal. per hr.



**TRULY THE SAFEST, MOST SOPHISTICATED
MOTORIZED HANG GLIDER IN THE INDUSTRY!**

**HANG-EM
HIGH FLIGHT SYSTEMS INC.**

**4104 MERCY INDUSTRIAL COURT
ORLANDO, FLA. 32804 305/293-3104**

Circle #7 on reader service card.

USED GLIDER BLUEBOOK

EDITION NO. 3

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	MANUFACTURER	YEAR	MODEL	SIZE	CLEAN PRICE	AVG. PRICE
ALBATROSS SAIL GLIDERS						MANTA PRODUCTS					
	76	ASG 20	C	750	550			75 Fledgeling	1A	700	325
	76	ASG-21	C	800	675			76 Fledgeling	1A	700	475
BENNETT DELTA WING						MOYES DELTA WING					
	76	Phoenix 6B	Jr.	725	350			76 Midi	220	800	625
	76	Phoenix 6B	Reg.	675	400			76 Maxi I	200	900	675
	76	Phoenix 8	Reg.	750	450			77 Maxi I	200	1050	875
	76	Phoenix 8	Reg.	700	550	SEAGULL AIRCRAFT					
	77	Phoenix 6C	Sr.	700	650			75 Seagull III	220	375	325
	77	Phoenix 6C	Reg.	800	700			76 Seagull III	220	425	375
	77	Phoenix 8	Reg.	1050	800			76 Seagull VII	174	700	475
CHUCK'S GLIDER SUPPLIES								77 Seahawk	170	800	675
	76	Falcon V	225	600	500			77 Seahawk	190	825	650
	76	Falcon V	185	650	450			77 10.5 Meter	—	1100	875
	77	Falcon V	185	750	600			78 Seahawk	190	875	800
EIPPER FORMANCE								78 10 Meter	—	1075	975
	75	Flexi II	240	400	200	SKY SPORTS					
	75	Cumulus V	180	550	400			76 Bobcat II	204	600	425
	76	Cumulus VB	180	450	375			76 Kestrel A	185	675	500
	77	Flexi III	185	700	550			76 Kestrel A	220	725	525
	77	Cumulus 10	Med.	950	825			76 Merlin	160	800	650
	78	Flexi III	Lg.	800	750			77 Bobcat III	Lg.	800	625
ELECTRA FLYER								77 Sirocco I	156	925	800
	75	Pathfinder	20-18	200	150			77 Sirocco I	175	950	800
	76	Nimbus	20-17	350	250			78 Osprey	175	950	775
	76	Cirrus	3	625	425	ULTRALITE PRODUCTS					
	76	Cirrus	2	750	550			76 Dragonfly Mk. II	174	800	425
	77	Cirrus	3	625	475			77 Firefly	174	800	650
	77	Cirrus	2	800	625			77 Dragonfly Mk. II	196	900	700
	77	Olympus	160	800	500	WILLS WINGS					
	78	Cirrus 5	C	850	675			75 Swallowtail	22-20	250	175
								76 SST	90	775	625
								76 SST	100A	775	600
								76 SST	100B	825	600
								77 X-C	185	900	775
								78 X-C	215	1025	850

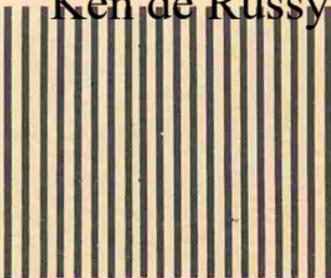
FIRST CLASS
Permit No. 10
Lookout Mtn. TN

BUSINESS REPLY MAIL

No postage stamp necessary if mailed in the United States

Postage will be paid by—

**IDEA-GRAPHICS, PUBLISHER
CRYSTAL'S WHOLE AIR CATALOG**
P.O. Box 144
Lookout Mountain, TN 37350



READER INQUIRY CARD SEPTEMBER - OCTOBER

(Card expires October 10, 1978)

Circle numbers (as many as you like) of advertisements, new services, events here:

1	6	11	16	21	26	31	36
2	7	12	17	22	27	32	37
3	8	13	18	23	28	33	38
4	9	14	19	24	29	34	39
5	10	15	20	25	30	35	40

Name _____

Address _____

Zip _____

PLEASE ANSWER ALL QUESTIONS

- Have you ever had an accident or mishap resulting in a broken bone? Yes No
If yes, on how many occasions? _____ (no. of)
- On the average, how many flights per month do you make? _____ (no. of)
- What percentage of all your launches are done the following ways?
Foot launching _____ (%) Tow launching _____ (%) Powered _____ (%)
- What are you now flying and when did you buy it? Check if none owned.
(Brand) _____ (Model) _____ (Size) Purchased _____ (Month) _____ (Year)
Do you currently own a parachute Yes No, or a variometer Yes No; If yes, electric pellet?
- How many times per year do you travel a significant distance to fly? _____ (no. of)
- How many miles is that distance, one way? _____ (miles)

Who do you know that could use WAC, free? _____ We read every card, carefully . . . anything you

want to say?

Name _____
Address _____ Zip _____

HARNESSES

SAFETY-PRO[®] HARNESSES

CUSTOM BUILT BY F.A.A. MASTER RIGGER
DESIGNED FOR SAFETY, COMFORT, CONVICIENCE,
AND FULL ADJUSTABILITY.



PHOTO BY DAVE HOWLETT

FLOWN BY JOHN MOODY

"The safety-pro harness is the best harness which I have used. I am noticeably more comfortable when in my safety-pro. I wouldn't fly without it."

John K. Moody
(manufacturer of Power Package kit)

"ITS DEPENDABILITY YOU CAN TRUST"
FOR MORE INFORMATION WRITE OR CALL:

AERO FLOAT FLIGHTS BOX 1155
BATTLE CREEK, MI. 49016
PHONE (616) 965-6455

Circle #8 on reader service card.

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.

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.

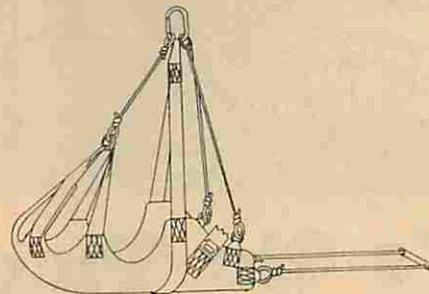
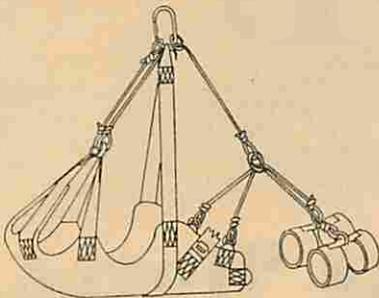
The Price harness is standard in six sizes and four colors. Comes complete with adjusters, stirrup, locking carabiner and two control bar hang loops.

Custom features are also available on request.

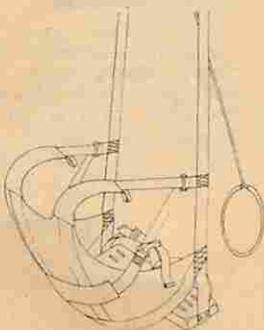
WILLS WING, INC.



Circle #9 on reader service card.



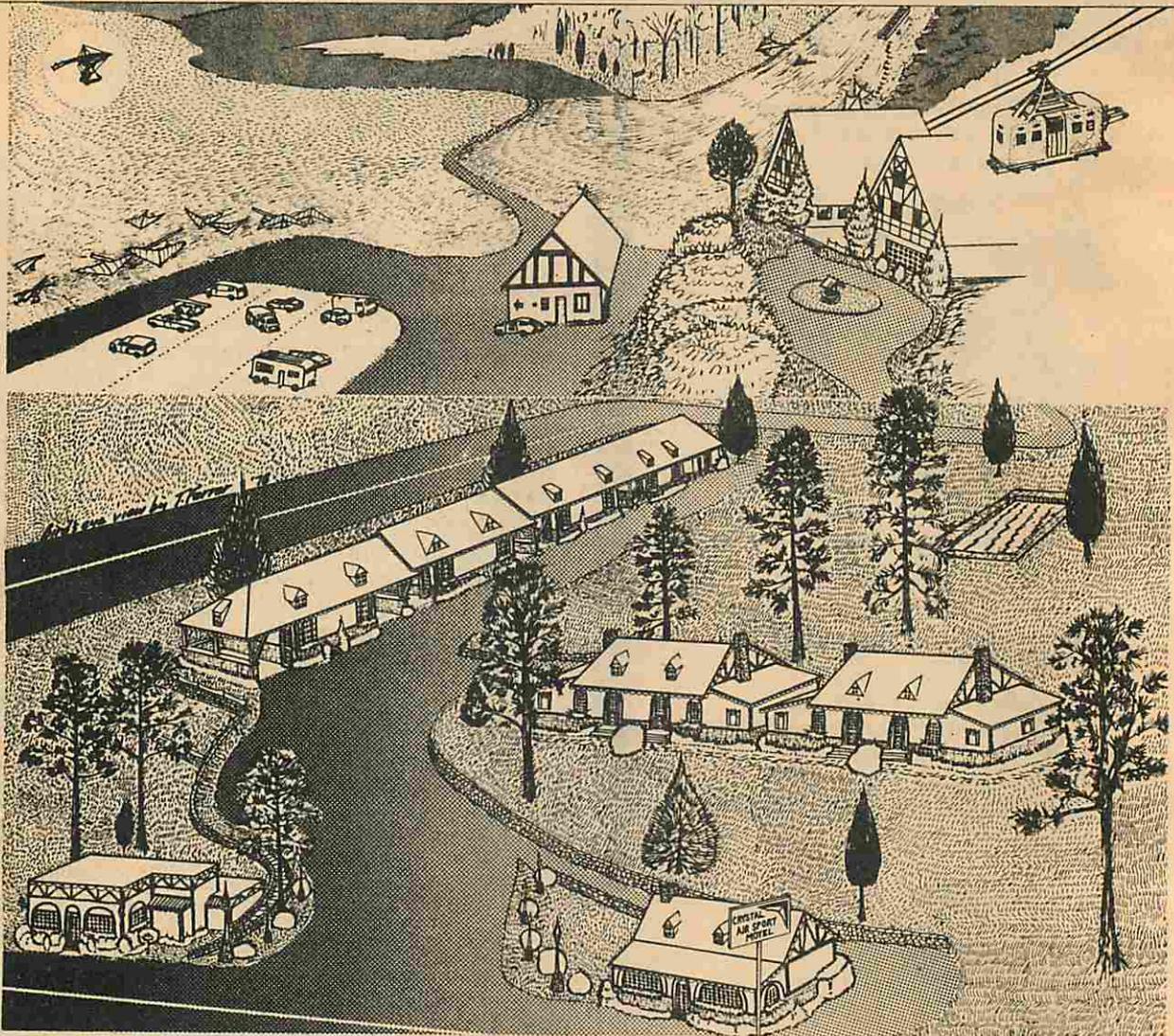
- Proven reliable body harness
- Complete with double knee hangers, or stirrup
- Both are \$5.00 extra
- Superior construction with space age materials
- Adjustable leg straps keep the harness secure for launch
- one size fits up to 6 ft. pilot
- \$69.95.



- Deluxe adjustable supine seat
- In flight adjustable back position
- with foot stirrup
- \$59.95.

CRYSTAL ACCESSORIES

Circle #10 on reader service card.



It's No Place Like Home, At The Center of Lift!

When nearly every flyer in the East travels to Chattanooga for a hang gliding adventure, we make absolutely sure that it's **no place like home.**

Many of our regular customers make 600-1200 mile treks several times a year to fly at the Center of Lift. Almost all of them check in at CRYSTAL FLIGHT RESORT to see where

it's happening — which is right there at the Resort on 80% of all days. The majority are also careful to reserve rooms at the most exclusive motel in the East. CRYSTAL AIR SPORT MOTEL remains the only Motel in America maintained expressly for glider pilots and friends.

No where in the world are your

flying needs seen to with such care. And it's no wonder, 'cause we're all flyers too. We've seen the desire for hand painted tee shirts and glider gifts; we stock gliders from Sky Sports, Seagull, Eipper, Moyes and more used equipment than you can shake a deflexor rod at; munchy goodies for snacking around the Motel's fine

pool; "accessories" of every description; all levels of expert flight instruction; and more, all compactly located for your greatest convenience.

It's got to be extra special for our flying friends... but it's certainly **no place like home...** It's the Center of Lift! For information, write: CRYSTAL, Rt. 4, Cummings Hwy., Chattanooga, TN 37409



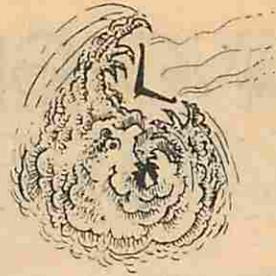
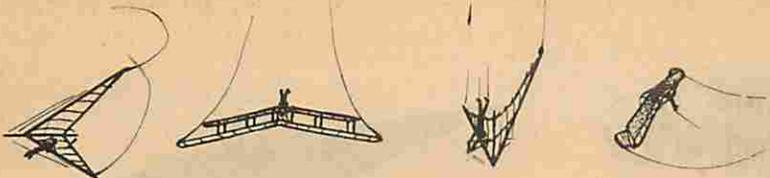
**CRYSTAL
 FLIGHT
 RESORT**



**CRYSTAL
 AIR SPORT
 MOTEL**

4328 Cummings Hwy.
 Chattanooga TN 37409
821-2546

Circle # 11 on reader service card.

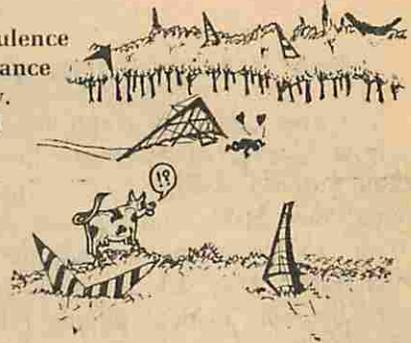


LOW FLIGHT

Oh, I have lost the surging lift of thermals
 And gone 'over the falls' on shining dacron wings.
 Earthbound I've dropped, and joined the fallen gaggle
 Of shadowed hang gliders — and done so many things I've never
 Dreamed of — scratched and searched and sunk
 Lower in darkening rotor. Gliding there,
 I've beaten the screeching turkeys down, and flown
 My flimsy craft through lifeless pools of sink.
 Down, kicked & trashed, thru the great sobering turbulence
 I've grazed the outstretched trees with clumsy chance
 Where never glider, nor even motorglider dared to fly.
 And, while with scared witless mind I've berthed
 In the flat, natural seclusion of pastures
 Put out my lips, and kissed the face of
 Earth.

graphics by Terry Ferrer

— unidentified vagabond
 hang glider pilot



WE NEED USED GLIDERS!!

\$250.00 trade in allowance off any name brand glider C.G.S., Delta Wing, Electra Flyer, U.P., Manta, L.E.A.F. Inc., Seedwings, finished Easy Risers and others; or, \$150.00 off on C.G.S. MoGlider, Soarmaster or Easy Riser Kit. Offer good until January 1st, 1979.

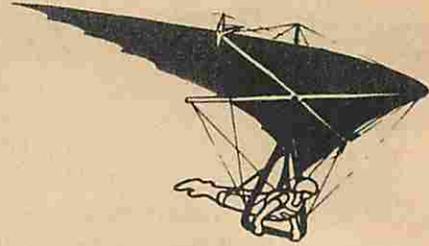
Write or call:

Leading Edge Air Foils, Inc.
 331 South 14th St.
 Colorado Springs, CO 80904
 (303) 632-4959

Circle #12 on reader service card.

HANG GLIDING STATISTICS

By Dan Johnson



WHAT YEAR DID PILOTS START?

Just what does this graph imply? It says that nearly a quarter of all those involved in hang gliding entered during 1976. The next year it dropped over 50%, and the next year half again. Is hang gliding failing to continue drawing new participants? After all, attrition from the ranks should be most evident among the more senior pilots.

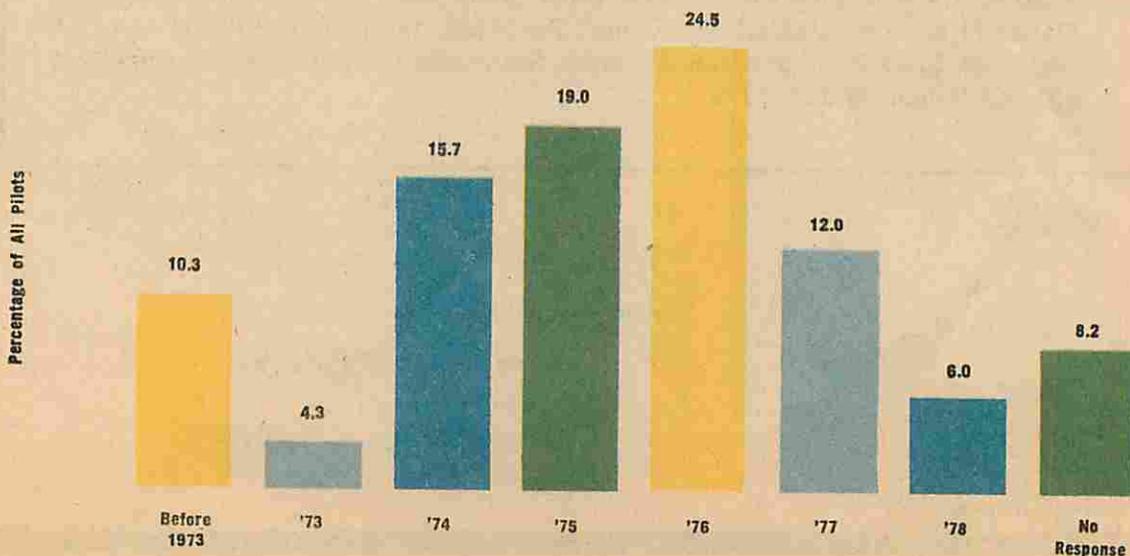
1975 through 1978 was a period of great design evolution, yet our membership grew very slowly, so state the figures. Perhaps some readers lied on the most recent entry years, so as to appear having greater experience. But in a large sampling, such cheating was certainly not a significant factor.

To attempt confirmation of this trend, we will survey again from a later issue. The results we found might also be compared with the USHGA "new members" list.

More statistics. We thought you readers would be interested by a presentation of statistics about hang gliding. But we never realized the response would be so tumultuous. Thanks for your great, warm reception. Our decision to continue this feature was automatic as dozens of letters and cards encouraged us to "keep it up, please."

To hold your interest, we've selected new topics to sample this issue. Except for one; due to the nature of our infant industry, we have decided to present glider brand percentages each issue, as they surely change with every new purchase.

As with our first look, this inspection was done by conventional methods on a random sampling. We count and calculate as carefully as human error allows.



MALE OR FEMALE

Besides the inevitable pranksters who mark the sex blank with "you bet," we knew fairly well what the ratio of male to female was among pilots. But we were curious for a more accurate number. The results show that 3.5% of all pilots are women. That's less than one female flyer at most gatherings.

PILOT OCCUPATIONS

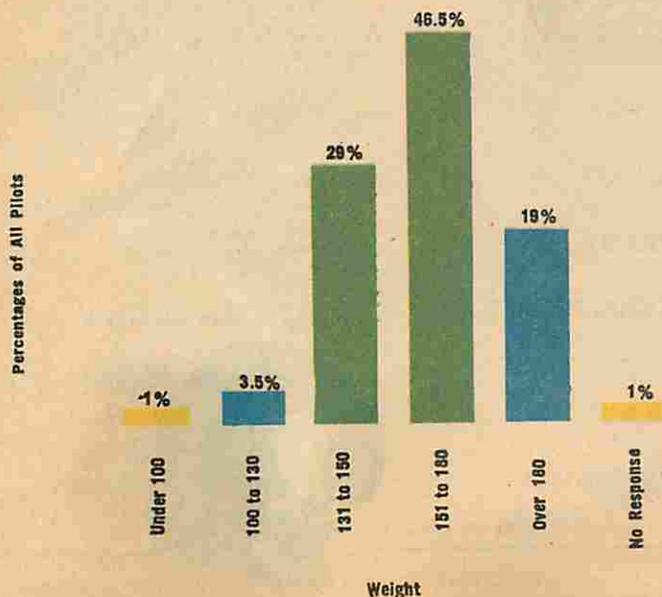
Contrary to some opinion, most pilots do claim to be employed, all but 5%, and some of those did not respond at all to the question. It became quite a task to sort out those that did say what their work was, as job titles are not universally accepted. One exception, however, was 'student.' The rest had few answers alike, and sometimes we were forced to interpret what people meant.

Our opinion is that occupation surveying must be studied for a longer time to be valid. Insufficient repetition from statistics brings doubt into the analysis. Among the more common answers, a table could be made with approximations for their percentages of the total.

Businessperson or self-employed	13.0%
Student	11.5%
Professional person	11.0%
Construction trades	10.5%
Transportation	8.0%
Teacher, or arts field	4.5%
Civil Service position	3.5%

WHAT DO PILOTS WEIGH?

Did you ever wonder why smaller pilots (referring to their flying weight) cannot find gliders to buy which fit their size? The following graph may help explain.



MOST REQUESTED ADS

In assembling ad response information for our contract sponsors, we compile response statistics for each of the ad spaces in WAC. We thought you might be intrigued to know the most requested ads.

1. Parachute 26.0%
2. Flight Resort/Motel 25.5%
3. Quicksilver motorglider 22.5%

The rank changed between number one and two, in this issue, but positively the most requested products or services are parachute emergency back-up systems and flying sites with instruction and accommodations. The two motorglider companies represented in the July-August WAC both got excellent response.

BRAND MARKET SHARE

What are WAC readers flying?

This month, as stated earlier, we are presenting brand shares to illustrate the market's continual change. The figure shown this time (% Market Share) measures the percentage of all readers surveyed as to what brand they fly.

Rank	Manufacturer	% Market Share	Last Rank
1.	Electra Flyer	12.6	1
2.	Seagull Aircraft	11.2	2
3.	Eipper Formance	8.8	4
4.	Bennett Delta Wing	8.4	3
5.	Wills Wing	7.4	6
6.	Sky Sports	7.0	5
7.	Chuck's Glider Supplies	2.3	none
	Ultralite Flying Machines	2.3	none
	Pliable Moose	2.3	none
10.	Ultralite Products	1.9	7
11.	Manta Products	1.8	none
12.	M Company		
	(Mitchell Wing)	1.4	none
	No response	18.1%	

All Other Brands had less than 1% share each



Certain factors bring about the most success in training to fly hang gliders.

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

Circle #13 on reader service card.

IT ALL EQUALS SUCCESS



FLY CRYSTAL

ACCESSORIES

helmets

DELTA WING



YOUR HEAD DESERVES THE VERY BEST NOT SOME SUBSTITUTE

IF YOU'RE A COAL MINER WEAR A  MINER'S HAT

IF YOU PLAY BASEBALL  WEAR A BASEBALL HAT.

IF YOU'RE A GRENADIER GUARD  WEAR A BUSBY.

IF YOU PLAY HOCKEY  ONLY THEN WEAR A HOCKEY HELMET.

FAMOUS SUPER LIGHTWEIGHT HELMETS WITH EAR OPENINGS IN ALL SIZES & COLORS... \$30.00

DEALERS—25 to a carton Ask about our Special Price

PHONE (213) 787-5600 (213) 785-2474
P.O. BOX 483, VAN NUYS, CA 91406
TELEX 85-1425

Circle #14 on reader service card.

IF YOU FLY GLIDERS YOU MUST WEAR A HELMET

ESPECIALLY DESIGNED FOR HANG GLIDING AND THIS IS IT.

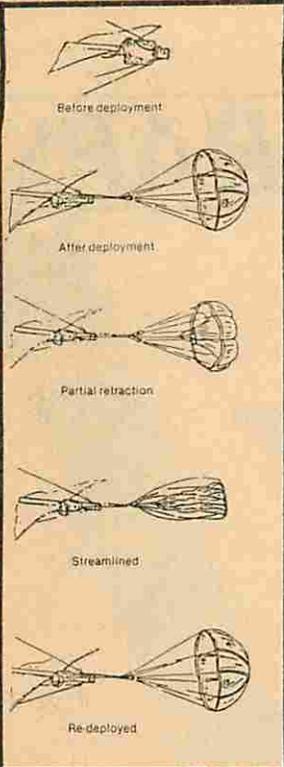




AERIAL TECHNIQUES

ROUTE 209 SOUTH, ELLENVILLE, NY 12428
(914) 647-3344
SALES • SERVICE • INSTRUCTION
AERIAL TECHNIQUES INVENTORY
AUGUST 1, 1978

Hummingbird Drag Chute



Circle #15 on reader service card.

Glders in Stock

- 1 J&L Stratus V 148
- 2 Wills X-C 185
- 2 ASG-21 180
- 1 ASG-21 160
- 2 Cirrus V 200
- 1 Cirrus V 175
- 2 Sirocco 156
- 4 Osprey 175 & 207
- 1 Easy Rider complete
- 1 Seagull 10 Meter

Equipment

- 30 Bell Helmets
- 6 Thommen Altimeters
- 500 Hang Gliding books of all kinds
- 500 Hang Gliding shirts of all kinds
- 1 Windhaven chute
- 35 Hummingbird Drag Chts.
- 3 Wills Wing Chad AVT Unt.
- 10 Hall airspeed indicators
- 5 Astraltune stereo packs
- Odyssey Parachutes

Glders on Order

- 5 Fledgeling II B
- 3 Cirrus V 175
- 1 Phoenix Mariah 170
- 1 Phoenix Mariah 190
- 3 Phoenix 8 Jr.
- 1 Phoenix 6 C 180
- 2 Condor 194
- 1 Bennett Phoenix 6 C 162
- 1 Mini Strato 140
- 1 Alpha 200
- 2 Alpha 180

- 10 Colver varios
- 30 UP Cloud Harnesses
- 1 Ball Vario
- 1 Theotek Vario
- 9 Price Harnesses
- 8 Sunbird Supine
- 2 Skysports Supine
- 2 Bennett Parachutes
- 10 UP Parachutes
- Velcro Tie Backs
- Helmets - \$20

Litek



MANY IN STOCK!

Hall Wind Meter



THE BEST BOOKS ON THE SPORT

HANG GLIDING, the first book on the sport has been updated 8 times and now includes a special section on **motorized** flight. 186 pages, 350 illustrations, over 120,000 sold! The complete flying, designing, building handbook and buyer's guide. \$5.95 postpaid (Californians add 36¢ sales tax).

HANG GLIDING MANUAL with Log. The most authoritative, compact, concise, complete and least expensive basic flight manual available. Used as a training text, by schools worldwide. \$1.50 postpaid (Californians add 9¢ sales tax).

MANNED KITING. Fly the flatlands with the only book on tow launched hang gliding. Step-by-step instructions carefully guide the novice through taxi practice, towed flight and release to free flight. \$3.95 postpaid (Californians add 24¢ sales tax).

DAN POYNTER

P.O. Box 4323-505
Santa Barbara, CA 93103

Circle #16 on reader service card

FOR FREE DESCRIPTIVE BROCHURE

A Lift in Performance.

The Thommen Altimeter is designed especially for hang gliding pilots. A high degree of compensation is achieved for unequalled accuracy in temperature change conditions. And, a highly visible orange day-glo needle sported against a black face with easy-to-read white numerals of 20-foot increments to 15,000 feet provides quick and accurate viewing of soaring altitude.

Durably constructed, the Switzerland manufactured Thommen Altimeter contains nineteen jewel oil-free movement parts. Standard with a velcro wrist strap.



Thommen Everest Altimeter

WILLS WING, INC.

1208-H East Walnut Street,
Santa Ana, CA 92701 • (714) 547-1344

Circle #17 on reader service card.

WILLS WING, INC.

Instrument Consolidation.

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.

The flight deck combines the Colver Variometer (5XC), the Thommen Altimeter and an optional digital elapsed time meter.* All protected from impact in a resilient molded shell.



CHAD AVT™
Flight Deck

Weight of the flight deck is only 2¾ pounds — far less than the instruments in their original mountings — and its compounded curve design reduces drag.

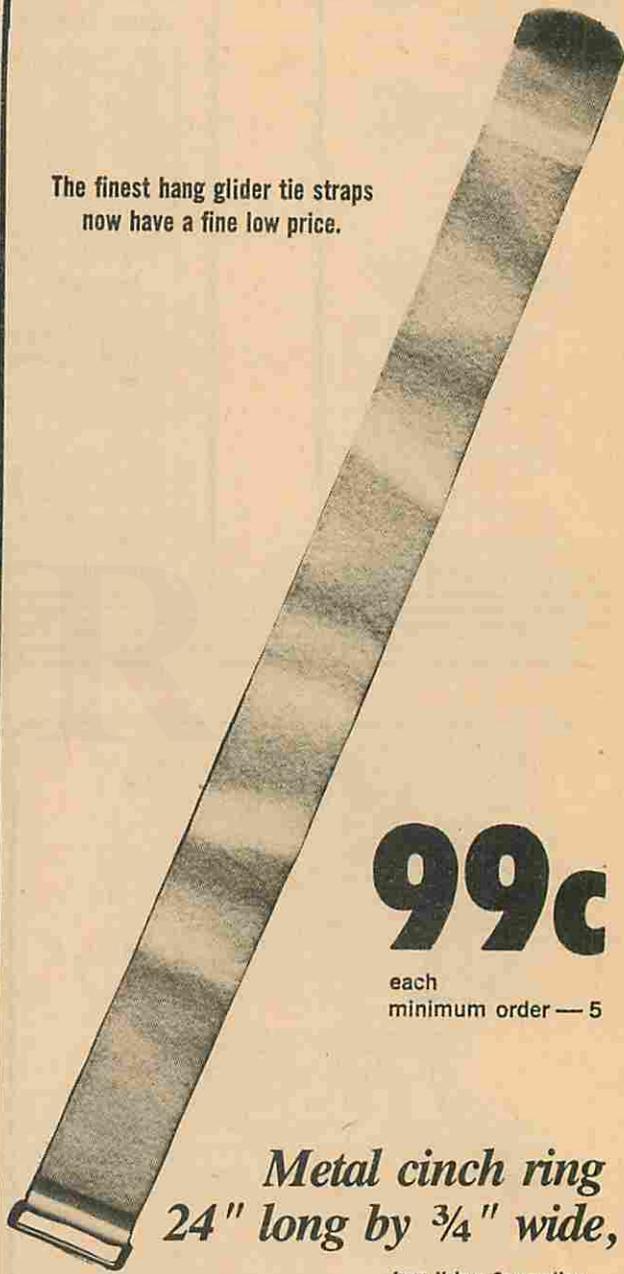
Better soaring performance is the objective. Our accessories can help you achieve it. All are available through Wills Wing, Inc., or your local hang glider dealer. Performance like you've never experienced.

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

Circle #18 on reader service card.

VELSTRAPS!

The finest hang glider tie straps
now have a fine low price.



99c

each
minimum order — 5

Metal cinch ring
24" long by ¾" wide,

from Velcro Corporation
see order form on page 18

You're Welcome

OOPS!

THANK GOD FOR THOSE WHEELS!

WHEEL

The HIGH perspective

WEIGHT: 1.1 lb.
SIZE: 12 x 5 inches
SHAPE: Hyperbolic ellipse
COLOUR: Chocolate brown
MATERIAL: Linear Polyethylene
SATISFACTION Guaranteed

Suggested Retail:
F.O.B. ont.
\$20.00 pr.

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

Now available to fit 1½" curved control bars.
Please specify 1" or 1½" when ordering.

michael robertson r r 2 claremont ont canada

DEALER INQUIRIES INVITED

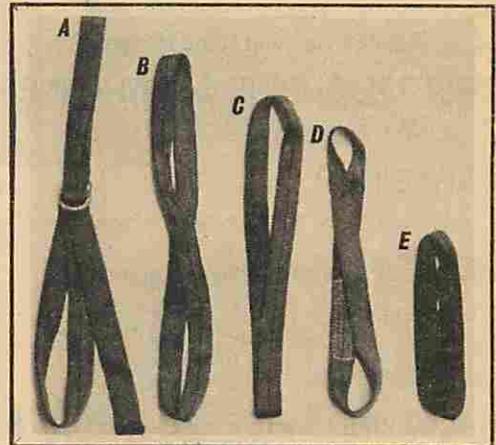
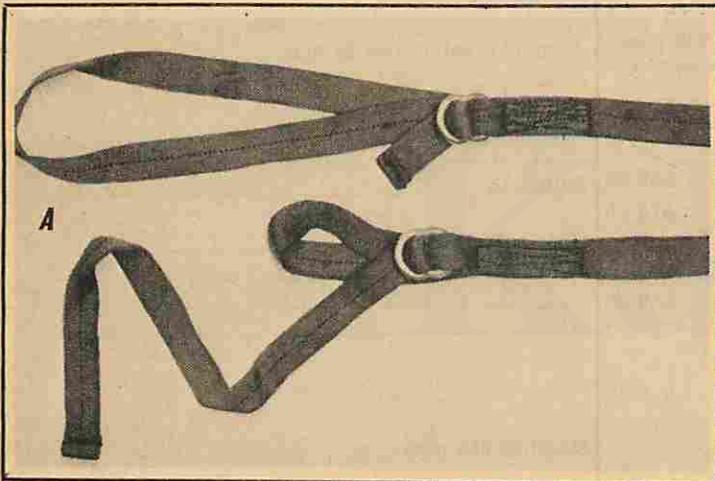
Circle #19 on reader service card.

CRYSTAL accessories

Circle #20 on reader service card.

PILOT SUSPENSION LOOPS

Tested to 20 G's!



ADJUSTALOOP®

A Deluxe adjustable loop with wide length range, positive locking.

\$7.00

- B** 18 inch standard loop **\$4.00**
- C** 15 inch standard loop **\$3.75**
- D** 12 inch standard loop **\$3.50**
- E** 9 inch standard loop **\$3.00**

CRYSTAL accessories

Circle #21 on reader service card.

CRYSTAL accessories

HANG GLIDER ACCESSORY ORDER FORM

As advertised
in the Whole
Air Catalog

SUSPENSION LOOPS

- _____ A Deluxe Adjustable Loop\$ 7.00
- _____ B 18 inch Standard Loop\$ 4.00
- _____ C 15 inch Standard Loop\$ 3.75
- _____ D 12 inch Standard Loop\$ 3.50
- _____ E 9 inch Standard Loop\$ 3.00

BAGS

- _____ A Kingpost/Tensioner\$ 2.00
- _____ B Lower Cable (Single Pouch)\$ 3.00
- _____ C Lower Cable (Dual Pouch)\$ 4.00

VELSTRAPS

The finest hang glider tie straps
now also have a fine low price.

_____ Number of _____ X \$0.99 each

CRYSTAL PRONE HARNESS

- _____ Stirrup, or _____ Knee Hangers\$69.95
- _____ Both Stirrup, and Knee Hangers\$74.95

CRYSTAL SUPINE SEAT/HARNESS

- _____ With Foot Stirrup\$59.95

CARABINER

- _____ Aluminum, 2500 kg, with locking gate\$ 5.95

HELMET Buco Flightmaster brand

- _____ Small, or
- _____ Medium, or
- _____ Extra-large

OUT-OF-STOCK

HALL WIND/AIRSPPEED METER & MAKIKI VARIOMETERS

- _____ Hall Meter, with spinning disc\$18.50
- _____ Hall Meter Prone Bracket\$ 5.50
- _____ Hall Meter Seated Bracket\$ 4.50

- _____ Complete, self-contained, pellet
variometers, with mounting hardware\$50.00

REQUIRED ORDER INFORMATION

Name _____
Address _____
Zip _____

Please indicate method of payment:

_____ Check, or Money Order, or Bank Draft, in US Dollars,
enclosed,

Make checks pay to: "CRYSTAL AIR SPORTS".
_____ or charge to _____ VISA/BankAmericard, or
charge to _____ Master Charge.

Account number: (list all digits) _____

Expiration Date _____

Signature _____

Special Instructions: _____

Merchandise total _____

Tennessee residents,
add 6.25% sales tax _____

Handling/Shipping
75¢ minimum, or
5% of total order _____

TOTAL _____
Amount Enclosed _____
COD _____
(COD orders will involve COD charges)

MAKE SURE FUNDS WILL NOT FALL OUT!

Send order form to: CRYSTAL, Box 144, Lookout Mtn., TN 37350 — No phone orders, please.

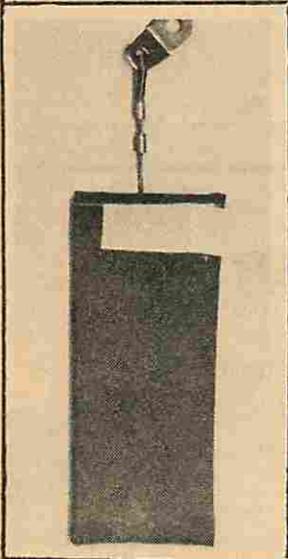
CRYSTAL

"If you need another order form,"

Circle #22 on reader service card.

BAGS

To Protect Your Sail



LOWER CABLE *B or C*

**KINGPOST
or TENSIONER**

A

Holds tensioners, or any other sharp fittings from tearing your sail. Also can fit over the kingpost top wires, covering the stop terminal nicos.

\$2.00

Put your lower wire coils in bags and you will not only protect your sail, but you won't lose safety pins or other small parts. Bags available in a dual pouch, or single pouches for coils that stay on the control bar.

\$3.00, \$4.00

CRYSTAL accessories

Circle #23 on reader service card.

LEAF

Leading Edge Air Foils

JUNE 1978 QUANTITY PRICE LIST - ALUMINUM TUBING-SEAMLESS DRAWN

TUBING SIZES

LENGTHS ORDERED

		1	2-19	20-29	30 & OVER
1 1/2" x .035 wall x 12' 6061T6.....		1.00ft.	.75	.73	.70
1 1/2" x .049 wall x 12' 6061T6.....		1.50ft.	.90	.87	.85
1 1/2" x .049 wall x 12',19' 6061T6 anodised.....		1.80ft.	.99	.97	.95
1 1/2" x .058 wall x 12' 6061T6.....		1.65ft.	1.00	.97	.95
1 1/2" x .058 wall x 12' 6061T6 anodised.....		1.95ft.	1.20	1.17	1.15
1 5/8" x .058 wall x 12' 6061T6.....		1.85ft.	1.05	1.00	.97
1 5/8" x .058 wall x 12' 6063T832 bright dipped anod.....		1.80ft.	.99	.95	.92
1 3/4" x .058 wall x 12' 6061T6.....		2.10ft.	1.15	1.13	1.10
1 3/4" x .058 wall x 12' 6061T6 anodised.....		2.40ft.	1.45	1.43	1.40

Any order that exceeds ten lengths may be combined for quantity discounts: No boxing charge for orders shipped via truck; however, Air-Freight shipments add \$10.00 for each 12' shipping container.

Will cut standard lengths smaller for U.P.S. shipment - Cutting Charge .25¢ per cut.

**331 South 14th St.
Colorado Springs, CO 80904
PH: (303) 632-4959**

Circle #24 on reader service card.

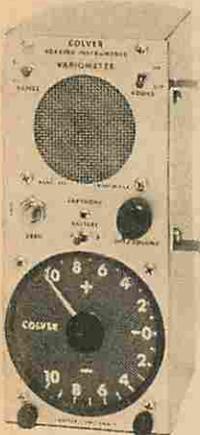
Responsive and Sensitive.

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.

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.

Circle #25 on reader service card.

THE HALL WIND METER

A precision instrument for the serious pilot.

Rugged, dependable and easy to read.

\$18.50 postpaid in U.S. Foreign add \$1.00. Prone bracket \$5.50. Seated bracket \$4.50.

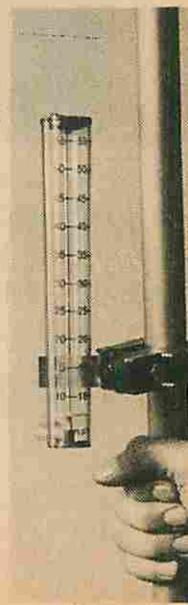
**HALL BROTHERS
Box 771
Morgan, Utah 84050**

Dealer Inquiries Invited
C.O.D. Phone Orders Welcome
(801) 829-3232



Prone

Circle #26 on readerservice card.



Seated

CRYSTAL C O R N E R

By Mike Smith

(Editor's Note: Mike is a Hang IV pilot, who serves as senior instructor at Crystal Flight Resort. As with most professional pilots, safety is of great concern to Mike. WAC welcomes Mike as a contributor.)

Are you planning a trip to Chattanooga to try some of that elevation so easily found in the sunny South? Flying from mountains can be the stuff dreams are made of, as long as you insure that you do so safely. Judging by the number of new pilots coming to Crystal everyday, it is obvious that some simple suggestions toward pilots safety are in order.

A locking carabiner is a necessity in potentially turbulent mountain air, to guard against accidental opening in flight. Once you have the locking 'biner on your harness, be sure to **hook it in to your glider!** I have seen an unhooked launch, and can assure you that without your wings, you will have the glide ratio of an aircraft quality rock. You have heard of touch and go? This was more like smash and stop. Luckily, the launch was from the Crystal training ramp, and the pilot, though dazed and confused, survived with more damage to his ego than himself.

After you are carefully hooked in, check your harness height above the control bar. You should have at least one fist clearance, but no more than two. If you use an emergency back-up system (regular mountain pilots do), be sure it clears the bar.

If you fly seated or supine, be sure you have clearance below the bar at **any bank angle.** If you are flying too low, however, your ability to flare properly will be greatly reduced.

Use of a secondary suspension loop is also highly recommended. Sturdy material, one inch tubular nylon or the like, should be used. A Crystal loop used with an Adjustaloop is ideal.

Do Not make sharp turns close to the ground. To avoid this potentially dangerous situation, set up your landing approach downwind of the target, and make 90° turns or less as you fly towards the target for your final approach. Once on 'final,' keep your wings level, making only gentle adjustments. Pre-flight planning of your approach will help you land into the wind, **without sharp turns.** Be sure you check wind direction while you have plenty of altitude.

Fly your glider well above minimum sink speed on landing approaches to guard against wind shifts, wind shadows, wind gradients, or thermals, and corresponding loss of control. This can be critical if committed on final approach, so keep that speed up!

Fly with a safe attitude. Every time you fly, try to make it your best flight yet. Crystal personnel are serious, dedicated, professional flyers. Talk to us about equipment, flying conditions, or flying techniques.

Remember, at Crystal, safety is our number one priority. When you come to fly with us, make sure it is yours, too.

GIFTS

FRAME IT!



SPECIAL, LIMITED EDITION, COLLECTOR SERIES

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.

NAME _____

ADDRESS _____

STATE _____ ZIP _____

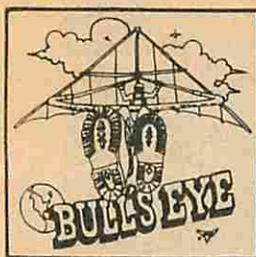
**PLEASE INCLUDE FULL PAYMENT
PLUS 50¢ POSTAGE**

Circle #27 on reader service card.

Rainbow T-SHIRTS!

FANTASTIC, CREATIVE, FIVE-COLOR DESIGNS!
SELECT THE DESIGN AND COLOR SHIRT
THAT'S RIGHT FOR YOU.

106 BEAUTIFUL COMBINATIONS



BULL'S EYE



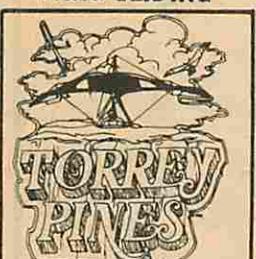
GET HIGH-FLY A KITE



SURF THE SKY



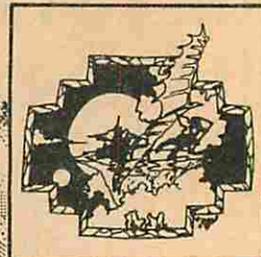
HANG GLIDING



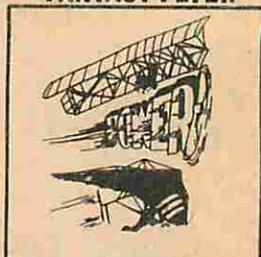
TORREY PINES



SYLMAR



FANTASY FLYER



POWER



GO FLY A KITE



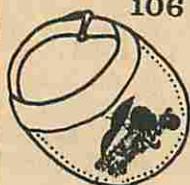
SOAR



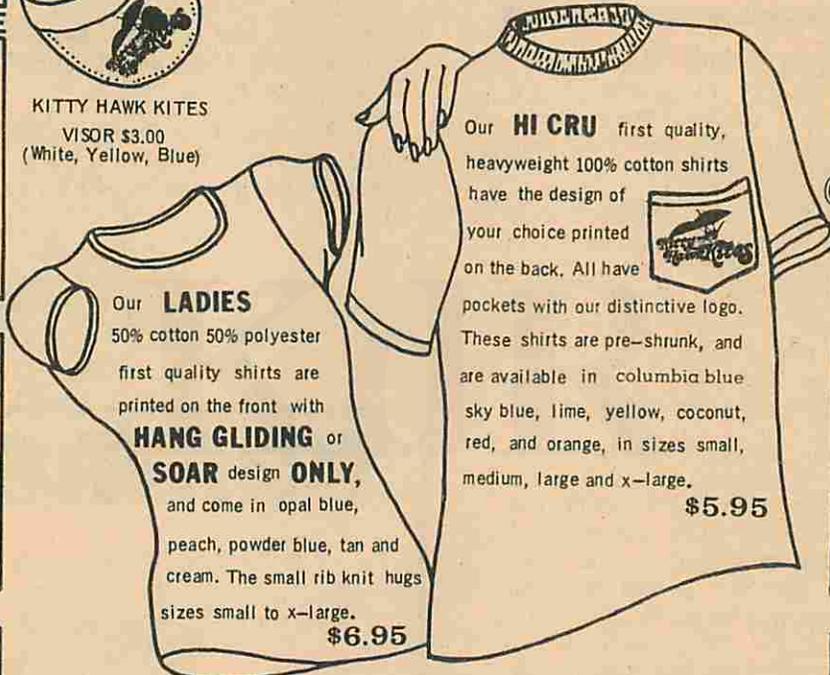
LOOKOUT MOUNTAIN



KITTY HAWK KITES



KITTY HAWK KITES
VISOR \$3.00
(White, Yellow, Blue)



Our **LADIES** 50% cotton 50% polyester first quality shirts are printed on the front with **HANG GLIDING** or **SOAR** design **ONLY**, and come in opal blue, peach, powder blue, tan and cream. The small rib knit hugs sizes small to x-large. **\$6.95**

Our **HI CRU** first quality, heavyweight 100% cotton shirts have the design of your choice printed on the back. All have pockets with our distinctive logo. These shirts are pre-shrunk, and are available in columbia blue sky blue, lime, yellow, coconut, red, and orange, in sizes small, medium, large and x-large. **\$5.95**

SIZE	STYLE	DESIGN	COLOR (GIVE 3 CHOICES)	PRICE EACH	SHIPPING \$1.00 / ITEM	TOTAL

- PAYMENT ENCLOSED
 MASTER CHARGE VISA

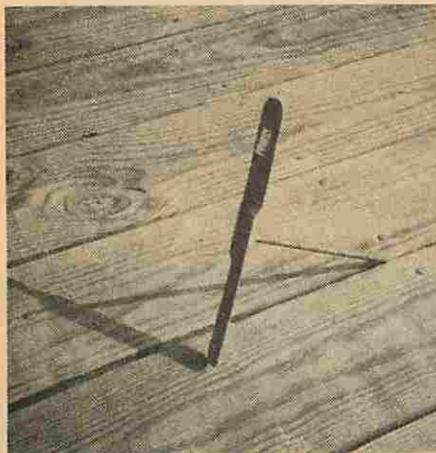
ACCOUNT NO. _____
EXPIRATION DATE _____
PHONE _____

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

SIGNATURE _____
(Signature required for credit card orders)

SEND TO: KITTY HAWK KITES P.O. BOX 386, NAGS HEAD, N.C. 27959 (919) 441-6247

WRITE FOR DEALER INFORMATION
Circle #28 on reader service card.



For that hang glider pilot who thought he/she had everything that flew . . .

\$1.95

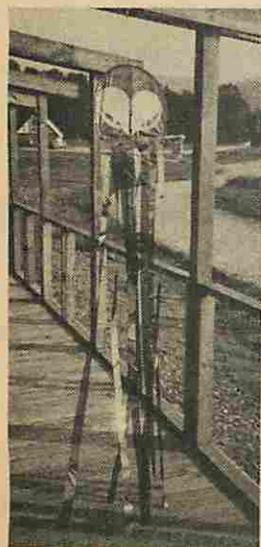


Simple to construct

THERMIX Hand Launched Gliders

- TRIO\$1.75 (3 Models)
- DART\$1.75 (large model)
- "18"\$1.25 (small model)

... a top seller at Crystal Flight Resort



MYLAR OCTOPUS String Kite

a light wind flier that will astound you on those sled-run-only days.

\$4.00

6 feet tall

Beautiful Design, makes it a great wall hanging or display, too.



ORDER FORM

- Send me: _____(no.) Puddlejumpers @ \$1.95
- _____Thermix Trio @ \$1.75
- _____Thermix Dart @ \$1.75
- _____Thermix "18" @ \$1.25
- _____Mylar Octopus Kite @ \$4.00

Name _____
 Address _____
 Zip _____

Merchandise Total	\$ _____
Shipping, add 75c per order	\$ _____
Tenn. residents, add 6.25% sales tax	\$ _____
Total	\$ _____
Enclose FULL payment	\$ _____

Send to: **THINGS THAT FLY!**
 Box 144
 Lookout Mtn., TN 37350

THINGS THAT FLY!

Idea•Graphics, publisher
Crystal's **WHOLE AIR CATALOG**
P.O. Box 144
Lookout Mtn., TN 37350

BULK RATE
U. S. Postage
P A I D
Chattanooga, Tn. U.S.A.
Permit No. 22
ADDRESS CORRECTION REQUESTED

PHIL RICHARDS
3108 W WINDROSE DR
PHOENIX, AZ 85029

SOUTH

SEPTEMBER 21-24, 1978, Masters of Hang Gliding Championships at Grandfather Mtn. Invitational. USHGA sanctioned. For further information, write: Box 128, Linville, N.C. 28646.

OCTOBER 19-22, The America's Cup. International competition. Chattanooga, TN. Sponsored by Air Space, Inc.

Crystal Flight Resort

SEPTEMBER 29-OCT. 2, 3rd Annual Great Race, \$500 cash prizes; Chattanooga. Registration and \$15 entry fee required by Air Space, Inc., P.O. Box 886, Chattanooga, TN 37401.

SEPT/OCT 29-2, Cross-Country Seminar with Special Guest in Conjunction with the Great Race.

OCTOBER 28 & 29, Halloween Costume Fly-In; Unusual competition.

EAST

Kitty Hawk Kites

OCTOBER 21-23, Orville Wright Fly In (Oct. 23, 1911 Orville set a soaring record of 9 min. 45 secs.) Soaring seminar.

NORTH

WEST

