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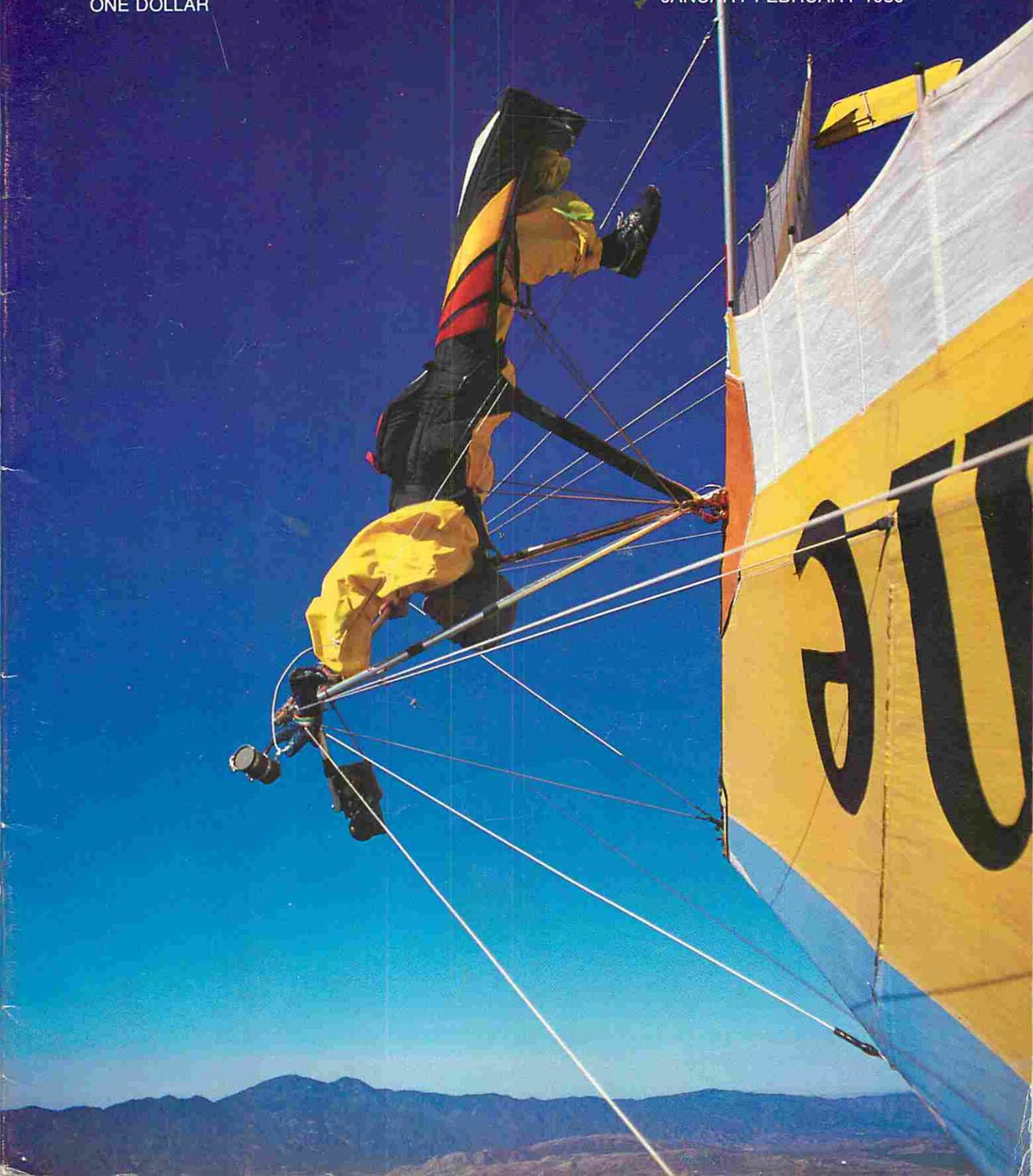
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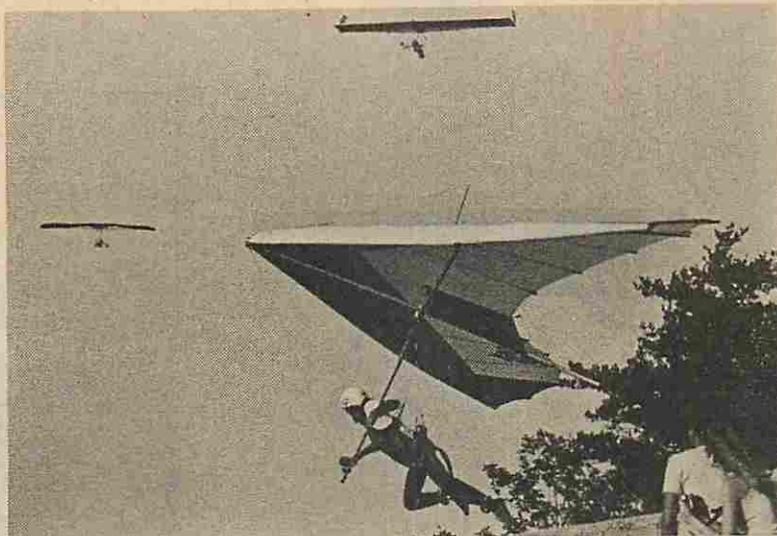
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ATLAS

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PHOTO BY JIM HENDERSON



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stall speed	14 MPH	14 MPH	14 MPH
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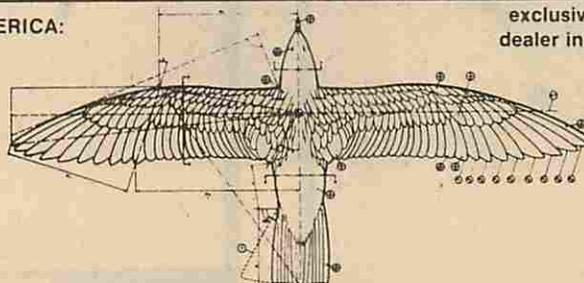
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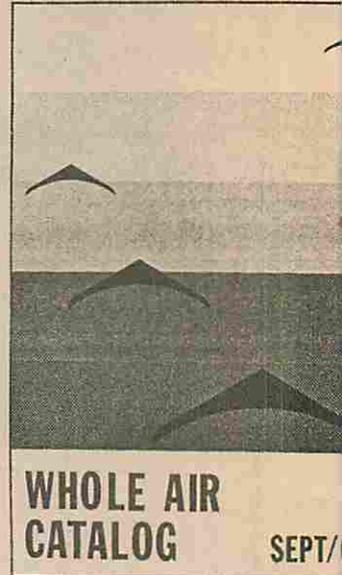
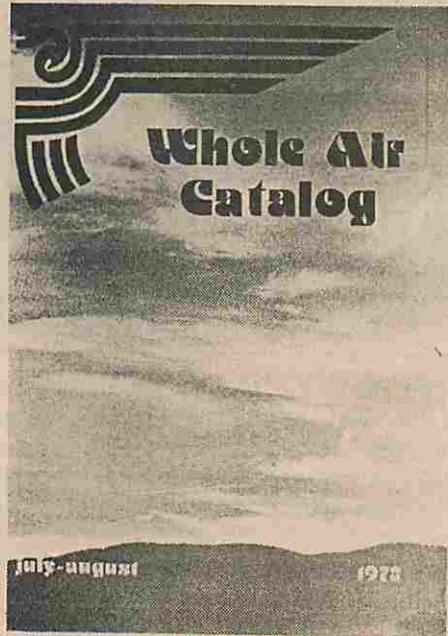
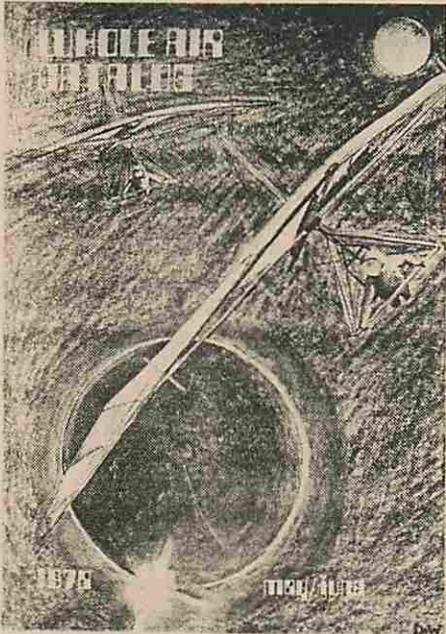
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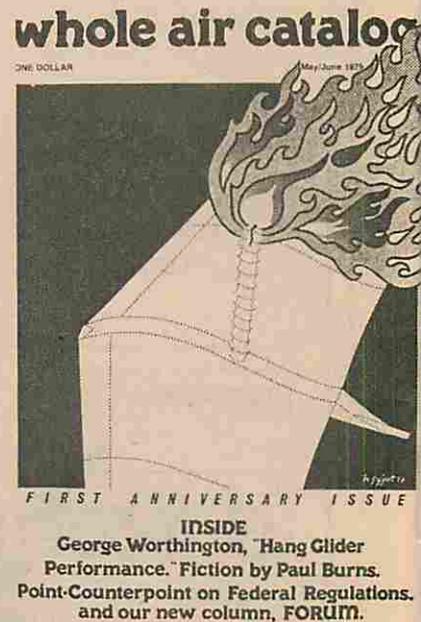
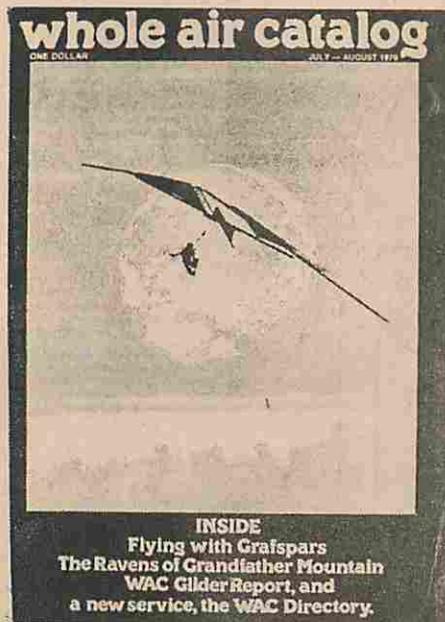
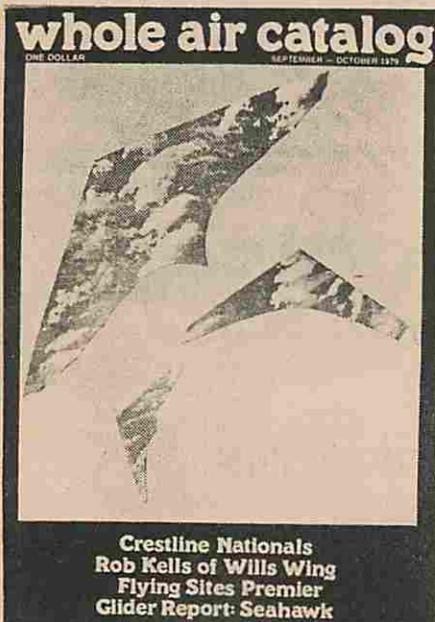


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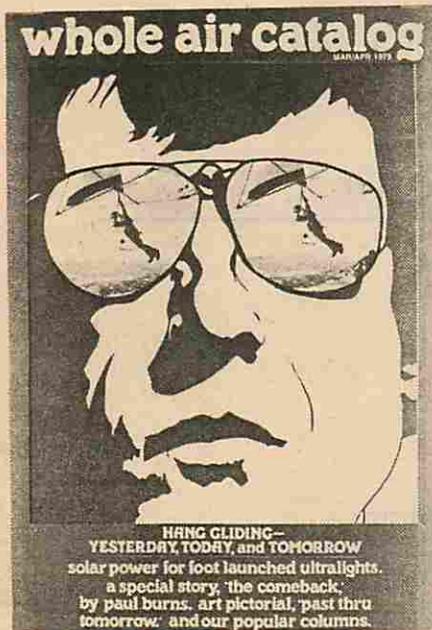
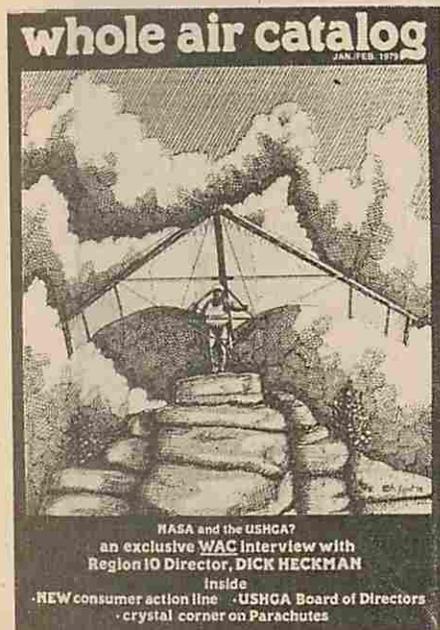
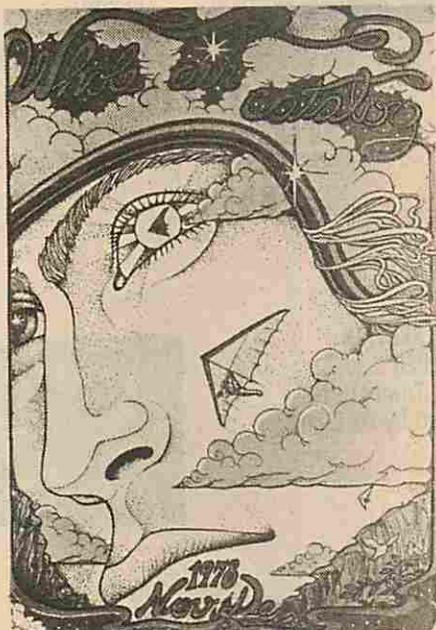
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WHOLE AIR CATALOG

Volume 3, No. 1, 1980

CATALOG NO. 11

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ON THE COVER:

National Champion Eric Raymond caught by LeRoy Grannis' motor driven camera on the back of a loop during a recent commercial filming.



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Falcon 8 and Maxi

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with Towing Sites
Edited by Ed Quirk



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Forecast with Bill Bennett by Dan Johnson
Grafspan's Eagle Sarmont by Mike Pringle

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UP Firefly 2B



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GLIDER: UP Firefly 2B-181

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FORUM

It's pretty hard to fly South Texas without towing. We're looking forward to the latest towing news down here. We feel towing can only be made safer with increased knowledge passed about.

H. Wise
Corpus Christi, TX

FAR's

On possible FAA regulations . . . I feel that the *Glider Rider* poll was presented in a way that resulted in a pro-regulation reaction rather than the true thinking of hang gliding people. We want individual responsibility — not regulation. A *Whole Air* Poll?

R. Tone
Prescott, AZ

(Editor's Reply): Exactly what we have planned for next issue. An article on the pro's and con's and then a space for you, the pilot, to vote. If we think we have a "true thinking" consensus from the hang gliding people, we will forward the information along to the USHGA. So cast your votes!!

Fantastic job!! Any chance of WAC becoming a monthly instead of a bi-monthly magazine in the future? Hope so.

M. Lippe
Muenster, TX

(Editor's Reply): Sorry. We haven't at this time decided to change our publishing schedule.

Site Information

Would like to see more site directories closer to home (Maryland). Also, how about a new flying resort an easy 1-days driving distance from all the rich people here in D.C.?

A. Jenkins
Bethesda, MD

(Editor's Reply): We encourage those pilots who have compilations on a particular site, sites in their home state, or other states' sites you fly often, to send them in. This feature can only grow and become more useful with pilot input. All you need to do is answers questions set forth in previous site reviews and furnish one good B & W photo on at least one of the sites you are writing about. If you have any questions in regards to sending in information send them to:

Starr Tays, Editor
Whole Air Catalog
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As for the new flying resort you asked for . . . we had nothing planned for that part of the world, not to say you couldn't go for it.

Motor Gliders

How about more on motorized gliders?

G. Dickinson
Marietta, PA

Free flight is *real* flight. Let's keep powered flight on the totally different level it is on and out of the free flight mags.

S. Cohee
Cedar Glenn, CA

(Editor's Reply): Sorry to disappoint you (see page 20 in this issue of WAC) as we introduce our new motorized column written by CGS owner, Chuck Slusarczyk. We feel we should freely present the three major areas of ultralight flight; hang gliding, towing, motorized and let you, the pilot, decide which one is best for you.

Aerobatic Gliders

I want an aerobatic glider for X-mas, please!

M. Smallback
Sebastopol, CA

(Editor's Reply): If you didn't get your wish this past year, maybe after reading this issue of WAC you'll realize how close it is to being available. We feel Aerobatics is a new avenue for hang gliding and plan to keep abreast and write about any new developments. So stay tuned.

Best rag in the business. Finally, a magazine with substance instead of a lot of pretty pictures.

L. deWitte
San Juan
Capistrano, CA

Competitive Homebuilders

Brock made a very valid point in *Gliders in Competition*, and I agree. But, there should be room for the homebuilts in competition. They deserve a chance to prove their craft against the corporate conglomerate.

D. Lindberg
Snohomish, WA

(Editor's Reply): We can offer no help to you in terms of competition, but we would eagerly print any new and deserving innovative concept by a homebuilder.

I love my Electra Floater, but does that mean I have to chew gum and fly without a helmet?

B. Hays
Timoniuim, MD

You just saved me 107 dollars on a parachute. I can afford to subscribe to the WAC for life now. Thanks!

D. Polston
Farmington, NM

Lift is like incest . . . it's relative.

J. Forburger
Heavener, OK

What would life be like without Mr. Forburger's little epigrams?

we're up there with you



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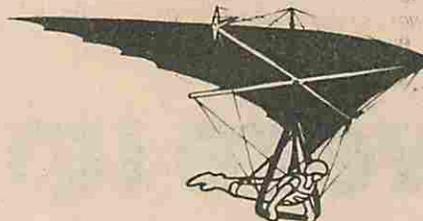
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HANG GLIDING STATISTICS

By Dan Johnson



Preliminary Statistics of Hang Gliding Injuries

Unlike all previous Statistics columns, this tenth edition will concern itself wholly with accidents and injuries in our sport.

The figures were derived from our Sep/Oct '79 reader response cards. The question was posed very simply, "Have you ever had a hang gliding injury?" (Yes or No). "If yes, describe briefly." We did not provide a great deal of room to reply, so pilots answered the question as they interpreted it. This gave us an interesting collection of responses. We found it humorous how some down-played the situation, such as "... minor tip stall, slight concussion." Some said No to the question, then elaborating, "only cuts and bruises." To others this did represent an injury.

Overall, it is extremely important that you regard this report as very preliminary, and not very conclusive, though intriguing. We feel we mainly learned how to more correctly and efficiently ask questions in this topic area. We will do this poll again in a later issue.

For the present we were able to garner enough responses in some areas so as to have workable results. They are, by our definition:

- 1 — Type of Injury
- 2 — Area of Body Affected
- 3 — Phase of Flight
- 4 — Approximate Probable Cause (APC), and
- 5 — State of current residency.

We will also endeavor to penetrate some other categories in subsequent surveys, as:

- A — Mode of Flight, i.e., instruction, competition.
- B — Type of Flying, i.e., tow, power, foot.
- C — Experience Level, by Hang Rating
- D — Location of Occurance, if not at home site.
- E — Object Struck
- F — Date of Incident(s)
- G — Action to avoid or reduce severity.

TOTAL NO. OF CARDS EXAMINED: 404
(Assuming 20,000 active pilots, this represents just over 2.0%, a standard sample size.)
TOTAL NO. OF "YES" ANSWERS: 185

Within the categories, percentages relate only to those who answered "YES" to the injury questions.

TYPE OF INJURY

For this category, 87% responded, with 11% of all indicating multiple injuries. We further broke down the category as to the nature of the injury:

Cut/Scratch/Bruise (including minor burns)	19%
Laceration	3%
Puncture Wound	4%
Tear Wound (including ligament, tendon) ...	2%
Sprain	19%
Concussion (including any black-out)	4%
Dislocation (including compressed vertebrae, separation)	8%
Fracture (including dental)	42%

AREA OF BODY AFFECTED

Here, 75% of injured pilots responded, with just under 10% of all indicating more than a single area of the body was affected. Here's the breakdown:

Head	10%
Torso (including neck and collarbone)	15%
Arm (including shoulder and wrist)	29%
Leg (including ankle)	30%
Extremity (hand, foot)	16%

PHASE OF FLIGHT

A much lower number of injured flyers provided any insight into this category, and we did not attempt to "guesstimate." Fifty-eight pilots or 31% gave us this display:

Take-off	45%
In-flight	16%
Landing	39%

APPROXIMATE PROBABLE CAUSE

This category can be regarded with the least conclusiveness of all because the causes were reported by the pilot, and because they had the lowest number of responding flyers, only 25%.

For the sake of brevity, we list only those with two or more incidents:

- Stalled take-off 17%
- Failure to hook-in 8%
- Landing downwind 8%
- Stall after take-off 4%
- "Tip stall" 4%
- "Blown back" 4%
- Stalled downwind 4%
- Structural failure 4%
- "Flipped over" 4%
- "Tree landing" 4%
- "Nose in" 4%

(Percentages are of all causes given, some not listed here).

CURRENT STATE OF RESIDENCY

This category, also, has less certainty in its evaluation, as the accident may have happened while away from home, and may have happened prior to the pilot living in this state. But, as all but two cards gave their address, it may offer some validity.

	% of Accidents Reported	% of WAC Circulation to State
California	17.5	23.6
New York	6.0	6.3
Arizona	5.5	3.8
Colorado	5.5	3.6
Oregon	4.4	4.1
Illinois	4.4	3.2
Connecticut ...	3.8	1.1
North Carolina ..	3.3	4.6
Washington ...	3.3	4.1
Texas	2.7	3.6
Tennessee	2.7	3.5
Virginia	2.7	1.4
Pennsylvania ..	2.7	4.0
Ohio	2.7	3.3
Maryland	2.7	0.9
Florida	2.7	2.9

	% of Readers	% of Accidents
West of Rocky Mountains	34.9	40.4
East of Rocky Mountains	65.1	59.6

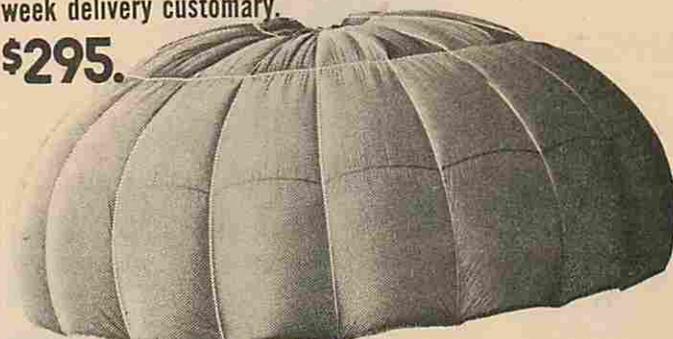
One last warning: Please do not place undue faith in these presentations. Consider them a start with which WAC will follow up with more surveying. Fly safely.

EARLY BIRD SPECIALS!

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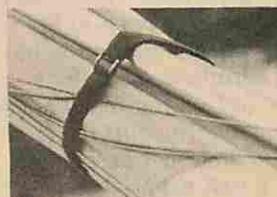
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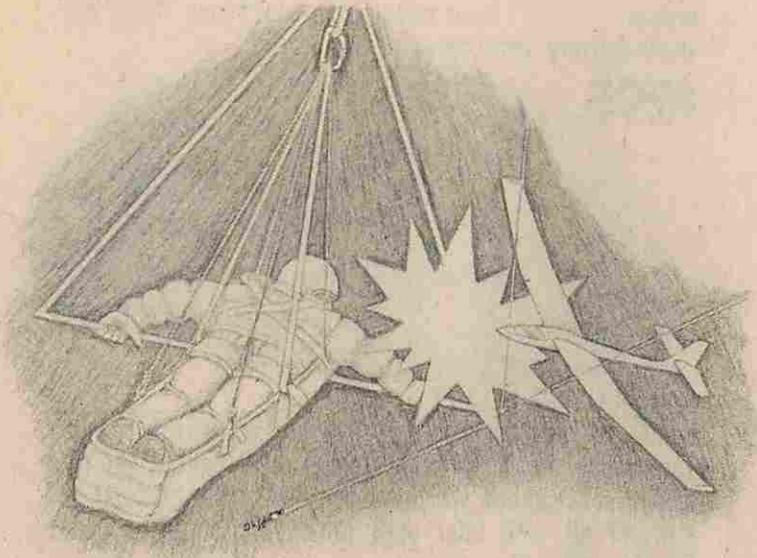
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CRYSTAL accessories

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You Can Learn About Flying From This...



By Ric Lee

I had a very frightening experience at Pt. Fermin on New Year's Day that I'd like to share with you.

It's New Year's Day and I'm in Pasadena for the Rose Bowl Parade. I'm feeling great. My friend Dennis Hibdon and I had finished 1979 off with a couple of hours of great soaring at Pt. Fermin. For those of you who have never been to Pt. Fermin, a short description is in order. Pt. Fermin is a 130 foot sheer rock cliff with a rocky sliver of beach below. The cliff faces WSW and is undercut at launch. Take-off is a real experience because you're almost touching a three and one-half foot concrete fence behind you while the nose of the glider pokes out in the lift. Make sure you get off clean, because the rotor is waiting for any slight mistake. If you should happen to hit the cliff face, you'll fall straight down to the water

below.

Pt. Fermin spells caution. It's not the kind of place you fly when it's marginal or really smoking. But in the right conditions it can be magical. December 31st was one of those days — 22-24, nearly straight in. We were getting 300-350 feet above. Only darkness brought our flying to a close that day. End of another year. "Well, not to worry," Dennis told me. "We are still getting the WSW winds from that weak Pacific front. We'll go see the parade and still catch some airtime in the afternoon." Great way to start a New Year, I thought. See the Rose Bowl Parade in person and then go flying.

After the Parade, we made the long drive back to Dennis' San Pedro home. He lives only one block from Pt. Fermin. A quick glance at the trees tells us it's soarable. We go to the cliff and

set up. It's a beautiful clear day and the Wuffos are out in force. I also notice there are quite a few R/C sailplanes out today. Two R/C's are in the air and three or four more are lying nearby on the lawn.

The wind is fairly steady, 13-14 mph. I'd like a little more for the altitude it gives you, but you take what you can get. I gave the glider a good preflight and Dennis helps me over to the launch area. I hook in, do a static check and launch. The lift is smooth but there's not much of it. I'm staying 30-60 feet above the top. After 10 or so minutes in the air, I'm feeling uncomfortable. There are four or five R/C's buzzing around me now and for the first time I'm nervous. I can't understand why I'm nervous. I've flown around R/C's at Fuston, Torrey and back home at the Point of the Mountain. But for some reason today it's bothering me. I decide to make one more pass and land. I can still catch most of the Rose Bowl game on TV.

I'm heading South on my final pass. The sun is off to my right, giving me a great blind spot. All of a sudden I think I see something in my peripheral vision. I don't know why, but I choose to duck my head instead of looking up. Wham! Something hits my helmet with tremendous force and I see stars for a few seconds. I look up to see what happened and all I see is red. For a split second I thought I was blind. I put my left hand to my face and pull the red away. My wire framed glasses are badly damaged but I can still see what I'm holding — the wreck of an R/C sailplane.

I can't tell you how many emotions raced through my head when I realized I was holding the shattered remains of a toy in my hands. I threw the plane away from me. I had more serious problems to deal with. My glasses were badly damaged. One side was bent down five degrees and twisted seven degrees out of line with the other lens. I didn't dare reach for it; I thought the lens would pop out. All this happened in the space of a few seconds. My mind was racing so fast it seemed like minutes. I was at the end of the cliff now; I had to turn around and work my

way down to a safe landing on the tiny beach below.

I was shaking badly now, partly in fear for my landing ability with my impaired vision and partly because I was outraged at the thought of dying from someone's toy! I set up for the landing as best I could with a few slipping 180's and a final skim across the waves to the end of the beach, flare, and touchdown! Thank God I'm down and in one piece. I unhook and reach up to see what's wrong with my glasses and the right lens falls into my hand. I take my helmet off and sit down. I've never had a worse case of the shakes.

I bent my glasses back into a reasonable shape and restored the right lens. I looked at my helmet and could see what happened. The plane had come right out of the sun at me. I still don't know if he was intentionally buzzing me or just misjudged the distance between his plane and my body. Anyway, I caught a flash of something out of the corner of my eye and ducked my head. The nose of the plane hit the right forehead area of my helmet just above my right eye. It was slowed down and deflected enough by my helmet to just hit the right corner of my

glasses, bending them. The wings of the plane wrapped around my face and the air pressure held them there. I saw red because the wings were covered with red mylar. The large black line in sight was the rubber strapping around my helmet. The collision tore it loose and pushed it down in my field of vision.

If the plane had hit one inch lower, I wouldn't be here to tell you about this. If I hadn't been wearing a helmet, I wouldn't be here either. What I feel we can learn from my experience is to treat R/C's as lethal weapons. They may be toys but in inexperienced hands they could kill as easily as a gun. I urge all pilots flying with R/C's to talk to these guys before you go up in the same air with them. Show them a copy of this article and maybe give a little talk at one of their club meetings. It could save a life.

Note on the Author: Ric Lee is a Salt Lake City, Utah pilot, partner in Sunbird of Utah, and Safety Director of the Utah Hang Gliding Association.

Publisher's Note:

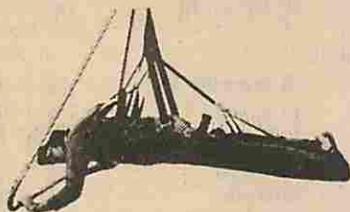
The **Whole Air Catalog** regrets that in this column of our last issue (Nov/Dec. 79), we failed to fully investigate an editorial submission. Glenn Russell's story, "Dave's Dive," made an allusion to Jim "Scruffy" LeMieux which was unsubstantiated by the **Whole Air Catalog**. Reflecting some local "political" tensions, Jim felt that the remarks were negatively biased and could affect his business dealings. We admit they were undesirable in content and that LeMieux may thereby be unfairly represented for this.

On behalf of the **Whole Air Catalog**, I wish to apologize to "Scruffy" LeMieux for this unfortunate portrayal. While we do bear responsibility for the magazine content in general, the opinions of our contributors are their own and do not necessarily reflect the opinions of the **Whole Air Catalog**.

Golden Sky Sails, Inc.

Introduces

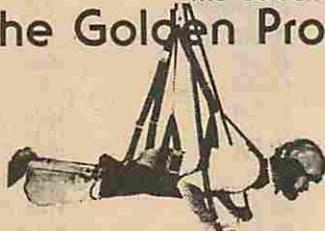
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USED GLIDER BLUEBOOK

EDITION NO. 11

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
BENNETT DELTA WING						SEAGULL AIRCRAFT					
	76	Phoenix 6B	Jr.	425	350		75	Seagull III	220	325	250
	76	Phoenix 6B	Reg.	425	400		76	Seagull III	220	350	275
	76	Phoenix 8	Reg.	450	450		76	Seagull VII	174	600	350
	77	Phoenix 6C	Jr.	550	450		77	Seahawk	170	650	550
	77	Phoenix 6C	Sr.	400	425		77	Seahawk	190	675	600
	77	Phoenix 6C	Reg.	500	425		77	10.5 Meter	—	900	750
	77	Phoenix 8	Reg.	650	375		78	Seahawk	170	825	600
	78	Phoenix 8 Super	Reg.	675	450		78	Seahawk	190	800	600
	78	Phoenix 12	Reg.	750	525		78	10 Meter	—	975	875
	79	Phoenix 6D	Reg.	875	725		78	10.5 Meter	—	950	900
	79	Lazor	190	1150	975		79	Seahawk	180	1000	950
							79	11 Meter	—	1275	1200
CGS AIRCRAFT						SKY SPORTS					
	76	Falcon V	225	550	450		76	Kestrel A	185	450	350
	76	Falcon V	185	575	400		76	Kestrel A	220	525	425
	77	Falcon V	185	650	500		76	Merlin	160	500	375
	77	Falcon V	220	600	475		77	Bobcat III	Lg.	675	600
	78	Falcon 5½	Med.	750	625		77	Sirocco I	156	600	475
							77	Sirocco I	175	575	500
EIPPER FORMANCE						ULTRALITE PRODUCTS					
	75	Flexi II	240	400	200		78	Osprey	175	800	675
	75	Cumulus V	180	400	300		78	Sirocco II	164	875	825
	76	Cumulus VB	180	450	375		79	Eaglet	191	550	425
	77	Flexi III	185	575	500		79	Osprey 2	175	900	800
	77	Cumulus 10	Med.	550	525		79	Sirocco III	189	1200	1100
	78	Flexi III	Lg.	650	500						
	78	Cumulus 10	Med.	675	500						
	78	Antares	Med.	875	800						
	79	Antares	Med.	975	925						
ELECTRA FLYER						WILLS WINGS					
	76	Nimbus	20-17	200	125		75	Swallowtail	20-20	300	150
	76	Cirrus	3	425	350		75	Swallowtail	22-20	225	175
	76	Cirrus	2	425	350		76	SST	90	600	400
	77	Cirrus	3	550	350		76	SST	100A	625	450
	77	Cirrus	2	450	300		76	SST	100B	600	475
	77	Olympus	160	575	525		77	SST	100B	650	550
	78	Cirrus 5	C	700	600		77	Universal	100A	700	500
	78	Cirrus 5	A	700	575		77	X-C	185	700	650
	78	Olympus	160	775	625		78	Alpha	185	950	775
	78	Olympus	180	725	550		78	Alpha	215	950	800
	79	Cirrus 5	A	825	725		78	X-C	215	950	775
	79	Olympus	160	900	850		79	Alpha	215	1000	850
	79	Floater	205	925	825		79	Omega	220	1100	950
							79	Raven	209	1175	1000
MOYES DELTA WING											
	76	Mini	180	525	400						
	76	Midi	220	625	575						
	76	Maxi I	200	650	550						
	77	Maxi I	200	700	625						
	78	Maxi II	200	1000	800						
	79	Maxi III	200	1150	1000						

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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Inquiries received after the expiration date, incomplete cards, or illegibly written cards cannot be processed.

PILOT SURVEY FORM

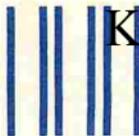
Name _____

Address _____

_____ Zip _____

PLEASE PRINT RESPONSES — ANSWER ALL QUESTIONS

1. What is your present age? _____ (years)
2. How many years experience do you have? _____ (years)
3. What skill level are you? _____ (USHGA I-V)
4. How much air time have you accumulated? _____ (hrs.)
5. How often do you fly? (No. times per) _____ mo. _____ yr.
6. Have you ever flown _____ tow _____ power?
If yes to above, _____% foot, _____% tow, _____% power
7. In what year did you purchase your last glider? 19_____



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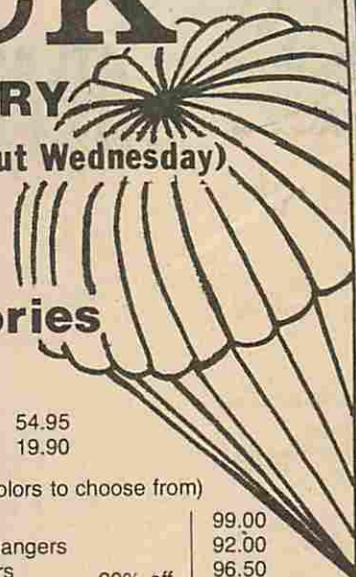
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	lg, dg	\$1025.00
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	lb, db, p	\$1025.00
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	r, o, g, w	\$1025.00
	bl, br, o, g, y, w	\$1025.00
	y, g, o, r	\$1025.00
	db, lb, lg, r, p	\$1025.00
	db, lb, lg, r, p	\$1025.00
Seahawk 200's	db, lb, lg, r, p	\$1025.00
	p, r, w	\$1025.00
	r, o, g, y, br	\$1025.00
	all lb	\$1025.00
	g, y	\$1025.00
	lg, dg	\$1025.00
	w, lb, db, p	\$1025.00
10 Meter	r, o, g, w, bl	\$1300.00
11 Meter	db, r, o	\$1300.00
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Alpha 215	y, g, o, r	\$1036.00
Alpha 185	br, g, y	\$1036.00
Omega 220	br, g, w	\$1240.00
Fledgling IIB	br, g, w	\$1525.00
	(Soarmaster & landing gear in stock)	
Fledgling IIB	o, r, w	\$1525.00
Easy Riser Kit	white	\$810.00
Kestrel A 185		450.00
Shearwater		400.00
Flexi II	20 foot	550.00
Merlin 180		550.00
Cumulus 10	Medium	750.00

Accessories

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HARNESSES (many colors to choose from)

Eipper w/stirrup	99.00
Flight Design w/knee hangers	92.00
Sunbird w/knee hangers	20% off 96.50
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Adv. Air Sports 24 ft.	20% off	346.00
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Makki Variometer	55.00
Hall Wind Meter	17.95
Thommen Altimeter	20% off 119.00
Dwyer Wind Meter	7.95
Flight Design Variometer	149.00

Towbars	20% off	300.00
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EURO-MARKET

ATLAS

Jean-Michel Bernasconi

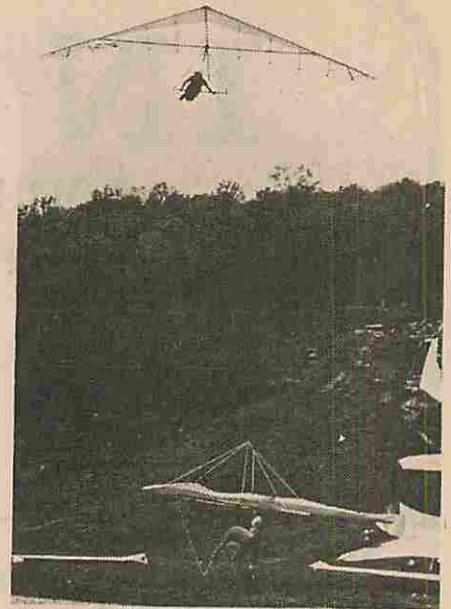
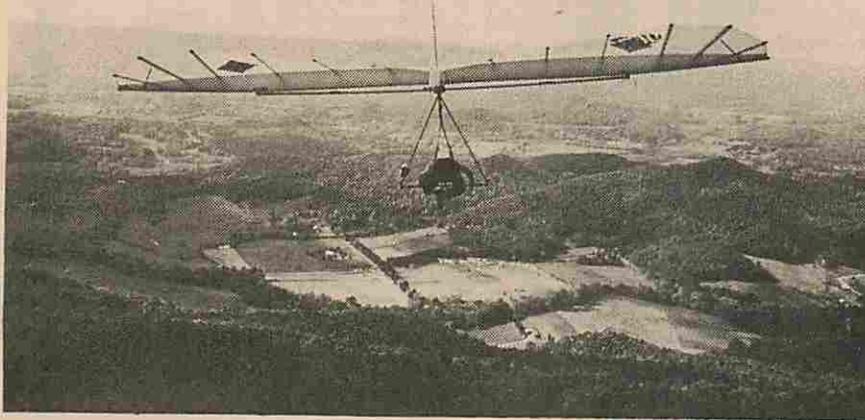


Photo by Jim Henderson



ATLAS SPECIFICATIONS

	ATLAS 14	ATLAS 16	ATLAS 18
Nose Angle	120°	120°	120°
Leading Edge	17 ft. 6 in.	18 ft. 8 in.	19 ft. 9 in.
Keel	11 ft. 4 in.	11 ft. 6 in.	11 ft. 6 in.
Wing Span	30 ft. 6 in.	32 ft. 1 in.	33 ft. 6 in.
Aspect Ratio	6.24	6.20	6.15
Sail Area	155 sq. ft.	175 sq. ft.	192 sq. ft.
Glider Weight	55 lbs.	57 lbs.	62 lbs.
Weight Range	100-160 lbs.	130-210 lbs.	170-250 lbs.

Writing a consumer report about the ATLAS was one of the toughest things I've had to do this month! For only one reason; it's hard to talk about the ATLAS without sounding like an ad. So let me put it this way. This French glider was introduced to European flyers a little over a year ago, in November 1978. Presently, there are over 700 ATLASes flying over Europe. And it's a fact that the ATLAS competition record is the best of any gliders to date (at least in Europe).

Those above mentioned facts allowed me to see the ATLAS

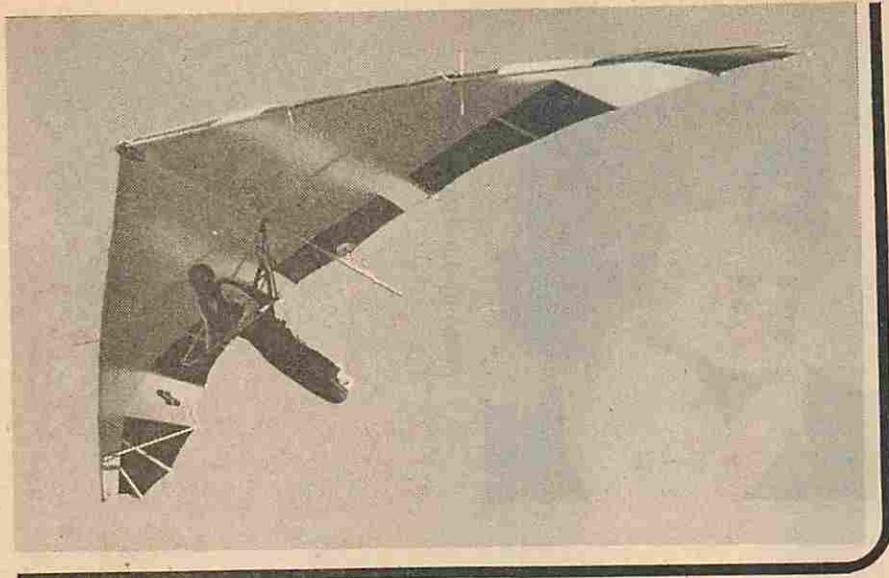
performing in all types of conditions with all types of flyers and, competition-wise, pretty much against all the gliders available on the market today.

The reasons why this glider got such a successful start are easy to understand:

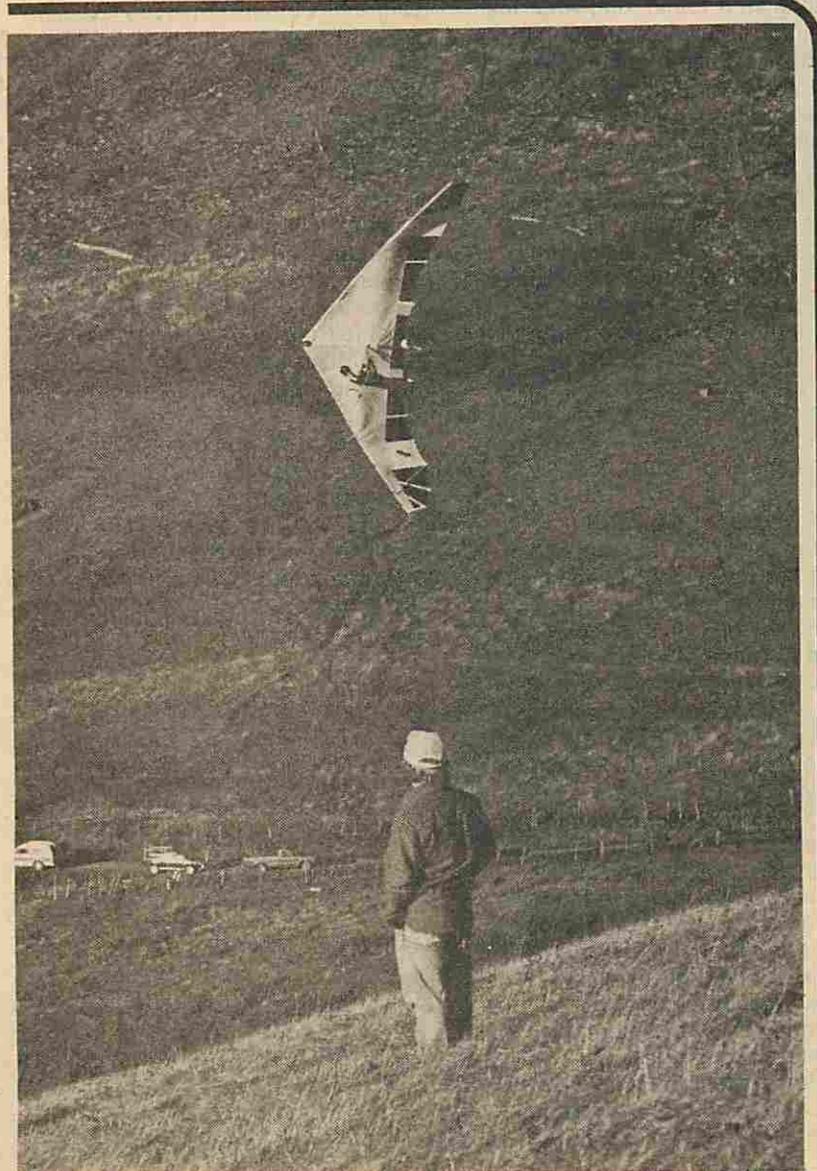
- For the weekend pilot, the ATLAS has a very simple and clean appearance; deflexorless airframe, a true five minute set-up time (with two lock pins), velcro batten closures, coated cables, batten bag, protective cushion sewn to a double zipper and handle-equipped bag.

• On the other hand, a new concept in sail work and a very clean double surface airfoil give the competition oriented pilot an interesting performance package. Now, let's take a closer look at this glider and its flying characteristics:

- All three sizes have internally sleeved uprights and crosstubes, defined tips, anti-luff lines, and have been showing an excellent pitch curve during preliminary HGMA certification tests conducted by Flight Designs and Tom Price.
- Its medium size control bar, good static balance and reasonable wing span makes ground handling very easy. For the same reasons, and also because of a low take-off speed and high angle of attack acceptance, take-offs are definitely "trickless"!
- Once off the ground, you'll know you've got a performer and your vario will definitely confirm the feeling!! Along with an interesting slow speed glide and decent top end, the ATLAS offers surprising energy and performance retention throughout its entire speed range.
- Although not the most responsive glider in the sky today, the ATLAS offers predictable handling and requires little bar pressure during maneuvers. After 2 to 5 hours airtime, you'll learn how to use an interesting "yaw reversal," very handy in marginal lift.
- Once again, because of its excellent slow speed performance package, the glider is as easy to land as it was to take off!



SIROCCO III



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 resting 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 at 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.	64 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.

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Photo by Jim Henderson

CAN AMERICA MPETE?

For the last few years, a very popular belief in our sport has been that America has fallen behind the rest of the world as the leader of hang gliding. Embarrassing contest losses such as the European Championships at Koessen '78, the American Cups I and II and, not least, the World Championships at Grenoble, France in '79, would seem to support this. In our typically American way, we have spent more time over-regulating ourselves and made our gliders heavy and super-safe. This might seem nearsighted, but it's what made America great. And let's remember, America is still the world leader, because we do it right.

There is more innovation, more research, and most importantly, more work being done here to make gliding safer than anywhere else in the world. Let's not lose sight of goals. Safe sport flying for everyone is not that old a dream. A recent editorial by Rene Colon, publisher of *Vol Libre Magazine*, applauded the HGMA test flight rule by saying, "He who is highest is not always the leader." Well put. It has not been long since our sport's safety record was less than enviable, and we still have a long ways to go yet. Safety breakthroughs in the sport have come quickly. So quickly in fact, that few people remember when accident rates were staggering, and anyone with a Standard, pith helmet, and whistle could be an instructor.

Anyone who thinks that American manufacturers love certification, listen here. Certification has made life very complicated for manufacturers big and small. It does create resistance to change models after production has begun, and it does raise the cost of gliders considerably. But certification is a necessary evil.

The 1980 compliance regulations are tougher than ever and documentation procedures more strict. This was voted in by the group it will affect the most. Not by a government agency, but by the manufacturers themselves. Just as with the space program, the technological spin-offs from the in-depth studies involved in certification cannot be ignored. Knowledge of the control and performance envelopes of the modern flex-wing has increased ten-fold because of certification.

As with every Spring, a "new wave" of American contests ships will be offered. They are the most advanced and refined gliders you'll find anywhere. It takes time to develop gliders that are high in performance and safety. This is also the year graphite structures shall really make their mark on the American scene. Gliders designed around this advanced material will have the light weight of the European machines and the strength necessary to meet our compliance regulations.

An idea started in England by the BHGA is now in the works in California. A local competition

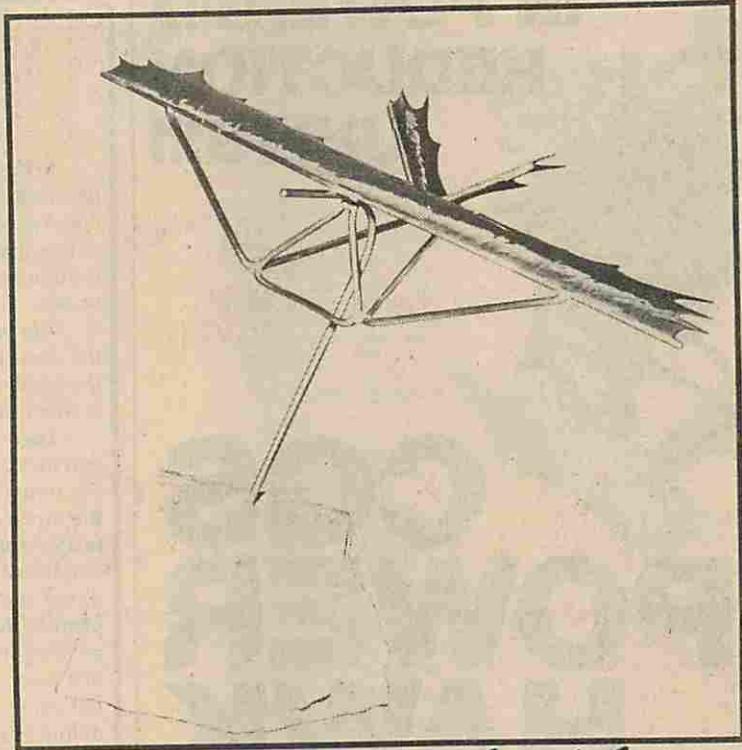
league has been formed to sharpen our skills and supply team organizers with more data on who deserves to be on our national teams. As compared to the buddy system of previous seasons, this idea should expand to other areas as well.

I think we have all been too hard on ourselves. Not that we are alone in this. It seems almost a national pastime to complain about how atrophied our country's clout has become and how the U.S. is the shrinking violet of the planet. Bull! Copping out is an easy thing to do, far easier than doing something about it. I suggest that the writers who cover International Competition look elsewhere for easy copy and easy ways to elevate themselves above the people who are championing our *real* challenge... safer flying.

Thomas A. Poffing

This space donated by
E Z WIDER Rolling Papers
 for use by the hang gliding community
 to better communicate, unrestrictive thought.
 Robert Burton Associates
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Congratulations to Eric Raymond who became the happy owner of the coveted "Cheetah" trophy for being the "fastest cat in the sky" at the 1979 Great Race. An ordinary trophy just wouldn't do!



*Hank Syjut
fine & applied visual art
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ph. 615-821-5183*

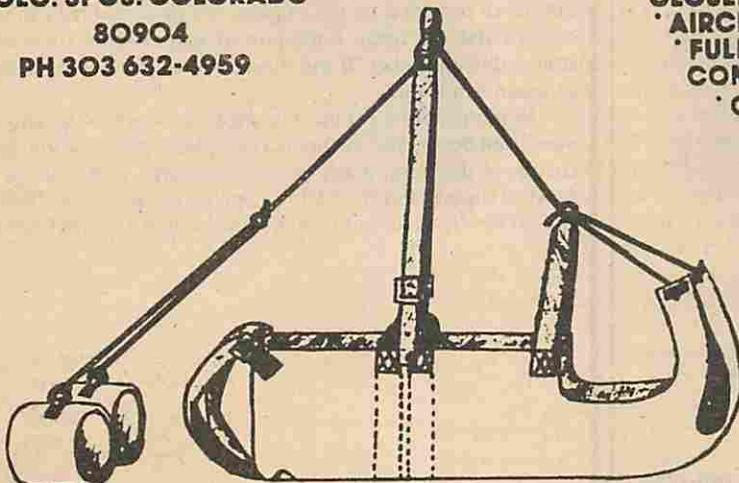
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LEAF

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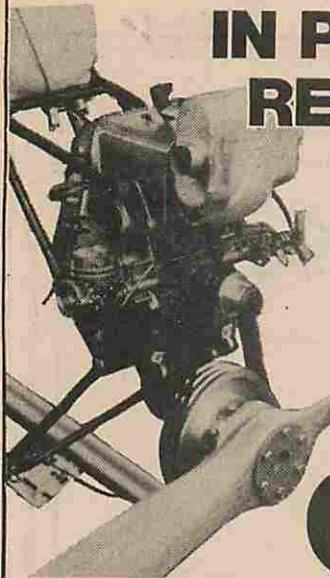
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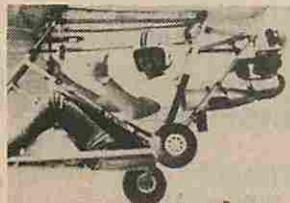
The CGS Power Hawk Line of power plants for ultra lights is the end result of an extensive research and development program. CGS Aviation, the original manufacturer to develop and market reduction drive units for ultra lights, has been named the "recognized leader" in reduction drives in the November '79 issue of Air Progress Magazine.

Now you know. CGS Aviation is the recognized leader in reduction drives for ultra lights and the CGS Power Hawk Series is the reduction unit that got us there. Armed with those facts, read on.

CGS POWER HAWK

Our Power Hawk B Model is a proven power plant guaranteed to produce 80-85 lbs. static thrust, stock. With optional power set ups, thrust up to 105 lbs. is possible. The basic unit includes a 10 h.p. West Bend Chrysler engine, 3:1 ratio/48 inch prop combination, high performance "V" belts, aircraft style engine mounts — chrome molly, plus our exclusive "power tilt" to fine tune the thrust line to your aircraft.

For heavier pilots, we have a limited supply of CGS Xenosah 150 Power Hawks available. It is so named due to the fact that it



produces 150 lbs. static thrust. Complete units are available for Easy Riser, Fledgling and Mitchell Wing.

Special features include a 22 h.p. Xenosah Engine, highest thrust on the market (150 lbs. static thrust), exclusive power tilt and 48 inch prop pitched for climb with cruise at 40-45 mph. Truly an outstanding piece of machinery.

If you are disappointed with the performance of your present power system, we may be able to help you out.

For those of you with direct drive Xenosah's, there is our Xenosah 150 conversion kit, complete with reduction mount, engine and prop pulleys, belts, 48 inch prop, mounting hardware and CGS "Super Muff" muffler.

Other conversions to our Power Hawk B Model and MAC 101 are also available.

CGS Aviation not only manufactures the most efficient power system available, but we also provide complete aircraft kits upon request.

If you need an airplane and a power source, why not do it all through CGS Aviation.

We offer kits for Easy Riser, Fledgling, Mitchell Wing, F.L.A.C. and more.

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CGS AVIATION

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Motorized

By CHUCK SLUSARCZYK

In this month's column, I'm going to address what is probably the most important factor in an ultralight aircraft . . . the thrust line. First of all, let me say that I'm going to explain a few things in less than ultra-technical terms, so please don't be too critical if I don't use all the long-winded formulae, or if I omit a detail or two.

The industry has had some crashes of ultralight aircraft with the cause being listed as Pilot Induced Oscillation. I contend that the condition is more like Pilot Aggravated Oscillations, and here is why I believe that.

There are two considerations when dealing with thrust lines and they are: one, the thrust location on the airplane, and two, the thrust direction. On flying wings with weight shift control, the thrust line is extremely important. The thrust location is the relationship of the thrust line to the vertical "CG" of the airplane. The thrust direction is the angular relationship of the thrust line to the angle of attack of the wing. Simply stated, when the airplane is flying and at its proper angle of attack, the propeller is pushing straight ahead, through the "CG." However, if the thrust line is too high, a condition of dynamic instability can exist. In this configuration, the airplane can be flown in a trim steady condition. However, when disturbed by a gust, for example, porpoising can occur. If this is coupled with pilot inexperience, an extremely dangerous oscillation can result leading to whip stalls.

High thrust lines can also result in dangerous power-on stall characteristics. Let's use a billiard ball suspended in air as an analogy. The "CG" of the ball is in the center. The pool cue represents the thrust. If you hit the ball above the center, it will rotate "nose down." If hit below the "CG," the ball will rotate upward, and if hit dead center, it will not want to rotate at all. This condition exists when an aircraft stalls. When stalled, the aerodynamic forces due to reflex and washout are very low. The thrust of the engine is very high, and is the major force acting on the airplane. At this point we have a mass acceleration situation just like the billiard ball being hit with the cue stick.

How do you tell if your thrust line is off? The easiest way is to fly your airplane straight and level at a cruise airspeed. Reduce to idle and watch the reaction of the airplane. If the nose rises and you have to re-trim, either the thrust location or direction is off. In this instance, the thrust of the engine is too high and is acting as a nose down trim force. When you remove the trim force provided by the engine, the nose will rise. In some cases, a stall can occur if the pilot doesn't re-trim soon enough after reducing power. If the thrust line is too low the opposite situation can occur.

When properly set up, the airplane should slow up, slightly nose itself down, and maintain a safe glide speed without any trim change of the pilot. If any porpoising starts, shift your weight forward slightly and shut off the engine immediately. Then land, and do not fly again until some corrective action has been taken!

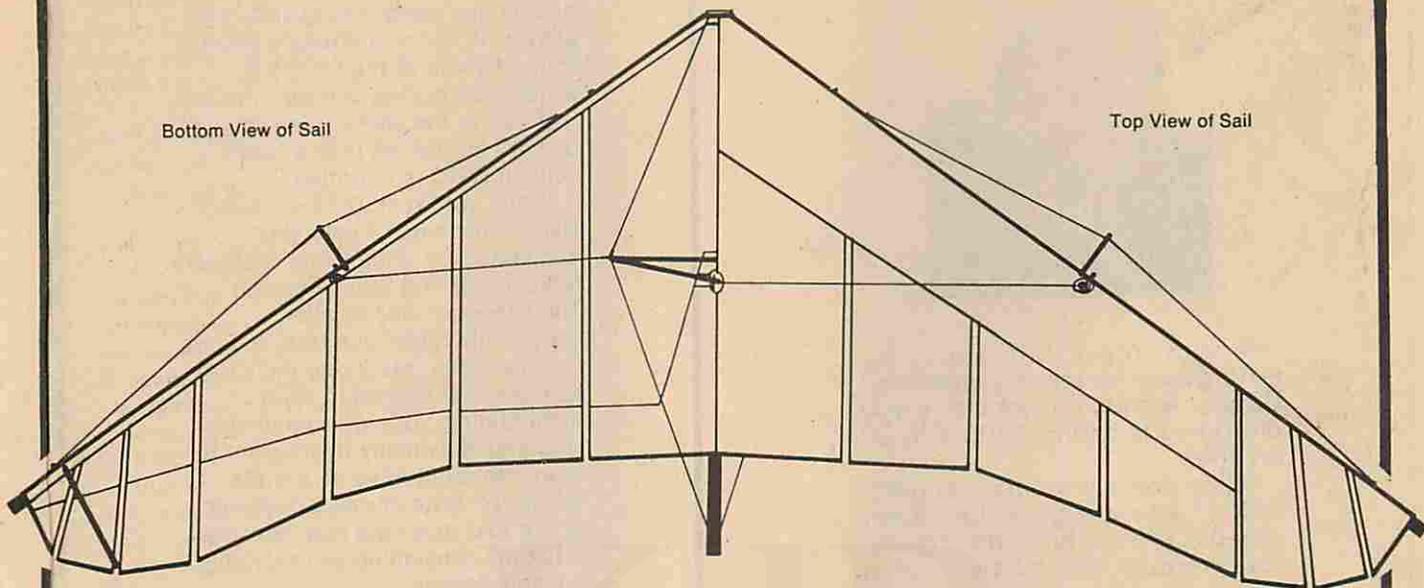


Highster Aircraft, Inc.

1508 Sixth Street Berkeley, California 94710

Bottom View of Sail

Top View of Sail



More Reasons for Owning a Highster —

The ALL SEASON GLIDER !!

Most gliders excell at something; there are gliders designed for marginal days, for ridge flying, for thermal flights . . . which is fine — if you're a "one-condition" pilot. Most flyers aren't.

If you're a pilot who likes to fly in everything from 0 to 40 mph, there's now a glider just for you — **Highster** for 1979! Through extensive research and development, our wings are capable of very slow flight, while still retaining their famous top end. The speed range is nothing short of fantastic. Right through the whole line, whether the 150, 170 or the 190, you'll find proof that **Highster** has designed the first all-condition glider.

The roll rate is faster than in 1978, and just as docile. The sink rate has been improved by approximately 10%. There is also an increase in L/D due to the constant refinements being made to this time-proven design.

Other manufacturers are still trying to equal **Highster's** performance capabilities, yet need many specialty models to cover the broad spectrum of our double-surfaced glider . . . and **Highster** accomplishes all this with an airfoil that began flying in 1974!!

If you have fun flying, and don't want to miss a day because your glider's limits don't fit the conditions, then you'll have more fun — on the **Highster!!!**

HIGHSTER SPECIFICATIONS

MODEL	150	170	190
Span	30'	32'	34'
Area	152 sq. ft.	168 sq. ft.	188 sq. ft.
Leading Edge Length	18'	19'	20'
Aspect Ratio	6	6.02	6.1
Root Chord	9'8"	9'11"	10'2"
Nose Angle	110°	110°	110°
Empty Weight	50 lbs.	52 lbs.	54 lbs.
Pilot Weight Range	105-155 lbs	150-180 lbs	170 lbs +
PRICE	\$1,395	\$1,425	\$1,455

Fully ribbed 90% double-surface sail
 Wing loading factor 6.5 positive - 4.5 negative (all models)
 Passed 150° load test at 35 mph in 1978 (with quadral deflexors)

All Models

- includes deluxe bag assortment - cover bag, rib bag, cross spar covers and wire pouches
- Rainbow tips - no extra cost
- Custom keel pocket - no extra cost
- Special designs available upon request

Colors Available

light blue, dark blue, dark green, lime, yellow, gold, orange, red, purple, brown, black, white

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WAC tech~panel

Ever had a technical question that you were afraid to ask? Maybe no one you knew was qualified to answer it. Do you struggle trying to read some of the technical articles appearing in *Hang Gliding*?

If yes to the above, then you will be very interested in this new column WAC is initiating.

While out West, WAC Publisher Dan Johnson had a new idea suggested by Wills Wing designers, Mike Meier and Steve Pearson. Their thought was to elicit reasonable questions from readers . . . questions relating to technical aspects of the aviation sport of hang gliding. The idea seemed very sound as many flyers want to learn more but have no avenue except to write or call a designer. While that may help one individual, it is time-consuming and aids only a single person.

Thus, the WAC Tech-Panel. Via our popular Reader Inquiry Cards, or letters, you can now send in your questions to WAC. (Do NOT send them to our Panel Advisors!) We will screen the questions for new inquiries, for clarity, and for ways that serve as many readers as possible.

We will then submit the question to the most suitable Advisor. If suitable to more than one Advisor, we will distribute them on a rotating basis. Our Advisory Panel is now comprised of:

Mike Meier and Steve Pearson —
Wills Wing
Roy Haggard —
Ultralight Products
Dick Boone —
Bennett Delta Wing
Tom Peghiny —
Seagull Aircraft
Chuck Slusarczyk —
CSG Aviation
(Power Questions)

As these persons are able to answer your questions, WAC will print them, with the question, for all to digest and learn.

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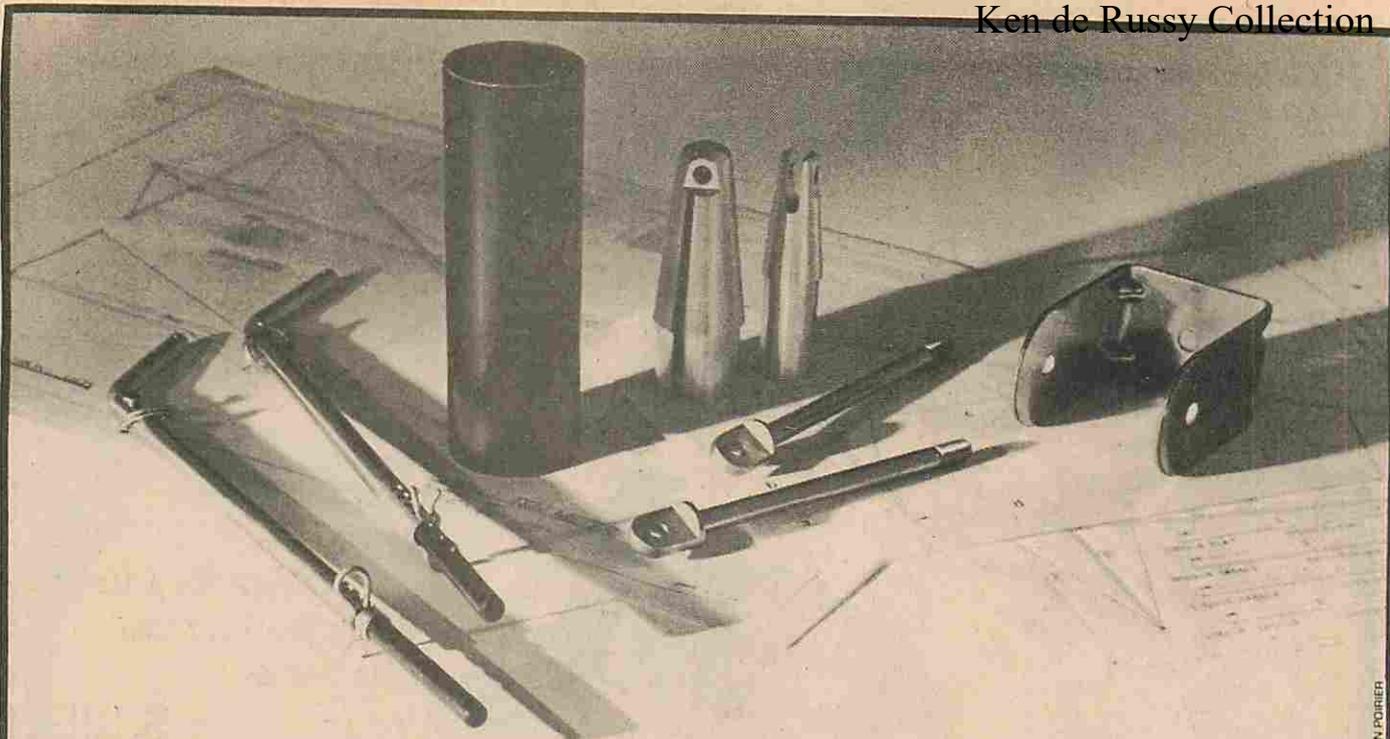


PHOTO: YVAN POIRIER

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There are two methods used for achieving low twist on a flex-wing hang glider. On a glider with straight leading edges, one can only tighten the sail to reduce aerodynamic twist. Simply tightening the sail reduces the overall flexibility of the glider. This slows the roll rate and increases control pressures considerably; it also puts an increased load on the airframe, making heavy reinforcements necessary to retain adequate strength. The SEAGULL cylindrical/anhedral leading edge reduces aerodynamic twist without tightening the sail. This is done by raising the front of the sail (curving the leading edges to a cylindrical shape) to produce a leading edge curve that matches the trailing edge curve. This allows low twist on a relatively slack sail. The dividend is high performance with better handling and greater strength. Our "curved leading edges" are as distinctive conceptually as they are aesthetically.

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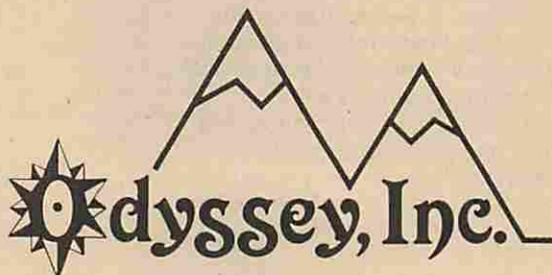
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GETTING RADICAL

When I first saw '79 Nationals Champ, Eric Raymond, looping his glider repeatedly just prior to the start of the recent American Cup, I felt I had witnessed the opening of a new avenue in hang gliding. Aerobatics! Loops had been done before by several pilots, so Eric's were not the very first. I just don't think they had been done before under these circumstances. Maybe it was because he was a pilot who had the focus of attention from all the other pilots. It seemed to spark acceptance, an approval that had not always existed. Hang Gliding oscillated at a point of evolution, and needed a push over.

The timing is evident in the industry, as various manufacturers are either in the process of building, or are seriously considering an aerobatic glider as a practical commodity. This will be the decade aerobatic technologies are tested and perfected. Eric will be remembered as a pioneer in the effort, for his loops in Chattanooga. Other pilots will become interested and motivate for greater knowledge, thus propelling the cycle of learning.

One interested pilot, Chris Smith of Chattanooga, who is also a CGS test pilot, will be capable of aerobatics when his bowsprit glider is complete. It is because of this interest that I thought of a printed conversation between the two, with Eric's vantage point as an "experienced" aerobatic pilot, and another one ready to begin to "get radical."

— Starr Tays

"Whatever you do, make sure you have tons of positive bar pressure."

LOOPS

Chris: You put extra reflex in your glider when you did your first loops. Why? Does it let you pull out faster?

Eric: I still have it. It's built in up elevator. Anyway, all the Fledges need it because hands off they don't have any pitch stability. It's dangerous to some extent to try a loop with negative bar pressure.

Chris: How come you use a rigid wing to do loops,

Eric: Because of its energy retention. Other gliders are able to go fast, but they don't retain their energy.

Chris: How critical is the trim on your glider for doing loops?

Eric: It has to be perfect so you stall straight.

Chris: You told me at the American Cup that you wanted to build another wing. Are you still thinking about it?

Eric: I am not going to build another one; I'm going to alter the one I have some more by putting bigger tubing on the main spars, a completely new double surfaced sail, and flexible, not metal ribs all along the bottom. (Editor's Note: Such modifications are NOT recommended by Eric or WAC without consulting the factory!)

Chris: How do you judge your speed when doing loops?

Eric: Just by the sound of the wires.

Chris: How fast are you going when you dive for loops?

Eric: 65 m.p.h.

Chris: How fast over the top?

Eric: 25 mph down to zero — sometimes less than zero when I tail slide and go backwards.

Chris: How do you react when this happens? Do you complete a loop,

Eric: Nothing happens. It tail slides, then the nose drops through.

Chris: Where is a good place to do loops and how much consideration should you give to thermals?

Eric: There is no way you can do aerobatics in thermals. Actually, ridge lift is best; Hawaii being the most perfect, because its lift band is so wide and smooth. I thought Lookout Mountain was great!

Chris: You told me that you thought of doing loops the few times you have been to 10,000 AGL, but didn't. Why? Was it the thermal activity?

Eric: That, plus the thinner air. Thin air means more air speed needed to complete a roll. The tremendous amount needed could break the present crafts.

Chris: What would you do if you stalled upside down in a loop?

Eric: I put my rudders "on," with my feet in the wires and hold onto my control bar. It's weird, you would think you would want to pull yourself forward through the bar, getting your weight on the nose. But I found the opposite to be true. By pushing out all the way, you arc it on around.

Chris: How did you go about practicing for aerobatics?

Eric: Well, what I did was get the glider going as fast as it could, and try to climb as steep as possible, a gradual pullup.

Chris: Do you push out at the top or the bottom?

Eric: If you push out fast at the bottom it will kill your airspeed. Retain your energy. I have failed to do this before, and snapped it into a high speed stall.

Chris: When you "snapped," did it just stop,

Eric: No, it was really weird. The glider didn't go up, but the nose pointed straight up. It all happened so fast; it still did a loop but the airspeed was gone. When it did recover, it grabbed the air really weird. More like a tumble, rather than a loop.

(Editor's Note: Recall that a wing can stall at any airspeed and at any angle.)

WINGOVERS

Chris: For doing wingovers, do you think your Fledge or a rag wing is best?

Eric: Rogallo wings, definitely. Rigid wings do better loops and spins. My Fledge doesn't have the necessary dihedral to do wingovers.

Chris: Are a lot of people out in California besides yourself doing loops and wingovers?

Eric: Not that I know of.

Chris: I heard about some pilots flying Status' doing them.

Eric: A few people in San Francisco are pretty close. Dan Racanelli and a few others are into

doing 100 degree wingovers, straight and level inverted. But they are not going straight up and coming out the same direction they entered.

Chris: How did you practice for wingovers?

Eric: Gradually. I did small ones at first. Do a lot of roll reversals, left to right, right to left. Then it's a matter of coordination between pitch and yaw. It's pretty important, also, to learn about stalling.

Chris: Is it easier to do linked wingovers, or one at a time?

Eric: Linked is easier. Several can build your speed up faster and you develop a certain rhythm. Many gliders you cannot dive fast enough to do really steep wingovers the first time. You have to do a series of rolls first.

Chris: Are there similarities in the way gliders do wingovers?

Eric: Yes, for instance, the Mosquito, Stratus, and Antares are pretty similar to each other. The Raven and the Condor are also similar. The 151 Condor is fun and easy to roll back and forth.

GLIDER ALTERATIONS

Chris: Do you have a sleeved base tube?

Eric: No. I have two independent ones. If you do sleeve your base tube, I would suggest sleeving it all the way to the end.

Chris: I just added a bar to my back flying wires. Do you think that is a good idea?

Eric: Yes, I don't need one on my Fledge, because the wires are pinched together.

Chris: On your Fledge, you have 3/32" going way out to the wings. Do they stretch a lot when you loop?

Eric: Yes, especially the king post wire. Each one has stretched an inch or inch-and-a-half, at least. I have to put new ones on.

Chris: You have taken off your droop tips. Why?

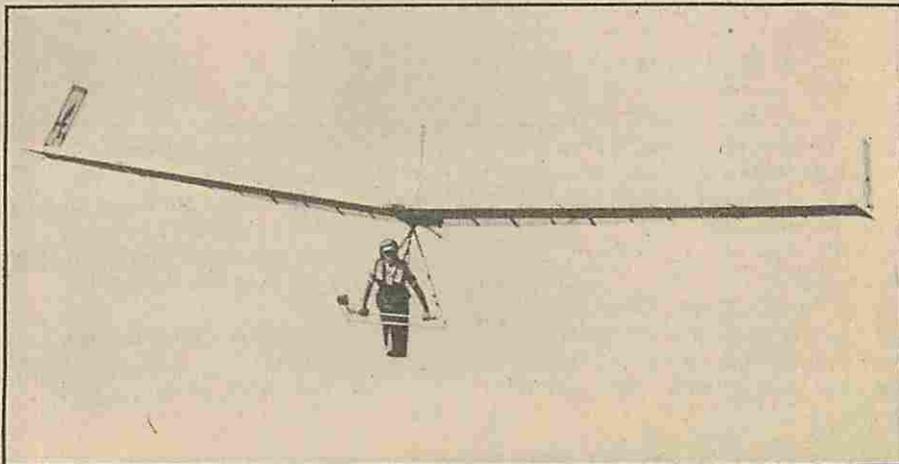
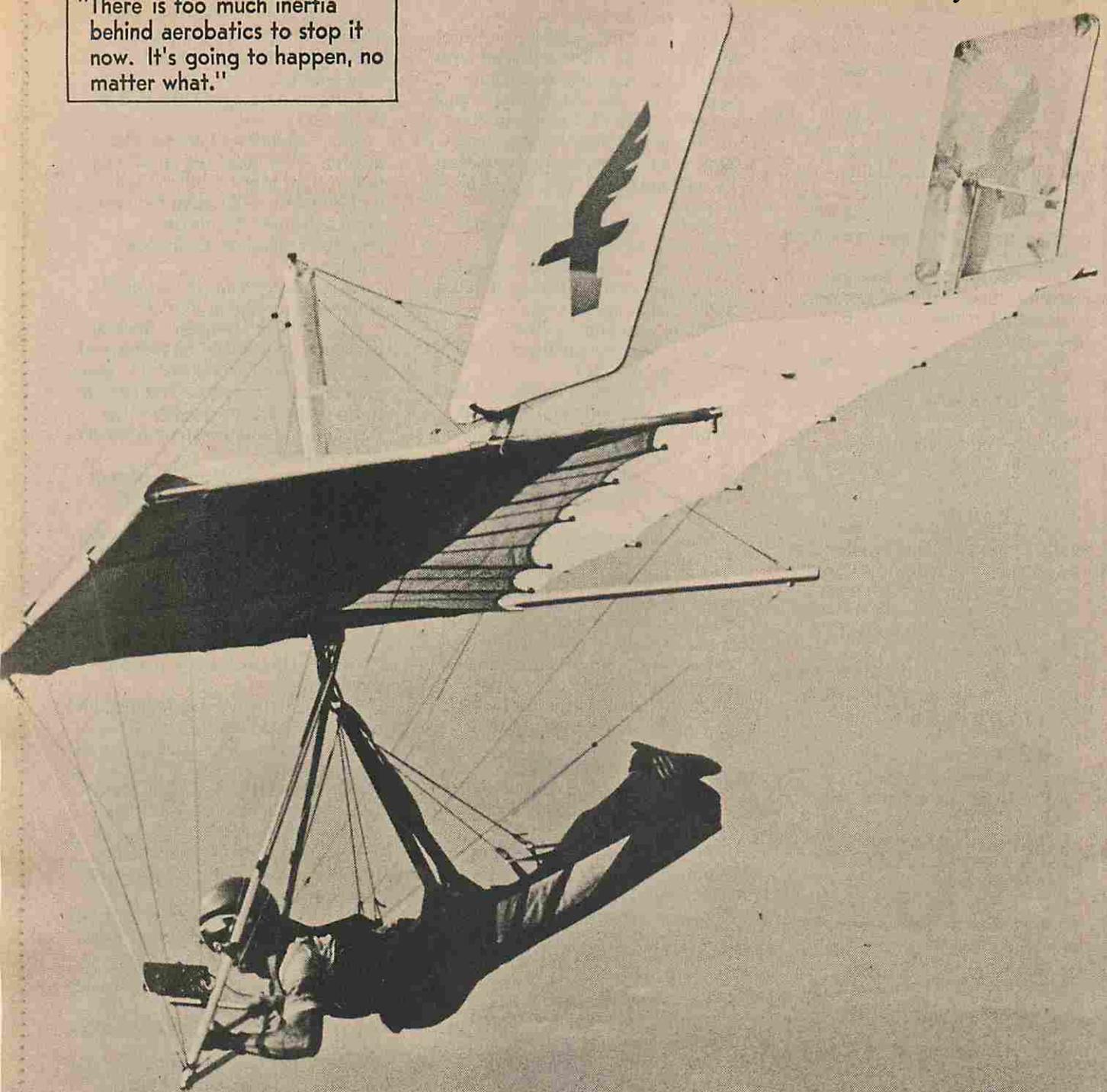


Photo by Jim Henderson

"There is too much inertia behind aerobatics to stop it now. It's going to happen, no matter what."



Eric: Better handling. Actually they make it too "hot" by increasing the turn radius, which you don't want in aerobatics.

Chris: How about a word on Kasper Tips?

Eric: They're great! They give you a better glide and better sink rate. You can go slower although you can't turn as well. This makes

them only adequate for thermalling as they don't work very well as spoilers. When you put them on all the way, they just don't seem to have that much drag. Not when you compare them to the Fledge II spoilers.

Chris: When you put them on, do you pull in?

Eric: Yes, a lot, as far as you

can. You can't get the nose down once the rudders are on. They make you fly slower and go down faster.

Chris: What do your extra battens do?

Eric: They make the glider go faster with less drag. The trailing edge used to flutter at 40 mph. I believe in battens, the more the better.

THE NEW CGS FALCONS

STANDARD FEATURES:

Standard features on both Falcon models include: cover bag, negative deflexers, floating tips, quick set-up and CGS high quality hardware. Applied leading edges are standard on the Falcon 8. Breakdown frame and dual rigging are optional.

FALCON 8

With lightness in mind, the Falcon 8 has been developed for the pilot that wants an easy to fly, L/D ship. Using the same basic frame and large keel pocket from last year's Falcon 5.5, CGS has improved the sail and cambering technique. The result is, easy set-up launching and landing, light bar pressure, and performance that will put you ahead. The high speed ability combined with a beefier frame makes the Falcon 8 a much safer thermal or high wind ship that won't wear you out.

OUTSTANDING!

FALCON 5 PLUS

The Falcon 5 "Plus" has many of the appealing characteristics of the original Falcon 5 ... with a plus. The "plus" is a raised keel pocket and floating tips for a positive attitude. The Falcon 5 "Plus" has a wide range of tuneability. A good beginner can fly safely while an advanced pilot will find the tighter profile gives easy, light handling with quick response. The Falcon 5 "Plus" has low stall speed for floating, but good penetration when needed, even under a light loading. A design that has proven successful for three years, proves better now. Falcon 5 "Plus."



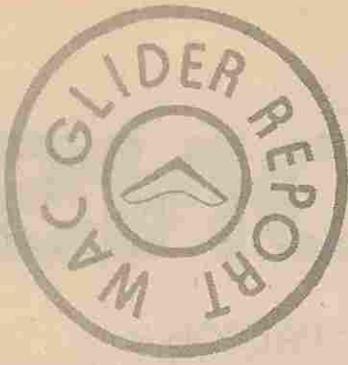
FALCON 5 OWNERS

If you presently own a Falcon 5, ask about our conversion option to a Falcon 5 "Plus."



CGS AIRCRAFT

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by DAN JOHNSON

THE CGS AIRCRAFT FALCON 8

The Falcon goes back further than CGS Aircraft. How's that, you say? Well, in 1978, Chuck's Glider Supplies split into two organizations. At that time, being in the glider business for well over six years, owner Slusarczyk had to diversify. Motors had begun to make a mark in the sport and Slusarczyk's background lent itself to this new phase. So the old CGS became both CGS Aviation (power)) and CGS Aircraft (gliders). But before any of this corporate name juggling came the Falcon.

I first viewed the prototype Falcon 5 at Frankfort, Michigan in 1976. Of course, if you ask Chuck, he'd point out that the name Falcon went back much further to a twin keel, tailed design of the early 70's. But Falcon, as we newcomers know it, relates to the '5,' and it was first flown in public at the Mid-West Open.

It was a wild looking craft, with a sail made entirely of patches, regular squares which gave it the look of a quilt. But it had Chuck's quick set up system, flip-out deflexors, and clean, gleaming looks and craftsmanship which is typical of CGS. All this was true at the time the Cumulus V was first being seen . . . rather impressive.

The Falcon 5 was manufactured for several years before development began on the 8. The first 8 prototype came to Chattanooga with former test pilot Pete Osborne in 1978. Many changes were made to arrive at the smooth looking model of 1980. Let's go fly one.

I felt comfortable about trying out the Falcon 8, knowing that local hot pilot Chris Smith had done dive

testing for CGS on it. I asked him about its characteristics.

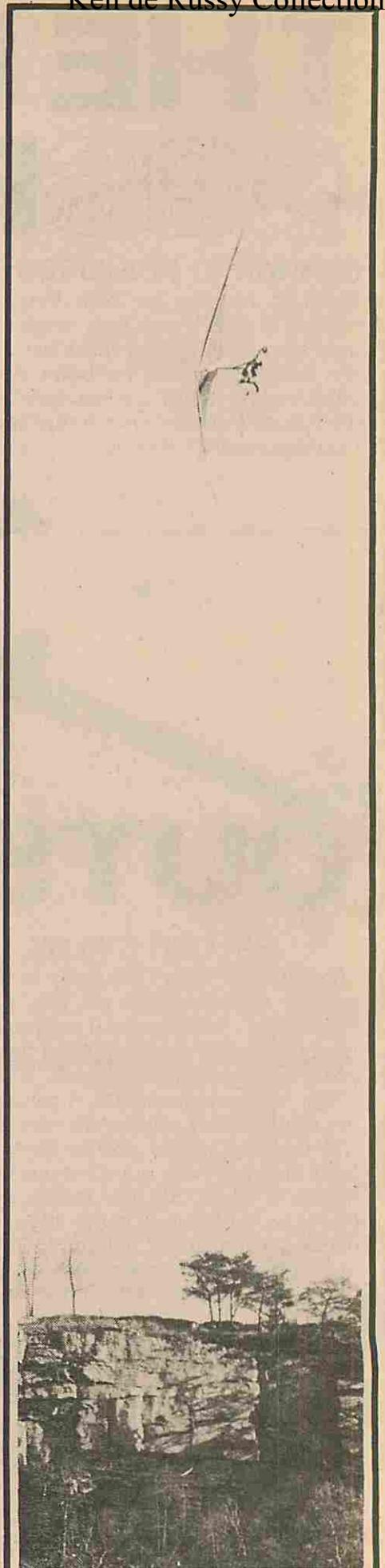
The 21 footer launches very easily, exhibiting no stalling tendency. This will make it forgiving in light winds, even in a mild tailwind. Its balance is a bit tail heavy, though not as bad as some other designs. Chris advised the factory to remove the stinger keel for this balance reason and because he feels it will reduce stall recovery time slightly.

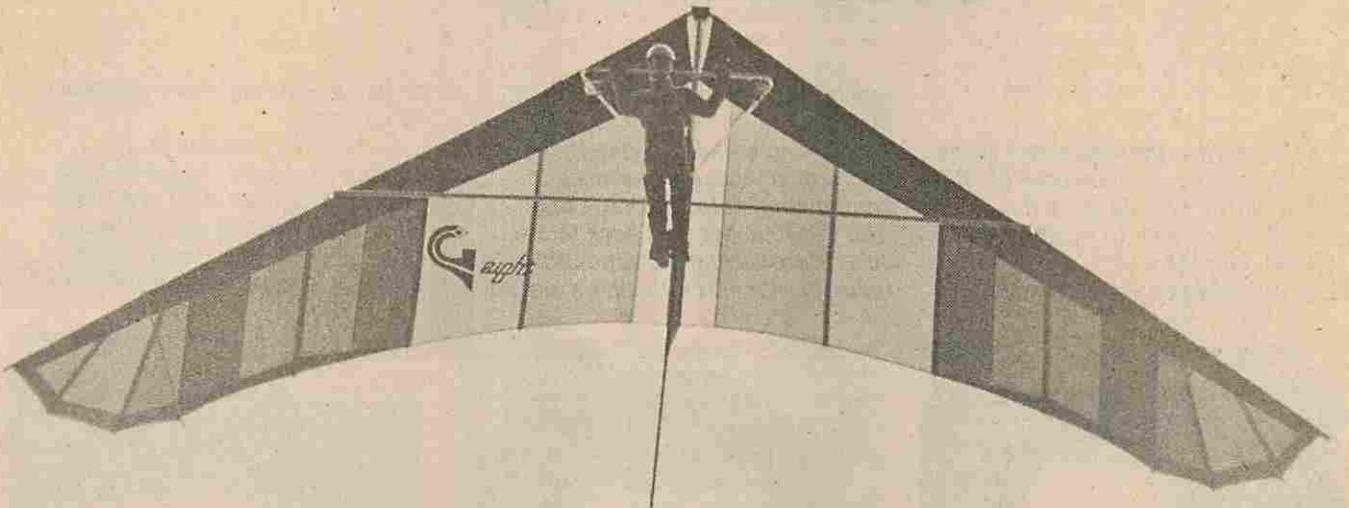
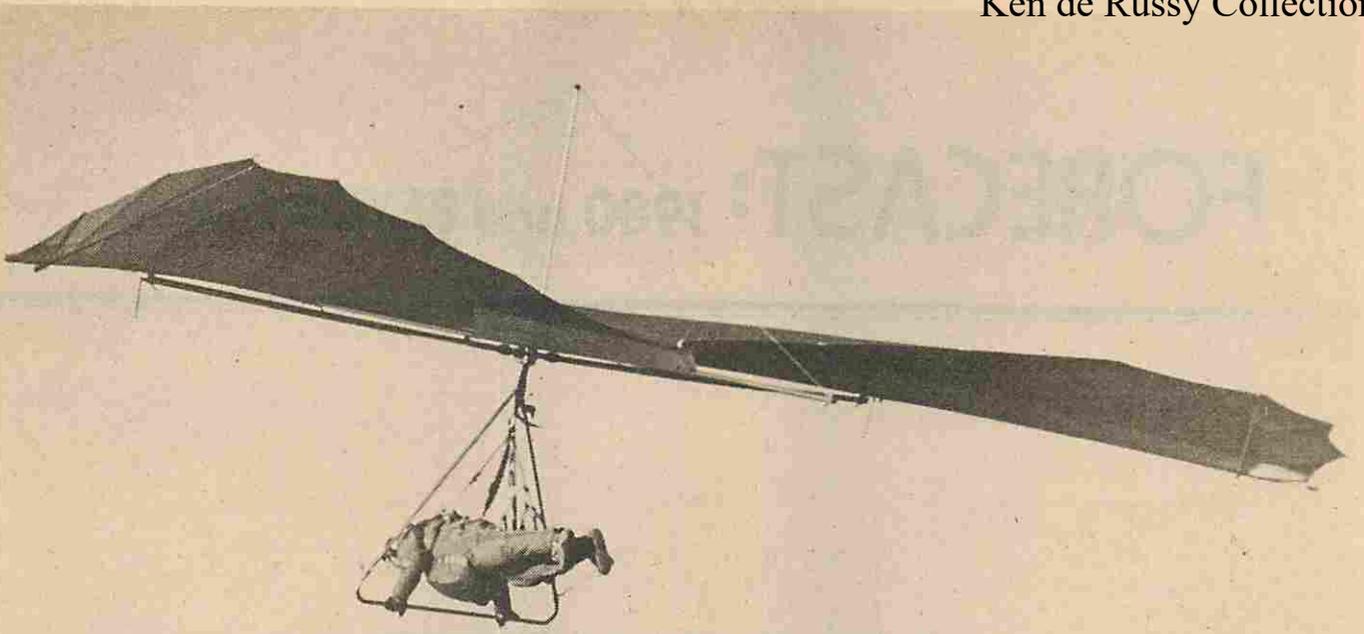
The 8 rolls very lightly, as easy as the Olympus it resembles, though it cannot slow down in turns nearly as well. Smith is certain that the light roll pressure comes from a mild degree of spiral instability, a quality shared by some other top designs. Because of this, however, one cannot use excessive push out in turns. Once a wing is stalled, corrective pressure builds somewhat. This cuts into its thermalling ability. That is, I should say that the 8 thermals easily enough, but much like a Maxi, you must high side the bar to effect the best thermalling turns.

The glider can really cruise. In fact, while its sink rate is very respectable, the 8 can truly show off at higher speeds. It also illustrates a clean sail. Even the tips do not flap, frequently a drawback of flex-wings. I did not get to fly the 8 in any amount of wind, but Smith relates that on a day with a troublesome crosswind, the Falcon moved right out, comfortably.

The landing is mellow, no tendency to drop the nose, as is common on many high performance wings. It does seem to require a sharp flare out and will not tolerate a gradual movement.

Set up/take down is very fast with a proven system CGS has employed for some time. My sole recommendation is to make the bar collapse. I'm uncertain of the 1980 price, but judging from last year, the 8 is an advanced ship with many desirable qualities for a very reasonable price. It's beautifully constructed and deserves a test flight by you.





FORECAST: 1980 and BEYOND with

BILL BENNETT

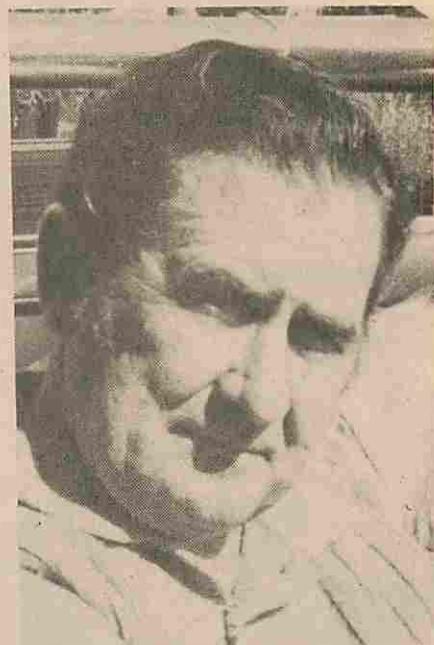
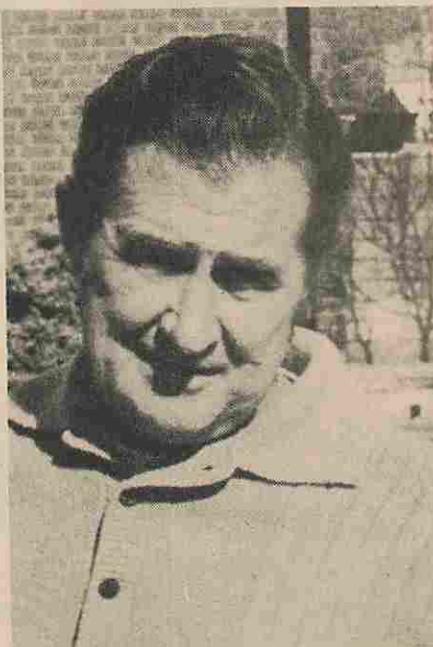
The 70's were the beginning years for hang gliding. Advancements at the end of the decade gave the sport an image real to aviation and pilots around the world. Now, with these developments, much new

technology should emerge in the 80's.

Speaking with Bill Bennett, we find a man whose experience in hang gliding dates back not only thru the 70's, but well back into the 60's. Considering his time in the industry, Bennett's thoughts are apt

to be as accurate as a consumer could hope.

Some have mentioned the closing of the gap between high performance flex wing and fixed wings like the "Fledge." Having seen much design development, Bill, would you comment on that?



"We will see the use of graphite, lighter weight sails, and composite materials, leading to strong, cantilevered designs."

"Our growth future lies with schools and instruction."

"Just let anyone produce an unsafe glider, and they'll have a battle to stay around."

Soon in the 80's, we will see no differences. I see that by '81 we will have only a single utility class with no distinction, flex or fixed wing.

How will we achieve that?

Weight savings are a path, with higher wing loading we will see the use of more exotic materials to accomplish this — graphite, lighter weight sails, composite materials in air frames leading to strong cantilever designs, which will save on kingposts and cables. We may also see control surfaces, whether manually controlled or automatic. Tails are not likely if stability can stay where we've got it now.

What new developments are in the making for Delta Wing?

We have a new chute in preparation. It features very fast deployment and super light weight, perhaps only three pounds. This is now going thru patent processing. Another will be greater use of exotic materials, once larger industries, like autos, make them available at reasonable prices. To fight price increases (dacron is up 25% already), we will use efficient procedures and less components. This will have a secondary benefit of reducing assembly times.

We will also see use of radios, already permitted in the XC- meets and the new Southern California League. Beyond these things, I see use of more applicable instruments such as infrared glasses, thermal sniffers, optimum airspeed indicators, et cetera.

The 70's showed several losses of manufacturers — Free Flight, Chandelle, Sun, and others. This has distilled ten or twelve brands. What does their general future look like?

Let's compare ourselves to the auto industry. In 1932, three hundred manufacturers produced cars. Five years later, in the depths of the depression, only five remained. Since the days of our conventional standards we've had a gentle shaking away of builders.

Technological developments have caused the most attrition, as opposed to the auto industry, where economics were the major difficulty.

Today, a manufacturer needs a quite experienced designer, and the ten we're speaking about all have one. The HGMA action has done a lot for the consumer and designer alike, but it has scared some undesirables and some smaller outfits.

Loans are now more available to hang gliding manufacturers than ever in the 70's. So as I see it, all the current majors should survive the 80's, both technologically and economically, but just let anyone produce an unsafe glider, and they'll have a battle to stay around.

The color of American competition is changing fast, even now as the Southern California League begins professional level contests. What promise does this indicate for American pilots and crafts in competition in the 80's?

It's harder and harder to be a champion pilot — much more so than in the 70's when America led the world in developments. And internationally, it's harder than ever for American pilots. We used to create new records easily, but now we must compete against the masses. Many foreign pilots are achieving new heights. Old winners must strive ever harder.

Beyond that, Americans are still learning the art of team flying. This is a much different thing and America is a nation of individualists.

But international meets are very good. They give American designers fresh input, and vice versa.

Great safety developments came in the closing years of the 70's — 'chutes, stricter HGMA certification requirements, tougher pilot standards, regulated sites. What directions are possible for the 80's?

I'd call this a two part answer. As I view it the most significant thing we can do for safety is continue the pilot education program. The Instructor Certification Program has begun a great increase in the safety factor of flying. This should bring more success yet.

But also, we are experiencing a

change in pilot attitudes since the 70's. We have many less go-for-it flyers. Peer pressure will create more safety and safety consciousness than anything from the 70's.

You recall in the 70's especially the early 70's, we were just coming from the turbulent 60's, and the Vietnam War. There was a need to prove one's manliness it seemed. Now, there are more mature pilots around. These people do not want to see any negative press. The average age has risen noticeably.

At the close of the decade, strides were being taken for hang gliding to be somewhat assimilated into the General Aviation Community (more interface, flying areas on Sectional maps). Are we likely to continue this?

Economically, the FAA is overburdened. They just don't need more duties without more funding. Our assimilation hinges greatly on FAA actions, and they have had their hands full of DC-10 problems. If it had not been for those incidents, the situation could have been very different. Motorized developments may still invite FAA involvement. Other nations like Germany, Switzerland, and Australia already have much more control. It's not a certain thing to forecast as so many other variables exist.

In the mid-70's, it was popular to claim hang gliding would grow to proportions of snow skiing. This has not happened. What do you see as pilot growth in the ten years ahead?

Well, growth must be true growth, gains minus losses. Our growth future lies with schools and instruction. For example, Venezuela gained a good many pilots at first. But those entering early wanted a small group and they trained no new pilots. The size of their community has not grown at all, even gotten smaller. Thus, growth lies singularly in fostering new students. For this reason, as well as the safety factor, the Certified Instructor program is vitally important.

Thank you, Bill.



THE US MOYES MAXI MARK III

By Dan Johnson



Photo by Jim Henderson

For a number of good reasons, the Maxi may be the most well known glider in the world.

Enumerating, first, the Maxi has an excellence performance envelope, optimizing the lower speed range best. Hence, the first floater. Secondly, the Maxi has been around quite a while, emerging on the scene in 1977. It was just the Maxi then, and with improvements to widen its speed range and handling, it earned the Mark II, then Mark III designation.

Thirdly, the Maxi is probably the only "foreign" glider enjoying active sales in several different countries. Fourthly, the Moyes name rivals that of Bill Bennett for

length of time involved, and again, Moyes and company have toured extensively around the world, winning contests everywhere they go. Lastly, the Maxi was born in a towing environment, the contest circuit in which it has never been beaten consistently by any other brand.

No wonder then, the Maxi has gained the ability to create a sort of revered mystique. It's the kind of thing that causes a new enthusiast to buy a Maxi sight unseen — even before he or she takes a first lesson. True, in 1977 the Maxi was rated Hang 4, but today a "2" can handle it, and the Michigan Moyes boys have even

used them successfully for training.

The Mark I Maxi was really a different wing. It offered a quicker roll, but the pitch action was less responsive. It also flew slower and would not accelerate well. The Mark III changes that dramatically. They tightened the sail and made a more rigid airfoil by extending the flexible battens all the way to the leading edge, as opposed to stopping behind the leading edge pocket. You would suppose these changes might make it roll less easily, and you are partly right. But alterations to the keel pocket (which Moyes pioneered) now permit a good deal more sail shift.

The result is a much wider speed range which still handles well. This is just another example of refinements which heighten desirable qualities without detracting from established benefits. Refinements of this success reflect Bill Moyes long years in the design of gliders.

The Mark III will be replaced by the Mark IV in 1980. But this will not change the flying characteristics at all. It is merely a name change to accompany the addition of a quick set up, modeled after the best European systems, also incorporating a kingpost screw-down tensioner arrangement. The Braddock brothers added this last touch, fabricating the fittings themselves in their well-equipped tool business.

The Maxi Mark III is average among lower aspect ratio wings (i.e., longer root chord). Average, that is, in roll and pitch responsiveness. It is fair and accurate to claim it is legendary in performance. Roll and pitch pressures are slightly higher than, say, a Raven or a Lazor, and a greater control distance must be traveled. But in spite of these



Photo by Jim Henderson 2



assessments, turning is a phase of flight where Maxi pilots consistently out-gain most other designs, till they sit on top of the pack.

The Maxi is a thermalling dream. It turns very tightly with a low bank angle. (This also helps explain its powerful tow meet advantages.) It has neutral roll stability, so it can be flown hands off in a 360. Over a 45° bank you must high side the bar, though this can be a matter

of tuning. Greater deflexor wire (it has only one) and lower rigging tension will alter this quality somewhat.

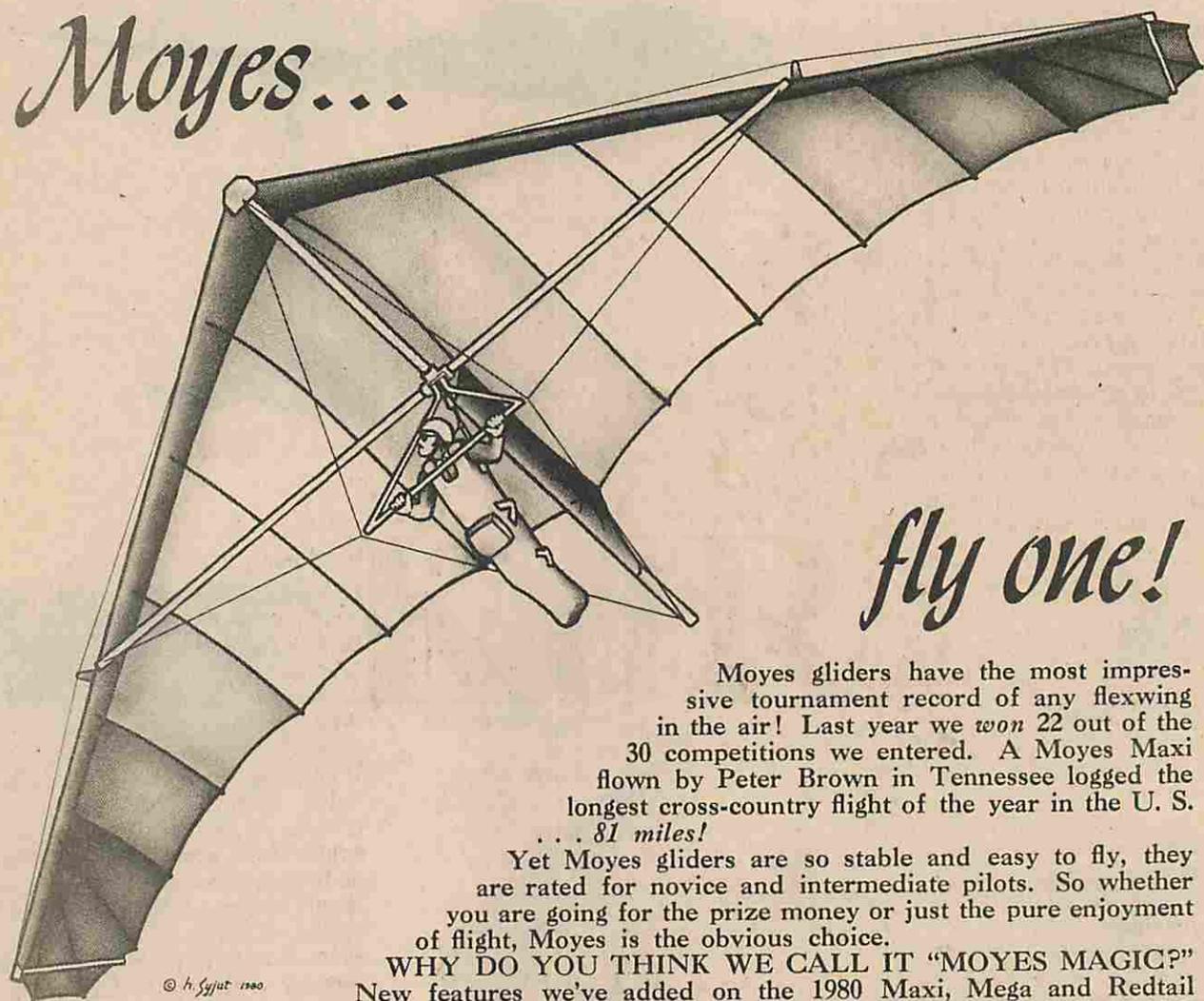
The Maxi takes off almost without pilot assistance, and lands similarly, with neutral pressures. On landing, a gradual flare out is usual, with no precise timing required.

Set up and disassembly is Eipper-like, with the American

version. The Australian crafts had to be set up on the ground, but the Braddocks made this more conventional to Americans. Now that Bill Moyes is half partner in US Moyes, more fine changes are likely as the two groups are able to function more singularly.

If the opportunity presents itself to you, try test flying a Moyes legend — the Maxi. You may sell what you've got.

*There is only one way
to keep up with a
Moyes...*



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fly one!

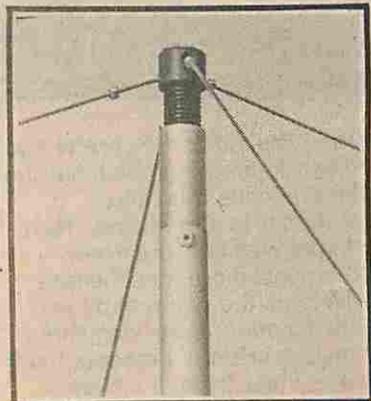
Moyes gliders have the most impressive tournament record of any flexwing in the air! Last year we *won* 22 out of the 30 competitions we entered. A Moyes Maxi flown by Peter Brown in Tennessee logged the longest cross-country flight of the year in the U. S. . . . 81 miles!

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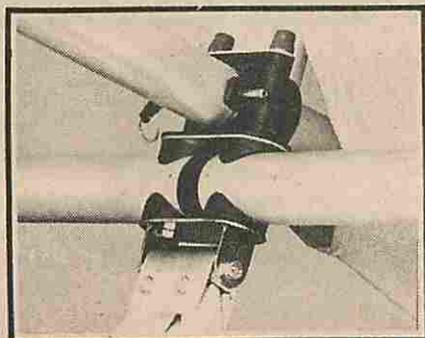
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TOWING



With this issue of WAC we begin our new section on towing. Ed Quirk, who has been actively involved with towing for many years, is our editorial coordinator. Ed will be a welcome addition to our pages, and brings with him a list of credits to handle the task. He is publisher and editor of Sunflight, the newsletter of the Florida Flyers. He is also a partner of Sunflight of Florida. Some of the nation's most seasoned tow pilots will be drawn upon to provide you with their years of experience, as well as many of the manufacturers of tow equipment.

Many of you have expressed an interest in learning about this unique way to hang glide, which comes as no surprise, since many of you are seeking easier, more economical, and less bothersome ways to get into the air. Towing is a logical alternative to consider. Towing has taken a back seat to foot launch flying for many years so consequently there is a shortage of good current information available. In this section, we will cover the techniques, equipment,

and people involved with the many facets of towing.

I've often heard it said that towing is a difficult and dangerous way to fly. On the contrary, towing offers you an alternative to the usual forms of launch. Quite simply it's just another way to get up there. The goals are the same as any mountain pilot — to stay aloft as long as you desire.

Imagine, you load your glider onto the car, and five minutes later you are meeting with your friends at the flying site. It looks like a boomer day with puffs of cumulus just starting to appear. You get quickly set up and do a preflight, hook in and take off. After getting 1200 feet above takeoff, you snag a thermal which takes you up another 1000 feet. After working the lift for awhile you find your harness is getting uncomfortable so you decide to land back at takeoff to make some adjustments. You notice that the wind has turned 100° since launch. No problem, you correct your approach and make a perfect landing next to the other gliders. Later, with the harness readjusted,

you take off again, into the wind, even though the direction had changed considerably from your first launch.

"Never could happen" you say? Well perhaps not with mountain flying, but with towing it can. There is no dependence on distant flying sites. Chances are there is an area perfect for towing close to home. If the wind direction turns, as is often the case, moving with it only involves a change in takeoff direction. No need to chase the wind cross-country to the next site. Another advantage is setting up your glider only once, to fly all day. This gives you and your equipment less wear and tear and more flight time.

Many pilots have a phobia about towing a hang glider. The fear is similar to your first calculus course. You were told all the stories about terrifying equations and had conjured up in your mind that this was a necessary evil you had to endure. Well relax . . . towing is an experience you can enjoy. With the right equipment and instruction, you will be able to safely tow up and fly at locations and times not possible before. It just doesn't make sense to load up the car and head to your favorite site for sled rides, when you can tow close to home, catch a thermal and fly

away. Now I don't want you to think towing is better than soaring a ridge — quite the contrary, since 75 percent of the United States is flat lands, towing may be the only logical choice.

Let me stress the importance of proper equipment and instruction. Just like you wouldn't use hardware from your local discount store on your glider, you wouldn't want to just attach some rope to your glider and have your friend with the turbo muscle car pull you.

One of the first things you should

Equipment used in towing is not complicated or expensive. Only one modification or addition needs to be made to the conventional glider. You'll require a stronger control bar, which will distribute the pull from the tow line. This is called a tow bar and is made from heavy gauge aluminum or stainless steel. The bar is made to fit the glider's existing flying wires; therefore, it will interchange freely with the soaring bar. Several other features are needed to complete a typical tow bar — releases, bridal,



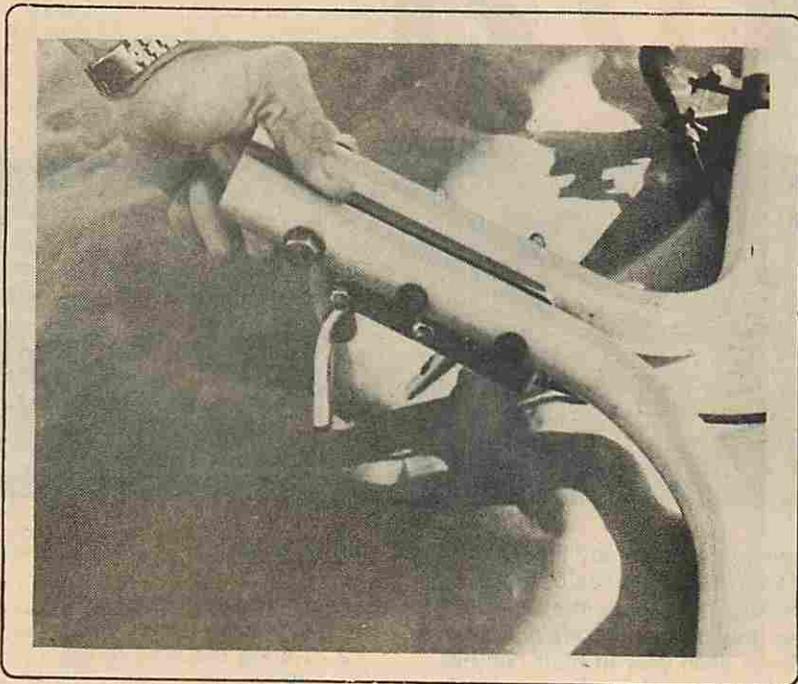
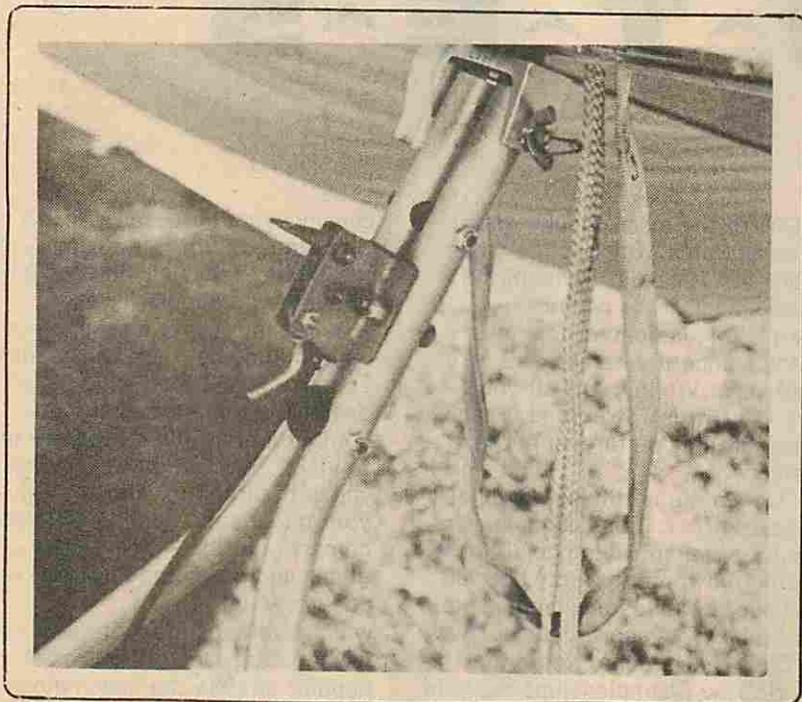
do is seek professional help (not necessarily the type with the couch). Towing, like foot launch, is difficult to grasp from a few written words and diagrams. Many hang gliding schools now offer tow instruction. These schools are able to take an experienced pilot and have them towing to 1000 feet in one short weekend. This is also a great way to learn how to hang glide from the beginning, and generally offers the student altitude experience quicker.

and floats (if you are flying over water). The cost of a tow bar ranges from \$350 to \$600, which is low when you compare that with a 4-wheel drive vehicle to get you to the top of a mountain.

Releases are one of the most important parts of a tow glider. They enable the pilot to release the tow line when he chooses. The release must work positively and smoothly in all loading conditions that may be encountered. It is entirely possible that the tow line

BELOW:

A typical top release.



ABOVE:

This is a Bailey Swivel release attached to the bottom of the tow bar. Notice that the release arm can move freely from side to side. This allows positive releases from all angles of pull.

could pull from the side of a release in an adverse situation, which may cause it to bind or open without warning. A premature release could result in a whip stall, while in some situations not being able to release could tuck a glider. So, when you are selecting a tow system for your glider, pay particular attention to the release.

The two-release system is the most popular method used today. One is attached to the top of the bar, close to the hang point, while the other is in the center of the bottom of the control bar. This bottom release is extended out several inches to allow better pitch control. Along with the bridal, the top release is used to limit the angle of attack during the initial stages of the tow. Both releases are operated by means of a mechanical cable and lever system similar to that used on a motorcycle.

The bridal, or "V" pull as some call it, is attached to the two releases and one end of the tow line. By lengthening the top bridal line, the pitch will be increased during the tow. If the line is shortened, the converse would be true. This length is adjusted to the pilot's preference. About a fourth to a third way up on the tow the top bridal line will be released. The rest of the tow is done from the bottom release, and the pilot controls the pitch.

Floats are quite obviously used to float the glider and, if necessary, the pilot. (Of course, if you are towing over land, you wouldn't sink and drown in sand, so you don't need floats). Two floats are attached to the tow bar, and on each of the down tubes. These floats should be mounted as low as possible so they will float the glider high. A third float is attached to the tail of the glider. This will assist in keeping the glider upright and into the wind. Floats should be aerodynamically shaped to reduce drag.

This briefly covers the components used on a tow glider. More in-depth discussion in future articles will explain their operation and maintenance, as well as some other types of tow bar systems that are used. In the next Issue we will begin to review the various types of tow line systems, such as winches and static line. I welcome any questions or comments you may have about towing. You can write me in care of: Sunflight of Florida, 11049 Blackwell Way, Orlando Florida 32809. Tight lines!

Florida Towing

S ^ I ^ T ^ E ^ S

When I was asked to write an article about Florida tow sites it appeared to be an easy task. All I would have to do is write about the few sites that everybody flies — or so I thought at first. Sitting back and thinking about it, I came to realize that the Florida Flyers have a lot of "sites"! Perhaps I should explain what I mean by site. With so many areas of water in and around the state we're able to fly just about anywhere. You don't need much more than a beach, facing into the wind, to take off and land. Faced with the dilemma of how to give you a travelog of our sites, I decided to tell you about some of the more popular. I'm sure someone's favorite place is missing, but what follows will give you a good idea of what Florida has to offer.

Obviously with a lack of mountains here, towing is about the only way to fly. This causes you to need a tow vehicle, usually a boat, and a crew to operate it. Ratings are also precluded since everyone is familiar with the site and its conditions, and flies there regularly. Most pilots fly locally for these reasons. However all this presents little problem to experienced foot launch pilots that wish to come down and fly with us. With some coaching and a few practice tows, you'll be going all the way to the top of the tow line in no time. Many pilots have found the transition to be quite enjoyable and personally rewarding.

Most of the flying sites are located in central and south Florida. The majority are on state or county land. However, currently we are enjoying the absence of government regulation at most locations. The government is taking a "wait — see" attitude. This increases the pilot's responsibility to be safe and courteous.

One of the most popular sites is Lake Wales, which is the cross roads of 27 and 60. Some of the state's best cross country thermalling is done at this lake. Many competitive meets are also held here. While in the air you'll see the Citrus Tower, and orange groves rolling on forever in the distance.

Over to the northwest 20 miles is Lake Alfred. This lake is known for its excellent flying conditions during the winter. With a beach a quarter of a mile long, landings are no problem. A short distance away is Cypress Gardens, where the World Tow Championships are held

causeway that crosses Key Biscayne. South trade winds and the Miami Beach skyline make this one site you should fly.

Just about every weekend you will find people flying these sites. To make your trip south a little easier I recommend that you contact a pilot in the area you plan to visit. They will be able to assist you with directions and answer your questions. So next time you come to Florida — bring your glider and do as the Florida Flyers do — tow up! which oversees most of the flying in that area. One of their most popular sites is the beach along the



each year. Some say that the flying talent within 50 miles of the Gardens is perhaps the World's best tow pilots. Florida pilots have placed each year in their contest.

Moving south we have come to the town of Sebring. Here you will find Lake Jackson which offers some of the best winch towing to be had. This lake can be flown in any wind direction, and is large enough to tow up 2300 AGL from the winch.

Down in sunny Miami is the Florida Free Flight Association

LAKE WALES

1. Direction beach faces:
0° - 360°.
2. Rating required to fly:
None.
3. Any club(s) or organization(s) you must register with:
None.
4. Fees you must pay:
None.
5. Best winds:
0 - 12 mph from 45° - 135°.
6. Flying season:
Flyable year-around. Best

thermals are April thru August.

7. Type of towing:
Primarily static line pulls. This lake is too small to effectively use a winch in most conditions.
8. Glider set-up area capacity:
Unlimited
9. Landing field:

LAKE ALFRED

1. Direction beach faces:
355°.
2. Ratings required to fly:
None.
3. Any club(s) or organization(s) you must register with:
None.
4. Fees you must pay:
None.
5. Best winds:
5 - 15 mph from 315° - 45°.
6. Flying season:
Flyable late November through March.
7. Type of towing:
Both static and winch pulls.
8. Glider setup:
Unlimited.
9. Landing field:
Beach is long for easy setups. Has trees at the east end and

railroad tracks along the south side.

LAKE JACKSON

1. Direction beach faces:
0° - 360°.
2. Ratings required to fly:
None.
3. Any club(s) or organization(s) you must register with:
None.
4. Fees you must pay:
None.
5. Best winds:
5 - 12 mph in any direction.
6. Flyable season:
Flyable year-round, best thermals are early spring through summer.
7. Type of towing:
Winch pulls.
8. Glider setup:
Unlimited.
9. Landing field:
A wide beach surrounds most of the lake, with few obstructions.
10. Unique features:
Has several large apartment buildings on the east side which are soarable with moderate west winds.

KEY BISCAYNE — MIAMI

1. Direction beach faces:
0° - 360°.
2. Ratings required to fly:
Beginner, smooth winds to 12 mph, limited to 500 ft. of tow line. Novice, smooth winds to 16 mph, static pulls only. Intermediate and Advance can fly as conditions permit and do winch pulls.
3. Any club(s) or organization(s) you must register with:
Florida Free Flight Association. Club officers are generally available on site.
4. Fees you must pay:
Temporary Association Membership.
5. Best winds:
5 - 12 mph in any direction.
6. Flying season:
Year-around.
7. Type of towing:
Static and winch pulls.
8. Glider setup:
Unlimited.
9. Landing field:
Is a strip of beach which runs along Rickenbacker Causeway. No approaches over the causeway are permitted.

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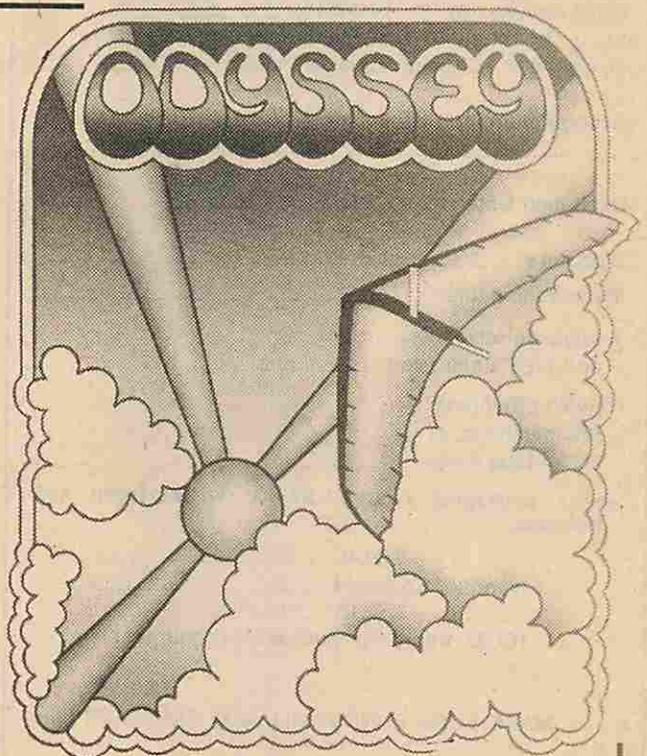
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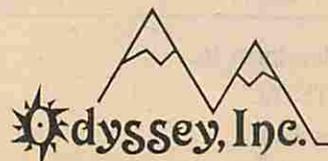
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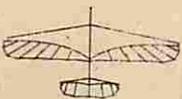
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We still wish to invite all dealerships who realize the value of advertising to send in their names and information, for the Directory to place in front of our thousands of readers. Many of these pilots have told us that they didn't know such and so 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.

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.

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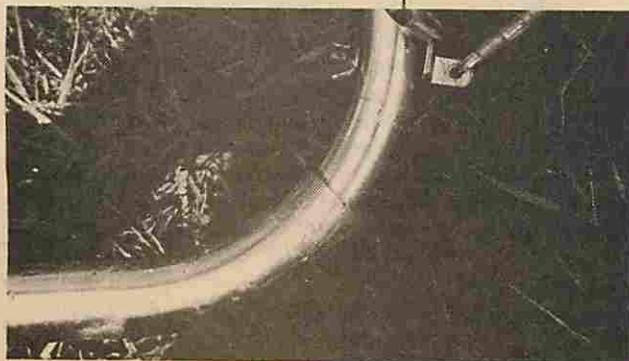
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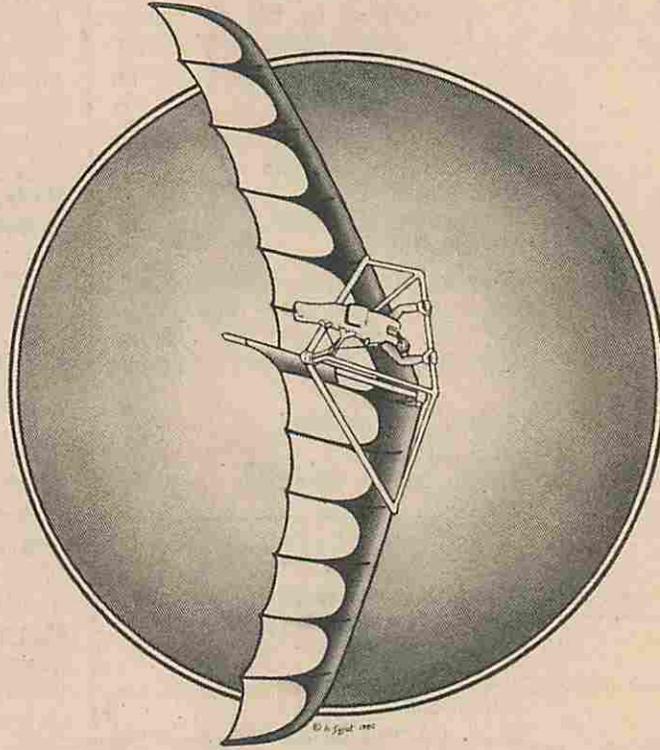
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Eagle Sarmont



of Grafspan

By Michael Pringle

While on a recent flying vacation along the California coast, I stopped at Grafspan in Santa Cruz. Eagle Sarmont, Grafspan president, was very open to an interview; so, in light of the recent publicity he has received concerning his retrofit kits for gliders, I thought I'd pass the contents of our interview along to Whole Air Catalog readers.

Michael: There is a general awareness in the business that hang glider design has reached somewhat of a plateau using current construction materials. What led to your involvement with graphite tubing?

Eagle: Well, that's a long story, but I'll try to make it short. I've been into designing, building, and flying gliders since about 1971. From the beginning I've had a

dream of being able to hang glide on hundred mile cross country trips a regular basis, not just at special places like Cerro Gordo. I also wanted a glider that could fly waves safely and yet thermal as well as any bird. Since there were only standards around at that time, I could see that I was going to have to build a better glider if I wanted to fulfill my dreams.

I was working for NASA Ames at the time in the high speed aerodynamics department as an engineering aide while I was going to school. While at NASA, I developed a computer program to optimize hang glider sails for airframes.

As you can imagine, I got a lot of assistance on that program, and with it I was able to optimize the twist curve planform, and to a limited degree, the camber of the sail. This allowed me to get the maximum possible performance out of any particular airframe shape I wanted to work with.

Michael: What happened to that research? Was it ever applied to a particular hang glider?

Eagle: Yes, it was used in 1974 by J & L Enterprises. They used the information to build a prototype glider called the Traveler. After a lot of work it eventually led to the Stratus V.

Michael: How does all this lead to graphite?

Eagle: When I was doing all that design work in the computer, I kept bumping into the problem of having to build an air frame strong enough to support a sail that had the potential of delivering the kind of performance I really wanted (like an L/D in the high teens). First I examined the possibilities of rigid and semi-rigid construction. It wasn't until '75 or '76 that I finally started looking into alternate building materials. And that, through my connections at NASA, led me to graphite. It has taken me up to the last part of '78 to raise sufficient monies to start working with graphite full time.

Michael: Even if graphite will make a stronger air frame and

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WAC Interview with
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Euro-Market on the English
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Are Hang Glider Pilots Grow-
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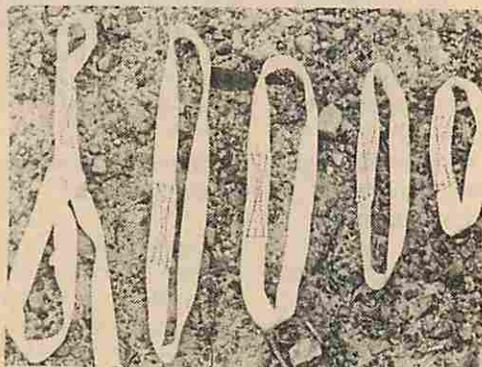
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shave off a few pounds, is that really enough to increase performance all that much?

Eagle: The "stronger and lighter" motive for using graphite is only a beginning for this material. That's the same sort of thinking that was going on when people first started making gliders out of aluminum instead of bamboo or other more inferior materials. The first aluminum/dacron gliders were just bamboo bombers made out of new materials. It was only when designers started using aluminum to its fullest potential that higher performance gliders resulted. Then people began to see that aluminum had much more to offer than just stronger standards and fewer repairs. Obviously these materials were good for a lot more than that. It wasn't long before the old rule, "Don't fly higher than you care to fall" slipped from our minds along with the bamboo bomber designs.

Michael: Then what can we expect to see in the way of performance improvements with graphite?

Eagle: Eventually there will be graphite hang gliders which are not too different from today's flex wings with glide ratios in the high teens. But that's 3 to 4 years away at best. Over the next couple of years you can look forward to owning either an aerobatic glider or a glider with a glide ratio in the low or mid teens good for the same kind of limited aerobatics as today's gliders. Right now at Grafspan we're in the process of exploring what it takes to make a truly aerobatic glider. Just the other evening I completed making the tubes for the frame of a design by Steve Rehfeld of Olomana Gliders in Hawaii. It should be strong enough to handle absolutely anything the glider can get itself into though we

will be load testing it before we let someone really wring it out.

It looks like we'll be doing the same thing with the Stratus V and possibly a third design. The purpose of all this is to determine what type of design criteria makes for the best handling characteristics in an aerobatic glider.

Michael: What exactly are you doing to these

gliders to make them aerobatic?

Eagle: For the most part, we're just making the frames exceptionally strong. But at the same time we are removing all the wires by building deflexorless leading edges and struts for them. Also, on the Olomana, for example, we're sweeping the cross bar forward quite a bit. This gives the advantage of shortening both the crossbars and the struts with an attending reduction in drag and at the same time it moves the C.S. of each wing half closer into the pilot making for a noticeable improvement in handling. Eventually we see the possibility of sweeping the cross bar forward enough so as to need one pair of struts to hold the control bar in place while still handling all the aerodynamic loads instead of the usual nose and side struts. But that is down the road away. Once we have had a chance to test fly these gliders we will have a much better idea as to what design ideas work best in an aerobatic glider.

Michael: Questions have arisen regarding your test programs and what you say graphite can do. Would you like to comment on that?

Eagle: Well, I think many of the comments made by outside parties in regards to our test procedures have all been based on a complete lack of information coupled with a lack of interest by these parties to find out what we have done. If anyone would like a list of our test reports and key tests, send a self addressed stamped envelope to Grafspan.

We have always and will continue to use the most accurate engineering testing procedures possible. Key tests are performed by an outside party. We have written up many of our tests in small booklets that

are available to anyone, as I said. Other information on graphite is also available. Since a lot of this information is not too understandable to someone without an engineering background, we will be performing and publishing a number of tests over the next year. These will clearly demonstrate the capabilities of graphite to even the most critical untrained viewers.

Michael: What are your goals for Grafspan as a company?

Eagle: The graphite industry is just beginning to come into its own. It is a child of the space age. The space shuttle couldn't have been built without it. It is a very strong, inert substance. Because it is also very light as well as heat resistant, it has incredible potential in space application. It is in this direction that Grafspan is headed.

Michael: What are your plans for the hang gliding industry?

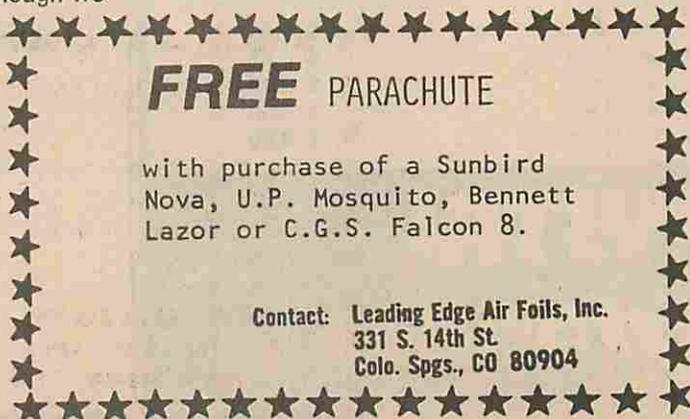
Eagle: We plan to sell a limited number of manufacturing licenses world wide; with one of them earmarked specifically for Europe, two for the U.S., and the last one where ever it ends up. They will be provided with information on the latest types of graphite, and new manufacturing, design, and construction techniques. The research we are doing regarding the concepts behind workable, flyable aerobatic gliders is an example of that.

Michael: Have you sold any of these licenses?

Eagle: Yes. We are in the process of completing an agreement with Olomana Gliders of Hawaii along with talking to a couple of other U.S. firms. We are also in contact with a couple of parties in Europe.

Michael: What's in all this for you personally?

Eagle: The fulfillment of a dream. I know that graphite is to aluminum what aluminum was to bamboo. When designers and manufacturers really start exploring the potentials of graphite, I'll soon be able to fly the heights and distances I've dreamed about since the day I saw the first bamboo bomber.



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Chattanooga, TN — Home again in Tennessee after 9500 miles of **WAC** Sales Tour. Got a lot of info to pass on this issue, but first, a big welcome to a new year and a new decade of hang gliding. The year began with Larry Newman's **Eagle Seminar**. The current (Feb. '80) **GR** has a ton of info on Newman and his new line — read it for details. Here it'll suffice to say I flew the **Eagle**. Leading all other comments must be that it was real fun to fly, very easy too; why, it was my first experience on a powered ultralight. Yes, you can land it hands off (given a good approach), and yep, it folds right away when the sun sets. They're looking hard for a more powerful engine, and it needs one. Current thinking is a twin engine set up, but it's still uncertain. Get with **Electra Flyer** for info sheets. While engines are on our minds, I also went to **Eipper**, where they were busily packaging powered **Quick's**. Got to look at (but not fly) their new double surfaced, Yamaha powered **Quicksilver**. It looks clean and beautifully constructed as **Eippers** always do. No wonder, they've one of the nicest factories in the industry. We may begin reports on powered wings — if so, the **Quick** is high on our list. Speaking of nice factories, I also was at **Ultralight Products**. They are ahead of the game with their 1980 model line ready to go. From **Firefly 2B** to **Mosquito** things are looking good at the Temecula plant, which may be the largest in the field. Roy Haggard was doing the final efforts on his impressive "Skeeter" owners manual. Impressive is also a word to apply to another visit, **Seagull**. No wonder they had some difficult weeks in '79; they made a significant move (along with many changes) but have one of the top two or three factories in hang gliding. **Tom Peghiny**, head designer, has a chock full product line from revised **Seahawks** (even the 155 size is now ready), to altered **Meter ships**, now a racy-floater, to his new **Sierra**, with a classy breakdown system. This set-up may not be the fastest, but it's very clean and very easy, which in their opinion is what pilots really want. Top o' the line is the **Seagull/Peghiny Sailwing**. Complete with V-tail, this bowsprit on a 180° nose has only one boom wire and is remarkably simple. Also balances very nicely; you don't even notice the tail. How do they all fly? Don't know as it rained every day I was in **Carpenteria**. Heard some very good things about the new **Highster** but did not connect with the factory while up in the Bay Area. Look for a glider report soon, tho. Up north I did see the **Stratus** folks, new owners **Dan Racanelli** and **Tod Bomont**. These fellahs are going to take **Stratus** to new heights. Maybe new tumbles too, as they were installing **Grafspars** on a new boom **Stratus** (hopefully full aerobatic), while I observed. While not the fanciest, the **Old Schoolhouse** in **Montara** is easily hang gliding's most unique factory. Look for a glider report on this five year old design. Just south of **San Francisco** is a very nice area called **Salinas**. It's near **Carmel** and **Monterey** and is the home of **Flight Designs**. Going from his garage less than two years ago,

Marty Alameda has built a large, efficient factory where he manufactures the **US Lancer** (even designer **Graeme Bird** is "on the staff"). In addition **Flight Designs** has emerged as one of only a couple truly serious distributors in the sport. They market a wide variety of useful products topped off with the current rave, the **Atlas**. They join **Seagull** and **Wills** as **WAC's** first full color advertisers! While we're on the subject, **Wills** has a great year in progress. When I was in the plant, about January 7th, they had already received 34 **Raven** orders for the month. How **Wills** created so much interest so late in the year is a question which any manufacturer would like an answer. Also, they are nearing completion with their new "**Boomer**" supersonic. This exotic design will impress everyone — we'll present details when appropriate. **Wills** also had a great turn-out for their dealer seminar in early February. A lot of eyes are on this company which has but a single **Wills** left in ownership. Last, even tho it was my first visit, no write-up of Western happenings can be complete without **Bennett's Delta Wing**. As usual, things are crackin' at the **Van Nuys** factory. Besides getting ready for competition in the **New So. Cal. League** (which **Bennett** triggered), **Dick Boone** has a wild new design. I hesitate to call it a boom kite as the leading edges have cable for spars and the lead spar is really the crossbar. It shifts so freely as to seem unattached. Yet it certainly is, to the extent that when blown down occurs the tips are thrust upward. All very ingenious — we'll be watching for more developmental details. In early February, they were including words like "graphite . . . aerobatic." Also, if you missed it, go back and read **Bill's** forecast for the decade ahead on pages 32 and 33. **Gary Valle**, who retired from the **HGMA**, also retired from the biz, selling **Sunbird**. No more info at present. Moving back east, I attended the **EAA/Ultralight** meeting in **Wisconsin**, to hear discussions from nearly everyone in the powered end of the sport. Then **US Moyes** got a visit from me. Good things are poppin' in **Bridgman, Michigan** where the **Braddocks** are beginning construction of a brand new 6000 square foot plus building to house **US Moyes**. They also showed me the quick set up **MK IV Maxi** and told me of the super sounding **Mega MkII**. See the **Maxi** write up on pages 34 and 35 for more info. **Scott's Marine's** new free catalog is available on request. The club newsletter in their area revealed that **Aerial Techniques** has tendered financial sponsorship for the 1980 **Nat's** to be held in **Ellenville**. That is if the club can garner enough volunteers and if that site is chosen. Wow, outta space. Send news to P.O. Box 144, Lookout Mtn., TN 37350. STOP THE PRESS FLASH: Per **Steve Wilson**, he and partners (**Dave Cronk**, **Dave Meuhl**) have sold **Eipper-Formance, Inc.** Take-over date was February 1, 1980 and the company will be renamed **Eipper Aircraft, Inc.** **Larry Cook** and partners may also cease advertising to the hang glider community, and have definitely suspended same till they review their new directions and policies.

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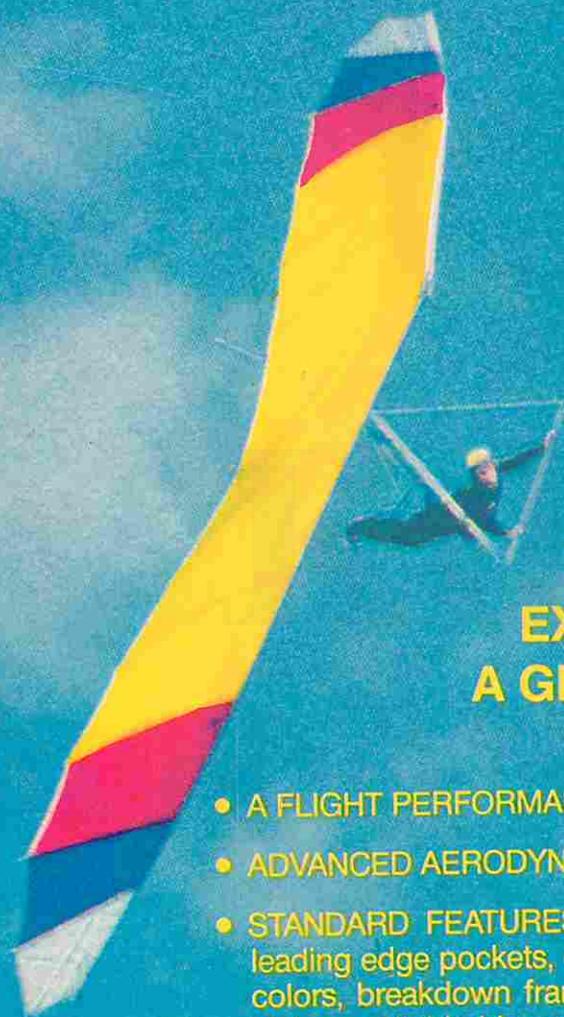
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