SOARING

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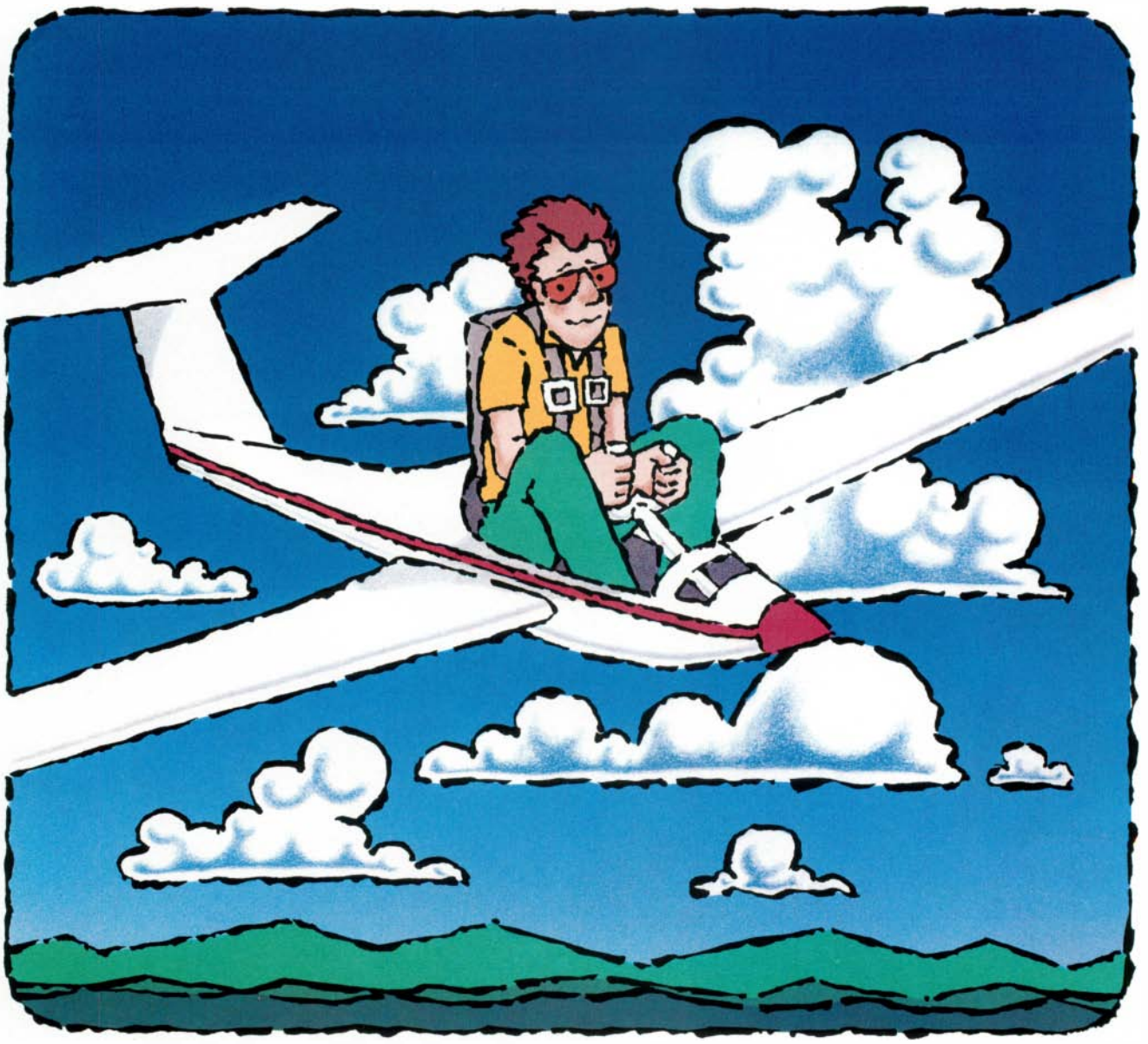

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SOARING & MOTORGLIDING

The JOURNAL of the SOARING SOCIETY of AMERICA **Volume 51 • Number 3 • MARCH 1987**

We will venture a guess that your typical U.S. soaring site doesn't look quite like this. But there are places like this where you can fly gliders, as Don Wemple found out, and he tells us in "A View of Camelot."

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.

Division: The 1-26 Association, R.R.4 Box 597, Blairstown, NJ 07825

Division: The Vintage Sailplane Association, Scott Airpark, Lovettsville, VA 22080

Division: The Sailplane Homebuilders Association, 3425 John Street, San Diego, CA 92106

Affiliate: The National Soaring Museum, Harris Hill, RD #3, Elmira, New York 14903

Affiliate: The National Soaring Foundation, P.O. Box 831, Hobbs, NM 88241

Offices: SSA business office and *Soaring* magazine business and editorial office: P.O. Box E, Hobbs, NM 88241.
Phone (505) 392-1177.

Cover: Grob G-109B over the ocean off the coast of Southern California. Sailplanes over water are a rare enough sight—that's what the security of an engine can do for some people. Photo by Bob Said.

Total paid circulation of the February issue was 16,768

"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 Director's Meeting.)

SOARING magazine, publication number USPS 499-920, is the journal of the Soaring Society of America, Inc., editorial and business office P.O. Box E, Hobbs, NM 88241. Telephone (505) 392-1177. SOARING is published monthly. Second-class postage paid at Hobbs, New Mexico and at additional mailing offices. Subscription to individuals in the United States available only as part of SSA membership.

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

FULL MEMBER	$ 35
FAMILY MEMBER	17
STUDENT MEMBER	22
ASSOCIATE MEMBER	25
LIFE MEMBER	450
BUSINESS MEMBER	100

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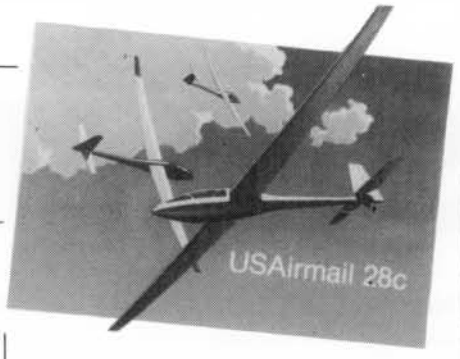


The Fun Alternative

The Sailplane Homebuilders Association is the non-competitive alternative to a soaring calendar filled with contests. S.H.A. is the division of S.S.A. devoted to making soaring more affordable.

In addition to our major East and West coast Workshops we offer smaller regional gatherings, and even smaller interpersonal meetings. We believe that knowing what makes them work is almost as much fun as flying 'em. We exchange dreams, ideas, experience and skills freely and most of all we have fun. Join S.H.A. and get more fun from your soaring. Call or write: Bruce Weber, 490 Broad Ave. Apt. #5, Leonia, N.J. 07605. (201) 944-6529.

BRUCE WEBER
President S.H.A.

The Elimination of Pilotage

The modern sailplane is becoming computer-equipped, and if we don't give some thought to the matter, we may see the nature of the sport—and certainly of competition—changed into something we don't recognize as piloting. Do you remember in the movie "The Right Stuff"? —test pilot Yeager was reluctant to become an "astronaut" because monkeys could do the job riding on the top of a rocket while the whole thing was controlled automatically

It seems only a question of time before this type of technology will be applied to the myriad problems that beset a sailplane pilot as well. As each function is added it will be one less thing for the pilot to do or to be proficient at doing in a competition.

Can we decide now where to draw the line on what computer technology we should allow in order to preserve the trueness of the sport? How much of the sport is the person and how much is the machine?

We see that theory, mathematics, and computerization spurred by the drive for greater speeds in contests and records, (and of course, "safety") can, and will soon, allow many pilot functions to be taken over by an autopilot or fly-by-wire. For example, cruise speed control could be easily coupled to the vario cruise-speed indicator to control precisely the interthermal speed so the pilot could "read maps", "observe safety", "do other things". A cruise control is a very nice thing to have on a car on the freeway but it sure isn't like the soaring I love.

Thermal centering strategies could likewise be programmed to have the glider automatically climbing while the pilot did the other things. It doesn't take much power to operate the controls and a battery-powered or pilot-pumped air or vacuum system for the actuators could do the job.

One can see that these things are feasible, and wonderful in a way, but to allow them in the competition sport of soaring will, in my view, be a mistake with profound consequences. Can you imagine an aerobatic competition which was flown by programmed autopilots in something like Pitts Specials? Would you admire the pilot riding along like a monkey on a rocket while the plane executed letter-perfect stunts? If we don't make rules to be sure that pilotage is what is to be tested in soaring competition, then we will eventually see pilotage give way to artificial intelligence, because A.I. can do most of the flying more efficiently than a human can.

I proposed therefore that whereas the purpose of soaring competition is to determine the best human soaring pilot (for these aspects of pilotage that may be called upon during a soaring contest);

That no autopilot or computerized control or navigation devices be allowed in soaring competition.

That no location devices such as VOR, DME radio, radar, sonar, satellite, etc. be allowed in soaring competition.

That no distant thermal detectors based on electronic, infrared, etc. technology be allowed in soaring competition.

That no transmitted or received aid-to-navigation or weather information be allowed from the ground, air, or space except in cases of imminent danger (safety) during soaring contest flights.

R. T. ALLEMAN

Heading for Europe?

"A visit to Charles-les-Eau" by Ned Jacoby (*Soaring* Dec 86, p. 55) threw me straight from a rainy Indiana Christmas into a Provencal summer.

The French Alps are home to 6 large soaring operations—5 clubs and 1 state-run instructor training center.

Put together, they offer 200 fiberglass sailplanes for rent. The very affordable rates are due partly to state help, but mostly to the non-profit status of these clubs. They all have a few employees—instructors, mechanics, maybe a part-time secretary—but much of the work is done by club members, with much talent and dedication.

The emphasis is very much on cross-country flying: anybody with a bit of experience (say a silver C) is expected to be 'sur la campagne' (over the country) daily—which is made safe by the high density of gliderports. Many cross-country flights take place in wolfpacks of 4 or 5 sailplanes, with usually two seasoned pilots, one leading and one trailing, and two or three relative newcomers. This also makes for very safe flying, as it is practically impossible to get lost or to err into dangerous areas.

With such great flying at such low prices in such a magnificent countryside, it is surprising that the place is not filled with Americans! Language is not the obstacle, as in summer there are more Germans, U.K.'ers, Scandinavians, Dutchmen, than there are French pilots flying in the region. Many instructors speak enough English to administer a check ride, which will often be a two hour, 150 km flight over the Alps. A French license can be obtained at no cost upon presentation of a U.S licence. Housing varies from place to place, but is usually available at reasonable rates. Food and wine are French—need I say more?

To secure a place in July and, even worse, in August, one should apply around March. One can expect that, in the summer, there will usually be two pilots per glider on most days. The best period is May/June, when the crowd is less dense and there will usually be a glider for each pilot.

If anybody needs help, I'll be glad to oblige—although not being French, I know the language and have flown often in the area. You are welcome to publish my address and phone number if you wish.

JEAN CLAUDE DISPAUX
6020 E. 65 Place
Indianapolis, IN 46220
(317) 849-8437

"Meathead" Responds

Robert Gaines struck a chord in his Safety Corner, Dec. 86. ("The Step Up", p. 62).

Thirteen years ago I retired as a pilot in the Air Force. Not long ago I got a contract in a small town and am still working there. They had an Aviation Day at the local airport. An Air Guard C-130 was in on static display. I have about 5000 Air Force pilot hours and about 2800 hours as a tactical airlift instructor pilot in the C-130. It was a great nostalgia trip.

After the C-130 left, I noticed some gliders on the grass. The club marketing scheme was awesome. Took half an hour to find anyone who knew anything about the gliders, and even longer to get any information. "You fly these things?" "Yup." "When do you fly?" "Weekends, if the weather's good." "What time?" "Oh, 'bout noon."

Asking for more information, the leader said, "Luther, go get him a yellow sheet." Some time later, he appeared and handed me a data sheet about the club. They offered no further information.

Calling the number on the yellow sheet put me in touch with the then-president/instructor pilot/tow pilot/mover-shaker. He agreed to give me

instruction.

The first minute in the Ka-7 was wonderful. I was back in Western Oklahoma flying formation in a T-33 and loving every minute of it. He tried hard to break some of my bad habits in the pattern, flaring, low and slow, etc. After seven rides he soloed me and soon I was off in the 1-26.

When I survived 20 flights, I went for an endorsement to my commercial license. The checkout was with some hard bumps. For one thing, the "nervous nellies" continually found fault with my performance. Whether they were more interested in my carcass or their equipment, I was never sure. I'd get slow in the pattern and even landed in the grass a couple of times. Recrimination, benching and another "Bi-annual Flight Review" followed each of these episodes.

One reason for the short landings (not a good one) is that I spent many years over the globe landing big airplanes on short airstrips. There the survivors learned quickly that runway behind you, even inches, was not cool. Perhaps it was even fatal.

After I got the endorsement, I moved into the K-8. When the club lost the hanger, the Ka-7 went in the rafters and the club sold the K-8. Those were nice ships. We now use a 2-33, 1-23 and a 1-26.

Over the past two years, the "nervous nellies" have faded. I am probably a better glider pilot, too. I am glad that I knew no one who was foolish enough to let me try their "Schweiger-Fliegel" or let me into a club ship and "have a go at it."

Now, if any one has a nice Libelle for sale at a reasonable price, please drop me a line.

KEITH C. MCDONALD
Swansboro, North Carolina

Happy Birthday RESCO

Last October RESCO—Region 12 Soaring Council—held its third Diamond Badge Banquet for Region 12. Over 120 people came to honor the recipients and celebrate the end of the 1986 soaring season. This season saw RESCO sponsor two sports class contests, a wave camp, and a cross-country camp. The banquet was also a celebration of RESCO's 4th anniversary.

1987 promises to be an even bigger year, with both a regional and a national contest sponsored by this young organization. A bigger and better wave camp, cross country camp and sports class contest are also being planned.

Region 12 is probably the most active gliding area in the country—if not the world. The Mojave Desert & several mountain ranges produce year-round ridge, thermal and wave conditions—no matter what the wind direction. These factors, together with a super-abundance of world class pilots, produce a steady stream of national and world records.

Bob Harris beat the old world altitude record (Bickle/1961/Region 12) with a 49009 ft flight. Henry (Lighter than Air) Combs made his one hundredth flight of greater than diamond distance last August. Fritz Seger beat diamond distance for seven consecutive weekends. Ross Briegleb beat several world champions in the Hitachi Invitational—in spite of not having flown for two years. The year before—b.c (before child)—Mike Koerner made a winter flight of 906 miles in spite of a late start and a 400 mile detour to take a picture for a California goal record.

Then there are Jim Payne and Tom Edwards. Jim has been collecting national records for the standard class in his LS-4; Tom has done better than diamond distance thirty times in a 1-26!

All these fine people and many others are more than willing to help others improve their skills and experience the joy of soaring.

The originators of RESCO wanted to

take advantage of the geographical and manpower advantages of Region 12. They hoped to be able to create new projects and recreate several older projects that had become extinct or dormant. They planned to act as a clearing house for ideas among the diverse groups, clubs and individuals in the region—as well as provide a source of volunteers and trainees for projects beyond the scope of individuals and clubs.

Representatives from the clubs, FBO'S, and any interested individuals were solicited to help achieve these goals. A monthly newsletter, *Final Glide*, was published, and has become a forum for ideas and dissemination of information.

A dedicated group of individuals has kept things in motion, but it hasn't always been easy. The biggest problem has been regional apathy. With over two thousand SSA members in the region, we have been hard-pressed to sign up more than ten percent for membership.

Of those that joined, it was exceedingly rare to see or hear anything from them. Attendance at meetings was limited to the lonely nucleus of officers and board members, most of them hangers-on from the charter group—this, in spite of the fact that an SST transceiver was raffled off at the end of the year, with all those attending having one chance to win for each time they had been present.

During the last two years, not a single ballot was returned for the election of officers.

Burn-out was a constant problem, as so few were doing everything and at times we were close to throwing in the towel, and calling it quits. Yet each time we hit a low, someone new would show up, present new ideas and perspectives, and revitalize the organization.

Most recently, Trip Mellinger (who has been responsible for preserving an annual regional competition for the last five years) showed up full of energy and ideas, including RESCO sponsorship of the Regionals and 15-Meter Nationals in 1987. He and Ross Briegleb met with the SSA directors and were successful in bringing the National event to Region 12.

We now have great need of a large number of volunteers, with experience and/or enthusiasm to help run these contests, as well as a Sports Class contest prior to the Nationals and at the same site—Barstow-Dagget. This would allow local and visiting pilots to get some practice and prepare for the national competition if they so desire.

For the new volunteers, this is a golden opportunity to get some valuable experience and meet some of those great people we have been talking about, expand your horizons and make new friends. For some of the old hands, many who have been burned out—this is an opportunity to preserve and promote soaring, as well as to inspire and train a new generation to ensure a future for soaring. At the very least, it is an opportunity to get away from the world's problems, renew old friendships—and it's a great excuse for a few parties.

Make no mistake, soaring has been on the decline this past decade. Several sites are now lost to us, several are for sale, the clubs are losing members, and everyone is facing the liability/insurance demon.

If every individual, club and FBO stands alone, there will be even fewer members of the soaring community to start the next decade. If we all stand together to support the sport and each other, we will have a fighting chance to maintain or increase our soaring sites and groups.

United we may be able to attract new people, train them and install and maintain the enthusiasm necessary to undertake advanced training and cross-country, competition, etc.

United we have more clout with politicians, the FAA, and insurance companies. Together we may be able to attract financial support from large corporations and business.

Once the foregoing has been accomplished, our short-term RESCO goals will be accomplished. Long term goals are only limited by the imagination of our members. What do we need from our members?

First, the realization that passive non-participation will not stop the decline in soaring, loss of sites and members or further restrictions by government

Second, *participation*! For RESCO to survive, we need support in the form of input of ideas/suggestions and volunteers. Show up at meetings, write or phone us. Donate articles to *Final Glide*. Get involved in RESCO events or ask us to help you with your projects. Clubs, send your representative to our meetings. Most of all-support Soaring, spread the word, take up people for rides, tell them where they can get lessons.

Last of all, we must get the support of the non-soaring community. We can use legal and political help. Gliding clubs can be organized by large businesses; they can also support school, scout and other groups who are a source of student glider pilots. The numerous local military bases contain a vast pool of potential glider pilots. Anyone having contacts within these and other organizations should get the ball rolling or help us to utilize those contacts. Donations of money or equipment to soaring organizations, contest committees and clubs should be encouraged.

In summary, the problems RESCO faces are the same problems the clubs and soaring in general face in this country at this time. The future of soaring does not look bright. Unless something is done soon to affect the future, this beautiful and soul-satisfying sport will wither away in this country. The suggestions above are only a few ideas of what might be done. We need your suggestions and participation—for the good of soaring.

FINAL GLIDE

SSA IN ACTION

HITACHI MASTERS OF SOARING

NEW FLASH! Three time World Champions George Lee, Helmut Reichmann, and Ingo Renner have all confirmed that they will attend the 1987 Hitachi Masters of Soaring event to be held May 16 through 23 at Estrella Sailport, Arizona. The remaining slots on the pilot roster will include the best competitive soaring pilots in the world!

Wouldn't you like to be part of such a prestigious event? The World's best can't compete without sailplanes! The Hitachi Masters of Soaring is a 15-meter class competition, and preferred aircraft are the AS-W 20A, B, or C, *Ventus* A or B, LS-6 or any late-model 15-Meter ship. Aircraft may be leased or offered free of charge, and owners are encouraged to offer crew vehicles and assistance if they wish.

Experience the unique comraderie of this World Class event—start a soaring friendship you'll keep forever—only *you* can make this event happen! Contact Judy Lincoln at 6827 N. Highlands Dr., Paradise Valley, AZ 85253, (602) 840-5287 for information, including insurance options for all aircraft!

GAINES NAMED AS NEW PUBLICATION BOARD CHAIRMAN

The SSA is very pleased to announce the recent appointment of Bob Gaines as SSA Publications Board Chairman. Bob, as devoted *Soaring* readers know, has long edited the "Safety Corner," which brings important safety items to the forefront through members' own commentary. *Bob himself* has tended to down-play his work in organizing this column, saying, "Well, when I'm asked by anyone to do a column on a certain subject, I figure that person has a reason behind the request. Usually, it's a good first-hand account, one that deserves to be in the magazine! So I really don't write . . . I delegate!"

Bob's first contact with soaring was in 1960, through the Wichita Soaring Association. When relocated by the Air Force to Little Rock, Arkansas, Bob became the driving force in forming a local club there. In the 60's, Bob acquired the DFS *Weihe* Dick Johnson had flown to a win in the 1959 Nationals, and again courtesy of the Air Force, spent some time in Texas as an active member of TSA, and editor of their newsletter. Now out of the Air Force and into the airlines, Bob has settled in Marietta, Georgia, where he edits the Mid Georgia Soaring Association newsletter. (But he doesn't travel light—the partially restored *Weihe* resides in the basement.)

Bob takes his new chairmanship seriously. "After all," he says, "SSA publications, and *Soaring* in particular, are the main contacts we have with our members! I hope to see more emphasis on the people in soaring, and the sites we're flying from. Contest coverage needs to be in the magazine, of course, but there's room in the spotlight for the unsung "average" hard working soaring pilot".

But, as one would expect from Bob Gaines, he won't shy away from the controversial . "I'm not above banging on the typewriter a bit now and then to keep things lively!" Welcome aboard, Bob!

YEAR OF THE MEMBER

Have you nominated anyone as SSA's "Member of the Year?" Use the nomination card from the February *Soaring*, or send us your nomination in any 1-page letter, with "Member of the Year" written across the top. We'll include both an Honor Roll of all nominees and excerpts from outstanding nominations here in *Soaring*.

Who's eligible? Both you and your nominee should be current SSA members. Nominations should include both names, along with a brief description of the qualities and/or achievements that you feel best prove your nominee to be worthy of being SSA's 1987 "Member of the Year". The winner will be determined by drawing, during June's National Soaring Week, and *Soaring* will continue to publish both the Honor Roll and nomination excerpts throughout 1987, for all nominations received prior to the drawing date.

The "Member of the Year" is *not* an SSA award, as such, but is our way of celebrating what SSA is all about: *our members!* We're planning a special honorary function for our drawing winner —he (or she) will be SSA's guest at the dedication of our brand new office building in Hobbs. There'll also be time set aside for some of our famous southwestern soaring during this weekend trip!

So, go ahead, nominate your CFI, your crew, your weekend flying buddy, *any SSA member* (except current Directors) who you feel best personifies what SSA is all about!.

—Judy Lincoln

INVITATION TO COMPETE

The President of the Bulgarian Aeronautical Federation has issued an invitation to the United States for the upcoming European Feminine Gliding Championships to be held in Bulgaria.

Prominent U.S. women pilots are invited to participate in the 5th European Feminine Championships to be held July 12-26, 1987 in Shumen, Bulgaria. Interested individuals are asked to contact the SSA Office in Hobbs for detailed information concerning this event.

IN MEMORIAM

Our friend, Stanley Strauss. Stanley died on the operating table Jan. 22, 1987 in Berkeley.

Stanley will be remembered as a ge-

nial, good natured soaring enthusiast, always willing to help. He specialized in servicing oxygen systems and attended many international contests, usually helping.

Stanley started his soaring career in England, long ago. He traveled widely and I had the privelege of doing a grand tour of Europe culminating with delivering him to Chatoureaux at the International Contest there.

Our team was amazed by his ability to get things done. He was a long time member of Bay Area Soaring Associates and will leave a huge gap there.

Within the last week before his passing, he had a nice wave flight with another club member at Sky Sailing Airport.

He spoke several languages and was a well-educated person. While driving across the Alps, he would casually remark, "here is where Hannibal crossed with his elephants". In Vienna, he and an aunt of mine had a long discussion on who made the best salami. They drove all the way across the grid-locked city to buy it. It was good, and it lasted through Czechoslovakia, Austria, Italy and Switzerland. We bought another salami in France.

Stanley made his living as a freelance automobile mechanic and I bet his customers miss him as we do.

—EMIL KISSEL

—

It is with great sorrow that I report the passing of Hal Lawrence on October 26, 1986. He died unexpectedly, but apparently peacefully, of a heart attack at his home in Portola Valley, California.

I read with great interest Hal's article in the most recent issue of Soaring magazine ("A Little Dual Time With Ingo", Jan. p 40). I went with Hal to Tocumwal, Australia in 1984 to fly with Ingo Renner. It was on that visit that Hal earned his Diamond Distance (and pin).

Hal was born in Elmira, New York in 1923. He grew up there and knew the Schweizer family well. He went to the Naval Academy and graduated in 1944. While in the Navy, Hal flew PBY's in the Pacific Theatre. After the war, he moved to Palo Alto, California where he founded a very successful advertising agency. He worked with many of the pioneering firms in Silicon Valley.

In 1967, together with three others, Hal helped found the Bay Area Soaring Associates (BASA). He designed the logo for the club and edited its monthly newsletter for man years. BASA will be celebrating it 20th birthday of continuous operations in August of this year.

During the 1970's Hal conceived of flying a motorglider around the perimeter of the United States. Together with many friends around the country who flew legs with him, he completed his circumnavigation of the 48 states.

During the same period, he developed an airshow aerobatic routine that he performed to accompanying Beethoven music. This performance was called the Ballet of the Blue. Hal performed all over Northern California in one of BASA's Schweitzer 2-32's over a period of 10 years, and was the only performer to be asked to fly at the Moffatt Naval Air Station Airshow for 13 consecutive years.

His act invariably was the hit of any airshow, regardless of who else performed. He never accepted payment for any of his performances, saying it was his way of promoting soaring to the general public. At the last performance at Moffatt in 1984 there were over one million spectators at the two-day show.

Hal Lawrence's extrordinary talents are missed, but will always be remembered, by his many, many international friends, both in an out of the soaring community.

—DAVID C. PENNING

Take a wedding, a bicycle, a Berlitz handbook, mix well and presto—an Italian soaring vacation with enough memories for a lifetime

A View Of Camelot

by DON K. WEMPLE

Although this is being written in 1986, the story has its origin eighteen years ago in 1968, during the time I was an instructor for Karle Jessop's commercial operation at Skylark Field, Elsinore, California. One weekend afternoon during a lull in the flight schedule I noticed an interested sideline observer and decided to strike up a conversation with him—perhaps as a shill for a $20 demonstration ride.

It turned out that he was Italian, but had enough English, along with arm waving, pointing, and all the gestures used by a stranger in a strange land, to make himself understood. He was a sailplane pilot himself with several hundred hours of flight time, had heard of the gliderport at Elsinore and decided to drive down from the Los Angeles area to have a look at it.

He told me of his club in Northern Italy, described some of his flying experiences and I some of mine. In short, we did some real universal language hangar flying and became the kind of friends that you know result from our world-wide shared interest in this remarkable sport of soaring.

When we parted, we exchanged addresses and Georgio de Felip promised to contact me if he was ever again in America and I promised to contact him if I ever got to Italy. I wrote his name, address, and soaring club in my log book, and with another student coming up, went back to work.

The years rolled by and suddenly I had occasion to plan a trip to Italy. My oldest son, Steven, had met an Italian girl from Carpi, a city of 70,000 70 km north of Bologna, while she was studying in San Francisco, and for the past three years had carried on a jet-set, story-book romance with her. We all loved Antonella and she loved us, but family ties are strong in Northern Italy, no member of her family had ever left Carpi,and being rather well placed professionally she really had a difficult time deciding if my son and her love for him was worth giving up all she had in Italy to come live with him in America. Finally she did, in her charming words,"take a decision" to marry Steve and the wedding was set for May 24th in Carpi.

What an excuse to go to Italy! Anne and I cast financial prudence to the winds, decided to take leave without pay from respective teaching jobs to go, and started making plans. We decided that as long as we were going to spend the money to fly all the way to Italy that it would be totally dumb just to fly for the wedding and then turn right around and fly home. Yet, since Anne's school didn't break for summer until June 19th and mine finished at the end of May, we settled on a two week trip, leaving San Diego on the 22nd and returning on the 5th of June.

On final in the ASK-13. The paved takeoff runway on the right, the grass landing strip on the left, and Lake Varese.

Suddenly the idea struck me that I'd be on summer vacation and since I'd be over there anyway, perhaps I could stay a bit longer. In addition, I find that when I'm home "vacationing" and Anne still has to hit the road to work everyday, she does have some mixed emotions about the arrangement, that have led me to take a few soaring trips during those first two weeks in June in the past!

So . . . since bicycling has been a hobby with me since the early 60's and even though most of my riding has been as a commuter, I'd always been intrigued by bicycle touring; so why not tour in Italy?

A call to TWA confirmed that they allow one to carry a boxed bike as one of the two pieces of luggage. So I ordered panniers, a new jersey, a pair of new cycling gloves, and an Italian made Vetta helmet. TWA even provided a bike box, and was it big! I didn't even have to remove the wheels, and it carried not only the bike but the panniers, front bar bag, and all the clothes I would need for the entire trip. The whole package came up to TWA's 42 pound bag limit, but nobody seemed at all interested in weighing it.

My thoughts then turned to where I was going to ride. Since we would arrive in Italy at Malpensa, 50 km. northwest of Milan, I would already be near the famed Lake Area of Northern Italy, and not too far from the Italian Alps. We certainly don't have much scenery like that in Southern California, and if the ups and downs of mountain riding proved to be too strenuous for me, I could always slide south down the map to the flatlands.

It was then that I remembered my Italian friend and his home gliderport in Northern Italy. I dug up my old log book, #2 out of 5, and wrote him a letter, hoping that he'd still be at the same address, to tell him of my plans. Unfortunately, I didn't get a response. However, I did have the name of his club field and address: "Volo a vela, Calcinate del Pesche (Varese)". The city of Varese I knew was situated at the foot of the Italian Alps between Lake Como and Maggiore, but I was to find out that when one puts a city name in parenthesis in an Italian address, it refers to the American equivalent of a county. So. I'd have to find out where Calcinate del Pesche was after I got into the general area of Varese.

After the plans, the event. Off we flew on the 22nd. Takeoffs, landings and connections were perfect and on time—most amazing to us. But it was the first time that we had made a international flight on a scheduled airline. Our past European travels have been via "cattlecars" (aka charter flights) and the experiences of 4-5 hour delays lay heavy on our thoughts.

At Malpensa we were met by Antonella and Steven. Charming and beautiful as we remembered, Antonella proved invaluable in explaining to the left-luggage clerk what I had in mind regarding the bike and its box. We then set off for Carpi.

Steve was just beginning to master autostrada driving. He'd been in Carpi for only two weeks, the required time to establish residency before the marriage. I just closed my eyes as we passed the trucks!

The meeting with our future relatives is a story in itself. Antonella's brother, Alberto, speaks a bit of English, but her mother and father, Anna and Renzo, speak about as much English as I speak Italian (mine all gleaned from "Italian for Travelers by Berlitz"—not too much help for meeting and greeting in-laws!) But lots of smiling, hand shaking, back patting, etc., helped us feel at home and truly Antonella's family was as wonderful as Steven had told us they were.

The wedding day arrived and we motored in mass and finery to the City Registry where the beautifully done-up couple were married by the mayor of Carpi (complete with tri-color sash), in front of 60 family members and guests, and then fled amidst rice and rose petals and several hundred townsfolk gathered outside in the piazza.

Later that evening the 60 of us drove about 50 km. to a beautiful small country lake with an elegant "ristorante" and had the wedding feast: as I remember, about 12 courses concluding with a wedding fruit torte about 4 feet in diameter, carried regally in amidst cheers from all. Vino, toasts, more vino, more toasts, etc., etc.

I hope that you haven't given up on me as a soaring writer yet, thinking that I'm going on and on in such great detail. I'm not! Rather I'll shorten things here a bit and summarize by saying that two days later, Anne and I left by train for 5 wonderful days in Florence, 3 in Venice, and a day and a half in Milan. June 5 finally arrived and we sadly bussed to Malpensa.

Emotions were strong since we'd never been separated for more than 3

or 4 days, but plans are plans and off she went to San Diego. I went to the left-luggage department.

Now it was my turn without Antonella's help to try to explain that I'd like to take the bike but leave the box for another 14 days before taking the whole thing off their hands. Somehow I succeeded and after an hour assembly time I was a touring cyclist, all my possessions tucked into two rear panniers and the front handlebar bag of my trusty Nishiki. My first goal was a town rather close to the jetport, in order to establish a home base that I could come back to in two weeks time that would be near enough to allow me to ride to the jetport, pack up the bike and still be set to board the noon flight as Anne had done.

After finding a hotel that filled the bill, checking in and getting showered, I still had time to stroll the streets and shops of Gallarate.

With the late afternoon sky filled with elegant cumulus clouds, my thoughts turned to "Volo a vela, Calcinate del Pesche". Where, exactly was it? Since I'd forgotten to pack a pen and really needed one in order to keep a log of my trip, I entered a small stationery store. Following the purchase I asked the owner in my "Berlitz" Italian whether he had ever heard of such a place. I mentioned the words "Volo a vela" (Italian for sailplane, I now know) and he immediately summoned his teenaged daughter.

Sure enough, she knew of it, and when I produced my detailed biking map of the Lombardy area, she pinpointed it for me on the eastern edge of Lake Varese, about 25 km. to the north. As I left the shop, the cumuli really did look better toward the north.

Friday dawned clear and warm and I loaded up early and took off for Lake Varese. The snow-covered Italian Alps glistened in front of me as I rode north. Varese is charmingly nestled in a depression between two alpine foothills and the lake to its west is in a separate valley, about 100 meters lower. I headed straight for the lake with the idea of possibly finding lodging fairly early, near the gliderport, then continue my ride that day around the lake, hopefully doing some sightseeing at the gliderport as well as around the picturesque lakeside area.

The first road I took down to the lake proper dead-ended at a small village called Schiranna, complete with a storybook lodge with open air lakefront dining garden, rental boats pulled up at the shore, etc. I booked quickly, left the 8 kg. of panniers and continued north in a counter-clock-

Pilots lounge of the Aeroclub Volovelistico Alta Lomardia at Cacinte del Pesche (Varese).

The filled trophy case of the A.V.A.L.

wise direction around the lake.

Within a kilometer—a *runway!* At lake's edge, the south end of an asphalt runway, and then a sign showing the entrance to the Volo a Vela Ristorante(?). I followed the road down toward the lake and came upon a couple of buildings, including the relatively good sized and very fancy restaurant.

This certainly wasn't like the gliderports that I knew and loved. But beyond the restaurant complex were three hangars adjacent to the runway, and the familiar enclosed trailers of the glass birds. I leaned the bike against a friendly wall and set out to more closely investigate things.

It was about 10 AM and the restaurant was closed, so I moved north and entered a door with a lot of soaring stickers pasted on it. I entered a world that I didn't know existed—first, a large clubroom with a fireplace, trophy case (filled!), comfortable couches and chairs; next an adjacent classroom with maps, adiabatic charts, and assorted soaring paraphernalia on its walls; and finally, a control room with a full view of the runway, hangars and lake, and a very complete weather station, a communications center and a full time chief airport operator—Nando Broggini.

I introduced myself, and since his English was only a bit better than my Italian, we communicated using a lot of gestures, poor grammar, etc. I asked about my friend de Felip, and he did remember him but said that he hadn't seen him for 4 or 5 years and thought he had perhaps moved, was flying at another gliderport or had given up the sport entirely.

"Was it possible for visitors to fly here?" I asked. "Yes." "Was today a possibility?" "No, tomorrow would be better since it was Saturday." Was I going to stay around an extra day? YOU BET!

I got back to my bike about noon after nosing around through the hangars and looking enviously at their lakeside, tree-covered and grass-carpeted camping area with its scattering of clubmembers' house trailers, and continued my ride around the very scenic Lago de Varese.

For lunch it was a couple of pieces of fruit purchased from a roadside vendor and relaxation on a wall on the west shore of the lake looking back across it toward the gliderport. Far across the lake I watched a few weekday pilots testing the currents in an ASK-13 and an *Austria*. My last memory of that day was in my hotel room, glimpsing the ASK-13 whisking by my second floor window, low, on final, at about 5:30.

Before I describe my Saturday at Calcinate del Pesche, let me tell you what I have since learned about their club, Aeroclub Volovelistico Alta Lombardia. In addition to their magnificent facilities, they have 7 club-owned sailplanes: 2 ASK-13's, 2 *Janus'*, 1 Twin *Astir*, 2 single-place *Astir's;* and 5 Stinson L-5 towplanes—one with 180hp, the others with 230hp engines. The higher horsepower is appreciated when one sees the lakeside takeoff runway with fairly well developed forests at either end!

The total runway length is 400 meters, 300 of it paved for a takeoff runway and the landing strip lakeward of it, all well-mowed, luxurious grass (remember that I'm from Southern California, and by grass I'm impressed!). The 150 members also account for about 35 privately owned sailplanes of assorted vintage, right up to a *Discus* that I helped assemble and a *Nimbus* 3 whose pilot, Roberto Manzoni, former Italian National Open Champion, was preparing in order to leave Sunday for the European Championships in Germany.

The Club doesn't own the Volo a Vela Ristorante, but leases the space to a private investor. However, they do have a club-owned snack bar that is open on weekends and operated on a non-profit basis by two of their club members. The snack bar is at field level adjacent to the swimming pool. Oh, I didn't mention that before, did I? Yes, it's a large tile one overlooking the runway and hangar complex.

Indeed, this is Camelot! But Camelot has its price. It is true that there is some government subsidy, but this is primarily subsidization of the youth program. The club members each pay about the equivalent of $800 per year. I was also told that assessments are possible and are common during the year when special maintenance needs to be done.

Additionally, their tows are more expensive than ours, averaging around $30 per tow, due to the greater expense of fuel in Europe and the poor fuel economy of the towplanes to get the sailplanes off in this relatively short field condition.

So, as you see, Camelot does cost, but believe me it is Camelot, especially so to one of my experience, who learned to soar at the world-renown Torrey Pines where there's not a blade of grass in sight, and we didn't even have a "portajohn"!

Saturday morning was cloudy with a drizzling rain. What a dramatic change in the weather, since Friday had been such a perfect soaring day! The rain finally stopped at 9:30 and at 10:00 I walked over to the gliderport.

I stood around not knowing exactly how to get involved, and without the language it's rather a problem. Soon the opportunity presented itself as a *Discus* was being pulled out of its trailer. I must have looked as if I had enough knowledge to be allowed to hold a wingtip, guide it out of the box, and support it while the main pin was being driven home.

Suddenly the stream of Italian was interrupted by the very cultivated English of one of the assemblers, who turned out to be Roberto Paolieri, a chemical engineer who had worked in America for a number of years and was married to a charming English woman. He must have discerned my national origin when he overheard a few low-volume English epithets regarding the weight of the Discus wing in comparison to that of my 1-26!

Quickly, he took me under his wing, so to speak, and introduced me to everyone, making me feel quite at home. Almost all the pilots had much more English than I had Italian and were soon probing me all about Hobbs, El Mirage, Marfa, etc. Even though there were some language problems, that marvelous camaraderie that exits among soaring pilots bridged all the gaps.

I met Franco and Giovana Zuliani, who so much reminded me of Anne and myself 20 years ago; Jens Kroger, who was so interested in the "UV-blue shield" sun glasses that he had read about in *Soaring* (unfortunately I hadn't brought mine with me, so that he could see how well they worked); Gianluca Tranconi, a soaring badge collector who gave me an AVAL decal and is now eagerly awaiting a badge in return; Lorenzo Scavino, editor of *Volo a Vela*, Italy's equivalent of Soaring (he gave me 4 back issues of the journal and put me on the mailing list for future ones); and finally Ernesto Aliverti, flight instructor and longtime club member.

By this time the sky had begun to clear up a bit, the stratus condensing into rather gray, isolated cumuli. The pilots began to pull their ships out to the south end of the asphalt strip. Ernesto, with a gleam in his eye, said "Let's go!" I didn't need a second invitation to move rather quickly toward the waiting ASK-13.

This bird was not altogether unfamiliar to me since the AGCSC had owned one of its predecessors, the Ka-7, a number of years ago and I had had many happy hours in it. Parachuted and belted in, we took off into the "iffy" sky. With the knowledge of

what wet ground does to soaring in my environs, I expected little in the way of an extended flight. But, even with a short flight, the prospect of seeing this beautiful area from the air filled me with expectation.

We towed north toward the foothills of the Alps northwest of the city of Varese. We passed level with a magnificent mountainside castle overlooking the city and the lake and continued climbing, ultimately cresting the mountain. We encountered lift beneath a cumulus and, at 1000 meters, released. The wet ground evidently had little effect on the lift below the gray cumulus and we climbed easily the 200 meters to its base.

Then, almost as quickly as we had hit the lift, it stopped and we began descending. We moved south nearer to the field, trying other clouds along the way, but they provided little more than scattered bumps—certainly not enough to sustain the ASK-13. At about 300 meters, Ernesto, in his clipped, unsteady English announced, "Look for birds! The last stand!" While I was "scoping and craning" for birds, we hit a great save and as if we were on a glass elevator, we smoothly rose back to 1300 meters. Halfway up this thermal, Ernesto said, "It's yours", and my flying skills were on display. The ASK-13 has the exact feel that I remember the Ka-7 had and was truly a joy to fly. If anything, the directional stability has been improved, as the Ka-7 had a habit of wandering that required one to be constantly "rudder conscious".

It seemed like no time at all before Ernesto interrupted my concentrated efforts and said that others were waiting, the hour was up, and that we must return to Calcinate. Prior to the descent, the loop he performed was duly recorded at its high point by my ever-present camera and sure enough, the slide shows the Alps to be upside down!

The landing was as smooth as possible on the closely mowed grass and soon after touchdown, Roberto Paoliere pulled up on the retrieve tractor and towed the ship back. I walked the wing tip to the queue waiting for their turn to takeoff.

My soaring adventures for that day were not to be over quite yet, for I was hardly settled down in the lawn chair area after being introduced to more local pilots when Gianluca Tranconi came over and pulled me toward the *Janus.* Although two-place sailplanes of this quality and performance had been at gliderports I'd flown at, I'd never actually flown in one. I soloed in a TG-2, instructed in 2-22's, 2-33's and Blaniks, but that was it. The *Janus* is a classy 2 place ship and it took me no time at all to develop a taste for it. Mind you, nothing will ever replace my 1-26, but the next time I introduce a friend to soaring it will surely be in one of these new, sleek and most impressive glass birds.

The flight with Gianluca lasted almost an hour, with improving conditions adding to the better performance of the *Janus* as compared to the ASK-13, we were able to fly high and wide in that span of time. In fact, we flew west to the edge of Lake Maggiore and I was able to look at a large part of the area over which I was to bike during that week. Needless to say, the aerial scenery in the Alps made it a flight to remember; the glacially carved lakes Maggiore, Varese and Como; Mount Rose glistening in its snow-capped beauty; the small cluster villages tucked carefully in the valleys. Our flight ended as did the one with Ernesto with the camera handed to Roberto to take a picture of both pilots, smiling, arm in arm.

The afternoon tapered down with birra and panini in the snack bar and lots of hangar flying, just like at home. Later that afternoon was to come an invitation to the Paolieri home on the hill overlooking Lake Varese for tea and ultimately a delicious dinner. It was there that I learned that Roberto's other passion is sailing and that he's a world class Lazer sailor. The two sports, soaring and sailing, often go together, don't they? Anyway, after a day of memorable soaring, an evening of stimulating conversation with the Paolieri's over a grand meal, I was back at my lodge at midnight to be up and on my way in the morning, again, as a touring bicycle rider.

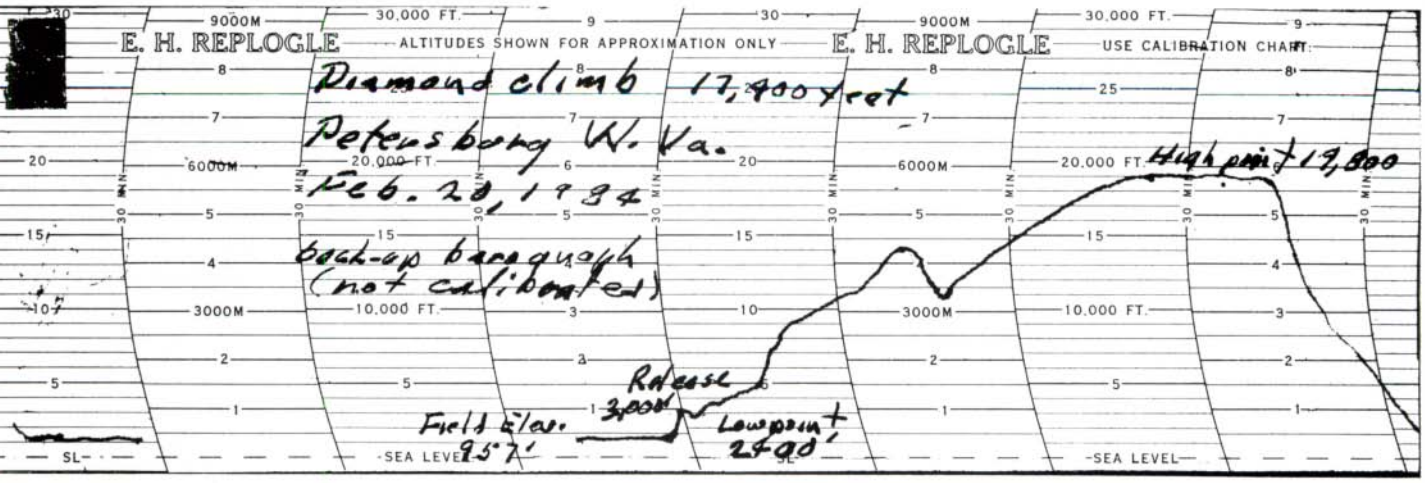
The next few days took me around Lake Maggiore, to Lake Orta and finally to Locarno and Lugano in Switzerland. From there it was around Lake Como to the city of Como where I had been invited for dinner at the Aliverti home. During my soaring day I told him I'd probably make Como on Thursday and calculations were perfect, as I pulled into the Youth Hostel (yes, they allow oldsters there too!) in Como at 3 p.m. Thursday.

Ernesto and several of his children are involved in the fabric trade in Como, a large employer in this region of Italy. His most beautiful home is halfway up the hill at the south edge of the lake. The Aliverti living room is decorated with a table covered with silver trophies—his wife's golf trophies. Ernesto joked about his single soaring trophy—a clay coffee mug!

After leaving Como, the weather began to turn worse with light rain almost every day. It drove me to the flatlands and I biked to the city of Bergamo (my favorite of all the cities I visited), then on to Montova, Cremona, Pavia and finally back to Gallarate. It was with a heavy heart that I cycled in the rain to Malpense to pack the bike up and get ready to fly home. I had never in the whole trip been soaked as thoroughly as I was that morning, but I arrived, retrieved my bike box and loaded it all up under the watchful eye of a friendly carabinieri (airport security, you know!) and was off to America at noon.

I had visited a magic land, seen its magic cities, conversed with its charming citizens, and had been to Camelot. I'll be back.

The author and Gianluca Tranconi following a flight in the A.L.T.A. Janus.



'Ah, but a man's reach should exceed his grasp, Or what's a heaven for?"—Robert Browning.

Wave flying is a world unto itself, a world you enter at your own risk, in search of rewards of truly personal meaning . . . and a badge

"Or What's a Heaven For?"

She was telling the patient in the other operatory, "there has to be some doubt about the sanity of anyone who would leave south Florida in February and tow a thirty foot trailer due north for two days in order to fly over a mountain in an airplane that doesn't have any engine—and that you put together yourself!"

And not only that, we had been doing it for the past five years. Such is the compulsive glory of the Diamond Climb Attempt.

In Marion, North Carolina, the local paper explained that sailplanes were owned and flown by doctors and airline pilots and other wealthy types. That day also included were a peanut farmer, a manager of a state farm market, and a formerly wealthy, recently divorced dentist. Henry Mangles, raconteur, lover, aviator, and banjo player; Frank Connor, philosopher and humorist major of Zolpho Springs, Florida, and me.

Mt. Mitchell proved fickle and gave up her 16,400 altitude gains only on days we weren't there, so for the past two years we had journeyed even farther into the frigid inhospitality of a climate that has contributed so much to the prosperity back home. The plan was to test and be tested by the Allegheny Ridge.

The topography of this fine soaring site is unique. It is manifestly a furrow, plowed through several states by that early Nittany Lion nose tackle, Paul Bunyan. The wind, when it's right, blows hard across the plain, drops abruptly into the valley and shoots up over the ridge forming a standing wave of over 20,000 feet astride mountains that are surprisingly only around 3,000 feet high.

The wave clouds are actually large rotor clouds with bases around 5000 and topping at 10 or so. The windows between them vary in width with the change in wave strength and condensation level. Oddly, there are no lenticulars above, just clear air all the way up. Sometimes from the satellite these wave clouds can be seen repeating all the way to the coast, like sand ripples on the bottom under a clear blue sea.

Losing the initial thermal after release at 3,000 produced a handsome notch to 2400 MSL or about 1400 feet above the ground, and the game was on. Climbing the leading edge of a rotor is about as unpleasant a way to gain altitude in a glider there is. Actually, there is plenty of up but it is compounded by a lot of down and not inconsiderable sideways, all occurring in such rapid succession as to confound the senses.

At about 4500 a probe toward the wave failed to make contact and I was back again trying to climb the greased pole. This time I would go to cloud base before trying a new penetration. Just as I turned out from under the edge of the cloud something hit me hard from ahead and below and everything went black. I had been sucked up into the cloud and condensation had fogged over the canopy. I was back on instruments for the first time since tooling a Mustang through the English overcast some 40 years ago.

The canopy cleared as quickly as it had fogged and I burst out into brilliant sunshine and wave. There is no more mind-boggling change in all of soaring meteorology—from fighting the rolling black turmoil of the rotor, suddenly to explode into bright white light, breathtaking clouds, and lift so glassy smooth you don't even notice the variometer is pegged up. It sort of makes a person consider for one brief moment that he has passed over.

A light touch on the stick for a slight increase in speed to move forward on the wave—but not over the front, drifting back but not too far, gentle turns to tack back and forth seeking always the stronger surge; I worked up over the vast white Partonian bosom of the two wave clouds into the clear air above.

At about 15,000 feet the secondary began to peter out. It was time to make the run for the stronger and higher primary wave.

By constantly forming in the front and dissipating in the back our rotor cloud does in effect stand still, completely belying the presence of a 60 knot headwind. We dive across the canyon at speed to traverse the area of heavy sink as quickly as possible, but seem to be getting nowhere. Our ground speed (or inter cloud speed) is some 60 knots slower than indicated; and the visual effect is that if we don't get rid of whatever it is we're dragging and pass through this inexorable sink, we'll surely be into that cloud up ahead. It is important to keep out of that one. That's the one with the mountain in it.

Slowly the vario needle moves away from 10 down, and there is a perception of more speed. We aren't going one bit faster; we're just getting closer to that cloud down there and it seems so. Is it time to turn back? Wait a little longer. The vario definitely looks better—600, 500, 400; then just as we begin to sink into the puffies there's a tentative peep from the audio, followed by a few more, then a steady song. What lovely, joyous music that thing does make!

This is indeed a manic-depressive sport, and the depths of our depression to the heights of our elation can be measured by the needle on the altimeter. Mere numbers, signalling distance to earth, elicit on exaggerated emotional cycle which is quietly taped by the barograph for an EKG of our psyches.

Right now I was feeling great! Passing 12,500 in steady, very steady 300 ft. lift while pointing in one direction is something lowland thermal pilots dream of at night. Doris came on 123.3 and reported a snow squall coming through Hopewell Gap. Everyone should return to the field. Not a chance. Let it snow.

At 17,000 it was still 200 ft. up and there might be a possibility for that worthless little third Diamond. Here is where all the other attempts had terminated. At 18.5 it was going and at 19 it was gone. The apogee had been reached and that writhing, surging serpent we were riding down below had expired; with only an occasional death twitch to seek out for a final hundred feet.

I did make it to 19.8 before several factors intervened to convince me of the wisdom of returning to planet earth. One thing that I hadn't even mentioned is that it's cold up here. My God, it's cold! The inside temperature reads 30 below.

Then someone said something on the radio to the effect that it looked like the window might possibly be closing. From where I was at altitude looking down between the clouds there was plenty of ground visible. Besides, from this point on was the glide, the good part, the fruition of all our hard work; and what a glide! With a jet stream tailwind we could go forever. The view itself is worth the trip. It tingles the spine. So what's the hurry to get down?

Doris came on and said the window really was closing and even from my vantage point it obviously was. Maybe I better open the spoilers and drop the gear.

Now instead of a gear warning horn, which I can land right through, to get my attention this sexy, southern voice admonishes "Hey honey, are you sure the gear is down? I wouldn't want you to skin up your pretty little Astir, so check the handle over there on the right side of the cockpit and be sure it's all the way forward." The second part of my clever invention is that it doesn't stop when the gear goes down, thus providing a spoilers open warning before take-off. Sometimes my inventions go awry. I couldn't turn the damn thing off.

At lower altitudes the curve of the clouds tends to obscure the opening, and when it did appear there was very little left. I made a dive for the fast disappearing hole. And missed. Back into the black boiling caldron of the rotor cloud and this time I'm really in it. No way to turn if I knew how. It's all I can do to keep it right side up and strait ahead. I'm being thrown in every direction and that sexy southern voice keeps repeating "Hey honey—check the gear—I wouldn't want you to skin . . . " finally silenced in frustration by the simple expedient of yanking the wires out of the micro-switch. Needle, ball, yaw string and airspeed! Keep the airspeed somewhere about half way between stall and rough air red-line. If I had the time I'd probably be terrified.

To have the audacity to violate the sky like a bird, with no engine—to have the ego to think I had done it all by myself, by my own wit and skill. The gods of the lower eight clouds will tolerate no such arrogance! I was wrenched, pummelled, shaken, and then vengefully flung out the bottom of the cloud . . .

Into a completely strange valley. The town was gone, the river was gone, the mountains were unrecognizable and the valley was going in the wrong direction.

From the heights of glory to the depths of ignominy. Completing a Diamond Badge after five years of trying only to land out in some obscure West Virginia valley and be retrieved by two guys who would never let me forget it.

Suddenly, my eye caught the flash of sun on a white wing. Another glider was in the same area. We Diamond

The window was definitely closing!

Petersburg, on a clear day

pilots don't like to admit we are lost so I disguised my voice and said, "Aaah, I seem to be temporarily disoriented."

Tom said, "Bill, if you'll look under your left wing the airport is right there."

Now being somewhat unnerved and having deactivated the gear warning device you probably think I'm going to forget the landing gear. Not so, I reached up and pulled that lever all the way back and heard it clunk into detent.

Yup, that's what I did.

Epilogue

Thanks to an alert crew with a handheld I got the gear down and put the old *Astir* on the ground unscathed. Then Frank and Henry went on to achieve their 5,000 meters in a much more sedate manner.

But now something is missing. Once you've got it there are really very few places you can wear that oversized Rotary Club button; and the challenge is gone. As in love and fly fishing the quest is ofttimes better than the trophy. Or as Browning eruditely queries, *"A man's reach should exceed his grasp, Or what's a heaven for?"*

But wait, Frank is mumbling something about west Texas for 1000 k's.

Three Florida glider pilots enjoy(?) the brisk West Virginia weather.

Flight Testing Performance Improvements Through Wing Profile Correction

Sailplanes pop out of their molds pretty close to what the designers intended, but as our flight test expert found out, there's always room for a little improvement

by RICHARD H. JOHNSON

INTRODUCTION

Flight test polar measurements were performed with two modern sailplanes, a *Ventus* A/16.6 and a *Nimbus* 3/24.5, to compare their polars when measured in original factory delivered condition to those recently measured after their wing surfaces had been carefully profiled to within about ±0.5 mm.

DISCUSSION

Sailplane wing molds are very carefully constructed these days; however, wing surface distortions of 1 or 2 and sometimes up to 3 mm do exist on even the best sailplane wings. Those unwanted distortions degrade the aerodynamic characteristics of the sailplane, principally by increasing the profile drag.

The wind tunnel test models, from which the airfoil characteristics are derived, are constructed to a tolerance of about ±0.1 mm or less; and that is about 10 to 20 times more accurately than current sailplane production techniques apparently permit.

Therefore, any reduction in sailplane airfoil distortions should result in improved performance. The purpose of the recent *Ventus* A and *Nimbus* 3 flight test measurements was to measure the magnitude of the performance improvements that were achieved through improving the wing surface contour to more closely match those of the airfoil wind tunnel models.

DESCRIPTION OF WING SURFACE MODIFICATIONS

The approximately true coordinates for the *Ventus* and *Nimbus* 3 Wortmann FX 79-K-144/17 proprietary airfoils were measured from full scale factory Mylar drawings, and with the kind permission of Klaus Holighaus, the approximate basic coordinates for that new airfoil are presented here in **Table 1**. A scaled drawing of that new 14.4 percent thick airfoil section is shown in **Figure 1**.

These preliminary coordinates have not yet been completely smoothed by the currently available airfoil aerodynamic flow computer programs. However, Dan Somers of NASA/Langley has kindly run the Table 1 coordinates through his airflow program, and he concluded that though there was some waviness in the upper and lower surface pressure distributions, no large errors existed.

His computed chordwise pressure distributions for the FX 79-K-144/17 airfoil coordinates are shown in **Figure 2**. It is likely that the usual wing surface sanding and smoothing will further reduce the magnitude of the small airfoil coordinate errors, and thus the expected extensive laminar flow regions can hopefully be achieved in practice.

The Table 1 airfoil coordinates were used to construct 25 upper surface and 25 lower surface templates, spaced approximately 500 mm apart, which were then used to correct discrepancies in the factory produced airfoil surfaces. The *Ventus* appears to use exactly the same airfoils as the Nimbus, except that its 8-meter-shorter wingspan omits the *Nimbus* 3/24.5 inboard panels.

Each template was prepared by plotting the appropriate full-scale coordinates on graph paper, cementing those to aluminum sheets, then carefully sawing and filing the sheet aluminum to faired lines through the coordinates. Both the upper and lower surface templates overlap the wing leading edge by about 1 cm to provide better shape continuity in that region. The templates ended at about .80 chord and no attempt was made to carry airfoil corrections onto the moveable flap and aileron surfaces.

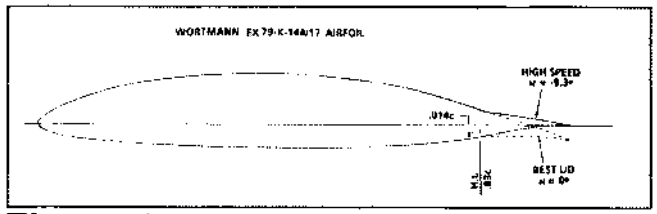


Figure 1

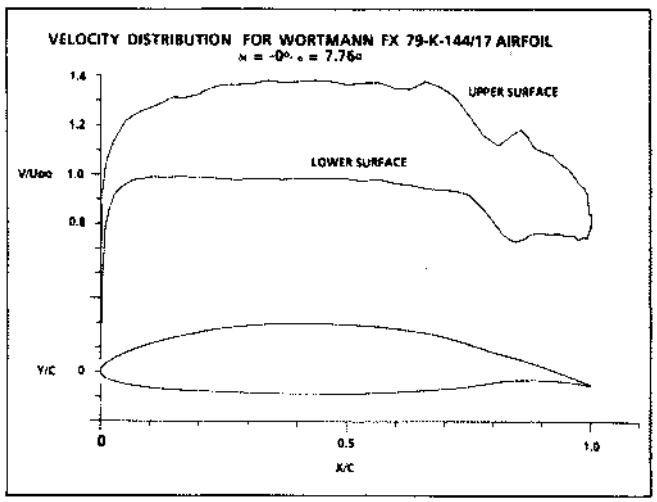


Figure 2

The wing surface corrections were accomplished by sanding down any high points on the wing surfaces at each template station; being very careful to limit surface removal to only excess gelcoat finish material and not disrupting any structural fibers below.

A filled epoxy resin, such as Duro EPF-39 or Sears No. 80605 was then used to make a 5- to 6-mm wide bead to fill any remaining low regions under each template. In fitting the templates to the wings, care must be taken to keep the leading edges relatively straight and symmetrical between the left and right hand wing panels because wing heaviness may result.

Once each wing station has its correctly formed "rib" in place, then it is relatively easy to place a spanwise-oriented straight edge between the corrected "rib" stations and again remove only excess gelcoat at any high regions. The remaining low regions between the ribs are then filled with a light-weight mixture of epoxy resin and small hollow glass spheres, such as Emerson 7 Coming Eccospheres IG-101.

This epoxy-microballoon mixture is prepared sufficiently thick to not run before hardening, and any excess amounts are carefully screeded off while soft by slowing drawing the spanwise-oriented straightedge in a chordwise fore and aft direction while held firmly against the correctly formed ribs.

About five successively more thinly mixed screeding coats of the epoxy-microballoon mixture were required to properly fill the low regions between the "ribs". After each coat hardened, all high points were carefully sanded flush so that the following coat could be smoothly screeded. Following that a polyester surfacer such as Simtec 2081 white sanding surfacer was sprayed on the modified wing surfaces to fill any remaining voids. Before final painting, the wings were carefully wet sanded, and a chordwise oriented wage gage was used to identify any waves in excess of ± 0.1 mm for elimination.

Table 1

APPROXIMATE COORDINATES FOR WORTMANN FX 79-K-144/17 AIRFOIL
δ_f = -9.3°

POINT		Y/C		POINT		Y/C	
NO.	X/C	UPPER	LOWER	NO.	X/C	UPPER	LOWER
1	.00000	.00000	.00000	26	.53270	.09560	-.04250
2	.00107	.00480	-.00430	27	.56526	.09270	-.04160
3	.00428	.00990	-.00870	28	.59755	.08880	-.04010
4	.00961	.01510	-.01250	29	.62941	.08450	-.03840
5	.01704	.02060	-.01590	30	.66072	.07980	-.03640
6	.02653	.02650	-.01920	31	.69134	.07350	-.03430
7	.03806	.03270	-.02230	32	.72114	.06580	-.03190
8	.05156	.03910	.02520	33	.75000	.05690	-.02880
9	.06699	.04540	-.02790	34	.77779	.04780	-.02470
10	.08427	.05160	-.03030	35	.80438	.03970	-.02030
11	.10332	.05770	-.03250	36	.82967	.03340	-.01570
12	.12408	.06370	-.03440	37	.85355	.02930	-.01170
13	.14645	.06950	-.03610	38	.87592	.02540	-.00840
14	.17033	.07480	-.03760	39	.89668	.02200	-.00560
15	.19562	.07990	-.03880	40	.91573	.01880	-.00330
16	.22221	.08480	-.03990	41	.93301	.01560	-.00160
17	.25000	.08910	-.04080	42	.94844	.01270	-.00030
18	.27886	.09260	-.04160	43	.96194	.01000	.00050
19	.30866	.09550	-.04240	44	.97347	.00760	.00100
20	.33928	.09780	-.04300	45	.98296	.00570	.00100
21	.37059	.09920	-.04340	46	.99039	.00410	.00080
22	.40245	.10000	-.04370	47	.99572	.00280	.00040
23	.43474	.10010	-.04380	48	.99893	.00220	.00010
24	.46730	.09930	-.04370	49	1.0000	.00200	.00000
25	.50000	.09770	-.04330				

The final spray finishing was performed with Simtec Prestic 2381 polyester gelcoat on the *Nimbus* wings and with DuPont Imron polyurathane enamel on the *Ventus* wings. Both finishes appear to be very satisfactory, but the polyester gelcoat was much easier to final sand and smooth. It is estimated that the entire profiling sequence added about 18 pounds (8.2kg) to the weight of the *Nimbus* wings, and about 12 pounds (5.5kg) to the *Ventus* wings.

NIMBUS 3 RESULTS

Figure 3 is a three-view drawing of the *Nimbus* 3 sailplane that was flight tested in its 24.5-meter span configuration. The unmodified airfoil testing was performed by the Dallas Gliding Association during the late summer of 1982 when the sailplane was about six months old, and those test data are shown in Reference A. The recent test data for the same sailplane four years later, but with the profiled wings, are shown in **Figure 4**.

The 1982 testing determined optimum flap settings for each test airspeed by actually measuring sink rates for several flap angles, and then using those which resulted in the lowest sink rate at each airspeed. Since then we have developed and sufficiently tested the Reference B wing relative profile drag probe to have fairly good confidence in its ability to indicate near optimum flap setting at each airspeed. Those flap angles are noted on the lower portion of Figure 4.

The effects of the wing profiling on the *Nimbus* 3 were gratifying, in that 2 to 3 knot speed increases were measured at airspeeds between 60 and 110 kts for the same sink rates, as shown in **Figure 5**. Between 42 and 46 kts the L/DMAX measured a solid 59, which is exceptionally good for a modern Open Class sailplane, without ballast.

Between 48 and 59 kts an anomalous behavior of the sink rate polar was observed, where during two of the five data test flights the measured sink rates were unusually low, whereas during the remaining three test flights the measured sink rates were unusually high. Little data scatter existed in the region and the sink rate data points seemed to fall either on the higher or lower curve, and not between.

It did not appear to matter if the test data were measured there while increasing or decreasing airspeed from the previous test point. That is, no repeatable hysteresis effect were shown, and that was checked during the flight resting by taking the sink rate data from both increasing airspeed test run schedules. Perhaps future testing will answer the anomalous sink rate questions there.

The above described *Nimbus* 3 flight testing was performed with normal 1 mm high by 5 mm spaced dimpled turbulator strips installed on the lower surfaces about .80c. Also, the wing surfaces were carefully polished and waxed with paste wax and well rubbed into both top and bottom wing surfaces.

VENTUS A RESULTS

Figure 6 is a three-view drawing of the *Ventus* A sailplane that was flight tested in its 16.6 meter wingspan configuration. The unmodified testing was preformed by the DGA during the winter of 1983-84 and those test data are shown in Reference C. The recent test data for the same sailplane three years later, but with the newly profiled wings, are shown in **Figure 7**. The optimum flap settings used were determined through use of a wing drag probe, as they were for the *Nimbus* 3 testing, and those angles as shown on the lower portion of Figure 7.

The same type of dimpled turbulator strips were also installed at about .80c on the wing lower surfaces, but the wings were not polished and waxed, only fine sanded with 400 grit wet paper. Here the flight test results were disappointing, with an L/DMAX of only about 42.5 shown at 45 kts. However, between 60 and 80 knots, and above 100 kts the airspeeds increased by about 2 to 3 knots for the same sink rates. The climb performance was relatively poor and that definitely needed to be improved.

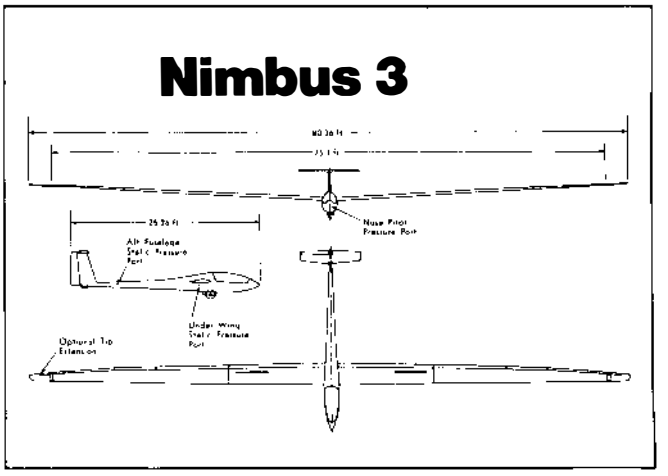


Figure 3

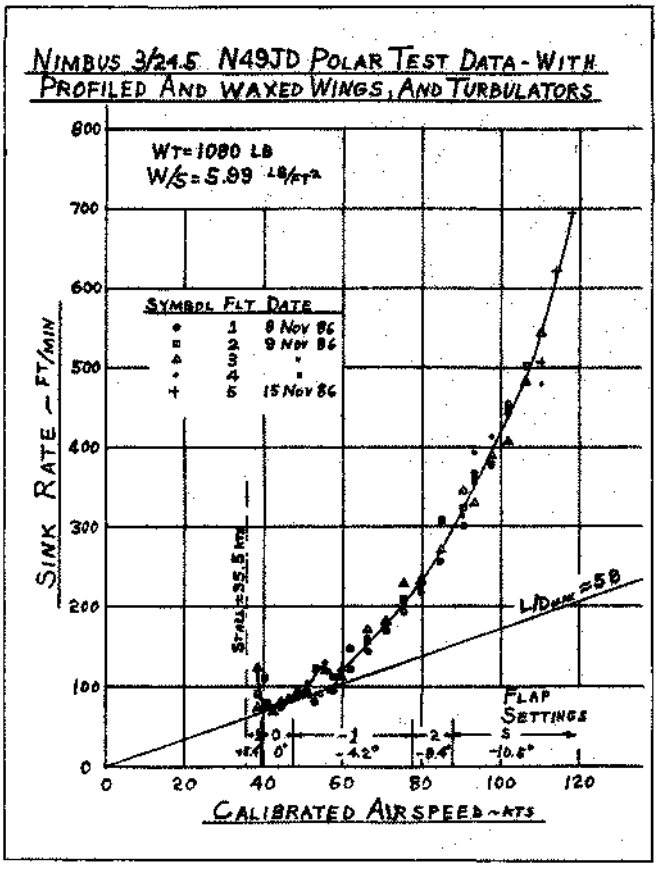


Figure 4

The *Ventus* wings were then carefully polished and waxed to place its wing surfaces in the same condition as those of the successfully tested *Nimbus* 3, discussed above; and the *Ventus* was re-tested. Those test data are shown in **Figure 8**. The effects of polishing and waxing on the *Ventus* performance were again disappointing, with an L/DMAX of only about 41.6, shown at 40 kts. However, at airspeeds above 70 knots, an additional 1 to 2 kts were shown for the same sink rates. That was quite encouraging; however, be-

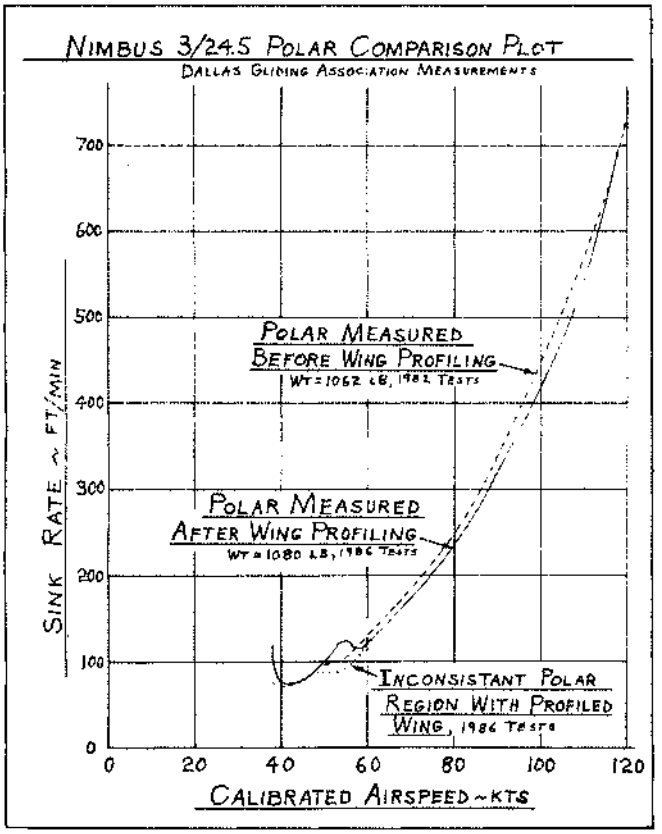


Figure 5

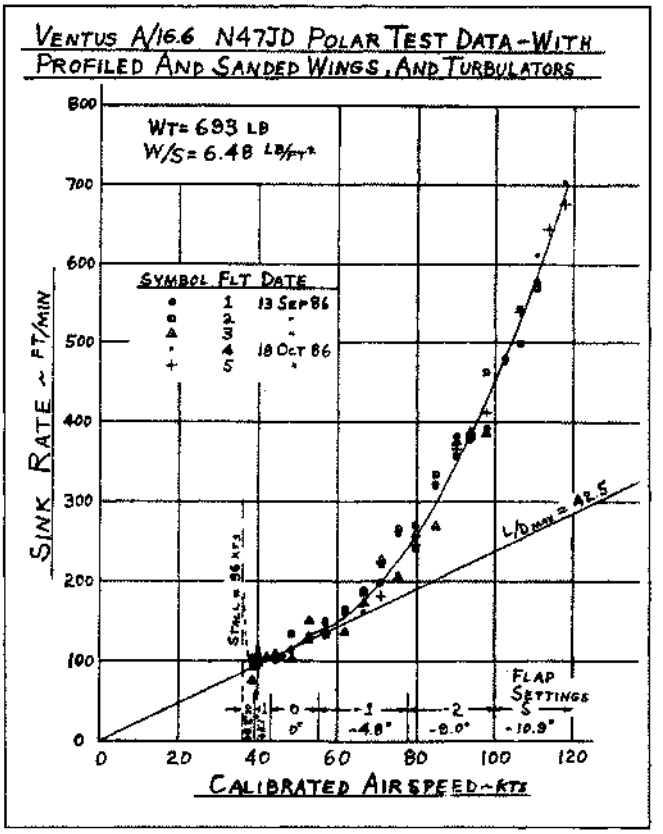


Figure 7

Figure 6

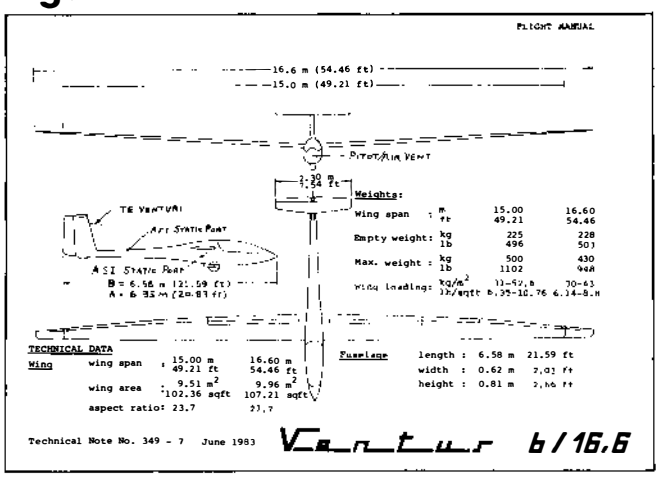
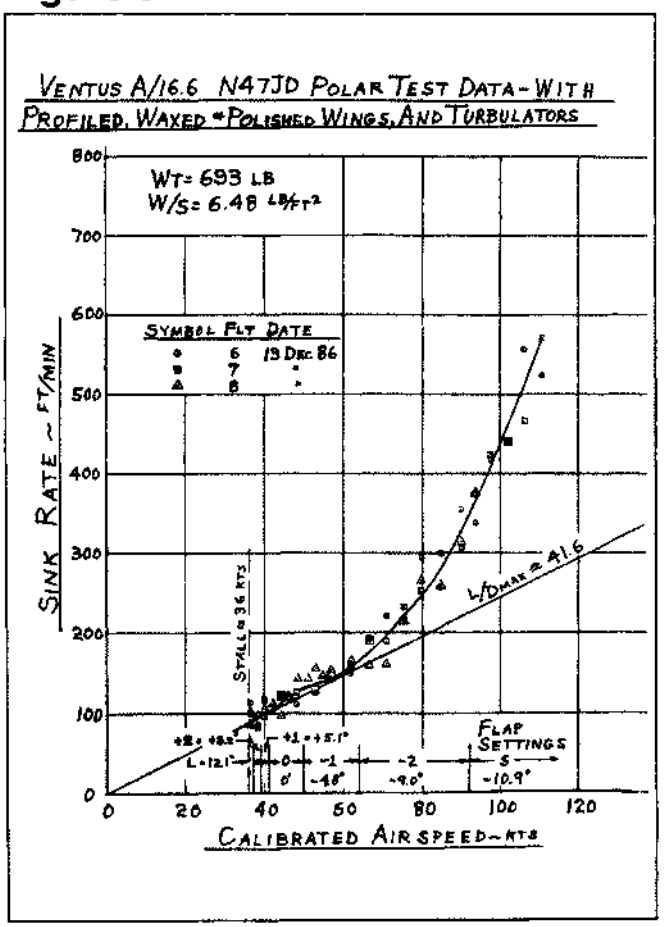


Figure 8



tween 40 and 60 kts the performance was worse than before, with even poorer climb capability noted.

When the *Ventus* A was initially tested in 1981, it was in its 15 meter wingspan configuration (Reference D). At that time sink rate tests were performed both with and without the factory supplied dimpled turbulator strips installed at .80c. Better performance was measured without the turbulators installed, so they were then removed for the following 15 meter and 16.6 meter wingspan testing, where excellent L/DMAX values of about 45 and 50, respectively, were measured.

Since the factory had observed better *Ventus* performance with the turbulators installed, it was assumed that small differences in our test sailplane's wing surfaces had

resulted in the lack of need for the turbulators. After profiling the wing it should have had an airfoil profile that was very close to that of the *Nimbus* 3, where early flight testing has shown the turbulators to be beneficial (Reference A) and recent profiled wing testing had shown excellent results.

Since our test *Ventus* 16.6 had repeatedly refused to show good performance with turbulators installed, they were removed for our final testing, and those data are shown in **Figure 9**. The effect of the turbulator removal was an unexpectedly large improvement in the Ventus' low speed polar below 65 kts. An L/DMAX of about 48.8 was shown at 44 kts, with equal or slightly better sink rates measured at airspeeds above 70 kts. The reason for this unexpectedly large performance improvement to the *Ventus*' polar is puzzling, especially since the recent *Nimbus* 3 testing with the same airfoil had shown excellent performance with the turbulators installed.

Figure 10 compares the *Ventus* 16.6 polar measured before wing profiling to that recently measured with the profiled, waxed and polished wings. Both polars are without turbulators because better performance was measured in that configuration. Below 43 kts both polars show excellent performance with minimum sink rates of 87 to 89 FPM (.44 to .45 M/S). Above 43 kts the profiled wing configuration showed significantly lower sink rates at given airspeeds, or viewed from an airspeed standpoint the cruise airspeeds improved from 1.5 to 4kts at a given sink rate. The largest gains were measured in the 80 kts and the 105 kt regions of the polar, where 4 kt airspeed improvements are shown.

CONCLUSIONS

Significant drag reductions in the *Nimbus* 3 and *Ventus* A polars can be achieved through carefully profiling of the wing sections, to more closely match those of the airfoil wind tunnel test models. Factory production accuracy of wing profiles are now much better than they used to be where distortions of up to about 8 mm have been measured by DGA in the past.

However, even the current 1 to 3 mm production and/or post mold curing accuracies are not sufficiently good to provide sailplanes with their full performance potentials. That can be remedied by either further improvements in the manufacturing process, or by laborious post-manufacture profiling.

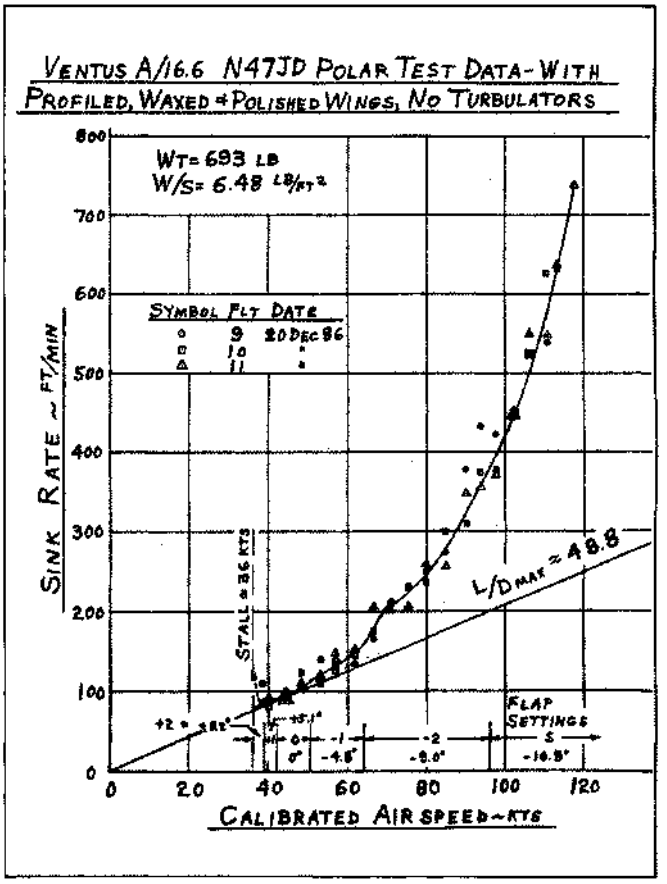


Figure 9

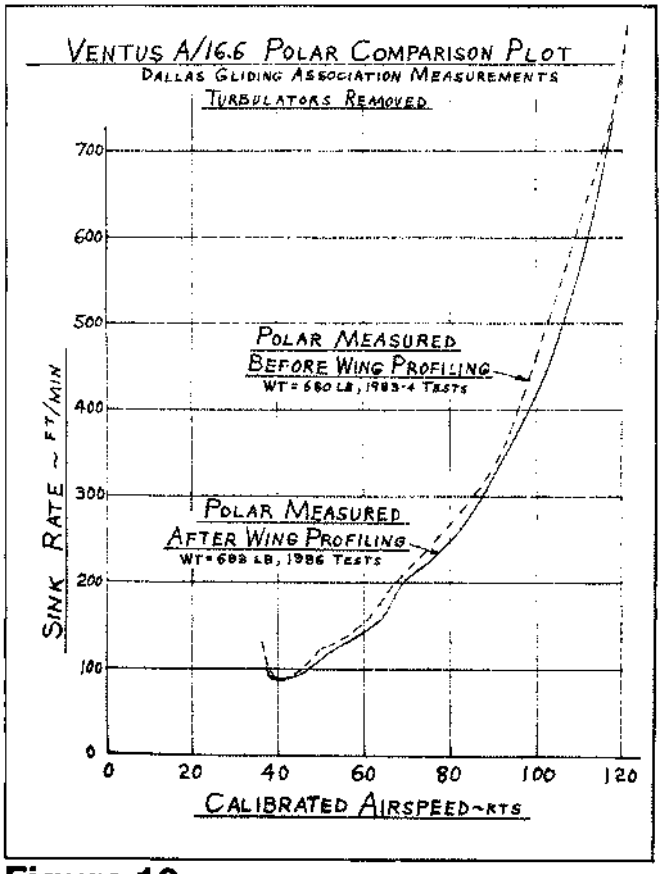


Figure 10

References

A. Johnson, R.H., "A Flight Test Evaluation of the *Nimbus* 3", Soaring, Dec. 1982

B. Johnson, R.H., "At Last: An instrument that Reads Drag", Soaring, Oct. 1983

C. Johnson, R.H., "A Flight Test Evaluation of the *Ventus* 16.6", Soaring, Apr 1984

D. Johnson, R.H., "A Flight Test Evaluation of the *Ventus* A", Soaring, Dec. 1981

A 'NEW' SOURCE OF LIFT?

by DUDLEY MATTSON

Lift is where you find it, but what if you find it where you had no right to expect it? Herewith a point to ponder.

I'm frequently made to wonder again at the tremendous forces of nature affecting our atmosphere and which we casually experience in tiny samples in our sport. Since these aerial flows are mostly invisible to us we have had to find them by trial and exploration, by observing soaring birds or by their visible effects, clouds or dust. I want to share with you some discoveries I've made in hopes some of you have also encountered a source of lift I've used on few critical occasions.

As a result of a recent flight in the Sierras (200km record flight for Region 11) I was reminded of earlier flights of ridge soaring along the Blue Ridge mountains of Pennsylvania and Virginia. While I have done a fair amount of ridge running in the East, it's not my favorite form of soaring, even though exciting. Extended low altitude flying can be tiring, not to mention hazardous.

Perhaps some of you who understand air flow over rough terrain can help explain what I've "discovered". To cut the suspense, here it is. The following conditions seem to be required: (1) A strong steady wind, 15-30kts; (2) At least some instability to encourage convective air movements; (3) A notch or abrupt end of a ridge running approximately normal to the wind direction; and (4) A glider pilot trying to penetrate upwind across, or around the end of, the ridge. (Obviously #4 is not required for the phenomenon to occur).

Given these conditions, there appears to develop a stream of lift similar to cloud street down the wind line from the notch or ridge end. How far this stream extends is unknown but may be 10-15 miles.

Let me briefly describe some of my experiences. My first encounter was on my Diamond Goal flight in Virginia (1976) though I didn't then have a clue to explain the last five upwind miles to my landing at the goal. Nearly the entire 200 miles were flown in ridge lift.

The last of the flight was flown under an overcast showing dark spots, indicating cu's. After "hill-hopping" 20 miles I arrived at the start of the Skyline Drive and the first good bluff. I was then directly downwind from Front Royal Airport two miles, and from the abrupt end of the Massanutten Ridge, seven miles. The best altitude I could get on the bluff was about 2300' above the gently rolling land between me and my goal, six miles upwind. With a headwind of 30-35kts no chance to make it.

I decided I would have to settle for Front Royal and Gold distance. I found as I crept forward at 15mph ground speed that by staying under the darkest clouds there was zero or reduced

sink and I passed over the F.R. Airport with nearly 2000'. So I kept on, losing very gradually until I suddenly realized I could reach my goal.

For weeks afterward I puzzled over what had enabled me to reach my goal (a problem to tangle with on sleepless nights). It wasn't until much later after encountering streams of lift in similar conditions near Front Royal Airport that I formed my tentative hypothesis.

Some years later, at a contest held at Ridge Soaring, Pennsylvania on a thermal day, I reached a turnpoint downwind from the ridge and thermaled to about 2500' AGL. I was five miles downwind from the ridge leading home. Since I had only about 1000' above ridge height there was very little chance to reach it in a 15kt wind; thermals were weak. I could see a distinct notch directly upwind. You guessed it, I made it home after a straight ahead penetration to the notch of the ridge, crossing it with a comfortable 300'.

The most exciting penetration I made—still later— was on a cross-country flight from Lexington to Front Royal, Virginia, on a day with a 25-35kt wind from about 300'. It was all ridge flying except for 12-mile penetration from the Blue Ridge to the Massanutten Ridge. This is a beautiful, classic ridge, 46 miles long between very abrupt tips dropping down to rolling plains. I-81 runs along its full length only 3-6 miles to the west. The northwest face is quite smooth with a few breaks where the ridge shifts forward or back, 1–2 miles. These breaks seldom cause trouble in running this ridge in as little as 45 minutes.

The much older Blue Ridge, more or less parallel, is broken up with valleys, gentle slopes and knobs, a real challenge to fly with ridge lift alone.

On this trip I made reasonable progress under blue sky with a few cu's along the Blue Ridge. As I progressed northwest I could see a stream of cu's coming southeast from the southern tip of the Massanutten. Sure enough, as I came under the line of cu's a thermal boosted me to 2000' above the hills. Twenty minutes later I had penetrated those 12 miles to that tip and gained 1500' with no turns. I reached Front Royal, 53 miles, less than an hour later. Now you will say I used a cloud street and you're right. But the fact remains that street began just off the end of that ridge.

Now my most recent experience, near Truckee, California. On my 200km record flight, the last ten miles from Verdi Peak was directly into a SW wind of 20-25kts. I've sketched this last course as it might look from SW of Truckee airport. There is a distinct notch formed by Boca Hill on the NW side of I-80 and the steep slopes leading SE to Mt. Rose. The SW wind across the airport and surrounding flat terrain seems to pick up speed as it drops slightly through the notch containing I-80 and the Truckee River.

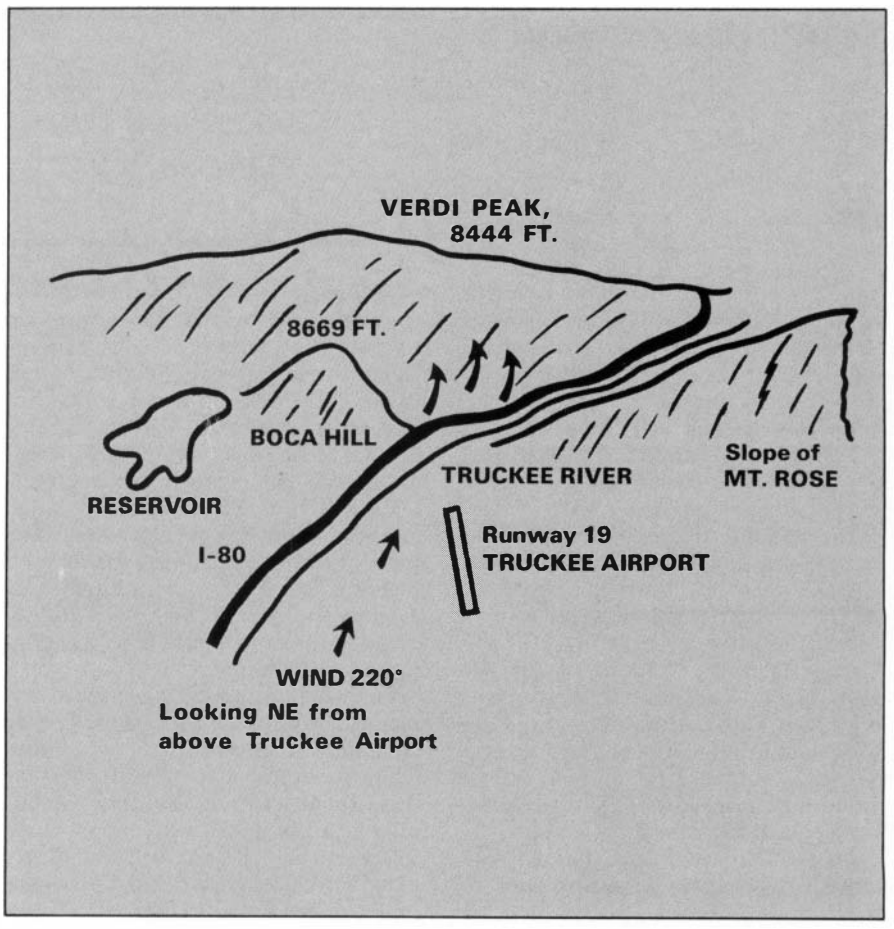
At the end of my run south along the Verdi ridge I turned SW toward Truckee. As I did I was prepared, if encountering "down", to turn into "Boca International", a straight stretch of gravel road Les Sebald had told me of. As I penetrated I found only slight lift and climbed 400' straight ahead over the next slow five miles until Boca Hill was under my right wing. With 3000' over the runway, now only four miles away, I dove off the remaining distance.

This lift was entirely unexpected but shouldn't have been. From my previous experience in Virginia I should have looked for it. However this was not a typical notch in a ridge as specified above. Rather it was more like a narrowed "drainage" slot at the downwind end of a basin several miles wide containing Truckee and the airport.

Now for a little speculation about causes. Is this an example of venturi action? Is it possible that air streaming through a notch or around the end of a ridge, as it speeds up, sets up vortex turbulence which in unstable conditions produces a stream of rising air?

In my experience the lift has always been weak but fairly steady and turbulent. I have not encountered strong convective bursts. Is unstable air required? Are there other flows associated with this stream of lift? Possible down currents? Has anyone ridden such a stream of lift downwind? Wouldn't it be great on a downwind X-C to use ridge lift as encountered across the course, turning downwind after reaching a notch or tip and hopefully avoid the downflow off the back side of the ridge, and even extending the next glide?

Harry Senn, you should have encountered this in North Carolina. And you fellows in New Jersey, Pennsylvania, Maryland, and Virginia, what are your experiences? Lets get some discussion about this and maybe learn to understand and use this "new" lift source. As I do more mountain flying I'm certainly going to explore this more deliberately.



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The author, strapping in for the 1986 RESCO Dust Devil Dash.

The RESCO Dust Devil Dash

Go along for the ride with our author as he gives a thermal-by-thermal account of a record-setting flight.

by JIM PAYNE

Midnight, Sunday
September 7, 1986

I hate retrieves! So, pray tell, what am I doing many hundred miles from home in the well-worn 50's-vintage travel trailer that serves as the lounge of Harriet Field, Wells, Nevada? Waiting, of course, for the heroine of my story and scribbling notes on one of the best soaring days of 1986.

The guy I have to blame for this fun is our Southern California SSA Governor, Rob Morgan. Last year, he decided that California needed its version of the Kansas Kowbell Klassic. So, Rob is offering an annual prize for the longest straight out flight from a designated gliderport in Southern California on the first Saturday after Labor Day.

September was chosen because the normal weather would keep the retrieve shorter. And in 1985 this was true, as the crews were always able to stay within radio range. But this is 1986 . . .

Let's go back a couple days and see where the fun started...

On the line, ready for Dust Devil Dash launch.

11:01 a.m., Friday
September 5

To broaden the background of test pilot trainees, the USAF Test Pilot School curriculum includes glider instruction. On this particular Friday, I am flying a student sortie at Fantasy Haven Airport, Tehachapi, California. We have just topped out an 800 fpm thermal 12,000 feet MSL. If tomorrow is this good this early, the Dust Devil Dash ought to be a marathon.

8:00 p.m. (after dark)

Jackie and I rig our LS-4a, "JP", by the rays of Glass Teck's yard light. She has reminded me that my biggest weakness is failure to be ready before the lift starts. During the first Dust Devil Dash at Crystalaire, Bill Bartell threatened to ace everyone with an early start. He was suffering from flu that day and aborted, giving me a chance to win. Lesson learned.

8:30 a.m., Saturday
September 6

Having camped at the airport, we are watering the ship. The rules require a five percent penalty for water, but we smell a great day and want to go as far as possible. Besides it's always easier to dump before launch than to fill the ship at the last minute.

9:00 a.m.

Dan Gudgel has collected an array of weather charts and satellite photos. At the impromptu pilot's meeting he presents a weather briefing worthy of a national contest. The day will be one of the best of the year with excellent lift, cumulus markers, and a light tail wind along a heading toward the northeast corner of Nevada. He does warn that there will likely be areas of overdevelopment in the northern parts of Nevada.

10:15 a.m.

"JP" is ready to go. I have declared Jackpot Airport, Nevada as a goal, a cruise of 516 miles.

11:00 a.m.

I take off exactly on the hour, the first launch of the race. The tow pilot knows the rules. He circles the airport so that I do not get any "intel" concerning the lift in the hills to the south. I depart his umbilical at 3000 feet above Fantasy Haven and backtrack south to the area that worked so well the day before. Hark, it is working, but not well enough to get ahead of the rest of the field. So I head north toward Tehachapi, encountering the first good thermal just southwest of the field.

11:22 a.m.

I have topped out at 11,000 feet MSL and have sent Jackie to Inyokern. (JP ground: "So much for having the time to de-bug the windshield.") Cu are in evidence on the Sierra and it looks every bit as good as forecast.

1:53 p.m.

Two and one-half hours after leaving the first good thermal, I am 14,000 feet MSL over Basalt, Nevada, 202 miles from Fantasy Haven. This early 80 mph run is the best start I have ever enjoyed. And I have company to keep my feet to the fire. Rick Wagner in his ASW-20C "MS" took off second and every time I have seen him since Kelso Valley, he has been about 1000 feet below me.

3:00 p.m.

"Moon Shiner" and "Jet Pilot" are back together south of Austin, working a band from 14,000 to 17,000 feet MSL. During the separation of our paths he has beaten me, as he is now 500 feet above. He is flying dry, leading me to conclude that on this day his negative flap is the equal of my water. The trouble is that his handicap dry is three percent better than my wet one.

But, with the beautiful lines of cu in front of us I have visions of 1000 kilometers, the Barringer Trophy, and a couple of Standard Class Records, so I am willing to concede the Dust Devil Dash to Rick. So much for counting my chickens.

3:30 p.m.

Ouch! I am passing between two cells of overdevelopment at Austin, Nevada. It looks ok ahead, but there is reason to worry. "MS" and I have separated again and he reports severe sink. We both are entering unfamiliar territory. The cockpit becomes crowded with charts as I attempt to keep an accurate position. I finally decide that the good landmarks are so far apart that I will just stay high and press north. (JP Ground: Rob Morgan gives a relay that "last he heard JP was headed for Canada." The relay is corrected to "headed for Idaho."

4:30 p.m.

It is still early as I pass Interstate 80. But, Dan's forecast "area" of OD is in fact wall of overdevelopment across my path. I climb to cloudbase at the last reasonable looking cloud and begin a sidestep toward Wells, Nevada.

5:00 p.m.

I am over Harriet Airport at Wells, Nevada with 10,600 feet on the altimeter and two hours of daylight remaining. A huge storm is rapidly dissipating over my goal of Jackpot. It is only 50 miles away, but the air has an eerie smoothness, the intervening sky is one big blue hole, the winds have switched to the east, and the local elevation nears 6000 feet. The terrain ahead is forbidding, with the road being possibly the only place to land. As Einar Enevoldson once succinctly put it, "For me it is a point of honor that I not intentionally risk my life or my ship."

So, I tested the air around Wells. Over some hills to the southwest there were a few bubbles, but nothing was working to reasonable altitudes.

I hear Graham Thomson (*Discus*) land at Winnemucca, Nevada to claim the U.S. National Standard Class Distance to a Goal record at 401 miles.

And the morning after. JP goes into the box

Rick Wagner is shot down at Elko, Nevada, 422 miles out. Hannes Linke (LS-6) is flying near Reno. I wonder if it is OD'd over that way. (JP ground: Bill Jones, "20C" passes the word that "Jim is headed for Wells." I'm not yet in Nevada so it is going to be a long evening.)

5:59 p.m.
Gravity wins and I land at Harriet Field.

6:30 p.m.
The ship is tied down, my landing card is signed, the call to the retrieve phone is complete, and I am settled down for a long summer's night. So what does one do while counting the hours?

A couple of passersby offer rides to a casino downtown. The phone number to Rose's Ranch is prominently displayed on the wall. Free pickup. But no, I want to be by the phone in case Jackie calls. Thanks to a good idea learned from Dale Bush, my crew has packed me a book. The title was one she gave me for Christmas, one which until tonight has thankfully not been opened.

7:30 p.m.
(JP ground: Austin, Nevada knows how to party on a Saturday night. Main street (the only street) has no traffic except for pedestrians, as if set for a parade. Only after I pass three sidewalk saloons do I realize that we are the parade.)

9:30 p.m.
Jackie calls. She is still more than three hours away. She has Grandma Payne, Julie, and Jason with her. She is doing great considering that there is no direct road to Wells. (JP ground: "No direct roads, that's an understatement if I ever heard one! I have been dodging cows on the open range by day and by night; it's really slowing me down.")

11:30 p.m.
"Yeager" is half read. It is a pretty good book. I am tired.

1:00 a.m., Sunday
September 7
Jackie arrives, covering 650 miles in 13 hours. She parks the motorhome next to the glider and we turn in, so tired that she doesn't give me the usual interrogation, prying all the details of the flight from me. There'll be too much time to do that tomorrow.

8:00 a.m.
We awake to a light sprinkle. It has overdeveloped already. The sprinkle lasts only a few minutes. We break out the towels and chamois, dry "Jet Pilot", and de-rig, fearful of another shower.

10:30 p.m.
We arrive back home, the 1300-mile retrieve equaling the sum of all her previous retrieves of the LS-4. Jackie reminds me one more time that she'll retrieve only one straight out per year (JP ground: amen.) I am thankful that the Hilton Cup is for triangles.

Monday, September 8
Crunching the coordinates in my Apple computer indicates that I have gone 458 miles, far enough to claim the U.S. National Standard Class Distance Record. I learn that Hannes landed at Rosendale, California for a 409-mile flight. Tom Massoth (Kestrel 15), Bill Jones (ASW-20C), and Rob Morgan (LS-4) all aborted back toward the south, flying raw distances of 467, 449, and 418 miles respectively.

Saturday evening
October 18
The Region 12 Soaring Council has gathered for the annual Diamond Badge Banquet. Bud Hopp has done a great job of setting up this event to honor the four 1986 Diamond Badge recipients in Region 12. In addition, awards are presented to Henry Combs for his 100 Diamond distance flights, to Fritz Seger for soaring Diamond distance on seven consecutive Saturdays, and to Bob Harris for his world altitude record. Ross Briegleb is presented his Hitachi "Master of Soaring" jacket.

Compliments of Rob Morgan, Jackie is awarded the 1986 RESCO Dust Devil Dash tee shirt. And deservedly so, she did all of the work.

Pilot	Ship	Actual/ Handicap miles
1. Jim Payne	LS-4a	458/418
2. Rick Wagner	ASW-20C	422/396
3. Graham Thomson	Discus	402/366
4. Hannes Linke	LS-6	409/365
5. Tom Franklin	DG-300	386/352

enediction

by DOUG JACOBS

It really wasn't much of a soaring day. The colors of Nature's fall paint brush were beginning to flow across the hillsides, heralding an end to the season. The cool breath of winter was not far behind. As he swung out onto the Parkway and headed northeast, he could see that the robins-egg blue of the sky overhead was marred at the horizon by the dusty haze of a strong inversion. To the north and inland over the high ground a few cu's had begun to form. However, their energy had been mostly spent in the ascent through the inversion, and they hung at the top of it lifeless and limp. It would be a difficult day with indifferent thermals and long searches for lift, he knew. A day when soaring was hard work.

A season of racing was behind him and he was tired. The constant juggling of job, family and flying had taken its toll over the course of the summer, as it always did. Eager and irrepressible in the spring after long winter's hiatus, he nonetheless felt spent in the fall, almost welcoming the restful winter weekends ahead. Today would have been a good day to relax, to putter around the house, to enjoy the gentle pleasures his children brought him. He'd been reluctant in gathering up his gear and had almost decided to stay home.

Still, he drove northeast, vaguely aware that this was a pilgrimage of sorts, knowing that he had to fly today or perhaps never again.

The crowd at the field was subdued. Crewless, he rounded up a few friends to help with the wings and got the glider together. He tried not to think of the last time it had been assembled, purposely keeping his mind blank as he taped and washed down its elegant form. Several pilots stopped by to chat, but he was inattentive and they drifted off.

His turn came quickly in the launch line. He ran to the car to leave the keys, unsure who might be persuaded to retrieve him if he went down, but not thinking that he would. The L-19 roared into place in front of him, the tow rope tightened, and he felt the

Illustration by Charles C. Kratka

sailplane leap forward. He eased back on the stick and the trees bordering the field fell all around him, magnifying the effect of the climb and bringing with it the heady first taste of flight.

As if sprung from a trap, the glider leapt upward behind the tow ship, the air welcoming him back, he rejoicing in its embrace. He gained altitude quickly behind the powerful tug and was soon at release height. Pulling the tow release, alone and on his own, he swung the nose around in a graceful arc and headed west.

His route took him over the high ground of western Connecticut for the first thirty miles. Farmland with inviting pastures soon gave way to hillsides forrested with New England hardwoods and narrow valleys drained by fast moving streams. He tried to hop from airport to airport in the hope that an aero-retrieve might be arranged if he lost it. There were few along his course at first, and as expected, the lift was weak. Each thermal took forever to climb through and was surprisingly turbulent for so gentle a day. Perhaps a wind shear existed at the inversion level.

Whatever it was capped him out at medium altitude, and each succeeding thermal seemed all the harder to find. He was often low, through never dangerously so. Just enough to tell him that today was not the day, that to turn back was advisable. Even so, at the top of each climb he continued west.

Soon he was near the shores of the Hudson. Here the river was broad and deep, and the surrounding shores were low and wet enough for ten miles in either direction to make crossing it difficult without good height. Over foothills on the eastern side he found good lift and decided to take it as high as he could. As he rose, he gradually realized that he had begun to enjoy the slow climb and the panoramic view of the Hudson valley that it afforded him. He also knew why, that the driving pressure of the racing season had yielded few opportunities such as this for aimless enjoyment. Flying for seconds and minutes seldom permitted such luxury, and he was happy for the freedom of these moments. Reaching the top at last, he reluctantly headed onward, anticipating a long glide before reaching the active portion of the river's far shore.

There was heavy traffic on the river, mostly pleasure boats. For many, it would probably be the last cruise of the summer. At ground level, the water flowed smoothly, untroubled by the massive scale on which it moved. Boats fighting the current northward did so with seeming ease, their bows scarcely rising and falling. From above, he admired the spindly lines of the boats wakes. It was easy to imagine them as mindless insects intent on capturing the river in a spider's web of coiled bonds. That's us, he thought. Trying to stop the inevitable with wishes and hopes, hardly aware of what we're up against.

From his vantage point above he could also see a deep churning pattern to the water's movement, not visible from the surface. Deep within the river were massive upswellings spread out over miles, as though a huge kettle were just beginning to boil. The water was smooth and complacent on the surface yet churning below, seeking release. Like me, he thought.

His glide was absolutely still for a long time, the ship seemingly suspended in amber. He sank lower, trading distance for altitude as cheaply as he could. He was easily within range of the big county airport but, never having landed there, he was uncertain of his likely reception. On the chance that he might need their help, he jumped into the busy flow of radio traffic at a quiet moment.

"Hello Stewart tower, this is glider Delta Juliet on a cross country flight transiting your area between one and four thousand feet." "Roger Delta Juliet, how's the lift?" was the delighted reply. "Not great, but as good a day as you can expect this late in the year," he said. "Yeah , fall is here. Good flight, Delta Juliet and we'll watch out for you."

Yes, please watch out for me, he thought. Watch out for all of us.

To the west of the Hudson the lift became more reliable. This was familiar sky, and he felt at home. The Catskills gleamed in the distance, their rugged peaks the site of so many soaring hours. Like a geological freeway, the Wurtsboro ridge below him ran straight toward them, ready these last hundred million years to bear a sailplane on a favorable northwest wind into their heartland.

To the south, the ridge melded into others, and their collective might ran for almost five hundred miles. He remembered how they had flown this sky intensively together, had seen each corner of it from almost every conceivable angle. On good days they had raced one another, never having called it such but each inevitably pressing to take the lead. On poor days they had huddled together, searching for the needed lift as one, helping each other home. Far overhead they had caught wave, riding its silky thrust until the mountains had been humbled far below, until the sky directly overhead began to blacken. Here and there was the site of an outlanding, the result of to much confidence, each one having taught its lesson of restraint. He knew this sky well, and greeted it now with warm affection as it lay in the midafternoon sun.

At first he couldn't find the small grass strip just short of the ridge. He had been over it many times and knew its pilots well but had never actually flown there. Suddenly it popped out at him, paralleling a highway and hidden by the pattern of the surrounding fields. Its surface was lush and green, and the sailplanes tied down around its perimeter seemed to be quietly grazing in bovine complacency. To the west at the end of the runway was the small triangular cornfield.

He found a weak thermal and began to circle, looking hard at that field. Somehow he had expected something more dramatic. It looked like most other cornfields, and was almost free of any signs that could be damage or disarray, despite the number of people who had tramped around in it. A bare spot showed here and there, but these might have easily been the result of poor drainage patterns. Perhaps in their wisdom, the natural forces at work below had conspired to swallow the outward effects of the tragedy, had straightened the crushed cornstalks and made them green again. Dust to dust, he thought, vaguely disappointed. Perhaps it's best to put it behind us, to give up trying to understand, to simply forget.

He noticed that the cockpit had become strangely silent. At first he thought his ears were blocked, but a forced yawn brought no release. The choppy turbulence of the thermal had been replaced by a quiet calm that felt like wave but couldn't be. Stick and rudder remained almost motionless under his light touch, and the glider flew almost by itself.

He switched off the electric vario and heard the silence intensify. An unnatural lack of airframe noise made him think he was close to stalling. A glance at his airspeed indicator showed a solid fifty knots, and the controls had none of the butterfly-like trembling that signalled separation. Perplexed and suddenly anxious, he had a mad thought.

"*Robert?*" he said aloud. The sound of his voice crashed across the still cockpit.

"*Robert,*" he repeated, quietly this time.

He never saw the approach of the red-tail. It was just there suddenly,

twenty feet over his canopy. He'd seen many before; the ridge below served as a major migratory route for thousands of hawks, but he'd never seen one act quite like this. The bird hung just above him, flying inside his circle and remaining motionless relative to his canopy.

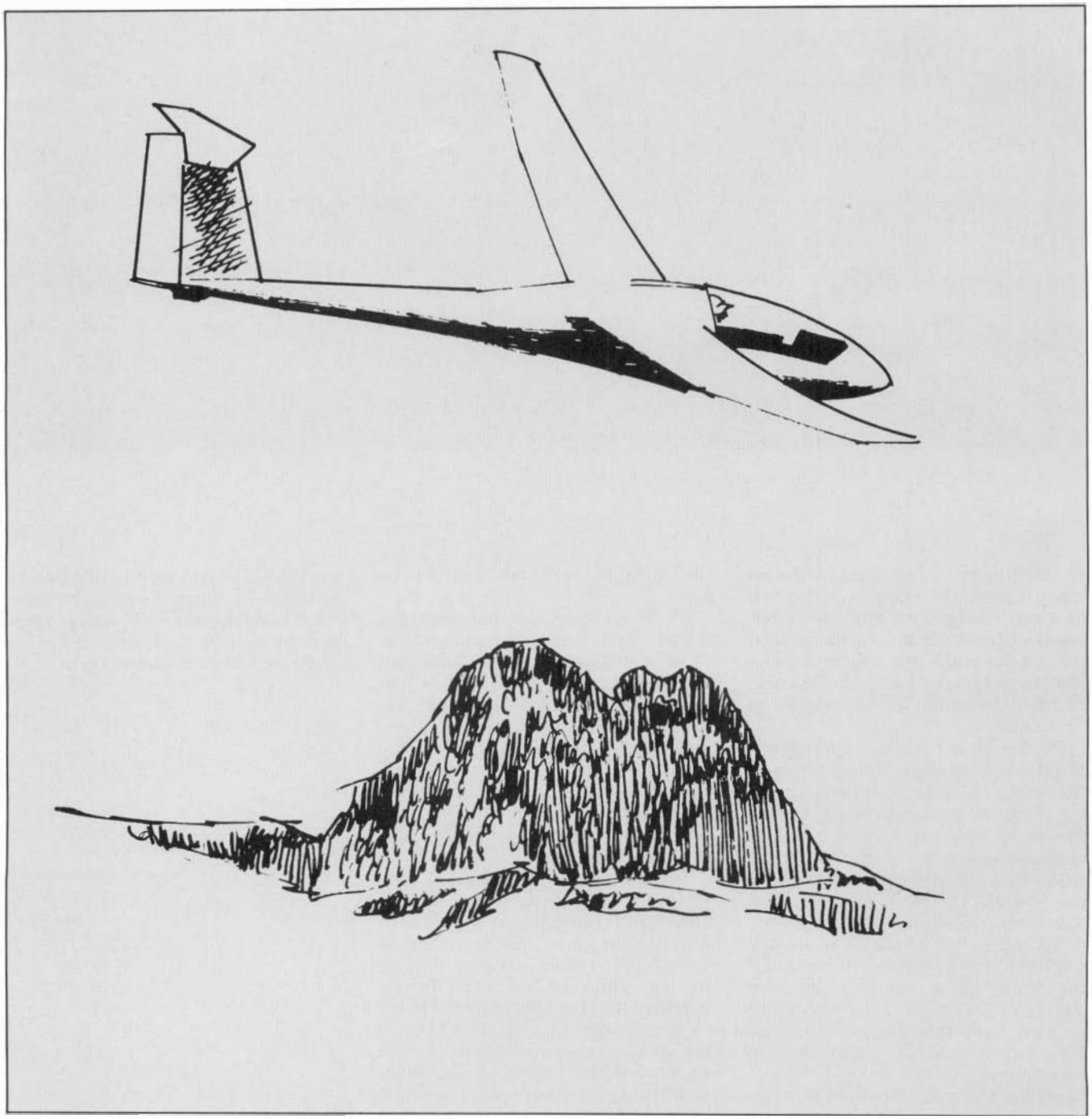
He stared at it for long moments, mostly reacting in surprise to its sudden presence in the seemingly empty sky. Its fierce eye was plainly visible, and as he watched, it glared at him, challenging him somehow. For several circles they shared the thermal, eyeing one another. This is my sky, it seemed to be saying. Fly it as I do or be gone.

While the hawk continued to stay with him, so close above, he admired the beauty of its banded wing, the flexibility of its tail, the thrusting pointed beak that defied the wind. How nice it might be, he thought, to be immersed in the air, to be rid of fiberglass and instruments, to fly as Icarus dreamed, without restraint or fear.

The hawk disappeared as quickly as it had come, swinging its talons forward and flexing them at him with one last ferocious glare. With a half roll it dove behind his left wing. He quickly rolled the glider into near vertical bank and pulled hard on the stick, searching for his companion. Shuddering from the g forces, the sailplane slewed around quickly and nearly stalled, but it was no use. The sky was empty again.

He headed east, retracing the ground he had worked so hard to cross. While the flying continued to be difficult, he knew full well that he would make it home. The empty feeling with which he had begun the day persisted, but had diminished. He felt challenged, felt like this need to be in the air would not now abate. He also knew that the events of this flight would not bear close examination, that the release he had found could be easily lost if he thought too much about what had happened. He simply knew that he carried with him all the answers he was ever likely to get.

Eight-One-Charlie



And Me

by ANDY HOLOUBEK

Do you remember what it was like when it was all still new and capable of producing adrenaline every time? Of course you do, you just haven't thought about it in just that way for a while. Take a moment . . .

Labor Day weekend, 1986. Monday dawned clear and cool in the San Gabriel Mountains north of Los Angeles.

I prepared a lunch, double-checked the contents of my flight bag and was on the road by 8:00 for my 9:30 appointment with a sleek Grob G-103 glider—and the brilliant blue sky above. It was going to be a great day. I could *feel* it!

The 75 minute trip to the gliderport was, as always, filled with a mental review of the basics: ground preflight checklist; rope break plans; cockpit checklist; landing checklist; stall, spin and spiral dive recovery procedures; flight at minimum controllable airspeed; glider/towplane signals; weather; FAA regs; and on and on.

"So much to learn!" I thought. "But you *must* learn it ! No time to check the book— when you're up *there*!" I remind myself. Before I know it, the field is in sight. I feel great, confident that I have been thoroughly trained to calmly and correctly deal with whatever in-flight situation may arise today.

The temperature was already starting to climb. The forecast high, here in the Mojave desert south of Edwards Air Force Base, was for just over 100° F. Needless to say, it was promising to be an excellent soaring day!

I discussed plans for the day with John Stevenson, my instructor. Tail number 3981C was assigned to me for the day's flying, a ship I had flown many times before and knew well.

I proceeded to the tie down area and performed a thorough preflight inspection on "Eight-One-Charlie". All was in order. John arrived, with the Honda ATC, and we slowly towed to the runway.

He told me that this first flight of the day would, as usual, be a high pattern tow and that he would ride the back seat. He would play the "silent" instructor and observe my every action. Therefore, in effect, this would be a solo flight. The flight was without incident, except for some coaching by John while I was struggling through a few Dutch rolls. This flight lasted 23 minutes.

The second and third flights were short pattern tows during which John gave me some pointers on landing approach and flare techniques. One of the areas, I had told him, where I felt I could be doing a better job. He then approved me for solo flight for the rest of the day.

It was almost noon, by then, and I was hungry. I made one solo pattern tow, to reinforce the points that John had just made, and then broke for lunch.

Two sandwiches and a pint of orange juice later, the sun, under cloudless sky, was baking the high desert sand in earnest. The temperature was in the high 90's— and still climbing. According to Ed Green, the tow plane pilot (and also instructor), the thermals were developing very well now.

This was what all the training during the last year was for (I can only fly once a month, usually). This was what I had been waiting for all summer! A superb soaring day. A fine ship. The approval of my instructor for solo flight and plenty of time to just go up *there* and enjoy.

My pulse quickened as I planned

*"So much to learn!" I thought. "But you **must** learn it ! No time to check the book— when you're up **there!**"*

the remainder of the day. I was looking forward to this afternoon with almost as much eagerness as my first solo, way back at the end of June. On that flight, I didn't realize I was actually *alone* in there until . . . But that's another story.

I busied myself with preparations for the next flight. I had decided that I was simply going to enjoy the flight, let the conditions take me wherever they might (not forgetting the bounds of the training area) and stay up as long as possible. Just flight—for the sheer joy of flying.

"Drafting" a somewhat nervous looking bystander—awaiting his first "intro" ride with John—to walk my wing tip, I towed Eight-One-Charlie to the runway. "Memories,I hope you are prepared to be hooked!", I thought, wathcing my wing-walker. How long ago that first, magic, intro flight seemed, the event that guaranteed my life would never be the same again.

Upon reaching the runway, I unhooked the tow line, thanked my "volunteer" and wished him a good flight. As I watched him turn and head back toward the office, I remember thinking "Good flight—nothing! You would have to be made of stone not to fall in love with soaring on a day like *this!*"

Anticipation rapidly building now.

As I was next in line for takeoff and Ed was already taxiing the towplane into position, I quickly went through my equipment checklist once again: Hat—check; water bottle, full—check; pencil—check; pocket notebook—check; sunglasses clean—check; all loose gear stowed—check. I had previously prepared the back seat for solo flight by fastening the harness straps and securing any loose items. I double-checked everything at this time and then lowered and locked the rear canopy before climbing into the front cockpit.

The towplane swung a 180 in front of me. I grabbed the open canopy with one hand and held full left stick with the other, against the blast of the prop-wash. The line boy walked toward me, towrope in hand.

Pulse rate quickening. Adrenaline beginning to flow.

"OK, nothing to it. " I tell myself. "Just relax and tend to the business at hand. You *can* do it!"

The preflight cockpit checklist, CB-SIT-CB, was next:

Controls: full and free movement—check.

Ballast: should be out—check.

Straps: both cockpits secured (the back is secure and my harness is—*click-click-tug*—secure)—check.

Instruments: altimeter set at field elevation of 3420 ft—check.

Trim: set at neutral—check.

Canopies: both down and locked (turn and *visually confirm* that the rear cockpit canopy is latched)—check.

Dive brakes (Spoilers): closed and locked—check.

Loose gear: safely stowed—check.

The line boy offers the end of the towrope for my inspection. It's slightly frayed (not enough to worry about though) and I OK it for this tow. I can also see that it is free of strength-robbing knots, as I quickly scan the length of yellow rope all the way to the towplane release mechanism. The rope is connected to the nose hook. He gives it a pull, hard enough to drag the sailplane a foot or so along the runway.

Towrope—check.

Pulse rate jumps yet another notch. Palms beginning to perspire slightly now.

While he walks to the wingtip, I quickly review my rope break plans—again.

"Remember: expect that the worst is going to happen—on *this* flight—and be *prepared* for it!" I remind myself. "Emergencies are only events for which you are *not* prepared."

He is now at the left wingtip. I ask him if the landing patterns are clear. He confirms that the patterns are clear—check.

Windsock: indicating about 5 kts. straight down the runway—check.

Stick: centered and slightly aft of the neutral position—check.

I give him the thumbs up signal and he responds by raising the wingtip to the wings-level takeoff position.

Left hand: resting on—but *not* holding—the yellow towrope release knob—check. (Just in case).

I actuate the stop watch on my wrist in order to monitor elapsed flight time.

I signal Ed for takeoff by fanning the rudder. A few seconds later he responds with the same signal, applies power, the tow rope goes taught and we begin to move.

"From now until I reach the first rope break decision point; I will deploy spoilers as necessary and land back on the runway if the tow rope breaks. If the towplane develops trouble on takeoff, I will release immediately and land to the right of the runway," I remind myself.

At this point, I need to inform the reader that I never, really, fly "solo". You see, I have this "passenger" who always insists on tagging along whenever I am going up—alone. I've never seen him, but we carry on a running dialog nonetheless. He keeps me in the real world. He looks over my shoulder and watches everything that I do. On several occasions, my first solo being one, he has kept me from making a potentially serious error. I therefore tolerate him. He is, however, a perfectionist and grades almost everything that I do. This can be most annoying. He has no name. He is just there, my invisible co-pilot—and I would not fly solo without him.

Now then. Oh yes...

With a tremendous roar and a great deal of obvious effort from the towplane, we slowly accelerate down the runway. As the airspeed builds, the controls begin to bite into the hot thin desert air. Slowly at first, with very large movements of the control surfaces required to accomplish the smallest correction, then rapidly settling down to near normal responsiveness, and Eight-One-Charlie approaches flying speed. The ship feels as though it is coming alive in my hands now. Slowly awakening from a deep sleep.

"OK, get that nose wheel up. Balance the ship on the main gear. Keep those wings LEVEL!" my passenger fairly "shouts". Comforting to know he's

there—annoying—but comforting anyway.

Airspeed continuing to build. The ship is feeling very light now, almost as though she is anticipating what lies just a few feet ahead. "Wait—just a few more seconds." I tell myself. "Just a few more knots and—*now*!" I apply *very* slight back pressure on the stick and we immediately lift clear of the runway. We're *flying*!

Looking out of place on the ground, Eight-One-Charlie is all beauty and grace in her element—the air. We become one, Eight-One-Charlie and me, and we respond, to each little buffet and gust, as one. We are flying. We are home, again.

"Check that airspeed indicator. Make sure it's working. You don't want to get up there and find out your airspeed indicator is dead. Could make landing a whole new experience." he says, as he snaps me back to reality.

Accelerating through 55 knots. Airspeed indicator—check.

Passing the mid-point of the runway, the towplane becomes airborne and begins a slow and steady climb toward my planned release altitude of 2000 ft. above the desert floor.

"You're getting a little high on him." my invisible co-pilot says. *"EASE it down a bit. But don't hug the ground to close, a gust could slam us into it."*

We pass the first rope break decision point. From here, until we have 200 ft of altitude, if the tow rope breaks I lower the nose to maintain flying speed, execute a gentle left turn and land in the emergency field across the road. "Piece of cake," I remark to myself, as I swallow, very hard, and hope that I never, actually, have to do it. That emergency field looks awfully short, especially when you consider those power lines that must be cleared on final approach. Yet something inside me says that if I did have to use it, I *could* do it.

We continue to maintain position behind the towplane and pass through 200ft. From here on, if the rope breaks, I can safely execute a 180 degree turn and return to the field for a downwind landing.

I start breathing again, now that I have a little altitude with which to work.

The towplane is turning now. I try to hold position, aimed at his high wing tip. *"Looks good,"* the voice says, *"but could be a little cleaner: B-plus, so far."*

"Look, there's a lot of turbulence out here." I point out.

"Excuses, excuses," he says.

We continue to climb. Passing through 1000 ft now. Suddenly, the towplane jumps up about 5 ft. and then, 3 seconds later, I apply slight forward pressure to the stick, just before we encounter the same rising air mass. We pass through it cleanly and continue on course.

"What's the matter with you?" he says. *"That was a perfectly good thermal back there. Why didn't you release?"*

"It could have been just a bubble. And we're too low to do any hunting if it was just a bubble. I'm sticking to the plan: tow to 2000 ft and then release near the best thermal I can find," I tell him, firmly.

"I still say we should have released back there" he says.

"And I say we stay on tow. Who's pilot-in-command of this ship anyway?" I remind him.

Silence.

As we climb through 2000 ft, Ed signals that he has located a thermal. I clear the airspace, release, watch the tow rope drop cleanly away then execute a gentle, climbing turn to the right. Just like the book says. Everything is great—except I can't seem to locate the thermal. I waited too long.

"I *know* it's here—*somewhere*." I say.

"I told you so," he says, quietly.

A series of gentle 360's and shallow S-turns reveal only sinking air—4-6 kts sink! I take some consolation in the fact that where there is strong sink there should also be strong lift. If only I can find it.!

Descending through 1500 ft, I set course for the landing pattern IP, while we can still easily make it. Best to be safe. Those Joshua trees don't look like they would be very friendly to thin fiberglass wings. I continue to make shallow S-turns to either side of our base course, desperately searching for a thermal, *any* thermal.

Pulse rapidly accelerating as the decision point, my landing commitment altitude, quickly approaches.

"After descending through 1000ft, we are landing—no matter what!" I remind myself, firmly, *"NO MATTER WHAT!"*

The vario begins to head towards zero slowly. Down to 2 kt sink now. Promising.

About a quarter of a mile from the IP, descending through 1100 ft, the vario suddenly swings from 2 kt sink to 2 kt *lift*. I stiffen in the seat. All of my senses are alert. Eyes now rapidly cycling between the vario, the altimeter and the airspace around us, just in case it is a thermal and we have to bank hard and fast to catch it. Still no other traffic in sight. Altitude holding now. "Thank God for small favors," I say to myself. This weak lift has bought us a few more precious seconds in which to find that thermal. I KNOW it's here! A little buffeting, then—WHOOMP!!

The familiar hard slap from below that means we have encountered a strong, rising airmass. The vario is registering 4-6 kt lift and left wingtip is up— about 3 ft.!

"OK, just like the book says, now," I remind myself.

Hold steady for 3 seconds, then hard left bank—now!

"THERE IT IS!" I shout. Sounds dumb, shouting inside a closed cockpit—but who'll ever know? And it feels *good*!

The vario registers 4-10 kt lift in the first 360. I center up on it and begin to work it as we climb through 1800 ft. It sends a chill down my spine every time I manage to connect with a good thermal and watch that altimeter steadily climb.

"Not bad flying. Not bad at all," he says. *"Centered it pretty well in only three revolutions."*

I don't believe it. A compliment. Sometimes he *is* nice to have along. Sometimes.

At 3000 ft above the field, I take time to relax, for a brief moment, and enjoy a long drink of the water bottle. This can be tiring.

Pulse rate slowing now. Breathing approaching normal again.

That thermal topped out at 9200 ft MSL. I lost track of all the thermals we encountered. Now they seemed to be everywhere.

Once near 11000 ft, I leveled out on a southerly heading, trimmed back to a few knots above minimum flying speed and just absorbed the view over the mountains. Magnificent! What an exhilarating feeling! No sound, except for the gentle whisper of the thin air flowing smoothly over the canopy. The words of John Denver (in the film about our unique sport. "The Quiet Challenge") come to mind and seem so fitting: "We court mother nature in a silent arena—with not a single spectator."

My passenger is silent through all of the thermal hopping, except for an occasional *"Watch that yaw string!"* or *"Clear your airspace more often!"*

Once, while in a tight bank in a particularly small thermal, he had to say *"Better ease the nose down a little. It's getting AWFULLY QUIET in here. "* I had become so engrossed in trying to stay in the thermal that I inadvertently allowed the nose to rise. The airspeed slowly bled off and we were in danger of a turning stall. I carefully eased the nose back down, the airspeed rose slightly and all was well once again. I'm thankful that he is

very observant.

We spent over an hour and a half between 9000 and 12000 ft. thoroughly enjoying every minute. The water bottle was empty now—half in me and the rest on my head and down my back. You get thirsty up here! I was also beginning to feel fatigued. At these altitudes, for this long, I was well aware that the air was very thin. As I was not carrying oxygen, I decided to call it a day and head for home

"Wise decision."

I practiced turns across a road and Dutch rolls (damn those Dutch rolls!) on the way down.

Emotions were mixed. On the one hand, here was a magnificent soaring afternoon (for which I had waited so long) with plenty of time remaining—but, on the other, I *was* tired. "Safety first," I reminded myself, and continued my descent.

I set up course to intercept the landing pattern IP at the standard 800-900 ft. AGL. A check of the windsock, while making a high pass over the field, showed that a normal right hand pattern to runway two-five was in order.

OK. Time for the pre-landing checklist:

Airspace and landing patterns: clear—check

Spoilers: fully functional, left hand to remain on the spoiler control from now until fully stopped on the ground—check

Airspeed: trim adjusted for 60 kts—check

Windsock: wind is out of the west at about 5-7 kts so normal approach and pattern airspeed is OK—check

Altimeter: ignore the altimeter from here on, watch the angle to the landing point—check

At the IP I execute a left turn to enter the downwind leg, level out, breath deeply and carefully continue to checklist:

Runway: towplane and glider just beginning their takeoff roll so the runway *should* be clear when I need it (monitor this throughout the pattern, use alternate parallel dirt runway, if necessary)—check

Select aim point: opposite that 1-26 should be about right—check

Pulse quickening.

"OK now, stay calm," I tell myself. "Watch for the 45 degree angle to the landing point. Coming up . . . *now!*"

I execute a 45 degree banked turn to the right to enter the base leg.

"Watch that airspeed! Keep that yaw string STRAIGHT!" he shouts. *"We've only got ONE shot at this, remember?"*

Palms beginning to perspire now. I wish he hadn't reminded me.

"Deep breaths. just relax. We're almost home now. " I keep telling myself.

Level on base leg. Angle to the landing point looks good. Airspeed is almost 65kts, better ease the nose up a little and scrub off some airspeed with the spoilers.

"You're high," he says.

"No we're not. We're right in the groove. Be *quiet*. I'm a little busy up here at the moment. Do you mind?" I respond.

"I mind," he says. *"We're going to land long and there are people—PILOTS—down there watching our every move. We'll look like, like—STUDENTS!"* he says.

"Well, we *are* students." I remind him.

Silence

"Turn to final approach—*now*!" I say to myself.

"The bank is a little steep—and you turned to soon. We're going to be short of the runway centerline. Roll it out—just a little, there! Hold it!" he says.

I roll out onto final and check the glide path and airspeed.

"Looks good. Right on target. Airspeed at 58 kts and steady. OK," I say.

Silence from my passenger.

Watching the glide path, I come to the conclusion that we are, in fact, a

little high, and would land a little long. I deploy more spoiler, to steepen the approach slightly. (I hate someone who's always right!)

"Over the fence—now. Steady. S-T-E-A-D-Y. Flair point is approaching quickly," I caution myself.

Pulse very fast now. Adrenaline flowing freely.

I shift my eyes to a point well down the runway, to better judge the flare height. At an altitude of about 5 ft. I begin to flare.

"Easy now. Don't overdo it. Don't 'balloon' it!" I tell myself.

"You flared too high. But what's worse is that your are yawing slightly left. Apply a little right rudder—and quick!" he says. *"OK now—hold it off—hold it off—hold—it—off,"* he says.

We just passed over the numbers. DAMN!

About 2 plane lengths past the numbers, my *intended* touch down point, there is a gentle "chirp" from the main gear, followed almost immediately by the tail wheel settling down also. I apply the brake to reduce our speed.

"Watch it!" he says. "Keep those wings level! Remember: you're still flying! And slow us *down*!"

" Damn PERFECTIONIST!" I snap.

"Yeah—but what would you do without me?" he says.

As I said, I hate someone who's always right.

Carefully, I taxi over to the parking ramp and come to a gentle stop. The left wingtip settles slowly to the ground. I take note of the stop watch, for the log.

"Landing: C" he says.

"WHAT?!" I say, indignantly.

"Minus," he adds.

Some days you just can't win.

"You were a little high on base," he says. *"You turned to soon onto final. You flared a little to high, which caused us to float in the ground effect past the intended touchdown point, and worst of all, you nearly touched down with a left yaw. You do realize that, if you had not corrected at the last second, you could have damaged the main landing gear or even ground looped us?"*

Though I felt in control of the ship the entire time, I had to admit he had a point. I definitely need more landing practice and vowed to discuss this problem with John and to fill one of my next solo days with nothing but pattern tows. "Repetition of proper technique is the key to consistency—and safety", I remind myself.

I remove my perspiring hands from the controls, stretch my arms and legs, close my eyes, take a deep breath—and exhale very slowly. Heart rate slowly returning to normal now (for the first time since I signaled Ed to begin our takeoff roll, it seems). Beads of perspiration forming on my forehead and finding their way into my eyes as I sit, baking, under the "greenhouse" effect of the canopy. This is aggravated by the lack of air movement in the cockpit, now that we are once again at rest on the ground.

"We did it!" I shout, cautiously looking around to see if anyone is looking at this idiot talking to himself. Eight-one-Charlie and me (and my faithful passenger).

Opening the canopy, feeling the "cool" 100 degrees breeze flowing over my body, I realize that I am soaking wet and physically and mentally drained. No wonder, I have been concentrating on flying, as near to perfection as possible, for well over 2 hours. The longest, by far, that I have been up in a single flight.

It is a "high" to just sit here and relax, knowing that I am not just living but that, today, at this moment in time—*I am alive.*

After a few minutes, I take out my logbook and, still strapped and cradled in the cockpit, enter the pertinent information of this flight. Date: 1 Sept. '86. Flight: No 76. Glider type: G-103. License No 3981C. Type of tow: aero. Release alt: 2000 AGL. Flight time: 2 hr 41—SOLO. Remarks: New personal altitude mark (12,400 ft MSL) and new time aloft mark (2:41). I make no mention of the fact that the flight was only possible as a result of a last- second save. I know that and that is all that matters.

Not too bad, for my 11th solo flight. Two hours and forty one minutes and a 7000-ft gain in altitude with the only "fuel" being *my* ability to work in harmony with the force of nature, a force invisible yet powerful enough to lift 1,028 pounds of sailplane and pilot a mile-and-a-half in the thin California air. I am impressed. Especially when I consider the fact that there will be many more soaring days in the years to come—but none, no matter how good, will be quite like this day.

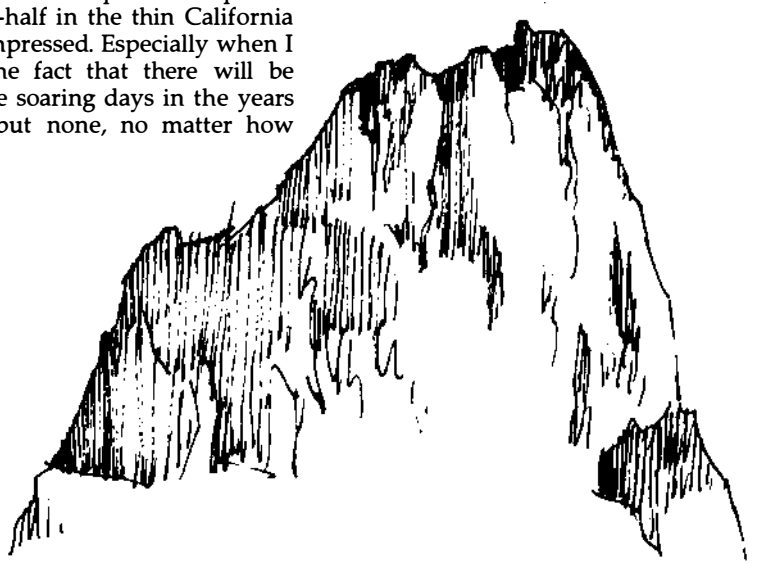
"No, not bad at all," he says, and I know that I will not hear from him again until the next time I strap into a glider, to fly "solo".

Climbing out of the cockpit, I realize that something is very wrong. The legs, kind of wobbly, almost have to learn to walk again. I shuffle around the ship for a few minutes, stretching and getting reacquainted with the ground. Feels sort of strange, after pushing rudder pedals most of the afternoon. Then, after deploying the spoilers, and closing and locking the canopy, I thank Eight-One-Charlie, bid it farewell and turn and walk, slowly, to the office. I'm already planning my next date with a glider, and the challenge of the sky above.

I will forever be grateful to John, Ed, Karen and all the terrific people associated with Crystal Soaring for having the never-ending patience to teach me the delicate and rewarding art of piloting a sailplane. Their enthusiasm for the sport is definitely contagious. There were times when I would climb out of the cockpit and seriously ask myself if I was capable of walking and chewing gum at the same time!

But, through it all, their patience never once wavered. John would often say, in his usual calm manner,"Don't let it bother you. We all had these problems when we were learning too. Just relax and it'll come," as he corrected some dumb error I had just made and straightened the ship out—again. Those words always made me feel better, even though I never really believed that he (or Ed) *ever* made the same mistakes I did.

One day I hope to attain the rating of Flight Instructor, so that I may pass this gift on to others. I am thankful for a gift that I will treasure for the rest of my lift—the gift of soaring flight.



F.A.I. BADGES & OTHER SSA AWARDS

ARLEEN COLESON

INTERNATIONAL F.A.I. BADGES FOR SOARING
Earned or Recorded in the United States Through November 1986

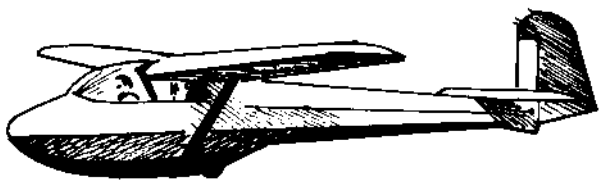
INTERNATIONAL NUMBER ASSIGNED
3916. Dan E. Swenson (U.S. 623)
3917. Thomas R. Ruwitch (U.S. 624)
3933. David C. Dooley (U.S. 626)
4014. Aland B. Adams (U.S. 635)

GOLD BADGES
1719. James G. Koonce, Sr.

SILVER BADGES
4909. Gregory V. Lewis
4910. Clarendon Bowman

ALTITUDE DIAMONDS
5000 meters (16,404 ft.)
Michael B. Cavanagh; LS-1f; Westcliffe, CO

GOLD BADGE LEGS
Altitude: 3000-meter gain (9842 ft.)
James G. Koonce, Sr.



Distance: 300-Kilometers (186.3 mi.)
Peter P. Angelou, Jr.; 1-26; Eagle Ridge, NJ
Kenneth Kochanski; 1-26; Eagle Ridge, NJ

SILVER BADGE LEGS
Altitude: 1000-meter gain (3281-ft.)
Kenneth Applegate; 1-26; Reno-Stead, NV

Distance: 50 kilometers (31.1 miles)
Peter P. Angelou (See Gold Dist.)
John L. Austin; AS-K 21; Matthews Field, TN
Clarendon Bowman; Std. Cirrus; Oviedo, FL
Gregory V. Lewis; 1-36; Tehachapi, CA

BRONZE BADGES
373. Jim Croce; Vacaville, CA
374. Gregory E. Lee; Vacaville, CA
375. Randy Mathews; Vacaville, CA

C BADGES
13,193. Kenneth Applegate; Reno-Stead, NV
13,194. Thomas P. Cahill; Eagle Ridge, NJ
13,195. Gregory E. Lee; Vacaville, CA

B BADGES
Kenneth Applegate; Reno-Stead, NV
Thomas P. Cahill; Eagle Ridge, NJ
Gregory E. Lee; Vacaville, CA

RECORDS APPROVED
World; Single-place; Open; Distance Around a Triangular Course; 1362.68 km (846.73 mi.); Jointly held by Thomas L. Knauff, USA (Nimbus 3), L. Roy McMaster, USA (AS-W 20), Robert L. Robertson, Great Britain, (Ventus A), John C. Seymour, USA (AS-W 20), Karl H. Striedieck, USA (AS-W 20); May 2, 1986; Ridge Soaring, PA.

Florida; Multi-place; Open/Senior; Distance Around a Triangular Course/Speed Over a Triangular Course of 500 km; 311.6 mi./43.48 mph; Peter W. Espenlaub, Pilot/Charles P. Espenlaub, Passenger; Twin Astir; May 17; Brooksville.

Florida; Multi-place; Open/Senior; Speed Over a Triangular Course of 200 km; 42.6 mph; Peter W. Espenlaub, Pilot/ Charles P. Espenlaub, Passenger; Twin Astir; May 31; Brooksville.

Michigan; Single-place; Open/Senior/15-Meter; Out & Return Distance; 262 mi.; David L. Nelson; AS-W S12; July 3; Ionia.

Michigan; Single-place; Open/15-Meter; Speed Over a Triangular Course of 200 km; 55.8 mph; Jack Wyman; H-301 Libelle; July 3; Gregory.

CALENDAR OF EVENTS

Events listed in bold-face type are sanctioned by SSA.

Mar. 6, FAA Physiological Training at Edwards AFB, California in conjunction with the RESCO Wave Camp. Contact Nancy Evans, 6430 West Avenue Q-12, Palmdale, CA 93551, (805) 273-7154.

Mar. 7-15, 1987, RESCO Wave Camp, California City Airport, California. Sponsored by RESCO. Contact Dick Buckman or Bud Hopp, (213) 476-4143, 1693 Stone Canyon Rd., Los Angeles, CA 90077.

Mar. 13-15, SOAR MINDEN Power Transition Camps. Sponsored by Soar Minden. Contact Marion Barritt, (702) 782-7627 or 782-7353.

Mar. 14-15, Second Annual Region 10 Workshop to be held at TSA Gliderport, Midlothian, TX, sponsored by TSA, DGA, and SCOH. There will be seminars, flying and fun. Contact Jim Callaway (214) 424-1567.

Mar. 14-20, Wave Week, High Country Soaring, Minden, NV. (702) 782-4944.

Mar. 21, Region 2 Cross Country Soaring Seminar and Banquet, from beginner to pro. Sponsored by Aero Club Albatross and Region 2. Location: Allentown, Pennsylvania. Contact Ron Almquist (201) 526-2199 or Aero Club Albatross, RD 2, Box 101, Blairstown, NJ 07825.

Mar. 21-22, Illinois Sport Aviation Seminar. Contact Gene Hammond (815) 467-4185.

Mar. 28, Soaring Experience Seminar. Hyatt Rickeys, Palo Alto, CA. Sponsored by Soar Minden. Contact Marion Barritt, (702) 782-7627 or 782-7353.

Mar. 29, PASCO WAVE CAMP BRIEFING, Hyatt Rickeys, Palo Alto, CA. Sponsored by Soar Minden, Contact Marion Barritt, (702) 782-7626 or 782-7353.

Mar. 28-29, Steve Powell's Aerobatic Seminar, TURF SOARING, Phoenix, AZ. Contact Roy Coulliette (602) 439-3621.

Apr. 11-19, 21st Annual PASCO Wave Camp, sponsored by the Pacific Soaring Council. Douglas County Airport, Minden, Nevada. Contact Bob Korves, (916) 363-8075, 9201 Henley Way, Sacramento, CA. 95826.

Calendar of Events

Sponsors of all soaring events are requested to submit details so they may be included in the SOARING calendar. Deadline for calendar items is the 15th of the month, two months previous to the cover date (i.e., Mar. 15th for the May issue). Prospective participants and visitors should write to activity contacts for information on entry applications, rain dates and practice days. Send calendar items to:

Calendar Editor
SOARING Magazine
P.O. Box E
Hobbs, NM 88241 90066

Apr. 12-17, Region 5 North, Chester, SC. Sponsored by Chester Soaring Association and Bermuda High Soaring. Contact Terry Frazier, 1712 Dilworth Road East, Charlotte, NC 28203. 15M, Standard, Spts.

Apr. 22-25, Central California Soaring Club 14th Annual Spring Contest, Delana, CA. Contact Mario Crosina, 1747 Bobolink Lane, Fresno, CA. 93727. (209) 251-7933.

Apr. 25-26, SOAR MINDEN AEROBATIC CAMP. Contact Marion Barritt (702) 782-7626 or 782-7353. Led by Steve Powell.

May 1-3, National Sailplane Aerobatics Championships, Stillwater, OK. Contact Les Horvath (602) 568-2318 (days), 3108 Fairway Drive, Tempe, AZ. 85282. Practice days Apr. 27-30.

May 9-10, 16-17, Second Annual Region 2/3 Soaring Council's Handicapped Sailplane Races, Blairstown Airport, Blairstown, New Jersey. Glass, Sports, or 1-26...something for everyone. Contact Bob Greenblatt (609) 397-8410.

May 10-15, Region 5 East, Winter Haven, Florida. Sponsored by: Florida Competion Soaring. Contact: Jerry Freeman, P.O. Box 7311-3383, Winter Haven, Florida 33883. Telephone (813) 324-3458 anytime. Practice day May 9th. Standard, 15M.

May 15-17, EAGLES NEST GOLDFEST HANDICAP SEEDING CONTEST. First of five amateur and professional sailplane races: Sponsored by Soar Inc., Odessa, Tx. Contact Juan Batch (915) 563-8191, P.O. Box 3089. 79760. May 15th practice day. First through fifth place eligible for professional handicap race Aug. 14, 15 & 16th.

May 17-21, PASCO Cross Country Camp, Air Sailing Airport, Reno Nevada. Contact John Volkober, 3930 Fruitvale, Okland, Ca. 94602. Telephone: (415) 530-1593.

May 23-25, 39th Annual Wright Memorial Glider Meet, Caesar Creek Gliderport, Waynesville, Ohio, sponsored by the Caesar Creek Soaring Club. Contact Pat de Naples, 5385 Elbon Road, Waynesville, OH 45068. (513) 932-7627. Practice day, May 22, 1987.

May 23-25, 30-31, Region 11 South, Minden, NV. Sponsored by PASCO. Contact George Thelen, 6632 Northbrook Way, Fair Oak, CA 95628. (916) 966-0737 days, (916) 961-0362. Open, Standard, 15M, Spts., MG.

May 29-31, United States Soaring Hall of Fame Induction Ceremonies, 1987 Exhibit Premier and Annual VSA Regatta. Contact National Soaring Museum, Harris Hill, RD#3, Elmira, NY 14903, (607) 734-3128.

May 29-31, Ann Arbor Municipal Airport, Michigan. PINCH-HITTER COURSE, includes 4 hrs. of dual (right-seat) flight instruction. Non-pilot, frequent passengers, learn to fly & land THEIR airplane. GDAC 99's. Lee O'Connell, 11270 Irene Dr., Warren, MI. 48093. (313) 573-0838. Pre-registration mandatory.

June 1-5, South Region 5 Contest, Tifton, Georgia, sponsored by the MGSA. Contact Bob Grey, 200 Grey Creek Drive, Athens, GA. 30606, Days (404) 543-6469, Evenings (404) 548-1805. Standard, 15M, Spts.

June 14-20, Region 1 Contest, sponsored by Sugarbush Soaring Association. Contact John Mahoney, 27 Mohawk Trail, Clifton Park, NY 12065, (518) 454-6366 days, (518) 371-2046 evenings. Standard, 15M, Spts.

June 19-21, EAGLES NEST GOLDFEST HANDICAP SEEDING CONTEST. Second of five amateur and professional sailplane races: Sponsored by Soar Inc., Odessa, Tx. Contact Juan Batch (915) 563-8191, P. O. Box 3089, 79760. June 19th practice day. First through fifth place eligible for professional handicap race Aug. 14, 15 & 16th.

June 24-July 1, 1-26 Championships, Caesar Creek Gliderport, Waynesville, Ohio, sponsored by the Caesar Creek Soaring Club. Contact Pat De Naples, (513) 932- 7627, 5385 Elbon Road, Waynesville, OH 45068. Practice days June 22-23.

June 27-28, July 3-5, Region 8 Contest, Ephrata, WA. Sponsored by Seattle Glider Council. Contact Roger Brewer, 4740 119th S.E., Bellevue, WA. 98006. (206) 644-9711 evenings. Spts., Standard, 15M.

June 29-July 3, Rideau Valley Soaring School Beginners Cross Country Soaring School, Kars, Ontario, Canada. Contact Glenn Lockhard, RR#1, Box 511, Manotick, Ontario, Canada KOA 2NO. (613) 692-3622. For 1-26 Pilots.

June 29-July 3, Region 10 West, Littlefield, Texas. Sponsored by The Caprock Soaring Club, Inc. Contact: Oliver Ramsey, 7711 Knoxville Drive, Lubbock, Tx. 79423. (806) 745-3344 days, (806) 795-9169 evenings. Open, 15M, Standard, Spts.

June 30-July 8, 1987, U.S. Sports Class National Soaring Championship, sponsored by Harris Hill Soaring Corporation. Contact: National Soaring Museum, RD #3 Harris Hill, Elmira, NY 14903, (607) 734-3128 or Competition Director, Tom Smith (413) 862-4704.

July 3-5th, 1987, Eagles Nest Goldfest Handicap Seeding Contest. Third of five amateur and professional sailplane races: Sponsored by Soar Inc., Odessa, Tx. Contact Juan Batch (915) 563-8191, P.O. Box 3089, 79760. July 3rd practice day. First through fifth place eligible for professional handicap race Aug. 14, 15 & 16th.

July 7-16, 1987, 54th Open Class Nationals, Hobbs, NM, sponsored by The National Soaring Foundation, Inc. Contact Steve Maier, NMJC, Lovington Hwy., Hobbs, NM (505) 392-4511.

July 17-19th, 1987, Eagles Nest Goldfest Amateur Handicap: First through fifth place eligible for professional handicap race Aug. 14, 15 & 16th. Sponsored by Soar Inc., Odessa, Tx. Contact Juan Batch (915) 563-8191, P.O. Box 3089, 79760. July 17th practice day.

July 21-30, 1987, 12th U.S. National 15-Meter Class Soaring Championships, Barstow, California, sponsored by RESCO. Contact: Trip Mellinger, 24743 Quigley Canyon, Newhall, CA. 91321. (805) 259-4749.

Aug. 1-14, World Sailplane Aerobatics Championships, Bielsko-Biala, Poland. Contact, Bob O'Dell (713) 661-9964 evenings. 3911 Riley, Houston, Tx. 77005.

Aug. 4-13, 18th U.S. National Standard Class Soaring Championships, Uvalde, Texas, sponsored by Uvalde Flight Center. Contact, Mark Huffstuttler, P. O. Box 5184, Uvalde, Tx. 78801. (512) 278-4481.

Aug. 14-16th, 1987, Eagles Nest Goldfest Professional Handicap. Last in the series of five sailplane races 1987 season. Contestants chosen from first four Goldfest races previously listed. For information contact Juan Batch, (915) 563-8191, Odessa, Tx. 79760. Aug. 14th practice day.

Aug. 16-22, Region 6 North, Ionia, MI. Sponsored by Benz Aviation, Inc. Contact, Jerry Benz, 3148 South State Road, Ionia, MI. 48846. (616) 527-9070.

Aug. 29-30, Sept. 5-7, 1987, Region 12 Contest, California City, California, Sponsored by RESCO (bid subject to sanction). Contact: Trip Mellinger, 24734 Quigley Canyon Rd., Newhall, CA. 91321 (805) 259-4749. Practice date Aug. 23.

SOARING SAFETY FOUNDATION

THE MEDICAL ASPECTS OF SOARING

The Soaring Safety Foundation continues its drive to reduce accidents and incidents in soaring by presenting information that could help you avoid being involved in an accident. This quarter's presentation deals with several medical aspects directly related to soaring, and is aligned with the FAA'S "Back to Basics" program.

There are several areas of medical aspects that affect soaring:

1. The pilot's overall medical and mental condition.
2. Medications, "over the counter" drugs, and illegal drugs.
3. Liquids and electrolyte balance, including effects of alcohol.
4. High altitude physiology.

As you may have noticed in other parts of *Soaring*, this is the 50th year of publishing. Over the years, several very good articles on medical aspects have appeared in *Soaring* magazine, and excerpts will be made from some of them. (For complete articles, see the reference list at the end of the article.)

OVERALL MEDICAL AND MENTAL CONDITION

We have spoken over the years about the "general medical, physical, and mental condition" of the pilot and how this affects his flying. We have known, for instance, that to remain alert during a Diamond Distance flight or a contest flight, one must be in good physical condition. We also know that when there have been major changes in our life, that we may not be capable of concentrating on the task at hand, thus making it difficult to fly safely. We will discuss Stress in another article, but for now, to quote from "THE JOY OF SOARING" (Ref. 1), "applicants for glider pilot licenses are spared the expense of a physical examination and must only certify that they have no known defect that would render them unsafe to fly a glider. This policy puts the responsibility squarely on the pilot to be certain he meets the requirement. If there is the slightest doubt in his mind in this regard, the best procedure is to be examined by an FAA designated medical examiner who has special training and experience in the field of aviation medicine.

"Any ailment that might cause a person to be suddenly incapacitated is sufficient reason not to be a pilot. Examples are epilepsy, serious heart troubles, and some diabetic conditions; there are doubtless many others. Some temporarily disqualifying ailments are peptic ulcers, anemia, and acute infections.

"There are causes other than serious disease that affect a pilot's ability to fly, to exercise good judgment, and, as a student, to absorb instruction. One of these is the common cold. In addition to hampering the efficiency of the pilot, there is the danger of middle ear pain and of spreading the infection into the sinuses. Anything like a bad cold should ground a pilot until the symptoms abate.

"Habit-forming and hallucinogenic drugs and alcohol are out for pilots. So is flying when suffering from hangover, even when the worst effects of it are masked by aspirin or other medication.

"The scuba diver is well aware of the danger of the bends. He may not realize, however, that soaring soon after a dive can create a secondary hazard of the bends if the blood has not yet had time to normalize fully. The 'diving pilot' should be aware of the possibility, and at the first sign of discomfort should descend to a more comfortable altitude.

"Fatigue makes a poor student and a poor pilot. It is a waste of time and money to try to fly when just plain tired out. Fatigue is also an in-flight problem. Power pilots usually run out of gas before they run out of pep, but glider pilots don't run out of gas. *(Except motorgliders.*—ED.*)* A cross-country often lasts eight or ten hours, and at the end, when judgment is most needed, an exhausted pilot may be trying to decide where to land. He should be ultra-conservative in his planning and flying at such a time, knowing that neither his reflexes nor his judgment are as good as they were earlier.

"Because of the glider pilot's continuous need to think clearly and make decisions, it is wise to follow the example of the Air Force and breathe supplementary oxygen when above 10,000 feet MSL.

"Airsickness is not too frequent among pilots because the control a pilot exerts over the glider eliminates the feeling of helplessness that is so much a part of motion sickness. The pilot is in charge, and that makes all the difference. Some people with a tendency toward airsickness get over it after a few flights as they become more at home in the air. Alas, a few do not, and lose interest in soaring; others of weak stomach but stronger determination continue soaring but carry an airsickness bag. These are the authentic heroes of the sport.

"The brilliant light encountered when flying soon converts most pilots to the wearing of sunglasses. In soaring, the polarizing type is especially valuable. With these glasses, when the head is tilted to the proper angle there is a pronounced darkening of the blue of the sky. Against this background, other gliders stand out more sharply, an obvious safety factor. The first appearance of wispy new cumulus cloud can be spotted earlier with polarizing glasses than with the naked eye. Some competition pilots claim that under certain conditions they can detect the presence of a thermal. These are all good things, but the prime reason for wearing sunglasses is still the protection they provide for the eyes, as attested by most aeromedical specialists."

HIGH ALTITUDE PHYSIOLOGY

Searching for the elusive Altitude Diamond creates several medical problems; hypoxia, hyperventilation, cold and fatigue. The following article appeared in *Soaring* ten years ago, and is just as valid today. (Ref. 2)

"How many times have you heard someone say they flew above 12,500 feet without oxygen, or 'the thermal or wave lift was so good I climbed to 15,000 feet without oxygen before starting my glide'? Each time a pilot does this he is asking for trouble. Hypoxia is generally recognized to be the single greatest hazard to the aviator. For example, some 75 hypoxic fatali-

ties occurred in Europe during World War II at altitudes between 17,000 and 31,000 feet. Twenty-seven (one third) of these fatalities occurred within 10 minutes of loss of oxygen. Two deaths occurred at altitudes between 17,000 and 20,000 feet, altitudes which are not too uncommon for glider pilots.

"In general terms, hypoxia can be defined as an oxygen deficiency in the body tissues sufficient to cause such functional impairment as poor judgment, euphoria, mental confusion, and loss of consciousness. For the purpose of discussion hypoxia will be divided into three major phases of breathing—ventilation, transportation and utilization.

VENTILATION

"The ventilation phase of respiration refers to back and forth movement of outside air into the small air sac of the lung where exchange of vital gases occurs. This phase is of particular importance to the glider pilot because an oxygen deficit in the inhaled air will mean an oxygen deficit in the pilot. This form of hypoxia is know as altitude *(hypoxic)* hypoxia.

TRANSPORTATION

"Assuming an adequate amount of oxygen is inhaled, the next phase necessitates transporting it to the tissues where it will be used. The oxygen molecule is picked up by the hemoglobin molecule in the red blood cell as it passes adjacent to the air sac in the lung. The hemoglobin molecule then carries the oxygen to the tissues where it is needed and releases it.

"Any condition which alters the hemoglobin adversely affects this phase of respiration. Acute blood loss or chronic anemia both decrease the amount of hemoglobin available to transport oxygen and hence lead to hypoxia. Toxins, particularly carbon monoxide either from smoking cigarettes or breathing exhaust fumes, inhibit the normal binding of oxygen to hemoglobin. This form of hypoxia is termed anemic *(hypemic)* hypoxia.

"A second form of transportation hypoxia is termed *stagnant* hypoxia. This refers to either a localized or generalized decrease in blood flow seen with excessive g-forces, heart failure, shock, or exposure to temperature extremes.

UTILIZATION

"The utilization phase of respiration refers to the ability of the cell to use the oxygen it receives. Certain compounds cause the cell to malfunction so it cannot utilize the oxygen delivered to it. This is termed tissue-poisoning *(histotoxic)* hypoxia. Alcohol,

(Continued on next page)

drugs, cyanide, and carbon monoxide have their effect here. The latter may be of potential importance with motorgliders.

ALTITUDE HYPOXIA

"As mentioned earlier, this form of hypoxia is the most important one to glider pilots. It generally happens by ascending to altitude (relative to the individual) without oxygen, or by equipment malfunction.

"At sea level with an atmospheric pressure of 760 millimeters of mercury (mm Hg) we breathe 21 percent oxygen and 78 percent nitrogen. As we ascend in altitude from sea level, the gaseous distribution of nitrogen and oxygen maintains the same percentages, but the atmospheric partial pressure of each decreases with increasing altitude. For example, at 10,000 feet MSL, the atmospheric pressure is 523mm Hg, air sac oxygen is 62mm Hg—considered hypoxic—and supplemental oxygen is required.

"Similarly, at 15,000 feet MSL, the atmospheric pressure is 429mm Hg, air sac oxygen is 45 mm Hg, hemoglobin saturation is 80 percent and arterial oxygen 44 mm Hg—enough said.

SYMPTOMS OF HYPOXIA

"There is individual variation in time of onset and character of hypoxia symptoms, but within an individual these are generally the same. Night vision is usually the first thing to go and may be affected as low as 5,000 feet MSL. This is followed by air hunger, anxiety, headache, nausea, dizziness, fatigue, blurred vision, slow thinking, impaired judgment, tunnel vision, blue discoloration of the skin and nail beds *(cyanosis)* followed by mental confusion, loss of consciousness and death.

"It should be noted that some symptoms of hypoxia are very similar to and difficult to distinguish from hyperventilation. This will be discussed in more detail later.

PREVENTION OF ALTITUDE HYPOXIA

"Adding supplemental oxygen as altitude increases will prevent altitude hypoxia (see Table 1). It is important to maintain air sac oxygen at 60 to 100mm Hg and consequently maintain hemoglobin saturation at 87.98 percent. Given these parameters we can now look at the theoretical altitude ranges of various oxygen systems.

TABLE 1

Altitude	Barometric Pressure mm Hg	Total inspired Oxygen Requirement (%0)
Sea level	760	21
5,000	632	25
10,000	532	31
15,000	429	40
20,000	329	49
25,000	282	62
30,000	225	81
34,000	187	100

"With the A-8 continuous flow oxygen system on 100 percent oxygen, theoretically one can go to 40,000 feet and be at the equivalent of 10,000 feet or 87 percent hemoglobin saturation. That's theory. In actual practice, considering mask leaks, activity and anxiety vs. total rest. etc., this system should not be used above 30,000 feet. In view of the practical experience in military aviation, an altitude ceiling of 25,000 feet has been established for this type of equipment. The diluter demand pressure breathing oxygen regulator operates to 30,000 feet by supplying the exact amount of oxygen needed to supplement the ambient air. At 30,000 feet, 100 per cent oxygen is delivered. Beyond 30,000 feet, inboard mask leakage is eliminated by the addition of oxygen at approximately 4cm H_2O pressure. With the specially designed mask, this provides a tight seal with minimum leakage. At 40,000 feet, additional pressure is added in excess of the ambient pressure. By means of a series of physiologic principles this positive pressure breathing maintains normal air sac oxygen par-

tial pressures to approximately 45,000 feet.

"However, pressure breathing is the reverse of our normal ventilation cycle. Normally, we actively inhale and passively exhale. With pressure breathing, inhalation is passive and under pressure, while exhalation is active and also against pressure. It is very tiring! The best technique is to keep some positive (outward) pressure on during inspiration (slows rate of inspiration), pause, then slowly exhale. This pattern of smooth rhythmic breathing should prevent one from hyperventilating when pressure breathing.

"The above are theoretical and practical applications of commonly used commercially available oxygen systems. It is important to note that any system may fail and therefor a backup system must be immediately available. Notice the time of useful consciousness (TUC), or effective-performance time (EPT) as shown in Table 2. These values give you some idea how rapidly things occur at high altitude and how little time there is to correct any malfunction.

TABLE 2

Altitude (feet)	Time of Useful Consciousness
18,000	20-30 minutes
22,000	10 minutes
25,000	3-5 minutes
28,000	2.5-3 minutes
30,000	1-2 minutes
35,000	30-60 seconds
40,000	15-20 seconds
43,000	9-12 seconds

HYPERVENTILATION

"Hyperventilation is an abnormal increase in the rate of ventilation. As a result of the increased rate, carbon dioxide is blown off which in turn makes the blood more alkaline. The alkalosis in turn has a number of effects including muscle spasms; numbness and tingling (particularly around the mouth and hands); decreased blood flow to the brain leading to dizziness and lightheadedness; and unconsciousness.

"Soaring pilots are most likely to hyperventilate while flying under stress or at high altitude. Since there is an overlap of symptoms between hypoxia and hyperventilation it may be difficult to tell which is occurring. Should any of the symptoms occur, switch immediately to 100 percent oxygen and at the same time consciously slow the respiratory rate to 12 to 16 times per minute (do not hold the breath); with the former, hypoxia has been treated (unless altitude is above 30,000 feet), and with the latter, hyperventilation has been treated. As soon as symptoms decrease, oxygen should be switched back to its appropriate setting. If symptoms recur, it was hypoxia; if not, hyperventilation.

"The soaring pilot should be prepared and keep equipment up-to-date and in good repair. Before making a high-altitude flight, the following mnemonics **are** useful as check lists:

Drugs
Exhaustion
Alcohol
Tobacco
Hypoglycemia

Pressure--(1800-2000 PSI)
Regulator
Indicator—blinker
Connection—mask, radio
Emergency—bailout bottle

"There are several locations where a pilot and crew can take the FAA physiological training. Inquiries to:
Dept. of Transportation
Federal Aviation Administration
Aeronautical Center
Civil Aeromedical Institute
Physiologic Operations and Training Section AAC-143
P. O. Box 25082
Oklahoma City, Oklahoma 73125

(Continued on next page)

To add some further observances regarding hypoxia, the bad thing is that the symptoms are very insidious and observable symptoms may not be obvious until too late. There may be a sense of "well being", that everything is going "just great", maybe even euphoria, which leads the pilot to not act on such things as sloppy flying, confused thinking, or unusual fatigue.

There are lots of other references for information on high altitude flight and oxygen use, including the American Soaring Handbook, Chapters 6 and 7.

We have also received a forceful warning—from the soaring pilot involved—concerning the use of the hospital-type mask (which is sold for flying use) with the plastic rebreather bag through which the incoming oxygen passes to the bottom of the mask. The mask stays flexible in the extreme cold, but the bag becomes stiff and brittle, and in this condition can pull off unnoticed from the bottom of the mask, leaving the pilot without any supply whatever. In the instance referred to, the pilot lost consciousness above 25,000 feet and finally came to and regained control at 10,00 feet. Ever since, he's has been quick to persuade his friends not to use this "Mickey Mouse" rig, and the Safety Foundation would like to do the same.

Here are some other suggestions from soaring pilots who have been up there:

1. Catalytic heaters may cause burns if placed to close to the skin and in such a way that they cannot be relocated or removed later on.

2. The breather valve in a mask may freeze and have to be cleared. Were a pair of thin gloves under your mittens so your hands won't stick to the bare metal when attending to such tasks.

3. When descending, remember to equalize the pressure to the middle ear by inhaling, holding your nose, and—with mouth closed—gently pushing air through the eustachian tubes to equalize pressure. But gently, as damage can be done by forcing to hard.

4. Skin divers should never attempt any flight to altitude within 48 hours after exposure to heavy underwater pressure. (Ref. 3)

A PRESCRIPTION FOR DISASTER

What about medications and drugs? Are "cold capsules" dangerous if taken when we plan to fly?

"A chain is no stronger than its weakest link" is a saying familiar to all of us. This axiom applies to many aspects of life, including flight. To avoid being the weak link that causes disaster, the pilot should include himself in his preflight planning. He should get plenty of rest prior to flight and never fly when he is ill.

There are many slightly incapacitated pilots who continue to fly, using their home remedies and over-the-counter drugs. Some people have taken medicine for a long time, sometimes so casually that they don't even realize that they are being affected by it. Drugs, as well as the conditions for which they are taken, can interfere with perception, understanding, emotion, or performance.

Here are some of the common types of medicines:

Aspirin: Two aspirin tablets may be taken safely by pilots who have used them before without ill effects. Other pain medicine and mixtures should be shunned since they often cause sleepiness, depression and nausea.

Decongestants: Nasal decongestants are useful in clearing a nose, ear, or sinus. The sprays or drops may be used safely in moderate amounts. Excess use may cause increased heart rate, nervousness, or visual disturbance.

Antihistamines: Common cold remedies often contain both antihistamines and decongestants. These frequently cause sleepiness and impairment of both mental and physical activity. Pi-

lots should not take the short-term antihistamines for at least eight hours before flight—the long lasting ones should not be taken for at least 16 hours before flight. Many have the admonition on the container to not operate machineray after taking the drug, and gliders surely are machinery!

Antispasmodics: Often used for ulcer treatment and other abdominal cramping pains, these medicines cause blurred vision and dilated pupils. Since these medicines are usually combined with barbiturates and other sedatives, the combination may also cause drowsiness.

Tranquilizers: Over 80 million tranquilizer prescriptions are written each year, so I'm sure a few pilots are occasional users. Most of these preparations are mildly sedative, but they all have a measurable effect on alertness, efficiency, and overall performance. They should not be used within 24 hours of a flight.

Stimulants: A few cups of coffee can be safely used as a stimulant, but the pep pills and appetite-control medications should not be used while flying. These medications cause a feeling of euphoria, an exaggerated sense of well-being which impairs judgment and causes reckless actions. Psychotic reactions have occurred with large doses.

Blood Pressure Medication: If high blood pressure is a problem, it is wiser to control it with weight reduction and physical fitness rather than with pills. Medicine that reduces blood pressure often makes a person sensitive to G forces, unexpected fainting, nasal congestion and mental confusion.

"The above groups are only a small sampling of drug types. In general, drugs and flying do not mix. In every case, get the advice of your Aviation Medical Examiner or Flight Surgeon before using prescription drugs or home remedies before flying." (Ref. 4).

MARIJUANA AND FLYING

While on the subject of drugs, what about the effects of marijuana? Two studies showed some interesting (and shocking!) results (Ref. 5).

"Not much has been written about the effects of marijuana on a pilot's flying ability. Because of the FAR's on alcohol and barbiturate use we see their use as dangerous. But what of the effects of marijuana? The purpose of the study was to observe power pilots under the influence of marijuana while operating an instrument flight simulator. The tasks were those typically assigned while flying in a holding pattern and in many respects comparable to thermaling. However, the tasks were considerably less difficult than in actual flying. All of the tasks required psychomotor coordination, as well as such cognitive abilities as short-term memory, concentration and orientation in time and in three-dimensional space.

The pilots in the study considered themselves, at most, moderate users of marijuana. That is to say, if they used the drug three or more times a week, they considered themselves moderate users, for the "social high". Their performance was measured at 30-minute intervals, covering a six hour period. Under the influence, all pilots had significant errors in performance after 30 minutes. A decrease in ability lasted at least two hours and the performance of all pilots returned essentially to baseline levels in four hours.

The study's findings were that marijuana affects short term memory, sense of time, and also caused alterations in concentration and attendant behavior. What happened is that pilots would forget where they were within a given sequence or how long they were performing the task. The pilot subjects also tended to concentrate on one variable to the exclusion of another, and as a result they over-controlled in an attempt to compensate

(Continued on next page)

for variables previously ignored. At times this led to a complete disorientation which resulted in grossly unpredictable flight performances.

On an average, pilots made two and a half times as many gross errors and four times as many minor errors. A major error was one that took the airplane out of its designated air space with potentially dire consequences such as stall, making gross altitude or navigational deviations greater than (plus or minus) 100 ft. or heading deviations of (plus or minus) 39 degrees.

Although the gross detrimental effects of marijuana appear to last for less than four hours, more subtle effects may persist for longer periods of time and are not measurable at this time, using existing research instrumentation.

"We know of the detrimental effects of barbiturates and alcohol, and FAR's prohibit their use for at least eight hours before flying. It would appear from the documented effects of marijuana on simulated flying ability that such a prohibition should also apply for marijuana."

ANOTHER TEST: A group of ten volunteer pilots, all experienced, and all admitted marijuana smokers, agreed to be tested in a simple task in a relatively simple airplane. They were to use a 172 Cessna simulator, take off, climb to 700 AGL, fly a traffic pattern, and land. Their performance was to be tested and recorded before being given a 19 mg. dose of THC (the active ingredient in marijuana), which is (in the words of the National Institute of Drug Abuse) probably about the equivalent of a strong social dose. They were tested again one hour after the dose, three hours after the dose, and 24 hours later. They all agreed to not smoke marijuana or use any other drugs during the experiment.

On the day of the test, each pilot was given two practice flights to get used to the simulator, and one recorded flight to establish a baseline. Then each was administered the THC, and flew the first flight one hour later, and the three-hour later flight. They returned the next day, took two more practice flights and flew the recorded 24 hour later flight.

During questioning prior to the flight, the pilots had no feeling of being high, more anxious, or more happy, but felt quite normal.

Aha! The problem surfaces!

On the original baseline flight, the average distance from centerline on landing was 12 feet, increasing to 32 feet one hour after the THC, with no report of the three hour result. However, 24 hours later, the average was 24 feet, or double the baseline! One pilot missed the runway entirely.

The pilots had difficulty lining up, judging height, and landing precisely as much as 24 hours after the dosage described. The results of these two tests should be evidence enough to avoid marijuana . . . and other drugs as well, when planning on going flying.

WHAT ABOUT LIQUIDS?

Most of us have heard about dehydration and the effects it can have on our judgment. We have read about highly experienced pilots having an accident and later heard that dehydration had played a large role in that accident.

There's more to it than just drinking water, however. One must consider those things which may cause dehydration, such as too much caffeine, or even our favorite, beer. We've been reminded again and again not to fly within 8 hours of any alcohol consumption, but dehydration was not given as one of the reasons. It is there, however, so add it to the list.

Other things, such as salt and other chemicals play an important part in our body's balance. (Ref. 6)

It has only recently become clear that gliding causes considerable

changes in the water and salt balance in humans.

In a study carried out during the Dutch championships in 1981, substantial reductions in body weight (3 to 5 kg!) were observed after a flight, accompanied by a simultaneous drop in the specific weight of the urine and changes in the urine pH. Significant differences could also be demonstrated between a group of flyers who took in fluid during the fight and those who drank nothing.

An explanation for this fact lies in what is termed the Henry-Gauer effect. Because of the semi-recumbent position adopted in modern gliders, a center-wards shift in blood volume takes place. In particular, this stimulates tonus and the production of the antidiuretic hormone and aldosterone at brain stem level and in the hypothalmus, in addition to suppressing the feeling of thirst.

These changes are aimed at cancelling out the quasi increased volume. They are followed by increased excretion of urine with a low specific gravity and a changed electrolyte composition. The pilots who took in fluid were able to maintain their acid excreting power at a higher level in contrast with their colleagues who drank nothing. The actual drop in the circulatory volume was also demonstrated in a large-scale German study in which distinct decreases in haematocrit were to be seen after the flight as compared with before. It may be concluded that drinking during the flight is absolutely essential in order to keep the fluid balance up to the mark.

"Here one must think in terms of quantities of two to three litres for between four and five hours' flying, in order to compensate for the loss of weight (i.e., fluid loss). (Ref. 6).

SUMMARY

These few facts are only the tip of the iceberg when discussing medical factors. When all is said and done, the pilot who—for whatever reason—does not feel well, should not attempt to fly, at least not solo.

General discomfort, whether due to colds, indigestion, nausea, overwork, lack of sleep, worry, or any other bodily weakness, is not conducive to safe flying.

All medication should be considered hazardous unless specifically approved by an Airman Medical Examiner.

Every high altitude flight attempt should be done under only the best possible medical conditions; i.e. proper physical, medical and mental condition, proper equipment, and proper supervision.

Last, but certainly not least, dehydration must be considered on every flight, whether the temperature is +100 or -100.

As they used to say on "Hill Street Blues", *be careful out there!*

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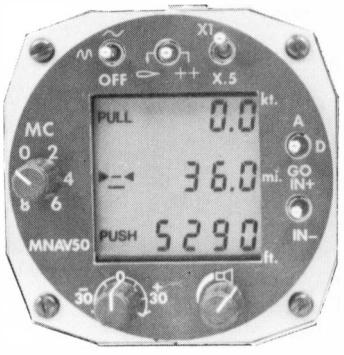

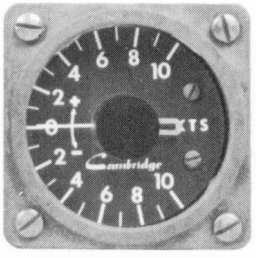

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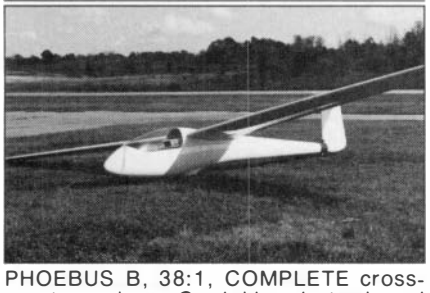

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LS-1f, 250 hrs. T.T., mftrd. 1978, RADAIR, Ball, Schuemann, Fac. water, oxygen, trailer. $16,000. (404) 577-7437 days, 373-0037 home. GA

LS-3, KOMET, radio, Schuemann and electric vario, basic instruments, excellent condition. $21,000. (904) 224-4663(w), 878-7054(h). FL

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VENTUS B/16.6. 80 hrs. T.T. Full instrumentation, Dittel, Cobra Trailer, parachute available. $30,000. (601) 981-1095. MS

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CITABRIA LEASEBACK! '73 7GCBC with 150 HP engine rebuilt to manufacturer's new parts limits, refurbished fabric, used as sailplane tug. Leaseback to Chilhowee Gliderport in Southeast Tennessee. Sale price—$18,500. Call (404) 992-7057. GA

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WANTED: TOW PILOT/CFIG at High Country Soaring, MINDEN, NV. 500 hrs. T.T., 100 hours minimum tail dragger experience. Needed Spring through Fall season, 1987. (702) 782-4944. NV

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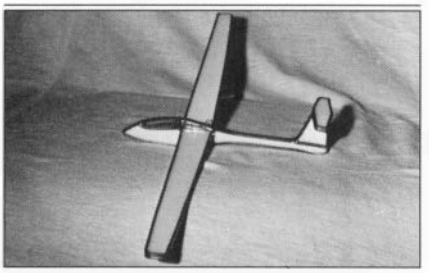

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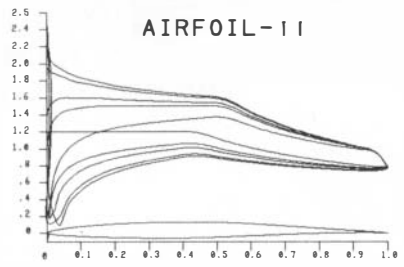

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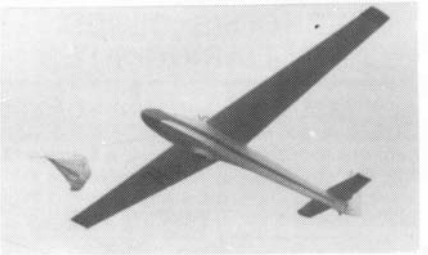

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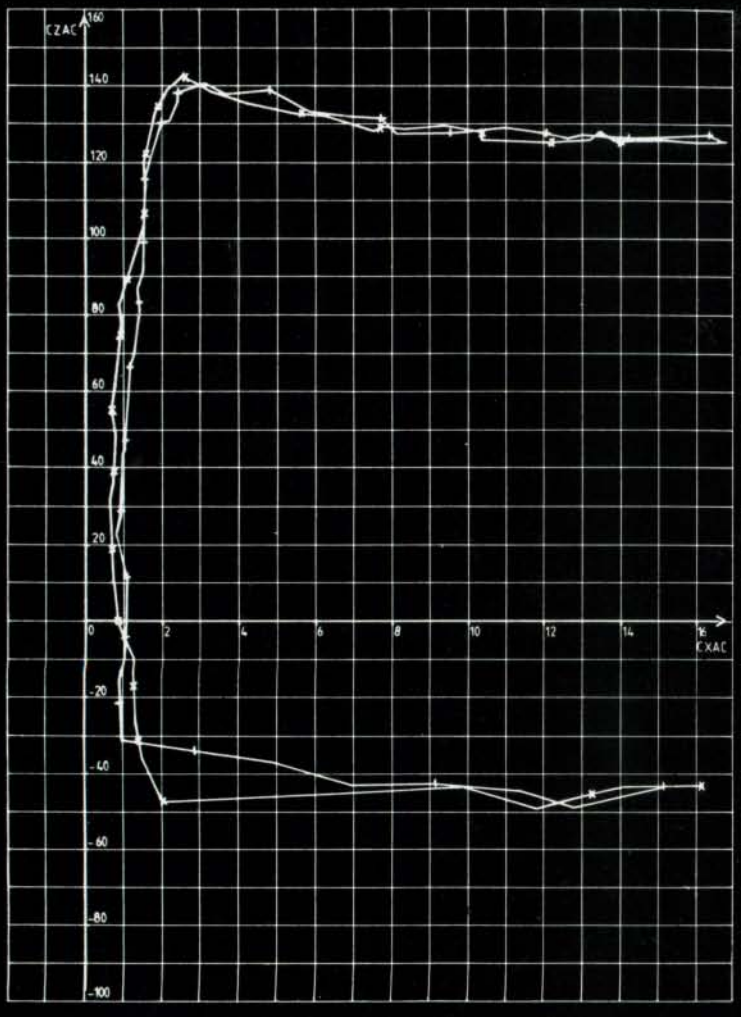

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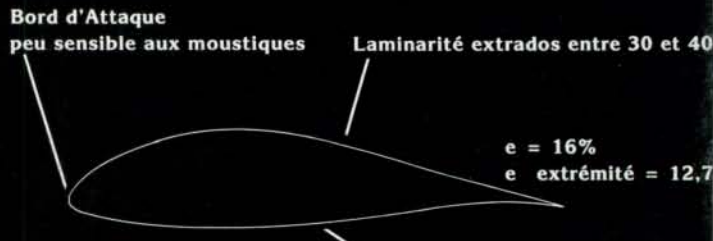
Masse max. 505 kg
Masse max. ballast 160 kg



OAP3

Caractéristiques données à titre indicatif

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