

SOARING

MAY 1980

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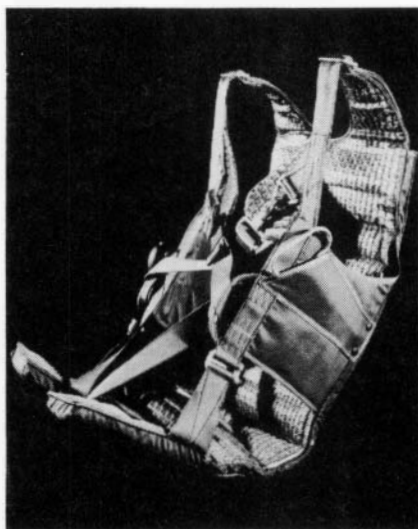
If you were to visit the Security plant in San Leandro, you'd see why their products enjoy the reputation they do. You'd learn how a parachute is designed, how it is put together, how it is rigged, and how and why it works.

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SOARING

MOTORGLIDING



The JOURNAL of the SOARING SOCIETY of AMERICA

Volume 44 • Number 5 • May 1980

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The Soaring Society of America is a nonprofit organization of enthusiasts who seek to foster and promote all phases of gliding and soaring on a national and international basis. The Society is also a division of the National Aeronautic Association (The U.S. national aero club) which represents the U.S. in the Federation Aeronautique Internationale (FAI, the world sport aviation governing body comprised of national aero clubs). NAA has delegated to the SSA the supervision of FAI-related soaring activities such as record attempts, competition sanctions, issuance of FAI Badges, and the selection of a U.S. team for the biennial World Gliding Championships. SOARING is the Society's official journal.

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Cover: Al Parker is dead. Those who were near — his family, neighbors, and friends — know and honor his many sterling qualities firsthand (see page 36). But for distant admirers, his immortality is assured as the first pilot to soar more than 1000 kilometers. The cover picture, taken at the moment when Al and his *Sisu* were starting their historic flight, evokes a soaring man's spirit. It will not be forgotten. Photography by SANDOR A. ALDOTT, Master of Photography, ASP ©

Total paid circulation of the
April issue was 19,000.

"Soaring Mail" may include letters from members who are advocating or opposing changes in SSA policy or operations. In this respect, SOARING strives to serve as an open forum and publish as representative a sampling of all views as space permits.

But publication of a letter can only give an idea exposure, not implementation. Society bylaws delegate policy and decision-making to the SSA Board of Directors (The SSA Regional Directors) and, between meetings, its Executive Committee.

Correspondents who want action should contact their SSA Regional Director or the Executive Committee (Names and addresses of Regional Directors are in the SSA Membership Roster, and the names of the three Executive Committee members are given at the close of the Executive Director's Report which is published in SOARING following each Directors' Meeting.)

Material published in SOARING magazine is contributed by individuals for the reading pleasure of soaring enthusiasts. Accuracy of the material is the responsibility of the contributor. Neither the Society nor its journal assume responsibility for the correctness of material or the opinions of the contributor. Monetary payment is made only for the photograph that is used on the front cover (\$40). Anyone is invited to contribute articles, reports, and photos concerning soaring activities. However, any material that is to be returned must be accompanied by a stamped self-addressed return envelope. Manuscripts accepted for publication are subject to whatever deletions, additions, or revisions are necessary to adapt the material to the space requirements and quality standards of the magazine. Cover and entire contents of SOARING are fully protected by copyright; permission for reproduction in any manner whatsoever must be secured in writing from the Soaring Society of America.

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Membership in SSA is open to anyone interested in the art, the science, or the sport of motorless flight. Membership categories are:

FULL MEMBER	\$ 23
Two-year membership	42
ASSOCIATE MEMBER	14
STUDENT MEMBER	10
FAMILY MEMBER	7
LIFE MEMBER	300
(May be four \$75.00 consecutive quarterly payments)	
BUSINESS MEMBER	60

Full and Life Members receive a subscription to SOARING and other member benefits. Associates receive SOARING magazine but are not voting members. Student Members (full time students, age 22 or under) receive SOARING magazine and have voting privileges. Family Members have voting privileges but do not receive a magazine subscription.

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SOARING MAIL

Doris, How Could You ... ?

A pox on Doris Grove!

My own personal out-and-return record is 40 miles (in a 1-26); my best altitude is 8000 feet AGL. And now today I read in the papers that Doris has set an out-and-return world record of 620 miles. In addition, this comes at a time when I was just beginning to get over the 41,500-ft. altitude record of Sabrina Jackintell.

Doris and Sabrina are blessed with more than ordinary beauty. Couldn't they have gone into show business? Doris used nine and one-half hours to make her record. During that time she could have done the dishes, vacuumed the entire house, washed the kitchen walls, and cooked a four-course dinner. But no, she has to be out humiliating the rest of us glider pilots.

Oh well.

The Ridge is a fabulous place to soar, and I hope to get back there in the near future. But rest assured, I'll be wearing a disguise and flying under an assumed name.

CHARLES O'MAHONEY

Pittsburgh, Pennsylvania

The Seattle Convention

We just had to write to tell how impressed we were with the 1980 SSA Convention in Seattle. The displays, the speakers — their depth, reputation, and credentials — the best in the world; Boeing serving as a quiet host; the organization — fantastic! And most of all, as always in soaring gatherings, the people.

LYNN and MARION GRIFFITH

Dallas Texas



A Classic Soaring Experience

For those of us who live in Athens, Greece, the idea of slope soaring the hill of Acropolis and flying over the Parthenon is a very challenging dream. But the problem of landing in the modern city of Athens which now surrounds the Acropolis would be a nightmare.

The next best thing is to soar along the slopes of fir-covered Mount Parnes (or Pendeli) which is in sight of the Acropolis and whose marble quarries are as old as the Parthenon itself. My enclosed oil painting will give the idea of the terrain.

Between Parnes and Acropolis (the hill nearest the shore) is a little soaring paradise with summer thermals and Aegean sea-breeze fronts. Winter winds blowing across the Marathon Plain toward the Island of Salamis (just below the wheel of the AS-K 13) and the harbor of Pireus create waves that are as glorious as they sound. But Greece is a small mountainous and rocky country where, even on the few existing flat-lands, farmers have to make piles of the stones they find when plowing. Thus, cross-country flying is very limited for badge and record seekers. Nevertheless, for those who, like us, savor flying in the fabled skies of Icarus and Aeolus, the little soaring paradise near Athens is still there.

COSTAS PIKROS

Athens, Greece



Flight Tests — LS-3, LS-3a, LS-3-17

I recently learned about the latest flight test data that Dick Johnson developed for the LS-3a. It was significantly below in maximum L/D than that of the LS-3 which was tested by Dick about two years earlier. In the light of these findings I asked Horst Eschenberg to have his own new LS-3-17 tested by Dick also. Before shipment we had conducted a comparison test in Egelsbach between Horst's LS-3-17 and an LS-3a that had been calibrated by IDAFLIEG. We found that Horst's LS-3-17 (in the 15m version) should have a maximum L/D of at least 41:1. Dick's test of Horst's glider again fell short of the maximum L/D we had measured for it.

In the light of these circumstances, I decided to travel to Dallas (Caddo Mills) on the way to the SSA Convention in Seattle to look into the matter. Here is what I found:

1. Dick claims in the flight test article of the LS-3a (*Soaring*, Feb. '80) that the thickness of the wing root of the LS-3a is 6mm greater than the LS-3 tested earlier. An accurate measurement revealed that the wing thickness of the LS-3a is 3mm greater than the LS-3. One should know that originally we aimed for a maximum thickness at the wing root of 170mm. At the start of the LS-3 production the maximum wing root thickness was 164mm; after six months of production the maximum root thickness came in at 167mm. Since then the maximum wing root thickness has remained within ± 1 mm of 167mm. Except for a little filling over one inspection plate (which had sunk a bit) and sanding over the other (which protruded on Horst's LS-3-17), the planes were in "new" factory condition.
2. Next I decided to conduct a comparison flight test using Horst's LS-3-17 (15m version) and the LS-3 tested two years ago by Dick. Using water ballast, I brought the LS-3-17 to the same wing loading as the LS-3. The latter is owned by Eddie Williams and is in excellent condition. I am confident that its performance has not deteriorated. Eddie flew his LS-3, I the LS-3-17. We took a double tow to 10,000 feet. The weather conditions were excellent. We conducted seven comparison runs. Each run was begun at exactly the same altitude and speed using the gear and the brakes to equalize altitude and speed. Eddie's task was to fly at constant speed and constant heading. The second pilot (myself) flew a parallel course by sighting across the wings to maintain the same speed. Each run was timed with a stopwatch; typically they ranged from 2 - 5 minutes. The resulting difference in altitude can easily be estimated by using the nose of the fuselage (2 meters) or the whole fuselage (7 meters) as a guide. The results of these flight tests are superimposed on the accompanying polar prepared earlier by Dick for the LS-3. As you can see, the differences are slight. The comparison flight shows that the LS-3a has equal performance at speeds from

50 to 80 kts, slightly better performance at speeds above 80 kts, and a very small drop in performance at 40 kts. Thus, at the same wing loading, the difference in performance is not significant.

To eliminate any possible remaining doubt regarding the maximum performance (L/D) of the LS-3a, I requested that Dick agree to a comparison flight between the just-tested PIK-20 and the LS-3a. I understand that he has done considerable work to improve the performance of the PIK-20 and claims a maximum L/D in excess of 40:1 (*Soaring*, March '80). Obviously, I would very much have liked to conduct a comparison flight against a sailplane for which more recent test data exists. Unfortunately, Dick was not prepared to permit this comparison.

WOLF LEMKE

Seattle, Washington

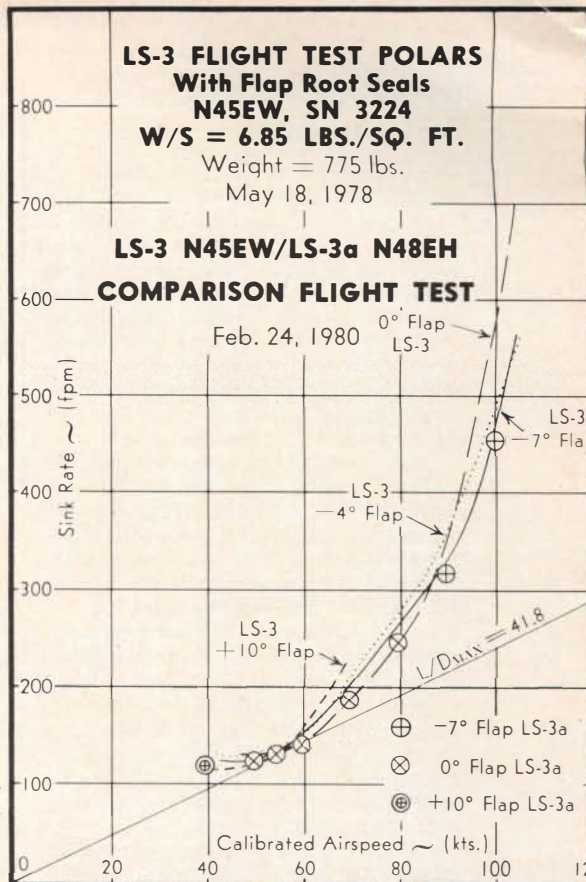
★The weakness of using a comparison test to determine the absolute performance of a sailplane is that its accuracy is completely dependent upon the assumed performance polar of the pacer ("sacred cow") sailplane. The pacer used in this case was Eddie Williams' LS-3 which showed an outstandingly good polar when tested two years ago by the Dallas Gliding Association. Eddie's LS-3 was new then, and we only had to add our flap root air seals to bring its polar up to the excellent 41.8 L/D level that we published.

Unfortunately, the performance polars of most, if not all, fiberglass sailplanes deteriorate with age. This is caused principally by the GRP structure of the wings shrinking and deforming with age, predominantly in the wing-spar regions. Manufacturers call this "post-mold settling." All top competition pilots are aware of this. George Moffat, for example, once said he thought one might have to purchase a new sailplane each year to achieve top performance levels because of this phenomenon.

Since its original testing two years ago, Eddie's LS-3 has weathered two hot Texas summers, and it is not now in the same condition as it was when new. Wave gauge measurements over the wing surfaces now show .007-inch peak-to-peak chordwise values on the top surfaces near the spar inboard regions. It measured about .003 inches two years ago. Also, the airbrakes do not fit smoothly into their recesses on the wing surfaces now. Likely Wolfe Lemke was not aware of that, but Eddie told me that "one of the airbrake ends protruded a good 1/4th of an inch" during Lemke's comparison tests. Eddie further stated that he felt that he had to carry some aileron deflection during the tests to counter the airbrake protrusion effect.

I believe that Eddie's LS-3 can easily be restored to its original performance level with a small amount of smoothing at the wing spars and reseating of the airbrakes. However, on the recent test date the LS-3's performance was, in my opinion, well below our earlier DGA-measured test level. On the day that Lemke made his above-discussed performance comparison test with the two-year-old LS-3, I also flew with Eddie for about 20 minutes of comparison in and between thermals at Caddo Mills. I flew a borrowed, essentially standard PIK-20B during that flight, and I found that I could quite easily keep up with Eddie's LS-3, both when climbing in thermals and when cruising at 55 to 70 knots between lift.

As for Lemke's wing-root thickness measure-



ments, he may be correct when he stated that his "accurate measurements revealed that the LS-3a wing thickness is 3mm greater than the LS-3 tested earlier." However, his measurements were made, I understand, at a point within the fuselage (which necessitated wing removal for measurement). Our DGA measurements were made (with wings installed) at a point approximately one inch outboard from the wing-to-fuselage bottom surface joint. I do not know if Lemke made measurements at that admittedly more difficult, but aerodynamically significant, location.

It should be clearly pointed out that three separate LS-3 sailplane types are involved in the testing: Eddie Williams' LS-3 (tested two years ago and reported in *SOARING*, Nov. '78); Bob Parker's LS-3A (tested four months ago and reported in *SOARING*, Feb. '80); and Horst Eschenberg's new LS-3-17 (tested two months ago and soon to be reported in *SOARING*). The LS-3-17 in its 15-meter configuration did measure better performance during our DGA tests than did Parker's LS-3A — for no apparent reason. Though Lemke had planned on making some flight test measurements with Parker's LS-3A the following day, inclement weather prevented that; early the following day he had to depart for the Seattle Convention.

As to Lemke's request for comparison flying with my improved PIK-20B: he did not make that request until after sundown on Sunday, our only suitable test day. Both the insurance and annual airworthiness inspection on my PIK-20 had expired, so regrettably I could not accommodate his request on such short notice. As it turned out, Monday's weather was unsuitable for testing anyway, and Wolfe had to depart early Tuesday. I have now relicensed the PIK, and if Wolfe can return for further testing, I will certainly try to accommodate his request.

— DICK JOHNSON

SSA Revalidation Clinic Response Sought

SSA presented the first-ever Flight Instructor Revalidation Clinic in Seattle just before the Convention. Those of us involved with the development and presentation of the clinic were very pleased to have thirty-three CFG's in attendance, and though we saw areas that need improvement, we were quite satisfied with the clinic itself. We have hopes that the clinic can be held in various parts of the country, if there is sufficient interest, which is why I'm writing this letter.

Areas in which clinics are held would be rescheduled every other year, since the instructor's certificates are valid for two years. It seems possible that SSA could hold three clinics in addition to the one scheduled with the annual Convention. A total of six areas could thus be served in two years.

In order to make the clinic self-supporting, we would need a minimum of approximately thirty applicants at a cost to them of \$60 to \$75, plus their expenses for accommodations. The clinic is a 3-day (24 class hours) affair and could be staged on any consecutive three days, though Friday through Sunday was the choice expressed by the participants in Seattle.

Again the purpose of this letter is to solicit an indication of interest from the various parts of the country. If CFG's in any area would like a revalidation clinic in their area, and if enough participants are available to support the clinic, we'd like to know. Advise us as to where and when would be most convenient for those attending.

Responses can come to me in care of the SSA office: Box 66071, Los Angeles, California 90066. Your SSA Director and/or State Governor may be able to coordinate interest within your area.

DON SLOTTEN

Los Alamitos, California

Soaring Site Seeing

I have just completed a six-week dream trip. As a new retiree, I have the time to travel in a mini-motor home, so I made my own personal survey of the flight operations at the major glider sites throughout the southwest and western sections of the country. A total of 6800 miles and fifteen gliderports gave me a fair cross section. It's surprising how closely the rates and procedures compare. All of the people were cooperative in detailing their operations and showed real hospitality to a genuine gliderport bum.

The main conclusion I reached is that the sport is made up of very nice people. I couldn't begin to list all the new friends I made but I especially want to name A.C. Williams and Mary at Caddo Mills, Texas, and Don and Lois Slotten at Hemet, California, as really outstanding people.

I want to take this opportunity to say thank you to everyone.

BILL FRASER

Dayton, Ohio

Lift Alongside of Clouds

Some time ago while I was climbing inside a cloud here in Sweden, my vario showed the lift had ended at 2200 meters after an ascent of 600 meters. I stopped circling and flew out the side of the cloud into a headwind and lift of about 0.5 m/s (98 fpm). I kept on climbing for another 100 meters or so and topped out even with the top of the cloud.

In Sweden it is not unusual to see a cumulus with a lenticularis "hat" sitting on its top. Can there be a wave on top of a cumulus? Has anyone used this phenomenon for distance flying? I'd like to hear from pilots or meteorologists who have experienced or know about this kind of lift. I made my flight in 1967, so it's about time to try again.

NILS-AKE SANDBERG
Ö Radiogatan 2C
S-852 42 Sundsvall
Sweden

★In 1971 the U.S. soaring pilot Carl Herold flew 150 miles of a 572-mile flight from Nevada to Idaho using lift alongside of clouds. — Ed.

Collected Columns

I am in complete agreement with Jim Maupin who wrote in to urge the publication of Stan Hall's collected columns ("Soaring Mail," Feb. '80). With the upsurge in homebuilding, Stan Hall's "Homebuilders' Hall" columns and Les Sebal's "Maintenance and Projects" columns are indeed as valuable as the actual kit plans themselves.

With every issue of *Soaring* I promise myself faithfully to keep these articles for future reference, but somehow my copies disappear into the caverns of our club — never to be seen again. Maybe I should chain a bound book to my person. . . .

WAYNE N. WILSON

Christchurch, New Zealand

SSA Conventions — an Exhibitor's View

As an SSA member and an exhibitor at our annual conventions for the last three years, I have occasionally heard statements to the effect that it isn't worth the effort of bringing an aircraft for display. My experience with the *Monera* prompts me to disagree. I feel it is of utmost importance for the vendor as well as the attendee to have the opportunity of seeing the aircraft at firsthand. Commercial display offers the only means of making comprehensive on-site comparisons, of asking questions, talking to the designers of homebuilts, comparing notes with other builders, evaluating their needs, and seeing the sailplane "in the flesh."

Without question our sales at the exhibit and in the period following were greatly enhanced by this exposure. I would encourage others to consider this activity as an important sales tool. I look forward to seeing more activity of this sort at the 1981 SSA Convention in Phoenix, Arizona.

JOHN MONNETT

Elgin, Illinois

Sloppy Editing

The *New Yorker* in its ongoing collection of gaffs and typos from the nation's press might find our journal worth quoting as follows:

From *Soaring*, February 1980 (letter to the editor from an SSA member/correspondent): "... I am presently building one [an *Eaglet*], along with 300 others, and . . ."

We wonder how big his garage is?

WALT BEAM

Alexandria, Virginia

Permit me, the old professor, to comment on writing and editing boo-boos in a recent issue of *Soaring*. On page 13 of the September journal I found this: "... we have added an additional telephone line . . ." And on page 17 I read: "... Several new innovations are being worked out . . ." (Do the editors have any *old* innovations lying around the office?)

But I was intrigued by the small photo of Michelle Silver, *Soaring's* assistant editor, on page 27 of the December issue. She appears to be a highly desirable package of attributes; I would definitely like to see more . . .

ROBERT LONG

Labelle, Florida

★Okay fellas, but Carl Herold found an even worse one in February. Did anyone else notice the line in Dick Johnson's LS-3A article p. 36: "... The +45° to -45° rolls required about 45 seconds . . ." A check of the original copy shows Dick Johnson wrote "5 seconds" in his manuscript.

To mollify the feelings of the production editor who regards printed typos as a personal slander (and who had somehow missed proofreading the LS-3A galleys), it seems advisable to publish a few choice examples from a collection of typos she did bag in the ms stage:

"Spectators numbered in the hundreds, but crowd control was no problem."

"Ballots for the SSA Directors will be counted by an ad hoax committee."

"One answer to the fuel crisis is to have a car fool with other glider guiders."

"The club will sponsor a flower-bombing and spit-landing contest."

"Plans for cross-countries were made because everyone wanted to do some kind of lying."

"Our chief instructor is stimulating emergency situations." And from the *Assified Clads*: "Open Circus in factory trailer . . . an ultra-right sailplane . . . min sin rate . . ."

To help Professor Long see more of Michelle Silver, George Uveges made the accompanying picture. "How's this, Professor?" he asks. "She took off her shades." — Ed.



Sailplane Certification Update

The FAA Notice of Petitions for Rule Making, as published in the Federal Register on February 21, 1980, contained an SSA petition, Docket No. 19831. This petition is a request "to amend the airworthiness requirements for certification of aircraft by proposing that the Joint Airworthiness Requirements (JAR) for sailplanes be adopted as the United States' requirements for the certification of sailplanes. The current body of Federal Aviation Regulations (FAR) do not contain specific airworthiness criteria for the certification of sailplanes. The JAR has been developed by the civil air authorities of a group of interested European countries." Comments must identify the docket (No. 19831), be received by FAA on or before April 21, 1980, and sent in triplicate to FAA Rules Docket (AGC-24), Washington, D. C. 20591.

The Joint Airworthiness Requirements are titled "JAR-22, Sailplanes & Powered Sailplanes" and, I am advised, were sent to Forrest W. Blossom, SSA. They were also sent to the printers in England in January 1980 and are expected to be available as a printed document around the end of March 1980.

The FAR 21.23 presently addresses Glider Type Certification by reference to complying "with those airworthiness requirements of Part 23 — found to be appropriate for gliders — ." Part 23 rules are airworthiness standards for normal, utility, and aerobatic category airplanes. As is well-known, these

are general aviation airplanes including various models of Beech, Cessna, Lear, Piper, and many others.

Jack Laister's comments on certifying sailplane designs (*Soaring* Mar. '80) note that most nonrecurring costs are in design engineering and development. His preference for an option to use the *Basic Glider Criteria Handbook*, FAR 23, and European requirements will be two-thirds filled with the acceptance of the SSA proposal, since FAR 23 is now referenced. The *Basic Glider Criteria Handbook* was first published several years ago and the last one issued was in 1962. A more up-to-date airworthiness criteria should be provided to the sailplane community, both domestic and international. Obviously, the Joint Airworthiness Requirements, JAR-22, for sailplanes and powered sailplanes will fulfill that goal.

NELS SHAPTER

McLean, Virginia

Canadian Invitation

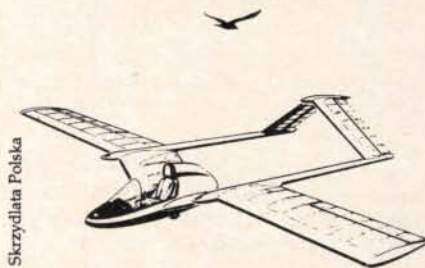
If U.S. pilots would like an opportunity to test their skill against some world-class competitors (Jim Carpenter, Dave Webb, Dick Mamini, and Hal Wernerburg), they are invited to hitch their trailer and come to the land of milk, honey, cheap gas (\$.86/gallon/Canadian), 10-knot thermals, and 12,000-ft. cloudbases. The place will be Claresholm Airport (just 78 miles north of the Alberta-Montana border on Highway #2, which is U.S. Highway 89 just over the line). The occasion will be the 1980 Cana-

dian Soaring Championships, which are sponsored this year by the Alberta Soaring Council in conjunction with the Soaring Association of Canada.

We expect to run races for Open Class, 15-Meter restricted, and 15-Meter unrestricted. Locked flaps for the 15-Meter restricted will not be allowed. A 100-knot speed-limiting start gate will be used. Dates are July 6-8 for practice days, and July 9-19 for the competition. Entry fee is \$100 (Canadian). Motel and camping facilities are located within 3 miles of the airfield. I'd like to point out the Cowley Wave Camp will be held immediately after the contest for a 10-day period. Cowley is probably one of the safest and most consistent wave sites in the world. Those interested may write to me for further information and forms, or to Rick Matthews, 3 Westwood Drive S.W., Calgary, Alberta, Canada T2C 2V6.

RAINER ZIMM

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SSA IN ACTION

EXECUTIVE DIRECTOR FORREST BLOSSOM RESIGNS

The President and Board of Directors regret to announce the resignation of **Forrest Blossom** as Executive Director of the Society because of ill health.

An avid sailplane pilot and instructor, Forrest assumed the role of Executive Director in 1977 and since that time has provided the Society with outstanding leadership resulting in many improvements in the office and service to membership.

During the airspace crisis of last year Forrest played a key role in coordinating our efforts with other general aviation organizations such as AOPA and EAA in carrying the fight to Congress and the FAA.

Forrest Blossom's contributions to the Society have been most appreciated, and it is with profound sadness that we report that his health will not allow him to continue his service as Executive Director. — BRIAN G. UTLEY

JOHN DEZZUTTI CONTINUES AS ACTING EXECUTIVE DIRECTOR

Following the resignation of Executive Director Forrest Blossom due to ill health, the SSA Board of Directors designated **John Dezzutti** to continue serving the Society as Acting Executive Director. John joined the SSA staff two and a half years ago as Operations Manager and during the course of Forrest's illness has filled in at times during his absence. Since coming to work for the Society in 1977, John has been involved in directing the office staff and managing various projects such as the recent Flight Instructor Revalidation Clinic in Seattle.

A proud 1-26 owner and a member of the 1-26 Association, he has nearly 30 years of flying experience — he took his first glider ride at the ripe old age of 3! It has been a continuing love affair with flying (and particularly soaring) ever since.

After graduating from Florida State University with a Bachelor's Degree in economics, John went to work for the Environmental Protection Agency and later the Federal Energy Administration. Concurrently, he found time to complete two years of course work in the Graduate School of Business at American University in Washington D.C.

John has his Commerical License with airplane, glider, and instrument ratings, and yet, he says with a laugh, "When I was a lieutenant in the Marines, I washed out of flight school." Obviously, it didn't phase him.

He is an experienced tow pilot, with nearly 1000 tows to his credit and about 1000 hours of power time in addition to his 150 glider hours. Soloing at 18, he worked at the noble profession of line boy in order to finance his flying. John's father, who is president of the Suncoast Soaring Association in Florida, is responsible for his introduction and interest in flying, he says. Apparently John is following in his father's footsteps in several ways as in his off-hours John recently took on the job of president of the Southern California Soaring Association.

John says he really enjoys working for the Society because he can combine his love of flying with his business skills. But his interests extend beyond flying to such disparate things as hot tubs, racquetball, and reading. Currently he is working his way through *Shōgun*, an "incredibly interesting" 3-inch thick volume on Japanese culture. Also a member of World Runners, he runs about 2 miles a day and is working up to running a 10-kilometer race soon.



1980
SSA
Vacation Derby: for information package contact
The Soaring Society of America,
P. O. Box 66071, Los Angeles, Calif. 90066

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He credits Werner Erhard as the person who has had the greatest influence on him as a person and a manager. "Through my experience of him I got in touch with my desire to contribute to the lives of others," John says. One of the ways he interacts with people on this level is through his involvement in the Big Brothers program where John has "adopted" a little brother. "It's something I'd thought about doing for a long time, and I find it to be real satisfying. Not only that, but it's gotten me back in touch with my own father and that relationship."

John views his appointment as yet another mode of realizing his desire to contribute to the lives of others, adding, "I'd like to acknowledge the Board of Directors for giving me an incredible opportunity to serve the members of the Society." — MMS

NATIONAL SOARING WEEK

June 1st through 7th is National Soaring Week. The purpose of the week is to bring national attention to the sport of soaring. To be a success, however, *all* soaring enthusiasts must take part in the promotion which is basically a specific time set aside to coordinate activities across the country supporting soaring . . . an all-out effort on everyone's part.

Again, the SSA office will be putting together a package to help individuals, commercial operations, and clubs put on activities that will attract both the media and public. All SSA business members and chapters will be sent the package automatically. Individuals wishing a package should contact the Society as soon as possible.

In order for the sport to grow — and it must grow in order to support commercial operations such as schools, dealers, and manufacturers, as well as non-commercial participation by clubs and individuals — it must become visible to the general public. That is why "National Soaring Week" came into being. Members who want to help in this effort should take the public to soaring (e.g. invite a prospect out to the gliderport) and take soaring to the public (set up displays at shopping malls, colleges, parks, schools, etc.).


It's work, but it spreads the word and brings in new enthusiasts. During the past year, for instance, several clubs, individuals, and commercial schools organized activities and displays that reaped benefits. These included formation of a new club, addition of 30 members to an existing club, and over 100 demonstration rides sold as a result of just one program.

Probably the first and most frequent

objection heard concerning displays is the fear of the aircraft being damaged. There are several ways to get around this, including roping off the aircraft and positioning it in such a way as to make it possible for the public to see down into the cockpit without getting too close. As the size of the crowds increase (or the age of the visitors lowers) the number of people needed to work the display must also increase. It is one thing to have a display at a small college (SSA office personnel have done this easily with three people), and it is quite another to have a sailplane on display at, say, an Air Force Base during an open house. One thing has been learned by SSA staffers: if an effort to publicize soaring has to compete with other displays, better have a sailplane on hand. It is almost useless to go without one, for chances of "disappearing" into the crowd are very strong. A well-kept sailplane is a magnet. Many people, including most power pilots, have never seen a sailplane.

If you wish to join the "National Soaring Week" observance, let the SSA office help and send a special Soaring Week Package. Also offered are items useful for displays. If interested, please write "National Soaring Week," (att'n John Lee), Box 66071, Los Angeles, California 90066.

Women's Soaring Seminar



August 27 - September 1
Ridge Soaring, Inc.
Julian, Pennsylvania

Although the daily presentations by world/national record holders and high-ranking competition pilots will be primarily aimed at women, everyone is welcome. For more information contact the SSA office, P.O. Box 66071, Los Angeles, Calif. 90066.

DORIS GROVE — FIRST WOMAN TO SOAR 1000 KILOMETERS

Doris Grove, well-known Pennsylvania soaring pilot, has filed a world record claim with the FAI for the Feminine Singleplace Out-and-Return Distance mark. On March 11, 1980, she flew an AS-W 19 from Ridge Soaring Gliderport in Pennsylvania south to Bluefield, Virginia, and back in 9 hours and 13 minutes. This is a 622-mile flight and is listed on her official claim at 1000.868 kilometers, enough to make her eligible for the FAI 1000 Kilometer *Diplome*, the first woman soaring pilot to achieve this rare distinction.

Doris was unable to get her story to *Soaring* in time for this month's issue, but promises a full report for June.

BRITTINGHAM AND MOZER TO HANDLE U.S. TEAM

SSA Competition Board Chairman, Woody Woodward, reports that the 1981 U.S. World Championships Team will be captained and managed by John Brittingham and Rudy Mozer, two U.S. seeded pilots themselves. Though the Team itself will not be selected until after the coming summer's contests, Woody points out that it is important that preparations begin now.

Many countries have national coaches, managers, captains, or other supportive personnel already working to see that their pilots will be launched with everything done so that they will have the best possible chance against the world's top pilots. In addition to the appointment of Brittingham and Mozer, Woody said that a U.S. pilot will be competing at his own expense at Paderborn-Haxterberg in West Germany this summer to secure firsthand experience on the courses, weather patterns, operations, etc. This should provide invaluable information for advance study of the site.

15-METER CHAMPIONSHIP SITE MOVED

The site of the 15-Meter Class National Championship has been transferred twenty-five miles north from Wilmington Industrial Airport to Springfield Municipal Airport in Springfield, Ohio. "The facilities at the two sites are almost identical," explained Contest Manager Tom Stoops, "but the airport management at Springfield is much more cooperative and eager to accommodate us." The contest is still scheduled for June 17-26.

— JOHN DEZZUTTI

FROM THE SSA PRESIDENT

The World Gliding Championships will be held in Paderborn-Haxterberg, West Germany, in the summer of 1981, less than eighteen months from this writing. The Society is now starting its fund-raising efforts to ensure that the U.S. Team will have adequate financial resources to be able to compete at a high level of efficiency.

We have on hand about \$4000 in residual funds from the last World Championship Team Fund. We no longer have the considerable income from the annual Smirnoff Derby, so we have to get started raising a substantial sum of money since our proposed budget is \$60,000.

John Lee will be coordinating this effort at the SSA office, and we hope that all our Chapters, Clubs, and other organizations will get behind the effort and develop fund-raising efforts on their own. John can be contacted for ideas on "Soar-a-thons," guest speakers, dances, etc. We encourage the involvement of other aviation groups, flying clubs, EAA chapters, etc., in fund-raising efforts. Awards are being developed for the chapter or club that raises the most money on a per-member basis.

Time is short, so let's get going on this important event. — BRIAN UTLEY.



GLASER-DIRKS

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Club — Open Class

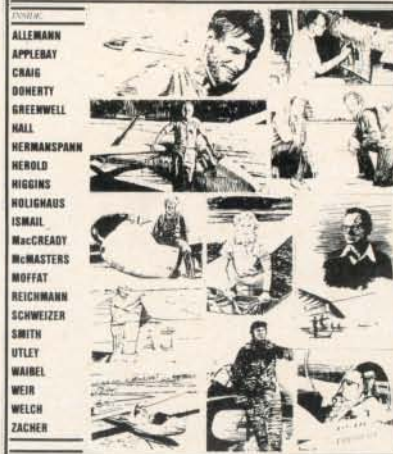
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MAC CREADY AWARDED COLLIER TROPHY

The National Aeronautic Association has awarded the Collier Trophy, the nation's oldest aviation honor, to **Paul MacCready**. "The Selection Committee met in Washington on March 12," according to NAA's Cathy Fischer, "and chose MacCready as the 1979 recipient for his design and construction of the *Gossamer Condor* which accomplished the first controlled, sustained human-powered flight, and the *Gossamer Albatross*, the first human-powered aircraft to fly the English Channel. The problems of aerodynamics, structure, and flight controls were unique in designing these very low-speed aircraft with little data available to draw upon."

WEST GERMANY SPONSORS YOUTH SOARING CAMPS

Ansgar Hermann of the German Aero Club (DAeC) writes to say that young people from outside West Germany are being invited to participate in low-cost soaring camps this summer: "These programs are open to young people between 16 and 25 of many countries and are supported by the government of the Federal Republic of Germany."

There are eight sessions beginning April 23rd and ending on October 18th. The sessions run from 12 days to nearly a month, and students usually solo and get B and C Badges as weather permits. Tuition depends on the camp length and runs from 660 to 720DM (approx. \$370 to \$400). The price includes meals, accommodations (four-bed rooms), and insurance.

"You need a good physical constitution for the sport," notes the DAeC. "Gliders have to be pushed to the start point after every landing." Soaring is evidently regarded as a team sport and everyone is expected to join in and participate.

Inquiries should be sent to Haus der Luftsportjugend E.V.; Fritz-Stamer-Haus; D-6345 Eschenburg 4 — Hirzenhain, West Germany.

NEW 1-26 ASSOCIATION OFFICERS

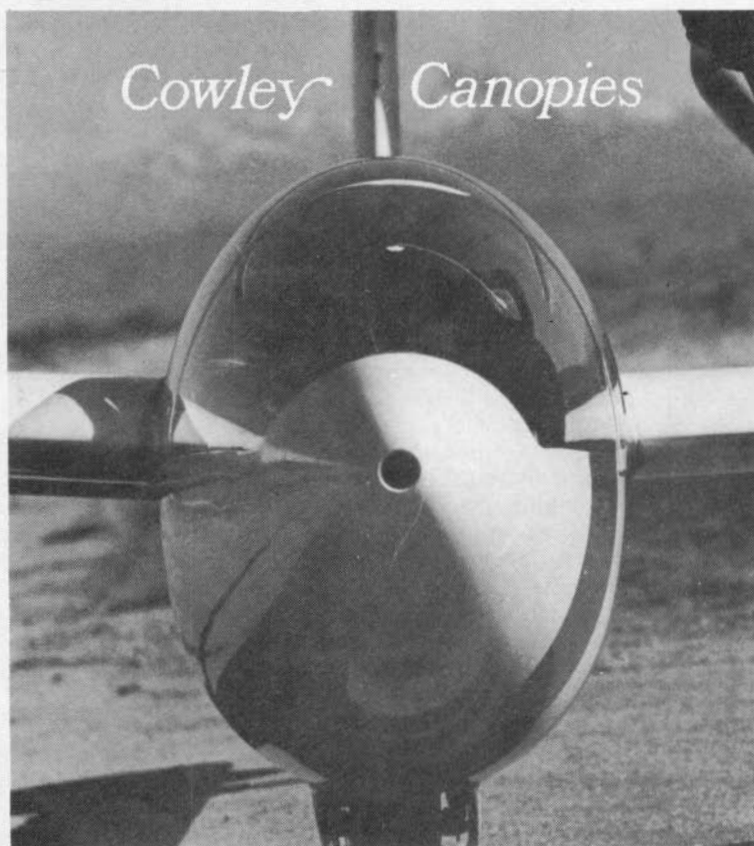
Outgoing 1-26 Association President, **Charles Shaw**, reports the group has elected its new officers for 1980. **Frank E. Conner** of Wauchula, Florida, will be the new President. Vice-Presidents for the Association's three regions are, **John Greene**, Eastern Region; **Thomas Farr, Jr.**, Central Region; and **David Ledford**, Western Region. Secretary/Treasurer is **Eddy Gal-**

lacher, who also has served as editor of the *1-26 Newsletter*, the outstanding publication of the Association. Henceforth the new address of the 1-26 Association will be P.O. Box 424, Wauchula, Florida 33873.

KOLSTAD YOUTH SCHOLARSHIP

Over the past 12 years, Labor Day has been the date for the official announcement of the recipient of the Kolstad Youth Scholarship, and 1980 will be no different. Designed to honor pilots between the ages of 14 and 18, nine scholarships have been awarded, including one to a young female pilot. The scholarship is made on the basis of club participation, personal integrity and character, and pilot proficiency, among other considerations. Candidates for the scholarship must already hold (or have applied for) one of the three Century Awards given for 100km, 200km, and 300km flights. Clubs wishing to nominate one of their young pilots for either the Kolstad Youth Scholarship or a Century Award should contact the Paul Kolstad Memorial Fund, 429 San Rafael, Colorado Springs, Colorado 80903, for further information. Applications for the scholarship must be received by July 15, 1980. — MS

(SSA in Action continued p. 37)



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The SSA President's Message

by BRIAN UTLEY

The annual SSA Convention, hosted by the Seattle Glider Council is now a memory — but what a memory! The delegates were there in larger numbers than ever, with so many faces from across the country and yes, even from other countries. How I wish I could have spent much more time with everyone.

How impressive it was to see so many walking past the exhibits with spec sheets in hand, discussing the very latest in technology with the sponsors or creators of sailplanes, materials, instruments, or whatever. And what a contrast it was to see the *Grunau Baby* and reflect on the progress of the past two decades! We are so fortunate to have available to us equipment that truly allows us to wander "free as a bird."

The sessions were equally impressive with many wishing for more time to attend parallel sessions. Thanks to the *Proceedings*, though, nothing is lost and we can all enjoy the outpouring of information to improve our participation in the sport.

Many thanks to the sponsors and to cochairpeople Ron Ferguson and Marion Barritt. The organization and attention to detail were fantastic. My thanks also to Boeing Aircraft Corporation for its participation which included tours and sponsoring several key speakers from Europe. Clearly, soaring is alive and well in Washington.

It was shortly after the Convention that we learned the sad news that Forrest Blossom would not be able to resume his position as Executive Director following his lengthy illness. Forrest is still under treatment and we wish him the very best for the future. He will be remembered for his enthusiasm and "get-it-done" approach to the job. He established important relationships for the Society with the FAA and other General Aviation organizations and played a leadership role in the fight to quash the infamous airspace NPRM.

John Dezzutti, Operations Manager, is continuing as Acting Executive Director. John is very capable and we are fortunate to be able to have him to serve in this capacity.

A number of key actions have been taken that will have a long-term influence on the Society and its membership. Two have been sponsored by the Flight Training and Safety Board under Don Slotten. They are:

- CFIG validation clinics approved by the FAA. The first was held during the Convention and attended by 32 CFIG's. It was judged an outstanding success by all participants. More clinics will be scheduled across the country, so watch for the announcement. The direction we are pursuing is to make sure that the validation clinic really serves the needs of the SSA and its members. It is an opportunity to practice self-regulation. The FAA is willing to give us the chance; we have to make sure it will work.
- Motorgliders for training. Currently motorgliders are not commercially useable for training because of certification restrictions. While we are pursuing the certification ques-



President Brian Utley congratulates Convention organizers Marion Barritt and Ron Ferguson.

tion separately, we have been able to reach agreement with the FAA on a six-month test program using motorgliders for training. Two operators have been selected for the program which was expected to get under way in April. Naturally the energy crunch only serves to reinforce the importance of this test. We are optimistic regarding its outcome.

The SSA has been invited to join GENEVAC (General Aviation Council) which is composed of the presidents of key groups in the country such as AOPA, EAA, GAMA, NBAA, etc. At the January meeting in Vero Beach, Florida, it was decided to form an energy council because of the critical supply situation being experienced in some areas. Things are expected to grow worse. General aviation only uses a half percent of all the gasoline produced in this country; therefore it is an expensive nuisance to produce, transport, and distribute. Nevertheless, it is vital to the transportation and sport interests of this country and the objective of the Council is to organize and pursue the interests of general aviation with the producers, federal government, and Congress to ensure that our needs are not compromised.

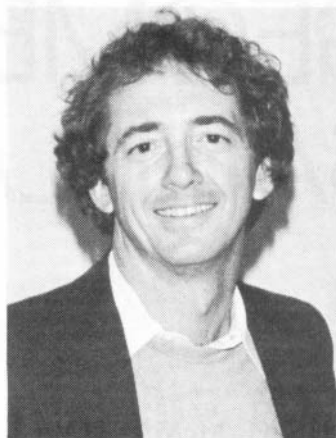
After the first meeting it is clear that we have an uphill battle. Very little, if any, planning has been done to match production to demand (which is expected to grow at a 15 percent rate the next few years). The oil companies are trying to get out of the distribution business and are expecting FBO's to take 8000 plus gallons at a time. Naturally this requires additional storage for many operators, and, with the cost of money these days, puts a large strain on what is frequently only a very marginal business proposition. The result is clear — we are going to have to pay more, and there is no end in sight.

It is also apparent that the Department of Energy doesn't understand the needs of general aviation. There is much work to be done. It will require the collective effort of everyone to ensure our interests are protected.

Spring is here, and with it comes the beginning of the new soaring season. I wish you all a safe and enjoyable season, whether it be in competition, badge or record flying, or just for plain fun and enjoyment.

The SSA Executive Director's Report

by JOHN DEZZUTTI



George Uveges

The 1980 SSA National Convention was a resounding success! Marion Barritt, Ron Ferguson, and the Seattle Glider Council deserve a hardy thank you for producing this Convention. Their commitment resulted in a memorable week for us all.

The Convention saw a breakthrough in flight instructor revalidation. Seattle was the site of the first Federal Aviation Administration approved SSA Glider Flight Instructor Revalidation Clinic. Thirty-three SSA members attended this three-day clinic prior to the Convention. The clinic was produced by Mike Moore (Chairman of the Flight Training Committee), Don Sloten (Chairman of the Flight Training and Safety Board), and Steve Brown. Additional volunteers who assisted in presenting the clinic included Ron Bellamy, Sam Francis, Ed Seymour, Jim Foreman, and Bob Chase. The clinic was a valuable contribution to the quality of glider instruction. It will be continued at future SSA conventions.

The most memorable seminar I attended during the Convention was the lecture by Dr. Paul MacCready on the *Gossamer Albatross*. His talk gave participants a sense of what it is like to be a pioneer, to dare to think the unthinkable, and to put it on the line to accomplish a dream. The standing ovation given Dr. MacCready was a testimony of the inspiration he imparted to us all.

Your Board of Directors, a dedicated group of volunteers, met on March 1st to conduct the business of the Society. Highlights of their meeting are covered in this report.

INSURANCE

Bernald S. Smith reported that the SSA Group Insurance Plan currently has over 2200 policies issued. Rates are unchanged since the plan was first offered over two years ago! Following this report, the Board gave Wyatt International a one-year extension as a broker of record through December 31, 1981.

PUBLICATIONS

Bernald S. Smith reviewed the *1980 Membership Handbook*. This handbook was prepared in alphabetical order of members rather than alphabetical by state as has been done previously. Member comments are being solicited to determine how future rosters will be prepared.

MEMBER RELATIONS

Paul Schweizer discussed the development of special interest groups within the soaring community. He noted the potential for future affiliations with homebuilders, competition pilots, and motorglider pilots, and reported his activities in this area.

REGIONAL ORGANIZATIONS

Jon Mead, SSA's Governor for Massachusetts and founder of the New England Soaring Council, and Ron Ferguson, SSA Director-at-Large and member of the Seattle Glider Council, reviewed the role of regional organizations. Because groups like these served as a major rallying point at the local level in last year's work on the FAA's Airspace Proposals, the Board directed Jon and Ron to prepare recommendations for the SSA to foster the development of such groups.

KOLSTAD YOUTH AWARD

Paul Schweizer reported the Colorado Soaring Association's generous offer to turn over administration of the Kolstad Youth Award to the SSA. Following this report, the Board gave the Executive Committee authority to accept this offer subject to final negotiations.

CERTIFICATION STANDARDS

At the request of Bernald Smith, the Board formally reiterated its support of the proposed Joint Airworthiness Regulations. The SSA will urge the FAA to adopt these as the new standards for recertification of sailplanes.

MOTORGLIDER STUDY

Don Sloten and Carl Herold reported that the Motorglider Study had been formally approved by the FAA. The study is intended to evaluate the feasibility of using motorgliders in the U.S. as glider pilot training vehicles. Southwest Soaring in Caddo Mills, Texas, and the Schweizer Soaring School in Elmira, New York, were selected as the sites for this study.

PILOT ENTRY FEES

In recognition of rising fuel costs faced by contest sponsors, the Board approved an increase in pilot entry fees for sanctioned regional contests to a maximum of \$160. This will include five tows and ten rolls of film.

INTERNATIONAL TEAM

Woody Woodward and Brian Utley reported the need to raise over \$60,000 for the U.S. Team to attend the 1981 Internationals. The staff was directed to develop and implement a fund-raising plan.

CONVENTION SITES

Houston, Texas, was selected to host the 1982 SSA National Convention. Reno, Nevada, was selected to host the 1983 SSA National Convention. The staff was directed to solicit bids for the 1984 Convention so that the selection could be made at the summer meeting.

50th ANNIVERSARY

Dick Schreder was designated as the 50th Anniversary Chairman. As such, he will be responsible for planning the celebration activities of the SSA in observing its 50th Anniversary in 1982.

MINUTES

Members desiring specific details of the Board meeting may contact the SSA office for a copy of the official minutes.



A VARIABLE-GEOMETRY GALLERY

The three aircraft pictured below on these pages illustrate two variable-geometry concepts — variable span and variable chord — discussed by author John McMasters in this series. It is noteworthy that these high-technology aircraft are the product of student academic flight groups (Akafliegs) in West Germany's technical universities.

Variable span is represented by Akaflieg Stuttgart's fs-29 (left). The pilot of this remarkable craft can extend its span with twelve strokes on a ratcheted lever, increasing its stretch from 13.3 to 19 meters. The aspect ratio changes from 20.7 to 28.5, and the area enlarges by 47 percent.

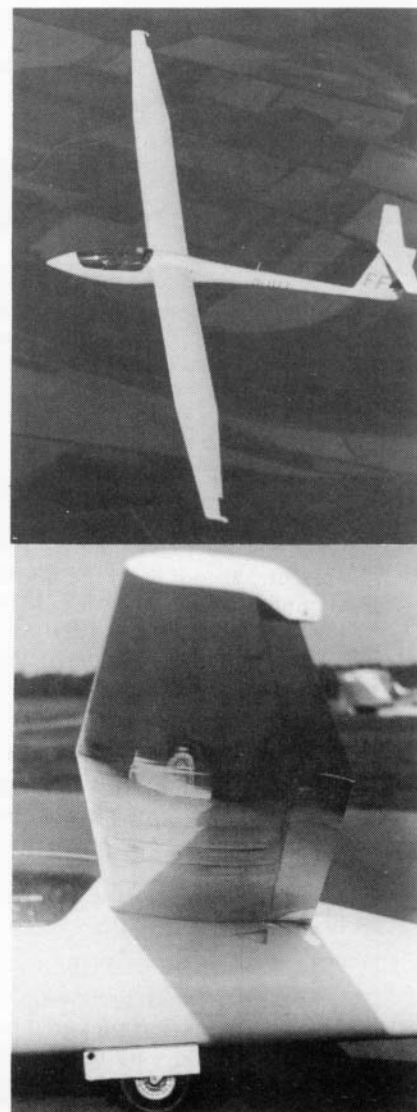
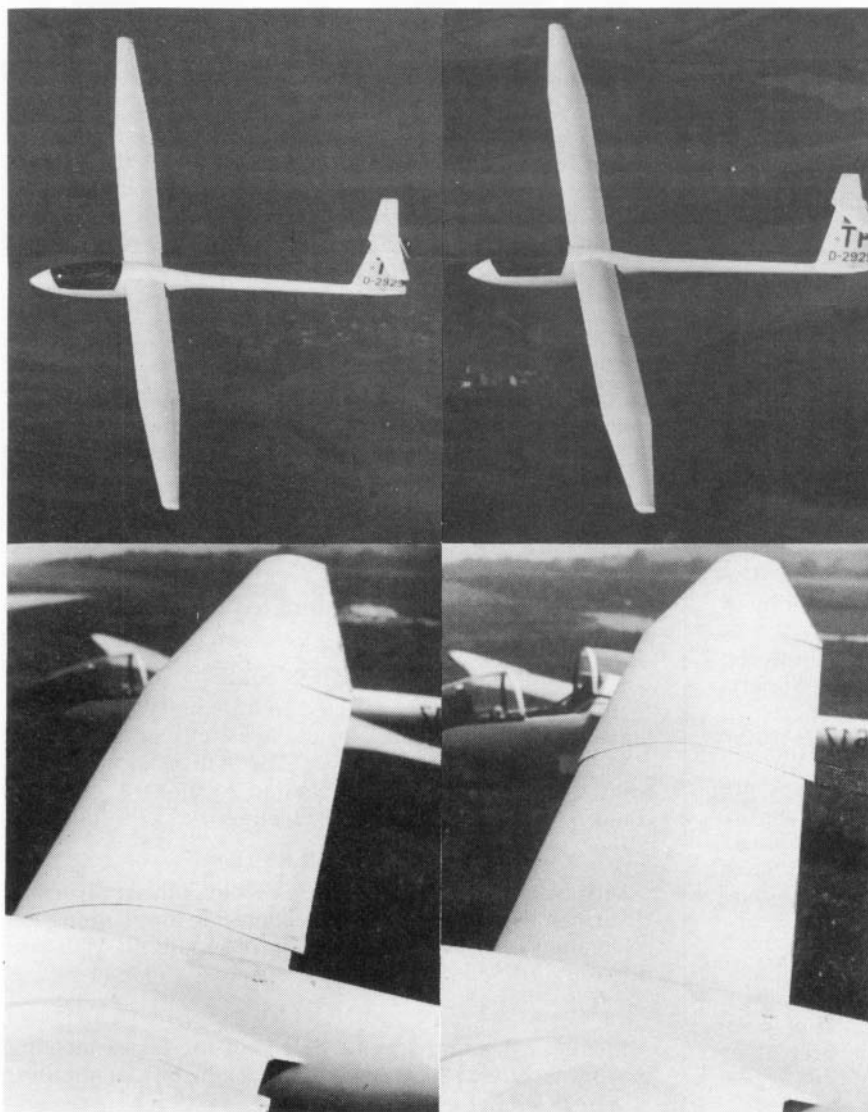
Akaflieg Braunschweig's SB-11 (center) and Akaflieg Munich's Mü-27 (right) employ variable-chord flaps to boost area — the SB-11 by 25 percent, the Mü-27 by 36 percent. The Mü-27 is the largest of the three, weighing 1800 lbs. when fully loaded; it is the only sailplane to use on-board power to extend and retract the wing elements. A button on the control stick activates electric motors to drive the flap mechanism. The bottom photos detail articulation and camber of the variable surfaces in extended and retracted position.

PART II

ADVANCED CONCEPTS IN

VARIABLE GEOMETRY SAILPLANES

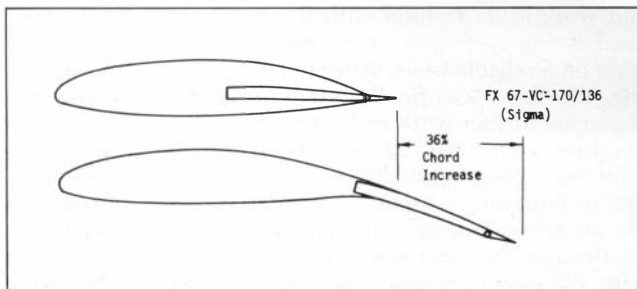
by JOHN H. McMASTERS



In Part I, some general aspects of the design of advanced racing sailplanes with variable geometry wings were discussed. With these general considerations in mind, we can now go on and explore the actual performance gains which might be expected from the use of each of the variable geometry approaches previously discussed. As specified in Part I, the performance predictions made are the author's best estimates and are not necessarily the values actually achieved by the particular sailplanes of each type which now exist. — J. M.

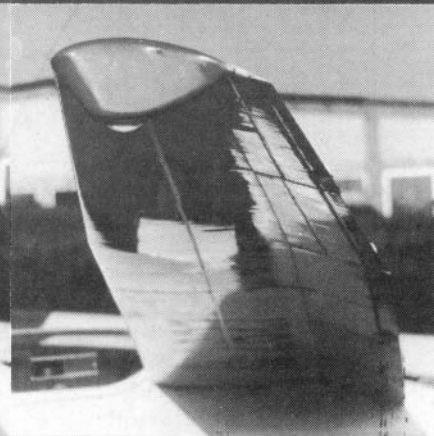
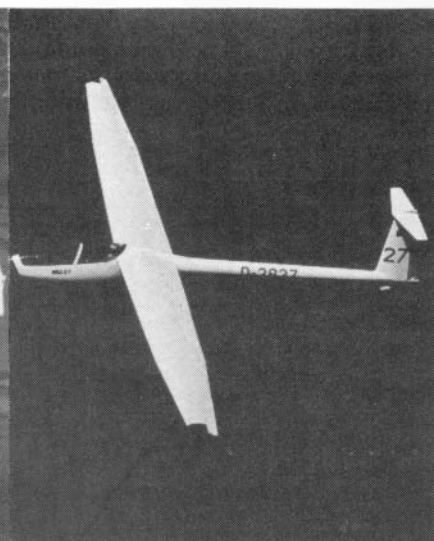
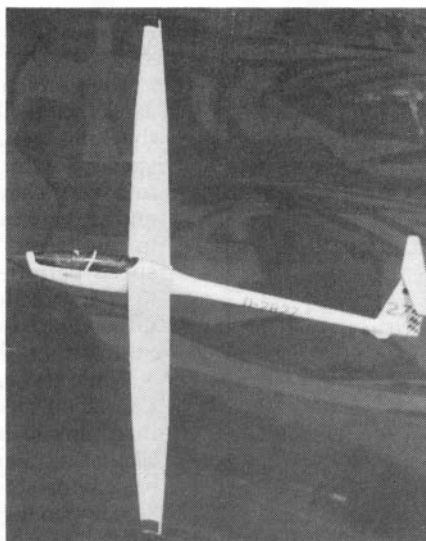
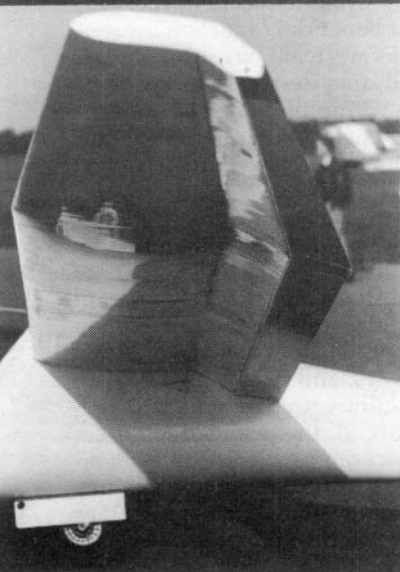
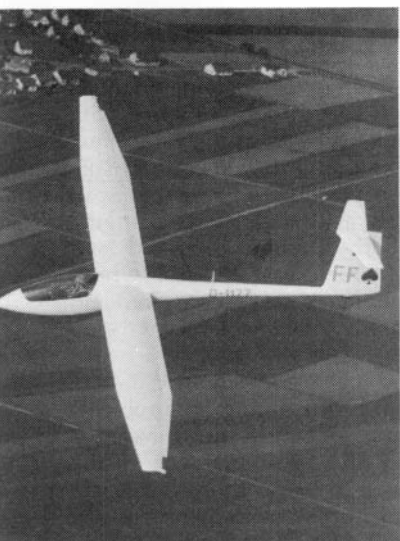
Sailplanes With Fowler Type Flaps

While the British *Sigma* (Reference 12) is the now classic example of extreme Fowler (area and camber-changing) flap application, this machine owes much to the previous experience and writing (Reference 13) of Pat Beatty and Fritz Johl of BJ-3 and BJ-4 fame. What Beatty and Johl proved with the BJ-3/4 was that unless the Fowler flaps ran the full span of the wing, the extra weight and complexity was very marginally worthwhile. (A partial span Fowler flap when extended creates a large "step" in the trailing edge of the wing, which is aerodynamically like another pair of wingtips producing a consequent increase in induced drag.) Further, the spanwise structural break on the wing under-surface (a critical area in high-speed flight) between the main airfoil and the leading edge of the large-chord flap when the flap is retracted, resulted in a performance pen-



alty due to a partial loss of the potential full run of laminar flow on the wing.

The upshot, according to Goodhart et al., was the opinion that while the performance advantages of the Fowler flap were correctly described by Beatty and Johl, the BJ's hadn't gone far enough by half. Thus was born the *Sigma* with its specially designed Wortmann airfoil (c.f. Figure 7 of Part I). The *Sigma* was and is a beautifully complex airplane. According to Frank Irving, the level of craftsmanship demanded to accomplish the necessary sealing of the flaps in the extended position and to make the whole system work was beyond the project's capabilities at that time. The *Sigma*



Idaflied photos courtesy of Aerokurier.

did work in its fashion with flaps either retracted or extended, but cycling the flaps during flight proved impossible on a reliable basis. After much work and soul searching, the *Sigma* was finally offered to serious investigators to pursue further work and research. Over a period of time inquiries were received from twelve qualified applicants with the *Sigma* eventually being entrusted to David Marsden in Edmonton, Alberta, Canada. Marsden (designer of the variable geometry *Gemini*) has now laid his skilled hands on the machine and fitted it with a sophisticated slotted flap. We have not heard the end of *Sigma* yet. Nor have we seen the end of the splendid Wortmann airfoil that went with it. Helmut Reichmann, armed with the SB-11 at Chateauroux, showed that whatever the mechanical shortcomings of the *Sigma*, a little more time, care, money, and carbon fiber could make the basic scheme work more than well-enough.

Whether the *Sigma*, or even the SB-11, used the Fowler flap to its full advantage is a subject of possible controversy. More experience will be required to tell, but the basic objectives of its use are easy enough to explain. Fundamentally what we want to do is construct a high-speed wing which is compromised for low-speed performance requirements as little as possible. This wing would have an airfoil optimized for very low drag at relatively low lift-coefficient values and would have moderate span, low camber, and minimum surface area. Now to fly this wing as slowly and as efficiently as possible, we need to dramatically increase its area (thus reducing wing loading) and at the same time change its camber to increase its maximum lift coefficient capabilities. In this process we want to keep the *total* drag

(both viscous and induced) to a minimum. And to minimize induced drag for a machine of given weight, we also want to create an optimum planform wing of large span.

Well, we can't do all these things simultaneously with ease (although the bird does rather well), but we can arrive at a reasonable approximation as the performance shown in Figure 3 indicates. Here my assumed wing has the same 36 percent area-increasing flap as that on the *Sigma*, and one can see that in this case, while the high-speed performance is little better than a "heavy" *Nimbus*, the low-speed performance is nearly as good as a "light" one. Thus, what has been gained is performance *flexibility* with a machine of fixed weight and span. Even larger gains might be had if one pursues Wortmann's later suggestion (Reference 14) for a fabric "sailwing" Fowler flap where area could be increased by up to twice that of the high-speed wing.

The main liability, other than cost and mechanical complexity, of the use of Fowler flaps is that they are largely limited to wings of almost fixed span. Thus, with flap retracted and span set by low-speed, induced drag (i.e., span loading) requirements, the high-speed wing becomes one of often extreme high aspect ratio. This makes the problem of providing an adequate margin of structural strength, stiffness, flutter, and control reversal within reasonable weight limits extremely difficult. However, ingenuity will likely triumph, and the overall scheme has obvious attraction.

Variable-Span Wings

The problem of the Fowler flapped wing having *too* much aspect ratio for optimum high-speed flight, coupled with the same general sizing problems — both high and low-speed — which any sailplane faces, is solved conceptually in a very easy fashion: Telescope the wings so that span and area change simultaneously, with both values changing in the "right" direction for both optimum high and low-speed performance. That's of course easy to say but hard to do in practice — although there are several powered and unpowered examples historically, the most recent being Stuttgart's fs-29 (Reference 15).

While the variable span-and-area approach appears logical, albeit mechanically awful, it runs into more problems than simple mechanisms. First, one does not have *carte blanche* in changing span and area. The geometry of the basic wing sets definite limits on the ways these values can actually change, and the result turns out to be not exactly what one wants. Specifically, while telescoping the wing in (à la the fs-29), we do get a beneficial reduction on area, but if we reduce it as much as we really want to, we lose *too much* span. While induced drag decreases as speed increases, it is never negligible within the range of sailplane performance limits, and the 13-meter "wing-in" span of the fs-29 is *not* sufficient for an Open Class racer at any weight until you get to very near redline speeds.

The second problem with variable span is that for really efficient low-speed flight we want an airfoil with quite a bit more camber than is ideal for high-speed flight. Now, once one has decided to telescope the wing, how does one fit an efficient camber-changing flap to a significant portion of the wing? Headache upon headache. Well, again, I tried to work the problem several ways, and finally came up with the performance shown in Figure 4. Compared to the previous Fowler flap result (Figure 3), the results don't seem promising, given the mechanical problems to be confronted. To my not very great surprise, these results agree well with those past (well-done) results obtained by other wiser heads (e.g. Goodhart, Reference 3). Variable span works well for the birds, but only when coupled carefully

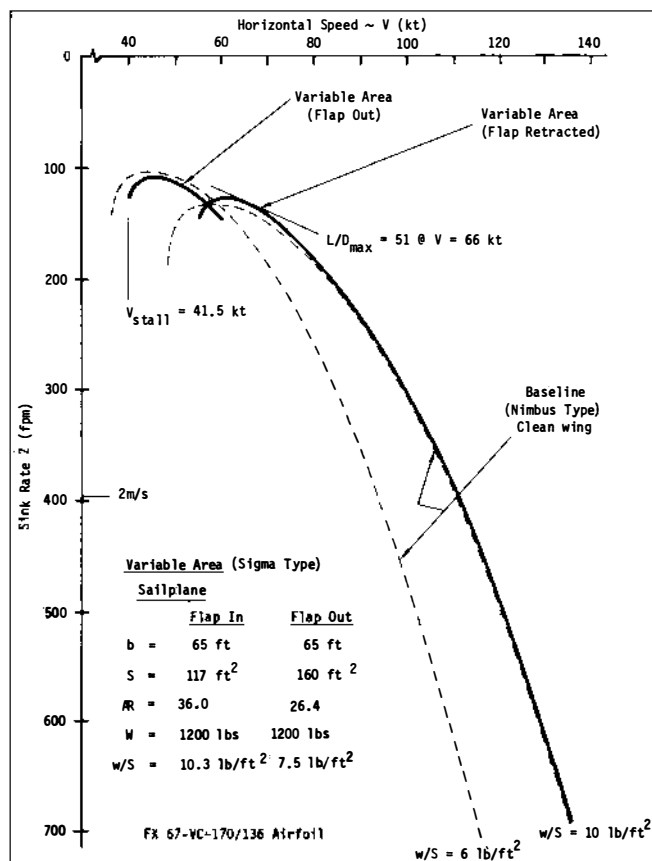


Figure 3. Predicted Performance of a Sailplane with a Fowler Flap

with a mechanical replica of bird feathers and spars, and area and camber-change capabilities. Score a major triumph for the bird which does not demand long runs of laminar flow to survive and fly quite satisfactorily.

So much for the aerodynamic problems. Have our ingenious German friends blown smoke in our faces and solved the problems anyway with the fs-29? My latest information claims not. Having done a marvelous job and coming up with an excellent end run on the mechanical aspects of the scheme (i.e., gloving the outer wing panels over the inner carbon fiber stubs), they still face the problem of quickly moving all that wing in and out at the instant of perceived need. Well, the fs-29 system (which runs on Teflon bearings, etc.) still has a lot of friction I'm told and apparently tends to bind inconveniently if the wings flex wrong. And there may be problems of asymmetric extension if there is slop in the extension mechanism. (Variable asymmetry can be a good thing, but only if done in a properly controlled fashion.) Headaches upon headaches.

Variable Thickness Wings

Variable span and Fowler flaps, as concepts, have been with us for over forty years. But leave it to Pat Beatty to come up with a non-obvious alternative as incorporated in his new B-5 (Reference 16). Having introduced big Fowler flaps into racing sailplane design, he has now turned to a scheme which still seems implausible after the fact. But think! Drag (ugly viscous drag) is most of the problem at high speed. And thin, low-cambered airfoils minimize wing

profile drag. Suppose we pitch out any requirement for "high-lift" capability and go for *absolute* minimum profile drag at low lift coefficient values. Suppose we combine the fruits of Dr. Eppler's computer (or analytic wind tunnel) with the wing size of a *Nimbus*, and we get — Figure 5. Or at least the high-speed part of it (where *stall* occurs at a glorious 70 kts).

This last problem is "easily" solved (at least with the same mechanical ease as fitting the wing with a Fowler flap) by physically arching the upper wing skin to a new position, equivalent to a good low-speed Wortmann section for thermaling. Yes, the wing changes from an Eppler 1001 airfoil (of a mere 11 percent thickness) for "cruise," to a good old Wortmann FX 67-K-150 (15 percent thick) for climb. And it works. Mechanically it works. Aerodynamically, matters are not so clear.

The Eppler airfoil on the B-5 was generated theoretically according to good theory. And an independent analysis we made last summer indicates that if the wing surface is perfectly smooth, wave free, and true to contour, the very low drag values are probably achievable. To get these values, about 70 percent of both surfaces of the wing are covered by laminar flow, the bulk of it is *marginally* stable. Now if you put a few bugs on that wing or get a little surface imperfection introduced by the surface contour changing scheme, you may lose a great deal of this laminar run, and the fancy wing deteriorates in performance to a heavy (and complex) "dirty *Nimbus*" level. We shall await Pat Beatty's flight test results. The *concept* is attractive; its consummation in *practice* must be considered an *extremely* risky business!

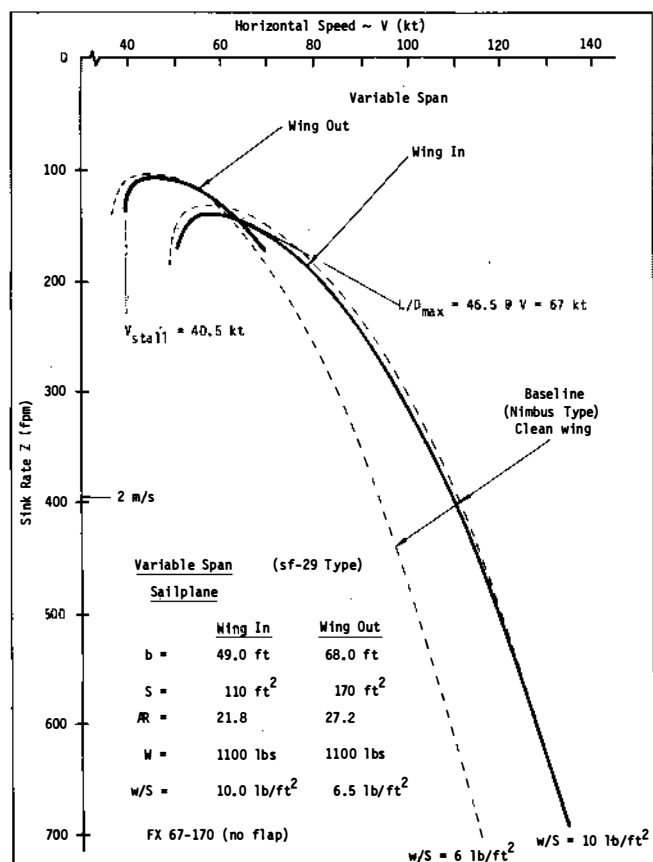


Figure 4. Predicted Performance of a Variable Span Sailplane

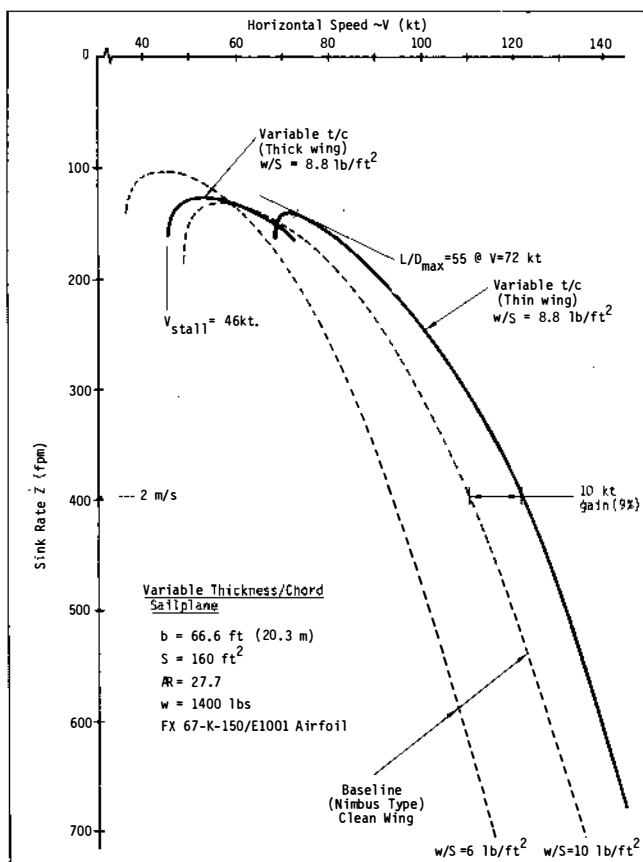
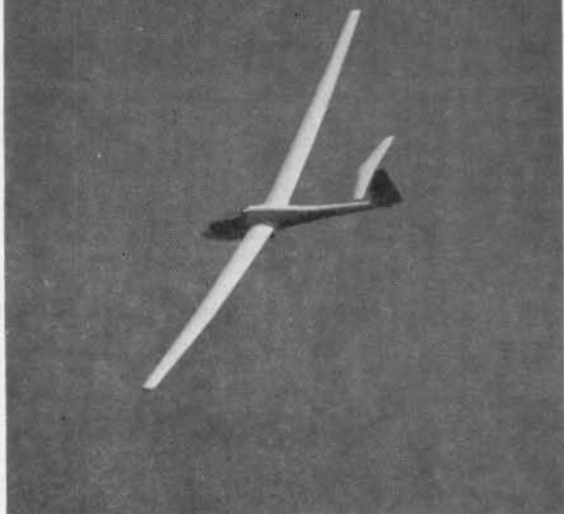


Figure 5. Predicted Performance of a Sailplane with a Variable Thickness Wing.

THE JOHNSON FLIGHT TESTS



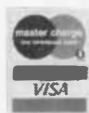
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Now What?

As the examples previously described show, it is now possible to contemplate a next generation of high-performance racing sailplanes with a good deal more performance (in an overall sense) than current models. Each of the three basic variable-geometry schemes which might be employed to give these performance increases has now been tried with, so far, highly mixed results. Which scheme, if any, is "best" cannot now be identified with any surety, but through the dedicated efforts of a few visionaries among us, some lessons are beginning to emerge. In general we may say that a *good* variable geometry scheme would have the following characteristics:

- The particular aerodynamic approach taken would not result in any serious deterioration of handling characteristics of the machine over its entire flight envelope.
- Aerodynamic gains would be carefully evaluated against weight and complexity increases which might destroy the gain in pure aerodynamic performance.
- Any mechanical system for varying geometry must be actuable quickly and with very little more effort than one now expends actuating current racer cruise flaps.

With all these considerations in mind, my own favorite among the schemes proposed so far is the big Fowler flap. In addition, I can readily envision this flap combined with a scheme for mild span extension. An inflatable cuff or extensible tongue at each wingtip which would increase overall span by only 1 meter (out of perhaps 20), coupled with a 30 percent area-changing Fowler flap and a lot of ballast, should be interesting. At least until some real genius develops a scheme for causing rain to fall inside a ballast tank at the discretion of the pilot.

As a parting note, it should be observed again that variable geometry wings are *not* peculiar to Open Class racing sailplanes. We have already seen the application of *Sigma*-type Fowler flaps to the highly successful SB-11 15-Meter racer. The forthcoming 15-Meter Darmstadt D-40 will also have a Fowler flap of the same sort but simpler and less extreme. Until Pat Beatty sorts out the B-5, we still have to wait for the possible extension of his scheme to a 15-Meter ship. Either way, only the variable span wing appears improbable for 15-Meter applications. On the other extreme, there is a *very* simple variable thickness/chord scheme afoot for application to an ultralight sailplane. No class of sailplane can profit more from variable geometry (if accomplished simply and with low weight) than the ultralight. But more on that another day.

Parts I and II of this series were written prior to the SSA Convention in Seattle where author John McMasters has participated in various formal and informal discussions with U.S. and overseas designers. The result is a previously-unplanned Part III for next month which discusses the "add-a-tip" variable geometry of the new AS-W 22, as well as such exciting ideas as how the emerging "straight-ahead" (little or no thermaling) cross-country techniques may reopen the dominance of super-span sailplanes, how space-age "fly-by-wire" control of unstable but ultra-high performance designs can mean still greater achievements, and how a laminar flow flying wing can get an L/D of 65:1 and even 92 or 98:1 using LFC — laminar flow control! — Ed.

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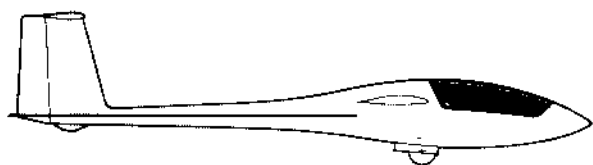
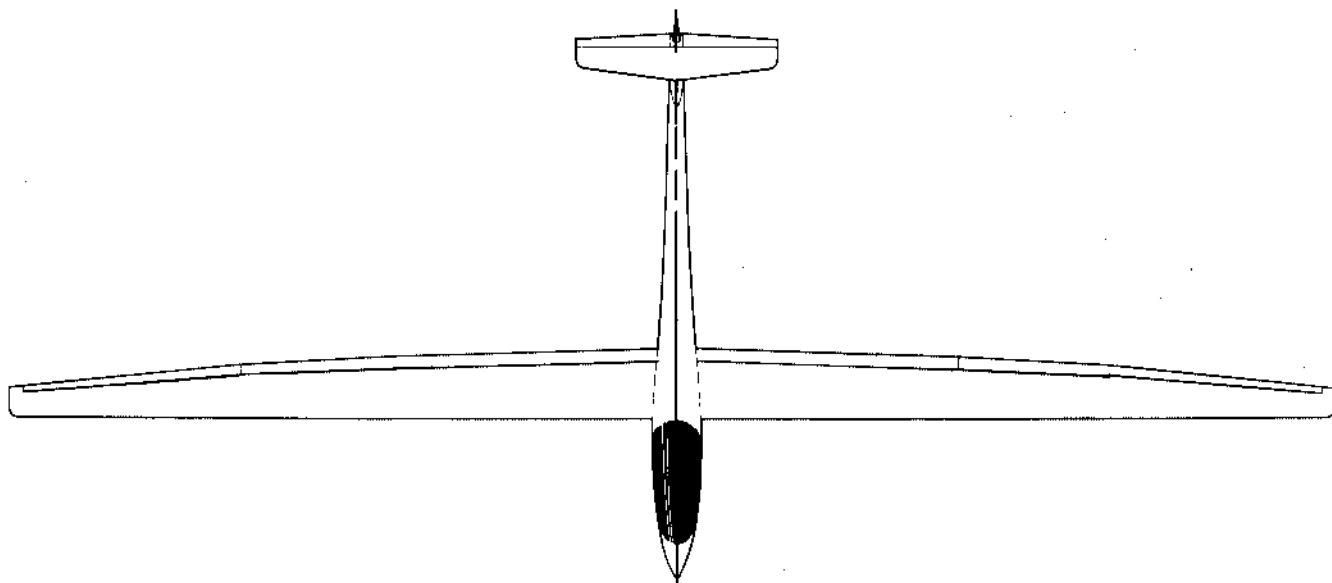
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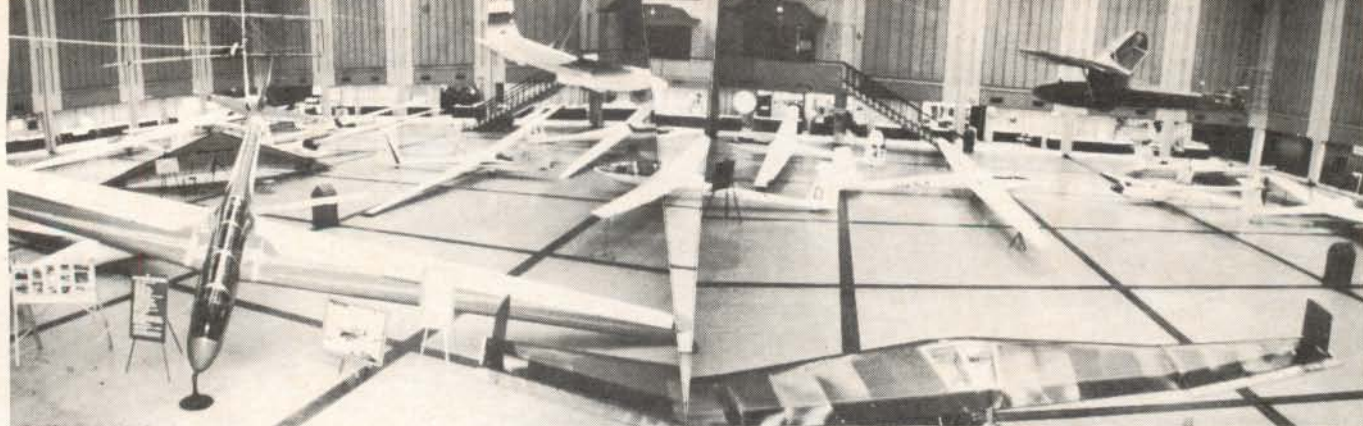
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THE SSA NATIONAL SOARING CONVENTION

"We've been trying unsuccessfully to interview our top soaring people in one place at one time," said a West German aviation correspondent at the recent SSA Convention in Seattle. "We had to come here to do it!"

How about that?

But the newsman shouldn't have been surprised, really. **Helmut Reichmann**, **Hans-Werner Grosse**, **Gerhard Waibel**, and others of their countrymen were only responding to the same force that brought significant numbers of attendees from many of the world's soaring nations. This attraction transcends sectional and national boundaries and is the basis of the bona fide sense of "community" that exists among soaring enthusiasts everywhere. For six days, more than 1000 of them reaffirmed their tacit society (and SSA'ers their explicit Society) by nonstop chatter, listening, looking, and total immersion in the world of motorless flight (and motorgliding, too).

Readers of past accounts of SSA Conventions in this journal may doubt the credibility of a story characterizing the Seattle gathering as being the best ever.

But it's true.

The Seattle Glider Council's staging of the 1980 Convention tops them all, and conventioners inevitably found themselves using worn-out PR clichés such as "fan-TAS-tic," and "super," and really meaning it. Even standing ovations, which elsewhere sometimes seem to have become *pro forma* social amenities, had a genuine spontaneity: Like **Paul MacCready's** film/lecture on the historic *Gossamer* projects. Many in the large audience will long remember the moving response accorded Paul and his *in absentia* team at the conclusion of his presentation. So let it be said at the outset — the 1980 convention was, yes, FAB-u-lous.

And, yes, there was someone behind the success. **Ron Ferguson** and **Marion Barritt** were billed as the SGC's cochairmen. But Ron insists that Marion was the real kingpin (queenpin?).

"My business required me to be out of town on the road much of the time," Ron explained, "and Marion carried more of the responsibility. I know that for the last two months before the Convention she was working sixty to eighty hours a week."

THE DO'ERS: CONVENTION PERSONNEL

Cochairman: Marion Barritt
Cochairman: Ron Ferguson
Program Chairman: Bob Lamson
Exhibit Chairman: Tom Davis
Registration Chairman: Barbara Ascanio
Art Display: Sharon Austin
Asst. Program: Doug Barritt
Commerical Operators: Bob Chase
Video: Paul Cordell
Public Admissions: Fred Hermanspann
Public Relations: Pat McGrath
Social Events: CeLinda Niedermeyer
Public Relations: Kapi Parks
Art Director: Jerry Pomeroy
Exhibits: Gil Roberts
Tours: John Sager
Treasurer: Herb Voss
Sailplane Signs: Faye Lomax
Speaker Signs: Jack Olson

For her part, Marion insists that the Council's nineteen Convention Chairmen (see box) made it all possible, and she refuses to single out any special contributions. It is clear the accomplishment was the result of the cooperation of the Council's member clubs. The Society salutes a truly remarkable achievement!

If there could be a complaint, it would only be that the attendees were

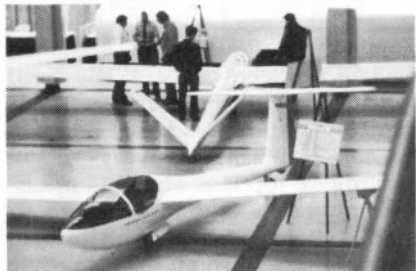
tortured by an embarrassment of riches: there were times when members were torn by indecision in having to choose which of the two or three simultaneous sessions to attend. However, the organizers had provided even for that by printing in advance a 221-page transcript of all the formal papers. Thus, it was not only possible for a conventioneer to catch up on what he or she missed, but also to study and review at leisure any of the 21 presentations. These are profusely illustrated in the *Proceedings* with photos, charts, polars, and other graphic adornments. Topics ranged from **Cecil Craig's** classic flight story of his wild winter ride down the Cascades to meaty technical papers like **Harry Higgins' "The Light Touch,"** a systematic analysis of sailplane handling qualities. The volume was selling for \$12.50 during the Convention and copies are still available from SGC.

An unscheduled bonus was the appearance of **Hans-Werner Grosse** who dropped by the Convention on his way home from his most recent expedition to central Australia. Listeners got a new appreciation of what's involved in flying over the virtually uninhabited Simpson Desert of the subcontinent, thanks to Grosse's outstanding slides and commentary.

And then there were the displays.

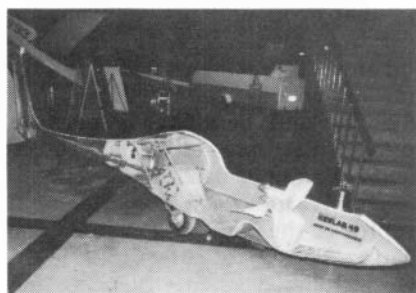
The enormous Seattle Center Exhibition Hall was a mecca for SSA members and also for Seattle citizens whose interest had been aroused by local media coverage. There they could view soaring aircraft ranging from hang gliders to **Bob Lamson's** huge, pressurized, high-altitude, fiberglass *Alcor*. An uncovered vintage *Grunau Baby* and a Wright glider replica (courtesy of the University of Washington) hung from the cavernous ceiling as did the sparkling new U-2, **Don Mitchell's** latest self-launched, low-cost ultralight. A feature of special interest was the first appearance of the Schweizer *Sprite*

(1-36), an all-metal sailplane designed to provide Diamond Badge performance while being the "lowest-priced FAA-approved sailplane available." (Paul Schweizer promised a full-length article on the *Sprite* in the near future.) Competition buffs ooh'd, ah'd, and drooled over the latest sleek racers including the *Zuni II*, LS-3-17, carbon *Hornet*, *Speed Astir*, *Vega*, AS-W 20, and



Speed Astir

DG-200. Noteworthy was the *Zuni* presentation which displayed a full-size, nose-to-tail, fuselage cross-section offering a rare view of a fiberglass sailplane's innards. Kit builders had a



Bisected Zuni II

chance to look over the Mitchell Wing B-10, the HP-18, and a *Monerai* with a self-launching power pod installed above the turtle deck. Cecil Craig's still-beautiful Laister LK-10 (in which he made his midwinter cross-country wave flight) caught everyone's attention with its jazzy spiral dive mounting over the exhibit hall floor. Multiplace sailplanes were represented by the *Lark*, while the classic department included a Ka-6E and an SHK-1. **Arnold**

Monerai with power pod



Skopil's masterly do-it-yourself installation of a retractable Nelson engine in his *Nimbus II* also attracted appreciative scrutiny in Rainier Hall, where it provided a unique backdrop for session speakers and served as a specimen case for **A.J. Smith's** "Aerodynamic Clean-up" demonstration.

Around the main hall's periphery were 49 booths and stalls with instruments, radios, trailers, parachutes, clubs, commercial operators, and museums. A popular feature was an art gallery containing paintings, sculpture, photographs, jewelry, and handicrafts. The exhibition hall doubled as an effective marketplace. One sailplane manufacturer revealed he had sold three aircraft and received several deposits by the second day. Merchandise offered at the Society's information stand was virtually sold out by Saturday.

By the fourth day, the main influx of visitors taxed the facilities of the towering Washington Plaza Hotel. The organizers had anticipated this and the sessions were already scheduled at the Seattle Center in the shadow of the "Space Needle." Such groups as the Commercial and Business Operators, National Soaring Foundation, National Soaring Museum, competition pilots, and motorgliding partisans held formal meetings or rap sessions, while Women Pilots, the 1-26 Association, SSA Governors, Old Timers, Vintage Sailplane Association, and the Blanik Association groups opted to socialize at various breakfast get-togethers.

And for the first time an Instructor's Revalidation Clinic was held coincidentally with the Convention. Normally this latter activity is an FAA function, but with the SSA's initiative, the government delegated the job to the Society on a show-us-you-can-do-it basis. The response proved greater than anticipated, requiring every chair in the assigned meeting room. Official FAA observers were apparently convinced and have recommended continuance of this SSA service; an announcement of further clinics will be forthcoming from **Don Slotten**, Chairman of the SSA Flight Training and Safety Board. Incidentally, the unannounced appearance of World 15-Meter Class Champion **Helmut Reichmann** added a real boost when he lectured on cross-country instruction to the group.

Originally the annual SSA Conventions were initiated by 1972 SSA President **Marion Griffith** as a modest adjunct to the Directors' Meeting in San Antonio, Texas. At that time Marion



The Executive Committee (left to right, Woody Woodward, Carl Herold, and Brian Utley) and Acting Executive Director John Dezzutti listen to recommendations from the Board of Directors.

had no trouble keeping the Board's nose to the grindstone of the enormous amount of business to be transacted. But it is probably safe to say that secretly some of the Directors must be tempted to play hookey and join in the festive activities bustling outside their meeting rooms. Let it be noted that none succumbed, and, to the credit of SSA President **Brian Utley**, the jam-packed agenda was completed in one day with notable efficiency and dispatch, thanks to the increasing role of his Executive Committee in dealing between sessions with matters that would otherwise have required much more time. Elsewhere in this issue are reports on the Directors' meeting from Brian and from **John Dezzutti** who was functioning at that time as Acting Executive Director for the ailing **Forrest Blossom**.



Going first class — the Awards Banquet.

The Awards Banquet provided the setting for a lavish repast complete with a corps of liveried waiters. At one point they elicited applause when they darkened the lights of the glittering ballroom to deliver flaming dishes of baked Alaska with the precision and pageantry of Radio City Rockettes. Master of Ceremonies and *bon mots* **Rudy Allemann** set up a convivial ambience that was happily sustained by featured speaker **Ann Welch's** reminiscences of "A Life in Aviation." Par-



Ann Welch

enthetically, it should be mentioned that following the Convention Ann's life in aviation was further enriched when she attempted to catch a night flight back to England at the Sea-Tac International Terminal. This included boarding delays for engine trouble, a bomb threat, a false start that was aborted over Canada because of more engine trouble, and final completion to London via an international "red-eye special" with a detour through New York!

Floyd Sweet, SSA Awards Chairman, presided over the dispensation of Society honors to eight member recipients. A posthumous Exceptional Service Award went to **Jean Doty**, whose many years of work in compiling the 1937 - 1971 and 1972 - 1977 indices of *Soaring* represent a great service to the Society. "This task could never have been accomplished except by a person like Jean," said Chairman Sweet.

Stan Smith's singular 48-year history in soaring won him the Exceptional Achievement Award of the Society. As his early design of a two-place training glider (*City of Utica*) shows, given his druthers, Stan would probably have liked to do more in the motorless category. However, as Chairman Sweet pointed out, "His aircraft designs, the X-1, X-2, and X-5 research vehicles, were really gliders" presumably since they had to glide back to earth once their rocket fuel was exhausted. Stan has an extensive competition history, including his winning the 1957 National Soaring Championship, and he will be out on the courses again this summer.

Charles Lindsay's continuing service to soaring forecasting has been lauded both by the National Weather Service and the Society; SSA recognized his contribution with the Exceptional Service Award. He has written for the journal and coauthored mete-

orological texts focused on soaring. This summer, pilots who use the services of FAA's Flight Service Stations may notice an improvement in service — "He has developed a program in the language of soaring pilots for the FSS," said Floyd Sweet.

How can you say "thanks" to a Director who already has the Eaton Trophy, a place in the Hall of Fame, two Exceptional Service Awards, and who is retiring from the Board of Directors after eighteen years? Floyd Sweet noted **Tom Page's** shepherding of the *American Soaring Handbooks*, his contributions to the journal, his work with the FAA/Air Force Physiological Training Program, and an earlier SSA insurance program. Considering his options, the Awards Chairman evidently decided that if two of something is good, *three* would be even better, and so Tom Page now holds the distinction of being the first SSA'er to have a trio of Exceptional Service Award certificates to hang on his study wall. "My cockpit runneth over," he said laconically with a twinkle in his eye.

The Paul Tuntland Memorial Award goes to the person "deemed to have made an important contribution to the science of soaring flight, as disclosed in a published article discussing the results of a soaring flight made by himself during the year." **Dick Johnson's** on-going and comprehensive Flight Test Evaluation Series had already won him the 1978 Tuntland Award. He was so honored again this year, but for a new report that appeared both in

the Swiss *Aero Review* and *Soaring* in 1979. The paper was titled "Measurements of Sailplane Sink Rates Between Thermals" and was evidently the first practical (as distinguished from theoretical) attempt to quantify this important aspect of cross-country flying.

Long distance cross-country flying has always been highly regarded in SSA, and since 1948 the Lewin Barringer Memorial Trophy has gone each year to the pilot making the best straight-out distance in the U.S. In the previous thirteen years, **Wally Scott** won the Trophy nine times, and his 590-mile flight from Odessa, Texas, to McCook, Nebraska, last year brought his string of top U.S. straight-out distances to ten — an unprecedented accomplishment. Wally wasn't present to answer the question: "You've made your mark. Long distance retrieves are exhausting. Why do you continue?" He hasn't said so, but there is reason to believe Scott is targeting the first 1000-mile flight. It is known that at one time he made preliminary investigations of an expedition to the Andes for such a purpose. Wally-watchers point out that Scott and his sailplane are ready to go when a certain juxtaposition of weather systems will sling-shot him out of Odessa as it did in 1970 when he and **Ben Greene** streaked north for 717 miles to become corecipients of another Barringer Trophy.

"The Warren E. Eaton Memorial Trophy is the highest award of the Soaring Society of America," Floyd Sweet reminded banquet listeners, "and

Award winners: (counter-clockwise from lower left) Stan Smith, Bill Cleary, Tom Page, Dick Johnson, Charles Lindsay, and proxy for Wally Scott.

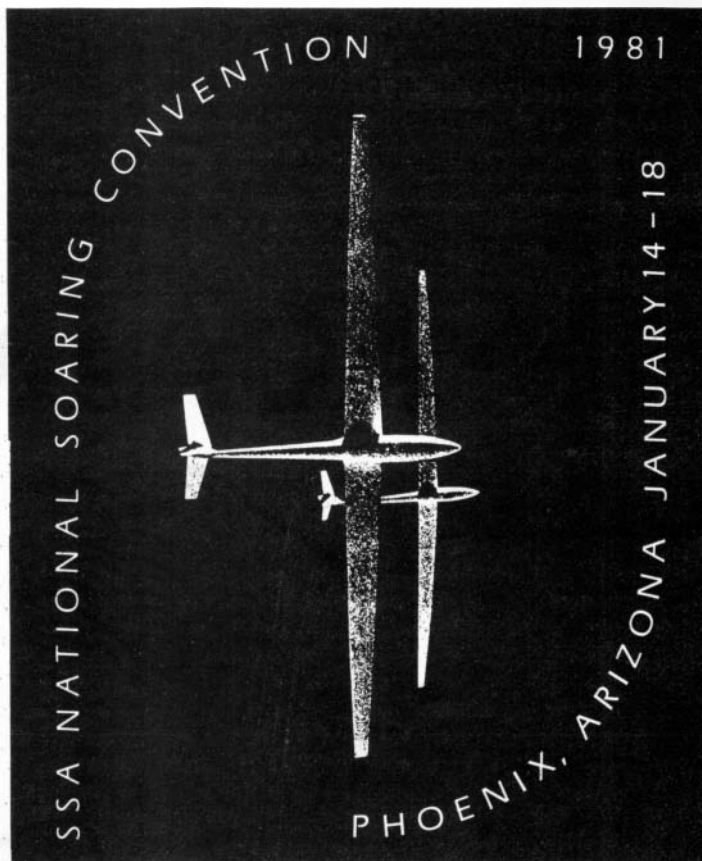


Norm Dalke

we are proud to present it to **William B. Cleary.** Before he became SSA President in 1977-1978, Bill's accomplishment with his 1-26 in national competition and his earning all the FAI Badges therein won the admiration of the rank-and-file members and contest pilots alike. Less visible, perhaps, were his administrative contributions as an officer of the Society. "Bill is a skilled manager," Sweet pointed out. "He unstintingly gave of his time and talents to guide the Society through an unprecedented period of change and growth."

All good things must come to an end, and the 1980 Convention was no exception. But even as good-byes were being said and departures made, eyes were turning south. Recent conventions have contended with snow, wind, and rain (though one could hardly fault Seattle's gentle drizzles). Everyone agrees the sun belt will be a nice change, and the Arizona Soaring Association is going to make it possible. Would you believe preparations for 1981 are already underway? If ASA'er **Woody Woods'** poster is any indication of what we'll find, it's going to be first class.

Look out, Phoenix, here we come!



Woodson K. Woods' poster for the 1981 SSA National Soaring Convention sponsored by the Arizona Soaring Association.

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[See May 1979 Soaring, page 15.]**

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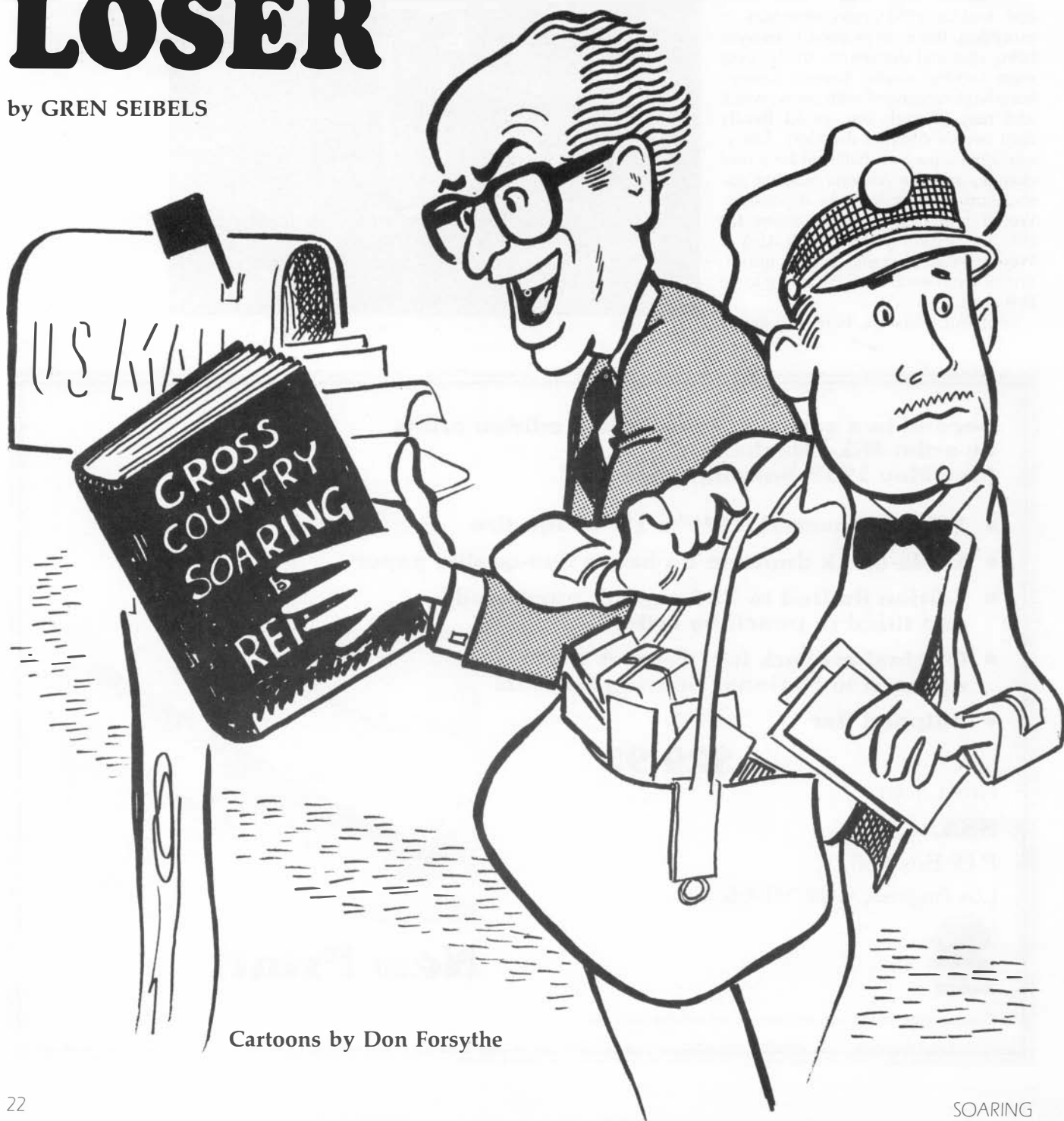
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Is competition's most acerbic apologist mellowing, converting from soaring-to-win to soaring-for-fun, suffering comeuppance, or experiencing revelation? Gren lets it all hang out. . . .

The BORN-AGAIN LOSER

by GREN SEIBELS



In my soaring days I've endured a good many low points — literally as well as figuratively — yet the absolute nadir came, not in the air, but while I was reading Helmut Reichmann's masterwork on competition soaring. (I know it's called "Cross-Country Soaring," but what it's really about is winning in competition.) During the tedious delay while the English translation was being thrashed out, my impatience to get my hands on the Reichmann opus became all but unmanageable; for here, at long last, one of the great champions in the history of our sport was prepared to tell all. For us bumblerers and stumblers, this was the chance of a lifetime: the mind and soul of a real-life winner laid bare for the edification of the peasantry. After reading this book, the advance publicity implied, we could set forth and astonish our friends while confounding our enemies.

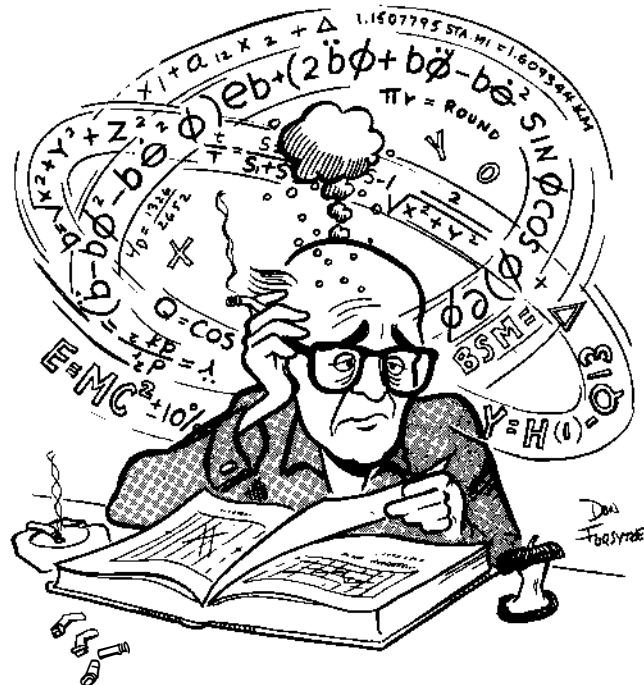
Alas. And alack. Once past the kindergarten preliminaries of the opening chapters, I began to sense a queasy feeling of disorientation, much like that induced by inverted spins. I knew I was reading about soaring, but the perspective seemed strangely askew, as though I had inadvertently put on someone else's spectacles. It was like Alice's trip through the looking-glass: familiar things suddenly seemed weirdly unfamiliar.

Sure, I could plow along for a paragraph or two, nodding in abstract agreement, but in nearly every discussion, sooner or later The Champ would trot out some technique or other that he considers vital to success in the air and I would come to a juddering halt, moaning "Oh Lordy, I *never* do that!"

Elsewhere, Doctor Reichmann is relentlessly dogmatic in his denunciation of certain procedures that have formed the cornerstones of my flying since I first soloed. It began to dawn on me that if this is what it takes to win, then my unbroken string of defeats was clearly predestined from the outset. By the time I finished reading the first half of the book, I felt trapped, like a bug in amber. But I had not yet touched bottom.

Throughout, the book is liberally illustrated with charts, diagrams, and other visual aids to comprehension; after some study, I *think* I got the point of most of them in the section devoted to "Flying Practice and Techniques." Taking a deep breath, I then broached Part II ("Theoretical Section" and it was like landing downwind into a stone wall. Never before had I realized that an equation can be designed for virtually every soaring situation except the overfull bladder halfway around a task. What's more, these wretched mathematical headaches can also be expressed as graphs in three colors.

Now, I have teetered along life's checkered path with perhaps more than my share of uncorrected weaknesses — none more glaring than my panic when confronted with even the most elementary mathematical concept. What small mental prowess I pretend to seems powerfully — nay, exclusively



— canted toward language and the verbal disciplines. Hence, a nasty little equation bristling with Greek letters and square roots renders me helpless and gasping like a beached codfish: palpitations, vapors, sweaty palms, dizziness, and tunnel-vision quickly ensue unless I close the book instantly, shut my eyes, and think pastoral thoughts.

Time and again, I've tried to sneak up on Part II. Opening the thing at random, I'd hold a hand over my eyes and timidly peek between two fingers: instant vertigo. Eventually, two dismal but inescapable conclusions were borne in on me: one, I don't know how to fly a sailplane; and two, I'm so dumb I'll never understand *why* I don't know how to fly a sailplane. The nadir.

So now I'm faced with selling myself on the prospect of spending the rest of my days as a role-model for those who exhibit Grace Under Pressure (of Defeat). I suspect it's going to be one very slow ticket.

Hearsay is about as close as most of us ever come to that quite different form of torture known in song and fable as Pressure-at-the-Top. As that perennial best-seller so pragmatically puts it, *Many are called, but few chosen*; an apt motto for SSA's still a-borning Competition Division.

Of course, were I very young (to me, that's anything under 50), I might be tempted seriously to consider revolutionizing my sinful ways. (Sign up for night classes in algebra . . . get in some dual-time with a Category 3 pilot . . . quit smoking in thermals . . . learn, once and for all, how to use that inscrutable final-glide calculator.)

Some regard aging as a curse, an incurable disease. To me, it's the perfect cop-out; the long-awaited alibi for my lifelong devotion to sloth, negligence, and nonfeasance. What a good and pleasant thing it is when a fellow can complacently purr that he has grown a bit long in the tooth to undertake an energetic program of self-improvement. So instead of baring all my petty

sins, excesses, and pleasures to a cauterizing blast of reform and making of my golden years a hideous purgatory of unnatural righteousness, I unblushingly opt for the primrose path of the unreconstructed ne'er-do-well. Henceforth, I shall eschew pangs of guilt for time squandered while admiring the spontaneous ballet of a 40-plane gaggle; I shall never again suffer professional embarrassment for unprofessionally waving at a passing friend; in fact, I may even observe the antics of beginners with detached amusement instead of temper tantrums.

As a logical first step into my new Age of Reason and Wisdom, I have erased Pressure-at-the-Top from the blood-chilling band of mental goblins that assail me while waiting for a contest launch. (Mystery: How did P.-at-the-T. get onto *my* list in the first place?) Now that my humility index is firmly embedded in concrete at the bottom of the chart, I believe I may actually begin to *enjoy* contests for a change.

In *his* later years, the incomparable Philip Willis deplored the relentless erosion of *fun* from soaring competition. Rereading his adventures, which is one of my more respectable vices, I find it a privilege to share, vicariously, the irrepressible sense of joy the man derived from his flying, even when he was embroiled in top-level competition. (And don't forget: he won a World Championship in Spain in the mid-1950's.) But in the late 60's, and even more so in the 70's, he sadly charted the drift of contest ambience from light-hearted-and-merry to gruff-and-grim. Aside from the satisfaction of the victors (after the flying is done), the thing itself — the racing — is somehow no longer the delight it once was and ought to be.

To the extent that we can be pigeonholed at all, I believe most soaring types can be assigned to one of two general categories: those who view soaring as a science, and those who see it as an art. These two viewpoints are so diametrically different that fence-straddling is all but impossible; one is either a square peg or one is a round hole (and I'm not about to hint which is which). Karl Striedieck is one of the few pilots I know who manages to savor the best of both worlds: behind that carefree



boyish grin lurks a mind that could embarrass a roomful of computers — and he's an incurable bird watcher to boot. Mentally he logs all the hawks and eagles en route to new World Distance records. Right on!

Of course, all the hard evidence supports and confirms the scientific approach. Offhand, I can't think of a single all-out romantic who has won a major contest in the past decade. The computer-brains clearly dominate the flower-watchers (with the notable exception above).

Okay. So any competent organic chemist could quickly reduce a lovely, subtle wine to a page of formulas, equations, and graphs — losing the wine in the process. Busy social scientists are performing similar analytical lobotomies in virtually every area of our private lives — areas that were once the sole preserve of poets and lovers. Instinctively, I wish bad cess to the lot of them. This must be what Wordsworth had in mind when he wrote of *One that would peep and botanize/Upon his mother's grave.* Is nothing sacred?

I feel this way, too, about soaring — an experience, a revelation, a glory far too beautiful and profound for a mere mind to encompass; it also belongs in the province of the heart.

So while I know I can't lick 'em, I sure as hell don't have any plans to join 'em. These are my modest competition goals for the 80's:

One, to taste the joy in every minute of every task (except, maybe, when confronted with an outlanding);

Two, to fly as well as I possibly can;
And finally, to keep on learning.

Any regrets? You bet — why didn't I think of this a dozen years ago?

* * *

(Postscript: Quickly, before publisher Graham Thomson mails me a letter-bomb, let me add that Reichmann's *Cross-Country Soaring* is unique in soaring literature; perhaps the most important book ever written on the sport. Despite my own technical illiteracy, I did indeed learn much of value from it . . . I think. — G.S.)



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CENTERING IN THERMALS— MODELING THE PROCESS

by WILLIAM M. PRICE IV

There seem to be two approaches to learning how to center a sailplane in thermals. The one pilots encounter most frequently can be described as the "Obi Wan Kenobe" school. Advocates of this method advise the sailplane pilot to go forth and practice; after years of experience the whole process will become natural, they say. The sailplane pilot begins to feel like Luke Skywalker, constantly zapped by some incomprehensible mechanism while awaiting the arrival of "the Force." The second approach is to learn to use some sort of model. A pilot then practices, relates what is happening to the model, corrects mistaken assumptions, and emerges with a reasonably clear mental picture of the thermal-centering process.

Several thermal-centering models exist. Mr. Carle Conway devotes several pages in Chapter 12 of his *Joy of Soaring* to thermal-centering models. Messrs. Welch and Irving devote most of their second chapter of *The New Soaring Pilot* to the subject (the author has used their excellent method of graphic display in this article). Mr. Wil Schuemann presented a modeling system and some valuable insights into

variometer lag in his advertisement appearing in the April 1977 issue of *Soaring*. Unfortunately, none of the models allow sailplane pilots to graphically see the effects of varying bank angle, airspeed, and variometer lag.

For those sailplane pilots (like the author) who possess limited powers of abstract imagination, a requirement exists for a graphics system that displays the effects of pilot-controlled changes (selection of bank angle, airspeed, and variometer lag). This article is an attempt to meet that requirement.

There is a great deal more to flying in circles than good coordination. For any given airspeed, the radius of a circle and the rate of progress around the circle (herein expressed in degrees per second) will change when the angle of bank is changed. If a constant airspeed is held, increasing the angle of bank will shorten the radius of the circle being flown and will increase the rate (in degrees per second) of travel around the circle. If the angle of bank is held constant while increasing airspeed, the radius of the circle will increase and the rate of travel around it will decrease.

In the table titled "Circling," the

rates of turn and the radii of circles for any airspeed and bank angle were computed using formulae given in *The Instrument Rating: A Guide to the FAA Written Examination* (1968 edition) published by Pan American Navigation Service. These formulae accompany the table. The resultant values are for common airspeeds and bank angles of 15, 30, 45, and 60 degrees.

These figures show what alterations in bank angle and airspeed will do to an attempt to fly a circle. Obviously, if bank angle and airspeed are not controlled, any attempt to relate a path being flown to the abstraction of thermal location will require a great deal of intuition. One Diamond Badge pilot with whom the author has consulted regularly practices turns in series while timing each turn with a stopwatch. He considers no more than 1 or 2 seconds variation between 360-degree turns to be acceptable.

The basic inputs to the circling process are airspeed and bank angle. For each unique combination of those, there will be a unique turning rate and circle radius.

Variometer lag is the time between a change in vertical motion of the

CIRCLING TABLE

$$\text{DEGREES PER SECOND} = \frac{1090 \times \text{TANGENT OF THE BANK ANGLE}}{\text{TRUE AIRSPEED (IN KNOTS)}}$$

$$\text{RADIUS OF TURN (IN FEET)} = \frac{\text{TRUE AIRSPEED}^2 \text{ (IN KNOTS)}}{11.26 \times \text{TANGENT OF THE BANK ANGLE}}$$

TRUE AIRSPEED			15° BANK									30° BANK									
					DEGREES OF ARC PER SECOND OF LAG								DEGREES OF ARC PER SECOND OF LAG								
					%/SEC.	RADIUS	1	2	3	4			5	6	%/SEC.	RADIUS	1	2	3	4	5
MPH	KNOTS	FPS																			
35	30.4	51	10	306	10	20	30	40	50	60	21	142	21	42	63	84	105	126			
40	34.7	59	8	399	8	16	24	32	40	48	18	185	18	36	54	72	90	108			
45	39.1	66	7	507	7	14	21	28	35	42	16	235	16	32	48	64	80	96			
50	43.4	74	7	624	7	14	21	28	35	42	15	290	15	30	45	60	75	90			
55	47.7	81	6	754	6	12	18	24	30	36	13	350	13	26	39	52	65	78			
60	52.1	88	6	900	6	12	18	24	30	36	12	418	12	24	36	48	60	72			
65	56.4	96	5	1055	5	10	15	20	25	30	11	489	10	22	33	44	55	66			

sailplane and the time that the change is indicated on the variometer. Mr. Schuemann provides lags for various variometers in his April 1977 *Soaring* advertisement. To the extent that one variometer can be selected instead of another, the sailplane pilot/owner can control variometer lag.

In the circling table, there are columns for different variometer lags. The lags, given in seconds, are listed as column heads. The values given under the column heads in the body of the table are degrees of lag for each bank-airspeed combination shown.

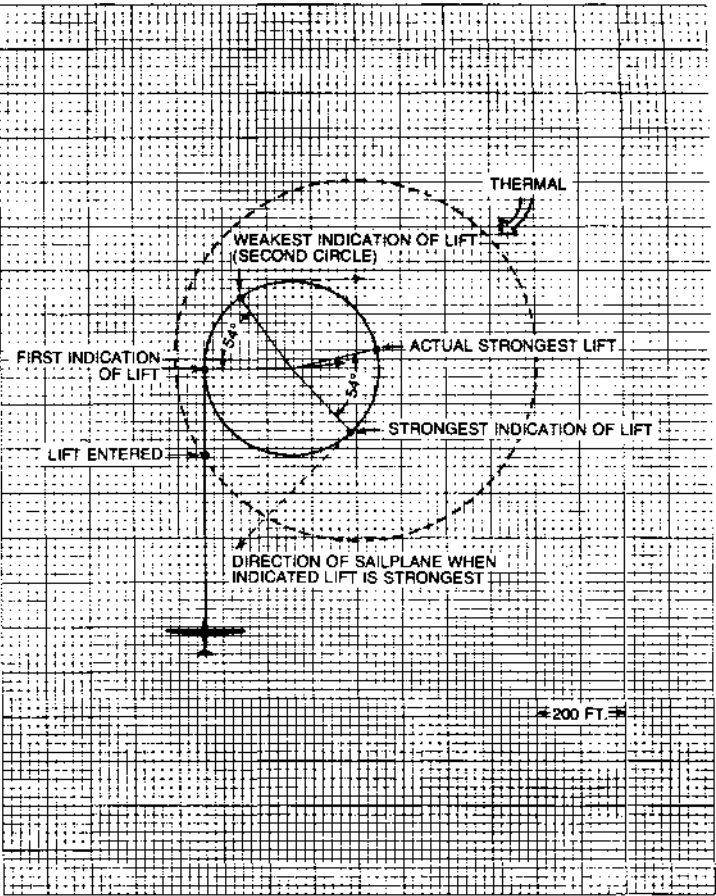
As a practical matter, the extent of variometer lag on a circle being flown can be estimated by observing the arc flown during the number of seconds the variometer lags. Although that approach works well in flight, it is of no help to a modeler presenting a graphic display of thermal centering — hence, the presentation in degrees of lag, which is calculated by multiplying turning rate by lag in seconds.

Two additional points need to be made on the subject of variometers. In addition to the lag of the instrument itself, there will be a lag between the time of the indication of an event and pilot recognition, and a further lag between pilot recognition and reaction. *Any pilot who attempts to minimize those lags by constantly watching the variometer is a suicidal maniac.* Even if such a pilot is fortunate enough not to fly into someone else, his control of coordination, bank angle, and airspeed will be marginal.

The values given in the table have been used to construct several models for thermal centering. In all of the models presented, it is assumed that lift will be greatest in the center of the thermal and will decrease toward the edge of the thermal.

The thermal size used in Figures 1 through 4 is one with a diameter of 800

Figure 1 —
800-ft. diameter
thermal,
30° bank,
40 mph,
3-second
vario lag.



feet. That size was used to portray a fairly small thermal which could be easily lost. The reader may construct models using any thermal size with the data provided.

The speed selected for the models is 40 miles per hour. Any other speed can be easily modeled. Select a speed, bank angle, and variometer lag from the table (or calculate your own from the formulae provided), then draw the model to scale on graph paper using the calculated turning radii and lags.

Figure 1 shows the first model. The sailplane flies into the side of the thermal; 3 seconds later, the variometer indicates the fact. This model assumes that the pilot begins turning at once (a later model will explore the results of waiting awhile). The turn used will be a 30-degree banked, coordinated turn. As the sailplane continues, it passes through the area of strongest lift. That fact is shown on the variometer 3 seconds and 54 degrees of arc later. The direction that the sailplane is facing at that moment is not the direction to move the circle. If the pilot straightened out and flew in that direction, he would leave the thermal in approximately the shortest possible time.

The optimum position to move the circle would have been out from the outside wing 3 seconds back in the flight path (a 54-degree segment of radius). But when it continues along its original flight path, it reaches the point on the thermal nearest the edge where the thermal is weakest. Three seconds and 54 degrees later, that fact is indicated on the variometer. If the pilot rolled out level just then, flew straight for about a second, then rolled back into a 30-degree banked turn to the right, he would be nearly in the center of the thermal. This method of center-

45° BANK								60° BANK							
%SEC.	RADIUS	DEGREES OF ARC PER SECOND OF LAG						%SEC.	RADIUS	DEGREES OF ARC PER SECOND OF LAG					
		1	2	3	4	5	6			1	2	3	4	5	6
36	82	36	72	108	144	180	216								
31	107	31	62	93	124	155	186								
28	136	28	56	84	112	140	168	48	78	48	96	144	192	240	288
25	167	25	50	75	100	125	150	43	97	43	86	129	172	215	258
23	202	23	46	69	92	115	138	40	117	40	80	120	160	200	240
21	241	21	42	63	84	105	126	36	139	36	72	108	144	180	216
19	283	19	38	57	76	95	114	33	163	33	66	99	132	165	198

ing thermals is called the "worst heading" method. Its use requires a firm theoretical foundation or a lot of blind faith. Straightening out when the variometer says "down" just is not natural.

If the pilot wanted to make use of the "best heading" for centering in the thermal, he should keep circling past the point of best indicated lift for 216 degrees ($270^\circ - 54^\circ = 216^\circ$), straighten out, then roll back in the same direction.

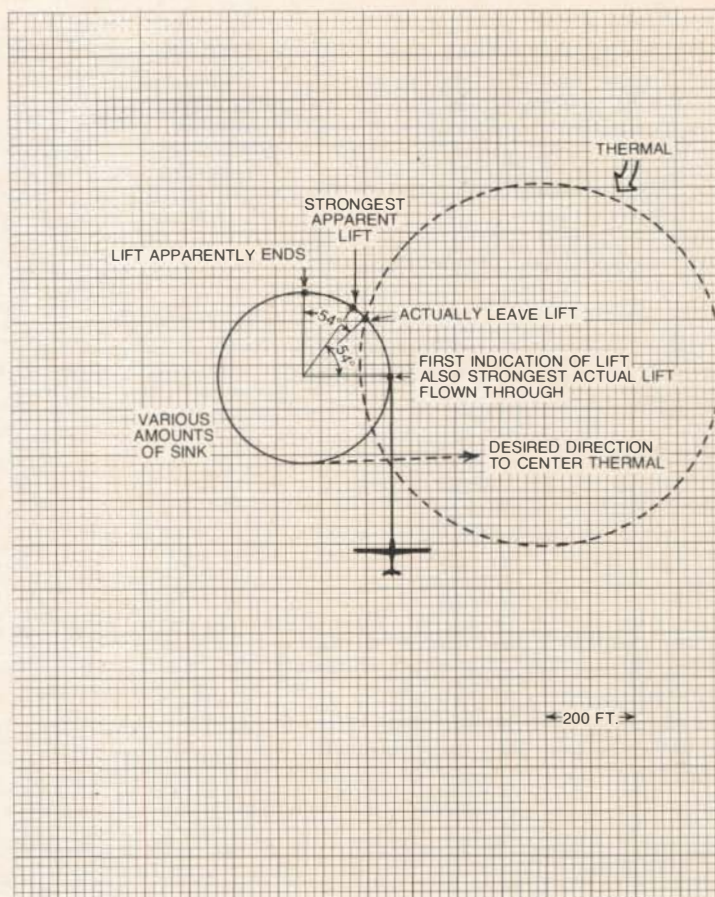
Much has been said about fast variometers. If a zero lag variometer existed (indeed, one does — the seat of a pilot's pants; it is mostly used in thermals with steep lift gradients, however), a pilot could still make no immediate corrections on the basis of a best-lift indication because the sailplane is oriented 90 degrees from the desired direction of travel. A faster variometer enables a pilot to visualize more easily the location of a thermal because fewer degrees of lag will have to be compensated for. This has advantages which may be appreciated by comparing the fast versus slow variometer lags in the table for a 60-degree bank angle. Further considerations concerning variometer lag illustrate that, while the visualization of lag problem can be reduced by fast variometers, it cannot be eliminated.

Fast variometers can be of great help when using the "surge" method of locating a circle near the best lift. Using that method, the pilot will immediately bank steeply when strong lift is experienced. That maneuver will keep the sailplane in the vicinity of the good lift. Thereafter, the same thermal-centering procedures as described earlier will be needed.

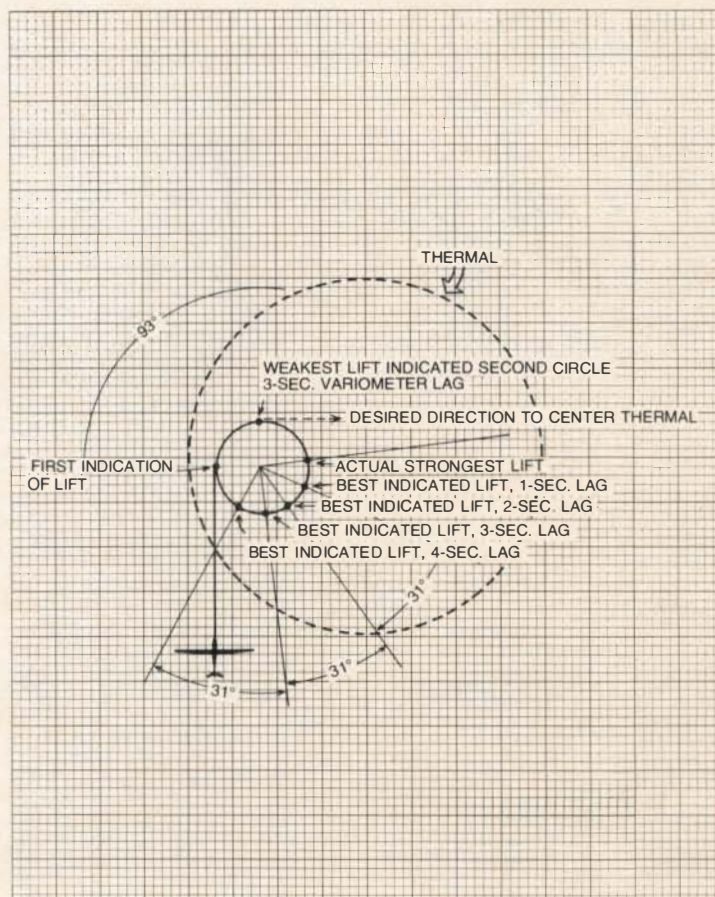
In Figure 2, the pilot guessed wrong and turned away from the thermal. The sailplane was probably nudged away from the thermal anyway. The pilot did not recognize it and followed the path of least resistance. Most of the first circle is outside of lift. Outside the thermal there may be a miscellany of sink, in which case, not a lot can be learned about thermal location from the worst variometer reading. One should note where on the circle the best lift occurred, then turn through 270 degrees less the allowance for variometer lag (54 degrees in this case), straighten out, then center as before.

Consider what would happen if the pilot reversed the direction of his turn after the indication of lift decreased, as shown in Figure 2. The resulting circle would be flown entirely outside the thermal. (That point is not illustrated in Figure 2 because it might obscure the basic point.)

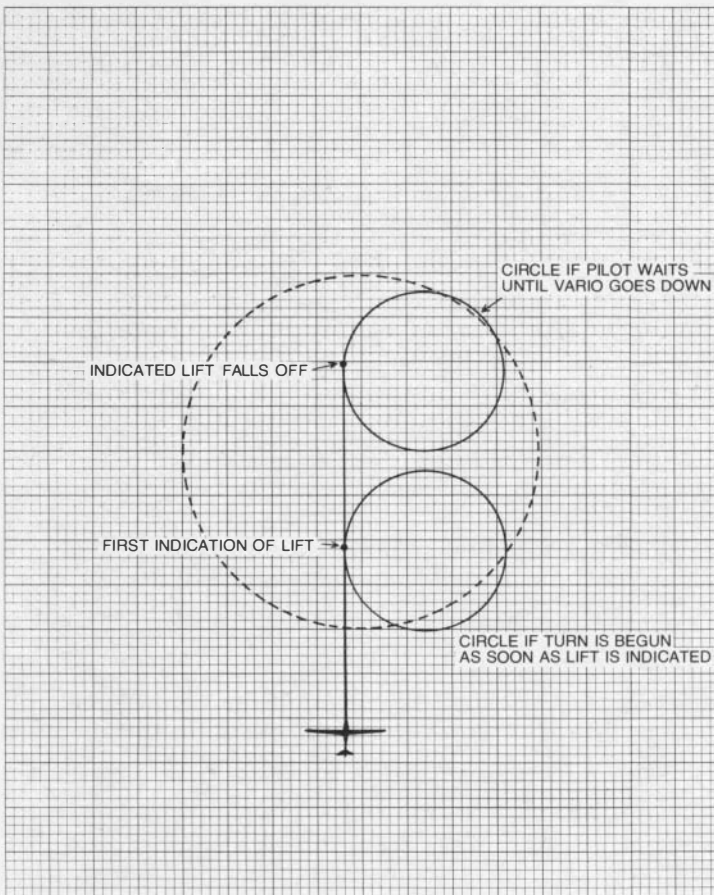
**Figure 2 —
800-ft. diameter
thermal,
30° bank,
40 mph,
3-second
vario lag.**



**Figure 3 —
800-ft. diameter
thermal,
45° bank,
40 mph,
various
vario lag.**



**Figure 4 —
800-ft. diameter
thermal,
30° bank,
40 mph,
3-second
vario lag.**



"Let's see . . . at 43 knots the blip on my 3-second lag vario shows that I was passing through the best lift 21 degrees of arc back, and at a radius of 630 feet that would be about where I passed over the edge of that plowed field . . ." Kendall Somers models his thermal as he attempts to center his Open Cirrus.



Royce Craig

In Figure 3, some of the basic inputs to the model have been changed — something not possible using earlier systems. The bank angle modeled is 45 degrees and the variometer lags in degrees are illustrated for 2, 3, and 4-second lagging variometers. (The

reader will recall that the lag for a 3-second variometer was 54 degrees at a 30-degree bank angle flown at 40 miles per hour. The same variometer at the same airspeed will lag 93 degrees at a 45-degree bank angle turn.) The steeper the pilot turns, the more

dramatic the variometer lag becomes. Using the best-heading method of centering, the correction to be used in Figure 3 for a 3-second variometer is about 180 degrees (270 degrees less the variometer lag of 93 degrees). Allowing for pilot recognition and reaction lags, a worst heading rollout would probably be a little late.

Figure 3 illustrates another point: A circle made with a 45-degree bank angle resulted in the pilot exploring very little of the thermal. Unless there is good reason to believe that the thermals are very small, turning with large bank angles can be counterproductive.

Figure 4 illustrates two different decisions concerning when to start a turn in a thermal. In the case shown, waiting until the lift falls off, then turning, produces a better result than turning at the first indication of lift. If the thermal were smaller, that would not be so; if it were larger, the improvement would be even more pronounced.

When centering in thermals — especially dry or blue thermals — it is advantageous to note the thermal's position over the ground. Landmarks such as a fence line, a road line, or the edge of woods can be used to construct two intersecting lines of position marking the thermal. Failing that, some other landmark below the sailplane can be used. This will allow the pilot to return to the vicinity of the thermal if he has lost the thermal (usually due to inaccurate flying or erroneous assumptions).

The author has attempted to present flexible models which illustrate basic thermal-centering theory and to provide the reader with enough data to construct his own models. This article is not intended to be an exhaustive treatment of the entire subject of soaring in thermals, nor is it intended to display the optimum circle size for thermalizing. Excellent presentations of thermal soaring have been presented elsewhere.

The author is certainly not suggesting that pilots perform the calculations called for here while airborne nor that they memorize the circling tables. Most pilots cannot estimate bank angle with sufficient accuracy to use in a precise model and, even if they could, they would sink to the ground before finishing the necessary arithmetic.

Interested pilots should make their own models, satisfy themselves that they understand the principles involved, then relate their experiences to the models. The process may explain the cause of many problems and suggest solutions. It has got to be better than falling out of the sky while waiting for "the Force."



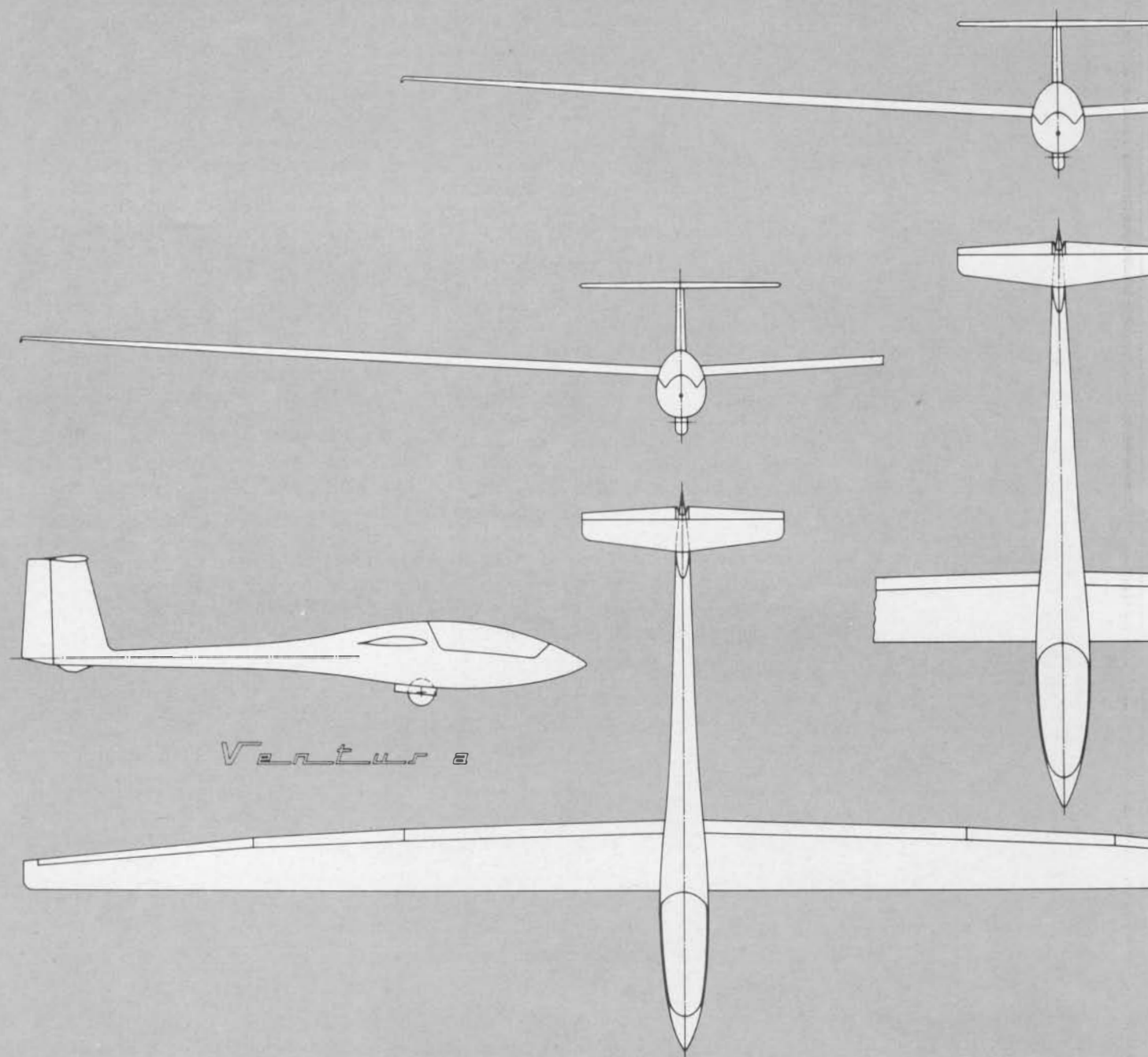
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* TECHNICAL DATA FOR "Ventus b" IN PARENTHESES



TECHNICAL DATA:

WING:	SPAN	15.00 M	49 FT 2.5 IN
	AREA	9.49 M ²	102 FT ²
	ASPECT RATIO	23.70	
FUSELAGE:	LENGTH	6.35 M (6.53 M)	20 FT 10 IN (21 FT 5 IN)
	WIDTH	0.54 M (0.62 M)	1 FT 9 IN (2 FT 0 IN)
	HEIGHT	0.75 M (0.83 M)	2 FT 6 IN (2 FT 9 IN)
WEIGHTS:	EMPTY WEIGHT	215 KG (220 KG)	474 LB (485 LB)
	MAX. PAYLOAD	115 KG (120 KG)	254 LB (265 LB)
	MAX. WEIGHT	430 KG	948 LB

MAXIMUM AIRSPEED:	AT ALL WEATHER CONDITIONS	250 KM/H	155 MPH
	WING LOADING:	30-45 KG/M ²	6.1-9.2 LB/FT ²
MAX. WATER BALLAST:		160 KG	353 LB
	AT W/S-30 KG/M ²		6.1 LB/FT ²
PERFORMANCE:	STALL SPEED	62 KM/H	38 MPH
	MINIMUM SINK	0.54 M/S	106 FPM
MAX. L/D		AT 95 KM/H	44
			59 MPH

The VENTUS Story

For more than two years Klaus Holighaus has been working with Dr. F.X. Wortmann and Dipl. Phys. Dieter Althaus to develop a new wing profile that takes full advantage of the unique strength and stiffness of carbon fibers.

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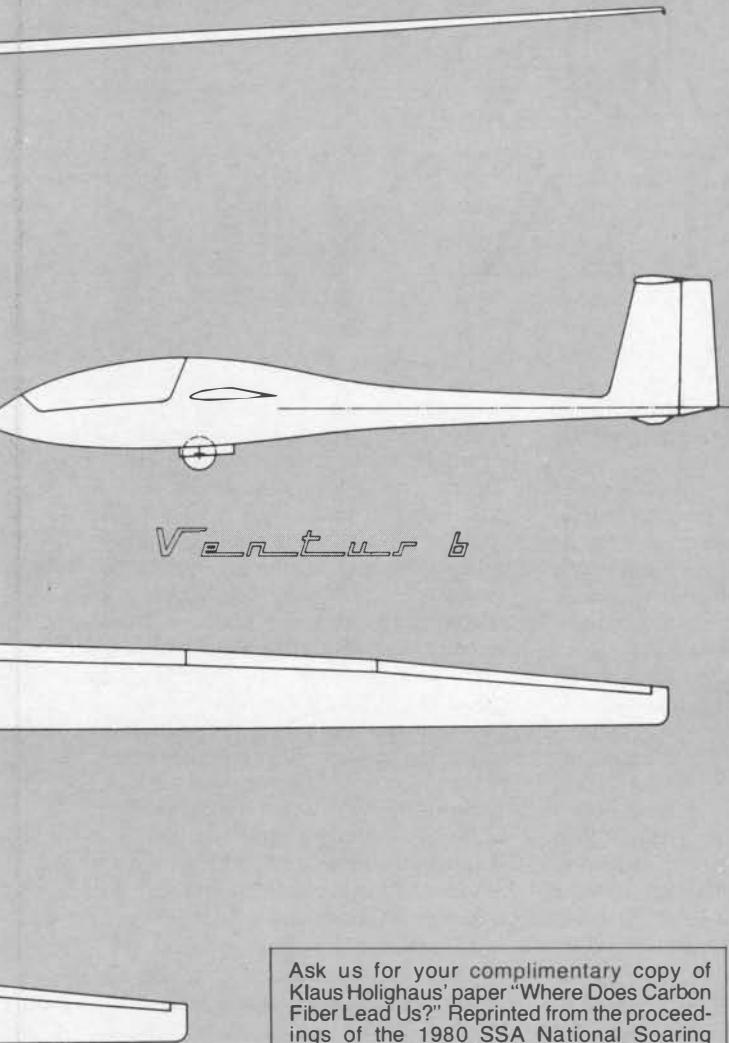
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Here's some solid counsel for those contemplating their first homebuilding project. . .

SO YOU WANT TO BUILD A SAILPLANE?

by BILL CARLSON

With the cost of modern day sailplanes spiraling upward faster than even the best Texas thermal, more and more soaring enthusiasts are turning to homebuilding as a means of acquiring the sailplane that they might otherwise not be able to afford. The Experimental Aircraft Association says that only one out of every ten homebuilt aircraft started ever reaches completion to flying status. Having just completed my own ship, I realize the pitfalls that could easily discourage the first-time builder. With this in mind, let's discuss what it takes to "beat the odds" and get your ship out of the shop and into the sky.

Building your own sailplane will be less expensive than buying a new factory ship — but it will hardly qualify as cheap. While people are constantly calling for cheaper sailplanes, instruction, and rental, I think we have to realize we have chosen an expensive sport. To lower costs one would have to lower the quality, and that is one thing that is sacred in flying. I know of very few flight schools or manufacturers that are making exorbitant profits. A set of plans will presently cost between \$75 and \$200. Material costs will vary according to your ability to scrounge and the type of material you are going to use. Sailplane kits cost between \$3000 and \$6000, not including paint (\$300) and instruments (\$1500). A trailer will cost \$1100 for a kit, less wheels, or about \$3500 built up. This adds up to between \$6000 and \$10,000, depending on the sailplane chosen, extravagance of your instrumentation, and your trailer.

The idea of building your own sailplane has a romantic appeal to it. Wanting to own a sailplane, and the idea of saving a little money while building it, is probably not enough to carry you through the trials and tribulations of homebuilding — what is really needed is a very strong *desire* to build and fly an aircraft that you have built. Evaluate your own mechanical skills, and do it honestly.

Are you qualified? A lot can be learned while building, but a good knowledge of tools and their uses is a must. Look around your home for any of those handy projects you started but never completed. Or how about that new sporting equipment that you just had to have and used only one season? If any of the aforementioned cautions have you the least bit hesitant, you had better reevaluate your plans to build, because it takes a very strict discipline and determination to see construction through to the end.

Given the necessary desire, experience, and skills, can you find the time? As a rule of thumb, you can multiply any designer's or kit manufacturer's estimates of time by two or three. Remember, they are generally optimistic, have built more than one (the second one always goes faster), and also are trying to sell their product. Don't forget that driving across town, writing letters, or making telephone calls to locate parts, rivets, glues, or information, or making jigs and fixtures to hold or align parts is counted as time spent on building, although not actually on the airframe itself.

Now that you have decided to build

a sailplane, you have to choose which one you want. Fortunately for the homebuilder, there is a large selection of sailplanes to choose from; there are T-tails, V-tails, upside down V-tails, conventional tails, wings from eleven meters on up, retractable or nonretractable gears, and some with auxiliary motors. You also have your choice of building materials such as aluminum, wood and fabric, and laminated foam and fiberglass. By the time you decide to build a sailplane, you should have enough flying experience to know which sailplane will best fulfill your needs. Consider if you will be competition flying or sport flying, the type of building material you will feel most comfortable working with, and the amount of available working space you will have. These are all determining factors in which sailplane to select.

Once you have decided which sailplane to build, purchase a set of plans separately and study them carefully. The plans will show you the specific type of construction involved, the kind of work to actually be done by the builder, and will give you a good indication of whether you will be capable of doing the project. The price of the plans is usually deducted when the kit is ordered, and if you determine that the project is too complex, the set of plans is definitely cheaper than ordering the entire unit in the event you have misgivings. Half-completed gliders can be a bargain if you know what to look for, but remember, they are selling it for a reason. Generally uncompleted gliders are sold for one of two reasons: the builder's interest in

soaring did not last as long as the building process, or the individual found out that he was incapable of the precision required in building. If the latter is the case, get someone who has built that type of sailplane before to go along with you to look at the workmanship and determine if the construction is good. You can probably get a lot of the special tools required in homebuilding as part of the deal for a fraction of their original cost.

Once you choose the sailplane, resist all temptations to "improve" the design. Very few of us are qualified in stress analysis and structural engineering or aerodynamics to make constructive changes. Sometimes those super ideas will haunt you throughout construction by getting in the way, by just not fitting at all, or by drastically changing the flight characteristics of the aircraft. Just remember, after the final inspection, the FAA inspector stays on the ground and watches while you go up and fly it.

Before you make that first cut in the first part, it would be good to call your closest General Aviation District Office and talk to the person who will be doing the inspections. Ask him if he wants to get together before you start work, or what his inspection schedules will be. Generally, any part of the airframe will be inspected before it is enclosed or made in any way inaccessible to a later inspection. If he is not satisfied with any part, you will be required to correct or remake the area in question. So take your time and do everything neatly and according to the prints and you will have no trouble with inspections. Make sure all of the proper entries are made into the aircraft logbook as the construction progresses.

Most kit manufacturers will tell you that their kit can easily be built within a certain amount of time and with only a few simple tools found in any home workshop, but it usually doesn't work that way. This is not to say that it is impossible to build your own sailplane without buying out most of your local hardware store — just difficult!

In building a metal sailplane you will need a large assortment of drills, reamers, a variable speed drill (we went through two of them in building our glider), microstop countersinks, files, metal shears, drill press, bandsaw, about 200 clecos (a temporary fastener used in fitting the parts together until the riveting is done) in the sizes of the rivets you will be using, plus the common hand tools found in any good home workshop. Since everyone uses the term "common hand tools" but

few describe what they consider them to be, I would say that they should include the following: a couple of ball-peen hammers of different weights, drift pins, center punches, chisels, a set of high-speed drill bits, screwdrivers and pliers of different sizes and lengths, visegrip pliers, box wrenches, socket wrench set, torque wrench, electric hand drill, saber saw, orbital sander, a good tape measure, layout tools, square, files, hacksaw, and hand saw for wood. Also in building a metal glider, access to a vertical milling machine and filing machine will prove invaluable. You will also need an air compressor, rivet gun, an assortment of bucking bars, and a pop rivet tool. Availability of a gas welding set if there is any welding involved in your glider is also a factor.

Wood gliders will need a saber saw, electric drills, router and assorted bits, lots of clamps (you never have too many), belt and orbital sander, bandsaw, table saw, a jointer planer, and again the normal hand tools.

The newest method of homebuilding is the use of fiberglass over foam. A combination of metal and wood-working tools may be needed for kits having wood spars and welded steel-tube fuselages. The only additional tool you will need is a hot wire frame for cutting the foam blocks to shape. This is usually a homemade item built to the requirements of the specific glider. A good supply of plastic pails for mixing resins will also be needed.

One last item is painting equipment. Nothing can ruin a well-built glider faster than a lousy paint job, so get the best you possibly can. You will need an air compressor that will deliver a sufficient volume of air, depending upon the type of spray gun and paint being used. If you have never painted with a spray gun before, start out on the smaller parts until your technique can be developed. Whatever type of paint you select (dope, enamel, or polyurethane), follow the manufacturer's instructions to the letter. When you start substituting thinners and reducers, funny things start happening to the paint when you mix it, and you may have problems of its not adhering to the aircraft.

There might be occasions when the homebuilder will find himself (or herself, did you know there are women homebuilders?) short of facilities to perform certain tasks. These usually fall in the areas of machining of metal fittings or heat treating of parts or welding. These special problems can be contracted out to local machine shops, but be prepared to pay \$25 per



If you're destined to be a homebuilder, it helps to have a father who's an engineer, tool & die maker, and model builder. Like author **Bill Carlson**. His father's teaching led him into model building at an early age. "I was flying RC sailplanes by the time I was in elementary school," he recalls. "They weren't easy to fly. In fact, I think it's easier to fly real ones." Bill's "real ones" began with an L-Spatz that he owned until he got the urge to fly something with higher performance. Then, with a partner, he bought and finished a half-completed HP-12; they spent 2000 man-hours over two years. "The '12 used a riveted instead of the bonded skins. It's a much slower process, of course, and I'm blessed that my wife Carol was so supportive. This was especially true toward the end when she did a lot of running as we spent more and more time trying to finish. She has no desire to fly it," he notes with a smile, "but she is a great passenger in a two-place."

The most memorable part of building was the final day.

"We were up at dawn assembling the ship on the lawn to be ready for a morning inspection by the FAA. When that was done and the paperwork finally finished, we tried to put the complete ship in the trailer for the first time — it wouldn't fit. We had to carry the leftover parts 40 miles to the airport in different cars. On the way I worried unnecessarily because I had never flown a vee-tail. It would have been nice to have had Ed Frappier's advice: 'Just fly the airplane — forget the damn tail!'" What with one delay and another, it was dusk before he finally had a chance to make a short flight. But now the ship has logged 150 happy soaring hours; its builders are looking forward to many more.

There are other satisfactions, too. Bill's 10-year-old son, Brian, is building models and has started flying with his father. Soaring is becoming a family tradition with the Carlsons.



When author Carlson studiously avoided mention of his own HP, the journal requested some pictures. Here is N78HP, first flown on July 28, 1978.

hour or more for any outside work done. Be sure to specify that this is aircraft work, as it requires extra precaution (no sharp corners, parts highly polished, and machined to close fits with mating parts). Welding is another special area where, if you are not an expert, it is better left to someone else. Some night-school programs offer courses in welding, but be sure to be very competent and to practice and develop your technique before welding on your glider.

Next you need the space to build the sailplane. Garages and basements are the most convenient for homebuilders, but generally are small and need a certain amount of modification. I built a 17-meter glider in an 8-meter garage. Simple mathematics will tell you that some part of it has to pass through a wall and into a special box built around a window with the glass out to accommodate the wingtips. (I know of one homebuilder who was building a set of 17-meter wings in his garage and had to cut a hole in the wall to an adjacent closet. An error in measurement was made and not only did the wings pass through the garage and closet, but into the bedroom without being able to close the doors. I am sure this was the start of many interesting conversations.)

If you elect to build in the basement, be sure that the completed project can be maneuvered up and out without having to make an extra door or window. Check at your local city hall to see if there are any codes or ordinances

that would restrict or prevent your project.

Your work area should have a heat source if you live in the colder climates and expect to work year-round. Resins and paints require temperatures of 60 degrees or better during the curing time. Good ventilation is also a must as most resins and paints give off toxic fumes and can be very hazardous to your health.

Think about your neighbors' reactions when the trailer becomes a per-

manent sight in your driveway, as well as the whine of your power tools and the pounding of the rivet gun into the small hours of the night. A little advance P.R. work on your part to make them aware of, and perhaps interested in, your project might prevent some ill feelings further down the line. The ideal situation would be to build in a hangar, especially in the final stages of construction when the glider has to be worked on in the assembled state. This may prove to be very expensive, unless you are on very good terms with your local F.B.O. One advantage of hangar building over garage building is that the kibitzers will be fellow pilots who understand and will show interest in your project. Building at home, you will soon tire of all of your neighbors' "Fred's Folly" jokes, and all of their questions will boil down to only one: "When are you going to get that thing the hell out of there?"

When building a kit, all of the parts, glues, nuts and bolts, pulleys, cables, etc., are generally supplied. When building from plans, however, the procurement of all of these items is left up to the individual. In this case a good aircraft supplier is a must. There are many good mail order houses, and in large metropolitan areas there are usually several aircraft supply houses to choose from. You should plan your order carefully, as many places have minimum orders of \$25 to \$50. This is not a problem in the beginning of your project, but toward the end when a few small parts are forgotten, you might end up paying a lot for a very little. Another good source is your lo-

Bill took his bird outside his shop to spray it with DuPont Imron polyurethane enamel.



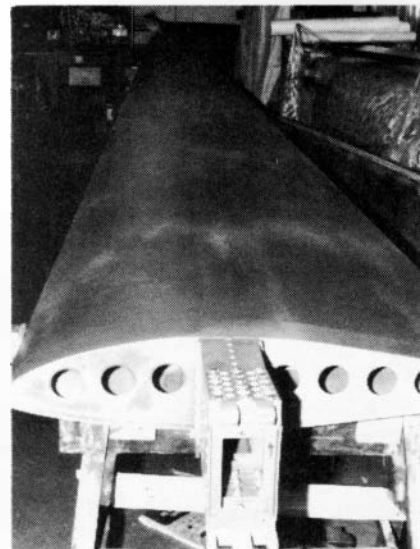
cal airport. If they do any maintenance and repair work, they will almost certainly have a lot of the parts you need. Remember, factory-built aircraft are put together with the same type of wood, metal, nuts, bolts, rivets, and fabric as the glider you are going to build.

Probably the best way to get a good insight into building would be to visit someone in your area who is in the process of building. This will give you a chance to see all of the plans, tools, materials, and types of construction techniques required to build a glider. If you do have the opportunity to visit a homebuilder in progress, please respect his time and don't expect him to stand and talk for hours. He is trying to get his project completed and cannot do it by entertaining everyone who comes along, but an explanation of your desires and an offer of help should start a long conversation. If your offer of help is accepted, don't be offended if it is a very menial task. Many areas of construction often need a lot of "elbow grease" but a small degree of skill, or just an extra set of hands.

Once construction is started, it is best to begin with a small part such as the horizontal or vertical stabilizers, elevators, rudder, ailerons, or flaps. These can be completed in a relatively small amount of time and, in the event of a problem, are the least expensive to replace. It is important to have a completed component to look at for a sense of accomplishment, and to show off to your doubting friends, rather than small assemblies of various parts

scattered about your shop. It is also easier to develop your building technique on the smaller pieces before going on to the bigger and more awkward parts. When building two of the same part, you will find that the second one always goes faster and easier than the first one because of the learning process. Another major plateau is when the forward fuselage is completed. You will find yourself spending a lot of time in the cockpit getting some stick time and just sittin' and grinnin'. Construction of the wings requires the majority of the building time. Some builders like to do them first and get them out of the way, while some save them until the end when they are at their best in building technique. Whatever your decision, take your time and ensure everything is done as accurately as possible, because the quality of the wing is going to determine the performance you will achieve.

Having owned one glider by myself, and building and owning my second one with a partner, I consider the latter the only way to go. With two owners in a sailplane the expenses and maintenance are halved, but more importantly, the glider flies more, which is why you built it in the first place, and there is rarely any scheduling problem. Most importantly, you have help in building. I would estimate that 75% of your work requires two people working together, and in a few areas a few more will help. Once work begins, it is important to set up a rigid work schedule in order to make reasonable progress. We set up two nights



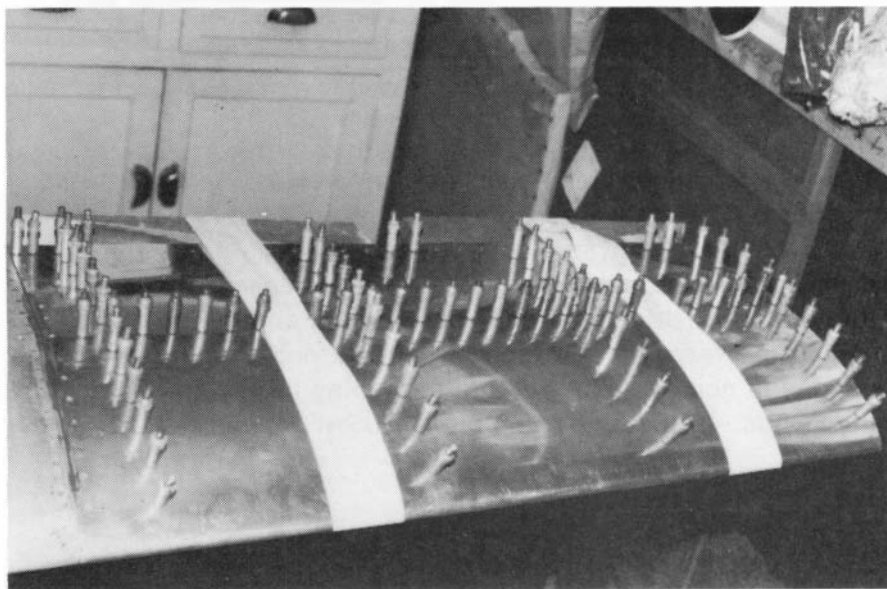
... but with clecos removed the result is a "skin you love to touch," and a beauty that is more than skin deep — how about that wing root?

during the week and one day of the weekend. This gave us about 35-40 man hours per week, or about 1800-2000 hours per year. If you try to build it on a time-available basis, you soon find your project moving off into the corner of your shop and time becoming less available, then you become one of the nine out of ten who never completes his (or her) glider. As you near completion, you find yourself working more and more, almost to the point of obsession. Eighty hours per week was the standard the last month of construction on our glider. You begin to hear your children asking their mother, "Who was that stranger at dinner last night?", and "Doesn't Daddy live here any more?" A large portion of the credit (almost equal to the building) should go to the family of the builders for supporting and enduring them during the construction.

This was not written to discourage anyone from building a glider, but only to call attention to points not usually thought of when considering building a sailplane. Nothing can describe the feeling of accomplishment when flying your sailplane for the first time. One of the best days of my life was the day the FAA gave us the O.K. and the initial test flight was made (with everything problem-free and with perfect handling qualities), followed by a champagne party on the ramp with my family and close soaring friends. So, if you still want to build, order those plans or kit today, you won't regret it ... and yes, I would do it again!



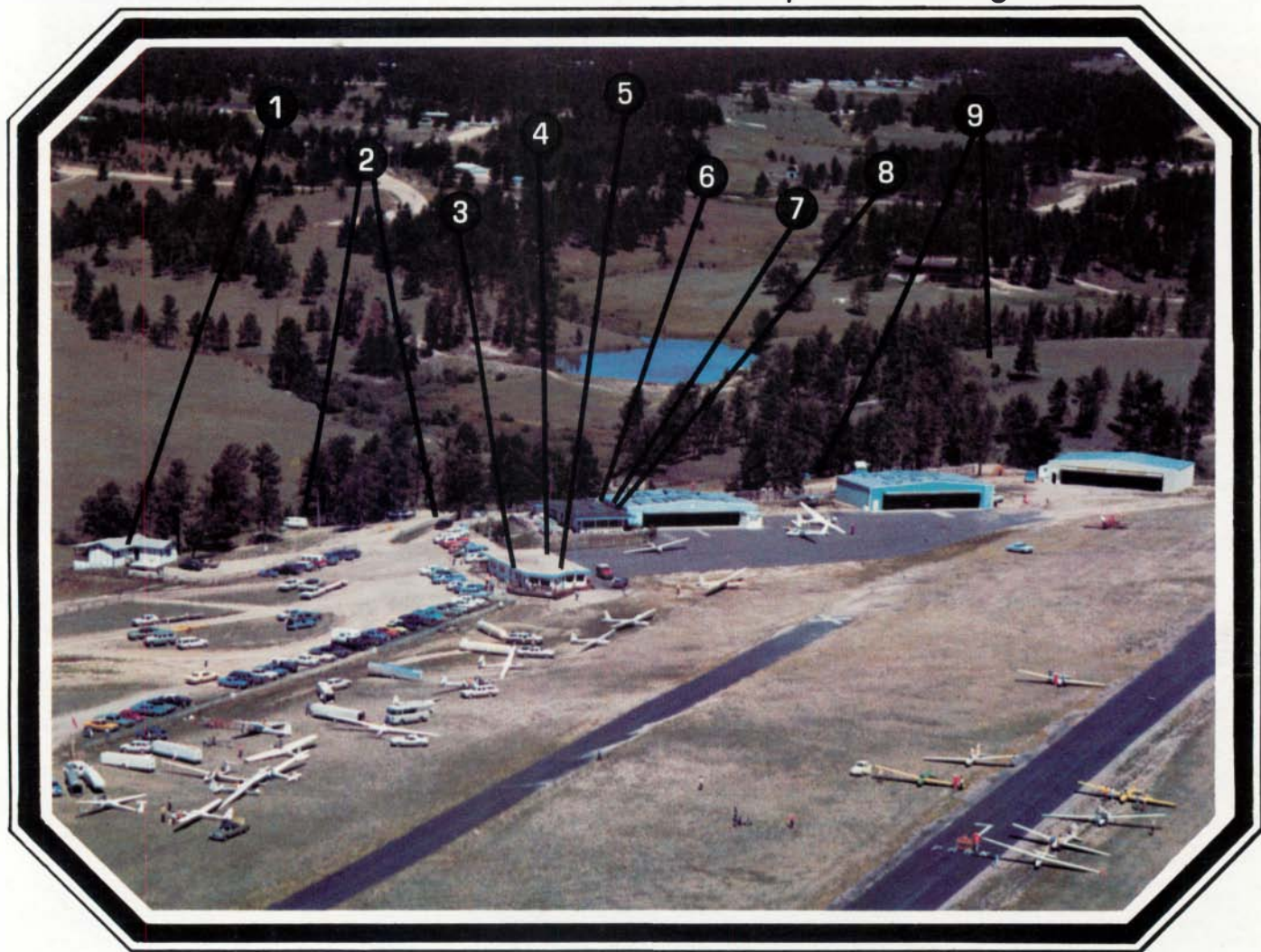
Cleco acupuncture of the wing not only is slower than bonding, but aesthetically unsettling. . . .



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PLAN AHEAD: PHOENIX '81

"The Seattle Glider Council put on the greatest SSA Convention . . . so far," says **Wally Raisanen** with a twinkle in his eye. "But now the Arizona Soaring Association is out to top it. Phoenix '81 will surely be the best and biggest Convention ever — that's our goal!"

Wally and the ASA ain't kiddin'. The Arizonans have made Wally their Convention's *Honcho*, and he's starting early. Look, for instance, at the smashing poster he got from **Woodson K. Woods**. And ASA has already lined up such stellar attractions as **Helmut Reichmann**, **Gren Seibels**, and **Klaus Holighaus** (Klaus is scheduled to reveal the secrets of his new *Ventus* 15-meter carbon racer).

Besides the Convention showpiece — the exhibit hall with its rich display of soaring products, artifacts, and sailplanes — there will be flight operations under the direction of Laz Horvath (remember, this is the sun belt), division and affiliate meetings, special breakfasts, the SSA Awards Banquet,

tours and social events, and the extensive program sessions. A total of sixteen 90-minute sessions for the latter will be divided into two sets running in simultaneous time frames. One set will mainly be technical and competition-oriented and the others more of general interest.

The Phoenix '81 Committee is soliciting contributed papers and proposals for invited sessions. Prospective authors should submit a one-page summary by July 30. Those selected will be notified by August 15 and will be expected to submit camera-ready copy for the full paper by October 30. All papers accepted will be published in a proceedings book to be made available at the Convention. Prospective organizers of invited sessions must submit in writing by July 30 a session title, a list of proposed papers, authors, and a statement of the sessions' value to the audience. Final selections of the proposed sessions will be made by August 15.

Papers and proposals should be sent to Program Chairman **Woodson K. Woods**, c/o Aero Meridian Productions, 14806 North 74th Street, Scottsdale, Arizona 85260.

|| IN MEMORIAM ||



Alvin Parker, the first soaring pilot to cross the magic 1000-kilometer line, is dead of a heart attack at 61.

I first met this remarkable, quiet-spoken, hardworking gentleman in 1961 and learned over the years to admire these qualities during our lasting friendship. The son of a pioneer Texas rancher, Al spent much time alone on the range caring for livestock, doing chores, and carrying out tasks assigned him by his father. These formative years may have built the fierce independence and self-reliance that would later bring success. Following graduation from Texas A&M University in 1941, he joined the Army and fought in WWII with the 1st Armored Division in North Africa and Italy, receiving a Silver Star for gallantry in action.

After the war, he returned to marry a beautiful young Odessa teacher, Mildred "Hoppie" Hopkins. She was of equally strong character and high morals, and it was no surprise to anyone that they raised three talented and handsome sons — Stephen, Timothy, and Jeffrey. They have made their careers in aviation, the military, and business, respectively, thus mirroring their father's three main loves and endeavors. As a businessman, Al had interests in ranching, oil, and manufacturing. His Ector Aircraft Company built the Ector Mountaineer, an outstanding towplane with exceptional climb.

But next to his family, Al probably loved soaring more than anything else. He excelled by pioneering world records and made history's first 1000km

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soaring flight. He never regarded soaring simply as fun. It was a challenge, a goal to be reached, and you flew to produce results. One goal he set for himself: to set world records from Texas with a Texas-built sailplane. He succeeded soon after he acquired the *Sisu* by establishing a world goal record of 487.24 miles in 1963 and by making his historic 1000km flight the next year.

I happened to be in the air with him at the start of the 1000km flight and took the picture on this month's cover. For me, it has come to symbolize Al's nobility of spirit and his excellence of sportsmanship. And for me, Al projected a Gary Cooper-like image where actions and not words count. He lived by the old proven rules and solved problems in a straightforward manner. A yes or no meant exactly that, not something in between. He treated his family, country, and fellow-men with love, respect, and honor. He believed in hard work and common sense. He used his radio sparingly for landing procedure or emergencies. He was a superb pilot who squeezed the maximum from the weather around him. He refused help, but he was more than generous to people and institutions: he donated his BS-1 to Texas University

and his *Sisu* to the National Air and Space Museum. Fittingly, it now hangs there along with such immortals as the first Wright aeroplane and the *Spirit of St. Louis*.

In the high solitude of his cockpit he accepted a basic truth of soaring: no one on earth can help up there; each of us must take the measure of our own limitations; the experience is between God and the pilot.

—SANDOR A. ALDOTT

II IN MEMORIAM II

Kurt Reupke, a soaring pilot well-known in this country, in West Germany, and a member of the Long Island Soaring Association, lost his life on February 7, 1980, in an automobile accident.

Kurt was one of those individuals whose generous contributions of time and talent sustain many a soaring club and the soaring community as a whole. His own ambition as a pilot was properly matched by his desire to help. SSA Instructor, tow pilot, teacher, chief pilot and LISA board member, mechanic, organizer — Kurt was and did it all. He was born near Hanover, Germany, in 1924 and started flying primary gliders at age fourteen. After the

completion of an apprenticeship in aircraft construction, he served in the German Air Force and saw action as a troop and cargo glider pilot in World War II. His enthusiasm, experience, and talents helped the soaring club in Hanover to reestablish itself after the war. In 1953 he completed his Silver C.

Kurt emigrated to this country in 1954 and joined the Long Island Soaring Association in 1956. He got his glider, power, and instructor's licenses soon thereafter. Employed by the Grumman Aerospace Corporation since 1958, he was Principal Model Designer in the Aerotest Group at the time of his death.

This gifted Diamond Badge pilot, in years of devotion to aviation in general and soaring in particular, had logged 2500 hours of flight time in gliders and sailplanes of every conceivable design, material, and performance. He will be missed by all who knew him — for his advice, his help, his criticism, his enthusiasm, his example, his wit, and his warm friendship.

We extend our heartfelt sympathy to his wife Margot and his daughter Margrit. — ROLF W. BAHRENBURG

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HOMEBUILDER NEWS

Bob Smith (Homebuilder Workshop ad hoc Chairman) Report:

Hundreds of homebuilders turned up at the SSA National Convention in Seattle. In addition to the standing-room-only audience that crowded the Homebuilders' Clinic in the ballroom of the Washington Plaza Hotel, **Stan Hall** also presided at his own session titled "Homebuilding: Soaring's Sleeping Giant?" I met with some of the ad hoc committee members from our Harris Hill workshop as well as Convention attendees; we discussed the road ahead for sailplane and motorglider homebuilders, and I reported on the inputs I've been receiving in the mail (overwhelmingly in favor of establishing a soaring homebuilders' association). It was felt the form of the association, division, or whatever, needed further refinement and the matter of affiliation was deferred pending circulation of the newsletter.

Speaking of the newsletter, **Sherb Klein** and SSA's **John Lee** are compiling a mailing list for an interim newsletter, the service most frequently asked for by respondents. I'll report developments in more detail than space permits here, and John may have a news tidbit or two, but mainly the first issue

will be a roster of names to assist in opening communications among us.

Things are happening. Exciting things. We're all impatient to finish the preliminaries so we can tackle the substantive matters that will promote sailplane and motorglider homebuilding. Be patient a little longer. Have faith. When we're ready, our bird will really fly.

Tony Beck, Rt. 1, Box 94, Leesburg, Virginia 22075, thinks he may have the answer to **Bruce Shannon's** missing horsepower in his *Eaglet* self-launch sailplane (*Soaring*, March '80): "Small two-stroke engines are incredibly sensitive to exhaust-pipe configuration," he writes. "What Bruce probably needs is a resonant chamber, or at least a long pipe and large-volume muffler. For example, most 125cc (about 7 cu. in.) engines produce around 25 hp (DIN), but with the substitution of a stub exhaust stack they won't break through the 10-hp level, and their specific fuel consumption skyrockets. An excellent text for the improvement of two-stroke motorcycle engines called *The Two-Stroke Tuners' Handbook* (by **Gordon Jennings**, available through Classic Motorbooks, Osceola, Wisconsin 54020) contains easy-to-use formulas for resonant chambers as well as many other good ideas and precautions."

John Lee reports that registrations started coming into the SSA office in March for the 2nd Annual Homebuilders' Workshop to be held at Elmira, New York, August 29-September 1.

The first three registrants were from individuals who attended the first workshop: **Larry Seikel** and **Richard Shenton** are both building *American Eaglet* sailplanes, and **Daniel J. DeVries**, who is building his own original design 13-meter ship, supplies tools and machined parts for the *Eaglet*. It looks as if DeVries will be bringing his new ship, finished or not. Now that a year has passed since the first workshop, it is hoped that several customer-built examples of kit ships will be on display.

An added attraction for this year will be a Friday night get-together which will enable builders who can't bring their work with them to show attendees ten slides of their pride and joy. One of the prime benefits from this activity will be the sharing of new tricks or short-cuts in building specific sailplanes.

If you are interested in attending the workshop be sure to write for a registration blank. They are available through the SSA office.

(Continued on p. 40)

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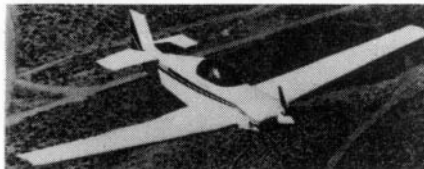


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Jeannette Rand, 5842 K McFadden Avenue, Huntington Beach, California, sent in some information on a 20:1 L/D motorglider version of the KR-1. New wings increase the span of the KR-1 from 17 to 27 feet and the area from 62 to 91 sq. ft. The VW-powered engine was designed to "minimize cost and construction time by using a combination of wood, polyurethane foam, Dynel fabric, and epoxy resin.



Don Dwiggins

... Construction of the KR is not unlike that used in making flying model airplanes, just scaled up a bit." Takeoff and landing run of the spoiler-equipped, retractable-gear design is given at 300 feet. Speed range is 38-144 mph.

Bob Gibbons called to say March "Homebuilder News" got his item on smoothing the wings of his Ka-6E backward: When he was quoted as having said he used Featherfill rather than microballoons and epoxy, it should have been the opposite — he used microballoons and epoxy rather than Featherfill.

FLIGHT TRAINING & SAFETY BOARD NEWS

As Chairman of the Flight Training and Safety Board, it is my pleasure to announce that **Gene Hammond**, SSA Region 7 Director from Illinois, is now the chairman of the Safety Committee for SSA. Gene is an airline pilot for United Air Lines, as well as a Commercial and Flight Instructor in power planes and gliders.

Bob Gaines, past chairman who has done an outstanding job editing the "Safety Corner" in *Soaring*, has graciously agreed to continue as editor of that column. Items of interest to either Gene or Bob can be sent care of SSA.

In other news, the Flight Training Committee notes that the time is nearing for the first revision of the SSA Ground School Course, *Soaring Flight Manual*. Comments and suggested revisions are requested for possible inclusion in the revision. Extensive changes are very expensive and would need a strong rationale for inclusion. Your comments and suggestions may be sent to **Mike Moore**, Flight Training Committee Chairman, in care of the Soaring Society of America, Box 66071, Los Angeles, California 90066.

— DON SLOTTEN

VACATION DERBY AND WORLD GLIDING CHAMPIONSHIP TOUR

Preparations are continuing for both the 1980 SSA Vacation Derby and 1981 SSA World Gliding Championships Tour to West Germany. Several inquiries have been received for both events.

The Vacation Derby will be starting at Hondo, Texas, near San Antonio on July 5th with the weekend spent in checking out the local area. San Antonio is one of the country's most unique cities and is always at the top of seasoned travelers' lists of places to go.

If a couple of extra days can be arranged, Corpus Christi is a short drive away. It has the well-deserved title of "Crystal City by the Sea" and has several new museums, a new fine-arts theater, and of course, Padre Island.

The SSA Tour to West Germany is still in the formation stage with arrangements being made to visit various towns where sailplane manufacturers and soaring sites are located.

Interested? If so, write the SSA office and have your name placed on the event's mailing list. — JOHN LEE



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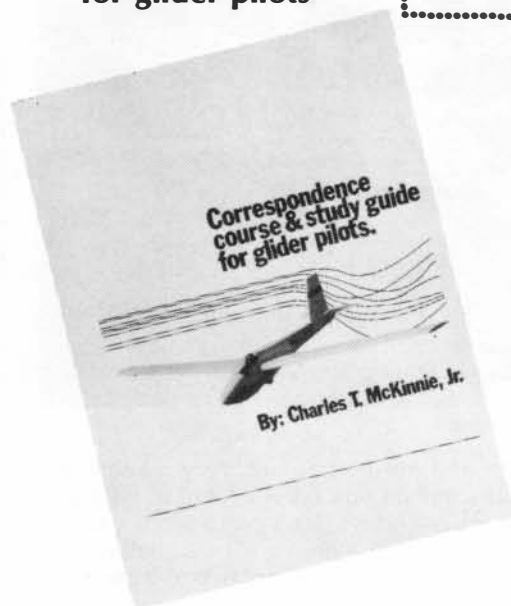
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SOARING TO WIN

GEORGE MOFFAT

This month's column is by Charlie Spratt, who is about the closest thing to a professional volunteer that we are likely to see. For the past several years Charlie has been making himself not only useful but often invaluable in running the totally necessary ground operation side of things that I'm afraid many of us pilots take for granted all too often. Me, I always feel a little extra spurt of confidence when I hear Charlie's crystal clear "Good Start, Double X!" one second after I've passed the line. — GBM

THE VIEW FROM THE GROUND

The soaring season is upon us again, and the thought of a good sailplane race begins to enter the minds of those of us who enjoy the game. Now there is no doubt that the pilot is the center of the scene, and that he feels the pleasure and pain of competition the most. But there are those who enjoy it from another view. Workers! That's right, I said *enjoy!* When a contest is running smoothly and things are happening the way they should, the job on the ground can be very pleasant. Lots of sun. Lots of conversation with interesting people. Lots of sailplane talk. But when the ground operation goes poorly . . . well, why talk about it? Take my word for it. It ain't no fun!

After a few years on the ground-support end of contests, I've learned some things that can help ground types to help pilots. And maybe, if they know a little about our problems and needs, the pilots can help us. Pilots and crews come to win — and one of the things that really helps is confidence in the ground pounders. Easy, huh? On-time launch. Gate timing correct. Gate control tight. Telephone operation smooth. On and on, the list seems endless, but in my experience the major problems that go with putting on a contest can be eliminated with three basic principles to remember.



Charlie Spratt at start board.

Teamwork is first and most important. Now I know that you've heard that a million times, but a lot of us have jobs which are independent and we don't get to practice the art all that much. It works best with a good quarterback and lots of team members, but lack of either can be compensated

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with effort. Teamwork tends to break down when one person takes on more responsibility than he can handle or enjoy. In order to enjoy a responsibility, you need time — time to do the job and do it right. Time to relax, time to talk to people you haven't seen for a while. Time to get to know your daughter again after a year of school. Time to take a nap in the grass. In other words — enjoy the contest! Ground types (as well as pilots) are in this for fun. They want to work, they expect to work, but they also hope to enjoy the contest.

Education is basic, not only for your job but for "getting off" on the whole contest. It is a beautiful but complicated event. Practice of teams and organization is, of course, most important and can be done easily without anyone flying a plane. I have found that teams such as Launch and Gate can practice without any actual flying involved if the weather poops out. The day before the official practice day (remember, practice day is for the ground crew) is a great day to run through the drills even if only for thirty minutes. It gets everyone's feet wet.

Keep it simple. In the past I have seen many contests made much harder by unnecessarily raising the skill level of the jobs involved. Elaborate launch procedures, unnecessary rules, fancy computers, etc., can drop the enjoyment level drastically. The launch should be simple to promote safety — no surplus bodies running around. The Gate should be simple, in a quiet place, with good equipment. Your best radio should be here, not some beat-up old Bayside that has been knocking around somebody's trunk for the last two years. I have found that the younger volunteers work great on the Gate due, maybe, to good eyesight and a large

desire to be part of the action. And the Gate is the place for action!

These three basics, teamwork, education, and simplicity, are the real key to putting on a professional contest.

Volunteers? Get them anywhere you can. I've seen scout troops used in launch. I've seen contests put on by commercial soaring operations where all the help came from the crews involved. Sailplane crew members who want to be part of the action can volunteer for certain times of the day. Remember Sonya Schuemann's great job at the launch in Seattle — while sporting a temperature of 102? Phone duty, Gate relief, scoreboard work, cleanup, etc. If the organization doesn't have any specific needs — oh well, back to the sun tan (by the radio, of course!).

If for some reason this summer you should happen to be a volunteer worker at a meet, remember it's your vacation, too. Come planning to enjoy it. If you think something needs changing, speak up. If they don't take your advice, so it goes. Maybe they know something you don't. Maybe they'll find out you knew something they didn't. You'd be surprised how quick things change that are wrong!

Most of the time soaring contests have given people some of the most memorable vacations of their lives. You needn't be a great pilot to enjoy it. People tell me it's not a spectator sport. I disagree. Being involved, making it happen, adds enormously to the enjoyment.

So if you get the chance to "volunteer," plan to enjoy yourself. If you're in a club and putting on a contest, take all the help you can get. Many crew members are veterans, and they are good help. The object of the contest may be to determine the best pilot, but there is no reason not to have some real good fun doing it!

See ya at the airport!



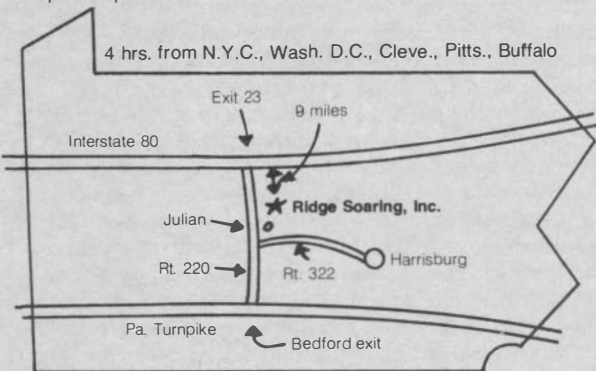
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SAFETY CORNER

ROBERT GAINES

Guest Columnist *Dick Conwell's* article was submitted with a short letter. He explained that he has been away from the soaring scene for a few years and that upon his return he was surprised by two things: adverse yaw and an extremely casual attitude toward flying safety by most clubs and commercial sites. There were quite a few instances where somebody should have told somebody to get a few hours of dual or tear up his ticket. But gentlemanly disregard seems to prevail in place of common sense. — ROBERT GAINES, SSA Safety Committee Chairman

GOOD HOUSEKEEPING

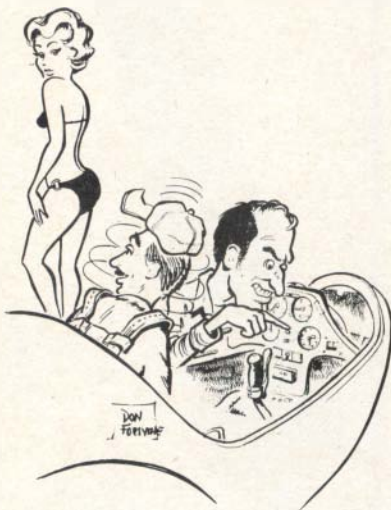
Did you ever notice that your average power pilot treats his soaring brothers as if they were flying model airplanes? I mean, even if you fly power but don't happen to be doing it at the moment, they'll saunter over, glance in your cockpit, shake their heads, and go away murmuring to themselves. I always thought they misunderstood what we like to refer to as "the joy of soaring," until I joined the Pitwatchers of America.

So let me explain what the true pitwatcher does. PW's spend a good deal of their time copping peeks into any cockpit they happen to chance upon to see how the other half is living, and he or she is usually welcome to gorge his or her orbs on whatever is available, unmolested. However, pitwatching is not without risk when it comes to blatant gawking at a really competitive pilot's bird during a contest, because the PW runs the risk of getting punched out for being nosy unless the guy he's watching is using a pellet vario and a St. Francis medal as his winning combination.

In a contest situation, then, it is helpful for the PW to use a series of diversions ("That bikini Smith's crewperson is wearing — is it pink, or mauve?") and ploys ("Have you noticed the Gerstufelflang averager Fred is using?") to sneak a glance at the state of the art while the owner is reacting to the diversion or contemplating the ploy.

As a pitwatcher, I think I've discovered why the People with Pistons act the way they do. Because in the last couple of years I've seen things which could accurately be described as The Pits, and thus are perfect candidates for any chapter of the Safety Column.

Take belts and harnesses for instance. Some of them I've seen are so worn and frayed that they would have been refused by a poverty-stricken sado-masochist. This is especially true of some of the older foreign equipment which seems to be made of vastly thinner material than the current crop of foreign belts.



Or consider The Strange Case of the Lumber Laden 1-26, whose owner apparently suffered from the two-by-four syndrome. A couple of two-by-fours were attached to the rudder pedals by casually wrapping copper wire around the wood and the pedals. I don't think the pedals could move through their full arc unless the wire allowed the wood to slide up as the pedal came back. I thought about the installation for a couple of days, and still couldn't figure out what it was for. But I could imagine the accident report after one of the two-by-fours slid off and jammed something at an inopportune moment: *Spin on final induced by displaced lumber.*

Ballast is another thing that is apparently taken lightly. Try this one: Six or seven pounds of lead being held in place by a couple of turns of 1/8" bungee cord wrapped around it and tied to a hole bored on each side of it in the floor. This was in a *Blanik*, and considering the aerobic nature of the beast, a bungee fracture could certainly change the voice of the pilot, not to mention substantial distortion of the canopy if it went sailing around loose.

You may never have seen a sailplane immolate itself, but some of the battery installations I've seen make me wonder if people realize what happens when a 14-volt

battery grounds out. To minimize the pyrotechnic possibilities, I use fused, #12 wire on my gel/cell, and I wire it to a 2-pin flat automotive trailer connector with the female half on the hot side, leaving the bare pin for the ground. I think these connectors are a good deal more secure than the beloved Jones Plug, which, incidentally, I've seen wired fuseless, using good old zip cord with the male plug on the hot side,



more times than I'd care to mention. When you add this carelessness to the fact that people seem to stuff batteries anywhere they'll fit without any kind of assurance that they'll stay there if the glider fetches up against something solid and stops abruptly, I'd say that there are a lot of very lucky guys flying the friendly skies.

My next bit of snooping involves, I think, FAR 91.32, which applies to placards or a manual which can be used by the pilot in flight. (I guess the FAA feels that the manual will be in the crew-car glove compartment where it can be read to the pilot by the passenger; Schweizer nails an honest-to-god placard right on the panel.) Since *We Who Fly With Eagles* don't usually get as much time in the book during the course of a year as *Those Who Fly With Fumes*, it seems to me that the possibility of forgetting some important part of the flight envelope (I love to use this technical kind of language) of our bird is much greater than theirs — especially after a winter layoff or if you're new to the ship, or if you've been flying glass with the airspeed in kilometers. It's interesting to find out what a 90 mph downwind leg will do for your L/D. "Funny," you'll say as you deplane in somebody's kitchen, "I always trim for 90 in the '15."

I've done as many dumb things as anybody when it comes to installations that seemed very sanitary on the ground but were perfect beasts in the air, and I suppose being around a particular ship for a while tends to make you overlook the slow deterioration that's going on all the time. But there are a

few things that seem to occur more often than others when it comes to sailplanes. Among them: *The Non-Current-Parachute* scam (very prevalent), *The Wheel-It-Out-And-Fly-It* dodge, the *That-Rope-Is-Good-For-Fifty-More-Tow* epitaph, and dozens more examples that you can fill in for yourself.

So in order for us to get the respect we deserve from our powered peers, look over your ship, your club's ships, even your friendly FBO's fleet, from the dispassionate viewpoint of a true Pitwatcher of America. Then repeat after me: *I will get out the vacuum cleaner, the soldering iron, screwdrivers, wrenches, lube, and anything else up to and including an A & I, and clean up my act.*

Those of you who fervently recite the Pitwatchers of America oath and carry it out get the Good Housekeeping Seal of Approval. And reduced life insurance premiums.



ACCENT ON CLUBS

MICHELLE SILVER

Flying coordinated: insurance and guest release forms. Can a club go bankrupt if a guest is injured at the airfield and decides to sue? Are individual members of the club obligated to pay the settlement of the suit from their personal funds? Can a signed guest release form help allay such problems? Under certain conditions the answer to all these questions is yes, says **Bob de Saro**, a member of the New England Soaring Council.

In "Flying Coordinated: A Financial Hazard Inspected," published in *Wing Tips*, NESCO's newsletter, Bob writes about the pros and cons of guest release forms.

To begin with, a guest release form is simply a written agreement signed by a guest absolving the club of any responsibility should the guest be injured. To be legal, the release form *must* be signed in absence of fraud or duress. One caution however: *release forms are not a guarantee against a successful lawsuit.*

But why bother with release forms if the club has insurance? Typically, club insurance is not complete. In the case of MIT Soaring Association, for instance, they have insurance on their four aircraft but are not covered for accidents to non-MITSA owned gliders. As an example, if a private owner accepts a MITSA tow and is injured due to a low-altitude rope break, MITSA would not have insurance to cover him and could be open to a lawsuit. With a signed release form, however, the probability of a successful suit against MITSA would be very small.

There is one major disadvantage for guests who sign a release form that has to do with a legal doctrine known as subrogation. If an insurance company pays a claim to one of its policy holders, the company acquires all of the policy holder's rights. If the guest signs a release form, he essentially has no right to sue and neither does the insurance company. As a result, the insurance company may not be willing to pay the claim since it would not be able to sue and recoup its loss. Clearly, the private owner could end up losing by signing. He may not be able to sue the club successfully or collect from the insurance company. Private owners should check their policies.

(Continued next page)

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Release forms do not ensure that a club will not be sued, nor that a case against it will not succeed. The release form will lower the probability that the club will be sued and perhaps lower the amount of any final award. But there are still lawyer fees to pay, which may in themselves be very expensive, even in the successful defense of a suit.

If the club is not incorporated, club members are liable for any claims out of their own pockets; in such cases release forms are imperative. A better solution may be to incorporate the club. The disadvantages are relatively minor.

The release agreement is an excellent line of defense, but it is by no means a watertight one and should not be used to replace a good insurance policy. Flying coordinated means a good insurance policy and guest release agreements used together — it's the only way to fly.

The Winnipeg Gliding Club: In March, John Bahndorf wrote in "Homebuilder News" about his new *Duster*, but in his letter he also sent along some interesting information about his club:

"We have a great gliding club here in Winnipeg," he writes. "Our annual membership is about 125-140 members. We are heavily student oriented and every year train about 25 to 40 students from April through October. There is training every week night plus Saturday and Sunday mornings when afternoon activity is among member pilots since they rely on thermals which start around noon.

"The club has two 2-33's, one 1-26, one *Lark*, and two towplanes. Privately owned ships number about 14. Six homebuilts are under way — two *Monerats*, two HP-18's, and one each of the *Tern* and *Pioneer*.

"Last year we recorded 3400 flights — all organized and run by volunteer workers. We have our own 45-acre field with hangar and campground, and we welcome visitors very much."

Pool your resources: When a club lists its resources, it often will cite the gliders and equipment it owns, the towplanes, hangars, bank accounts, etc. But what about the people? The Oregon Sailplane Council is busy devising a list of member resources and talents available to the club, including such things as the contributions of newsletter production materials and carpenter skills. Writes OSC Secretary Nancy Zirkle, "Think about it. The true assets of the OSC are the talents of the members and their willingness to use them for the club. Together we are strong and will soar together."

A deserved mention: Too often in the hustle and bustle of getting the ships in the air and back on the ground safely, we can forget the unique camaraderie and friendship available to us as soaring pilots. Richard Warrington, of the Cloudniners, and his friend Steven Dougherty found another club that is keeping this soaring tradition alive. They wrote in to "Accent on Clubs" to share a recent experience and publicly express their appreciation to soaring friends:

"My friend and I would like to draw attention to a display of friendship extended to us by the Mid-Atlantic Soaring Association at Fairfield, Pennsylvania. We were allowed to land our powered aircraft at Fairfield for a little sightseeing, but upon trying to leave we couldn't get the darn thing started. We and the club members spent a great deal of time and effort bringing it back to life. Those people displayed patience and understanding I would like to think I was capable of. Anyway, it's refreshing to still meet people that nice, and they deserve better than a mere thank-you. So if you have the opportunity, give them a much deserved mention in your column."

TEACHING SOARING

A VISIT WITH DEREK PIGGOTT

Last February, Derek Piggott, author and renowned British gliding instructor, spent a week at Skylark North Gliderport in Tehachapi, California. Lecturing in the evenings and flying with students during the day, Piggott attracted pilots from as far away as San Diego. His talks covered a wide range of topics, touching on test flying, the first glider ever built (Piggott flew a replica of this sailing glider designed in 1853 by Sir George Cayley), his military career, stalls and spins, and low-g sensations, among other things. The 3000-hour plus pilot (he also has over 4000 hours in power aircraft) also shared some motion picture clips and his experiences while flying for the films *The Blue Max* and *Those Magnificent Men in Their Flying Machines*. In between the frequent rainstorms he instructed students, combining airwork with theoretical discussions. One afternoon after a short lesson on aerobatics, Derek stopped to discuss loop technique with a student. As he spoke, he held a cast-aluminum sailplane model aloft to demonstrate the maneuver. His keen enthusiasm for teaching emerged in his bright eyes and animated gestures and soon attracted a small group of listeners — a not unusual occurrence during the week.

Despite his broad range of experience, Derek Piggott is perhaps best known as an instructor and author (he is currently working on a book for transition pilots in the United States). When rainstorms kept the ships on the ground one afternoon, Derek took some time to share his thoughts on gliding instruction and the philosophy behind it all.

"I never do anything without *really* thinking it through," he said. "And everything I do, I can say exactly why I do it."

Piggott is chief gliding instructor for the Lasham Gliding Club in England, a club comprised of nearly 120 club and privately-owned gliders. He approaches the job of instructing glider pilots in a professional manner. Aside from having a reason for every step in his training program, Derek continuously analyzes his teaching techniques, looking for ways to be more efficient and effective.

"More than anything else, instructors need to have the widest idea of the widest possible way of doing things so they can choose. If I'm teaching someone about affecting the controls, I'll say, 'This is what the books say, this is what some people say, this is what is generally recognized, and this is what my experience shows is best.' This way the instructor (and the student) has a much broader outlook on the whole thing.

"There is a tendency to say, 'Now this is the way you do it — do this, this, and this.' The person ends up with a very narrow view and probably never changes. Most instructors are not professional at it and will not say, 'Now, how can I make my instruction even better than it is now?'"

In his approach to instruction, Derek emphasizes the need to produce pilots who are capable right from the start, not of making a perfect pattern, but of making independent analyses of a situation with good judgment and act accordingly.

"The very early flights dictate the way in which people think about flying. They are the most important of all flights, really. If you have very good basic training, you can go on to other things very easily. If you have poor basic training, you don't develop the right way of thinking about

things, and you've got a poor pilot at the end who's going to come unstuck at some time or other.

"Thinking ahead is really what you have to grasp at the point when you're first learning the pattern, adjusting for things that come up, and looking at the possible eventualities. Usually it's too late when a person is already a soaring pilot to convert his habits and way of thinking."

A second important aspect about the early stages of training (and an important breakthrough in instructing technique) is the realization of what the problem areas are in learning to glide and conveying this information to the student, says Piggott. Quite often the student pilot isn't told that on the first few flights he may experience some discomforting sensations, such as the low-g sensation, the subject of a recent booklet by Derek. The result of not informing the student beforehand can be isolation. He feels that he is the only one to experience this and can become very demoralized about flying.

Learning coordinated controls is another area where a student's misunderstandings can get in the way of his learning.

"Coordination of the stick and the rudder is difficult, and the hardest thing of all is to fly a glider straight. Yet instructors will try to teach a student to fly straight right off. It's an absolute waste of time because you hardly use the controls if it's smooth air, and in rough air you can't do it anyway.

"It's very demoralizing. The student thinks, 'Hell, I've been flying for three days, and I can't even fly straight.' The other thing that happens is that the air work gets quite good and the coordination is quite good, but on landing the student suddenly finds he's weaving all over the place and can't control it.

In the early stages of instruction, Derek explains the theory behind such things as stalls and spins, but doesn't require that his students "learn" it.

"With theory, what very often happens is the person needs an explanation to put his mind at rest, or as a basis for his confidence. I don't say that you have to learn it. But you have to go through it so that you're no longer concerned with the theory while you're doing it. But then you'll have that confidence based on something solid. Then the student can say, 'Although I can't remember what this is all about, I know that if I ease the stick forward a bit in a stall, this will do what I want.'"

Pressured by the high demands of running operations for Lasham (which averages 200 launches on a good weekend day and has been known to launch as many as 500 gliders in a day), Piggott continuously probes and experiments with new techniques for more efficient gliding instruction. A major breakthrough in training in the past 10 to 15 years, said Piggott, has been the use of the motor-glider.

"The motorglider has turned out to be *the* tool for training, no doubt whatsoever. You can do so much that is difficult to do in a glider. For example, if you're doing landings, say, you can do seven or eight in half an hour. This is much more efficient than aerotow, and is better training. The way you learn to judge a pattern is by comparison with your last flight. If you only do one or two at a time, you forget what you did before. With the motorglider you can increase your capacity for instruction, without increasing congestion at the aerodrome." Piggott said that over the years he has continued to refine his techniques to be more efficient and effective on the ground and in the air. "The more precise you are, the more potent you are," said Piggott, "but the main thing is to keep trying to improve one's flying and instructing."

— MICHELLE SILVER

F.A.I. BADGES

CINDY BRICKNER

INTERNATIONAL F.A.I. BADGES FOR SOARING

Earned or Recorded in the United States Through February 1980

ALTITUDE DIAMONDS

5000-meter gain (16,404-ft.)

Robert C. Feulner: 2-32: Boulder, CO
Keinosuke Komiya: 1-34: Black Forest, CO (Certified to Japan)
John P. Squires: Jantar: Tehachapi, CA
Charles H. Stark: BG-12BD: California City, CA
Charles K. Theis: 1-26: Reno, NV
Hirotaka Yokoi: 1-26: Black Forest, CO (Certified to Japan)

GOLD BADGE LEGS

Altitude: 3000-meter gain (9842-ft.)

Brian L. Beals: 1-34: Black Forest, CO
William H. Blackburn: LS-3: Frederick, MD
Robert B. Gibson: 1-26: Moriarty, NM
Jens B. Jepsen: 1-34: Black Forest, CO (Certified to Denmark)
Klaus Meyer: 2-32: Black Forest, CO (Certified to West Germany)
Lynn Parker: 1-34: Calistoga, CA
Allen M. Paul: 2-32: Black Forest, CO (Certified to Canada)
Bryan D. Quickmire: 2-32: Black Forest, CO (Certified to Canada)
Kent L. Uhley: Diamant: North Conway, NH

SILVER BADGE LEGS

Altitude: 1000-meter gain (3281-ft.)

Gary Duhaime: 1-35: Indiantown, FL
Luis Fernandez: Ka-8: Frederick, MD
Douglas B. Grabill: Ka-8: Frederick, MD
Russell A.S. Janzan: 2-33: Indiantown, FL
Kimberly Jaszlics: 2-33: Black Forest, CO
Bryan D. Quickmire (See Gold Alt.)
Charles R. Roberts: Blank: Winter Haven, FL
David R. Thompson, Jr.: 2-33: Reno, NV
James A. Zapata: 1-26: El Mirage, CA

Duration: 5 hours

Andrew C. Frechtling: 1-26: Elmira, NY

Altitude/Duration

Lynn Parker (See Gold Alt.)

B BADGES

5-min. flight

David Beerman
Robert E. Buchanan
Donald Chambers
Melvin E. Dick
James F. Edwards, Jr.
Bennie H. Flowers
Michael W. Freeman
Scott Goodfellow
A.J. Heaberlin
Kimberly A. Jaszlics
Dale A. Johnson
Panos J. Kanes
Russell R. Mayberry
Thomas W. Sanco
Timothy H. Simmons
James L. Walkup
Albertus Wolkamp

RECORDS APPROVED

Massachusetts: Single-place: Junior: Alt. Alt. Gain: 9753 ft. 6500 ft.: John A. Interrante: 1-26: Feb. 2: North Adams.

C BADGES

30-min. flight

10.359 Harrie L. Bateman
10.360 David Beerman
10.361 Jeff W. Bentley
10.362 James L. Brickey
10.363 Donald Chambers
10.364 James F. Edwards, Jr.
10.365 Bennie H. Flowers
10.366 Michael W. Freeman
10.367 Frank R. Gibson
10.368 Scott Goodfellow
10.369 A.J. Heaberlin
10.370 Kimberly A. Jaszlics
10.371 Dale A. Johnson
10.372 Russell B. Mayberry
10.373 John C. Mealka
10.374 Louis Percival
10.375 Robert N. Reber
10.376 Thomas W. Sanco
10.377 Chris E. Steinbroner
10.378 James L. Walkup
10.379 Albertus Wolkamp

RECORDS CLAIMED

World National State: Feminine: Single-place. Out and Return: 621.5 mi (1000 868km) Dors Grove: AS-W 19: Mar. 11: Julian, PA.

CALENDAR OF EVENTS



Contests listed in bold-face type are sanctioned by SSA

May 12-16, **Region 2 Contest, Blairstown Airport, Blairstown, New Jersey.** Contact Ray Young, 192 West High Street, Somerville, New Jersey 08867. (201) 722-3737.

May 17-18, 23-25, **Region 1 Contest, Sterling Airport, Sterling, Massachusetts,** sponsored by the New England Soaring Council (bid subject to approval). Contact Nicole Szurovy, 550 Commonwealth Ave., Newton, Massachusetts 02159. (617) 244-4594.

May 18-19, 24-26, **Region 11 Contest, Douglas County Airport, Minden, Nevada.** Contact Carl White, Box 3377, San Rafael, Calif. 94902.

May 19-23, **Pasco Cross-country Camp, Minden, Nevada.** Contact Tim Broyhill, 6814 Roble Way, Sacramento, Calif. 95842. (916) 445-1417 days.

May 19-24, **Region 9 Contest, Estrella Sailport, near Maricopa, Arizona.** Contact Richard H. Elliott, P.O. Box 33907, Phoenix, Arizona 85067. (602) 264-2261.

May 22-24, **AOPA's First Regional Fly-in, Kansas City, Missouri, Downtown Airport.** Contact Wm. S. Brassel, AOPA, 7315 Wisconsin Ave., Washington, D.C. 20014. (301) 654-0500.

May 24-26, **Seventh Annual Vintage Sailplane Regatta, Harris Hill, Elmira, New York.** Contact Vintage Sailplane Association, Scott Airpark, Lovettsville, Virginia 22080.

May 24-26, "Task Days," **Ridge Soaring, Julian, Pa.** Contact Ridge Soaring, Inc. (814) 355-1792.

May 24-26, **The 32nd Annual Wright Memorial Glider Meet, Caesar Creek Gliderport, Waynesville, Ohio.** Three classes: 1-26, Sports Class, and high-performance. Write Caesar Creek Soaring Club, P.O. Box 581, Wright Brothers Branch, Dayton, Ohio 45409.

May 24-26, **Apalachee Soaring Society Contest, Quincy Airport, Quincy, Florida.** Contact Apalachee Soaring Society, Box 12472, Tallahassee, Florida 32308.

May 24-26, **May 31-June 1, AGCSC Sports Class Contest, Hemet Gliderport, Hemet, California.** Contact Rob Terry, 868 Poinsettia Ave., Vista, Calif. 92083. (714) 727-1424.

May 24-28, **Region 4 and Mid-Atlantic Competition at the Mid-Atlantic Soaring Center in Fairfield, Pennsylvania.** Contact Charles DeWald, 1504 Auburn Ave., Rockville, Maryland 20850.

May 25-31, **Region 7 Contest, Joliet Airport, Joliet, Illinois.** Contact Lance Flynn, 849 Brookside Lane, Deerfield, Illinois 60015. (312) 945-7153.

May 30-June 1, **25th Anniversary Meet and Dinner Dance of the Long Island Soaring Association.** Contact Mary Jane Glenn, 6 Broadhurst St., Port Jefferson Station, N.Y. 11776. (516) 928-1647.

June 1-7, **National Soaring Week.** Contact John Lee at SSA for assistance in planning local activities. SSA, Box 66071, Los Angeles, Calif. 90066.

June 7-8, **4th Annual Sportsman & Amateur Soaring Meet.** Contact Aero Soaring Club, Dart Airport, P.O. Box 107, Mayville, New York 14757. (716) 753-2112.

June 9-13, **Region 10 Contest, Marfa, Texas.** Contact Fritz Kahl, Box 1047, Marfa, Texas 79843.

June 14-15, "Task Days," **Ridge Soaring, Julian, Pa.** Contact Ridge Soaring, Inc. (814) 355-1792.

June 17-26, **5th U.S. National 15-Meter Class Soaring Championships, Springfield Municipal Airport, Springfield, Ohio.** Contact Tom Stoops, 3741 Silver Oak St., Dayton, Ohio 45424. (513) 236-1463.

June 23-27, **Region 8 Contest, Ephrata, Washington.** Sponsored by the Seattle Glider Council. Contact John Sager, 240 SW 183rd St., Seattle, Washington 98166. (206) 246-5225.

June 28-29, **4th Annual Great 1-26 Sailplane Race, Fun Country Soaring, Wellington, Ohio.** Contact Ray Malloy, 15309 London Ave., Cleveland, Ohio 44135.

June 28-30, **July 1-4, Region 12 Contest, Bishop, California.** Sponsored by the Bishop Soaring Club. Contact Adrian Schat, 120 Mandich, Bishop, California 93514. (714) 873-6311.

June 29, **50th Anniversary of Soaring Banquet, Elmira College, Elmira, New York.** Contact National Soaring Museum, Harris Hill, RD #3, Elmira, N.Y. 14903. (607) 734-3128.

July 1-10, **11th U.S. National Standard Class Soaring Championships, Harris Hill, Elmira, New York.** Contact Shirley Liwa, %NSM, Harris Hill, RD #3, Elmira, New York 14903.

July 2, **Commemorative Flight — An Official U.S. Glider Mail Flight, Harris Hill, Elmira, New York.** Contact National Soaring Museum, Harris Hill, RD #3 Elmira, N.Y. 14903. (607) 734-3128.

July 4-6, **12th Annual Soaring Fun Meet, Parlin Field, Newport, New Hampshire.** Hosted by Kearsarge Soaring Assn. (10th Anniversary Year). Contact Harold F. Smith, Crocketts Corner, New London, N.H. (603) 526-4219.

July 4-6, **Sportsman Contest, Hinckley, Illinois.** Contact Al Fredey, 754 N. Gladstone, Aurora, Illinois 60506.

July 5-13, **3rd Annual SSA Vacation Derby from San Antonio, Texas, to Hobbs, New Mexico,** by way of Odessa, Marfa, and Big Spring. Soar historical skies. Contact John Lee, SSA, Box 66071, Los Angeles, Calif. 90066. (213) 390-4447. (See March 1980 Soaring)

July 9-19, **Canadian National Soaring Championships, Claresholm Airport, Claresholm, Alberta, Canada.** Contact Rick Matthews, 3 Westwood Drive S.W., Calgary, Alberta, Canada. T3C 2V6. (403) 263-7670 business. (403) 242-4726 home.

July 11, **Friday, SSA Directors' Summer Board Meeting, National Soaring Museum, Harris Hill, Elmira, New York.** For information contact SSA, P.O. Box 66071, Los Angeles, Calif. 90066. (213) 390-4447.

July 15-24, 47th U.S. Open Class Soaring Championships, Hobbs, New Mexico. Contact Jack Gomez, 310 W. Taylor St., P.O. Box 831, Hobbs, New Mexico 88240. (505) 393-3252.

July 17-24, 1-26 National Championships, Ionia, Michigan (bid subject to approval). Contact Jerry Benz, 260 E. Main, Saranac, Michigan 48881. (616) 642-9019.

July 19-20, "Task Days," Ridge Soaring, Julian, Pa. Contact Ridge Soaring, Inc. (814) 355-1792.

July 19-27, National Aviation Space Education Convention, Florida Institute of Technology, Melbourne, Florida, and the NASA Kennedy Space Center. Write: American Society for Aerospace Education, 1750 Pennsylvania Ave. N.W., Washington D.C. 20006.

July 26-Aug. 3, 5th Annual Sun Valley Regatta, Hailey Airport, Idaho. Contact Klaus or Joyce Ansonge % Condor Sky Sailing, Box 1101, Hailey, Idaho 83333.

July 27-Aug. 3, Eighth International Vintage Glider Rally, Sutton Bank, Yorkshire, England. Contact Vintage Gliding Club of Great Britain, 60 Well Road, Oxford, Kent, England.

Aug. 11-15, Tenth Annual South Region 5 Contest, Cordele Airport, Cordele, Georgia (bid subject to approval). Contact Bob Grey, 200 Grey Creek Drive, Athens, Georgia 30606. Phone, business (404) 549-6988 or home (404) 548-1805.

Aug. 24-29, Region 6 Contest, Ionia, Michigan (bid subject to approval). Contact Jerry Benz, 260 E. Main, Saranac, Michigan 48881. (616) 642-9019.

Aug. 27-Sept. 1, SSA's 2nd Annual Women's Soaring Seminar, Ridge Soaring, Inc., Julian, Pennsylvania. Contact SSA, P.O. Box 66071, Los Angeles, Calif. 90066. (213) 390-4447.

Aug. 29-Sept. 1, 2nd Annual SSA Homebuilders Workshop, National Soaring Museum, Harris Hill, Elmira, New York. Contact John Lee, SSA, Box 66071, Los Angeles, Calif. 90066. (See March 1980 Soaring)

Aug. 30-31, Sept. 1, "Task Days," Ridge Soaring, Julian, Pa. Contact Ridge Soaring, Inc. (814) 355-1792.

Sept. 6-7, Joint Aviation Committee Air Show, Chemung County Airport, Elmira, New York. Contact National Soaring Museum, Harris Hill, RD #3, Elmira, N.Y. 14903. (607) 734-3128.

Sept. 13-14, Central Ohio Soaring Association Annual Fall Roundup, Marion, Ohio. Contact Karlee Lemley, 5288 Butternut Ct. W., Columbus, Ohio 43229. (614) 888-1987.

Oct. 4, Commemorative Flight of Wolf Hirth — Elmira to Binghamton. Contact National Soaring Museum, Harris Hill, RD #3, Elmira, N.Y. 14903. (607) 734-3128.

Oct. 11-12, Fall Foliage Festival sponsored by the Harris Hill Soaring Corporation, Harris Hill, Elmira, New York. Contact National Soaring Museum, RD #3, Elmira, N.Y. 14903. (607) 734-3128.

Nov. 28-30, Snow Bird Soaring Contest, Harris Hill, Elmira, New York. Contact National Soaring Museum, RD #3, Elmira, N.Y. 14903. (607) 734-3128.

May 24-June 7, 1981, 17th World Gliding Championships, Paderborn-Haxterberg, West Germany. Contact SSA, P.O. Box 66071, Los Angeles, Calif. 90066. (213) 390-4447.

May/June 1981, SSA World Soaring Championship Tour including visits to sailplane factories. Contact John Lee, SSA, Box 66071, Los Angeles, Calif. 90066. (See March 1980 Soaring.)

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1980 SCHEDULE

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Waterbury, CT	26 Apr	Chicago, IL	19 Jul	Los Angeles, CA	4 Oct
Brookhaven, NY	27 Apr	Miami, FL	26 Jul	San Francisco, CA	5 Oct
Montpelier, OH	3 May	Brookhaven, NY	16 Aug	Montpelier, OH	1 Nov
Houston, TX	10 May	Atlanta, GA	23 Aug	Houston, TX	8 Nov
Flemington, NJ	17 May	Flemington, NJ	13 Sep	Roc/Elmira, NY	15 Nov
Phoenix, AZ	24 May	Waterbury, CT	20 Sep	Brookhaven, NY	6 Dec

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H-301 LIBELLE (formerly Tango Tango), contest-equipped, trailer. Hungared at Chester, South Carolina. One-third partnership, \$5000. Terry Frazier (704) 376-9360.

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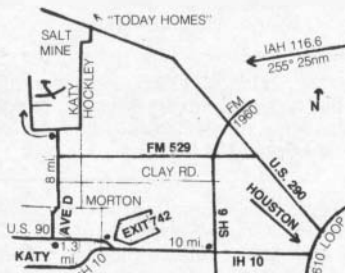
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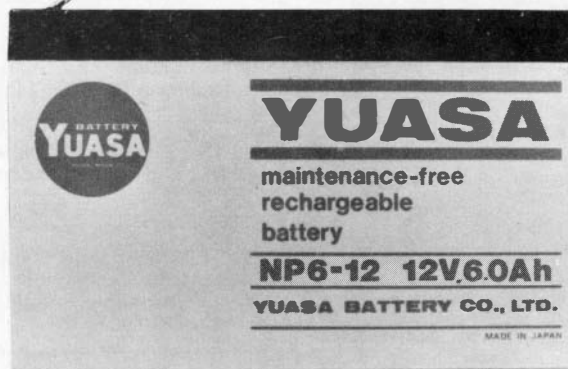
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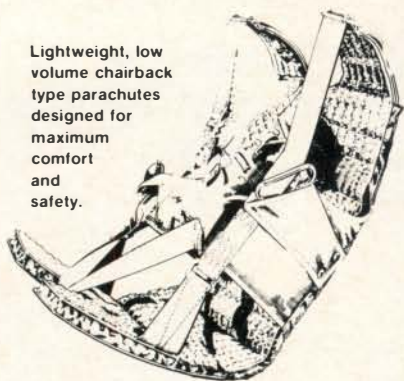
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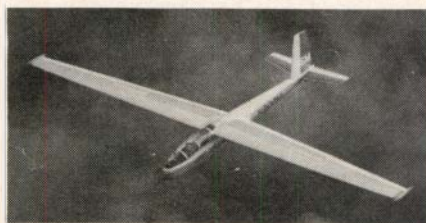
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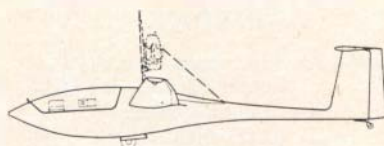
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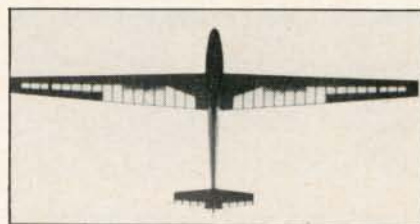
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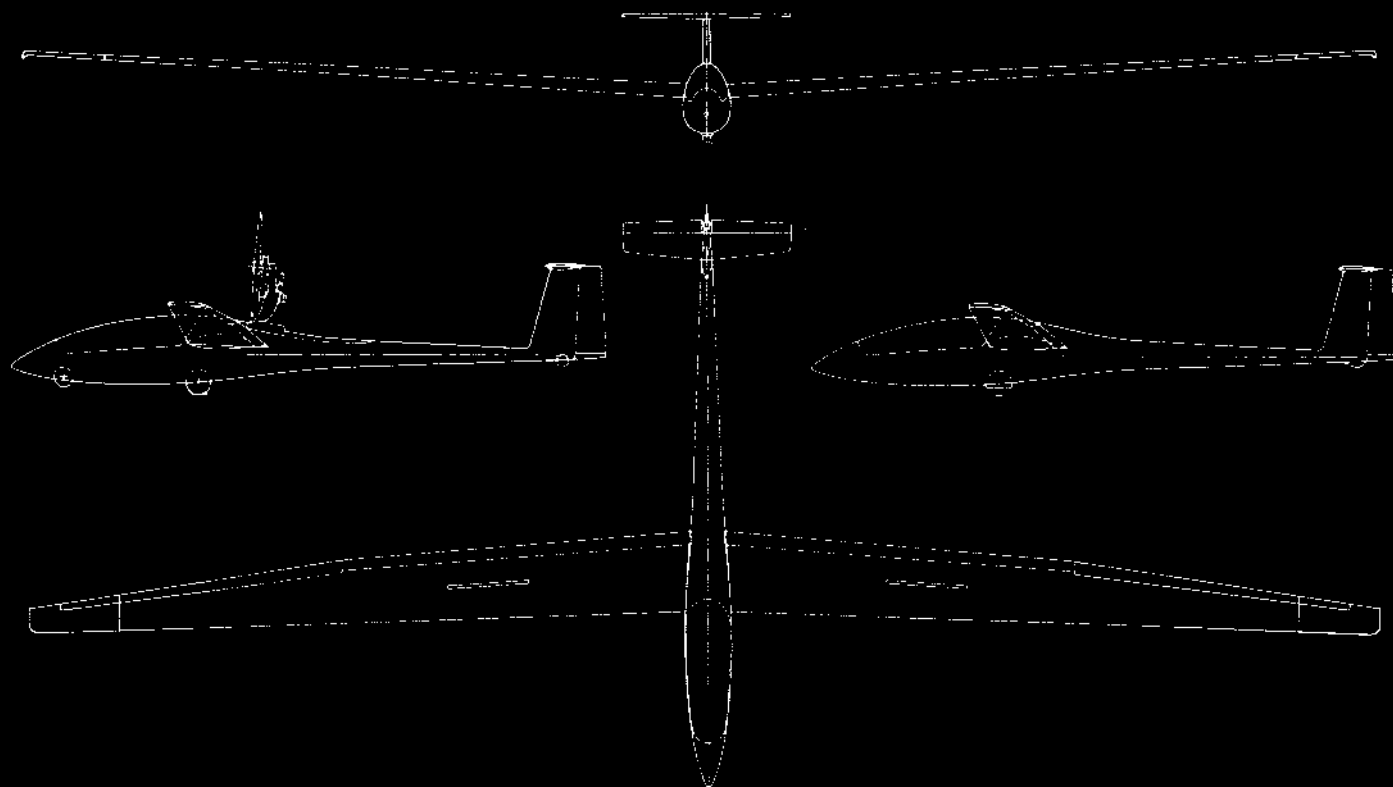
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