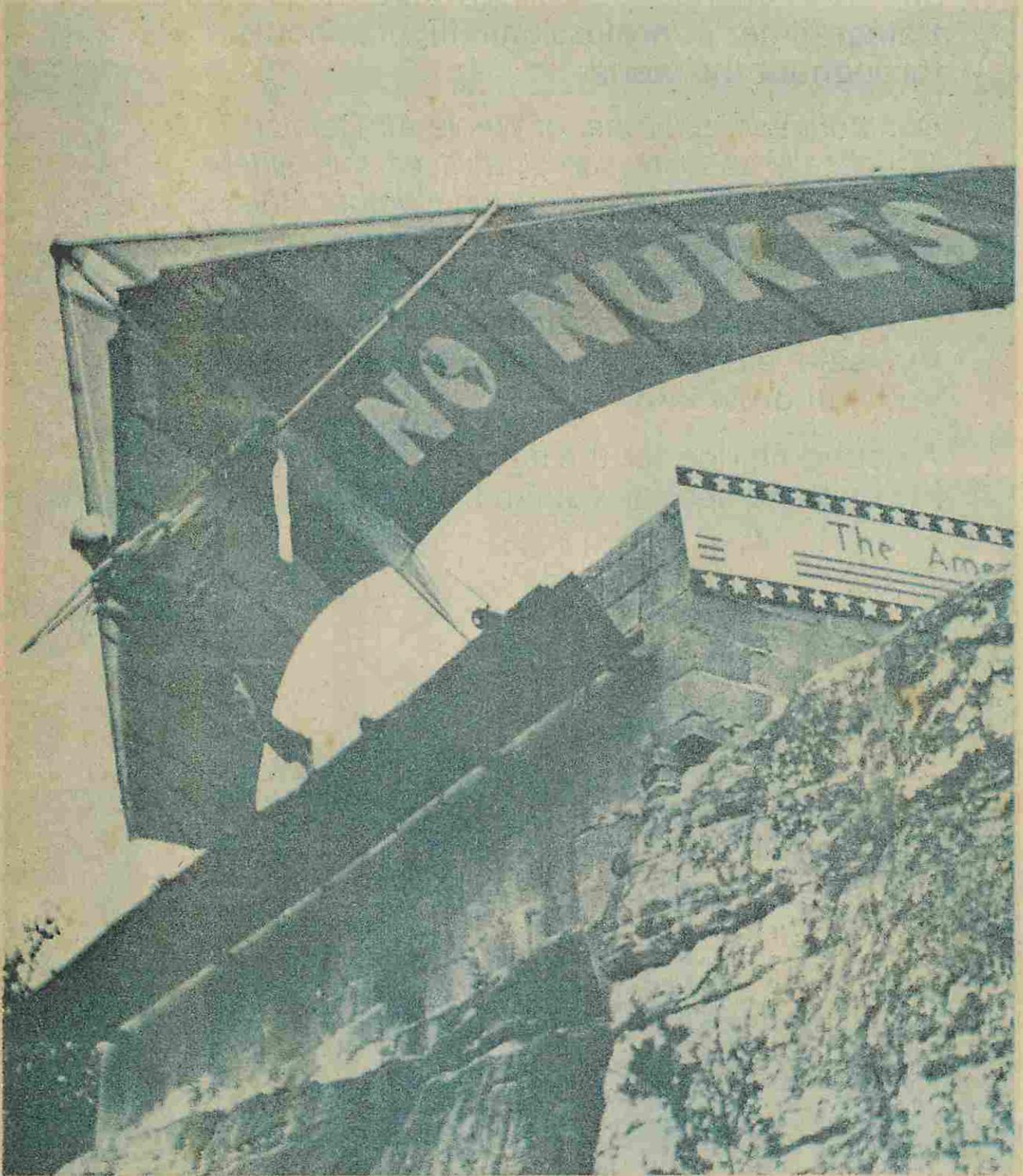


whole air catalog

Ken de Russy Collection

ONE DOLLAR

NOVEMBER — DECEMBER 1979



**The American Cup
with Dave Murchison
Michigan Sites
Three Glider Reviews
The 1980 WAC**

Because of their proven durability, stability, and performance, SEAHAWKS are the standard trainer glider in professional flight schools throughout the world.

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Whole Air Catalog, Sept./Oct. 1979

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WE THINK YOU SHOULD KNOW SOME IMPORTANT INFORMATION ABOUT EMERGENCY PARACHUTES.

What's important about an emergency descent parachute? Do you know? You should, if you are going to spend \$300-400.00 on one.

While size is important, a great lack of knowledge exists about size. But, did you know that no one can measure the diameter of a 'chute with a ruler?

It's a complicated thing, but basically the only way to find diameter on current 'chutes is by mathematically calculating **backwards** from the known area (in square feet).

Look at it this way. We used to size standard hang gliders by their leading edge length. Then, two lengths had to be used because keels got shorter. With modern crafts, this just won't work. Now, we define the glider's size by the square footage of area in the sail. This is best.

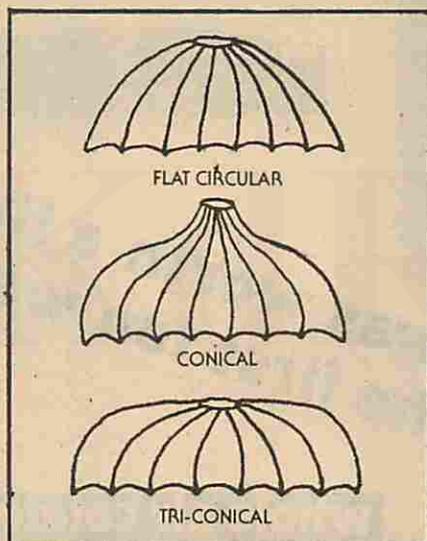
It is also best in 'chutes. The **Sky Sports 'Chute** has 452 square feet of area. This works out to 24 feet of diameter. Some other 'chutes advertise 24 feet, but don't even come close to our area of fabric. And just like with gliders having much larger area, 'chutes of greater area let you down more slowly.



That's important!

But, so is shape. Three basic shapes are possible for our use. As shown below, they are flat circular, conical, and tri-conical. What's the difference?

Well, a flat circular is easy to produce. But for all its size, it won't provide as much drag as the other two, due to inefficient use of fabric. And drag is what parachutes are all about — to let you down easy. A conical is a slightly better 'chute,



but the fabric still is not used as effectively as it could be. The tri-conical makes the best use of fabric, being flatter on top to give it the highest drag (for a given area), and yet it is still stress-efficient (in case of opening shock loads). It's a little more difficult to manufacture, but it's worth it. Plus, very important, it inflates fastest.

How do we know so much about parachutes? Well, our designer, Ed Vickery, had 15 years of experience with the parachute industry.

He designed the advanced and successful ParaCommander 'chute. He was the very first to jump a square, ram-air canopy. He was invited to speak on hang gliding parachutes before the professionals of AIAA, experts in the field.

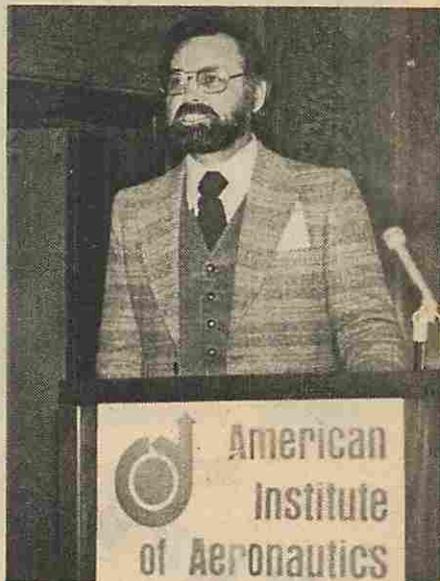
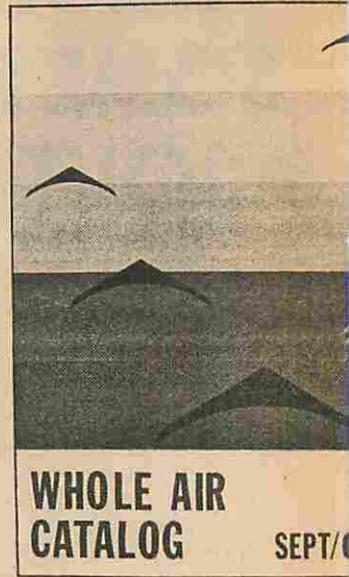
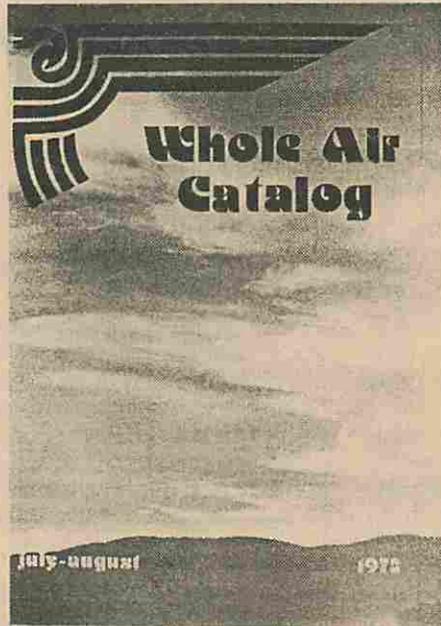
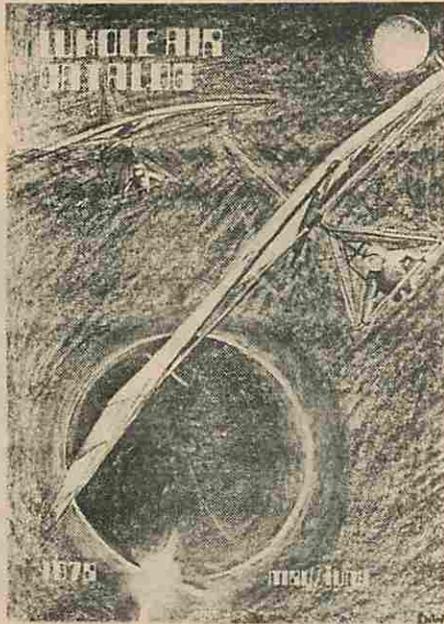


Photo by Dan Poynter

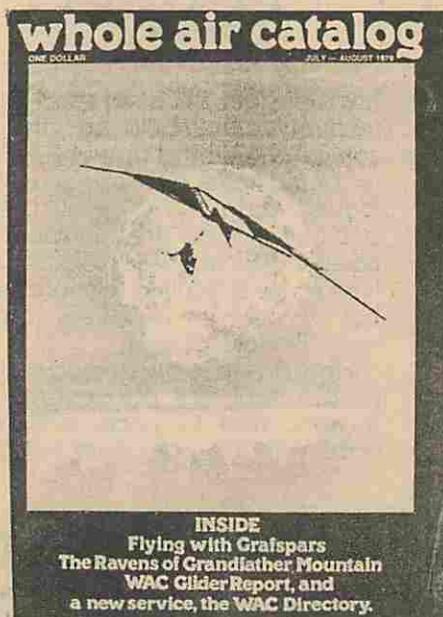
Some other areas of importance are the size and weight of the contained 'chute, the filling time, the optimal areas of "fullness", and the one-hand deployment system. The **Sky Sports 'Chute** puts all these points together in a tri-conical shape which can handle the stress while inflating **fast**, yet gives the greatest drag area to let you down easy.

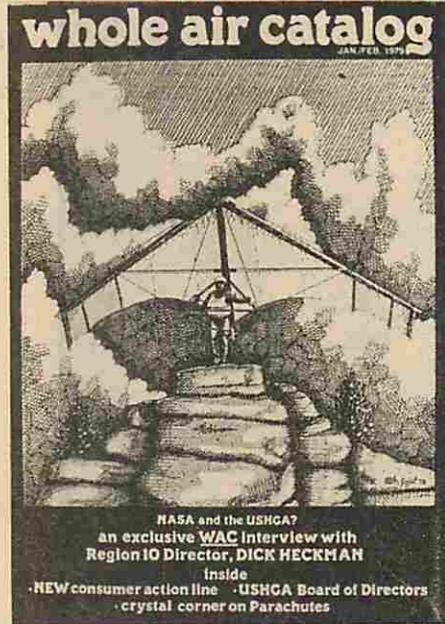
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Inc.
P.O. Box 507
Ellington, Conn. 06029

\$340. Retail, but see page 30 for a SPECIAL CHRISTMAS GIFT OPPORTUNITY!

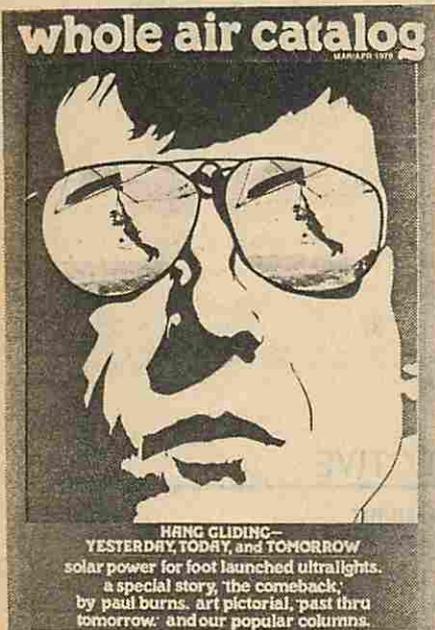


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WHOLE AIR CATALOG

Volume 2, No. 6, 1979

CATALOG NO. 10

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US Lancer and Sirocco 3 32, 33
By Dan Johnson

MICHIGAN DUNE SITES
Baldy to Sleeping Bear 22, 23
By Don Baker



THE AMERICAN CUP 24-28
A look at competition with Dave Murchison
Insight by George Worthington
Edited by Starr Tays

PREVIEW OF THE 1980 WAC 37
A look at what's coming next year

A PILOT'S PERSPECTIVE

YOU CAN LEARN ABOUT FLYING FROM THIS ... 14
Dave's Dive
By Glenn Russell

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Area	260 ft. ²	220 ft. ²	180 ft. ²
Span	40.5'	38'	35.5'
Nose Angle	120°	120°	120°
Pilot Ely-	200	165	130
ing Wgt.	265 lbs.	220 lbs.	175 lbs.

Photo by Steve Pearson

Reader Inquiry Card No. 3

THE BOTTOM LINE

The proof is in the flying. We could go on forever about the **OMEGA'S** extraordinary capabilities, but nothing we could say will impress you as much as your first flight on the **OMEGA**. You owe it to yourself to check out this extraordinary new soaring machine. See your dealer today for a test flight on the new **WILLS WING OMEGA**.

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FORUM

Hang glider contests should only have 1 class! I believe the 'difference' between flexwing and rigid wing gliders will not be evident in another season. If we penalize Fledges for being better designs how can we justify a sport that is supposed to grow on the basis of better and safer products?

P. Brock
Temecula, CA

As always, the "Catalog" was pretty good, I really enjoyed the article on "Where to Fly in Tennessee." Now how about other states, California for instance? In fact I would like to see it as a regular article. I am also up on your "Consumer Action Line" . . . keep up the good work!

D. Hoepker
Modesto, CA

(Editor's reply: More site info on its way in the form of "Michigan Dune Sites," pgs. 22 and 23 this issue. What we would need, to do a comprehensive California flying site list, is someone from the different regions out there, compiling and sending us information and photos! Any suggestions?

Really enjoyed your flying sites by state article. It will be most helpful next time we visit your super area.

R. Sprague
Portville, NY

I would like to get in touch with other EZ Riser pilots in the Missouri, Illinois area within 100 miles radius of St. Louis to form correspondence or a club. Write to:

Larry Bath
224 N. Central
Eureka, MO 63025

Have been noticing a tendency in my area (and others) to be lax in pre-flight checks. Please, let's pre-flight each time as if our lives depended on it. Thanks.

J. Sillero
Glens Falls, NY

Your publication is very good . . . it gets wide circulation in my classroom at the high school where I teach.

R. Trail
Winsted, CT

Some of us feel the "Used Glider Bluebook" prices are somewhat lower than usual resale values, at least in our area. Where does your data come from? (It wouldn't matter except this is a favorite part of WAC!)

D. Adams
Seattle, WA

(Editor's reply: We encourage response from all over the U.S., Danny, so ask dealers in your area to contribute to making the Bluebook more accurate.)

Any thoughts on a "Learning to jump into your control bar if you forgot to hook-up" clinic?

B. Smith
Denver, CO

WAC is more in touch with what's really going on in Hang Gliding today than any other hang gliding publication.

P. Hall
Manilius, NY

The article by Whitney on Grafspars was irresponsible. I admire your publication and support freedom of the press. But on issues with possible far-reaching effects, you should investigate claims. Hope everyone read the Wills Wing rebuttal.

H. Earls
Eugene, Oregon

Good job. Very informative. How about a survey of how many pilots currently try aerobatics in their gliders, i.e. spins, past 90° wing overs, to see if aerobatic glider is needed.

H. Betts
Santa Clara, CA

Deflexorless gliders look good in terms of drag and less hardware, but I'm waiting to see how designers overcome the loss in flexibility of tuning . . .

R. Mott
Princeton, NJ

How about re-hashing some pointers for people looking at used kites? What ages or fatigues first? Are any conversion kits worthwhile or safe? Could you also publish some notes on club organization liability?

A. Gwozdz
Adams, MA

Please give us more information on towing. There is not much info on towing to be had.

B. Pritchett
Finley, TN

(Editor's reply: We are hopefully going to solve this problem next issue, when we begin a towing section in WAC. Ed Quirk of Sunflight in Florida will be the Towing Editor.)

Keep up the good work!! You offer a unique service — different from the other hang gliding magazines.

B. White
Cogan, Utah

I tried to volunteer my time to demonstrate hang gliding to a local high school. This program was to include a film, gliders, lecture, and a question and answer session. I was refused because insurance won't allow endorsement of high risk sports. How then can they endorse football with its injuries and deaths?

J. Sanders
San Bernadino, CA



AERIAL TECHNIQUES

NEW HOURS: Open five days a week; 9:00 to 6:00

EVERYTHING IN STOCK

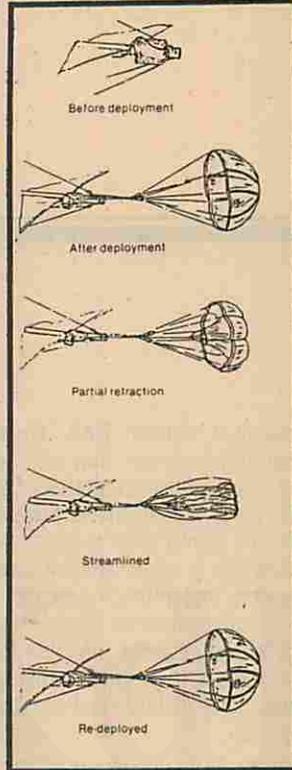
ASG-21 180 & 160	500.00 (U)
East Riser Comp	900.00 (U)
SST 110G	1,195.00 (N)
Phoenix 6C 162	1000.00 (D)
Phoenix 8	700.00 (U)
Firefly	700.00 (U)
Merlin 160	550.00 (U)
WW Raven 209	(N)
Seagull Seahawk 200 (2)	(N)
Seagull Seahawk 180 (3)	(N)
Seagull 10 M	(N)
Moyes Maxi III	(N)
Highster 190	(N)
Fledge 2B	1,200.00 (U)

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Seagull 11M	(N)
Seagull 10M	(N)
Seahawk 180	(N)
Seahawk 200	(N)
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UP Conder 194	(N)
UP Conder 224	(N)
UP Fireflyll 181	(N)

(N) — New (U) — Used (D) — Demonstrators

Hummingbird Drag Chute



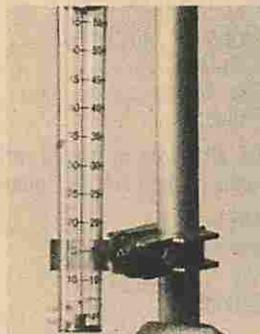
ACCESSORIES:

MacGregor Timers	\$24.95
Hummingbird Drag Chutes	45.00
Bennett Mark II Chute	359.50
Up Chute	349.00
Windhaven Chute	346.00
Up Cloud Harness	93.00
Price Prone Harness	125.00
Manta Prone Harness	95.00
Bennett Comfort Harness	85.00
Bennett Enduro Mesh	65.00
Sunbird Supine Harness	109.50
Sunbird Prone	94.50
Bell Helmets	54.95
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Control Bar Wheels (High)	12.95
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INSTRUMENTS:

Aircraft Altimeters	\$130.00
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Ball Varios	275.00
Dwyer Windmeters	8.95
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Hall Bracketts	5.50
Bennett Varios	187.50



(Prices Subject of Change Without Notice — New York residents add 7 percent sales tax.)

Reader Inquiry Card No. 4

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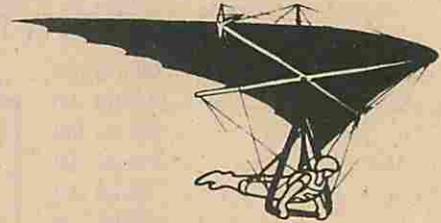
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HANG GLIDING STATISTICS



By Dan Johnson

WHEN DID YOU START FLYING?

We surveyed this topic some time ago, and on this newer poll we discovered significant changes in the results. One interesting point is that on the first trial, 8.2% did not respond to the question, while this time the question was answered on every card.

Our last survey (of this topic) was in the September/October WAC, a little over one year ago. Then, nearly a quarter of all pilots surveyed reported that they entered the sport in 1976. On this survey, over forty percent claimed they had been around since 1974 or earlier. Even '75 was larger. But some similarities do result, illustrating '77, '78, and '79 to be years of lesser growth.

We were perturbed about this last year, and the feeling lingers. Are we attracting (training?) less students? If yes, why? Last survey, nearly half (49.3%) of all pilots got involved prior to 1976. This time the figure was 64.1%. Even with the statistical inconsistencies, it shows a slowing trend of new entrants. Of course, 1979 pilots may not receive the WAC, lowering results for this year, but after all, it is near the end of the year. Compare then and now for yourselves, and ponder the question, "Is Hang Gliding growth slowing down?"

WHAT ELSE ARE YOU FLYING?

We began surveying for other forms of aviation experience in the

September/October WAC. We were genuinely surprised how many of you had flown other categories of aircraft. But it was a pleasant surprise as we felt this shows several things — awareness in other aviation disciplines, probable understanding of the perspectives held by pilots of other crafts, and possibly the situation whereby you readers tried other forms and still found hang gliding most practical or enjoyable.

Pilots with experience in other forms59.3%

Of these above, the other forms of experience breakdown is as follows:

Airplanes (all types)80.6%
Sailplanes47.9%
Sky Diving30.3%
Balloons16.0%

Of all pilots surveyed, other forms of experience are as follows:

Airplanes48%
Sailplanes28%
Sky Diving16%
Balloons8%

HARNES BRANDS

In our first inspection of which harness brand names are most commonly reported, we had an idea what the first and second brands were. We also knew the harness market had become quite competitive, with a large number of brands existing. With this first survey, we found 31 brands, of which 10 had

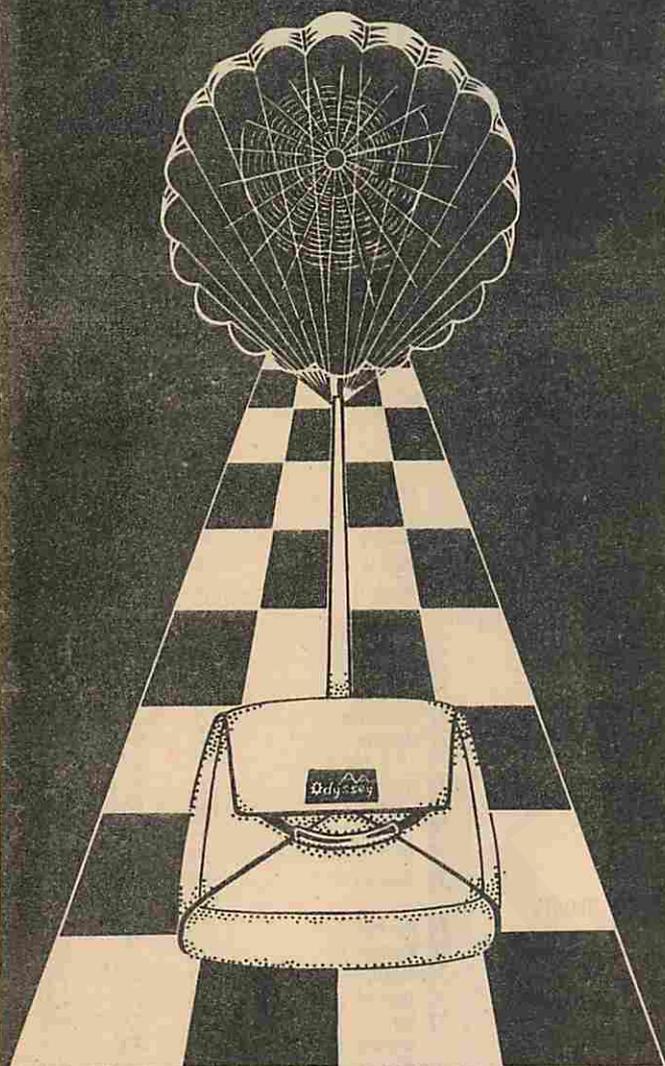
the majority of the market (76.8%). Narrowing this further, we found the top two brands held 42% of the total harness market. As the third largest manufacturer had only six percent, it is fair to say that Ultralight Products and Price/Wills dominate. Please recall our warnings of other polls, using caution about placing undue faith in the results from surveying only a single issue. Rank shifting is inevitable. Here are the tabulations:

Rank	MFR.	Market Share
1	Ultralight Products	23.2%
2	Price/Wills	19.2%
3	Bennett	6.1%
4	Eipper	5.6%
	Sky Sports	5.6%
6	Golden Sky Sails	5.1%
7	Sunbird	3.5%
8	Crystal Air Sports	3.0%
	Master	3.0%
10	Flight Designs	2.5%
	All Other Brands	23.2%

YEAR PILOTS STARTED HANG GLIDING

Year	1978 Survey	1979 Survey
1974 or earlier	30.3%	40.9%
1975	19.0%	23.2%
1976	24.5%	13.3%
1977	12.0%	12.8%
1978	6.0%	7.4%
1979	—	2.5%

Next issue's "Statistics" will delve totally into Accidents and Injuries. Don't miss it. **SUBSCRIBE!**



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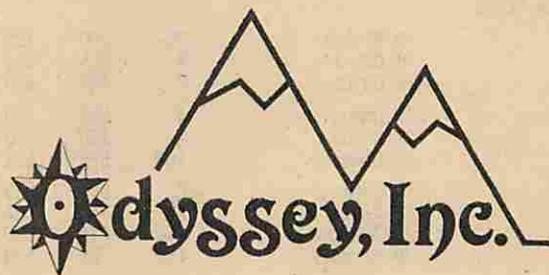
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(170-250 lbs.)

22 gores 22 V-tabbed lines
radial and circumferential
stress bands

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USED GLIDER BLUEBOOK

EDITION NO. 10

These prices are designed to be guidelines for evaluating your glider or one you wish to buy. We do not intend for these figures to be considered the final authority. Consult your local qualified dealer.

MANUFACTURER	YEAR	MODEL	SIZE	CLEAN PRICE	AVG. PRICE	MANUFACTURER	YEAR	MODEL	SIZE	CLEAN PRICE	AVG. PRICE
ALBATROSS SAIL GLIDERS						MOYES DELTA WING					
	76	ASG-20	C	550	300		76	Mini	180	525	400
	76	ASG-21	C	575	400		76	Midi	220	625	575
BENNETT DELTA WING							76	Maxi I	200	650	550
	76	Phoenix 6B	Jr.	425	350		77	Maxi I	200	700	625
	76	Phoenix 6B	Reg.	425	400		78	Maxi II	200	1000	800
	76	Phoenix 8	Reg.	450	450	SEAGULL AIRCRAFT					
	77	Phoenix 6C	Jr.	550	450		75	Seagull III	220	325	250
	77	Phoenix 6C	Sr.	400	425		76	Seagull III	220	350	275
	77	Phoenix 6C	Reg.	500	425		76	Seagull VII	174	600	350
	77	Phoenix 8	Reg.	650	375		77	Seahawk	170	650	550
	78	Phoenix 8 Super	Reg.	675	450		77	Seahawk	190	675	600
	78	Phoenix 12	Reg.	850	725		77	10.5 Meter	—	900	750
	79	Phoenix 6D	Reg.	950	850		78	Seahawk	170	825	600
CGS AIRCRAFT							78	Seahawk	190	800	600
	76	Falcon V	225	550	450		78	10 Meter	—	1100	900
	76	Falcon V	185	575	400		78	10.5 Meter	—	1150	1000
	77	Falcon V	185	650	500	SKY SPORTS					
	77	Falcon V	220	600	475		76	Kestrel A	185	450	350
	78	Falcon 5½	Med	800	625		76	Kestrel A	220	525	425
EIPPER FORMANCE							76	Merlin	160	500	375
	75	Flexi II	240	400	200		77	Bobcat III	Lg.	775	600
	75	Cumulus V	180	400	300		77	Sirocco I	156	775	500
	76	Cumulus VB	180	450	375		77	Sirocco I	175	700	525
	77	Flexi III	185	675	500		78	Osprey	175	800	775
	77	Cumulus 10	Med.	595	525		78	Sirocco II	164	1000	850
	78	Flexi III	Lg.	700	550		79	Sirocco III	189	1300	1150
	78	Cumulus 10	Med.	775	500	ULTRALIGHT FLYING MACHINES					
	78	Antares	Med.	950	875		76	Easy Riser	Compl.	1125	850
ELECTRA FLYER						ULTRALITE PRODUCTS					
	76	Nimbus	20-17	200	125		76	Dragonfly Mk. II	174	575	375
	76	Cirrus	3	425	350		77	Firefly	174	650	500
	76	Cirrus	2	425	350		77	Dragonfly Mk. II	196	700	550
	77	Cirrus	3	550	350		78	Spyder	176	850	675
	77	Cirrus	2	450	300		78	Condor	178	1000	825
	77	Olympus	160	575	525	WILLS WINGS					
	78	Cirrus 5	C	800	650		75	Swallowtail	20-20	300	150
	78	Cirrus 5	A	750	625		75	Swallowtail	22-20	225	175
	78	Olympus	160	775	700		76	SST	90	600	400
	78	Olympus	180	725	600		76	SST	100A	625	450
MANTA PRODUCTS							76	SST	100B	600	475
	77	Mirage	175	700	550		77	SST	100B	750	550
							77	Universal	100A	700	500
							77	X-C	185	800	650
							78	Alpha	185	1025	775
							78	Alpha	215	1000	800
							78	X-C	215	950	775
							79	Alpha	215	1150	1050
							79	Omega	220	1275	1175

NOTE: DEALERS! Write to us to participate in the Used Glider Bluebook. We would like to get your input on prices, to better represent all parts of the U.S.

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Ken de Russy Collection

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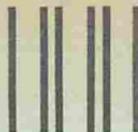
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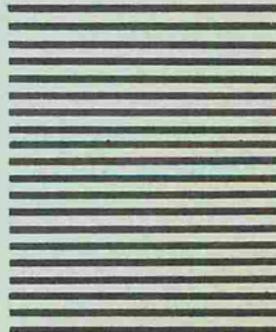
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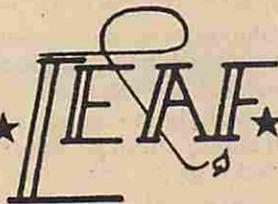
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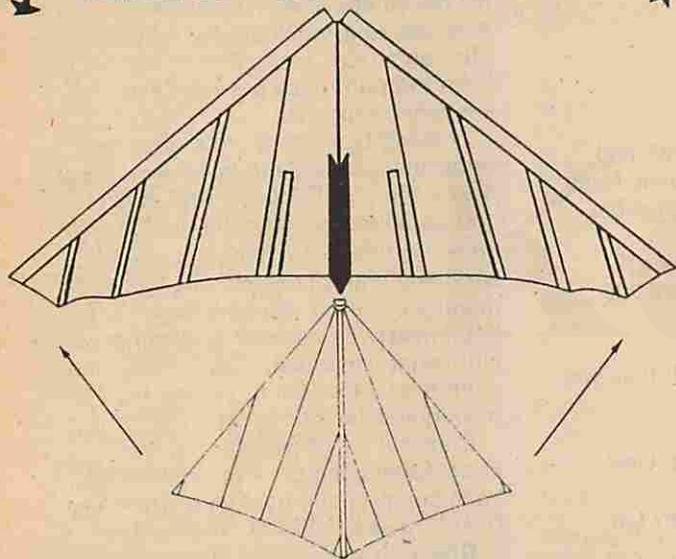
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Keel Length - ft.	11.1'	11.5'	12'	12.5'	13'	13.5'
Wing Span - ft.	24.9'	26.2'	27.5'	28.7'	28.9'	30.8'
Wing Area - sq. ft.	140	155	170	185	200	215
Aspect Ratio	4.45	4.45	4.45	4.45	4.45	4.45
Nose Angle - degrees	103	103	103	103	103	103
Sail Billow - degrees	1.5	1.5	1.5	1.5	1.5	1.5
Weight - lbs*	38	41	43	45	48	49.5
Pilot Weight - lbs.	100-130	121-145	139-164	152-176	167-191	182-210
Wing Loading - lbs. per sq. ft.	1.1 recommended wing loading					
Set-Up Time - minutes	8 minutes set-up for all sizes					

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See order form, page 5

You Can Learn About Flying From This...

dave's dive

Sunday afternoon, 12:30, 8-10 mph at Arcadia, Michigan, a 375 foot ridge. We waited since 8:00 for it to come in. Just when I figure it's teardown time, it picks up to 10-13. Maxi Dave launches, a 150 lb. pilot. Up and over the top he goes . . . barely. Another Maxi with a heavy pilot is scraping. An Omni is scraping, too. Two wings go down.

Suddenly it's 13-15. Three more launchings. Dave O. comes up in his C5A. 130 pound pilot, nice launch, proned out nice. Too far from ridge, turning back, a little over-control. Quick oscillations of yaw followed by 45 degree dive. Recovered after 50 feet. More sudden yaw oscillations. What's happening? Nose pitches straight down, past vertical in dive, sail flapping (buzzing), no nose camber.

Dave is pushing out hard. Locking tips appear to have pressure like they're trying to work. Rotation in dive 360°. Thud. Dave hits face first, no breath, pale face. Pupils responsive, establish airway. Clear sand, blood from mouth. Tilt head back, no, check neck injury first. Neck feels OK. Slight tilt of head, force open jaw, hold tongue down. Reach to depress abdomen. Before I could apply pressure, he started breathing. Three minutes pass, spinal alignment OK. Recheck neck

vertebrae. Irregular breath and heart. Spectator runs down. Need help, send helicopter, possible serious injury.

"What's happened to me?"

"You diverged and dove 200 feet, past vertical."

"OK, let me up!"

"No, stay still, or we'll toss you in the lake."

"OK, Glen."

Loss of consciousness. One minute passes.

"What happened to me? Let me up!"

"No, it's against the rules, stay still."

One hour and forty-five minutes after launch, Diver Dave is in the hospital. He's OK the next day. They wouldn't give him anything for pain till 36 hours past. He only wanted two aspirin.

Now it's three days later; I can't understand how many modern wing could dive in without pulling up. This C5A had just been rebuilt, and being a Wills dealer and pilot, we weren't sure on tuning. But just before launch, two other C5A's were set up and ours looked identical. Dave was under the recommended wing loading, but in light winds, I wasn't worried. One week earlier, I flew motorized with the C5 in 15-25 gusty winds, and the kite responded normally.

I called Electra Flyer, and Irv asked why the luff lines weren't on. At the time I bought the C5 from Scruffy (S.E. Michigan Hang Gliders), the sail flapped a lot. One week later, he gave me the manual and luff line kit, and said it might help stop the sail from flapping. It didn't and not being aware of the added dive recovery it gave, I left it off. To me, the kite flew the same with or without it.

Irv said all C5's should have luff lines, and I told him I never saw a C5 with them. He said if I knew the pilots, tell them and he'd send them free. Not that it was the answer, but they should be on. He said he would send me specs for me to check by measuring. Also, he said he would get a light pilot on a C5A, try to dive it and have the pilot push out hard and see what happens.

Looking back on Dave's dive, one thing that puzzles me is, why hasn't the USHGA got a first aid course aimed specifically at hang glider accidents? If I hadn't been seriously injured myself two months earlier, I wouldn't have been nearly as capable of dealing with what happened. The multi-media Red Cross course is inadequate for our sport.

Called a lot of people in the know (supposedly). The explanation I can comprehend best came from Dave Broyles (USHGA President).

Given an underweight pilot, a questionable tuning status, and no luff lines, plus the fact that Dave pushed out, we can't say for sure what happened. But if the kite had a slipping action, it might develop enough inertia that the locked tips and reflexed keel pocket perhaps could not overcome. Luff lines could have made the difference, or just pulling in.

Recalling the dive, I now feel this is what happened:

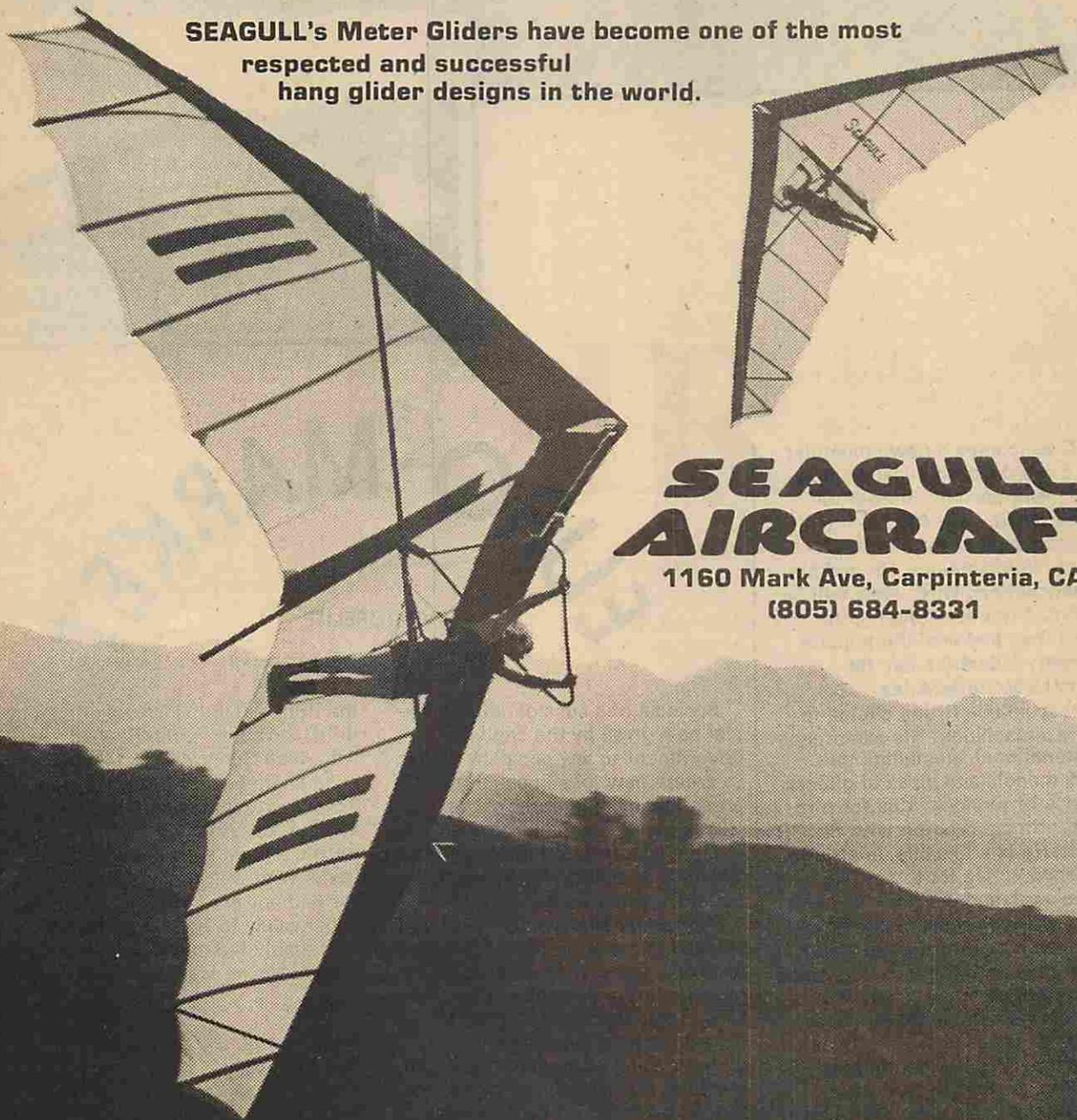
1. He flew too slowly and stalled repeatedly.
2. Poor tuning or pilot input allowed a slipping action to occur.
3. The kite developed enough momentum and with the bar all the way out, it was luffed all the way down. (The tips weren't luffed and showed pressure as if they were trying to work).

10 METER

The 1979 Meter Series reflects SEAGULL's tradition of excellent craftsmanship and strong construction techniques with these refinements:

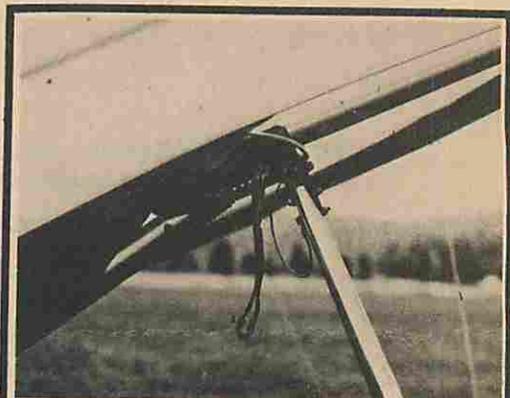
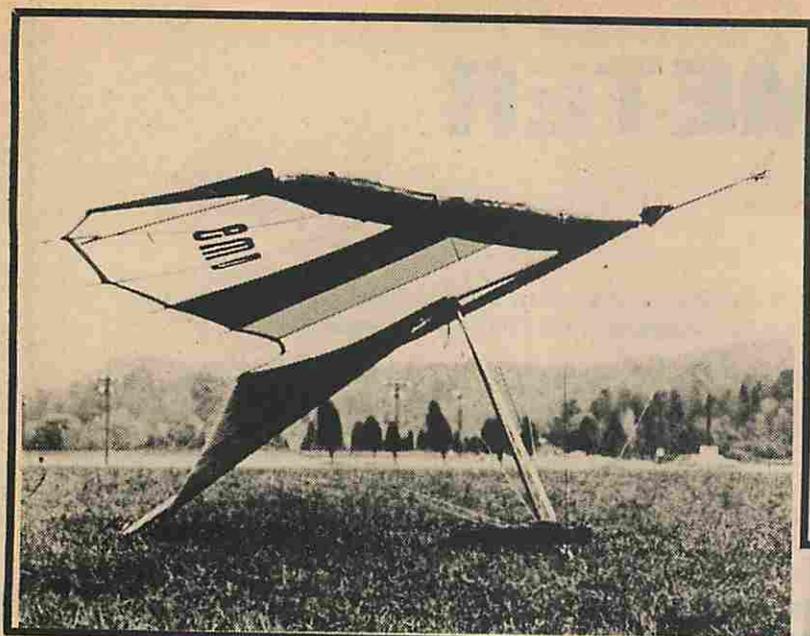
- * Larger lower twist airfoils for lower sink rates
- * A new camber distribution and keel pocket with a new method for applying the leading edge
- * A new glossy black anodized airframe with black coated vinyl rigging and stainless steel components throughout.

SEAGULL's Meter Gliders have become one of the most respected and successful hang glider designs in the world.



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VULTURELITE

By Jean Michel Bernasconi

WAC welcomes a new columnist to its pages with this issue, Jean Michel Bernasconi. From Chamonix, France, Jean Michel will begin employment for Marty Alameda of Flight Designs. He and his Connecticut-born wife, Joan, will be on the road representing Flight Designs' two imports, the popular US Lancer, and very soon, the amazing La Mouette Atlas.

Bernasconi is a fitting choice for these two machines. His experience is multi-national, spanning more than 80 models and sizes of gliders, hundreds of tandem rides for hire, and a profitable relation with Bill Bennett. He is a likeable, energetic young man with a lot to say. He does so well, and we think you will find his writing readable and enjoyable, as well as informative about the European marketplace. It sounds just like him as many of you will discover when you meet him near your home site.

It is all part of our continuing effort to give you the type of information you have asked for in our Reader Inquiry Cards. Jean Michelle will write this column on a regular basis, reviewing equipment from abroad.

Because of a considerable financial help given by the English government to any company willing to create new jobs in some rural areas, the manufacturer of the Hiway Super Scorpion moved 6 months ago, from Brighton, on the Channel, to South Wales, a consistent soaring area.

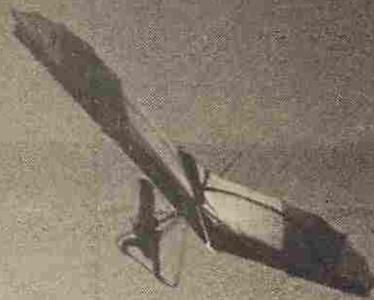
The former Hiway employees who refused to move or moved but came back to Sussex, then created a new manufacturing company, VULTURELITE. Their first design, the EMU, became quickly a very popular glider in Europe. Its extremely light handling and superior ability to flat turn in marginal lift became very apparent among all the other gliders during the 1979 World Championships in Grenoble, France.

The EMU and their new design,

the PREDATOR, which was flown by Keith Reynolds in the Second American Cup are both 140 degree nose angle bowsprit frames. Their 3-piece articulated keel and a tall keel pocket are mainly responsible for the unique look. A very simple frame with well designed control bar and bowsprit will make the glider ready to fly in minutes. It is probably the quickest set up I've seen after the French ATLAS.

SPECS	EMU 170	EMU 190
Nose angle	140	140°
Leading Edge	17'	18'2"
Keel	8'	8'9"
Wing Span	33'	35'9"
Aspect Ratio	6.4	6.4
Tip Chord	2'4"	3'2"
# of Battens	7	7

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- Dick Stern "Old Man of the Mountain"

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- Dan Johnson, Glider Rider

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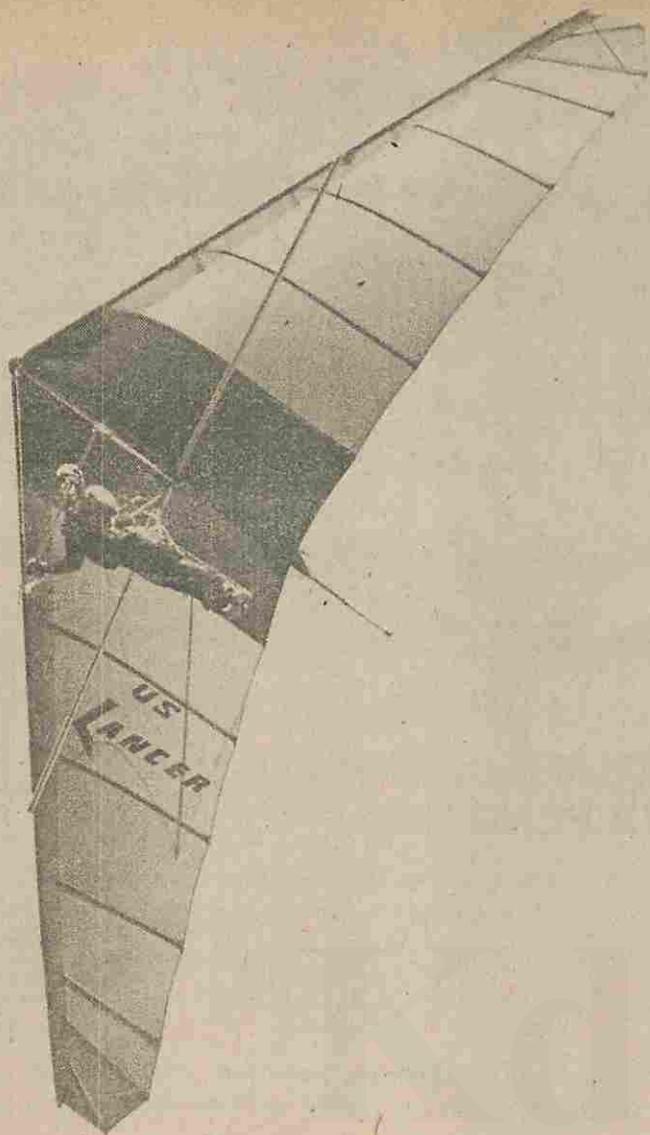
SPECIFICATIONS

AREA	245 ft. ²	215 ft. ²	185 ft. ²	155 ft. ²
SPAN	37'	34.5'	31.9'	29.3'
PILOT (FLYING) WGT.	190-250 lbs.	165-205 lbs.	140-175 lbs.	110-145 lbs.
GLIDER WEIGHT	56 lbs.	49 lbs.	46 lbs.	43 lbs.

AFTER ONE FULL YEAR OF PRODUCTION, NOT A SINGLE ALPHA HAS EXPERIENCED A STRUCTURAL FAILURE OR PITCHOVER.

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THE FLIGHT DESIGNS US LANCER

By Dan Johnson

The Lancer 4, recently renamed the US Lancer, is the first "foreign" glider reviewed in this regular feature. I accentuate foreign, as these days the only thing foreign in the Lancer is the design. Flight Designs, headed by Marty Alameda, is producing the Lancer in the US, from the nose plate bolts to the defined tips, and including sewing the sail. Hence, the US Lancer.

Flight Designs has done a remarkable job, in my opinion, arriving at this point of complete manufacture in a year and a quarter. This feeling is heightened when one looks over the construction quality of the US

Lancer. It is simple and clean, exhibiting flawless workmanship throughout. On four Lancers I examined recently here in Chattanooga, I saw that each craft had the fine crafting and spotless sails which likely represents all US Lancers.

Interestingly, Alameda is quickly establishing himself as the second primary importer of gliders, as he readies his organization to bring in the French Atlas (see the "European Connection" in the Jan/Feb 1980 WAC). Incidentally, the first primary importer is US Moyes and the next edition of WAC's Glider Report will cover the Maxi — don't miss either write-up.

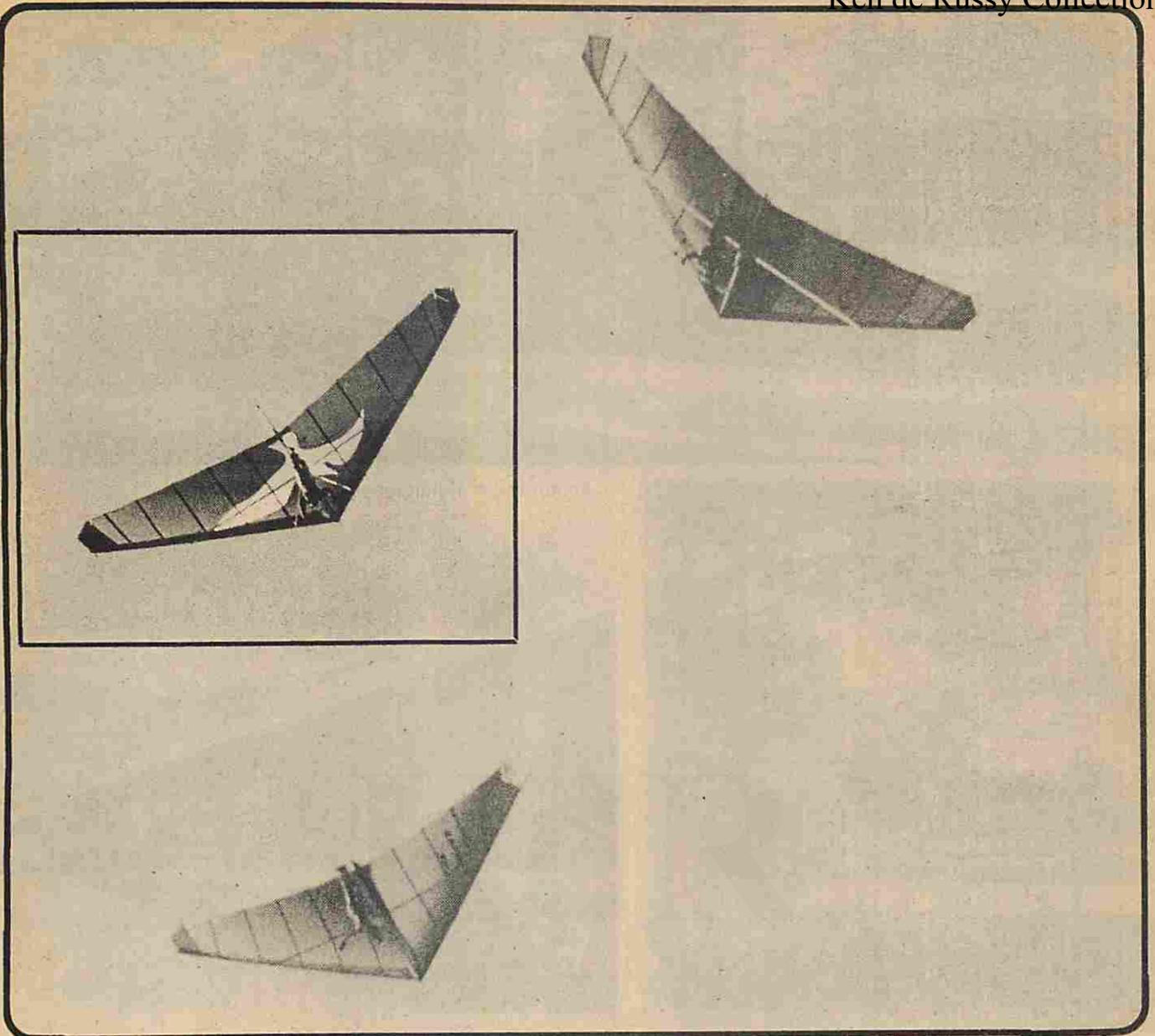
After leaving Seagull Aircraft to set up his Flight Designs business, Marty took a jaunt to New Zealand home of the Lancer. He was so impressed with the glider's design,

handling, and overall performance, that he brought some back with him to Northern California. In his home area and state they subsequently sold well and the ball was rolling. But it became increasingly tedious and costly to import, so the deal was made for him to manufacture.

Marty's Seagull experience is somewhat evident as the current Lancer has split crossbars very similar to Seahawks and Meter ships. Also, the clever hiding place of the deflexor rods (in a sewn-in pouch on the top of the keel near the nose) is a Seagull adaptation. But this is no drawback, as stated, the glider is smooth. Changes will be made for 1980, though, as a French-style super quick set up is planned.

Appearances are deceiving, but the glider does look to be to be a miniature Moyes. The two sizes





existing (I flew both) are 175 and 190 square feet. After a summer of large gliders, I felt more at home on the 190, but both sizes produce a stunning sink rate. And the feeling in the air is decidedly Moyes-like, as you feel like you're being pulled up by the kingpost. Lest it be misunderstood, my comparison of this quality of the Lancer to the Maxi is very favorable. It is hard to believe "small" gliders, like these, can feel so dynamic in sink rate. In two soaring flights in the Lancer, I had little trouble remaining on top of the pack or right up there, at least during the first thirty minutes, when I am always freshest and most sink-competitive.

Handling is quite distinctive, however, not only from Moyes, but from most other gliders. After my first flight, I wasn't sure I liked the handling. It seemed rather

sudden in roll response, following a lag. And while slow, it rolled out harder than it rolled in. But, I landed, checked observations with Alameda and went back up for another hour.

I should explain here that I had an unfortunate accident on that first flight. Having forgotten part of my instrument bracket, I did a jury-rig job, a poor one it turned out. From 500 feet over the ridge I watched my vario and aircraft altimeter spiral down to a noisy crash. The incident upset my whole flight.

By the second hour, with Alameda's vario and bracket, I settled into handling the Lancer, to find it very gracious. The first time I had been flying the 190 around like my Omega 220. Few gliders will operate at Omega speeds, the Lancer is no exception. By flying at more customary speeds

I found the Lancer light, quick, simple, and most cooperative to my turning notions. The result is, I believe the Lancer can be optimized after only two to five hours airtime, which is very fast.

The glider is easy to ground handle, by virtue of its smaller size, reasonable weight, and good balance. In the air, these same characteristics contribute to superb handling, and the Lancer has a very broad speed range. The sum of these attributes combine with the sum of its price tag to make a great all-around glider for an advanced beginner. The small Lancer retails for \$1,175.00, the large for \$1,195.00. These days, that's downright cheap. Definitely do yourself a favor and check one out.

P.S. The glider is fully HGMA certified, and comes with a handsome owners manual.

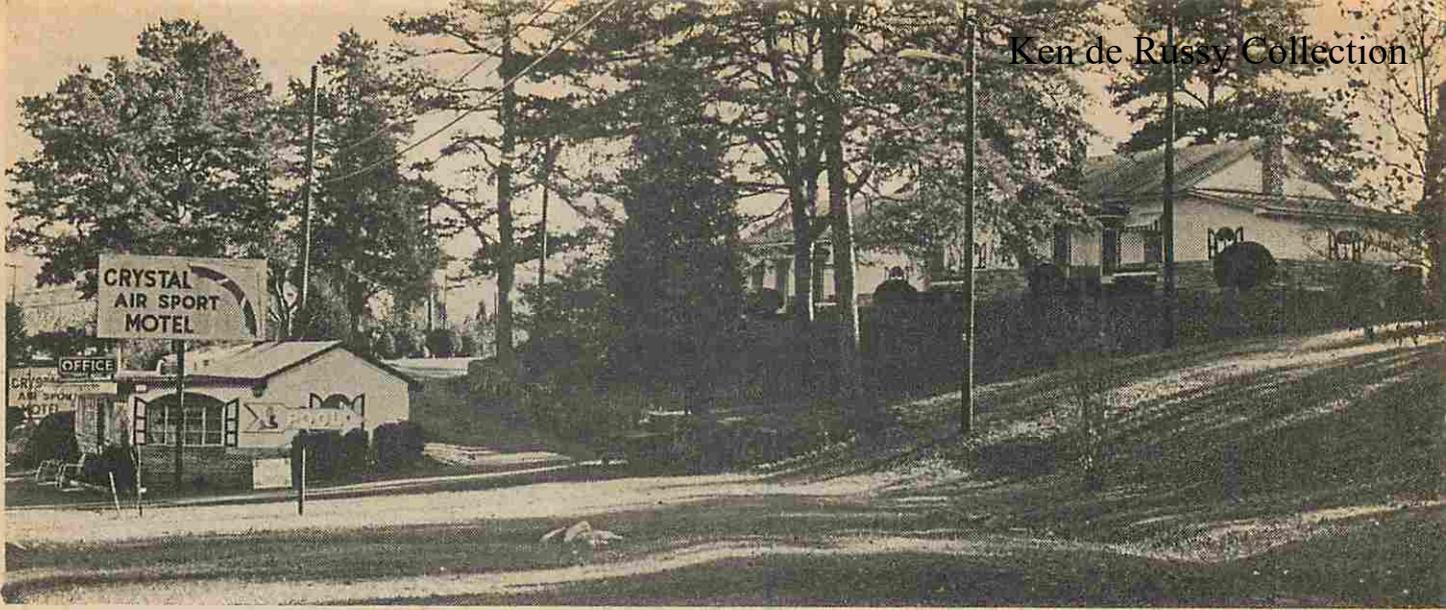
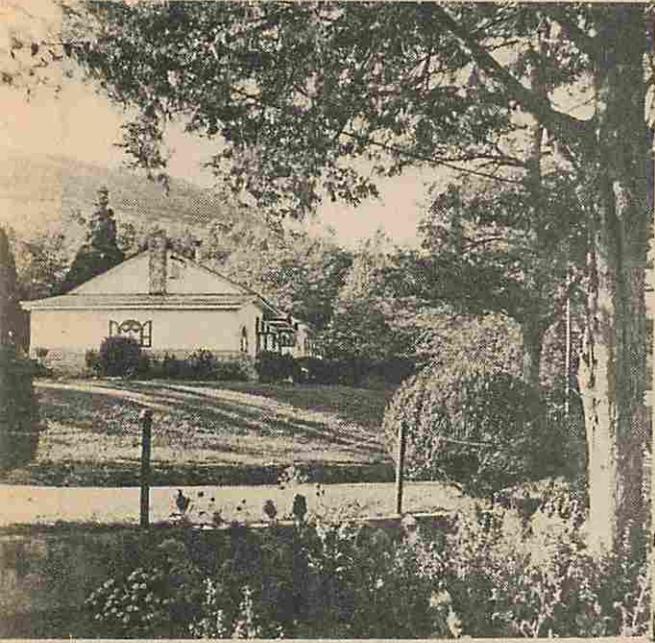


Photo by Jim Henderson



Crystal Air Sport Motel is the first and longest established hang gliding resort-motel anywhere, and is proud to announce the creation of the **CRYSTAL AWARD FOR FLYING EXCELLENCE**.

The **CRYSTAL AWARD** will be presented to the pilot who flies the **furthest distance** from any regulated Tennessee flying site.

The rules are simple. To be eligible, just join the Tennessee Tree Topper club and have two witnesses sign at your launch point. Have two **other** witnesses sign at your landing point. Required, will be getting an address, road crossing, or prominent landmark to accurately mark your landing. Call Crystal as soon as possible after landing for confirmation and to notify **your** pick-up crew. Mail or bring your completed form to Crystal and at year's end, all flights will be evaluated and the award presented.

By joining the Tennessee Tree Toppers you will become not only a club member but also a **part owner** in some of the finest, secured flying sites in this good-ol'-U.S. of A.

By staying, and flying, at Crystal you will join a world-wide group of flyers who return year after year, to fly the convenient and well maintained Tennessee sites.

The **CRYSTAL AWARD**, a cash prize, and a beautiful trophy will be presented to the pilot with the longest distance flight while the second and third longest distance flights will receive plaques commemorating the individual achievement.

Watch the **WHOLE AIR CATALOG** for more details and up to date flights as they occur.

Fly safe and we hope to see you soon,
Chuck and Shari Toth
Crystal Air Sport Motel
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Chattanooga, TN 37409

FLASH!

LANCER

When New Zealand's top designer-sailmaker develops a third-generation glider with supership PERFORMANCE, easy HANDLING, and proven STRENGTH and SAFETY, that's good news.

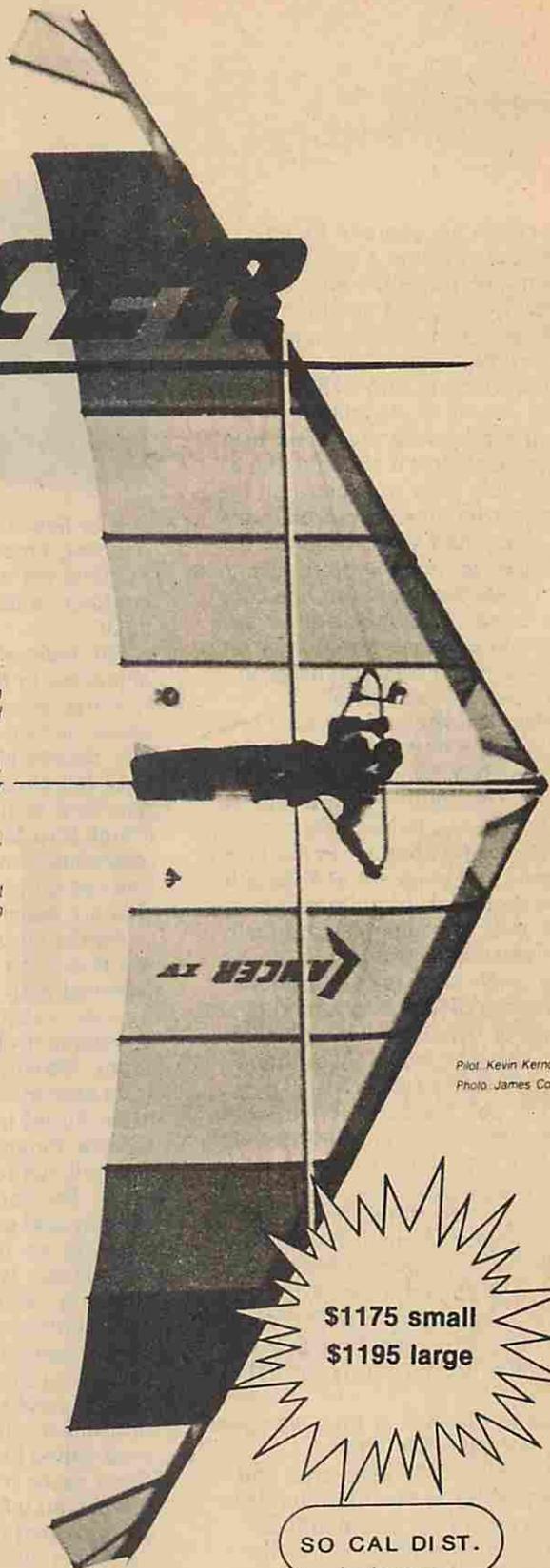
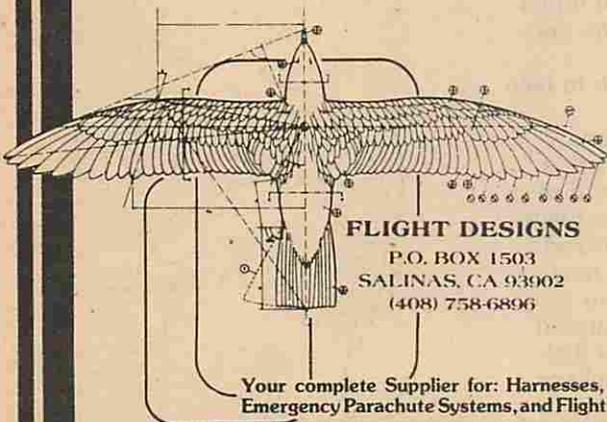
When the new glider turns out to float as well as the monster wings with 80 sq. ft. **more** sail, yet fly as fast as 1978's most successful contest glider, with a **better** L/D, give it a headline.

And when the same wing is certified in several foreign countries as the safest, strongest glider they've ever tested, stop the presses!

But when you find out that the glider is selling at 1976 prices, with an honest 2-4 week delivery, well, you're getting the idea. It's time for a new Front Page...with the name **LANCER IV** at the top.

Check it out:

	LANCER IV S	LANCER IV L
Span	32' 6"	34'
Nose Angle	120°	120°
Aspect Ratio	6.9:1	6.9:1
Root Chord	9' 0"	9' 10"
Weight	46 lbs.	50 lbs.



Pilot: Kevin Kernohan
 Photo: James Country

\$1175 small
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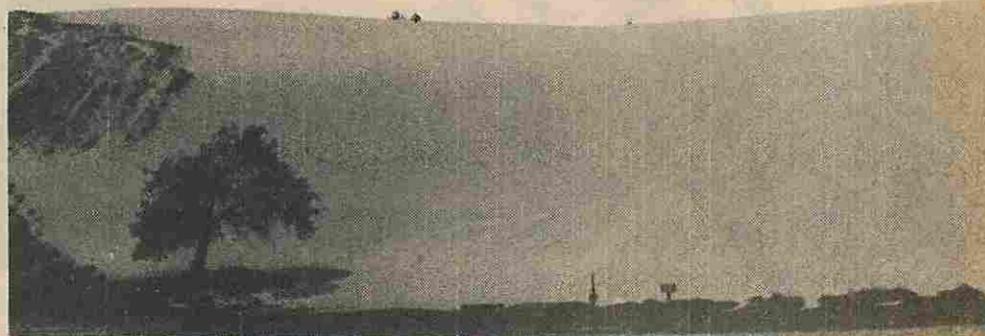
by Don Baker

In nearly six years of flying, almost every time I mention that I spent my first three and one-half years flying in Michigan I inevitably hear, "Where can you soar in Michigan, except for Warren Dunes which is only 175 feet high?" Since we were planning a week flying trip back to the dunes the first of October, it seemed like a reasonable time to explore all the changes that have occurred in our two and a half year absence. The changes we found were restrictions, as the National Park Service took over three of the major sites, and new land owners at one other site. But, the flying was still as good, if not better, than before.

Michigan sites are divided into two areas, southwestern and northwestern coastal. The major sites in the southwest are Warren Dunes and Mt. Baldy. Warren Dunes, in my opinion, is the primo learning and beginner soaring site anywhere. But, its potential is constantly changing. I continually hear stories from the U.S. Moyes crew (their shop is only one-half mile north of Warren Dunes) about flights of twenty miles, up and down the lake front, and altitude gains of nearly 1,000 feet. If you want to see masterful dune flying, I recommend you stop by to watch and talk with these folks.

Further south is Mt. Baldy, a 100 foot dune, two miles long. It is actually located about five miles inside Indiana, next to Michigan City. It is closed to weekend flying to help control over-crowding, but it is well worth the trip if the winds turn too northerly for flying Warren.

Due to the lack of time we spent all of our vacation in the northwestern Michigan area and were treated to five glorious days of soaring, in air as smooth as you'll find anywhere. All of the coastal sites are within 30 miles of each other. Soaring ridges run from the southwest to northeast. This makes for ideal flying as the arctic cold fronts move through, bringing the winds from the west around to the northeast.



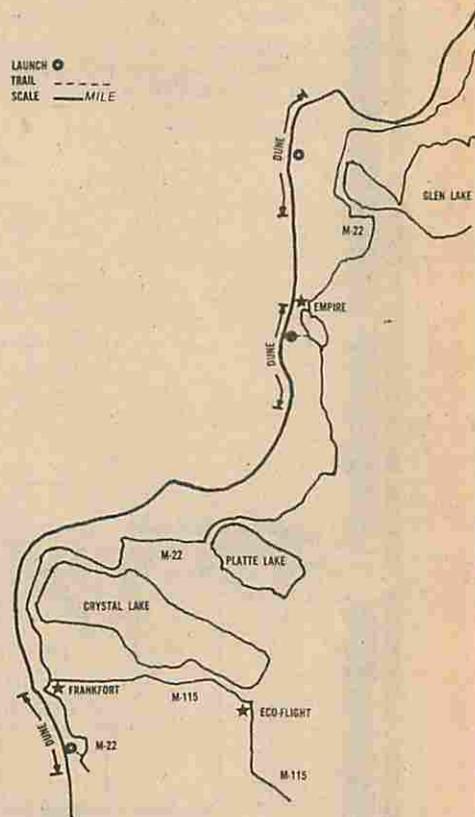
It is possible to soar Greenpoint one day, Empire the following, and Pyramid the next, for three continuous days from dawn to dusk.

The main obstacle is the cold and snow in the late winter months. It starts snowing quite heavily about mid-November and makes site access almost impossible until March, except for the heartiest of flyers. But, from March thru May, and between September and November you'll have to go to Hawaii to find winds that are equal.

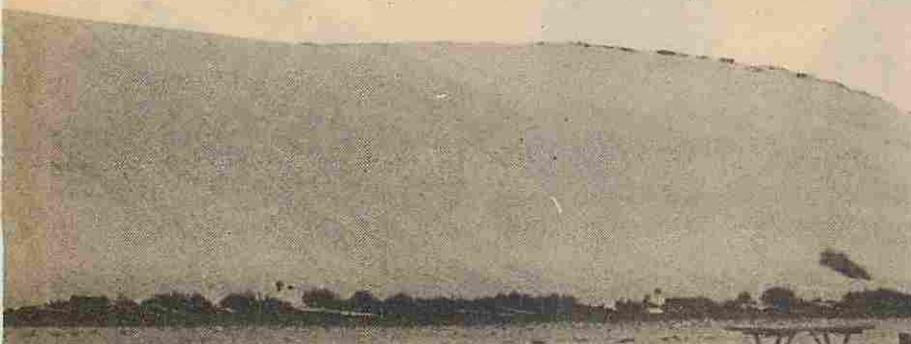
All the sites except Greenpoint are under the control of the National Park Service and each has its own restrictions as to the times and number of pilots that can use them. Usually all that is required is to stop at the Park Office on Main Street in Frankfort, MI., to show a minimum of a USHGA Hang III and to fill out a release form. The people are extremely friendly and eager to help. Every morning we found pens and forms already out, waiting for us on the counters. This is a small inconvenience to go through to help keep these sites available.

If any problems or questions arise a good source to contact is Jim Nelson. Jim owns a very nice shop called Eco-Flight, in Benzonia, about seven miles from Frankfort. Jim is well informed on any new changes that might exist. He is also the gentleman who organized a group of fifty flyers to pool their money and resources to purchase several acres of land on top of Greenpoint. This should help secure a permanent launch site for hassle free flying in the future. At this time the fees and

S-I-T



N DUNE



^E^S

SLEEPING BEAR DUNES (Hart Trail)



regulations that will exist are still undecided. But, the general plan is to make it as safe, fun, and inexpensive as possible.

All in all, I would have to say that Michigan has a tremendous amount to offer any pilot, from beginner to expert. It has some of the longest distance potentials in the country. If you get a chance, try it. I guarantee that even if the winds stop you will still see some beautiful coastal landscapes.

1. Direction — mountain, dune or cliff faces:
250° to 290°.
2. Rating required to fly:
USHGA Hang III or IV.
3. Any club(s) or organization(s) you must register with before flying:
National Park Service office in Frankfort or D. H. Day Campground in Glen Arbor. Only five permits per day issued for this site Monday thru Friday. On weekends, Sleeping Bear is closed.
4. Fees you must pay:
None.
5. What conditions for a) gliding, and b) soaring:
Acceptable in winds 0-12 mph 225°-315°. Soarable in winds over 10 mph 240°-300°.
6. Flying season: when best (consistently fly/soarable):
Flyable March thru November, soarable March thru May and September thru mid-November.
7. Transportation necessary to get to launch site:
Car. Road is closed in wet weather due to hazardous driving conditions.
8. Glider set-up area capacity:
Unlimited.
9. Landing field approximate distance from launch:
Land at launch or at Empire Beach, two miles south of ridge.

10. Launch elevation:
1,065 ft. A.S.L.
Vertical descent:
485 ft. vertical.

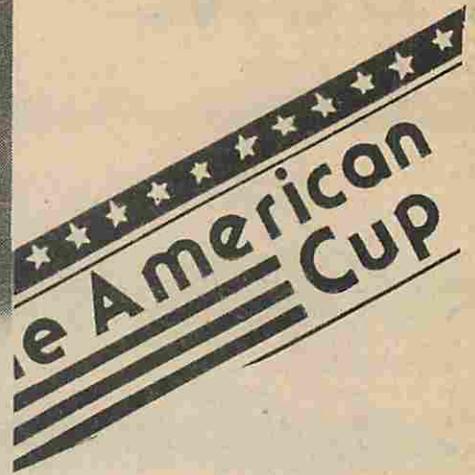
PYRAMID POINT

1. Direction — mountain, dune or cliff faces:
360°.
2. Rating required to fly:
USHGA Hang III or IV.
3. Any club(s) or organization(s) you must register with before flying:
National Park Service Office in Frankfort, or D. H. Day Campground in Glen Arbor. Only ten permits per day issued from this site.
4. Fees you must pay:
None.
5. What conditions for a) gliding, and b) soaring:
Acceptable in winds 0-10 mph 330° to 045°. Soarable in winds over 10 mph 350° to 045°.
6. Flying season: when best (consistently fly/soarable):
Flyable March thru November; Soarable March thru May, September thru mid-November.
7. Transportation necessary to get to launch site:
Drive most of the way, then hike last half mile.
8. Glider set-up area capacity:
Four gliders.
9. Landing field approximate distance from launch:
Land one-half mile behind ridge next to access road or on very narrow beach below.
10. Launch elevation:
980 ft. A.S.L.
Vertical descent:
400 ft. vertical.

GREENPOINT

1. Direction — mountain, dune or cliff faces:
270°.
2. Rating required to fly:
None.
3. Any club(s) or organization(s) you must register with before flying:

(Continued on Page 30)



**An Interview with
Dave Murchison,
American Cup
Meet Director**



PHOTO BY JIM HENDERSON

Dave (shown on right) with Tracy Knauss, Tournament chairman, and Stu McDonald, Chief Scoring Judge.



Graham Slater hoists the Francis Rogallo award that remains his as consecutive top scorer in both American Cup competitions.

Rather than give just another account on the American Cup as a meet, we decided to find out more on its history, and hang gliding competitions in general. For a detailed and excellent report on the contest, we encourage you to read the November 1979 *Glider Rider*.

We knew how the Cup originated

—from a five dollar bet between Tracy Knauss and Brian Milton, but who designed its format, and on what competition experience did they draw?

All our questions could be answered by talking to Dave Murchison, Meet Director, and

chief designer for both American Cups. Dave is also a partner at Air Space, Lookout Mtn., GA.

Before coming to the Chattanooga area to organize the first Cup in February 1978, Dave had worked for Hugh Morton of Grandfather Mountain, North Carolina.

He was there in 1974 as part of the Road and Maintenance Crew, when Harris flew his glider off Grandfather, opening it as a flying site. He helped John Harris as an organizer for the 1975 Nationals and again for the 1976 Masters, designed to become an annual event. It was for the Masters competition that he and John Harris designed the heat system that would be used in the American Cup. It was with this experience that Dave took the challenge to design an international competition that in two years has become one of the most important and well-publicized hang gliding events in the United States and the world:

With Starr Tays, editor of WAC, Dave talked about his role in the past two competitions and what to expect for the future in gliding competition.

How do you go about deciding the structure or format for hang gliding competition,

The 1976 Masters at Grandfather was a break-through in a lot of ways for hang gliding competition. Up until then, everything was very informal, more like a fun flyin. You took your turn launching, competing with the pilots who had launched an hour before you. There was not a lot of prior planning; people just sort of got together.

For the '76 Masters, John Harris and myself came up with the heat system idea with a lot of emphasis placed on accuracy in timing. This heat system grouped people together rather than flying against everyone all the time. This helped hang gliding a whole lot by getting it organized. You see, the fewer number of people you are competing against, the more equitable the competition, because of the condition changes. We were trying to get closer to the idea of pilots competing in similar air.

Ideally, for perfect fairness and the best competition, something we have just started to realize is that it should be a one-on-one contest. The only problem with this is how to give proper rotation and still allow a lot of people into the meet. Everybody should fly once against everyone else and then take the pilot who did best and declare him the winner. What was needed in 1976 at the Masters and still is needed today, to make winning a meet mean something . . . is more structure.



What has been the problem with structuring meets in the past?

The biggest problem was that competition sprang up on a national level before it did on a local level; from the outside in, rather than the inside out.

In the early 70's, not enough people were involved in the sport. The Nationals in 1974, for example, was actually an open meet with no organization on a local level sending its winners to compete on a national level. Then came a huge expansion of pilots. But competitions were still being handled in the same manner. The regional competitions were usually thrown together just in time to send a winner to the Nationals. National competitions are still going on without the essential grass roots competitions from which to build. We are going to have to change this if we want to compete successfully with Britain and their impeccable organization, for example, both on a local and national level.

With this show of impeccable organization as "team" pilots, the British have won the last two Cups. Is this due to the organization they employ or is it their individual pilot

superiority, such as Graham Slater, who has been top scoring pilot in both meets?

Britain has organized itself in a totally opposite way from the U.S. This is probably responsible for their complete organization as a team. They have many local competitions among themselves. The same pilots compete against each other in the same meets. They know who their top pilots are, so they know who to send. In this country, a real obscurity exists in knowing who our top pilots are because of the number of, and inconsistency in, regionalized meets from which to select winners.

As I understand it, the American Team is chosen by the USHGA's competition point system. Could you explain this method and answer if it is generally the same for all the countries involved?

We simply invite the countries; it is up to them to choose their own competing pilots. In this country, as of this year, the US team was supposed to be decided by the USHGA point system, which are points accumulated in USHGA sponsored meets or meets recognized by the F.A.I.

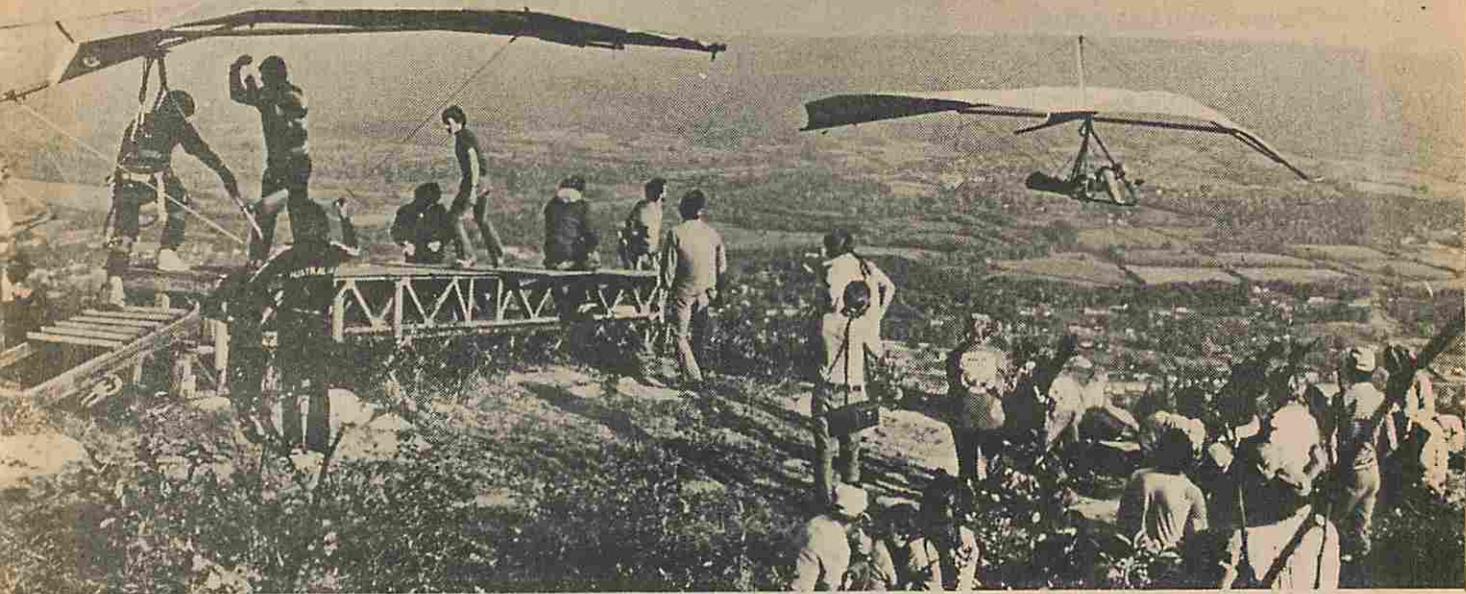


Photo by Jim Henderson

Launching in the Murchison-Harris heat system puts pilots into the same air for best competition.



Photo by Chris Voith

Brian Milton, Derek Evans, and some English team members rehash a day's practice at Crystal while other teams took the day off due to downwind conditions at Lookout.

The core of this year's team were the top scorers of last year's meet — Dennis Pagen, Rich Grigsby, and Sean Dever. I'm not sure of the exact basis for determining the rest of the team. I do know that the point system was a factor, but there were other factors also. This is one of our problems, but I believe it can be solved.

In Britain, if you wanted to be a Cup team member, you would have to have competed in many local level competitions, say five out of six. Then, they find their top twenty pilots by taking the consistent top scoring pilots. These fliers then compete against themselves to narrow it down to their top nine, who then comprise the British Cup team. Flier for Flier, they did better than we did, a fact you can't get away from; they make fewer mistakes. They are only proving that repetition is the key to competition, especially on a local level. Our local clubs are going to have to develop competition.

I know here at Air Space, this coming year we are going to hold more "fun" competitions, so the pilots can distinguish and test their skills, before going on to compete in the big money meets. If this happens everywhere, we might better tell who our hot pilots are,

and they might become more comfortable by understanding the whole idea of competition.

Will there be any major organizational changes in next year's Cup, for example, more alternate site usage?

First, the most important thing that I have learned from my years of being involved in hang gliding competition, and especially since working on the Cup these past two years, is that generally our competitions are not simple enough. They have to become more simple. Rather than making it simple with simple flying tasks, like staying up longer, going further, or getting there first, we are complicating things by having ground reference maneuvers. The Cross Country Meet is the best in the country, I think, as far as a pure competition, and it is simple in idea.

Secondly, what is important is to get the pilots off initially into the same air; then all that separates them is individual pilot skill. We came closer to this concept with the heat system, but competition won't get truly pure until it is a "one design" competition, that is, a one-on-one. All gliders would be the same; then it would be left entirely to the pilot who optimizes conditions. Realistically speaking, this probably won't happen for another ten years, at least, because of the size of our hang gliding population.

For the 1980 Cup, we will implement the one-on-one concept, and have an alternate site arranged ahead of time. Hypothetically, this should allow the six competing countries or six teams of thirty-six people (total) to get fifteen to twenty rounds of flying in over a nine day period. This may also increase spectator participation if we pit pilot against pilot, which would put an exciting touch to the pilots finishing the "race," conventionally speaking.

What countries will be in the Cup next year?

Since we had to sacrifice competition tasks (due to undesirable winds) by going to the Whitwell site this year, we invited everyone that was here to return next year. France was also invited because of their showing at the World Meet in Grenoble, France this year. The sixth country is, at this time, undecided.

Thank you, Dave.

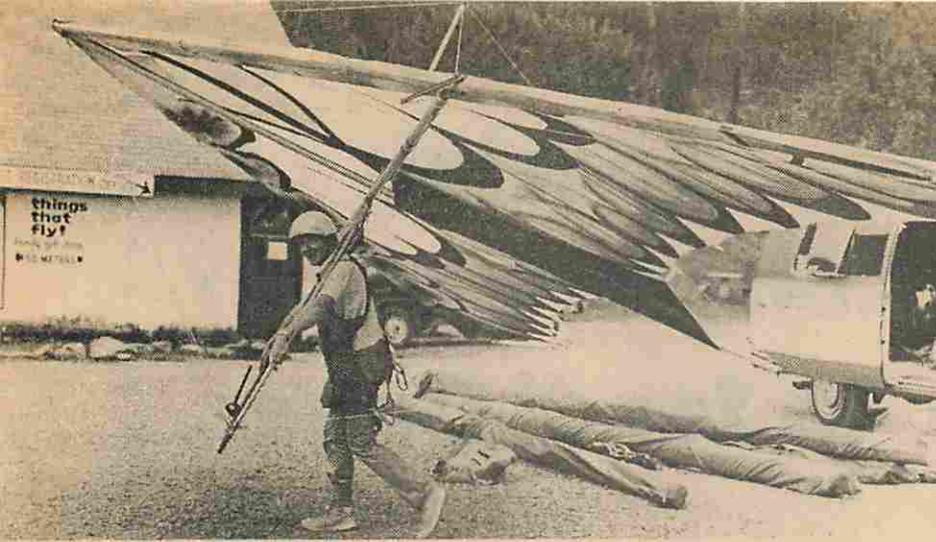
Special Congratulations to Sondi Baker



Photo by Jim Henderson

Sondi Baker was designated "Most Valuable Person" at the Second Annual American Cup. The award was designed and presented by Don Miller, Canadian Team Coach. Miller will be Meet Director for the Third American Cup.

Sondi, a local soaring pilot, is very comfortable with competitions. Aside from her job at this year's Cup as set-up director, she also served in the same capacity in Chattanooga's 1979 Regionals.



Hit or Myth?

by
George Worthington

Quite often, when a new glider hits the hang gliding scene, a great many pilots go around singing its praise with glassy-eyed enthusiasm. They've never flown it, but they're convinced that his new glider is better than all the rest.

The Atlas is an example of this. Wherever I go, when there is an Atlas present, pilots have said that if they only had an Atlas "things would be very different."

If you will recall, there is an odd thing about human nature. The "other guy" always does so much better than we do because he has a piece of equipment which is much superior to our own." Haven't you ever noticed that? No one can ever quite accept the fact that if another person's performance is superior to their own it is because the other person is more skilled, or more determined, or better trained, or has more experience, or all of these.

This is not to say that there are no differences among rogallo gliders. There *are* differences, but in terms of performance (sink rate, penetration, speed range, etc.) the majority of new rogallo hang gliders are so very similar that these differences are of little or no consequence in the winning or losing of major competitions. Pilot skill, and ability are, by far, the major factors in winning. If a pilot is a winner, he can win in any of ten different models, while all of his opponents are flying the Atlas.

Remember, I'm only talking about performance. I'm not talking about glider strength, handling characteristics, aerodynamic safety,

etc. These *are* laudible reasons for choosing a particular glider.

The combination of human nature and modern sociological orientation, urges the average person to believe that NEW is better. People believe that "New" always has to be better than OLD. The wise person waits for confirmation in the area of competition.

When we talk about hang gliders other than the rogallos, the story is different. For example, the Fledge II (a fixed wing type with rudders) is in fact so much superior in its combination of L/D, sink rate, penetration, and speed range, that meets can be won because of equipment superiority in spite of the fact that the Fledge *pilot* may not be quite as skilled as rival rogallo pilots. The Fledge superiority can be the difference in winning or losing. Between rogallos, this is very unlikely to happen.

The recent American Cup supports this contention. The scores achieved in the Cup are a very good indication of what I've been saying. Two Atlas hang gliders were flown in the Cup. Both were flown by pilots who are extremely well trained, talented, and experienced. Both pilots, I feel, would have done equally as well in any of the 10 other models, if they had time to get completely used to flying them. Both pilots were among the leading scorers in last year's Cup, when they were not flying the Atlas.

Here are the scores of each model in the American Cup. Judge for yourself.

Points Scored	Glider Model
55	Super Scorpion (198 sq. ft., with 145 pound pilot)
54	Cyclone, 10 Meter, Atlas, Floater, Lazor, Lazor, Moyes Maxi
53	Gannet, MJ-6, Lazor, Atlas
52	Moyes Maxi, 11 Meter, 10 Meter
51	Floater
50	Maxi, Maxi, Maxi, Predator, Cyclone, 10 Meter
49	Maxi, Maxi
48	Maxi, Maxi
47	Super Scorpion, Phoenix 8
46	Condor, Lancer
45	Maxi, Sirocco III

So, I would suggest that we stop falling into the same old trap of believing that just because a glider is *new*, and *looks* racy, it must be vastly superior to all the others.

The fact is that for the last two or three years, glider performance advances, which have been achieved, are still only a fraction of the differences that exist in pilot skill.

In the "crucible" of competition, there is no one glider which has shown itself statistically to be greatly superior to all others. On the other hand, there are pilots who, because of their great skill, can always be counted on to finish very high in every competition they enter, regardless of which glider they happen to be flying. i.e. Graham Slater was the high scorer of the 1978 Cup and was again high scorer out of the 32 pilots in the 1979 Cup.

This situation *might* change in the next few years, but I do not believe it will. When a rogallo, which is statistically a major winner in competition, is finally produced, we will know it. The Fledgling II (although not a rogallo) is an example. At the U.S. Nationals in 1979, it "ran away" with the meet statistically. Four Fledglings captured the first four places, with 85 pilots competing. And only six Fledglings entered. When and if a rogallo model can achieve such statistics, we'll know it. It will be right there to see. Until then, please don't "ooh and ahh" at every *new* glider that comes to fly your particular local site. The chances are that you'll be "oohing and ahhing" four months later at some other pretty new glider.

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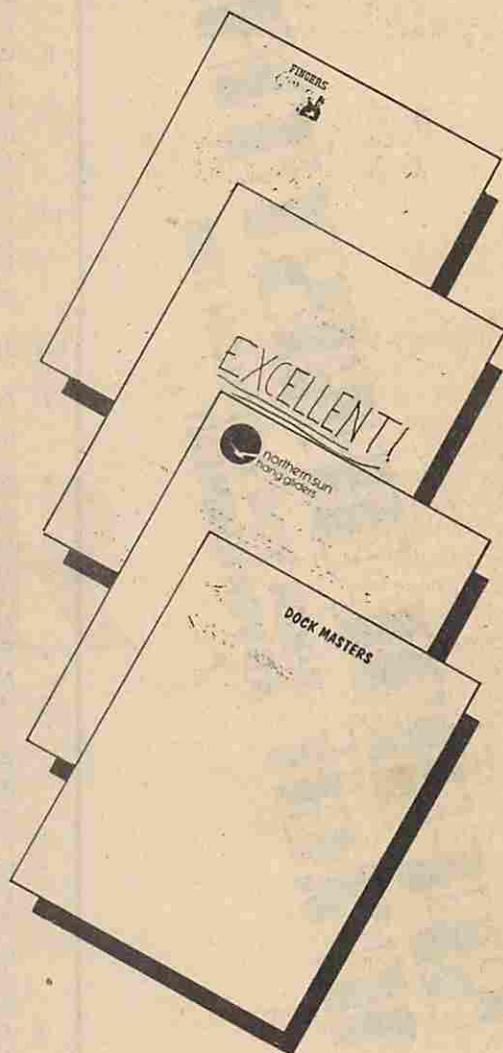
★ ★ ★ LATE NEWS FLASH ★ ★ ★

Dick Clauson set an official altitude gain record for powered hang gliders of 11,700 ft. He did it at the Mitchell Wing Meet in Porterville, California and he did it with a CGS Powerhawk unit, of course.



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- 4. Fees you must pay:
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- 5. What conditions for a) gliding, and b) soaring:
Acceptable in winds 0-10 mph 180° to 360°. Soarable in winds over 10 mph 225° to 300°.
- 6. Flying season: when best (consistently fly/soarable):
Flying March thru November. Soarable March thru May, September thru mid-November.
- 7. Transportation necessary to get to launch site:
Car.
- 8. Glider set-up area capacity:
Unlimited.
- 9. Landing field approximate distance from launch:
Land on top or on beach 1 1/2 miles down ridge.
- 10. Launch elevation:
940 ft. A.S.L.
Vertical descent:
360 ft.

MT BALDY

- 1. Direction — mountain, dune or cliff faces:
360°.
- 2. Rating required to fly:
None.
- 3. Any club(s) or organization(s) you must register with before flying:
None.
- 4. Fees you must pay:
None.
- 5. What conditions for a) gliding, and b) soaring:
Acceptable in winds 0-12 mph. 345° to 010°. Soarable in winds over 15 mph. 345° to 010°.
- 6. Flying season: when best (consistently fly/soarable):
Year around.
- 7. Transportation necessary to get to launch site:
One-fourth mile walk up back-side of dune.
- 8. Glider set-up area capacity:
Unlimited.
- 9. Landing field approximate distance from launch:
Land at launch.
- 10. Launch elevation:
680 ft. A.S.L.
Vertical descent:
100 ft.

WARREN DUNES

- 1. Direction — mountain, dune or cliff faces:
100°
225° to 315°.
- 2. Rating required to fly:
None.

- 3. Any club(s) or organization(s) you must register with before flying:
None.
- 4. Fees you must pay:
\$6.00 yearly park pass.
- 5. What conditions for a) gliding and b) soaring:
Acceptable in winds 0-10 mph. 225° to 340°. Soarable in winds over 10 mph. 270° to 325°.
- 6. Flying season: when best (consistently fly/soarable):
All year.
- 7. Transportation necessary to get to launch site:
Walk.
- 8. Glider set-up area capacity:
Unlimited set-up. Set-up at bottom and walk up.
- 9. Landing field approximate distance from launch:
Landing at base of dune. Large open parking lots.
- 10. Launch elevation:
650 ft. A.S.L.
Vertical descent:
170 ft. vertical.

EMPIRE BLUFFS

- 1. Direction — mountain, dune or cliff faces:
270° to 320°.
- 2. Rating required to fly:
USHGA Hang III or IV.
- 3. Any club(s) or organization(s) you must register with before flying:
National Park Service office in Frankfort or D. H. Day Campground in Glen Arbor. Only 10 permits per day issued.
- 4. Fees you must pay:
None.
- 5. What conditions or a) gliding, and b) soaring:
Acceptable in winds 0-12 mph. 250° to 330°. Soarable in winds over 10 mph. 260° to 325°.
- 6. Flying season: when best (consistently fly/soarable):
Flyable March thru November. Soarable March thru May, September thru mid-November.
- 7. Transportation necessary to get to launch site:
Two mile paved road. Three-quarter mile walk.
- 8. Glider set-up area capacity:
Unlimited.
- 9. Landing field approximate distance from launch:
Land at launch or one mile to beach landing.
- 10. Launch elevation:
955 ft. A.S.L.
Vertical descent:
375 ft.

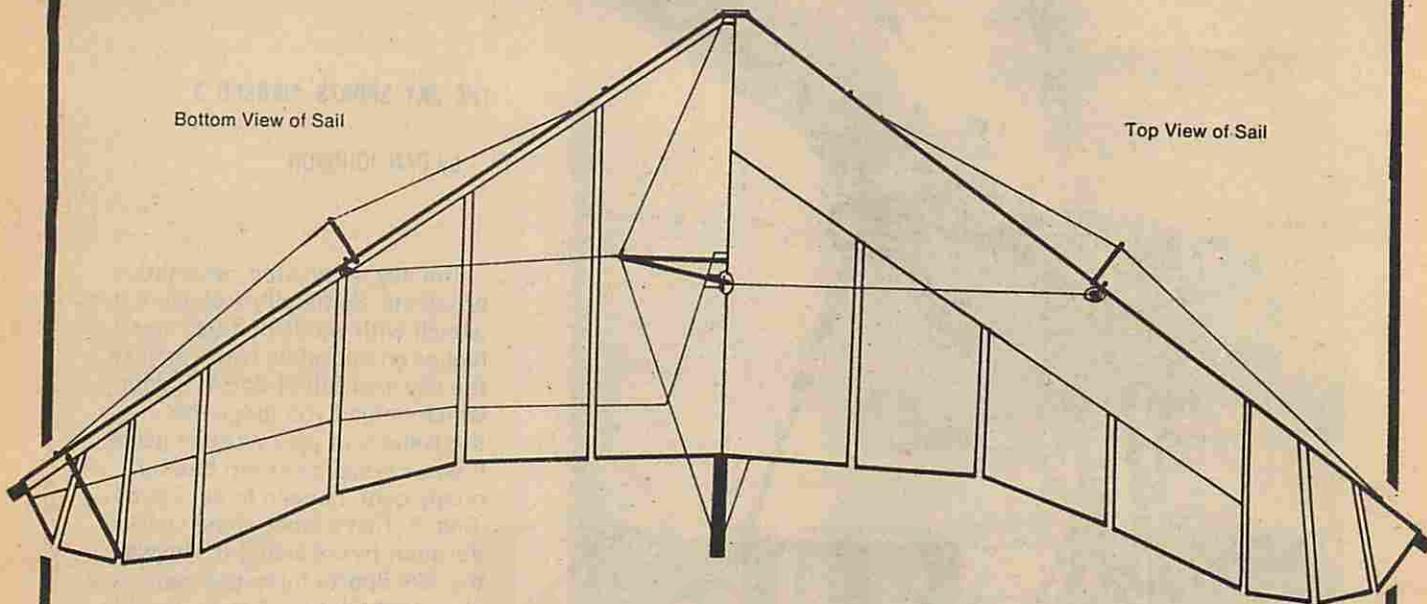


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Bottom View of Sail

Top View of Sail



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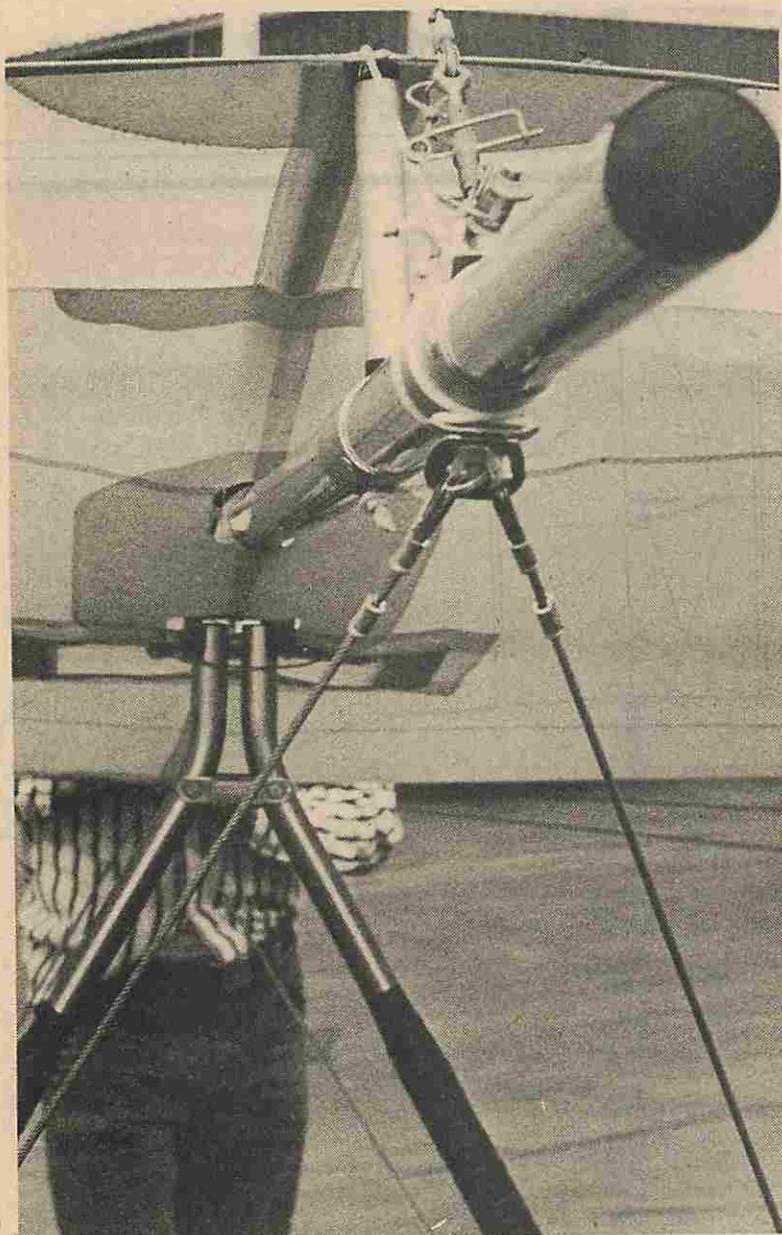
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by DAN JOHNSON



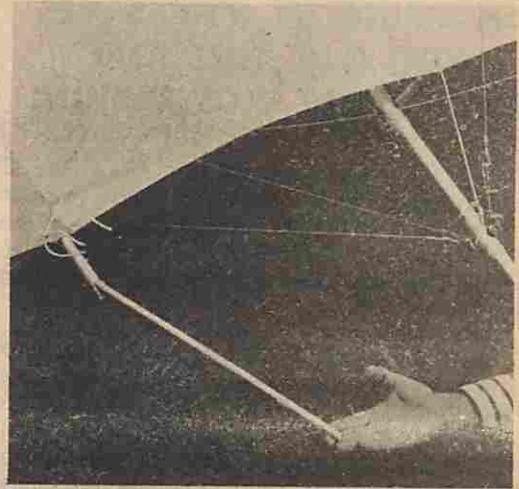
The day suggested penetration problems. Some pilots chose not to launch with winds of 18-25, gusting higher on occasion. Nevertheless, the sky was full of dots . . . dots which helped you judge the thousand foot plus altitude gains. It was crystal clear air, blustry, crispy cool. I began to set up my 'Roc' 3. That's what some visiting Vermont flyers called it. Anyway, the Sky Sports folks had sent me a shop 1980 Sirocco 3 to fly for this evaluation.

A smattering of subtle changes sets the Three quite apart from the Two. Most noticeable is the keel. It shows an entire aft section dropping out of the sail right behind the heart bolt juncture. A sleeve with a downward bend produces a keel drooped about 25°. Where it disappears inside the 80% double surface it has no attachment to the sail, thus it is now totally free of the sail. Free to shift much more than before. A six inch post supports the root reflex, not unlike the old Ten Meter or new Raven posts.

Next is the articulated batten. The center batten, a large diameter, extra heavily cambered aluminum rib, has a hinge about a foot in-board from the trailing edge. This further facilitates the sail shift. The reflex bridle lines attach to the batten end, as is common, but representing a change from the way the 'Roc' 1 & 2's were.

Out at the tip you will see the washout tube not supported by the kingpost type bracket of before. On the Sirocco 2, the tip could be bent by top sail loads on windy days while setting up.





This problem is eliminated by a cable traveling from the top of the leadspar to midway out the tip. It is strong. Other changes are more subtle. Some slackness is visible in the rigging to afford more cooperative handling. The tips look enlarged, and in fact a few squares were added to the sail.

Other nice Sirocco features, not brand new, include two pilot oriented qualities. One is the surprising light weight of the Sirocco. I flew the larger of the two sizes yet it weighs less than last issue's Seahawk 200. The second is the sliding crossbar, quick setup configuration. Two pins (control bar and slider), battens, deflexors, and you're off. Right in there with what we've seen recently in fine European hardware.

"Well, does it turn?" ask flyers whose experience dates back to the 'Roc' 1. My answer is in two parts. The One was hard to turn, no doubt about it. The Two, with pulley-like cable shift did much better. I've soared both sizes of the Two and found it rolled acceptably, given some experience on the machine, and your willingness to turn with good speed. But it was terribly pitch "boss-y," seeking its own angle of attack. The Three will not only permit rolling at much slower speeds, it is more pitch receptive. In fact, at higher speeds, the pitch lightens considerably, still positive, but requiring little pressure.

As I got ready on the Hensen's Gap launch ramp, coordinating my wire crew, it became obvious that this relatively big double surface glider wanted to fly anxiously. We grunted around till all was neutral. At one point in the struggle I though all four of us might be carried aloft by the powerful lift feeling. When the time was right, it went very smoothly.



I gained altitude very rapidly, easily out-climbing even a Maxi which launched directly after me. In this fast moving air the Sirocco 3 was so at home that I later laughed aloud about penetration problems. I sliced thru so convincingly that it seemed the wind could accelerate 20 mph more and still I'd have no problem. When pulled in, the sink rate remained very tolerable and I zoomed by three or four gliders at once when passing. The whole thing was a treat after a summer enjoying floater gliders. Another beautiful way to hang soar.

The Three slows down well, too, and thermals were more workable than ever in the Two. At slow speeds the glider will roll, but requires rather heavy control.

A stall brought by slow outwards pressure produces only a mushed flight. Rapid pressure gets a clean break but smooth acceleration helps recover with remarkably little altitude loss. In all, I felt very satisfied by my hour and five minutes. In five to eight hours, I feel I could be very effective with the Three; I consider that a quick transition.

Interestingly, a new flyer saw my soaring flight. He subsequently flew the Three twice from our 73 foot training ramp at Crystal. On one he had to do mild S turns to keep within the diagonal crossing of a six acre field. He weighs nearly 200 pounds ready to fly, and was impressed with its lifty airfoil. One follow-up mountain flight later, a total of three, and he bought it. I believe he made a good decision.

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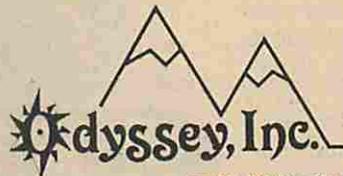
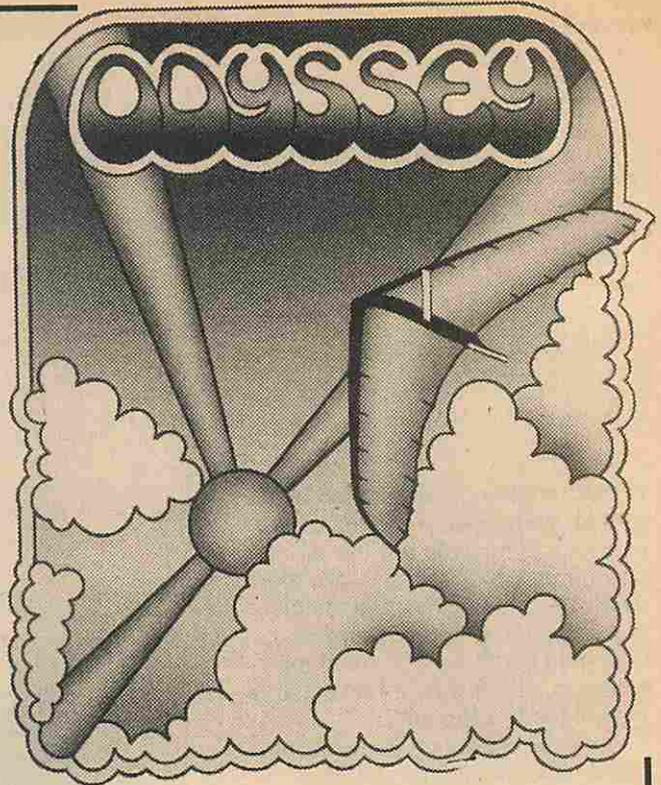
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	1	2-19	20-29	30 & OVER
3/4" x .049 x 12' 6061 T6 anodised.....	1.27ft.	.94ft.	.92ft.	.88ft.
1" x .035 x 12' 6061 T6.....	.83ft.	.61ft.	.59ft.	.55ft.
1" x .058 x 12' 6061 T6 anodised.....	1.49ft.	1.05ft.	1.03ft.	.99ft.
1" x .083 x 12' 6061 T6 anodised.....	1.87ft.	1.16ft.	1.14ft.	1.10ft.
1 1/8" x .058 x 12' 6061 T6 anodised.....	1.76ft.	1.10ft.	1.08ft.	1.06ft.
1 1/2" x .049 x 12' 6061 T6 anodised.....	1.98ft.	1.09ft.	1.07ft.	1.05ft.
1 3/4" x .049 x 12', 18.5', 20' 6063 T832 anodised... ..	2.08ft.	1.19ft.	1.15ft.	1.11ft.
1 7/8" x .058 x 12' 6061 T6.....	2.48ft.	1.32ft.	1.30ft.	1.27ft.
2" x .049 x 12' 6061 T6.....	2.53ft.	1.38ft.	1.35ft.	1.32ft.
2" x .058 x 12' 6061 T6 anodised.....	2.86ft.	1.71ft.	1.67ft.	1.65ft.

THIMBLES - STAINLESS STEEL

RETAIL

25-
49

50-
499

500-
999

AN100

AN100-3 (1/16" cable).....15ea. .10ea.
AN100-4 (3/32" or 1/8" cable).....15ea. .10ea.

Thimble
Wire Cable



NICO SLEEVES

1/16".....10ea. .07ea.
3/32".....12ea. .07ea.

.06ea. .05ea.
.065ea. .055ea.

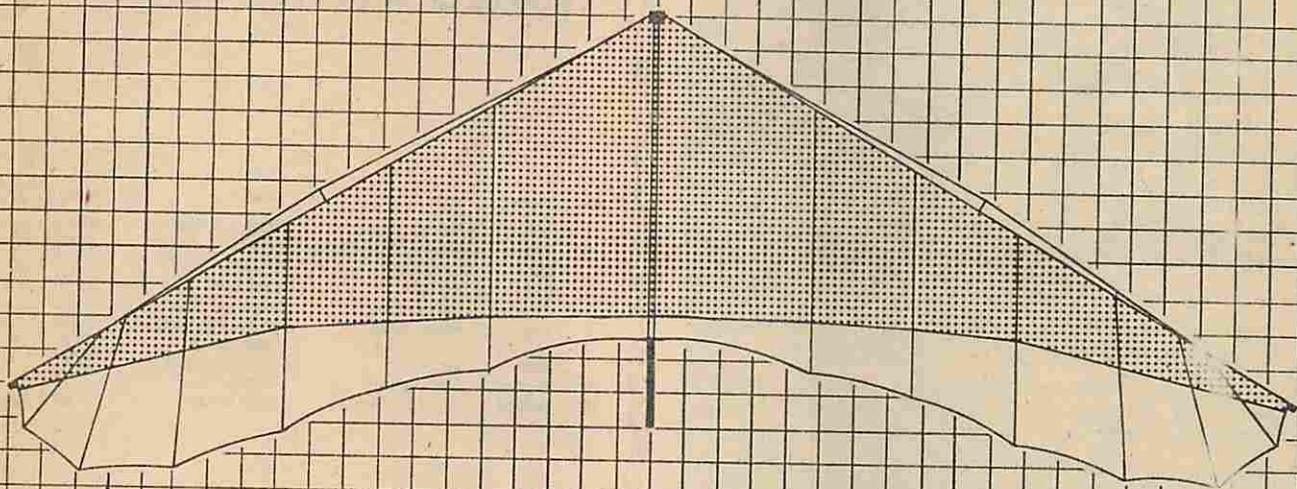


Any order that exceeds ten lengths may be combined for quantity discounts: No boxing charge for orders shipped via truck; however, Air-Freight shipments add \$10.00 for each 12' shipping container.

PH: (303) 632-4959

Reader Inquiry Card No. 14

FLY A 1980 GLIDER TODAY!!



THE 1980 SIROCCO III IS NOW HGMA CERTIFIED

WHY WAIT TILL NEXT YEAR TO GET THE HOTTEST GLIDER BUILT? TRY A **SIROCCO III** AND SEE WHY PILOTS FROM COAST TO COAST ARE RATING THIS GLIDER NUMBER ONE IN:

HANDLING

Due to the revolutionary dropped keel, freedom tips, and differential deflexors, the **Sirocco III** now handles like a hot little sport glider. Wait until you hook a thermal, or set up on a spot in this quick darting wing — you'll love it.

PERFORMANCE

No other glider can match the **Sirocco's** all around performance. Whether you want top end or slow speed, the **Sirocco III** does it all. The deep camber and new tip design yield a superb sink rate, yet the glider zips along to reach thermals while most other designs lag behind.

STABILITY

New cable defined tips plus our exclusive articulated battens provide damping and strong positive pitching for exceptional static and dynamic stability. Safety is our highest priority.

STRENGTH

We believe we have the strongest airframe in the industry. The **Sirocco III** passed the HGMA load testing easily. With a **Sirocco III**, you can stop worrying about the integrity of your glider and enjoy free flying.

CONVENIENCE

Quick set up, thanks to the breakdown control bar and sliding crossbar, which allows you to be or take off while your friends are still trying to find their wing nuts. You'll like the perfect balance on take off — no more tail heavy launches as with most other gliders.

SHOULDN'T YOU BE FLYING NEXT YEAR'S STATE-OF-THE-ART GLIDER? GET AHEAD WITH A **SIROCCO III!**

SPECIFICATIONS

Area	168	189
Nose Angle	120°	120°
Sail Billow	0°	0°
Stall Speed	18mph	18mph
Aspect Ratio	6.9	6.7
Span	34 ft.	35.5 ft.
Weight	61 lbs.	61 lbs.
Root Chord	8.5 ft.	9 ft.
Pilot Weight (from)	125 lbs.	155 lbs.
(to)	175 lbs.	220 lbs.
Maximum Glide Angle	9 to 1	9 to 1
Breakdown	10.5 ft.	11.5 ft.
Price	\$1470.	\$1490.

Sky Sports
Incorporated
P.O. Box 507
Ettington, Conn. 06029
U.S.A.

FLY ONE.

Here are 1/2 dozen good reasons:

1. Red
2. Blue
3. Grey
4. Brown
5. Navy
6. Black



They're hand-crafted in 100% nylon (durable, washable, water-resistant) with velcro closures. And, they're so trim and lightweight that they contour to your body!

Wallets — \$7.95
 Key Cases — \$6.95
 Checkbook Covers — \$7.95
 Postage & handling included.

duncan
 Box 33441-F, Seattle, WA 98133
 Dealer inquiries welcome.

Meet Results

THE FIRST ANNUAL GUATEMALA WORLD INVITATIONAL

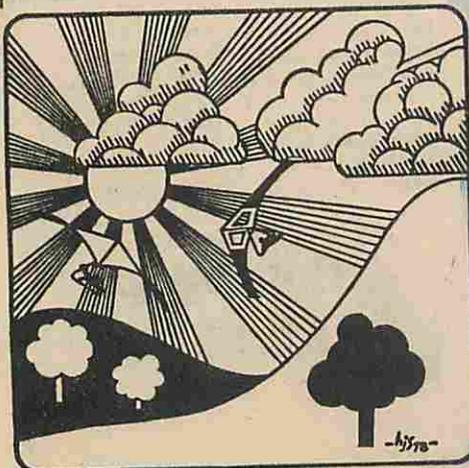
Rank	Country	Pilot	Glider	Award
1	USA	Malcom Jones	Seagull 11 Meter	\$1200
2	Canada	Andrew Barber-Starkey	Seagull 10 Meter	\$1000
3	USA	Larry Tudor	UP Mosquito 163	\$ 800
4	USA	Jim Cobb	Electra Spirit 200	\$ 600
5	Canada	Larry Croome	Seagull 11 Meter	\$ 400
6	England	Robert Bailey	La Mouette Atlas 166	\$ 300
7	England	Jeremy Fack	Super Scorpion	\$ 250
8	USA	Rob Kells	Wills Raven 209	\$ 200
9	England	Bob England	Gannett 155	\$ 150
10	England	David Garrison	Super Scorpion	\$ 100

"CRYSTAL FLIGHT" NOW IN FULL COLOR!

"Crystal Flight" is a limited edition print by hang gliding's foremost designer/illustrator Hank Syjut. It is produced entirely by hand. No photographic processes or automatic printing presses are used. Each print is certifiably "original."

Hank pulls each one from a hand-carved matrix and hand tints each one with beautiful artist's pigments, **not** offset printing inks, which fade with age. He prints them only on 100% cotton rag paper, which, if properly mounted and framed, will **never** yellow. (Not in your lifetime, anyway!) The edition is still limited to 250 and **no more** will be printed. The block will be cancelled by

defacing and a cancellation proof pulled! The first 60 prints were printed black and white only in greeting card format. A few of these B & W prints are still available for \$14.50, plus 50 cents postage and handling. The remaining 190 prints are in full, vibrant color on a larger paper size for easier framing. The cost is only a fraction of the usual price paid for a Hank Syjut original . . . \$29.00 (plus \$1 postage and handling) with documentation sheet. Prices subject to change without notice. Call for quotes on artist's proofs or framing!

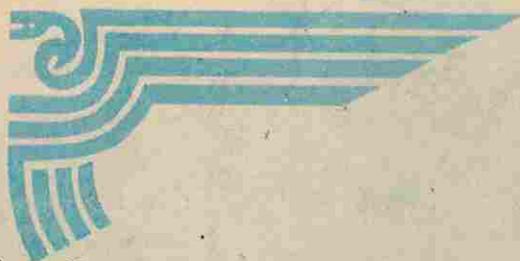


Hank Syjut • Rt. 4, Cummings Rd. • Chattanooga, TN 37419
 (615) 821-5183

Reader Inquiry Card No. 17

© hank syjut 1979

WAC PREVIEW 1980



The *Whole Air Catalog* now ends its second calendar year of publishing. We are happy to announce that, following questions to all parts of the US and Canada, you have told us you really enjoy WAC. This makes us very happy.

We could not have done as well without our Reader Inquiry Cards. As we have averaged 5-11% return per issue, we have heard consistently from large groups of you. You have told us a great deal about what you like, don't like, what you buy, read, where you fly, how you fly, when, on what, with whom and so forth. After surveying these cards for two years, we feel we may know more about what you would like best from a magazine than anyone in hang gliding has ever known.

Supported by this knowledge, we are ready to map out our plans for 1980. We have some nice changes, and since they are based on what you all have reported, we believe you will be satisfied with our new format.

This issue is a model for next year's increased size. We will publish at least 48 pages in each *Whole Air Catalog* for 1980. We have been able to secure more advertisers, and while they can no longer totally support WAC, a greater number of advertising friends permits us to enlarge the magazine. Our plans include other ambitious ideas, and by the end of the year we may well be sized with *Hang Gliding* and *Glider Rider*.

We will have more content in every issue of the 1980 WAC than we have ever presented. We will have Dual WAC Glider Reports in each issue; two American-made crafts per issue. But we will not confine ourselves to the best from the US.

For 1980 the "European Connection" by our new editorial contributor, Jean-Michel Bernasconi, will reach overseas for short, snappy reviews of the best machines from Europe.

And we will present more than just gliders, as our desire to be truly consumer oriented carries us to review all types of popular equipment — harnesses, helmets, parachutes, tow bars, variometers, and other instrumentation.

Of course, by heavy popular demand, we will continue our regional views of top flying sites. Here, we will need your help more than ever. We have gotten generous offers from many parts of the US, and we'll gladly accept more till we have covered every desirable place to fly.

In a two part program, we will delve into a serious, very necessary, and badly neglected topic area — accidents. We will provide Probable Cause accounts; short, concise, factual reports of accidents with the goal of helping to prevent similar incidents. This will be beneficial to the novice and expert alike. We will do our absolute best to provide honest and accurate reports in a positive manner, as has always been our hallmark.

The second part of this plan is previewed in this issue. This time, substituting for the "Action Line," we present the first of a new column, "You Can Learn About Flying From This." In this story, authored by Glen Russell (with some editing), you will see a good example of this column. We encourage any of you with similar experiences to send them to us for examination. Don't go to great trouble, just handwrite your thoughts coherently and we'll do the rest.

Starting with our January February issue we will begin an entire new section on towing. Requests have been heavy for more information on this topic. Ed Quirk, editor of Florida's *Sunflight* publication, will be editorial coordinator on this new section, drawing on talented people near him who have years of experience in tow launches.

For 1980, we will offer more color, a Western writing representative, more articles on technique, and greater yet reader participation. This last component will come from a change in our Reader Card.

Beginning with next issue, we will have more survey questionnaires. These questions will change every issue. You will be given opportunities to "vote" on various issues facing hang gliding. And we will maintain or enlarge the write-in portion of the Reader Card. We have discovered that an amazing 50-75% of you do indeed write in some comment. But, leaving the Cards will be our "Circle Number . . . for ad info" section. The size of our young industry and other important commitments of its advertisers makes this plan work less effectively than in other larger, more established industries.

We are as excited about 1980 for the *Whole Air Catalog* as a new thermal pilot who has cored a big one for the first time. We will do our best to please you. We thank you for your input the last year, your in-flowing subscriptions, and as we wish you the best in another Holiday Season, our thoughts drift easily to plans for the 1980 *Whole Air Catalog* — Join us for a good year — Subscribe!

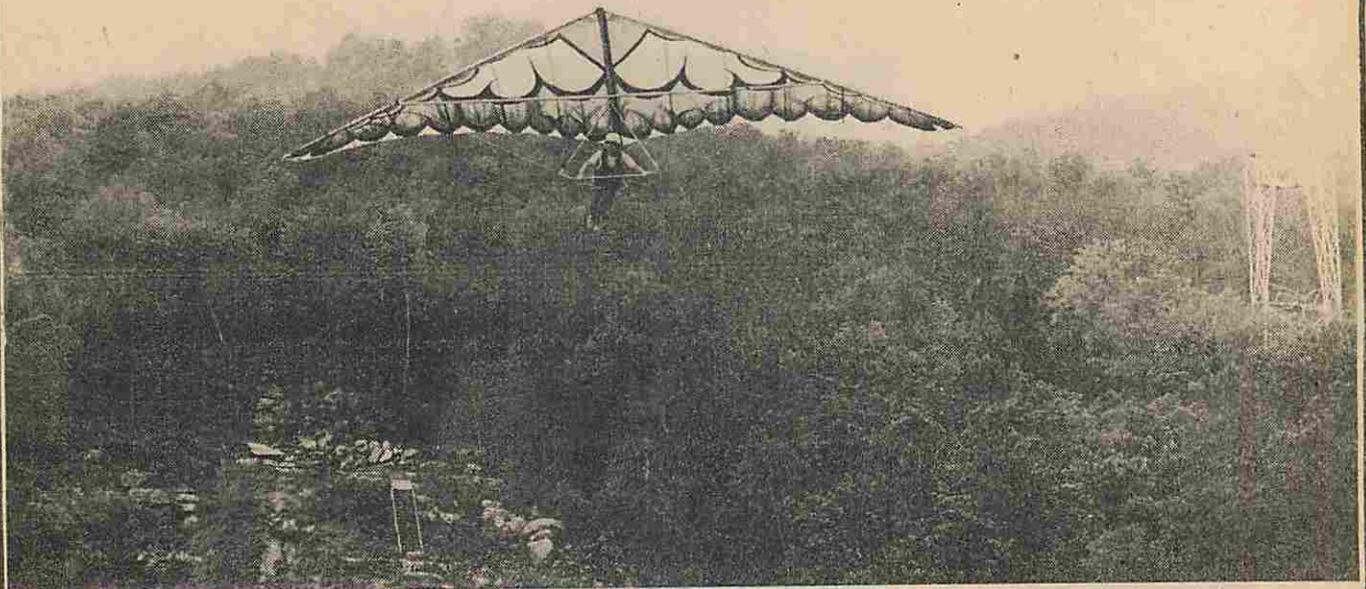


Photo by Chris Voith

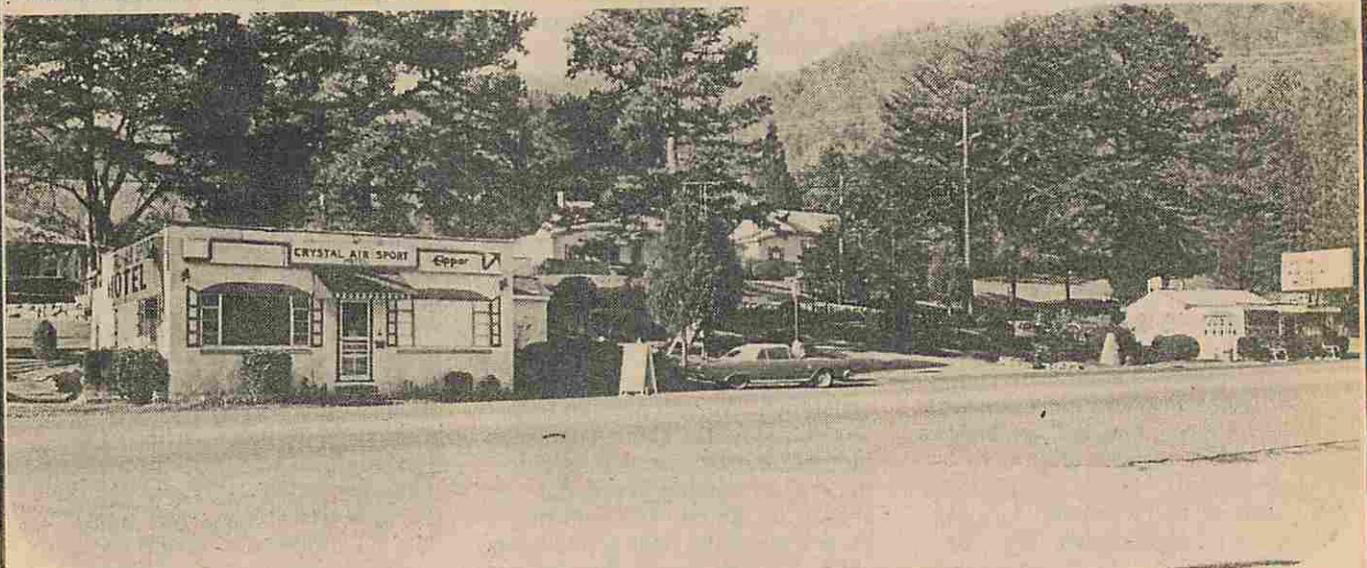


Photo by Jim Henderson

The Very Best in Hang Gliding Services

SITE — The most used "First Cliff Launch" mountain in the United States

INSTRUCTION — From the Ground to the Mountains

SALES — Wills Wing, Seagull, and Sky Sports Quality Brand Names

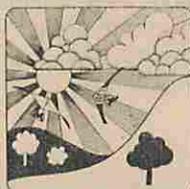
SHOP — Home of Crystal Accessories — Quality Repair Work

MOTEL — Quiet, comfortable lodging — "Where the Flyers Stay"

Eipper Dealership — Sky Gear Gifts — Munchies

Reader Inquiry Card No. 18

**CRYSTAL
FLIGHT
RESORT**



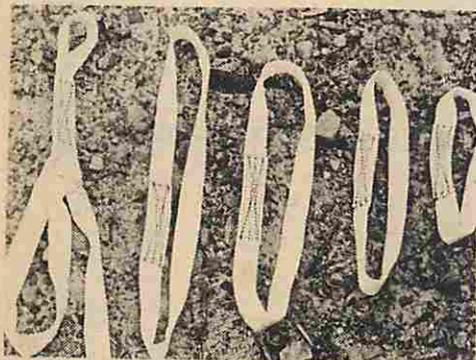
**CRYSTAL
AIR SPORT
MOTEL**

Resort — Rt. 4, Cummings Hwy., Chattanooga, TN 37409,
Phone 615/825-1995 9-2 daily

Motel — 4328 Cummings Hwy., Chattanooga, TN 37409,
Phone 615/821-2546 daily

CRYSTAL accessories '79

Reader Inquiry Card No. 19



SUSPENSION LOOPS

Crystal's deluxe line, all tested to 20 G's! Will fit all bar/harness combinations. Adjustaloop — 9" to 22" hang range tested to 4,000 pounds. 9", 12", 15", 18" fixed length loops tested to 5000 pounds.

COVER BAGS

Protect your sail and spars from tears and dings with Crystal's small bag line. Single pouch for small coils (Seagull). Dual pouch holds all lower wires (Wills, Electra). Kingpost or Tensioner bags keep rough nicos and sharp fittings covered. All use velcro closures.

VELSTRAPS

The finest in hang glider tie straps. Strong. Long Life. 24 inches long by 3/4 inch width. Metal cinch ring. From Velcro Corp. Minimum order of five earns the lowest price anywhere.

PRONE HARNESS

Deluxe knee hanger harness, with foot stirrup, and locking carabiner. Adjustable leg straps tighten snug for a secure launch, then loosen in flight. One size fits all up to Extra-large. Padded throughout with full floatation foam. Very popular harness, with continuous main strap.

LOCKING CARABINER

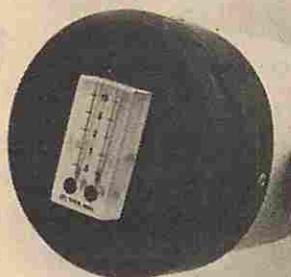
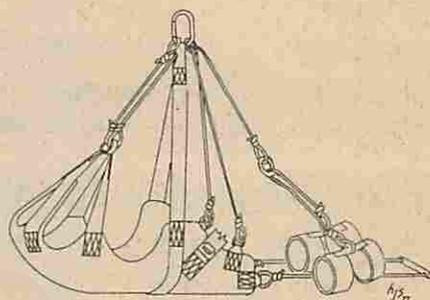
Mail order special price. 2000 kilogram (5500 pound) capacity, with friction-hold locking gate. Tested, aluminum. Was \$7.95.

MAKIKI VARIOMETER

Pellet vario. Very durable. No batteries ever needed. Very sensitive and easy-to-read. One quarter the price of electronic varios.

HANG GLIDING HELMET

Finally a reasonably priced helmet is available again. This quality American-made helmet is of lightweight yet strong construction which passes Z-90 rating code. One size for all with liner pads provided assuring a comfortable, snug fit.



**CHRISTMAS
EXTRA-SPECIAL
PRICE!!**



See order form, next page.

CRYSTAL accessories '79

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
___	New Crystal Flight Bag, Std.	\$35.00
	X-L	\$39.50

VELSTRAPS

___ Number of ___ x \$0.99 each (Min. Order — 5)

CRYSTAL PRONE HARNESS

___ Both Stirrup, and Knee Hangers, DELUXE \$89.00

CRYSTAL "PROFESSIONAL" PRONES

___	Knee Hangers, Pivot Style	
	Medium (to 5'9")	\$109.00
	Large (5'9" to 6'5")	\$109.00
___	Optional Foot Stirrup	\$ 15.00
___	Long Apron, Stirrup Style —	
	Medium (to 5'9")	\$109.00
	Large (over 5'9")	\$109.00
___	Optional Spreader Bar	\$ 15.00

CARABINER

___ Aluminum, 2000 kg, with locking gate \$ 5.95
 Mail Order Only Price \$ 4.97

BACK-UP PARACHUTE

___ 24 foot, warehouse stocked \$319.00
 ___ 26 foot, warehouse stocked \$329.00
 (National Brand — Drop Shipped Direct, COD;
 Send 50% deposit; Add no extra shipping charges.)

HANG GLIDING HELMET

___ Quality at a SPECIAL PRICE \$19.98
 One size fits all; passes Z-90 code.

MAKIKI VARIOMETERS

___ Complete, self-contained, pellet variometers,
 with mounting hardware \$55.00

CONTROL BAR "SUPERGRIP"

___ (feet) Plastic Oversleeving
 1 inch per foot \$ 1.50
 1 1/8 inch per foot \$ 1.95

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".
 ___ or charge to VISA/BankAmericard, or
 charge to ___ Master Charge.

Account number: (list all digits) _____

Expiration Date _____

Signature _____

Crystal Flight Bag

Colors available: Red, blue, black, orange.
 Allow 3 to 4 weeks for delivery.

Special Instructions: _____

Merchandise total _____

Tennessee residents,
 add 6.25% sales tax _____

Handling/Shipping
 95c minimum, or
 5% of total order _____

(extra packaging charge, \$1.50 on Supergrip and
 Helmets)

TOTAL _____
 Amount Enclosed _____
 COD _____

(COD orders will involve COD charges)

MAKE SURE FUNDS WILL NOT FALL OUT!

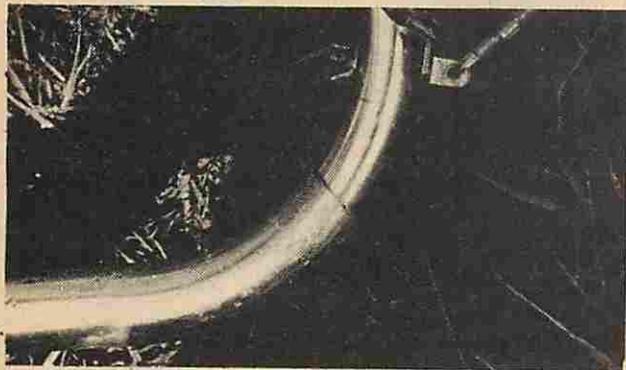
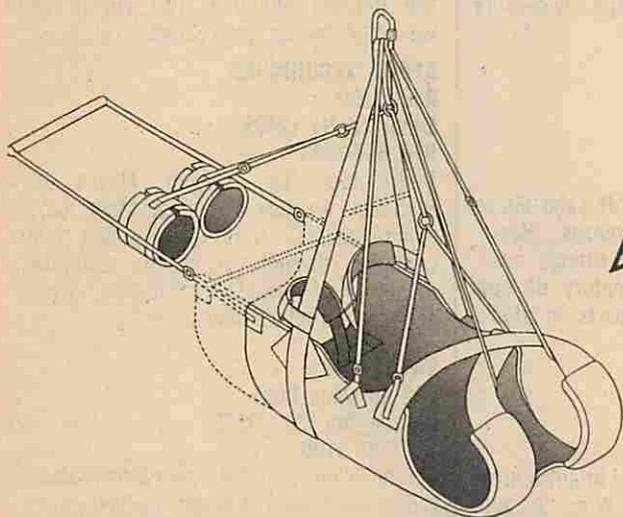
Send order form to: CRYSTAL, Box 144, Lookout Mtn., TN 37350 — No phone orders, please.

CRYSTAL

CRYSTAL accessories '79

FLIGHT EQUIPMENT BAG

Deluxe, carry-all equipment bag. Three inch main support and padded handles. Adjustable shoulder strap. Padded bottom. Inside pocket with velcro closure. Standard size adequate for most pilots. Those with cocoon harnesses or extra gear can use the Extra Large size. Colorful.



BACK-UP PARACHUTE

Special, limited-supply price on two nationally advertised brands (Odyssey and Advanced Air). Send 50% deposit for COD balance. Sent direct from warehouse stock; one week delivery customary.



NEW!
1980 Product
Ready

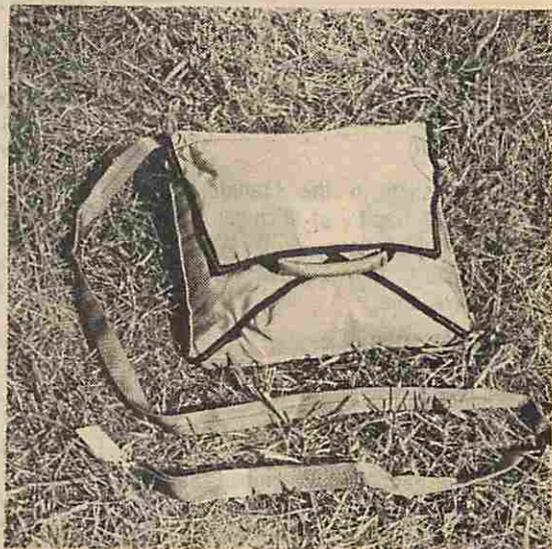
Reader Inquiry Card No. 19

CRYSTAL "PROFESSIONAL" PRONE HARNESSES

Our finest prone harness line ever, at a preview introductory price. Two styles, two sizes. The "Pro-Short" for pilots who prefer a knee hanger to shoulder pivot line. Five point support on both styles. Stirrup available, too. The "Pro-Long" for pilots who prefer long aprons with stirrup. Sit-down ease, also. Optional spreader bar. Both styles with continuous main strap. Both use 3" webbing and professional craftsmanship. Buckle adjusted supports.

CONTROL BAR "SUPERGRIP"

Tough, clear, plastic cover for control bar base tubes. Protects bar completely from scarring on rock or rough set-up areas. Insulates hands from cold. Offers excellent grip with larger diameter. One inch I.D. in stock regularly. Special 1 1/8 inch I.D. size available now, but on an intermittent basis. Now lower price.



WAC DIRECTORY

Interest in our **WAC** Directory, and its attendant component, magazine distribution, is continuing to grow rapidly. We are gaining the best shops in the country, including some overseas, and we know this a good opportunity to get buyer and seller together.

We still wish to invite all dealerships who realize the value of advertising to send in their names and information, for the Directory to place in front of our thousands of readers. Many of these pilots have told us that they didn't know such and so dealership sold a brand in which they were interested. Others found a place to take lessons much closer to home than they thought possible. All in all, the **WAC** Directory is a top reference source, and none others like it exist.

With our 1980 magazine, we will also help our dealers more by publicizing their activities via our new column, "Dealer News." Shops rarely get news coverage, yet all buyers are ultimately interested, as the retail dealer is where most pilots buy their equipment.

The reader will also have a source list for where the **Whole Air Catalog** can be bought, as all our dealers become retailers of the new 1980 magazine. We encourage all readers to patronize these shops. They are serious places of business, interested in serving the needs of the pilot.

EASTERN

ECO-FLIGHT HANG GLIDERS
626 Michigan Ave.
Benzonia, MI 49616
616/882-5070

Visit our shop in the Frankfort area, Hang Gliding Capital of Michigan. USHGA Certified instruction. Wills Wing, Seagull, Bennett, Moyes, UFM, with other brands available.

SOUTHEAST MICHIGAN HANG GLIDERS
24851 Murray Drive
Mt. Clemens, MI 48045
313/791-0614

Dealer for Bennett, UP, Eipper, Sunbird, Electra Flyer, SoarMaster. Featuring Powered Quicksilvers. We are a full time, full service dealership.

CRYSTAL AIR SPORTS
Route 4, Cummings Hwy.
Chattanooga, TN 37409
615/825-1995

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Learn to fly safely over soft sand dunes through gentle Atlantic breezes. Beginner, Novice packages and ratings available daily. Complete inventory of new gliders, accessories and parts in stock.

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Quiet and comfortable lodging. Water beds, pool, weather reports. Shari's "Sky Gear" Gifts T-Shirts, Jewelry and Famous Munchies — Eipper dealership at the 'Center of Lift.' Visa and Mastercharge.

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Beginning to advanced towing and winch lessons spring and summer. Learn to fly by towing! All ratings available. Parts, repairs, and service. Dealers for Manta, Moyes, Seagull, UFM, WW, Sunbird, SoarMaster, Odyssey.

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Sales, service, instruction, and promotions. We offer complete tow instruction, with USGHA ratings, and carry most major brands of gliders and accessories.

Ken de Russy Collection

ECO FLIGHT GLIDERS
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Milan, MI 48160
313/439-8637

For the Detroit Metropolitan area, visit our shop in Milan. Dealer for major glider manufacturers, parts and accessories. Certified instructors. Tow systems and motorized equipment.

KITECO, INC.
10250 S.W. 37th St.
Miami, FL 33165
305/226-6951
305/643-4714

Authorized dealers for Delta Wing, Sky Sports, Moyes, Wills Wing, Birdman, and the Bennett Mountain Tow Winch; and we offer towing instruction.

AERIAL TECHNIQUES
Route 209
Ellenville, NY 12428
914/647-3344

Distributors for: Seagull, Moyes and Highster. Dealers for most other major manufacturers. USHGA instruction from beginner through advanced. Complete inventory of gliders, instruments, accessories and replacement parts.

SWEET SKY
752 Norwood Road
Downington, PA 19335
215/269-5109

Personalized, careful instruction using radios on several different mellow grassy slopes. All major glider brands represented. Parts in stock. Repairs, 'chutes, harnesses, wheels, and more available.

MIDWEST SCHOOL OF HANG GLIDING
11522 Red Arrow Hwy.
Bridgman, MI 49106
616/426-3100

McCARRON AERONAUTICAL
17 Vichy Drive
Saratoga Springs, NY 12866
518/587-1957

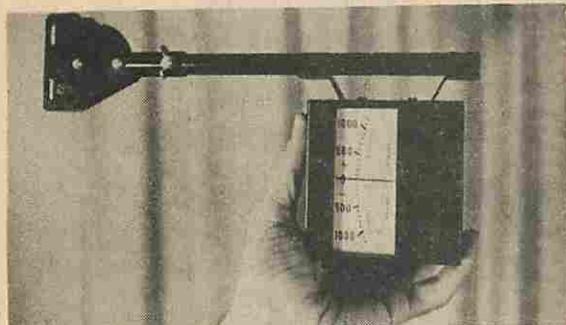
TEK FLIGHT PRODUCTS
Colebrook Stage
Winsted, CT 06098

AERO FLOAT FLIGHTS
Box 1155
Battlecreek, MI 49016

SOUTHEAST MICHIGAN HANG GLIDERS
24851 Murray
Mt. Clemens, MI 48045

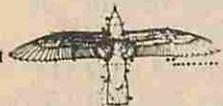
Flight Designs VARIOMETER

Reader Inquiry Card No. 21



LIGHTWEIGHT (20 oz.)
SHOCKPROOF ELECTRONICS
EASY MOUNTING
Audio on up scale only • Special Down Alarm
Excellent Response • One year warranty
Available at Local Dealers Everywhere

Adjustable Bracket
Available at
extra cost



Dealer inquires
invited

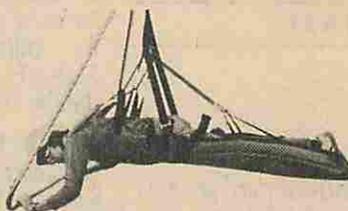
FLIGHT DESIGNS
P.O. BOX 1503 SALINAS, CA 93902
(408) 758-6896

Ken de Russy Collection

Golden Sky Sails, Inc.

Introduces

The Golden Cocoon



- * Adjustable for length & shoulder pressure.
- * Spreader Bars to eliminate hip & foot pressure.
- * Positive retention back & thigh straps.

The Golden Cocoon \$135⁰⁰

The Golden Prone



- * Tested to 6,000 lbs.
- * Super simple.
- * Comfortable.

The Golden Prone \$75⁰⁰

ORDER FROM:

Golden Sky Sails, Inc.

572 Orchard Street
Golden, Colorado
80401

DEALER
INFORMATION
UPON
REQUEST

Reader Inquiry Card No. 22



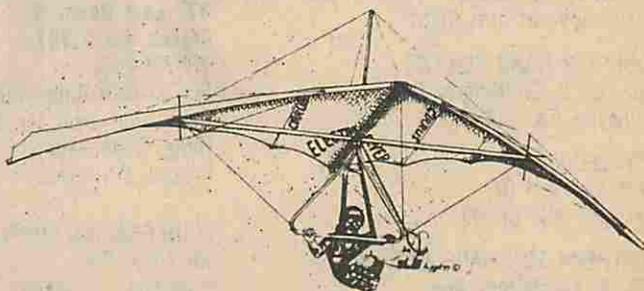
**CONFUSED
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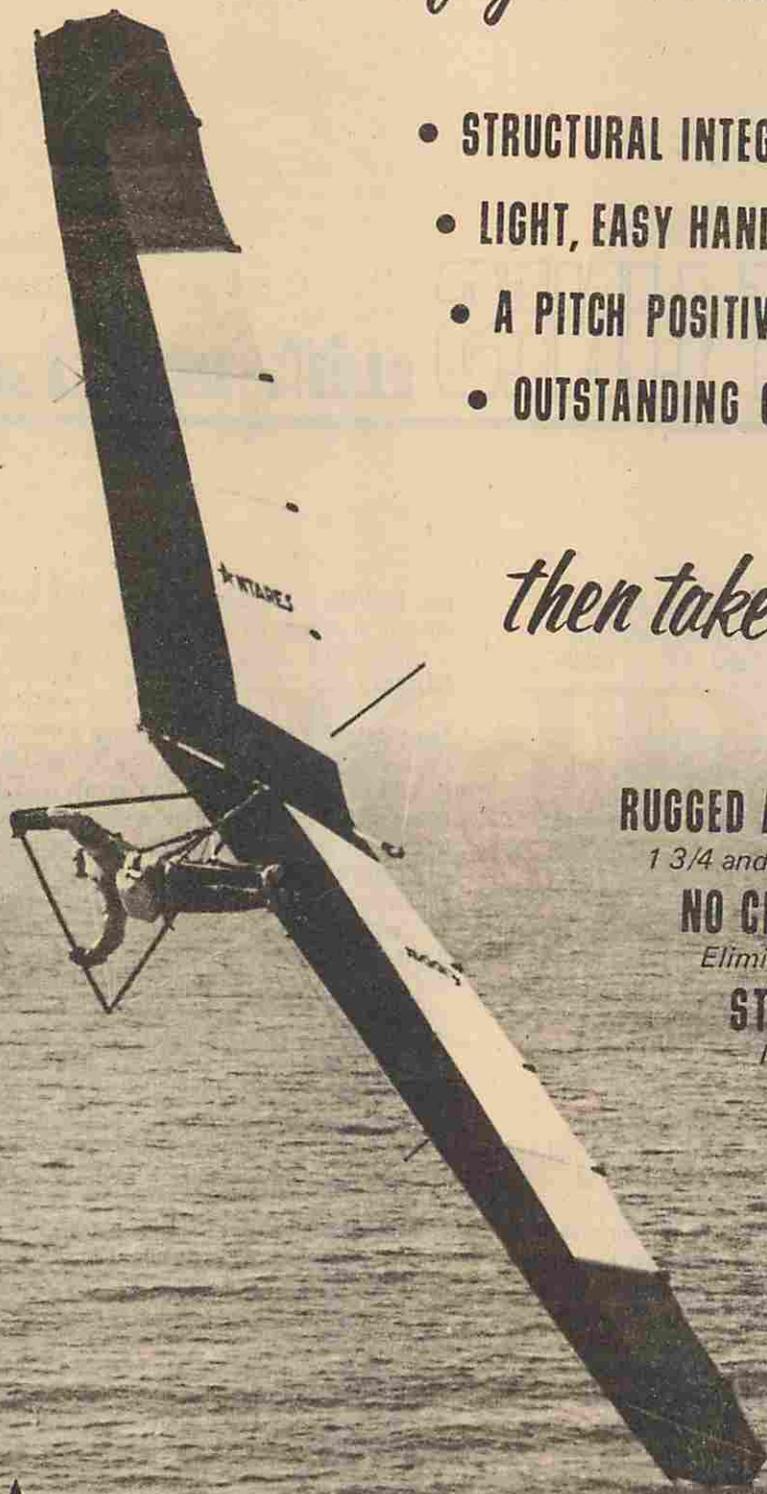
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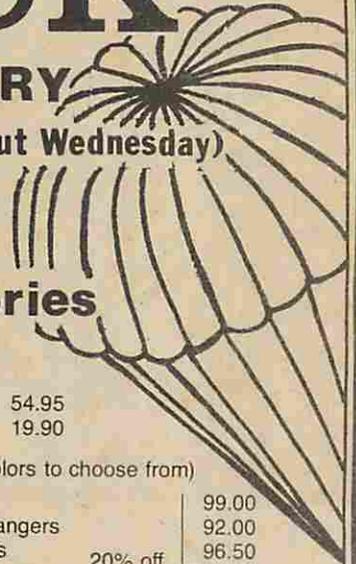
Chattanooga, TN — As you read this, the '79 Holiday Season is in the usual Christmas Countdown. Hang gliding also joins the mood as many special deals are advertised. And we begin to look back on the year. '79 may be the Year of the Foreigner, as Europe outflies America in Grenoble and at the American Cup. Two more imported gliders, the Lancer and Atlas are added to overseas inventories already liberally sprinkled with Australia's Moyes gliders. Also now, **Bill Moyes** is directly involved as he becomes a partner with **US Moyes**. Steve Moyes, this year's Grandfather Masters champ, will spend half the year working with Jim and Henry Braddock. The team's first project is a slick new quick set-up adaptation to the Maxi. Congratulations to the whole clan and thanks to "Pork" for releasing the news to us. **Marty Alameda**, of **Flight Designs** and Lancer reputation, is in France now arranging the preliminary import of the LaMouette Atlas. Read about this exciting craft in the next issue of **WAC**. While he's overseas, Marty has Frenchman Jean Mi' Bernasconi, and wife Joan B., covering the U.S. with **Flight Designs** products. See Jean Mi's write-up, page 16. **Seagull** just sent out some dazzling new full color brochures on their Seahawk and Meter line. The Seahawk will be refined and improved even more for 1980 and they'll be adding a new glider in two sizes. **CGS Aircraft** is forwarding a glider to Chattanooga harness-maker, Chris Smith, for dive testing. If he doesn't tweak it, we'll be looking to hop a ride. Check out the next **WAC**. Two entries in the developing **Microlight Aircraft** field are Sky Sports and Eipper. We know Sky Sports has the ball rolling, but Eipper is keeping quiet — we'll check it out for you readers when we're out West this winter. As forecast last issue, Electra, with Larry Newman back on the design table, is active again. They released details on their new **Vulcan 160**, (bowsprit speedster), their **Spirit 200** (floater), and Larry's **Quick Cam** (nifty quick set up innovation). We'll hope to report one of these crafts for you, probably in the March/April **WAC**. Pending the corporate head

nod, **EZ Wider** will sponsor a regular **WAC** Technique/Opinion column, presenting chatter from top pilots and personalities in hang gliding. It'll be called **Wider Opinions**. Like it? Say so! **Odyssey's** product brochure is out. Very impressive with nice graphics by **Hank Syjut**. Have a look at one. The **Crystal Air Sport Motel** (CASMO) has a new cash prize offering for 1980. It's headlined in this issue on page 20. Check out what seems to us to be a very good way to promote hang gliding's only resort motel. **Scott's Marine** writes, "This year's towing clinic went great with many pilots taking their first fixed line or winch flight. Tows to 2000 feet all day. Plans include two clinics next year — will inform **WAC** calendar." Great, Scott! This will coincide with **WAC's** new section for 1980 on towed flight. We'll be getting deeply into all phases of towing — don't miss it, **Subscribe today!** **LEAF** has a new product for sale just in time for winter cold. The **Wind Chill** and **Wind Speed Meter** can provide a better guide to how cold you will feel than absolute air temp. Write to them for info, see their address, pg. 13 or 43. **WAC** also wants to welcome dealers added to the Directory recently; Kiteco, S. E. Michigan, Aerial Techniques, Cloudhopper, Illinois Gliders, Golden Sky, Fresno Hang Glider, Sunflight, Scott's Marine, McCarron Aero, Ultralight Flight of Oregon, and Maui Soaring Supplies. Glad to have all dealers — we invite any shop serious about hang gliding. Now, year end calendar items. **Kitty Hawk** has a **Motorized Glider Fly-In** scheduled for December 15 and 16, at the occasion of the Wright Bros. 76th Anniversary Sale. Better power in with cash. **Crystal** has the **Thanksgiving Weekend Fly-In** on November 22-24. This is always a big turn-out event, closing the season in Chattanooga. Rumor has it that nearly the entire Sate of **Florida Flyers** will be present. As **WAC** closes its second year, our staff wants to wish one and all a **Merry Christmas and Soarable New Year**. Send news or opinions to Product Lines, Box 144, Lookout Mtn., TN 37350.

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Special Report:

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