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ONE DOLLAR

MARCH-APRIL 1980

Seagull introduces the SEAHAWK 155 and 9 METER the first hang glider designs especially for the light weight pilot.

To insure that smaller gliders handle and perform optimally at the recommended wing loading, it's necessary to use experienced light weight test pilots. This procedural requirement became obvious to us during the fourteen month development of the SEAHAWK 155 and 9 METER. This important aspect of small glider development has been neglected for too long.

In developing the SEAHAWK 155 and 9 METER, we enlisted the aid of two of Frances leading enthusiasts: designer/test pilot Michel Katzman and test pilot Odil Jocteur-Monrozier. This talented duo did the bulk of flight testing of the SEAHAWK 155 and 9 METER and contributed greatly to the development of the gliders. Michel and Odil tip the scales at 130 lbs. and 102 lbs. respectively.

The SEAHAWK 155 and 9 METER are the result of SEAGULL AIRCRAFT'S uncompromising efforts to produce the best performing, best handling gliders for small framed pilots.

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Photo: Don Whitmore

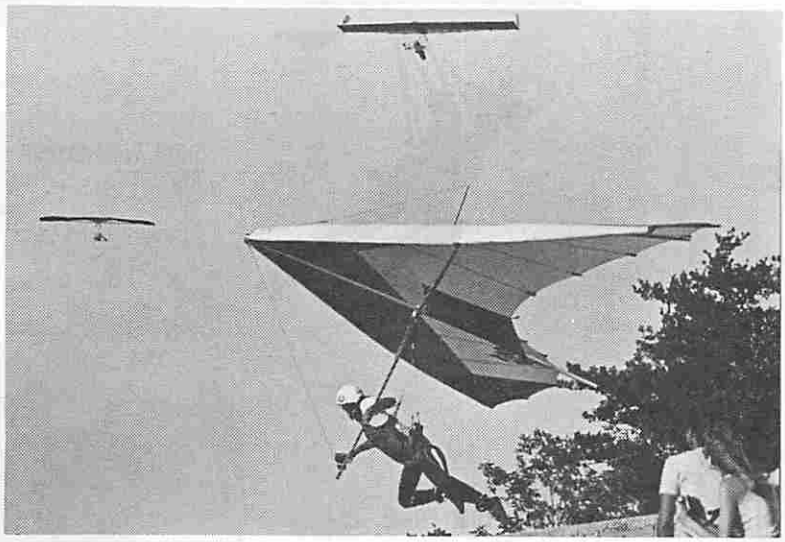

PHOTO BY JIM HENDERSON

ATLAS

ON TOP OF THE WORLD

Seven **ATLASES** made the top ten at the 1979 world championship. And now the **ATLAS** is winning over America.

With its innovative mylar-stiffened leading edge pockets, internally sleeved control bar uprights and cross bars, break down bar, and deflexorless, split cross bar airframe, the **ATLAS** is newer than 1981.

The **ATLAS** has defined tips and trailing edge lines, contributing to its impeccable pitch stability. Full HGMA certification is pending.

No other modern glider sets up as quickly; all you need is five minutes--no tools, wing nuts, or safety pins, just two ball lock pins. Velcro closures for battens, black coated cables, a batten bag, and a deluxe glider cover (with double zippers and a built-in protective cushion) make the **ATLAS** a true value.

Fly an **ATLAS**. The best evidence is your own experience. And the best experience is **ATLAS**.

Over six hundred **ATLASES** are flying in Europe. **ATLAS** — the French blueprint for next year's U.S. gliders.

SPECS:	ATLAS 14	ATLAS 16	ATLAS 18
leading edge	17'6"	18'8"	19'9"
keel	11'4"	11'4"	11'6"
nose angle	120°	120°	120°
span	30'6"	32'1"	33'6"
area	155 ft²	175 ft²	192 ft²
weight range	100-160 lbs	130-210 lbs	170-270 lbs
stall speed	14 MPH	14 MPH	14 MPH
top speed	47 MPH	47 MPH	47 MPH
glider weight	57	59	61

all **ATLASES** use 6061-T-6 greater than 1.75" dia.

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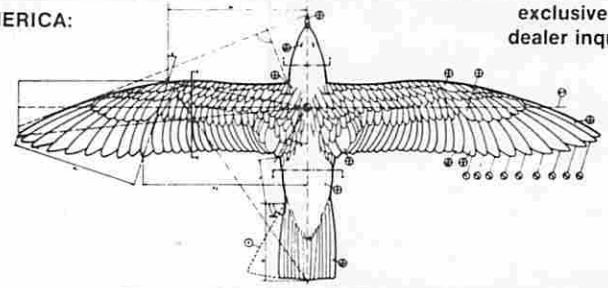

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WHOLE AIR MAGAZINE

Volume 3, No. 2, 1980

ISSUE NO. 12

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Gary Ballard flies his EZ- Riser over Michigan.

FEATURES

Henderson

A PILOT'S PERSPECTIVE

ULTRA LIGHT TOPICS

Sure, we teach a flock of beginners, but we also look after the "old pros."

We probably teach more beginners to fly than any other school in the country. Our location and the soft, forgiving sands of Jockey's Ridge account for that. In fact, since 1974 we've taken more than 20,000 fledglings under our wing and many of them have gone on to become old pros and even champions. Like Glenn Hockett and Tom Haddon.

But our real business is taking care of the needs of the enthusiast who's really into the sport. This is why we schedule so many advanced clinics and seminars each year. And why we continue the Hang Gliding Spectacular every May. The Spectacular, a fun event for both novices and pros, is the oldest continuous annual competition (except the USHGA Nationals) in the country.

When we opened our doors in an old garage in 1974 we were the first full time, year-'round school on the east coast. Our professional approach caught on and word of mouth brought us more and more students. Today, we're probably the largest hang gliding school in the country.

Recently, we built a new, larger hang gliding center at the foot of Jockey's Ridge—a building designed especially for a hang gliding school. It houses our large classroom, the workshop, an expanded retail area, and is topped with a lofty observation tower named after our good friend and neighbor, Francis Rogallo, inventor of the Rogallo wing. "Rog" still flies Jockey's Ridge at the age of 67!

Although Jockey's Ridge is ideal for beginners, experienced pilots will tell you that it's a perfect place to learn to soar and to polish technique, knowing that sand dune flying requires a great deal of skill for sustained flight.

Our inventory of hang gliding equipment, accessories, and parts is another way we serve the experienced pilot. Because of our high traffic we're able to maintain one of the largest inventories in the U.S. We're a distributor and dealer for Seagull and Flight Designs. We also stock Wills Wing. Pilots who are having difficulty finding hard-to-get and odd-size parts for glider repair can probably find them here. And we provide year-'round repair service as well. Our line of accessories is large. We have a showroom full of helmets, harnesses, instruments, chutes, flight bags and other gear. In the shop you'll also find a most unusual array of sportswear, air-brushed clothing, T-shirts, toys, string kites, games and books—all related to flight!

The Wright brothers learned to fly here more than 75 years ago and kept coming back to polish their skills and improve their equipment. If you've never flown Jockey's Ridge, we invite you to try. If we taught you to fly in the first place, just know that your alma mater would welcome you back for a flying reunion any time.

Write us or give us a call and we'll send you our newest brochure and latest newsletter.

1980 Calendar of Events for fledglings and "old pros".

April 12, 13. Hang III Rating Clinic (mountains). Application required.

April 19, 20. Demo Days. Try the new gliders. Also Cross Country Seminar.

8th ANNUAL HANG GLIDING SPECTACULAR

May 16-18. A fun event with competition for pros and fledglings. Product exhibits and street dance.

June 2, 3. Hang III Rating Clinic (mountains). Application required.

June 4-6. USHGA Instructor Certification. Application required.

June 28. Boat Towing Clinic.

July 19, 20. Hang III Rating Clinic (mountains). Application required.

August 16. 1st Anniversary of Motorized Coast-to-Coast Flight. Demonstrations.

August 23, 24. Hang III Rating Clinic (mountains). Application required.

Sept. 27, 28. Hang III Rating Clinic (mountains). Application required.

October 4, 5. Seahawk Class Competition for Seahawk Owners.

October 25, 26. Soaring Seminar & Orville Wright Fly-In. (On October 23, 1911, Orville set a soaring record of 9 minutes 45 seconds on the Outer Banks.)

December 13, 14. Wright Brothers 77th Anniversary & Motorized Glider Fly-In.

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Publisher's Column

Thanks to excellent support from you, the hang glider community, *WAC* is off and flying in 1980 with our brand new magazine. We deeply appreciate each and every one of you who has subscribed, as well as all the dealers and other retailers who are purchasing copies.

NEW NAME

As you have noticed, we are no longer the *WAC*. In the interest of being straightforward, we felt we must change our name slightly to *WAM*, or the *Whole Air Magazine*. We feel "Whole Air" is an accurate statement of our content objectives, but in agreement with hundreds of you who responded to our January-February issue, we feel we have earned the designation "magazine." So, *WAM* it is.

PUBLISHING SCHEDULE

As we have gone from a free to a paying structure, we encountered some misunderstandings with a few of you who subscribed early. We wish to set the problem straight by explaining when and why we publish when we do.

The first issue each year, though cover dated January/February, will emerge near the last week of February. This was true last year, too, *by design*, but as it was a give-away, people had little cause to object. Nevertheless, the winter is indeed a slow time everywhere for hang gliding. We compensate by coming out in late February with the first breath of spring. It gives us a chance to draw back during the winter, and gain perspective on our goals and progress.

The next three issues will be spaced only six weeks apart — not bi-monthly — so that those issues will emerge thus:

March/April — second week of April
May/June — end of May
July/August — second week of July.

The last two issues are then mailed on the bi-monthly basis in the second week of the first month on the cover. By this method we do not arrive in your home at the same time as other hang gliding publications.

We're still the "little guys" in the hang glider rag field, but we are really trying hard to be the publication with which you can identify. We are trying to present just what you reader/pilots want, not what we feel you should read. If we are not succeeding, *write us* and let us know. Use your free reply mail Reader Response Card. If we *are* doing what you want, *Subscribe*, and ask your friends to subscribe. The more support we receive, the better, more informative material we can present.

Help us earn our wings — by serving you . . . Subscribe today.

Thanks,
Dan Johnson

FORUM

Jan/Feb cover was the most spectacular I've seen on any hang gliding publication! Congratulations to you, LeRoy Grannis, and Eric Raymond for a most spectacular way to introduce your readers to the "new" *Whole Air Magazine!* Tom Peghiny's editorial was great — thanks Tom and E Z Wider.

P. Brock
Temecula, CA

You're doing a good job. Hang gliding needed a consumer oriented magazine, *WAC* has filled the gap beautifully.

C. Price
Elsinore, CA

I'm in total agreement with Tom Pehginy's article "Can America Compete?" The majority of us are recreational pilots not professional pilots. The real challenge is safety. You're not a loser if you have stricter safety regulations, insuring fun, safe skies for everyone.

M. Ward
Matawan, NJ

Energetic and appropriate publication.

O. Southard
Phoenix,AZ

Dear Editor;

Dave Murchison is gone . . . He will be missed as a Hang IV pilot, but will be long remembered as a *Hang V PERSON.*

Mike and Charles Hooper
Yanceyville, N. C.

The longer we keep the FAA out of hang gliding the better off we will be. I know as I work for the FAA.

D. Batman
Indianapolis, IN

Glad to see more on towing and power. I agree that there is definitely a place for aerobatics. What else are we gonna do when it's not soarable? We'll be racing 200 mph/200 lb. micros at Reno pretty soon. Good rag, er mag!

P. Mitchell
Shreveport, LA

I bought your last issue, and was surprised how it has matured from being predominately an ad mag to being full of enjoyable articles and special features. I really enjoy the glider analysis and features on top pilots. I have become a subscribed member. I wish it was monthly . . . I'm sure others do too. Keep it up!

R. Chapel
Katonah, NY

Your mag just seems to keep improving with each new issue — you are presenting the things pilots *want* to read about!

J. Dodgen
Dunwoody, GA

Tom Peghiny's opinion: "Can America Compete? says it better than anything else I've seen ". . . our *real* challenge . . . safer flying." Thanks for publishing that article.

J. Johnson
Seattle, WA

Your magazine is really great — especially the last issue with all the talk about future trends. My compliments to your staff. Keep up the important work.

J. R. McTammany, MD
Reading, PA

WAC LIVES! The other two hang gliding publications are moribund. You guys cater to the flier. GO!

E. Lefson
Ann Arbor, MI

Your mag has improved — liked the interview with Bennett. Also the new cover was nice.

D. C. Dunow
North Hollywood, CA

Each new issue of *WAC* has impressed me more than the last. The cover shot was incredible and I especially enjoyed "Getting Radical." Your "Used Glider Bluebook" is very helpful to me as a shop owner and I intend to provide you with info pertaining to used gliders we sell.

K. deRussy
Santa Barbara, CA

I really enjoy the *WAC* Glider Report. It helps me keep up with the market. Thanks!

J. Stephenson
Porterville, CA

First mag I ever saw with a special spot for the mailing label! Thanks.

C. Kanavle
Campbell, CA

Your mag has really improved both visually and info wise. No regrets about my subscription.

M. MacPherson
Lancaster, PA

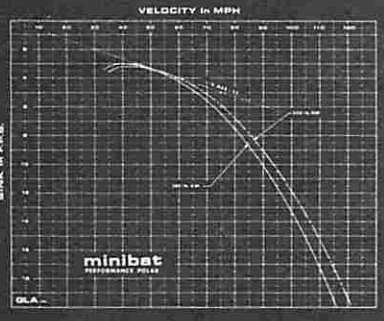
Great magazine — really enjoy it — keep up the good work!

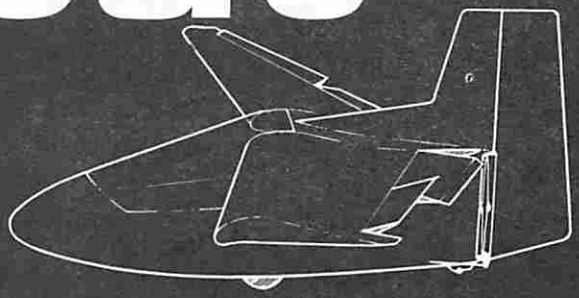
W & V Muller
Calgary, Alta, Canada

The *WAC* has a good mix of power, tow and foot launch, *keep it up.*

L. King
Silver Spring, MD

THE minibat





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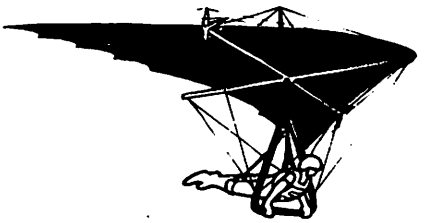
HANG GLIDING STATISTICS



By Dan Johnson

As we close our second year of the **Whole Air Catalog, now Magazine,** we are also proud to present our eleventh edition of statistics. This, our oldest column, has taken a firmly established place in our sport, providing certain quantitative information which has not been available by any other means.

In this issue, we will have a look at ourselves, at those of us who fly. How old are we? How much experience do we have? Some discoveries you could guess. Others were surprising. Once again, thanks for your great response in supplying the data.

HOW OLD ARE WE?

As we thought, the average age continues to creep upward. In our last survey of this topic (July-Aug. '78), we found the average age to be 28.5. This time the average was 32.8 years. We will leave the speculation as to why the advancing status to your own discussions, but obviously, the cost and seriousness of what we do are factors. Here is the chart, so you can locate yourself:

Up to 20 years	0.5%
20-29 Years	44.2%
30-39 years	36.0%
40-49 years	13.2%
50 years and up	6.1%

LENGTH OF TIME INVOLVED

This topic, and the next, are preparatory to understand the average number of hours pilots have accumulated. Consider that 41.1% of us have logged time for 5-6 years. This produces an "average" entry year of 1974-75. We are definitely becoming an experienced group, and many of us are staying with our sport.

Up to 1 year	7.8%
1 to 2 years	7.8%
2 to 3 years	11.9%
3 to 4 years	17.7%
4 to 5 years	20.8%*
5 to 6 years	20.3%
6 to 7 years	7.8%
7 to 8 years	3.6%
Over 8 years	2.1%

Median ..... 4.6 years experience

PILOT PROFICIENCY

As a result of the USHGA Hang Rating Program, we have a good idea now of our average skill levels. Only 3.7% of those reporting Hang Ratings said they are not rated, and 95½% of you did answer the question.

I — Beginner	2.6%
II — Novice	20.4%
III — Intermediate	27.7%
IV — Advanced	43.4%
V — Master	2.1%

AVERAGE AIR TIME

Here was our surprise category. It was, except that when we reviewed all the results more closely, perhaps it is not unusual at all that the median number of hours logged was just over 105 hours. We used to say that one hour in a hang glider was like ten in airplanes. Many airplane pilots who hang glide agreed with that. Yet a 1000 hour or more airplane pilot is considered a high time pilot. This would indicate a lot of hang glider pilots are also "high timers." Nevertheless, we found it interesting.

0-5 hours	20.5%
6-10 hours	7.0%
10-25 hours	14.0%
25-50 hours	11.6%
50-100 hours	17.5%
100-200 hours	13.4%
200-300 hours	8.7%
over 300 hours	7.6%
over 100 hours	29.7%

After you've considered the above chart, look at this evaluation:

Hours flown, with 73½% reporting

51.7% fly 0-5 times per month
34.7% fly 6-10 times per month

Obviously, we are averaging **much** longer flights than a few years ago.

YEAR OF LAST PURCHASE

We have surveyed this topic before, to find 57% of you bought a new glider in the last year. This survey also substantiated that rapid purchase rate, as 63% bought new gliders since the beginning of 1979 thru mid-March 1980.

But we are not sure if this means "new" to the pilot or "brand new." We will probe this area further on the Reader Response Card in this issue, and report the findings in our special feature on glider reports in the May-June **WAM**.

1980	20.3%
1979	42.7%
1978	23.4%
1977	8.3%
1976	4.2%
Prior to 1976	1.1%

As always, please do not place undue faith in the results of a short-term poll.

We would like your articles, photos or original artwork for publication in *Whole Air Magazine.*

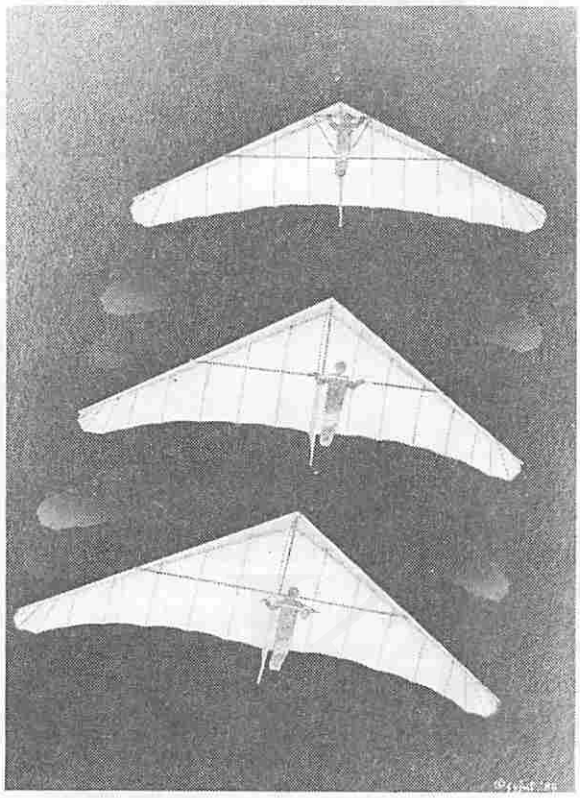
If you are submitting articles, type them out and please let us know if you have submitted this article(s) to any other hang gliding publications.

In the event we use your photos or artwork, we will return these two weeks after our publishing date.

If you have anything you would like us to consider, sent it to:

Starr Tays, Editor
Whole Air Magazine
P.O. Box 144
Lookout Mountain, TN 37350

You Can Learn About Flying From This...



STALLING AND FALLING:

NOW WHAT DO I DO?

By Ric Lee

Near the end of last summer, while at the local soaring site, I watched a Novice pilot stall, look bewildered, take no corrective action, and crash back into the hill. After checking to see that he was all right, something clicked in my mind. I began to review all the hang gliding accidents I've seen in my past six years of flying. It suddenly dawned on me that the single most common factor in all the accidents I've witnessed is the *unintentional, unrecognized stall* close to the terrain.

The next question which followed this correlation was, "Why?" Why does this happen to so many pilots of various skill levels?

The answer, I feel, lies in training. How many of you reading this had any training concerning stalls? Most instructors will expound upon the dangers of stalling to their charges in the classroom. But how many of them will have their students actually try them?

I'm not talking about a first day student doing break stalls or anything like that. I'm talking about a competent Novice pilot under radio instruction doing mild stalls at a predetermined altitude with the sole purpose being to accustom the pilot to what the glider feels like when stalled. What I'm proposing takes a lot of instructor discretion.

I have watched a school that has all its students do stalls on their third day of instruction. Obviously, not every student is ready for such a maneuver after only three days' instruction. The instructor must be sensitive to this. A good instructor knows reasonably well what his students can or cannot achieve. Stall training should be progressive. It should start right after the student has mastered basic flight skills and is aware of his surroundings during flight — in other words, past the "tunnel vision" stage.

The first step would be to have your student pay close attention to the sensations during final glide and flare. See to it that they begin to recognize the point of stall. A radio is most useful. You can speak a pre-arranged word such as "now" or "stall" at the point the glider stalls. After several flights where the instructor has vocalized the point of stall on landing via radio, the student should be allowed to try it on his/her own. This can be done by having the student speaking the word or noting his/her proximity to some ground object. By working closely with your students you can tell when they're ready to try it with some altitude.

There are several factors of which to be aware. You should be convinced that your student(s) are well prepared mentally (text knowledge) and physically (basic flight skills, good response to your radio commands) for this step. The conditions must be calm and smooth. You don't want wind drift and/or thermal complications. Use only modern gliders with defined tips and anti-luff lines that have gentle stall characteristics. Do a demonstration flight for them on the same type of glider from the same area on the hill.

Don't overload them with instructions for the flight. Remember K.I.S.S. (Keep it Simple, Sweetheart). A strong take-off; straight flight away from the hill; on instructor's cue, mild stall and recovery; on to a safe landing. The final step of this stall recognition training will be slow flight. This is where the student tries to fly as slowly as possible without stalling. Of course, some of them will stall doing this. See if the rest of the class can pick up on this.

When they have finished this part of your lesson, they should be nearly stall proof. Then, hopefully, you'll rarely see that wild-eyed look of incomprehension as a fellow pilot unknowingly stalls and pushes out all the way to the ground.

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USED GLIDER BLUEBOOK

EDITION NO. 12

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
BENNETT DELTA WING					
	76	Phoenix 6B	Jr.	425	350
	76	Phoenix 6B	Reg.	425	400
	76	Phoenix 8	Reg.	450	450
	77	Phoenix 6C	Jr.	550	450
	77	Phoenix 6C	Sr.	400	425
	77	Phoenix 6C	Reg.	500	425
	77	Phoenix 8	Reg.	650	375
	78	Phoenix 8 Super	Reg.	675	450
	78	Phoenix 12	Reg.	750	525
	79	Phoenix 6D	Reg.	875	725
	79	Lazor	190	1150	1000
CGS AIRCRAFT					
	76	Falcon V	225	550	450
	76	Falcon V	185	575	400
	77	Falcon V	185	650	500
	77	Falcon V	220	600	475
	78	Falcon 5½	Med.	750	625
EIPPER FORMANCE					
	75	Flexi II	240	400	200
	75	Cumulus V	180	400	300
	76	Cumulus VB	180	450	375
	77	Flexi III	185	575	500
	77	Cumulus 10	Med.	550	525
	78	Flexi III	Lg.	650	500
	78	Cumulus 10	Med	675	500
	78	Antares	Med.	875	800
	79	Antares	Med.	975	925
ELECTRA FLYER					
	76	Nimbus	20-17	200	125
	76	Cirrus	3	425	350
	76	Cirrus	2	425	350
	77	Cirrus	3	550	350
	77	Cirrus	2	450	300
	77	Olympus	160	575	525
	78	Cirrus 5	C	700	600
	78	Cirrus 5	A	700	575
	78	Olympus	160	775	625
	78	Olympus	180	725	550
	79	Cirrus 5	A	825	725
	79	Olympus	160	900	850
	79	Floater	205	925	825
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

MANUFACTURER	YEAR	MODEL	SIZE	CLEAN PRICE	AVG. PRICE
SEAGULL AIRCRAFT					
	75	Seagull III	220	325	250
	76	Seagull III	220	350	275
	76	Seagull VII	174	600	350
	77	Seahawk	170	650	550
	77	Seahawk	190	675	600
	77	10.5 Meter	—	900	750
	78	Seahawk	170	825	600
	78	Seahawk	190	800	600
	78	10 Meter	—	975	875
	78	10.5 Meter	—	950	900
	79	Seahawk	180	1000	950
	79	11 Meter	—	1275	1075
SKY SPORTS					
	76	Kestrel A	185	450	350
	76	Kestrel A	220	525	425
	76	Merlin	160	500	375
	77	Bobcat III	Lg.	675	600
	77	Sirocco I	156	600	475
	77	Sirocco I	175	575	500
	78	Osprey	175	800	675
	78	Sirocco II	164	875	825
	79	Eaglet	191	550	425
	79	Osprey 2	175	900	800
	79	Sirocco III	189	1200	1025
ULTRALITE PRODUCTS					
	76	Dragonfly Mk. II	174	575	375
	77	Firefly	174	650	500
	77	Dragonfly Mk. II	196	700	550
	78	Spyder	176	850	675
	78	Condor	178	1000	825
	79	Mosquito	166	1400	1200
WILLS WINGS					
	75	Swallowtail	20-20	300	150
	75	Swallowtail	22-20	225	175
	76	SST	90	600	400
	76	SST	100A	625	450
	76	SST	100B	600	475
	77	SST	100B	650	550
	77	Universal	100A	700	500
	77	X-C	185	700	650
	78	Alpha	185	950	775
	78	Alpha	215	950	800
	78	X-C	215	950	775
	79	Alpha	215	1000	850
	79	Omega	220	1100	950
	79	Omni	187	1125	1025
	79	Raven	209	1175	1075

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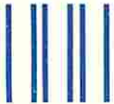

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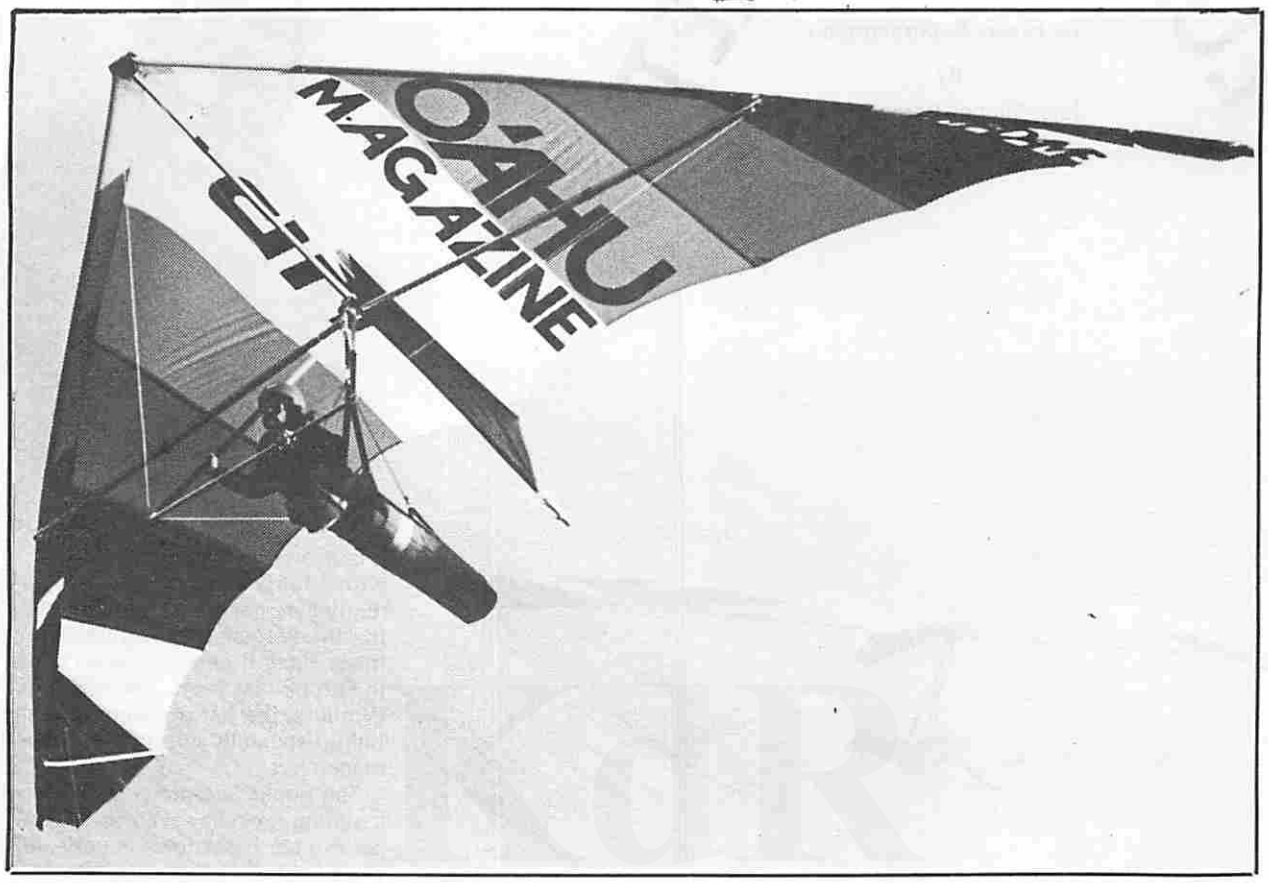
UP Firefly 2B



SETS NEW WORLD'S ENDURANCE RECORD!

RECORD: 19.6 hrs.
PILOT: Jim Will, Honolulu
GLIDER: UP Firefly 2B~ 181
SITE: Makapuu, Hawaii
DATE: December 7, '79

	149	181	216
AREA	149 sq. ft. (13.84 m^2)	181 sq. ft. (16.815 m^2)	216 sq. ft. (20.07 m^2)
NOSE ANGLE	107	107	107
WING SPAN	28.6 ft. (8.72 m)	31.6 ft. (9.63 m)	34.5 ft. (10.52 m)
ASPECT RATIO	5.5	5.5	5.5
SPEED RANGE	17-42 mph (27-67 kph)	17-42 mph (27-67 kph)	17-42 mph (27-67 kph)
WEIGHT	46 lbs	51 lbs.	56 lbs.
PILOT WT. RANGE	103-155 lbs. (47-70 kgs)	130-193 lbs. (59-87.5 kgs	160-220 lbs. (72.5-99.8 kgs

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EURO-MARKET

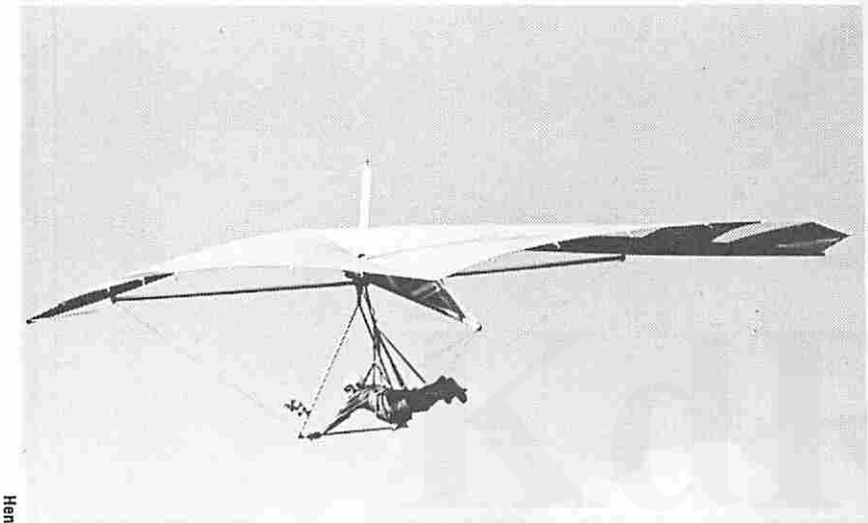
The Hiway Superscorpion

By

Jean-Michel Bernasconi

Photo by Hank Syjut

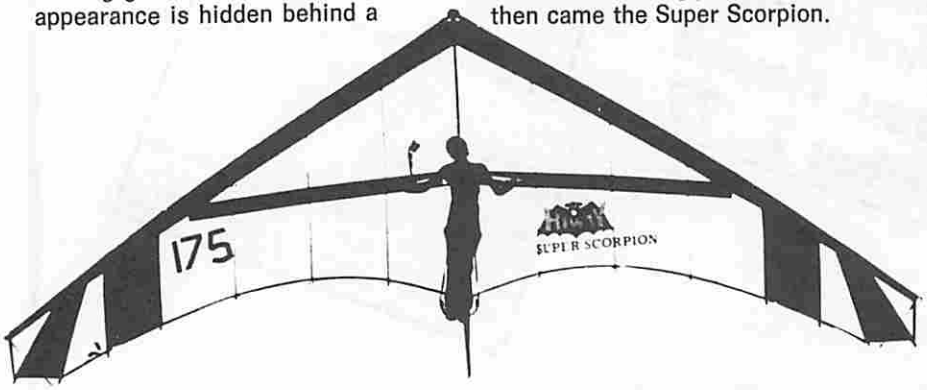
Jean Michel



Henderson

When Hiway released its brand new Super Scorpion in the fall of 1978, the best seller then was the Gryphon. The only common point was their British nationality. It was a tough choice for the European flyer. And I think it is a good idea through this article to find out what made the Super Scorpion so quickly successful.

Let's look at both. On one side you've got the Grypon, a racy looking glider, whose sophisticated appearance is hidden behind a jungle of wires. On the other side, the Super Scorpion is a very clean, deflexorless wing that looks so simple that it's hard to believe it flies so well. The performance package on a Gryphon was definitely interesting, but not suitable for the intermediate flyer, for different reasons. The expertise required to optimize rather stiff handling along with the tuning complexity of the glider was a definite marketing problem. And then came the Super Scorpion.



It is a very interesting performer with a fairly good speed range, and really nice handling characteristics, It's the type of trickless handling many Hang II pilots grew up with in Europe last year. And for Hang IV pilots, the bar pressure is really light, especially during slow speed maneuvers.

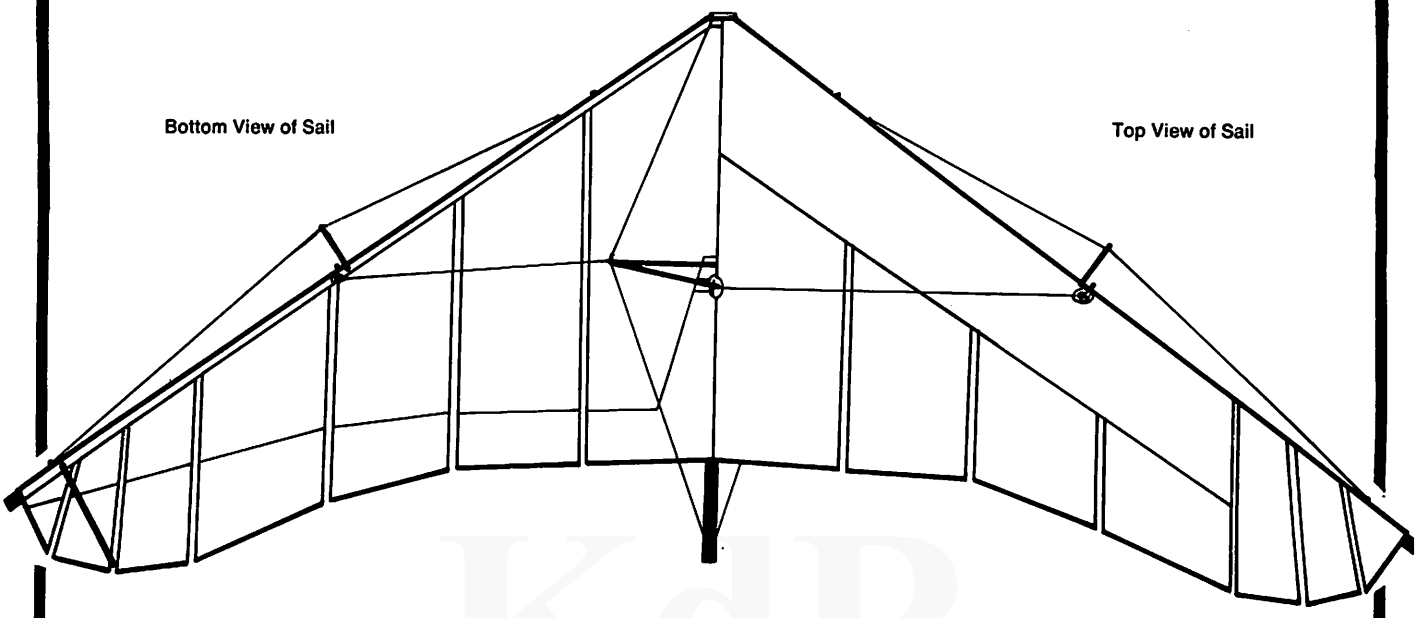
The Super Scorpion doesn't have a sliding crossbar system, but the control bar breakdown is very slick, along with an interesting way to connect the front flying wires to the nose plate.

The Super Scorpion comes in four sizes. The designer did a great job of scaling them. I flew every one of them, including the small Spectrum, and the tandem ship called the Gemini. The performance and the flying characteristics remained identical from the 150 square foot model to the 240 square foot, assuming the right wing loading, of course.

Finished and clean looking, the Super Scorpion has been designed toward simplicity and efficiency, but not with the next beauty contest in mind. I don't think any of the last year's 700 Super Scorpion flyers will be dissapointed flying the same wing again this year. It *is* a nice glider.

Highster Aircraft, Inc.

1508 Sixth Street Berkeley, California 94710



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
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Passed 150° load test at 35 mph in 1978 (with quadral deflexors)

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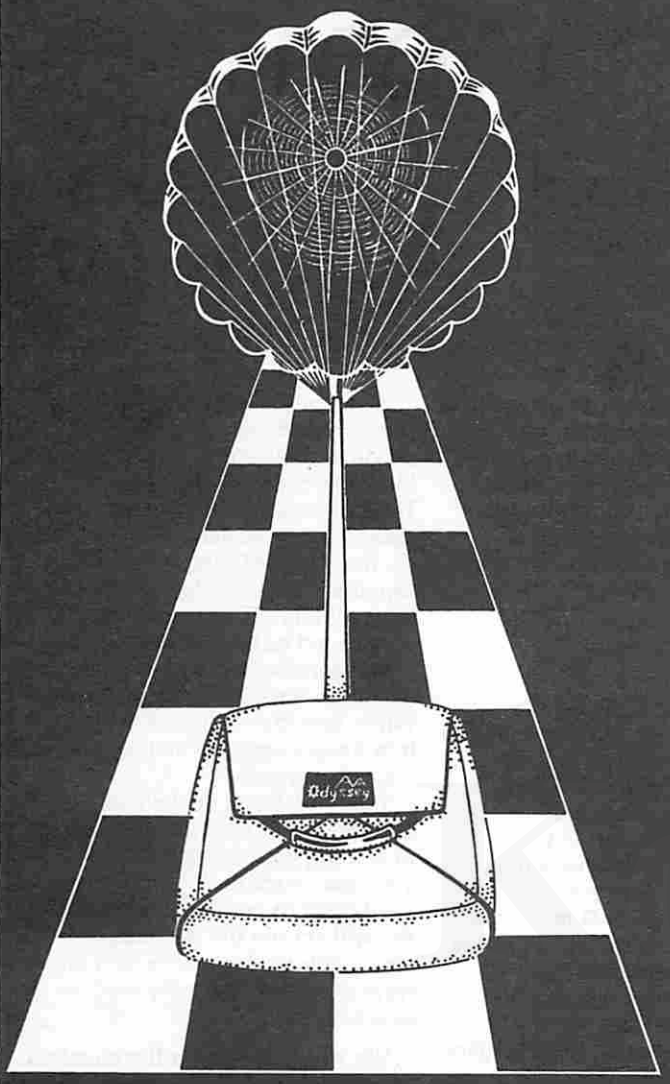
Motorized

By CHUCK SLUSARCZYK

With over 800 CGS Power Hawk Units in the fiels, certain problem areas keep cropping up. The most common problem is those that are temperature related. That is, the engine is operated at either too hot or too cold for conditions. These bring on the problems that most people, that are against the use of two cycle engines, always mention, plug-fouling and overheating.

These problems are not necessarily the fault of the engine, but in mis-management of temperature. In a two-cycle engine, the operating temperature should be high enough to insure clean burning of the oil, but not so high as to damage the engine. Too rich a mixture will keep temperatures lower but can result in carbon build-up behind the rings, port fouling and plug fouling and carbon build-up on the head and piston. Too lean a mixture will result in excessive heat and cause the most common damage, a seized engine. The way to avoid these problems is by using temperature gauges. The cylinder head temperature gauge is a vital instrument and if I had a choice of only one, this is the one instrument I would use. I also use an exhaust gas temperature gauge (EGT) and I will explain how later. The cylinder head temperature gauge is slower to respond and indicates metal temperature. The EGT responds quicker and indicates exhaust gas temperature. The cylinder head temperature gauge probe sits under the spark plug and should indicate approximately 350-375°F during cruise. Temperatures of 400°F can be tolerated for a short time but I try to avoid it, 450°F for more than a few minutes can fry an engine. The EGT probe fits into the exhaust pipe approximately one inch from the exhaust port. It should indicate 1000-1100°F during flight. I use my EGT during longer flights to conserve fuel and to monitor proper exhaust temperature. After climbing to cruise altitude and reducing power to cruise rpm, I observe the temperature of my cylinder-head temperature guage. It normally reads 325-350°F. My EGT usually indicates 950-1000°F. I then wait for the cylinder head temperature guage to catch up and then settle out. If it is still below 375°F I will lean the mixture slightly more and check it again. Sometimes during this leaning operation the rpm will increase, if this happens, reduce power slightly, back to cruise rpm. By adjusting throttle, mixture, and observing the temperature gauges, maximum power and minimum fuel consumption will be the result. For example; on my 50 mile flight over Lake Erie, I was able to reduce my fuel consumption from 1.7 to 1.35 gallons per hour. However, it takes approximately 10-15minutes to get everything settled out. You must also remember if you are cruising a lean setting and you must increase power it will be necessary to richen your mixture.

WATCH YOUR GAUGES! One note concerning temperature gauges; if your gauges do not have internal temperature compensation then they were probably calibrated at 70°F. Look at your instructions that came with the gauges. If calibrated at 70°F, subtract the difference from the gauge reading. Example: Outside air temperature 40°F — the calibrated temperature is 70°F, 70°-40°F is a 30°F difference. If your cylinder head temperature is reading 400°F — subtract the 30°F which will give you 370°F, actual temperature. Once again check your owner's manual.



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wam tech-panel

TECH-PANEL UPDATE

Since the inception of our newest consumer service column last issue, the snowball has begun to roll and gather momentum. We wanted to present the explanation of service a second time so all readers would be sure to see the details.

Further, we received an offer for the services of another qualified factory representative. J. C. Brown works hand in glove with Larry Newman and Electra Flyer non-powered products. J. C. also spent a considerable amount of time working alongside Tom Price in Electra's R & D department. He has much professional level and competition experience.

J. C. Brown joins our growing list of Tech-Panel Advisors; Mike Meier, Steve Pearson, Roy Haggard, Dick Boone, Tom Peghiny, and Chuck Slusarczyk. We are very proud to offer such a Who's Who list of hang glider designers, and we encourage all readers to utilize this technical question service. Below follows a reprint of the service details. Write right now. Next issue will begin the questions and answers.

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 *WAM* is initiating.

While out West, *WAM* 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 *WAM* Tech-Panel. Via our popular Reader Inquiry Cards, or letters, you can now send in your questions to *WAM* (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 distrbute 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 — *CGS Aviation*
(Power Questions)

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

Address your letters to:
WAM TECH-PANEL
Box 144
Lookout Mtn., TN 37350

ATTENTION
Writers, Photographers

WAM is looking for articles and photos.

Got a really nice shot we might use in the magazine or a color slide suitable for a cover?

Or do you have something of interest about which to write?

We will consider all submissions and return all originals if requested.

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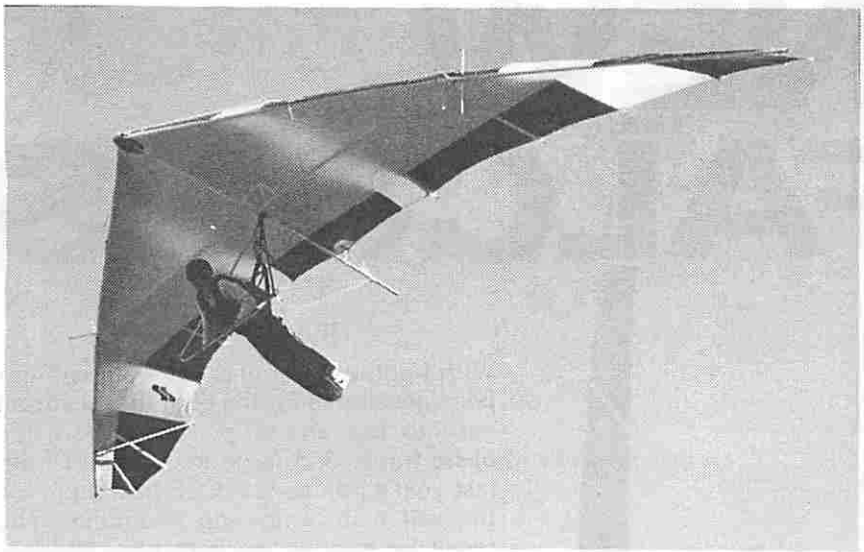

SIROCCO III

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.

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

STRENGTH

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

CONVENIENCE

Quick set up, thanks to the breakdown control bar and sliding crossbar, which allows you to be 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.	61 lbs.
Root Chord	8.5 ft.	9 ft.
Pilot Weight (from)	125 lbs.	155 lbs.
(to)	175 lbs.	220 lbs.
Maximum Glide Angle	9 to 1	9 to 1
Breakdown	10.5 ft.	11.5 ft.

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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.

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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."

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

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AN INTERVIEW WITH

TOM PRICE

By Tim Dunlap
Edited by Dan Johnson

Tom, what background do you have in aviation in general?

Well, I started flying airplanes in high school and got my license before graduation. I took a degree in aeronautical engineering at Embry Riddle (Daytona, Florida), graduating in 1966. I spent some years at McDonnell/Douglas (Long Beach, California) involved in structural mechanics, working in flight loads and design criteria for the DC9 and DC10. I had to gather the information, thereby learning many aspects of loads and stresses. I stayed there till '71, and

earned my Commercial license and Instrument rating during that time.

How did you get involved in hang gliding after all this?

My hobby was sailing. I got so into this while at Douglas that I began doing professional sailing, and made some sails. While I was working on sails, someone, in 1973, brought in a standard sail for repairs. Two weeks later, I went to work for Eipper (Torrence, California).

What did you do at Eipper?

Mainly I was a sailmaker. I worked there for a year and got the sail loft organized. I was responsible for the sail template system in hang gliding. That is, the tape on mylar templates, which I developed with Dave Cronk. He and I also worked together on designs.

You said you worked for Eipper about a year. Where did you go after that time?

I went to San Diego, to Torrey Pines, which was then, as now, one of the most popular sites. In 1974 I started ASG, or Albatross Sail Gliders.

Did this get you right into manufacturing hang gliders?

No my purpose was to build sails for custom homebuilt standards. I didn't advertise at all. I did some sails for Brock (Ultralight Products), Manta, and Sun, with continued prototype work for Eipper.

Did you do all this just by yourself?

No, shortly after I began, say two months, Keith Nichols joined me. I had begun studies on a design to be called the ASG-21. Keith helped, as did another flyer named Jim Walker. It seemed suddenly we had expanded to 15 people. We began doing serious design research instead of trial and error. A few ASG-18's had dive problems. We built the sails, others had done the frames. After these incidents we started testing. Other designs were luffing in and it was time to be serious about testing designs.

Was this the beginning of test vehicles?

Basically, yes. In conjunction with Sun Sails (Colorado) the first test beds were built. And after that, everyone followed suit, building vehicles and doing load testing. Bennett, Peghiny, Kells all helped. The results showed some bad things, and changes were needed. Progress was slowed by politics though. The H.M.A. was begun, and then folded. I got more involved when the H.G.M.A. was begun. I became a board member of the HGMA in 1976. With Gary Valle, Mike Riggs, and Tom Peghiny, we got the first airworthiness standards written.

This sounds like a lot of time away from Albatross. How was that going?

Well, the ASG-21 was one of the first gliders to be certified. But too much time was spent on other things. Poor management brought on the end for ASG; we closed in August of 1977.

That was about the time you became affiliated with Electra Flyer, wasn't it?

Yes, we had been talking prior to ASG folding. Under a contract agreement I began doing engineering and testing on the Oly. Tom Peghiny also came to Electra Flyer under a similar contract. Over the Winter and Spring, he and I completed the ASG-24 design, which became the Floater.

Was that your last design for Electra Flyer?

Basically, yes, as I had begun to do work for some other companies, also on contract, including certification work on the Sensor, vehicle testing on the Maxi III, control bar analysis and testing for UP, and other work for Seagull.

Did you continue any of your own design work?

Since 1978, rather secretly, I had been working on the ASG-23. In 1979, I began gathering the parts needed. Meanwhile I was continuing to do the engineering work on a contract basis, so it was not a full time effort.

What do your future plans include?

I'd like to start a custom shop where pilots can choose an exact design. Of course, I'll be continuing to do engineering and testing work. I have an idea to start a separate testing agency, maybe a part of the USHGA, or some other agency. It needs to be an unbiased group. Certification is expensive and time consuming. Each certificated design cost at least $3,000, and we may have had less new research and development because of the time manufacturers have spent on certification procedures.

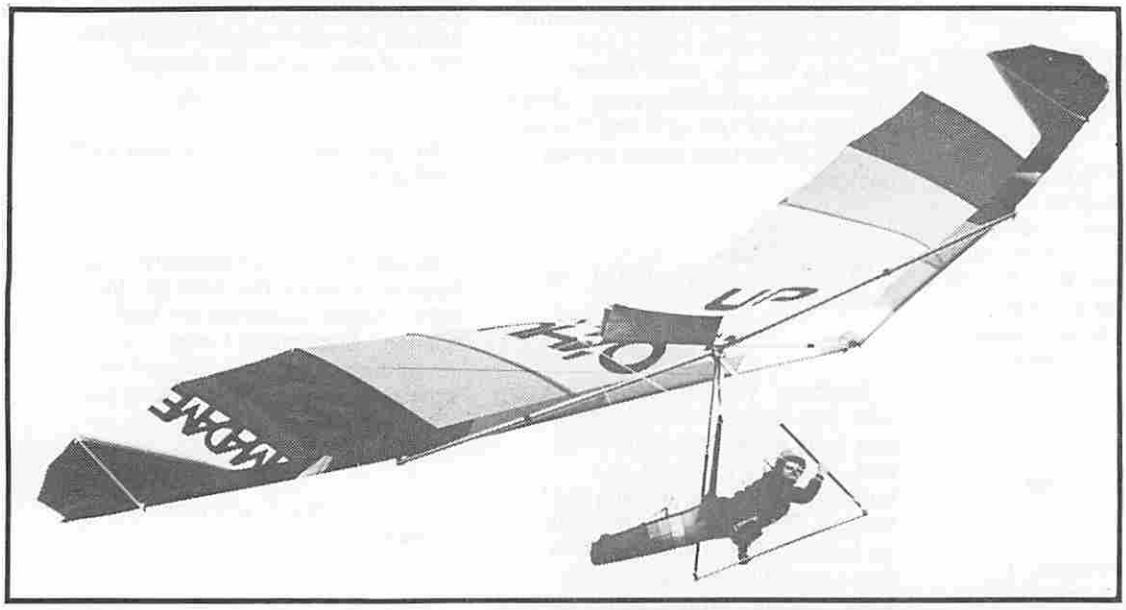
What do you see as the future of testing and testing equipment? What about 1980 testing?

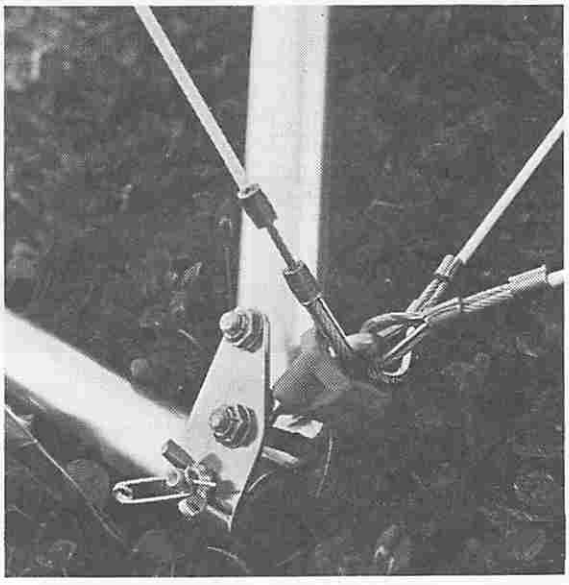
Most of our certification standards are pretty well set now, finally. Most changes at this point will be minor, sort of fine tuning.

We need and will develop a more sophisticated test vehicle that is capable of measuring more data.

Fatigue problems need more testing. Drop testing could become a new thing. And we may get NASA to allow us use of their computers for testing purposes. With powered ultralights, a great need for testing is present. Here, fatigue can be a major problem. And as newer materials become more available, testing procedures will have to be developed. The future will be a busy one.

Thank you, Tom.





Henderson

THE ULTRALIGHT PRODUCTS FIREFLY 2 B

By Dan Johnson

All last year, UP sold the Firefly without a single page of advertising in any magazine. In fact, a lot of you may not even know UP had such a glider. They did, it sold well, and it is a great flying beginner-intermediate. The Firefly now holds the world endurance record (Jim Will, Hawaii, 19.6 hours). Before we go flying, let's look at this craft.

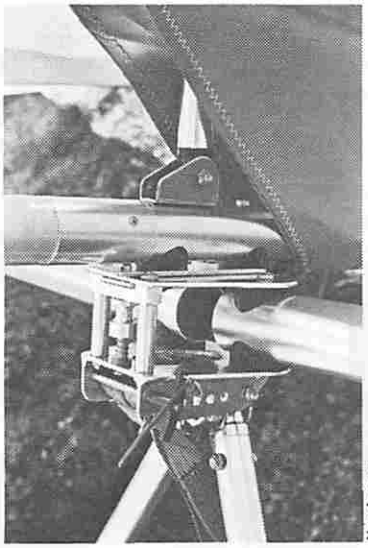
UP has always prided itself on manufacturing the "Porsche of hang gliders." This statement is a bit easier to comprehend when you know that owner Pete Brock was deeply involved in auto racing prior to engaging in hang gliding. But if you have any awareness of cars in general and the Porsche name in particular, you'll know that such a comparison means the UP products must meet some very demanding standards . . . and they do.

Of all the gliders I've ever set up, easily over 75 models, the 1980 Firefly 2B ranks at the very top of the list in both categories in which I know pilots to be interested. The two areas are: Quickness of set-up, and Ease of set-up. Because of this, a more detailed look is warranted.

Open the bag — even the bag is deluxe. A full zippered bag with carrying handles, which are indeed located accurately enough to really carry the glider this way. Once open, you'll note two "flop-over" pads which protect the sail from the fold-away control bar. A little pouch on one side of the pads permits a few extra small parts to be packed away.

Basically the glider has one bolt and one permanently mounted quick pin for complete assembly, then including the battens of

Henderson



Henderson

course. Spreading the uprights out and swinging down the base tube leads to the only bolt for set up. The only wire you need to attach is the upper cable to the nose, which fastens by a quick pin. Even the luff lines deploy more or less automatically when this wire is connected.

As usual on systems of this type, swing the wings out halfway or better. While you're doing so, the crossbar (unattached as yet) will not gouge the keel as a plastic sleeve protects it. When the wings are opened you merely push the top of the control bar neatly back into a sandwich of steel plates. A spring loaded, permanent quick pin pops into place, no nuts or safeties required. Then a final quick pin secures the permanent one, positively eliminating any chance of the vital pin slipping. That's it! Oh yes, battens and defined tips, but you are really done.

The Firefly is a deflexorless glider and, as such, is somewhat tail heavy. It is also a floater, though, and can use a filled sail technique for launching. Due to the luff lines, running while trying to hold the nose down will prove frustrating, as the nose will try to rear up.

The model I had to fly was a 181 (square footage), the same as that used by Jim Will. It has a weight range of 130-193 pounds, according to the placard, and at my hook in weight of 170, I was a bit on the higher end. As the glider is really a floater sort, I'd recommend getting in to the lower half at least, so as to bring slower speeds in flight. Control will be adequately light I feel even in a larger size, as the 181 had reasonably light response.

I did not get to soar the 2B, but as I and the factory basically consider this a "starter" glider, its soaring qualities and sink rate comparison are not matters of importance. Suffice it to say, that the Firefly can indeed soar, as Will's long flight in Hawaii certainly proves.

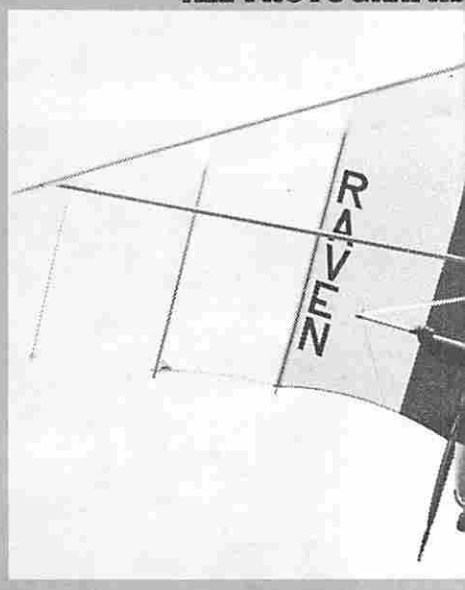
The novice pilot can find the 2B to be an excellent purchase choice for several good reasons. One, it is lightweight, more so than many other deflexorless designs. Two, it is simple to assemble and preflight check. Three, the price is very competitive, both for 1980 and for the deluxe reputation of an UP! Four, the downtubes and basetube are all identical, and very reasonably priced — a valid consideration for pilots of all experience levels. Five, you can get one fast, as UP stocks the model in all sizes and many attractive colors.

From the pleasure of setting it up, to pleasing and docile airborne characteristics, the Firefly is an exquisite choice. Go to your nearest dealer and try one on.

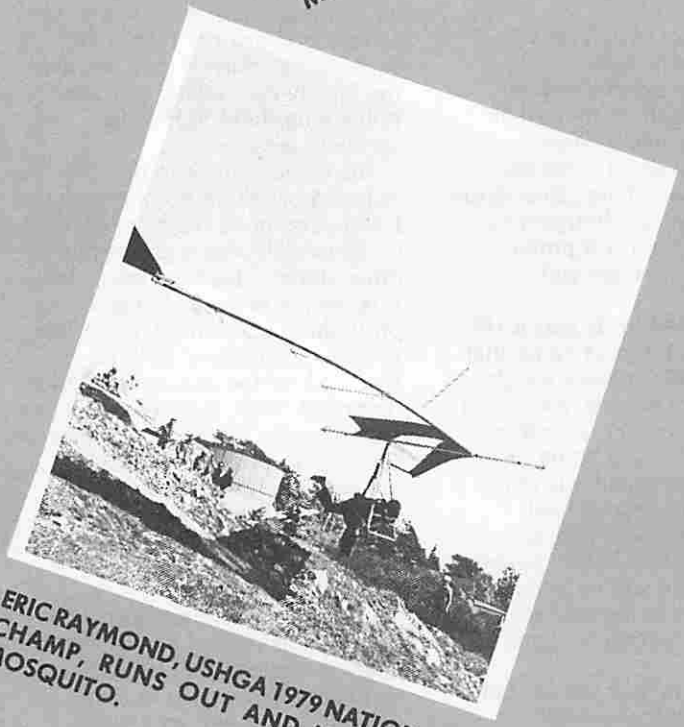
SOUTHERN·CALI

ALL PHOTOGRAPHS

LOIS CARROLL, A CRESTLINE ANGEL TEAM MEMBER, LAUNCHES HER SENSOR 210. SHE WON 2 OUT OF 3 HEATS IN THE MEET OF APRIL 5 & 6.



LANDING SET UP; ST

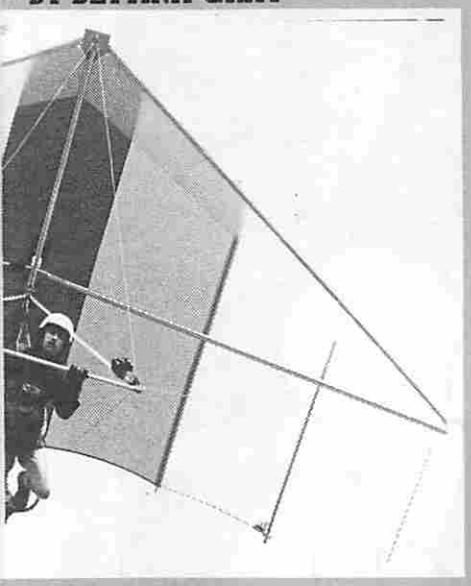


ERIC RAYMOND, USHGA 1979 NATIONAL CHAMP, RUNS OUT AND UP IN HIS MOSQUITO.

PETE BROCK AND BILL BEN

FORNIA·LEAGUE

© BY BETTINA GRAY



'EVE PEARSON, PILOT.

SUZY WIELAND, SAILMAKER, WITH HER SENSOR SAIL.

IETT, A MEETING OF MINDS.

BRACING IN . . . CRESTLINE.

SEAN DEVER, MEET DIRECTOR, WITH TROPHY DESIGNED BY JEFF STEBER FOR THE SOUTHERN CALIFORNIA LEAGUE.

Photo by Bettina Gray

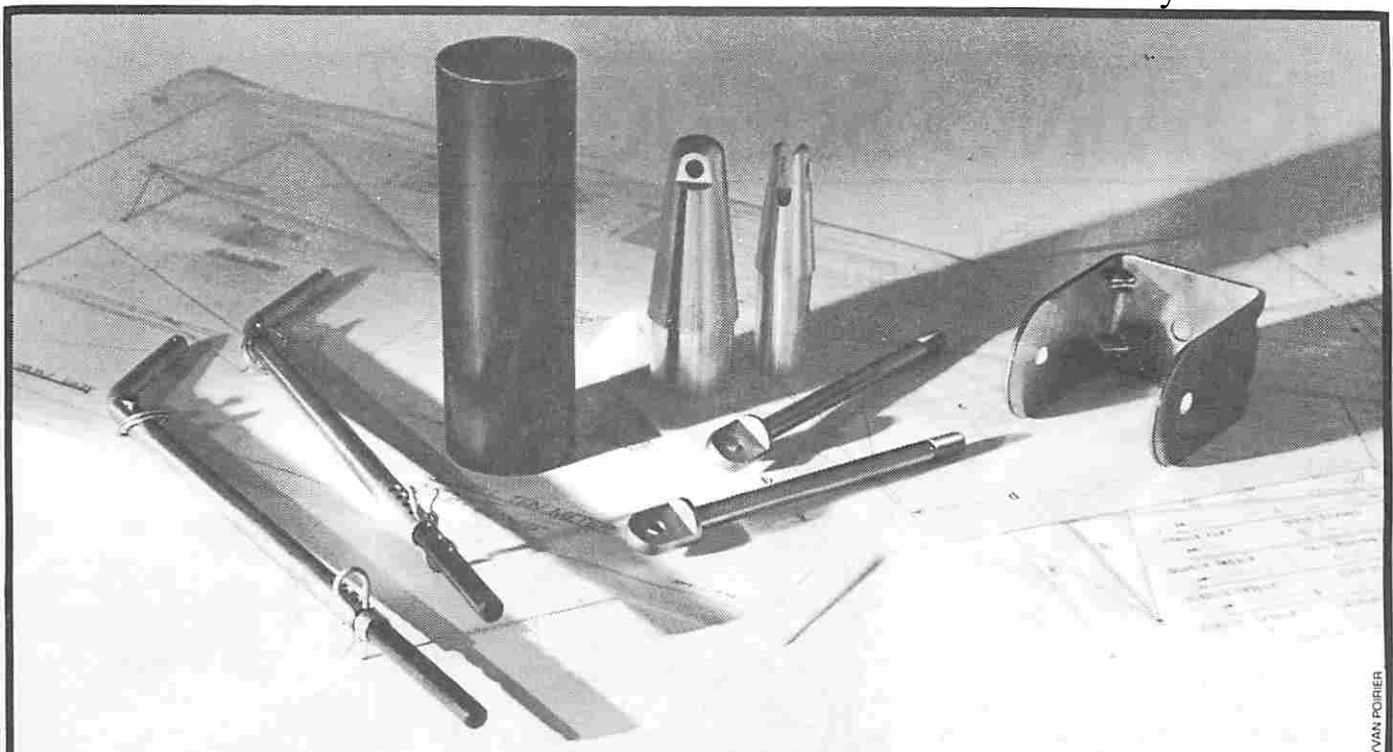


PHOTO: YVAN POIRIER

The Seagull Difference: Engineering dividends you can bank on.

The Cylindrical/Anhedral Leading Edge.

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.

Quality Construction and Materials.

Compare our gliders with the others on the market. Component by component, you'll find SEAGULL's quality and craftsmanship a cut above the rest. The anodization process our tubing undergoes is the best money can buy. SEAGULL's glossy black coating is thicker for greater protection and more corrosion resistant for longer life. We use a heavier 5 oz. dacron cloth for sailmaking so that your sail will hold its performance over time. Other considerations, such as electro-polishing of stainless steel components, and black vinyl coated rigging contribute to a finish you can be proud of.

Handling.

SEAGULL's handling is marked by light control pressures and the quick response that allows precise piloting. One flight and you'll discover why SEAGULLS are so enjoyable to fly: they give you high performance with superior control authority.

Performance.

This season we won the Cross Country Open competing against the higher performing FAI Class II gliders, took 1st and 2nd at the Canadian Nationals, won the Southern California Regionals, took 1st and 2nd at the Guatemala World Championships, and ended Moyes domination of Cypress Gardens' World Tow Championships with 11 METERS taking second and third. A 10 METER holds the World Record for Altitude Gain of 11,700 feet and the World Distance Record for Out and Return.

Above All, Safety.

We have the best safety record of any hang gliding manufacturer. We intend to preserve it by maintaining our strict adherence to a cautious and deliberate design phase and continuing our long standing process of test flying every production glider. SEAGULLS have always exceeded HGMA standards because they've had to meet ours first.

Last But Not Least.

When you think about a glider for 1980, you might do well to think ahead to '82 or '83 and consider this: SEAGULLS have a resale performance that no other glider can approach. That's because no other glider is built to last like a SEAGULL.

SEAGULL AIRCRAFT

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TOWING SECTION

tight lines by Ed Quirk

Carefully you attach the bridle to the releases and listen for the "click" telling you they are properly loaded. Your anticipation begins to build. The rope man coils a length of tow line a short distance in front of you. Everything is ready now, with the wind blowing in your face, you look straight ahead towards the tow crew and motion that you're ready. The rope man steps away, the coils of rope start to payout as the tow vehicle picks up speed. Quickly the rope goes tight, the glider leaps forward, and you become an integral part of it all. As you climb away you look down the tow line and see the ground falling away, almost like being in an express elevator. After climbing a couple of hundred feet your hand reaches over to one of the levers to release the top bridle line. Now you have control over the glider's rate of climb which you allow to increase slightly by letting out the bar. Further up the tow you find the going a little bumpy, which gives promise of some thermal activity upon final release. Minor roll corrections are constantly being made so that you stay directly with the tow vehicle. Finally you have reached the desired altitude and signal that you are about to release. The tow vehicle stops, you depress the release lever, and watch the line fall away. You are now free.

Many people have asked me what it is like to tow. Like most people I find it a difficult experience to describe. The explanation you just read took me more time to think out and write on paper, than it would take most experienced foot launch pilots to learn. However,

Henderson

this is just what occurs on a typical tow up. But there are some unanswered questions — were we towing over water or land — did we use a winch? Some very good questions, which we could take several articles to explore. The point here is that regardless of the type of method used and locality the principles of towing are the same.

This looks like a good time to make my disclaimer. Let me acknowledge that in various parts "they" do things different than we do here in Florida. I've got no problem with that, do what works for you and keep it safe. The intent of these articles is to explore and discuss towing, not dictate the way to do it.

There are several ways you can tow and depends largly on your situation and desires. The basic ways as I know them are: static line, static winch, and mobile winch. Each of these methods has its own advantages and disadvantages.

One thing that each has in common is an experienced person or persons operating the equipment. These people are responsible for the glider's correct rate of climb, proper use and maintenance of the equipment and also must know how to react in adverse situations. Unfortunately I don't know of any books or courses that teach what you need to know. Everyone I can think of got O.J.T. (on the job training), it takes time and mistakes will be made, which is fine if someone is there who knows how to correct before they get serious.

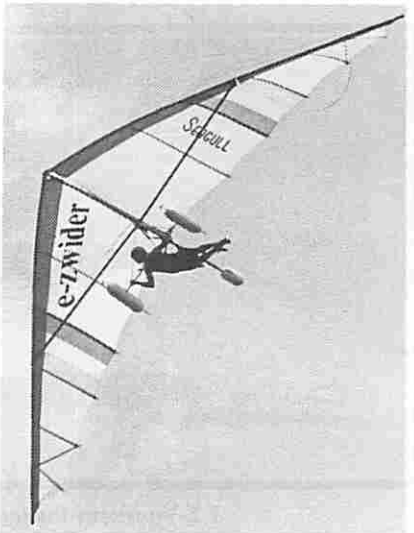
Static line towing is the oldest and most widely used form of towing. The methods used are straightforward and are perhaps the simplest. A set length of line in used, usually 5/16" braided polypropelene under 1000 feet. Anything over 1000 feet gets to be a bit much to handle.

At the tow vehicle end, we attach the rope to an in-line release. This is very important. The tow crew must be able to release the line on their end. This avoids dragging a pilot and glider if they crash with the tow line still attached. One person of the tow crew is assigned the responsibility of "pinning" or operating this release. They must watch the glider at all times and be ready at any moment to hit the release.

There is a school of thought that a static line should have a "weak link" incorporated into the tow line. The concept, on the surface, has some merit. The idea is that a 5/16" line has a breaking strength over 1200 pounds, and that a glider could not sustain a pulling force of this amount. It is suggested that a smaller gauge of rope, somewhere in the area of 3/16", should be attached to the tow line. This smaller line would break at a much lower pulling force, before the glider would be over stressed. Well I am of the opinion that I don't want the tow line to ever break, especially if it is pulling hard. I can not think of a quicker, unexpected, way to do a whip stall. It is possible to overpull a glider with a static line, but you depend on your tow crew to detect and offset this by modulation of the tow vehicle's speed. This presents a strong argument in favor of a regulated pull by use of a winch.

Now that we have the line attached to the vehicle's release, checked the line for frays and discussed with the tow crew what they are going to do, what's next? Well, you take all that line and coil it neatly in front of the glider. Make sure that when the line is pulled out by the vehicle that it will not tangle. Then attach the other end of the line to the tow bridle. A carabiner comes in handy here. After attaching the bridle to the releases, pick up the glider. You hold the glider by the bottom of the control bar, not by the down tubes, one hand by each of the release levers. The tail of the glider should be on the ground and wings level. Remember that the bridle, not the pilot, will control the pitch of the glider on take-off. Keep the glider pointed straight into the wind, if it is not it may turn or lockout on take-off.

Henderson



You're all set to take off now. The tow crew is signaled that you are ready. We do that by shaking the glider up and down several times. You could also have someone in front and to the side of the glider using flags to signal, green for go and red to stop. Once the tow crew is signaled to proceed, they gradually pick up speed. In other words if you are taking off into a 5 mph wind and the glider's stall speed is 16 mph, the tow vehicle needs to be going more than 10 mph, not really very fast. When the end of the rope is reached, the pilot should hold back, not jump into it. There will be a stretch in the line which does two things, reduces the initial shock of the takeoff and puts sag in the line. If you don't hold back, you will takeoff, stall and fall back.

When the glider starts to move forward you may take one or two steps. Concentrate on looking at the tow vehicle and keep the kite level. After you lift-off, work on keeping the glider tracking straight. If you are flying in the prone position this can best be accomplished by leading with your feet to make corrections. Supine flyers shift their weight as they normally do.

At this point we should briefly discuss the universal tow signals used in the glider community. When the glider is being pulled too hard or too fast, the pilot spreads his legs apart and holds them there until the tow vehicle slows down. This is also used for release of the top bridle line, so there is slack in the tow line when it is released. If the glider is being pulled too slow, the pilot should kick with one leg. Upon reaching the top of the line you want to make a final release, cross both legs, wait for the vehicle to stop and release. I would like to note here that the higher you go, the harder it is to see these signals. The principle of a winch overcomes the need for these signals, therefore much more line can be used.

This covers the fundamentals of a static line tow. When a winch is used many of the same techniques are used. A winch does nothing more than windup and payout line. You still need a crew to react to what the glider is doing. The pilot's input for takeoff and tow is also generally the same. In upcoming articles we will explore the principles of winches and their use. TIGHT LINES.

NO. CAROLINA TOWING S^I^T^E^S

By Scott Lambert

I just came into the house, there's about six inches of snow on the ground, and I'm wondering if spring and summer are going to make it back this year. After pulling up the rocker next to the woodstove and going through pictures of the last couple of season's towing, it's much easier to relate to the warm breezes, cool water, good flying, pretty girls in bikinis, and new friendships that his summer will surely bring.

North Carolina, like so many other states, has a great many towing sites. A good towing site should have several features to be ideal, while several features go without saying, the following are the ones I feel are important for towing.

1. Open shores facing N, S, E, and W, with enough room to set-up and pop off safely.
2. Room to go at least one to two miles into prevailing winds (for winching).
3. Not underneath controlled airspace. While we do regularly tow very near Douglas Municipal Airport, I've talked with the GADO many times and we call the tower at the airport and let them know where we're going to be flying on a given day.

I realize not all sites are going to have everything perfect, you can tow safely and have fun on almost any body of water over about 15-20 acres in size.

THREE POPULAR NORTH CAROLINA SITES

Lake Norman

Lake Norman is about 15 miles North of Charlotte. This is a very clean lake used for Charlotte's water supply and for hydro-electric and nuclear power. There's 550 miles of shoreline you can check out for those good flying sites. I fly regularly from Ramsey Creek Access, a public access area that has about four to five acres cleared with nicely manicured grass running right down to the water. The channel you face is open for flying from about 220-300 degrees, and it is reliably blowing in, during the summer months. As in most situations, people *love* the flying, and they tend to ask most of the same questions. They are especially baffled when they didn't see the tow boat and they *know* that there is no mountains around. Example — Fisherman, skier, sunbather, wuffo, whatever: "Where in the world did you come from?" Pilot: "Well, you see, I took off from Grandfather Mountain (100 miles NW) at about 10:30 this morning and . . ."

Lake Wylie

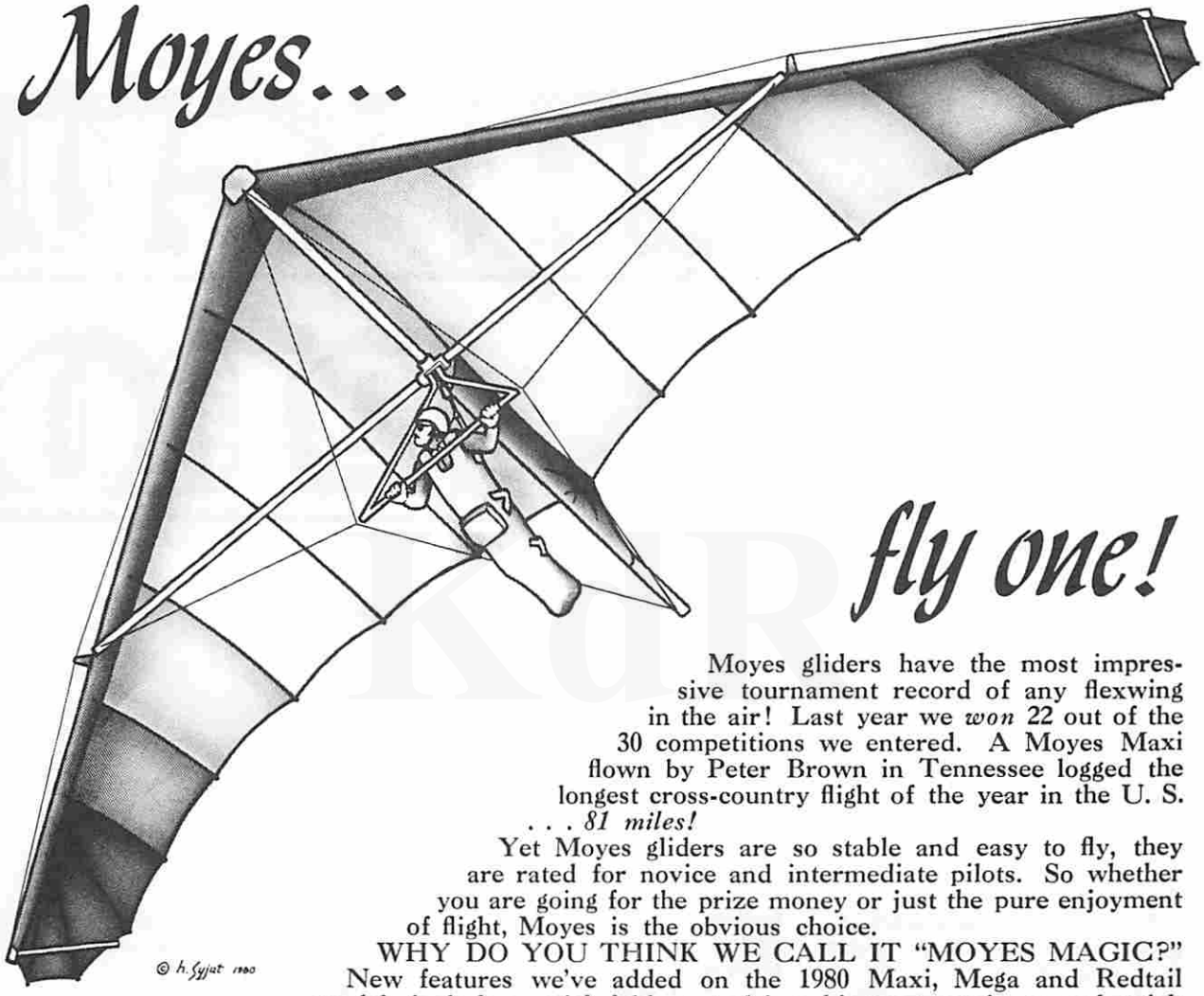
Lake Wylie is about 15 miles SW of Charlotte and is fed by the same river as Norman, the Catawba. Lake Wylie was built, I believe, in the late 1940's and its primary use, until the advent of nuclear power, was hydro-electric power. Wylie has a shoreline of about 250 miles, plenty of room for any type of towing. I believe towing started in North Carolina on Lake Wylie in 1971 when a 13'6 standard from Bennett was $495. That was *with* tow equipment. *Jeez*, what happened to the prices? A good friend of mine that quit flying in '75 was one of the first people around to be flying (towing) and if you think we've got war stories to talk about now, you should hear some of theirs!

White Lake

White Lake is located in SE North Carolina. Accurate directions may be obtained from yearly tournament schedules. Home of the really fun tournament called *Annual East Coast Tow Launch Tournament*, running into its fourth year this year. This is a beautiful white sand lake with crystal clear water. The lake is only two to three miles in diameter and has a very populated shoreline. Hundreds of boats use the lake during the spring and summer. This lake has only two real good launch sites, both privately owned, but usually accessible. Beautiful lake, nice people, don't miss the tournament!

E Z Voorhees towing at White Lake, N. C.

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



fly one!

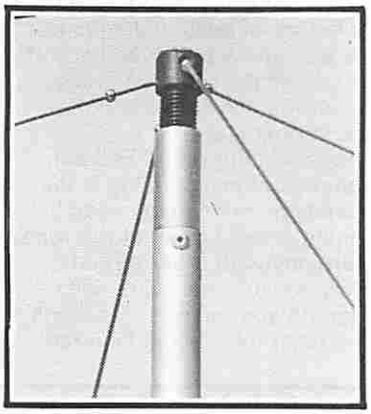
Moyes gliders have the most impressive tournament record of any flexwing in the air! Last year we *won* 22 out of the 30 competitions we entered. A Moyes Maxi flown by Peter Brown in Tennessee logged the longest cross-country flight of the year in the U. S. . . . *81 miles!*

Yet Moyes gliders are so stable and easy to fly, they are rated for novice and intermediate pilots. So whether you are going for the prize money or just the pure enjoyment of flight, Moyes is the obvious choice.

WHY DO YOU THINK WE CALL IT "MOYES MAGIC?"

New features we've added on the 1980 Maxi, Mega and Redtail models include a quick-fold control bar, kingpost tensioner and quick set-up mechanism that locks with a single pin. We've kept the same structural strength, precise handling and unbeatable performance we're famous for.

Call or write for the Moyes dealer nearest you!



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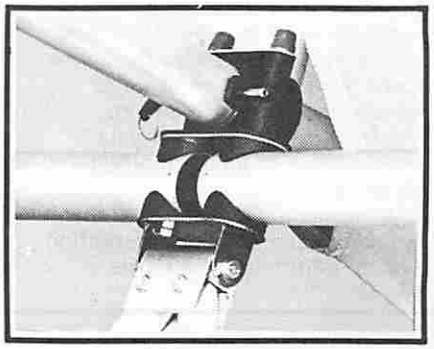

REGUL
PRO

To many pilots, the spectre of government regulation represents an evil negative. To others it seems a saving grace, through official sanction. The air remains turbulent and changeable on this issue. Summaries of present conditions and forecasts continue to eddy around the hang gliding community. What is the straight word, and what do pilots think will happen at this time? This article is preparatory to your responses on the enclosed Reader Response Card, which will permit us to survey the current thinking. We kept it brief and ask your involvement to help enlighten all of us.

A psychologist named Nathaniel Brandon developed an interesting way to determine one's true feelings on a subject. I call his system the Good and Bad Things Method.

The point is to name off as many reasons why something is good, followed by reasons why something is bad, or vice versa. Go as long as you can. The article helps start it off, you continue by filling in the blank spaces. The result is commonly a finer understanding of your thoughts. Here we go.

The *good* thing about Federal Regulation of hang gliding is official sanction and recognition.

The *good* thing about Federal Regulation of hang gliding is that then we can take our place as a legimate form of aviation, with our "own" airspace.

The *good* thing about Federal Regulation of hang gliding is that it greatly increases the liklihood of funds to further aerodynamic investigations.

The *good* thing about Federal Regulation of hang gliding is that with government influence our members, and thereby privileges, may grow significantly.

The *good* thing about Federal Regulations of hang gliding is that if we act now, we may be permitted to establish the rules, whereas later on they could make stiffer rules by themselves.

The *good* thing about Federal Regulation of hang gliding is the government will help us establish common sense "rules of the road" in harmony with other aircraft.

Now you do your own. Keep trying 'till you run out of reasons.

The *good* thing about Federal

ATION
CON

Regulation of hang gliding is

.....

.....

When you're done, go to the other viewpoint. Obviously if one list is a lot longer, your thoughts are already well-formed.

The *bad* thing about Federal Regulation of hang gliding is that once one rule is made, more will follow inevitably.

The *bad* thing about Federal Regulation of hang gliding is the government doesn't understand our sport as well as we do, so they cannot make rules as well as we can.

The *bad* thing about Federal Regulation of hang gliding is that while it seems like other aircraft should give us a wide berth, rules do not make safe pilots . . . attitudes make safe pilots, and no rule brings about a good attitude.

The *bad* thing about Federal Regulation of hang gliding is that it will certainly stifle some new developments as our flexibility to do what we want is reduced.

The *bad* thing about Federal Regulation of hang gliding is that if a pilot makes an error in judgment, his reprimand will not come from fellow pilots but possibly from a non-flying bureaucrat.

The *bad* thing about Federal Regulation of hang gliding is that, as with other forms of aviation, the regulations drive up the prices of services and equipment, as suppliers conform to rules which cost them more money.

Again, you continue . . .

The *bad* thing about Federal Regulation of hang gliding is

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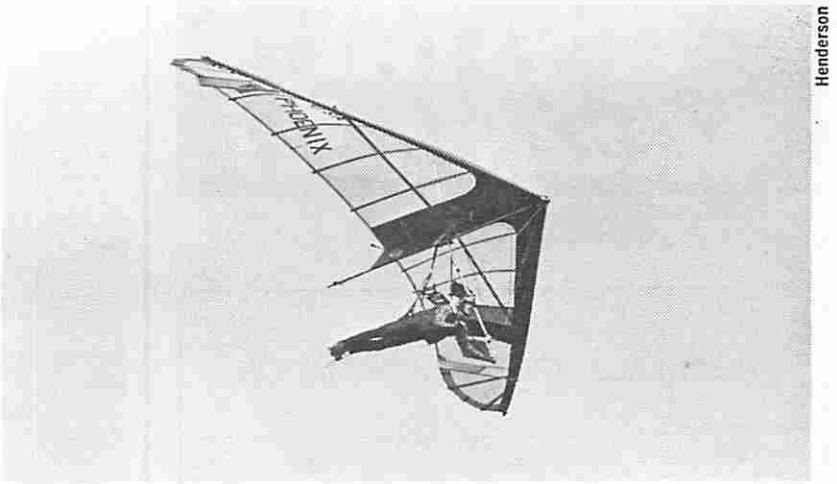
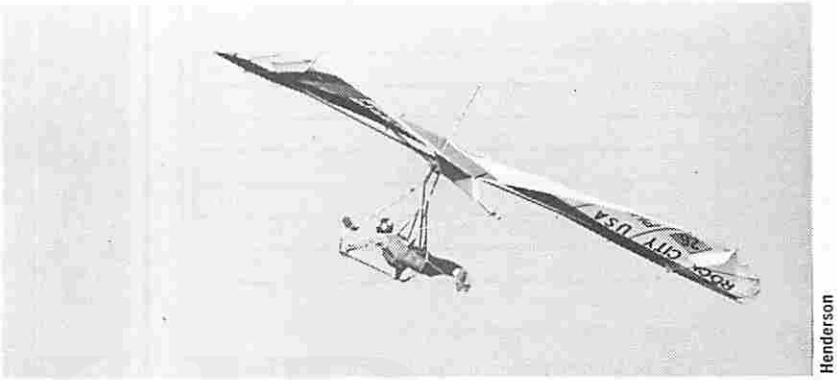
Contrary to the ways you have been surveyed in the past, we do not want to influence your answers. This is a difficult endeavor if we pose the questions — no matter how carefully we tried, we found any question wording tended to elicit certain responses.

Our solution was to have you write-in your thoughts. Our new 1980 Reader Response Cards have much more room for such responses and we encourage you to use it. SPEAK OUT on government regulation before it's too late. We *will* report whatever you say, pro or con.

Ken de Russy Collection



Henderson



Henderson

THE DELTA WING LAZOR II
by Dan Johnson

Even when I picked up the new Lazor II at the airport, shipping container and all, I felt its light weight. I was surprised by this for three reasons. One, I had heard the Lazor I was relatively heavy. Two, deflexorless designs are usually somewhat heavier than those with deflexors. And three, the Lazor II is a high performance glider with a 130 degree nose angle. I thought the construction would call for large tubing, steel gusset plates and the like, all heavy items. Mostly, I was wrong.

Further, I was surprised by some other discoveries I made. I'll get into more detail, but the pleasantries include docile take off and landing characteristics, light control pressures, easy ground handling, and simple set ups. I found a couple things I did not care for as well, and we'll go through them all.

The Lazor II was provided by Bill Bennett when he was informed that I would be doing an evaluation for the *Whole Air Magazine.* The only other one available to me was a '79 model, and some of the above mentioned pleasant surprises came about with changes made on the '80 model.

So, when the air cargo folks called that the glider had arrived, I brought it back to Crystal where I proceeded to assemble it from the breakdown form. Instructions for assembly were included and following one step at a time made the process easy and simple. A couple things were not spelled out in detail but can be deciphered logically.

When installing the rear leading edge halves, be sure the spar slides into the pocket *under* the batten pockets. I failed to do this on one side and it was impossible to insert the battens. Also, the single aluminum batten uses the pocket directly above the defined tip.

Normal set up on the Lazor II is more like the Raven than any other system. However, this is complimentary as both are simple and effective. The crossbar does not slide on the keel facilitating easier set up for one person. The keel is protected by a plastic sleeve, as on UP gliders. Unlike the Raven, tho, the crossbar is permitted to shift 1-2 inches. Similar to several of the best American quick set ups, the Lazor II has one bolt on the control bar, a single top tensioner, and a keel/crossbar fastener. Personally, I prefer this system to the crossbar sliders, though they may be more rapid. Luff lines stay attached on the Lazor II.

As I said, the Lazor II exhibited very easy take-off. My wing loading was about 1.3 compared to my usual 1.15. I expected a harder, faster launch, but in error. The factory trim was also perfect.

In flight the Lazor II has very good response. Some lag exists in a slower rate of roll than a Raven. But it is a quite comfortable, stable feeling. For pitch effort, it is quite a different story. Here, the Lazor II has very responsive handling. At first it offered no feedback to me, but after a bit, I relaxed into the sensation. I found it to be just like settling into the lighter roll handling of a Raven or an Emu.

The landing came . . . and went without a hitch, stumble, or dropping of the nose. I don't know what all the fuss was about, unless It relates entirely to Lazor I qualities. I am not an enthusiastic runner on landing, yet I experienced no difficulty either in slowing it down or in flare timing.

All in all, though its performance envelope is very high, I feel the Lazor II can be handled by most Intermediate, hang 3s.

The couple criticisms I have relate to the bag and the defined tip plug. The first is an extra cost item on a $1495 glider and made of thin material which fits too snugly. It is however a zippered bag and a good quality bag is also provided for the control bar. With the plug, there may perhaps be a slick technique but I had a devil of a time popping in the plug.

Customarily with the press of efforts to get these reports written, I don't get to keep flying the glider last reviewed. In the case of the Lazor II, I hope it will be available for a soaring flight or two as I enjoyed flying it. I believe many of you would feel likewise if you flew the Lazor II. You are sure well advised to try one.

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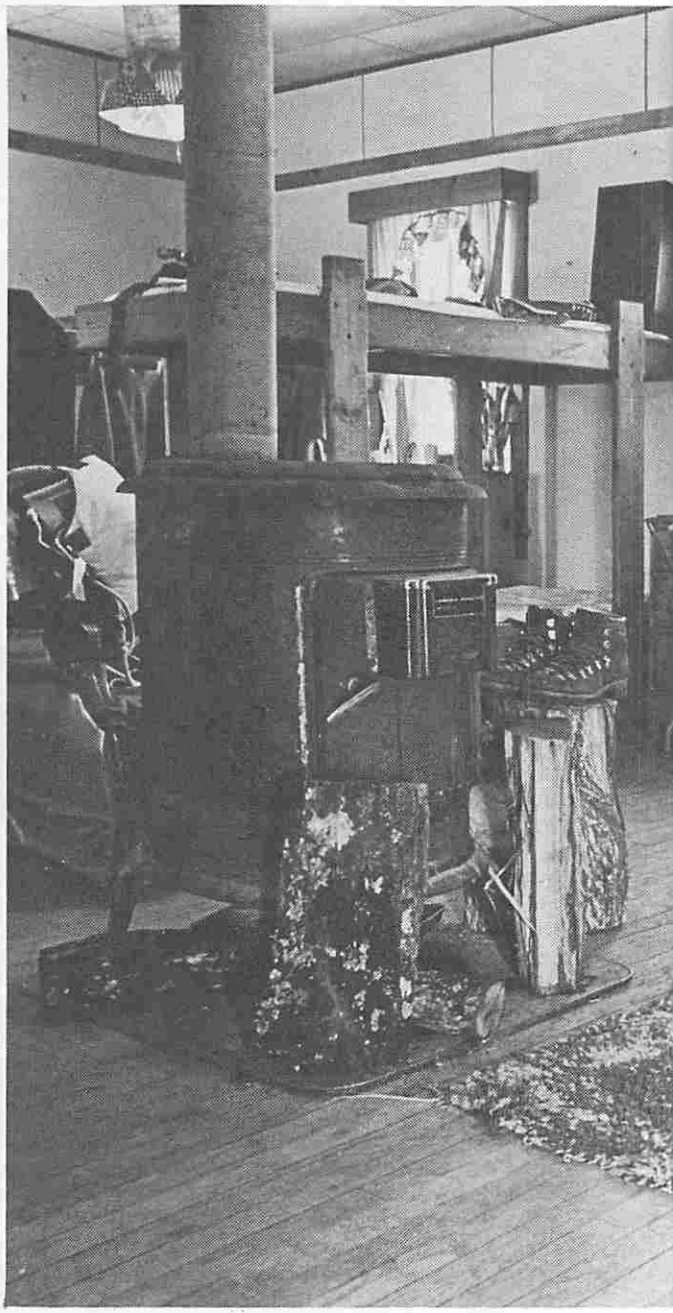

SINCE 1974

THE BUNKHOUSE

In Europe, they're "youth hostels" . . . in Aspen, it's the skier's bunkhouse. When you are coming to Chattanooga, you'll want to stay at Crystal Air Sport Motel — in the *flier's bunkhouse*.

Want to eat, live, and breathe hang gliding for your flying trip? The camaraderie of other men and women pilots is combined with real savings in a hassle-free environment.

LESSONS, TOO

We are nestled in Raccoon Mountain Valley. We're a quarter mile away from Crystal Flight Resort where you get full pilot services from lessons to sales to repairs. Seven days a week, ten months a year.

Whether you travel in groups, with your lady, or alone, the Motel and Resort can satisfy you. From the waterbeds in rustic pine rooms to the tramcar atop Raccoon Mountain, we're Crystal . . . come fly with us.

Regular beds, family sized rooms, and pool (in season) also available. Authorized Dealers for Wills, Seagull, Sky Sports, Flight Designs, Moyes, Electra Eagles, and more. All accessories, too.

CRYSTAL
AIR SPORT
MOTEL

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

WAM DIRECTORY

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 **WAM** 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 Magazine** can be bought, as all our dealers become retailers of the new 1980 magazine. We encourage all readers to patronize these shops. They are serious places of business, interested in serving the needs of the pilot.

EASTERN

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

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

FRIGATE AIRCRAFT INC.
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Towing and motorized, accessories, instruction, service, and sales. Dealer for Manta, Electra Flyer, Wills Wing, Ultralight Products, Eipper, Flight Designs, and Soarmaster.

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Route 209
Ellenville, NY 12428
914/647-3344
Distributors for: Seagull, Moyes and Highster. Dealers for most other major manufacturers. USHGA instruction from beginner through advanced. Complete inventory of gliders, instruments, accessories and replacement parts.

SOUTHEAST MICHIGAN HANG GLIDERS
24851 Murray Drive
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Dealer for Bennett, UP, Eipper, Sunbird, Electra Flyer, Soarmaster: Featuring Powered Quicksilvers. We are a full time, full service dealership.

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Chattanooga, TN 37409
615/825-1995

Authorized Dealer for Wills, Seagull, Sky Sports, Flight Designs, and Moyes. Parts and Repairs. Sub-Dealerships available. Complete Flight training — Basic to Mountains. Ratings. Large Accessory Stock. Bankcards OK.

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

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Gaithersburg, MD 20760
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We are the pros in the mid-Atlantic area. Representing Eipper, Delta Wing, Seagull, and Sky Sports. Beginner, intermediate, and advanced instruction. Good things in stock.

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

SCOTT'S MARINE, INC.
908 Lexington Ave.
Charlotte, NC 28203
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Beginning to advanced tow and winch lessons. Learn to fly by towing. Motorized lessons. Parts, Repairs, Service. Dealing Manta, Moyes, Wills, Seagull, Soarmaster, Pterodactyl, UFM and Odyssey. Free Catalog.

SUNFLIGHT HANG GLIDERS OF CENTRAL FLORIDA
11049 Blackwell Way
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Sales, service, instruction, and promotions. We offer complete tow instruction, with USGHA ratings, and carry most major brands of gliders and accessories.

ECO FLIGHT GLIDERS
17390 Redman Road
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313/439-8637
For the Detroit Metropolitan area, visit our shop in Milan. Dealer for major glider manufacturers, parts and accessories. Certified instructors. Tow systems and motorized equipment.

JOHN LUBON
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Hillandale Rd.
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803/242-1969
Representing Mosquito, Condor, and Firefly 2B as well as Cloud, Price and Raymond harnesses. Plus all other UP parts and accessories. Contact John evenings.

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

MIDWEST SCHOOL OF HANG GLIDING
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Bridgman, MI 49106
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USHGA Certified Instruction in the oldest school in Mid-West — foot launch, tow, motorized. Sales and full service at the home of US Moyes. Three-quarter mile from Warren Dunes.

AERO FLOAT
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CGS AVIATION
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Cleveland, OH 44109

HANG GLIDERS INTERNATIONAL
5603 McKinley St.
Bethesda, MD 20034

ODYSSEY, INC.
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Wilton, NH 03086

CENTRAL

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Mid-America headquarters for powered ultralights. Also dealers for all major glider manufacturers. Glider accessories, repair, and instruction. Sub-dealership inquiries welcome.

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We offer professional instruction on top quality equipment. Beginning, intermediate, advanced and motorized lessons. Complete line of gliders, parts and, accessories.

IOWA GLIDER INC.
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Variety of powered microlite equipment and accessories. Staffed by full-time/ full service factory trained personnel. Contact Dick Ford, President.

BAT-SAIL ENTERPRISES
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"Let Batman help you into the air." Dealer for Moyes, Wills Wing, Price Prone Harness, and Advanced Air Parachutes. Your Indiana towing and foot launch headquarters.

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All major brands of flex and rigid wing gliders, new and used. Power units, landing gear, accessories, in stock. Certified instruction. "Come see us. It'll be love at first flight!"

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LONESTAR HANG GLIDERS
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ARMADILLO AVIATION
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INFINITY FLIGHT SYSTEMS
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With five years and thousands of lessons experience, we can safely teach you on one of the nation's best hills. Soaring, thermalling and tandem instruction, too.

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Featuring Sunbird, Lancer, Highster, Stratus, and Atlas. USHGA Certified instructors — beginner through advanced. Complete accessory line. Only 15 minutes from Point of the Mountain.

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In stock, complete parts, accessories, Airframe shop and sail loft. Distributors for: Wills Wing, Seagull, Electra Flyer, Golden Prone Harnesses, Odyssey 'Chutes. USHGA certified school.

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Specializing in Ultralight Products with most most major brands available. Over 4 years of Certified Instruction. Expert repair and service as well as your favorite accessories.

BEAVER HOLLOW
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Factory dealer for Manta Fledge II, Electra Flyer, Sunbird, Moyes, Stratus V; All accessories. Qualified service, repair, and assistance. USHGA Certified Instruction.

TRADEWINDS FLYING CENTER
P.O. Box 543
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We are dealers for Moyes, Sky-Trek and Electra Flyer. We also give lessons, and have full sales and service. Island of Oahu. Mike Benson and Lani Akiona.

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Dealing Wills Wing, Alpine, Ball. All necessary parts and service. Flight School, USHGA certified instruction and ratings. Used gliders. Contact Jim Boscale.

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Dealing primarily with motorized ultralights, we proudly offer the well known Pterodactyl as the head of our line, along with many other kites and accessories.

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Santa Barbara, CA 93103

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PO Box 1503
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HIGHSTER AIRCRAFT
1508 Sixth Street
Burkeley, CA 94710

HANG FLIGHT SYSTEMS
1208-K E. Walnut St.
Santa Ana, CA 92701

WILLS WING, INC.
1208-H E. Walnut St.
Santa Ana, CA 92701

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Carpinteria, CA 93013

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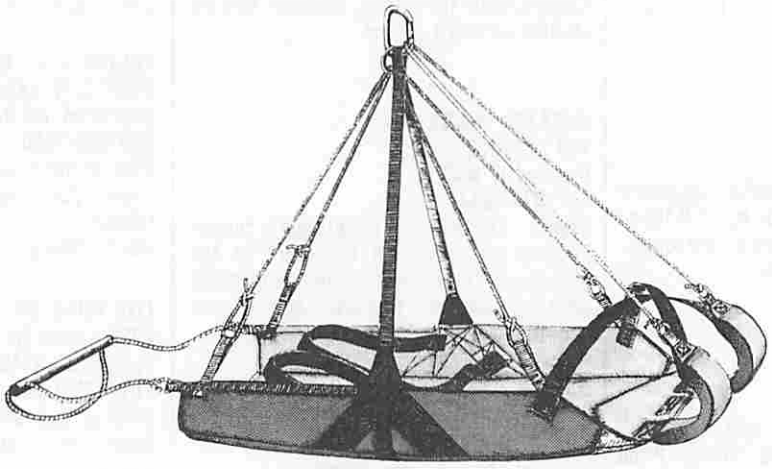
RR 2 Box 780
Kula Maui, HI 96790

COMFORT FROM THE WEST

MANUFACTURED BY FLIGHT DESIGNS



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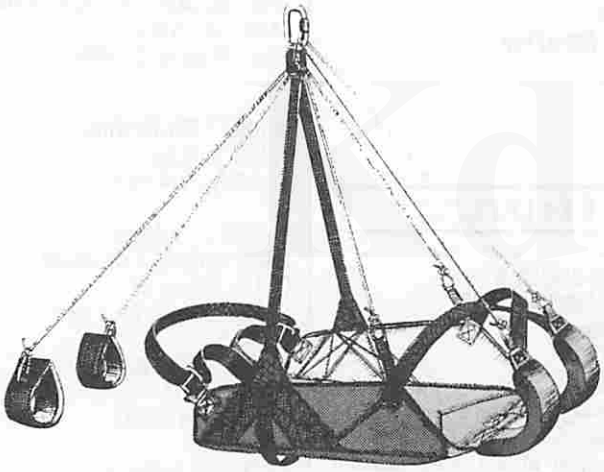
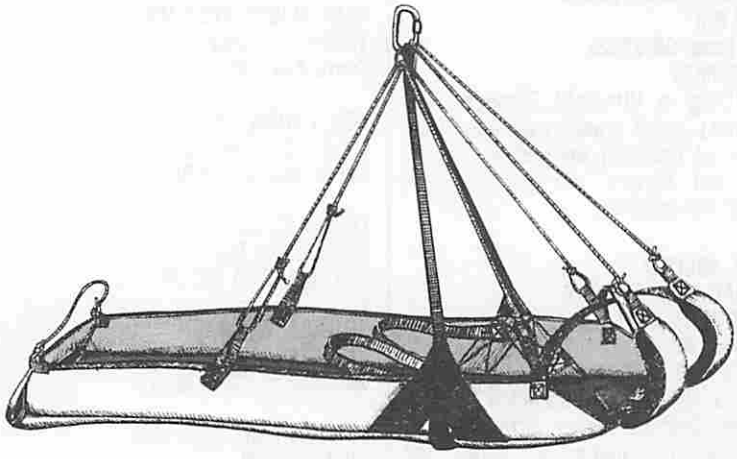


KNEE HANGER



COCOON

ON SALE NOW IN THE EAST

EASTERN DISTRIBUTION BY
CRYSTAL AIR SPORTS

In stock now, the entire line of styles from Flight Designs, known for comfortable harnesses.

Isn't it also comforting to know they're all tested to 8 G's? With full wrap-around support.

Two color bibs, all reasonably priced at $100, $105, and $139.

DEALERS!
Call, or write on your letterhead to Crystal Air Sports, Rt. 4, Cummings Highway, Chattanooga, TN 37409.

Receive customary dealer prices as when ordering from the factory, only receive them faster and at less cost.

COMING NEXT ISSUE
In the May-June WAM

Second Anniversary Issue

Tough Talk about Glider Reports: George Worthington and Dan Johnson explore the state of the art in Glider Evaluations . . . with a special statistics report.

East Meets West Special Dual Site Reviews

Tech-Panel Premier

Euro-Market on Britain's Chargus Cyclone

plus . . .

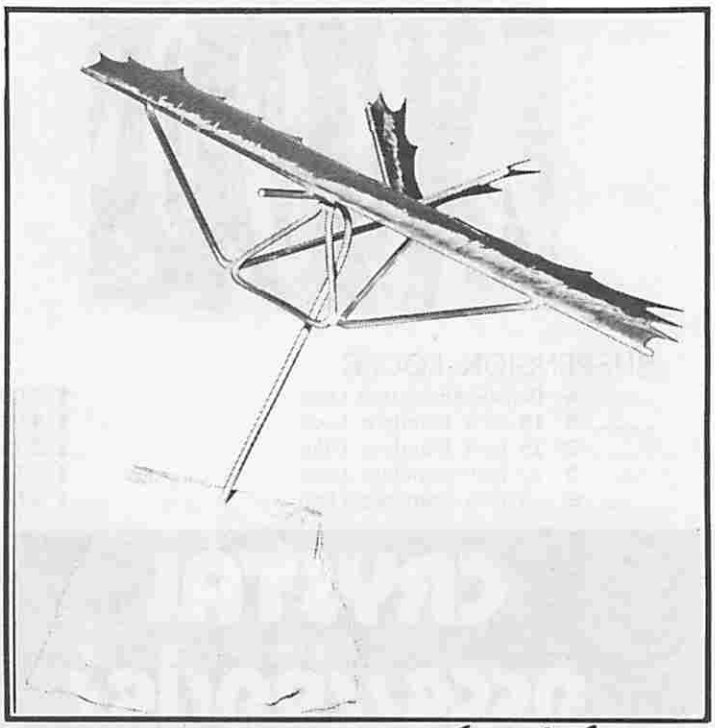
Information on Towing and Power

DON'T MISS THE MAY-JUNE WHOLE AIR MAGAZINE

Subscribe Today!

ORDER FORM ON PAGE 42

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!



Classified Advertising

Issue by issue, we at **WAC** have received more inquiries about Classified advertising. It has not been available. But as we start off 1980 as a full-fledged magazine, we are beginning to accept classified orders. By utilizing ordinary type, we can offer the INDUSTRY'S LOWEST PRICE PER WORD. Here's the details:

- ✓ 20¢ per word — order pre-paid only
- ✓ P.O. Boxes, phone numbers, and prices equal 1 word
- ✓ Zip codes free — $3 minimum order
- ✓ Deadline is last day of month preceeding cover date (Example: May-June **WAC** equals April 30th)
- ✓ Send to: **WAC Classifieds**
  Box 144
  Lookout Mountain, TN
  37350

Seagull Ten Meter, 1978. Manufactured January 1979. Very clean sail. Perfect condition and tune. Flown in 1979 Nationals. $800. 714/547-1344, ask for Russell.

FRAUDULENT POSSESSION

Seagull Aircraft Inc. requests information leading to the whereabouts of Mr. Charles Clark. Mr. Clark is in possession of three Seagull gliders obtained through fraudulent means. He is believed to be traveling to California from Oklahoma.

GLIDER DESCRIPTIONS

SSH 200, Serial # 9417: white sail with a red, orange, yellow right tip, triple deflexors.
10 Meter, Serial # 9367: yellow with orange leading edge pockets and keel pocket.
11 Meter, Serial # 9463: gold with dark brown leading edge pockets, soaring windows

Seagull Aircraft 805/684-8331

ATTENTION LADY FLYERS!!
APPLY NOW

Positions available now at Crystal's Job Corps at the Flyer's Hostel. Barter work for lodging. Good deal, great flying, fine friends. Check it out now! Write or call Shari at 615/821-2546; 4328 Cummings Hwy., Chattanooga TN, 37409.

POSITIONS AVAILABLE NOW

Sales Person (Clothing, jewelry); Office Clerk; Lifeguard (seasonal); Chamber Maid; Gardener/Groundskeeper. All at Crystal Air Sport Motel.

BEGINNER MOYES

1980 Moyes Stingray -- Brand new Moyes for beginner/intermediate pilots. Replaces the Midi in excellent floater performance with light handling. For pilots 125-200. Colorful sail. Never flown except testing and dealer demo. List $1275. plus freight. Special at $1095., complete. 615/825-1995 -- Crystal.

CGS Falcon 5+, 190 sq. ft. with keel pocket. White sail with orange, red, purple tips. Very good condition, excellent for beginner to intermediate. $650. Call 615/821-1134, ask for Bruce.

1978 Seagull Ten and a Half Meter -- 196 sq. ft. for pilot 150-215 lbs. Dealer trade-in. Extra clean ship in yellows and golds. Traded by owner who needed a Seahawk. 8 hrs. airtime. $795. firm. 615/825-1995 -- Crystal.

PACKAGE BARGAIN

Wills Alpha 215, excellent shape, custom sail; $850. complete with bag. Price harness, advanced air 'chute; $150. Both for $950. Contact Don at 615/238-4848 or 615/238-9410 at work.

1978 Seagull Ten Meter. Well cared for. Never stunched. Been very, very good to me. $895. Call when we're home at 404/820-9738.

1979 US Lancer 175 -- for pilot 130-175 lbs. Orange and gold sail, demo flown only by dealership. Brought to Chatt. for glider report in WAC. 12 hrs. airtime. $875. firm. 615/825-1995 -- Crystal.

1977 Colver Audio-Visual Variometer. Good condition. Never been pegged down. $95. Call Denny at 404/820-9738.

1977 Seagull Ten Point Five Meter. Prone wires and 1/8" supine wires. Good condition. $550. Call Chris R at 615/624-1912.

1980 Bennett Lazor II -- Brand new '80 version of this hot contest ship. Beautiful white sail with red, orange, yellow tips, and a brown leading edges. Flown for WAM Glider Report. Extremely low air time. Lists for $1650. delivered. Save $355. at $1295. Call today, 615/825-1995, ask for Dan.

1980 Ultralight Products Firef ly 2B -- 175 sq. ft. for pilot 125-170 lbs. Beginner/Intermediate Floater. Beautiful glider in a blue, purple sail. Quick set-up, impeccable hardware. Never flown except test-flight. $1075. with bag. 615/825-1995, ask for Dan.

Falcon 8 - 21 foot. Brand new. Excellent condition, never crashed. Rainbow sail, wrinkle-free. No sail flutters. 130-165 lb. pilot. $800. Call Chris at 404/820-9269.

Cloudbase Spaghetti harness. Total comfort for flight or sleep. For pilot 6 ft. + or - 2" and 160 lbs. + or - 10 lbs. $95. Call Denny at 404/820-9738

BRAND NEW BARGAIN !!

1979 (October) Sky Sports Osprey 2 -- 175 sq. ft. for pilot 125-170. Excellent glide, precise handling in a Hang 2+ ship. Rainbow sail. Never flown except test-flights. $850. firm, complete. 615/825-1995, ask for Dan.

1979 Wills Wing Omni 187. Superb handling. Great performance. Split panels. New condition, $1195. Call Denny at 404/820-9738.

1979 Wills Alpha 215 -- Built mid-May '79 for tow competition. Not used since owner bought Raven last Fall. Blue, White, and Black sail in excellent condition. For pilots 155-210. 11 hrs. airtime. $850. firm. 615/825-1995 -- Crystal.

1979 Wills Wing Raven 209. Demo flown only. Need a bigger one. $1100. Call Denny at 404/820-9738.

SUB-DEALERSHIPS

Crystal Air Sports is now accepting inquiries for sub-dealerships in the states of Tennessee, Alabama, Georgia, and Kentucky. Call 615/825-1995, and ask for Dan Johnson, if you are serious about selling Wills Wing, Seagull, Sky Sports, and accessories from many companies including Crystal and Flight Designs. We will be offering group advertising as part of the sub-dealership program. Standard factory discounts and in-stock merchandise available. Genuine inquiries only, please.

WE STILL NEED USED GLIDERS!

$350.00 Trade-In allowance off the following gliders: SUNBIRD, C.G.S. AVIATION, BENNETT, ELECTRA FLYER, MANTA MOYES or ULTRALIGHT PRODUCTS.

Contact: Leading Edge Air Foils, Inc.
331 S. 14th St.
Colo. Spgs., CO 80904 **Phone: (303) 632-4959**

PRODUCT LINES

Chattanooga, TN — Everyone everywhere is smiling as the weather improves on the dawn of a new season. The rain quit in California, and moved to Tennessee where we set an all-time record for a wet spring. But it's clearing and we figure it was dues paid to earn a great soaring season. Turning this column upside down this time, I'll pass on some notes on interest, calendar-wise. Owens Valley-man **Don Partridge** sent his event letter to inform us of three contests to be held in the valley of World Records. July 5-13 are the dates for the **3rd Annual X-C Classic** preceeded by the also-demanding **X-C Open** on June 28 to July 2. Interested? Then you'll also want to know of the **X-C Qualifier** on June 21-25. This year the revered **X-C Classic** will be as international as the American Cup, with teams from Australia, Canada, France, Great Britain, South Africa, New Zealand, and of course, the good ole US of A. 1st place prize is $1000 offered by Ultralight Products. Earlier yet in the year competition returns to **Crystal** on Memorial Day weekend. During the occasion of the **Mello Yello Balloon Race** at Crystal, a very simple contest (endurance and spot landings), to please the expected crowds, will offer a cash prize of about $200 and a weekend in Atlanta. Also in this same weekend the **Crystal Air Sport Motel** (CASMO) will host a poolside party, with entertainment by the pilot band, **Flyer**. Admission price will be nominal, and no need to bring-your-own. It'll be good fun and a proper warm-up for the **Region 10 Qualifier** on May 30 - June 2, jointly held at Lookout and Crystal. Organized largely by local soaring expert, **Bruce Short**, this year's event is novel as the competing pilots help judge the tasks. **Kitty Hawk Kites** has their usual full calendar. It is listed in their new ad on page 5 of this issue. Speaking of events, the **EAA Sun N' Fun** was a big success. At the gathering, **Chuck Slusarczyk** of CGS Aviation was approached by Electra Flyer to contemplate some engine design work for Newman's New Eagle. Just what it needs in my opinion, CSG engines produce power-to-spare. We'll keep you posted on developments between these two front-runners. While we're still on motor info, **Sky Sports** has decided to go ahead with major plans to build and market Klaus Hill's Hummer. This three axis, stick controlled, ultralight will fold away completely and features the Gemini twin engine concept. More details as they arrive.

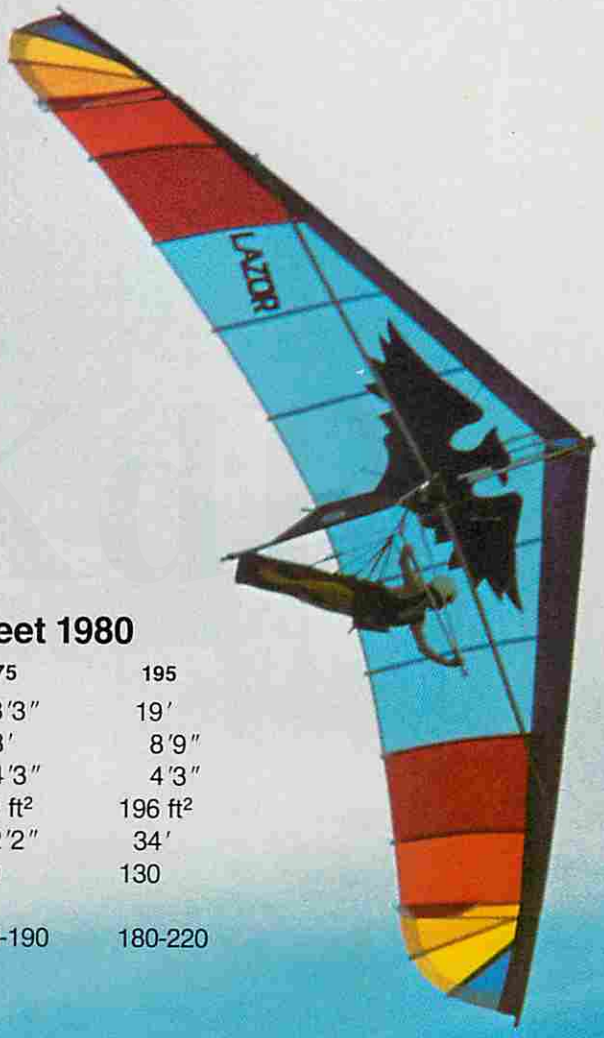
To help keep motorized enthusiasts informed **WAM** will also present more articles on various forms of "how to." **Gary Ballard** of Aerofloat Flights in Michigan, is working on a contribution for next issue. **WAM** will continue to provide info in all three major areas of interest, tow, motorized, and foot-launched free flight. In the industry, **Wills** continues phenomenal response to their **Raven**. A couple California pilots, Brad Lewitzke and Perry Kairis took a pair of 229 Ravens 21 miles (straight line) from 700 foot Hidden Valley site to Hemmett, CA. Took them two hours and 15 minutes on March 20. Congratulations. To keep from being idle, Wills is also developing an accessory line to match their deluxe new harnesses. Write 'em for details. Up the road, at **Seagull**, production is beginning to hum for a new season in spite of problems caused when it was discovered that a major lending institution with which they were involved happened to be doing some shaky business. In these days of tight money and high interest rates, it's a real pain to find people you've been working closely with are frauds. Nevertheless Tom Hadden assured me they're processing orders as usual. We were visited here in Chattanooga by the **US Moyes** boys who brought two of the new **Mega Mark 2's**. Very un-Moyes like in appearance, the newest design from Australia looked very hot indeed with an Atlas sort of shape. Handling was reported as superlative by Hank Syjut who got to fly one long enough to order one — it's expected in May though no firm production dates were mentioned. Ellenville, New York, home of **Aerial Techniques**, was confirmed as the site for the 1980 Nationals. Work will be done by the Southern NY H/G Association. We'll be getting progress reports from them, which we'll pass on. Last word is results of the 1979 Tennessee Tree Toppers Cross Country Classic contest with $350 worth of cash prizes at stake. First Place went to Aussy Peter Brown, whose 81 mile flight was the world's longest in 1979. Second went to Dave Gibson; third to last year winner, Chris Smith, and club gave an honorable mention to Ted Liston. **WAM** congratulates all entrants. Got news? Send it to: Product Lines, Box 144 Lookout Mountain, Tennessee 37350.

LAST MINUTE FLASH: On April 10th, a couple new East Coast records were set in Chattanooga. **Chris Starbuck** gained 7260 feet and flew over the back of Lookout Mountain downwind for 31 miles. Meanwhile, **Hank Syjut** and **Rod Gay** tandemed Rod's Alpha 245 to 5650 above. Congratulations to all three pilots for the new marks!

Use your WAC Directory.
Dealers — contact us at Box 144,
Lookout Mtn., TN 37350.

DELTA WING PROUDLY PRESENTS

LAZOR II



Phoenix Lazor Fact Sheet 1980

Model	155	175	195
Leading Edge	17′3″	18′3″	19′
Root cord	7′8″	8′	8′9″
Tip cord	4′	4′3″	4′3″
Area	156 ft²	173 ft²	196 ft²
Span	30′4″	32′2″	34′
Nose Angle	130	130	130
Recommended Pilot Weight	120-160	150-190	180-220

The Phoenix Lazor II was designed for the competition skill level pilots. Through its short deflexorless span and large radial tips, a remarkable level of sink rate, glide angle, and speed range is achieved.

Features: Quick set up, applied leading edge pocket, breakdown type III control bar, shipping size 12′, fixed nose camber, internal droops, elliptical tips, floating cross bar

Write: **13620 SATICOY VAN NUYS, CALIFORNIA 91408**

Call: **(213) 787-6600 (213) 785-2474 TELEX 65-1425**

WILLS WING RAVEN

DESIGNED TO SOAR

1. HANDLING –

Most high-performance gliders lack predictable responsive handling. The development programs of our Alpha, Omega and Omni models all placed a premium on handling. Professional pilots such as Dave Rodriguez, Rich Pfeiffer, Chris Price, Jan Case, Tom Peghiny, and Dan Johnson have each confirmed the relaxed and positive handling characteristics which have made Wills Wing gliders the standard of the industry. The Raven has raised our standard of control authority ensuring superior thermaling performance.

2. PERFORMANCE –

Only a lightly loaded low profile airfoil can achieve both the low speed handling and performance required to optimize marginal lift and the high speed penetrating capabilities that are desirable in a multi-purpose glider. The Raven was designed around this concept. The Raven's complete performance envelope is unsurpassed.

3. SAFETY –

Wills Wing development programs are a model of conscientious design engineering and comprehensive empirical testing. H.G.M.A. airworthiness documentation was completed on each model of the Raven prior to release. The positive pitch stability and structural integrity of Wills Wing gliders is proven by the unblemished safety records of each of our Alpha, Omega and Omni models.

4. VALUE –

Before you purchase your next glider compare the cost of the Raven's standard features. Include storage cover, breakdown control bar, applied leading edge, Never-Kinks, breakdown frame, comprehensive factory flight test, H.G.M.A. certification, quick set up, fiberglass foam battens, Bainbridge sailcloth, coated cables. Velcro ties and protective coverbags for the hardware and control bar. You'll find the Raven an exceptional value.

5. CONVENIENCE –

The Raven will simplify your flying. Gil Dodgen, editor of Hang Gliding Magazine evaluated our quick set up procedure as "the best on the market." This system utilizes a strong yet simple breakdown control bar and hinged plate folding crossbar assembly which allows for asymmetrical deployment of the wings and eliminates the binding problems encountered with crossbar slider systems.

6. SERVICE –

We've worked hard to provide our large dealer network the most comprehensive factory support system in the industry with innovative programs such as Demo days, dealer notebooks and tuning and service seminars. Special orders for replacement parts are processed on a bi-weekly basis so your glider can be serviced promptly by a qualified professional.

Dealer inquiries invited

SPECIFICATIONS

AREA	229	209	179
SPAN	36.2'	34.5'	31.5'
LEADING EDGE	21'	20'	18.2'
PILOT WEIGHT	170 - 230 lbs.	150 - 210 lbs.	115 to 170 lbs.
GLIDER WEIGHT	62 lbs.	58 lbs.	49 lbs.

WILLS WING, INC.

1208 H E. WALNUT, SANTA ANA, CA. 92701

(714) 547-1344