

MARCH 2007

Sport Aerobatics

OFFICIAL MAGAZINE OF THE INTERNATIONAL AEROBATIC CLUB

Finding the “Right Stuff”

- Redefining ‘Personal Challenge’
- Flying the Hammerhead
- 2007 Competition Calendar



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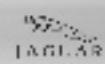
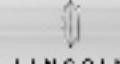
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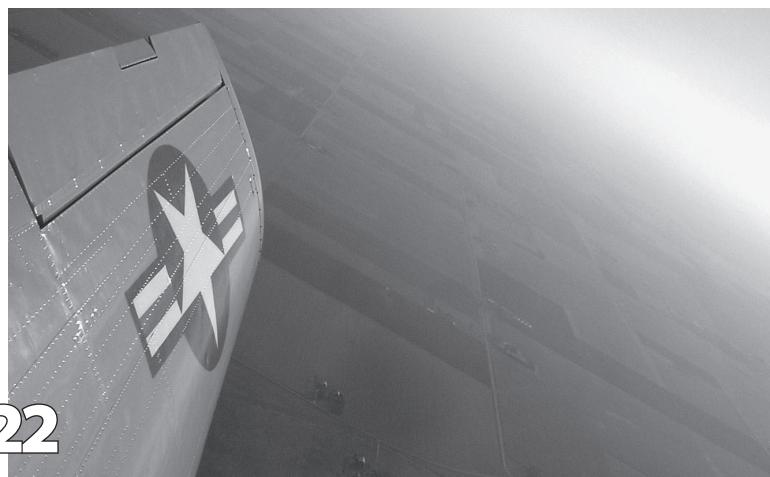
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Ray Somerlock pilots his Christen Eagle II over Wisconsin during AirVenture in 2006.
— Photo by Bonnie Kratz



Judson Bartlett

LETTER from the EDITOR

by Scott Westover

Finding motivation in the cockpit

Every month I have the privilege of communicating with IAC members from all over the world as we create this magazine. Opening e-mail can feel a little like scratching the silver foil off a lottery ticket—you never quite know what to expect, yet you are hoping for a winner. Unlike the lottery, I have the opportunity to win every time when it comes to learning about people and airplanes from our readers. This issue is a great example.

As you have read before in this column, I believe this magazine is a showcase for our members. Competitors, instructors, recreational pilots, and non-flying enthusiasts contribute to keep this magazine strong. This month, you will read about a couple of pilots who will have you rethinking your flying goals. Personally, they made me realize that I do far too much whining in my headset. These two people are Ray Somerlock and Pete Loeffler.

Ray is a straight-and-level pilot who took more than a decade off from flying and then reignited his aviation passion when he recently purchased a Christen Eagle II. At 69 years young he made the cross-country trip from Maryland to Wisconsin in his Eagle to share his passion at AirVenture 2006. If you have met Ray, then you know the confident, understated enthusiasm that comes across in his article, "The Right Stuff," is genuine. His comment that, when he is flying, he is "free and anything is possible" should remind all of us that we are privileged to see the world the way we do, and that we have an

obligation to find a way to share that freedom with other people.

Pete is pure inspiration. All of us who have attended an air show or a contest have heard folks comment about how difficult it is to tame a Pitts. After Pete was almost killed in a prop accident in which he lost a leg above the knee, he found himself driven to achieve his goal of flying and landing a Pitts. In the article "Where There Is a Will, There Really Is a Way," Pete shares his story and truly redefines the concept of personal limitations. Today he flies a single-hole Pitts S-1S, and according to his first Pitts instructor, Budd Davisson, "There is no difference between him and anybody else. None." That might be true in the airplane, but after reading about his personal journey I think you will agree that Pete is not your average guy, although he would want you to believe otherwise.

For me, these dramatic stories reinforce a truth about aviation and especially aerobatics. We are part of a tightly knit community, and there are deeply personal and motivating stories to be discovered at every airport diner, hangar, and contest throughout the world if we take time to ask a few questions and listen to the answers. I hope that we can continue to share some of those stories in this magazine. Perhaps you know about a few. If you do, I'd love to hear about them. Enjoy this issue of your magazine, and fly safely!

Contact Scott Westover with your articles and suggestions at Tookyflyer@tds.net.

Sport Aerobatics is your magazine. To submit news, comments, articles, or article ideas, please send them to: IAC, P.O. Box 3086, Oshkosh, WI 54903-3086; or email them to Tookyflyer@tds.net.

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PRESIDENT'S PAGE

by Vicki Cruse • IAC 22968
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Learning About Ourselves

Two spin-fearing pilots experience the thrill of aerobatics

One of the benefits of being at an airport with an active aerobatic flight school, and being one of only two IAC judges on the field, is judging Achievement Award flights. One of the goals set by the instructors here is to reward pilots who go through basic aerobatic training with an Achievement Award at the end of their program. Recently, I completed three Achievement Award flights for two people, Margo and Ron, both from the Los Angeles area.

Margo's father is a pilot, and she grew up around airplanes and recently learned to fly. She is the owner of a creative design company and decided she needed to do something creative, so she signed up for the Emergency Maneuver Training Program at CP Aviation in Santa Paula. Margo began her training with NAFI Master Instructor Patrick Dugan in the Super Decathlon and breezed

"I never expected aerobatics to be like this. My primary instructors made spins seem like something never to do. I am so glad I took this course."



through the course (even after suffering a broken knee and having to take 12 weeks off). She found each lesson more and more exciting. Patrick sensed her need for more challenges and introduced her first to the Primary figures and then to the Sportsman figures. On a day with the Santa Ana winds kicking, Margo earned both her Primary and Sportsman Smooth Achievement Awards. She is currently working on the Primary sequence for the local contest in May.

Margo came out to the practice area to watch me judge Ron. While we were talking, she shared, "I never expected aerobatics to be like this. My primary instructors made spins seem like something never to do. I am so glad I took this course."

Ron is an attorney from South Africa who came to the United States in 1979. He started his private pilot training just one week before September 11 and earned his pilot certificate in 2004. Ron was a Sunday afternoon flier and quickly became bored. He flew to Santa Paula one Sunday and met Patrick on the ramp. After talking to him for a bit, Patrick asked him, "How safe of a pilot are you?" Ron's reply was

This year the IAC is introducing awards in the form of pins and decals. For details, and to view the new pins, please visit www.IAC.org/programs/achievement.html.

that he was flying to stay current but wanted to learn more. After talking with Patrick he decided to take some aerobatic training to improve his skills, get over his fear of stalls, and be safer in the sky. Ron's stomach challenged him a little, but he kept coming back. He told me that after each lesson he'd go home and his wife would notice how happy he was. Ron completed the requirement for the Primary Smooth Achievement Award with flying colors and told me he didn't think he'd be able to fly a Cessna 172 ever again. Ron's next goal is to attend a local contest and meet people who share his interests. He plans to volunteer, but doesn't have aspirations for contest flying.

One of the biggest rewards from this day was the contagious excitement of two people who just accomplished something they never thought they could do. It brings back memories of the excitement of my first aerobatic lesson. There is something about aerobatics and the confidence it brings out in those who take on this unique personal challenge. We learn not only something about airplanes and aerodynamics, but also something about ourselves. ☺

NEWSBRIEFS

Goody Thomas Named to Unlimited Team

With the resignation of Melissa Andrzejewski, due to personal reasons, first alternate Goody Thomas from Rock Hill, South Carolina, has been named to the U.S. Unlimited Aerobic Team. Goody flies a Sukhoi Su-31 and is an airline pilot for AirTran. He is also an experienced air show pilot. This is Goody's rookie year on the team. The U.S. Unlimited Aerobic Team will be competing in late June at the World Aerobatic Championships in Granada, Spain. For more information on the U.S. Unlimited Aerobic Team, please visit www.UnlimitedAerobaticsUSA.com.



Irene Graves
Goody Thomas will replace Melissa Andrzejewski on the U.S. Unlimited Aerobic Team.



Tom Trinkwalder
Rob Reider, Judy Scholl, Michael Goulian, and Bud Granley as Mike accepts the Art Scholl Showmanship Award.

Mike Goulian Wins Prestigious Art Scholl Showmanship Award

The International Council of Airshows (ICAS), the governing body for air shows in North America, presented the prestigious Art Scholl Showmanship Award to Michael "Mike" Goulian. Goulian is best known for his contributions in the air show business as a performer and showman. However, he is also passionate about contributing to the aviation industry as a whole.

Lately, Goulian has been most proud of his relationship with his

sponsors, especially Castrol Aviator (owned by Air BP). He makes it his business to help each of his sponsors succeed. To scratch his competition itch, he was chosen as one of the Red Bull Air Race pilots in 2006. Throughout his career, he has achieved the reputation as one of the most approachable and likeable entertainers on the air show circuit. "I feel very lucky to be afforded the opportunity to excel in the air show industry. It's a privilege to be an

2006 Collegiate Program Winners Announced

The final results are in for the 2006 collegiate program competition. Twenty-four students participated, and 11 entrants successfully competed at the three or more contests required to qualify for the championship. The Collegiate National Championship Team Award goes to Southern Illinois University (SIU), followed by Embry-Riddle Daytona and the U.S. Air Force Academy. The Collegiate National Champion is Gerald Oliver from SIU, followed by Andrew Bochnovic, also from SIU, and Ryan Olson from Embry-Riddle Daytona.

The collegiate program began in 2001 to increase the interest level of college-age pilots in aerobatics and aerobatic competition. The purpose of the Collegiate National Championship Team Award is to recognize the highest-scoring U.S. collegiate team. The Individual Collegiate National Champion Award recognizes the top three highest-scoring individual collegiate competitors in the Sportsman or higher category.

Congratulations to all of the series winners. For additional information on the 2006 series, go to <http://Members.IAC.org>. Click under Contest Results, Collegiate Program.

aerial entertainer, and I never take that for granted," said Goulian.

The prestigious Art Scholl Showmanship Award is given annually to recognize air show showmanship excellence. Perhaps the most talented air show pilot of his generation, Scholl was a consummate air show performer. He flew for more than 20 years and appeared in more than 200 motion picture films, documentaries, and television commercials.

Friends Remembered

William K. Kershner

William K. "Bill" Kershner was born and raised in Clarksville, Tennessee, where he started flying in at the age of 15. He later acquired instrument and airline transport pilot certificate and logged more than 11,000 hours, including 1,150 military hours; 1,900 multiengine; 4,300 aerobatic instruction; and more than 8,000 separate spins of up to 25 turns. He graduated from Iowa State in 1960.

In the early 1950s, he entered the Naval Aviation Cadet Program and flew World War II fighters and early jets. Later he was a corporate pilot for Texas Gas Transmission Corporation and also worked for Piper Aircraft Corporation.

After coming to Sewanee, Tennessee, to write books full time in 1964, Kershner flew charter, instructed, and operated an aerobatic and advanced instruction school, Ace Aerobic School.

He wrote his first book, *The Student Pilot's Flight Manual*, in 1960 while still at Iowa State University. Other books include *The Advanced Pilot's Flight Manual*, *The Instrument Flight Manual*, and *The Flight Instructor's Manual*. His book *Logging Flight Time* is a collection of articles that covered his 61 years of flying. More than 1 million copies of his books were sold. He is survived by his wife, Betty Kershner; daughter Cindy Kershner and her husband, Mark Manz; son Bill Kershner and his wife, Donna; two grandsons, Jim and Travis Kershner; and sisters Sarah Jane Grant (husband Dale) and Molly Cook.

Memorial contributions may be made to the William and Elizabeth Kershner Scholarship Fund at the University of the South; the Smithsonian National Air and Space Museum in Washington, DC; or the Tennessee Aviation Museum in Sevierville, Tennessee. For details please call Catherine at 931.636.8678. Another option is to take someone who has never flown before up in an airplane, as sharing his enthusiasm for flying was Kershner's greatest joy.

Kenneth E. Stout

Kenneth "Ken" E. Stout was born October 15, 1947, in Palo Alto, California, the son of Willis and Evelyn (Hull) Stout. He was raised in the Goodland community, where he graduated from Goodland High School in 1965. He attended Kansas State University and served in the United States Navy. Following his military service, he received a bachelor's degree in finance from Fort Hays State University in 1971. He was the chief executive officer of the Citizens State Bank and Trust, and S&D Performance Management Company. He married Susan McDaniel in 2001.

Stout is fondly remembered in aerobatic circles as being competitive and performing hammerheads better than just about anyone flying Decathlons. One of his greatest achievements was winning the Sportsman category in a competition in Canada. He went on to become a well-respected judge, serving as chief judge in Poland for the 1991 World Glider Aerobatic Championships. He is also remembered as a true aerobatic ambassador, flying aerobatic demonstrations for his small hometown in Kansas and taking his daughters for rides in his plane.

Jenner Knight Wins Soucy Award



Robert Bismuth

Jenner Knight wins 2006 L. Paul Soucy Award.

Jenner Knight, 65, of San Diego, California, is the winner of the 2006 L. Paul Soucy Award, with a three-contest score of 86.84 percent. To be eligible for the trophy, a pilot must have flown at least three contests during the season, one of which is the U.S. National Aerobatic Championships. The best two contests flown, plus the pilot's Nationals scores, are used to determine the ranking. Knight retired from US Airways in 2001, after flying for 32 years as an airline pilot. He began in 1969 with Pacific Southwest Airlines and ended as an international captain flying Boeing 767s for US Airways. His first contest was in Casa Grande,

Arizona, in 2003, flying a Decathlon in Primary. He purchased a Velox in 2004 and flew Sportsman for the 2006 contest season. He plans to fly Intermediate for 2007. The award was conceived and donated by L. Paul Soucy of Louisville, Kentucky, one of the International Aerobatic Club's (IAC's) first members and a board director who passed away in 1971. Previous winners of the award include Reinaldo Beyer, Joe Haycraft, Brent Smith, and Rory Olson. For a complete listing of the 2006 L. Paul Soucy results, log into the IAC members-only site at <http://Members.IAC.org> and look under Contest Results, L. Paul Soucy Results.



TECHNICAL ADVISOR

By Vicki Cruse and Brett Hunter

This month's column makes a correction to the FAA Airworthiness Directive (AD) addressing Hartzell propellers in the January issue and includes a piece on how Pitts owner Brett Hunter modified his airplane for maximum performance.

Hartzell AD 2001-23-08

The January issue of this column addressed FAA Airworthiness Directive AD 2006-18-15 that affected Hartzell propellers installed on Lycoming O-, IO-, LO-, and AEIO-360 series reciprocating engines. However, this AD does not apply to propellers on aerobatic aircraft. The correct AD applying to aerobatic aircraft is AD 2001-23-08, which may be found through the International Aerobatic Club (IAC) website under the News heading and Safety Alerts subheading. Here you may access the FAA database and search by the AD number above. Additional information may be found at www.HartzellProp.com. Thanks to IAC member Benny "Eagle Eye" Davis for catching the error.

Pimp My Ride

When it comes to planes, trains, or automobiles, we all like that little bit of customization that makes our "ride," well...ours. And if you are flying aerobatics, you are thinking performance. Quite often I'm asked what changes I've made to get my plane to do what it does. The truth is that I had not really done much, until recently.

I have been operating a stock-production Pitts S-2C in the standard airworthiness category

for four years. This past summer, I switched to the experimental exhibition category. I did this for a number of reasons, but the biggest was to allow me to "pimp my ride." I knew that if I changed a few things, I could realize significant performance boosts.

My aerobatic style emphasizes tumbles, snap rolls, and performance, which require a favorable thrust-to-weight ratio, powerful flight controls, and a rearward center of gravity (CG). Most pilots don't have much money left over after operating expenses, so practicality is the key for the budget-constrained flier. The most practical and cost-effective way to achieve noticeable results is through weight reduction.

Along that line I took the old belt-driven automotive alternator off the front of the engine and slapped a lightweight alternator, from B & C Specialty Products, on the rear accessory case. This shaved 8 pounds off the nose! For the S-1s, S-2As, and S-2Ss with Lycoming engines, this lightweight alternator will locate on the vacuum pad in the upper right top side of the accessory case, along with a Vac2 adaptor (also from B & C). But for those of us with S-2Bs or S-2Cs, the engine mount is in the way, so we have to use the pad on the lower right side of the accessory case. This will require a Lycoming hydraulic pump adapter and possibly a bump out in the firewall to allow room, which was my experience. I like Bill Bainbridge's stuff; I already use the oil filter adapter. It bolts directly to the case in place of the vernatherm housing, with no extra hoses or firewall mountings!

Another weight saver can be



Brett Hunter smiles after piloting his "pimped-out" Pitts.



Focusing on weight and efficiency helps Brett get the most performance out of his ride.

Courtesy Brett Hunter

Tye Greenlee

your choice in starters. Sky-Tec and B & C make great starters that are lighter and better quality than your old original equipment. They can save you up to 10 pounds, and again that is off the nose of the airplane. These are approved for almost all applications, and both companies have great websites that list all the STCs (www.SkyTecAir.com and www.BandCSpecialty.com). I have had to make no modifications to the baffling.

For additional weight savings, performance, and control, I have installed a different governor. Check out the PCU5000 from Aero Technologies LLC. This is a totally new prop governor that threw an additional 4-1/2 pounds off the nose versus the old Hartzell. In my opinion it offers better control and less drag on the oil

system, which then improves the operating oil temps and makes life easier on the engine as a whole. For me this was noticeable as a 5-degree reduction in maximum operating oil temps and another 100 to 150 rpm at the top of verticals, such as hammerheads and torque rolls. For the certified types it is approved for installation on almost all applications, and in my airplane it was a simple swap out.

And finally, along the lines of pursuing weightlessness, I have

given up on paper oil filters and picked up a Challenger Pure Power cleanable lifetime filter. This filter is smaller than the smallest Champion. I have seen a 2-pound drop in oil pressure at idle and 5 pounds at full power. But I have also seen a 5-degree drop in oil temperature when flying hard at full power. An additional bonus is how easy and mess-free the oil change has become. Drain the oil, wait till the engine cools, unscrew the filter case from the B & C adapter, pop out the screen

cartridge, and clean with solvent and shop air. No mess on the firewall and no more cutting the filter open. The stainless steel screen is good for 10 microns and has a built-in magnet for your ferrous materials.

Thank you for the opportunity to share my Pitts diet plan. The results are more consistent double hammerheads, "tear your head off" snaps, and oil temps down from the 247-degree redline to a more comfortable 238 degrees. 

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Working as a Team

Help the U.S. Unlimited Aerobatic Team bring home the gold

By Norm DeWitt

Today, I went to the garage to file an issue of *Sport Aerobatics* on the shelf. Out of curiosity, I picked up a back issue just to skim through it. It was the November 1998 issue and featured the 1998 U.S. Nationals. As I paged through the magazine, I could not help looking at the pictures of our members. For example, Kirby Chambliss was the U.S. National Champion, and his Edge 540 is on the cover. Vicki Cruse was the Sportsman National Champion (she looks more mature these days). The youngest competitor was Zach Heffley at 17 years old, and he's now a two-time member of the Unlimited team. This year's U.S. National Champion, Debby Rihn-Harvey, was there finishing fifth overall at Nationals as was IAC Director Tom Adams. Alan Geringer, chief judge, was looking up at a competitor from the west cow pasture. Sergei Boriak was the only World Aerobatic Championships (WAC) competitor from Kazakhstan. Robert Armstrong was in the issue showing off his flight medals from the IAC Championships in Fond du Lac. And Svetlana Kapanina was the women's World Aerobatic Champion. I will never forget Svetlana telling Goody Thomas the night of the awards banquet in Lakeland, Florida, that her men didn't drink vodka with Red Bull. Goody began drinking Russian vodka straight shortly thereafter.

There were also several pictures of friends that are no longer in the sport or no longer with us, such as Briggs Wood, Glenn Frick, Chuck Alley (the oldest competitor), Tom Wade, Brad Lang, Paul Donner, Matt Chapman, Diane Hakala, and Maynard Smith. I miss them all. I have so many memories from that year. I can say the same about every year before and since. That's why I am still active in the sport.

This is a time of the year when most of us think about our goals. At the competition level, what category will I fly, what contests will I attend, how do I want to place in the contests, what do I have to do to accomplish my goals. All of us in the sport share this goal-setting process with the U.S. Aerobatic Unlimited Team members. This year's team has set the goal of going to Grenada, Spain, to bring home the gold medal. Is there any other reason to go? Well, yes, there may be a number of reasons to attend. The memories, for one, can make the trip personally worthwhile.

To be on the winning team, each member must help the other team members, any way they can, to finish in the top 10. It's analogous in some ways to the Ryder Cup competition in golf.



women's teams. The determination of the men's and women's world champions is a byproduct of the winning team determination, so the first goal is to win as a team, because the way to become a world champion is to be on the winning team. To be on the winning women's team, each member must help the other team members, any way they can, to finish in the top 10. It's analogous in some ways to the Ryder Cup competition in golf. In the Ryder Cup, it's the U.S. team members against the best from Europe. The winning team scores the most points.

Donations can be made to the U.S. team and/or individual members by visiting the Unlimited Aerobatics USA Inc. website at www.UnlimitedAerobaticsUSA.com or by mailing a check to:

Unlimited Aerobatics USA Inc.
Attn: Norm DeWitt, President
148 Magnolia Dr.
Atherton, CA 94027

The check should be made out to Unlimited Aerobatics USA Inc. If you wish to direct your contribution to one or more team member(s), please write his/her name(s) on the memo line of the check. Thank you, and I wish you the best of luck in reaching your flying goals this season. 

From a distance, competing on the world level appears to be the same as the regional or national level. However, there is a significant difference. When we compete locally, we compete as individuals. We compete like Tiger Woods in a PGA golf tournament. However, the first priority of the World Aerobatic Championships is to select the top three men's and





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ENJOY THE PRIVILEGE OF PARTNERSHIP

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With \$3,216 in savings on a LINCOLN MKX, you could pay for:

- A week at AirVenture
- A year's worth of fuel
- and your EAA Membership!

*Based on comparison of 2007 Lincoln MKX to 2007 Ford SUV FWD V-6 \$3,216 X-Plan price.

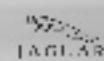
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THE STRAIGHT STUFF

HOW A SENSIBLE “STRAIGHT & LEVEL” PILOT WAS SMITTEN

EDITOR'S NOTE: Last summer I found Ray Somerlock volunteering at the IAC building during AirVenture. He was promoting our sport to those who were on a mission to learn more about aerobatics and those who simply stopped by to find some relief from the sun. He could be seen routinely walking civilians along the IAC flightline to tour the impressive collection of IAC member airplanes. The people that took his tours were guaranteed to get an up close and personal look at his Christen Eagle II, and Ray would humbly and patiently answer all of their questions. Soon enough, I found myself talking with this self-appointed tour guide and was so impressed with his enthusiasm and confidence that I asked him to consider submitting his story to *Sport Aerobatics*. I believe Ray's attitude represents the best of our sport. When a pilot who discovered aerobatics in his 60s talks with the zeal of a teenager who just earned his driver's license, it reminds us that to be a part of this community requires only a thirst for freedom and personal challenge that can be quenched only in a cockpit.





To those who may wonder if they have "the right stuff," I say that if I can do it, anyone can.

—Ray Somerlock

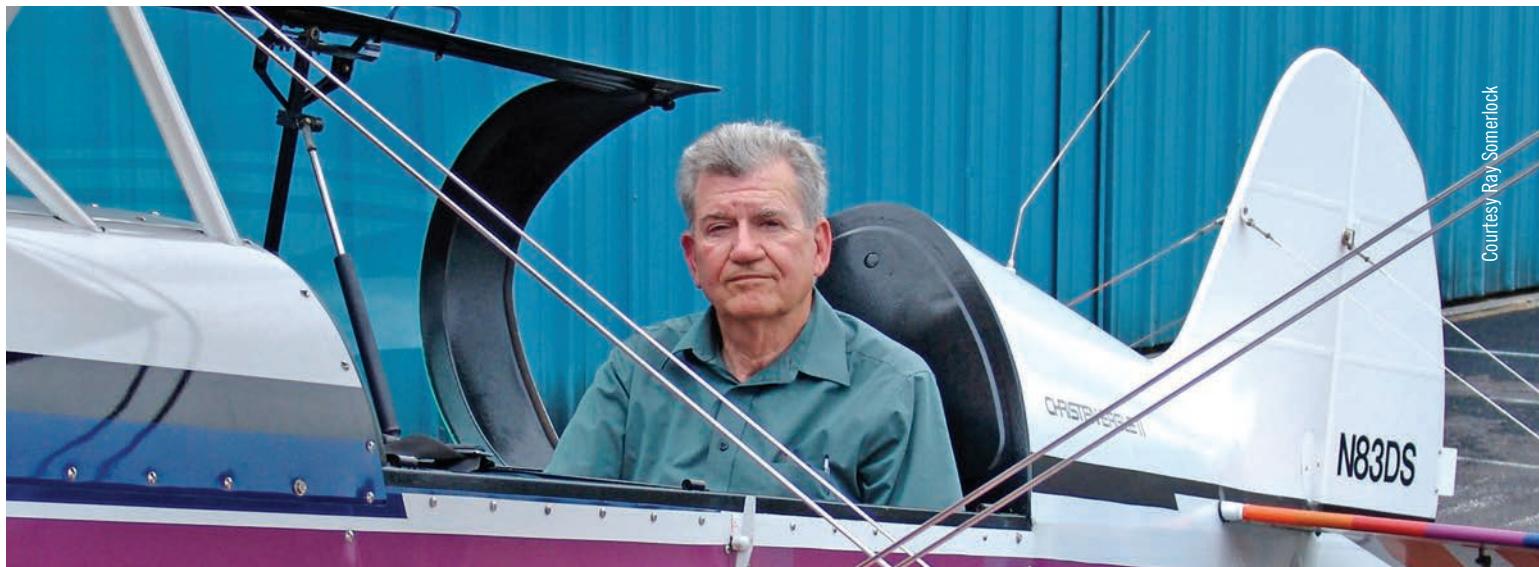
By Ray Somerlock

I didn't actually intend to take up aerobatics, at least not in any serious way. I just had a long unfulfilled desire to own a biplane, and I decided that it was time to fulfill that dream. But then, once you have an aerobatic biplane, what else can you do with it? Flying aerobatics is a logical next step, right?

There is something wonderfully nostalgic and romantic about a

biplane, and I had long envied the biplane pilots that occasionally taxied by as I was preflighting my "spam can" of the moment. I began taking flying lessons in 1968 when I turned 30, a reaction to the realization that I was "going over the hill." Over the next 15 years I earned a commercial certificate, added instrument and multiengine ratings, and traveled around the country in a series of Pipers.

The last of that progression was a wonderful Twin Comanche, in which I flew coast to coast numerous times. As is too often the case, though, the demands of career and family eventually caused me to sell the twin and "temporarily" suspend my flying hobby. It is amazing how fast the time goes by, and in the blink of an eye it was 2005—and time to get back in the air.



With my family now grown and out the door, and having already retired twice, it occurred to me that I should resume flying. During my hiatus from flying my own airplane, however, I had discovered that there is something to be said for flying coast to coast in the back of an airliner while an attractive "stew" served me drinks. Did I really want to go back to those long solo cross-countries? With that question still unresolved, I knew I had to get back in the air, so I started scanning magazines to catch up on the latest airplane technology. That is where I saw it...a Pitts. That had to be the answer; it was time for my biplane!

I like to share my passions, so I knew my future airplane had to have room for a passenger. It didn't take long, though, for me to realize that an appropriate Pitts was out of reach financially. Fortunately, the Pitts has a close cousin that is more affordable...the Christen Eagle. In surprisingly short order, I found and purchased the biplane of my dreams.

As the cold reality of my romantic impulse settled on me, I realized that I had better find out if I could actually fly one. So, before I even took delivery

of my purchase, I hustled down to Annapolis, Maryland, for a lesson in a Pitts with the famous Bill Finagin. It was in that first hour with Bill that I began to realize the size of the challenge I had embraced. I had no tail-wheel experience, and all of the 1,500 hours in my logbook were studiously straight and level. In addition, this was my first hour flying any airplane in some 20 years, and Bill has high expectations of his students. This was total immersion, with stalls and a spin demonstration early in the curriculum.

At one point he had me slow fly the Pitts down the runway at Easton, and as I struggled to stay over the centerline, I let it settle so that the mains brushed the runway surface. The admiral's voice in my headset let me know that he allowed his students to touch only once. It was an awesome experience, and Bill gave me a grade of A-. Despite my honor roll grade, I was so disoriented after we got back on the ground that I had to sit in my car for an hour before I could drive home. For some reason, I came back for a second hour with Bill, and I knew then that I was hooked.

Although I live in a fly-in com-

munity with a private airstrip, I had my Eagle ferried to nearby Carroll County Airport, which has nice wide runways. It was there that I hooked up with Johnnie Hutchison, who patiently taught me to fly the airplane and to actually use the rudder. Equally important, he taught me to land it. After six months of training, I finally was able to fly the Eagle into my home base and roll it into its new hangar attached to my home. With the beginning of my dream realized, Johnnie and I got down to the real fun of learning to fly aerobatics.

As in any sport, aerobatics can be stressful. Our early lessons were short, as my body adjusted to the unfamiliar strains associated with unusual attitudes. None of my earlier flying experiences had prepared me for pointing the nose straight down under full power or for inverted flight. In time those stressful moments became familiar and with familiarity came the fun. It is hard to describe the fun to someone who has never experienced it. How can any sensible pilot find fun in those bizarre attitudes and maneuvers? Well, I can attest that it happens. I am a conservative pilot, with strong self-preservation instincts, but this little biplane just begs to be put through its paces. I can almost hear it saying, "Come on, let's play!" No matter how unpleasant my ground-based day has been, a few rolls, loops, or hammerheads in the Eagle put it all in a different perspective. Jaime Giandomenico, an acquaintance who works at the Maryland Aviation



Courtesy Ray Somerlock

Ray has learned the difference between "straight and level" and aerobatic preflight inspections.

Administration and occasionally flies a Pitts, has described his experience as "more fun than anyone has a right to have." I concur with his assessment, but I am glad that we do have that right—and this old geezer hopes to keep on exercising it.

Next on my agenda is competition. I don't expect to make the U.S. Aerobatic Team, but competition is in the human soul, and the challenge to perfect one's skills adds to the satisfaction and the fun. I entered in the competition at Farmville, Virginia, in October, but alas, rain and wind got in the way. I did get to fly some practice sequences in the box, though, and that made the trip worthwhile. Johnnie and I plan to get me ready for the approaching season here in the East. With my late start in aerobatics (I'm 69), I'm not going to win many trophies, but I plan to continue as long as I can. When I am up in my biplane, I am free and anything seems possible. To those who may wonder if they have "the right stuff," I say that if I can do it, anyone can. Wish me luck! 

He has described his experience as "more fun than anyone has a right to have."



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Where There Is a Will,



Helen Loeffler

Editor's Note: When Budd Davisson first shared the idea for this story, I knew *Sport Aerobatics* readers would find it interesting and motivating. This story posed a unique challenge for Budd as an author because his personal involvement as Peter's instructor forced him to refer to himself in the first person from time to time. While that approach was unsuccessful for Bob Dole in the 1996 presidential election, in this story it is an effective way to honor Budd's contribution to another pilot's success. I want to thank both Budd and Peter Loeffler for sharing their experience.

There *Really* Is a Way

A focused amputee tames a Pitts



"Once I knew I wasn't going to die, some part of my brain knew that I'd get through this and come out the other side okay."

By Budd Davisson

Calvin Coolidge is one of those presidents (1923-1929) who history has nearly forgotten. One of his most enduring legacies, however, is a quote that should guide those who have a dream. He said:

Nothing in the world can take the place of persistence. Talent will not: nothing is more common than unsuccessful men with talent. Genius will not: unrewarded genius is almost a proverb. Education will not: the world is full of educated derelicts. Persistence and determination alone are omnipotent.

When old Cal was penning that, he could have been speaking about any one of those hundreds of pilots amongst us who have fought against the forces of luck and nature to make their way into the cockpit. One such pilot is Peter Loeffler of Bend, Oregon.

We'd like to share Peter's story not because he's unique (he's not) or a hero (he'll definitely say he's not), but because he's the living embodiment of the Coolidge quote. He's proven that persistence and determination will conqueror all, and there's something we can all learn from him. His extraordinary story starts on an ordinary day in the early 1980's.

Peter's Story

"I don't honestly remember getting hit," he says. "I got out of my Cardinal to break a stuck starter loose, and I remember moving the prop. The next thing I remember I'm laying on the ground in a pool of blood."

Between the two conscious moments was a violent instant where the already-primed engine started, caught him by the right leg, and, according to Dan Sullivan, who was driving past in a fuel truck, picked him up off the ground and actually thrashed him around the nose at least twice before throwing him nearly 15 feet in the air.

"Getting hit," says Peter, "felt like getting slammed onto the ground, but I have no perception of being

spun on the propeller or thrown into the air. Dan saved my life. There's no doubt about that. He is ex-Navy and, after calling for help, applied his first aid training. My leg was nearly severed above the knee, and he pinched off the main artery with his fingers until the paramedics arrived. I was conscious but definitely in no shape to do it myself."

Lesson number one for the rest of us: "I can only blame myself for what happened. I'd been flying for a long time, but at that point, I was clearly distracted by having been dumped by a girlfriend and wasn't totally focused on what I was doing and simply forgot to turn the mags off. Luckily, the mixture was out, so it ran out the prime and quit."

We've all seen movie scenes where

the hero is lying in bed contemplating a drastically altered future, and it's impossible not to wonder how we'd all react to the same situation. Hopefully, we'll never have to find out. But Peter did.

"For whatever reason, I reacted in what I now know is an unusual way. Once I knew I wasn't going to die, some part of my brain knew that I'd get through this and come out the other side okay. It never really got me down, and I was amazingly 'up' most of the time. In fact, the paramedics came by to see me a number of times in the hospital, and I think the fact that I was in such a good frame of mind made them feel good, too. I can't explain why I reacted that way. I just knew I couldn't let it get me down or it would drag me down for the rest of my life.

"While I was going through therapy," he continues, "I just assumed I wouldn't fly again. But, as I got better at hobbling around on my new prosthesis, I realized I loved flying too much to quit. So, two months after the accident and wearing a temporary leg, I got back in the Cardinal with an instructor and went for it. It turned out to be one of the most important moves of the entire experience."

It's pretty clear that Peter thrives on a challenge because he had been ready for his commercial checkride before the accident and picked up where he left off as soon as he could. He also didn't miss the scuba trip to Cozumel he had previously scheduled. As much as possible, his life was going to proceed on the schedule he'd had before fate stepped in.

It's important for the rest of us to understand exactly what losing a leg above the knee means to a pilot. If the amputation is below the knee, the primary limitation is that the ankle/foot flexibility isn't there. The foot and lower leg act as a unit, but the pilot can still push rudder more or less normally and can use his leg to reposition the foot up to get the brake. If the amputation is above the knee, that's not the case. With no knee to direct the prosthesis, most of the pushing motion has to come from the hip. The amputee has to twist to move the entire leg forward



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as a unit. Also, to get to the brake, the leg can't pick up the prosthesis and relocate it on the brake pedal. The amputee has to reach down and manually relocate it or come up with another way to apply brake. Peter did both.

"I was in the process of being checked out in a rental Bonanza," he says, "when the CFI, Wanda Collins, offered me a ride in her Pitts S-2B. She said, if I'd pay for the gas, we'd stay up as long as my stomach could take it. It was absolutely the coolest thing I'd ever done, but during the flight I remember thinking, 'I couldn't possibly do this.'"

That was in the early 1990s. In 2002, he began to re-evaluate his own capabilities when he was invited to be a partner in a Decathlon.

I Can Do That!

Parker Johnstone gave me my tailwheel endorsement and aerobatic checkout, including the entire spin series. Up until that point I'd been flying with a 'walking' foot that had a shoe on it, but found it didn't

work as well as one of those L-shaped carbon fiber feet. I hadn't flown aerobatics for nearly 10 years at that point, and it turned out the layoff caused more problems than my prosthesis did.

"I had dabbled in aerobatics before, but flying the Decathlon made me aware of how much I really liked the sport. I decided I was going to keep at it and eventually fly local contests at the Sportsman level. It was as if I'd discovered flying all over again, and I was loving it! The more I flew the Decathlon, the more I began to think back to my one hour of flying the Pitts a decade earlier. I began to wonder whether flying a Pitts really was beyond me, so, I decided to find out and called Budd Davisson in Phoenix. He advertises that he can teach anyone to land a Pitts, so I figured I might as well take him up on that."

When Peter called me he assumed he'd be the first amputee with such a request, but I'd already checked out at least two others in Pitts. However, both of them had lost their legs



Budd Davisson

Left: Peter Loeffler often turns heads on the tarmac.

Below: Aviation writer and flight instructor Budd Davisson. Peter took Budd up on his claim that he can "teach anyone to land a Pitts."



Courtesy Budd Davisson



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While he flies alone, Peter is thankful to all of the people who helped him regain his wings.

below the knee, so working with an above-the-knee amputee would be something new. I was fairly certain we could work it out, but we wouldn't know until we tried, and I'm game to try virtually anything along that line in my airplane, a Pitts S-2A. Neither of my past amputee students had any problems whatsoever. Better yet, both had an attitude about learning that couldn't be beat, and I sensed the same from Peter. If he was willing to try, I was certainly willing to work with him.

Peter says, "I stayed at Budd and Marlene Davisson's B&B, which helped as the ground schooling never stopped. Also, in many ways, Budd was going to function as a physical therapist, which means you can't hide anything from them and staying at the B&B helped in that regard."

"Our first challenge was getting me in the airplane. Fortunately, his airplane doesn't have the long, double canopy, but is open in the front with a sliding bubble in the back. So, I'd climb up on the right wing walk, balance on the prosthesis,

and swing my leg over the canopy and into the back seat. It must have looked odd to bystanders, but getting into every airplane involves some sort of special dance, and this is what worked with the Pitts. I have to admit to being a little intimidated walking up to the airplane, and the thought crossed my mind, 'What the hell am I doing here?' but Budd seemed confident we could do it.

"Once in the cockpit, finding a position for the L-shaped foot took some doing, and it was obvious a custom-designed foot would be the hot ticket, but we didn't have one. In fact, after each hop during that first weeklong session, I'd go into Budd's workshop and grind away on the foot, making small modifications to make it fit better and clear obstacles."

The "Either Or" Decision

Peter and I found right from the beginning that his biggest problem, besides getting in the airplane, was going to be the simple fact that the design of that prosthesis gave him an either-or decision on the

right pedal. It was *either* rudder or brake, and the decision involved him changing hands on the stick and picking up the leg with his right hand to reposition it on the brake pedal. Taxiing was extremely jerky at first because when he'd go for that brake, he'd just jab at it. However, eventually he worked out a way he could pressure the right brake and balance that with the other rudder and brake, so although he wasn't as smooth as he'd like to be, he wasn't rocketing off the taxiway into the lights.

As a flight instructor, I'd be lying if I didn't say I wasn't paying a little more attention than normal, but I'd also be lying if I said Peter's initial tries were scary. They weren't. In fact his first takeoffs were at least as good as I'd seen from a lot of students who weren't challenged. After 35-plus years in the pattern in the same airplane, I've seen a lot of "interesting" things, but during that phase of his training he didn't run the pucker meter any higher than at least half of my students do.

Peter remembers, "By the time we got ready for that first takeoff, we had done a bunch of taxiing down the runway at increasingly higher speeds. Budd had the throttle and controlled the speed, and I had the airplane. My job was to keep the airplane going straight and the tail on the ground. At first I was jerking it all over the place, but eventually figured out how to get the rudder in and then get off of it quickly, so I didn't over control. Budd had me running down the runway as fast as 45-50 mph, which felt as if we were riding a rocket."

"I can't begin to tell anyone how I felt the first time we did it for real. Budd was in front, so I couldn't see his face, but I know I probably was gritting my teeth as I focused on the sides of the runway and brought the power up. The acceleration was terrific, and as the tail came up and the airplane started a slight swing to the left, I thought, 'This is it!' This is where I would find out if I couldn't do it. I gingerly put in a little right rudder and was more than a little amazed when the airplane straightened out."

"Budd had me holding a constant, slightly tail-down attitude, and in a

few seconds, during which the sides of the runway became a blur, it left the ground and I broke into what had to be the biggest grin I've ever had. Of course, a second later, Budd's voice was in my headset saying, 'Right rudder, get that ball in the middle, right rudder.' I had forgotten his warning about the P-factor right after takeoff, and the airplane was sliding sideways to the left. A little rudder put the ball back in the middle, and the airplane climbed away like it knew what it was doing. A part of me was still on the runway watching it."

Confidence and Perseverance

In the years I've been checking pilots out in the Pitts, I've found they have more trouble flying a good approach and setting up a good touchdown than they do controlling the airplane on the ground, after landing. If a Pitts touches down square, with no drift, it has not much more tendency to head for the bushes than any other airplane, although you have to be thoughtful about the amount of rudder used to correct any

divergence. If you put it on crooked, however, you'll be a busy little bear right down to turning off the runway. Like every other pilot, Peter's salvation lay in making a perfectly straight touchdown. That way all he'd have to correct for would be the smaller turns that are generally the result of crosswind or unnecessary movements by the pilot.

On that first trip down here, he proved beyond a shadow of a doubt that he could fly the airplane. However, the leg made smooth braking difficult, although he eventually got it down to acceptable levels. Since he lived not far from Steve Wolf of WingOver Aerobatics in Creswell, Oregon, I suggested he hook up with Steve, whom I consider to be one of the best, if not the best, Pitts instructors on the planet.

Peter says, "I went over to see Steve, and he picked up where Budd left off. We were flying his S-2B, and Steve worked me pretty hard: he would introduce swerves on roll-out, forcing me to deal with larger and larger problems.

"In the course of flying with Steve, my confidence continued to increase, and I began looking for an S-2B with Steve looking over my shoulder to make sure I got a good airplane. I was doing this with a partner from the Decathlon. To make sure I was ready, I went back down to fly with Budd again.

"When I arrived at Budd's, I have to admit that I was feeling pretty proud of myself, and I wanted to show off a little for him. Then, I got my first setback: I made one landing where I flat lost it. The airplane went one way, and I was over controlled, and for the first time, Budd had to save my bacon. It was no big deal to him, and he said so, but it was a real blow to my confidence.

"I'm really careful about what I do, and I recognize the limitations the leg places on me, so I tend to be too hard on myself, which is just part of my nature, leg or not. I left to go back to fly with Steve with my tail between my legs."

Steve got all the kinks worked out for Peter and got him up to speed on

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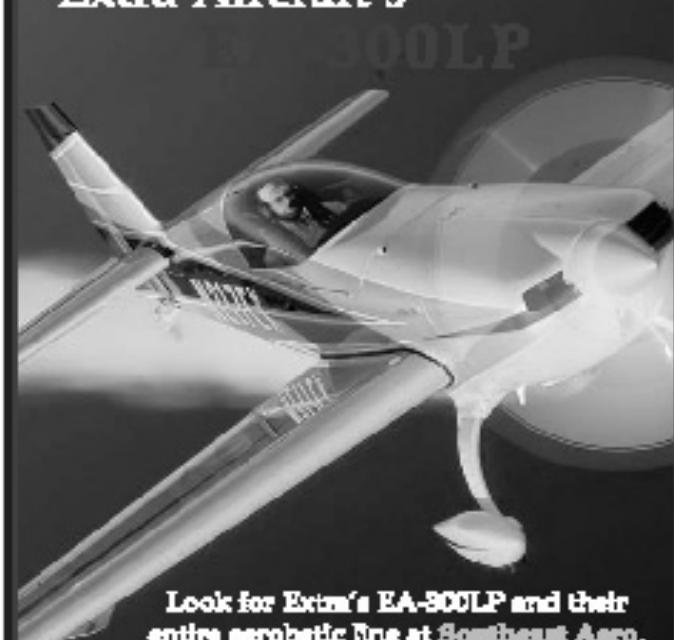
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the S-2B he had purchased, when Peter had another setback: After he had soloed the airplane and logged four hours in it, his partner (with two legs) lost it on landing and put it on its back, totaling it. Peter was right back where he started. Peter remembers, "On the one hand, I was devastated; on the other, I had proven I could fly the airplane, which was my goal all along. But I was definitely aeronautically depressed and started looking for a Decathlon, but this time I'd do it on my own."

"As I looked for Decathlons, I couldn't get the Pitts out of my mind. I just couldn't stop thinking about it. I guess I like a challenge, and I also now know I don't like being beaten by a challenge. So I started talking to Steve and Budd about the practicality of me flying a single-place Pitts, which is much cheaper and I could afford ownership by myself. Both of them said the airplane was too quick to handle with the current leg, but I'd already started coming up with a Mk. II prosthesis."

"The Mk. II Pitts-prosthesis had a flat foot on it that pivoted at the ankle and had a lever on the knee joint that could pivot it forward. I could change hands on the stick at the end of the roll-out, grab the lever, and put the right brake on smoothly without any jerks or grabbing. The first time I flew with Steve with that foot, a huge improvement was obvious to both of us. He felt I'd have no problem with a single-hole Pitts."



The custom designed Mk. II Pitts-prosthesis allows a smooth transition between the rudder and brake.

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It's important for the rest of us to understand exactly what losing a leg above the knee means to a pilot.

Flying Solo But not Alone

Peter's search for a single-hole airplane found him owning a homebuilt S-1S fitted with Sparcraft wings and a hopped up O-320. Steve gave the airplane a thorough going over and said pilot and airplane were ready to go. Peter recalls, "I was nervous as a cat on that first takeoff, but it went okay. Then, the first approach was pretty good and I was straight on touchdown, so I stopped. That first flight was from Creswell bringing the airplane home to Redmond, so I had about 45 minutes to calm down and get used to the airplane prior to landing. Before going back down to see Budd, I logged four hours in the airplane, including a bunch of touch-and-goes. I even got one good landing in it. The rest were ugly but acceptable."

When Peter came back down to fly with me the last time, he had the Mk. II Pitts-prosthesis, and it was a huge improvement. As I told him, from my perspective, I couldn't tell he was flying with a prosthesis. There was no difference between him and any one else. None. We had some mild crosswinds from both directions, including the left, which would challenge him more than ones from the right, and he handled them fine.

Because of the way the leg is configured, Peter always has to fly in shorts, and I have to admit it is huge fun watching the faces of the fuel guys or anyone standing around as he gets in the airplane because his right leg looks like the Terminator's. It's obvious to everyone that he's doing something that most would agree is totally impossible. But he's doing it. He

knows there's a risk, but from what I've seen of him, as a pilot, his risks are the same as anyone else flying the little buggers. He has to pick the days that match his talent and can't go out to fly with anything other than a totally focused attitude. And that's true of any Pitts driver. Since the airplane will only do what you tell it to do, you have to make sure your mind is not distracted by anything. Peter has already found that out the hard way.

Peter says, "I would like to add that none of this has been a solo effort. I have had a lot of help. From Dan Sullivan, who truly saved my life and without whom two great boys, Christopher and Nick, would have never made it into this world. From Parker Johnstone, who took me from a very rusty tricycle gear pilot to the point where I was comfortable landing a Decathlon from the rear seat and doing inverted spins. From Budd Davisson, who gave me a very firm foundation in landing the Pitts as well as a lot of encouragement, to Steve Wolf, who built on the landings and aerobatics and spent a lot of time setting up the S-1S so that I fit in it with my prosthesis. Last, but not least, I want to thank my wife, Helen, who has put up with my obsession with the Pitts and loved me through all the ups and downs."

At the very least, I'd say that Peter has definitely laid to rest the old wives tales that surround the Pitts Special. So, the next time you think a taildragger or a Pitts is beyond you, think about Peter Loeffler and others who have risen to the challenge. If they can do it, so can you. Period.

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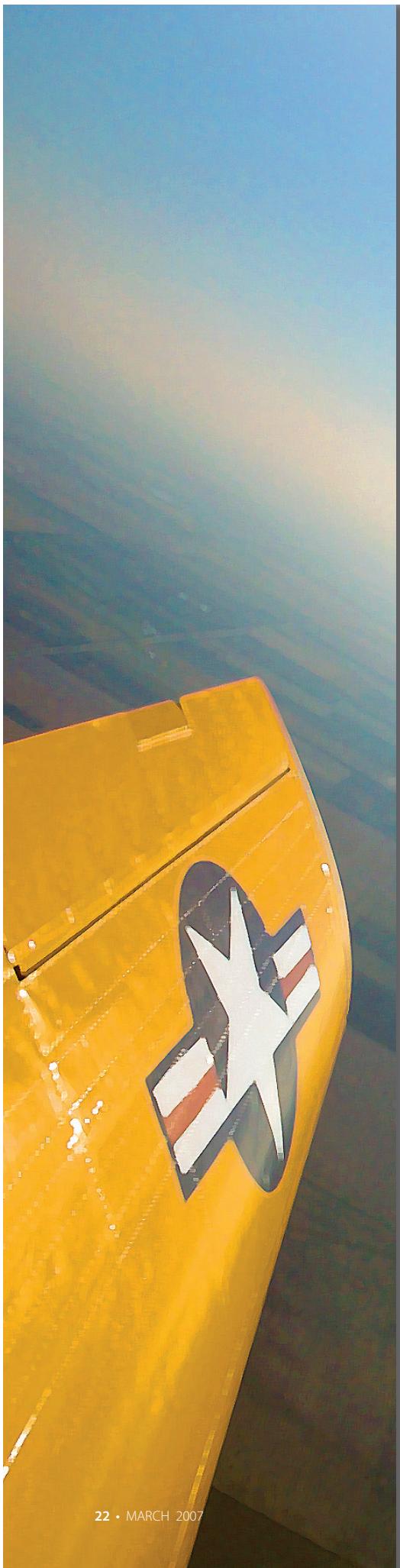
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Flying the Hammerhead

The art of energy management

Story by Greg Morris, photos courtesy Greg Morris

There are few maneuvers more impressive to watch or to fly than a hammerhead. An intermediate aerobatic maneuver that is both exciting and beautiful, the hammerhead is a zero-radius course reversal. It can be exited at any energy state for following maneuvers and can accept countless combinations of rolls and snaps on the upline and downline in higher categories. Mastering the hammerhead requires a well-developed feel for the aircraft, the ability to switch between reference points rapidly, and seeing (and correcting) minute deviations in all three axes of rotation instantly.

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- A vertical downline, and
- A pitch back to level flight

The pitch to vertical in a hammerhead is conventional and is flown just like the first quarter of a loop. Once the aircraft is established on the vertical line, it must be flown so the wing generates no lift. The zero-lift angle of attack varies with wing design, and the resulting pitch angle of the fuselage varies with the angle of incidence. If the aircraft is generating lift, it will have a component of velocity parallel to the horizon, thus pulling the aircraft off the desired vertical. As the aircraft is traveling straight up, drag and gravity will act in the same direction and slow the aircraft down, opposed only by thrust. This reduction in airspeed does not result in a significant energy loss, however, because as the airspeed or kinetic energy of the aircraft is decreasing rapidly, the altitude or potential energy of the aircraft is increasing rapidly as well.

As the aircraft slows, the spiraling slipstream tightens around the fuselage, eventually causing a slight airframe buffet. This signals that it is time to begin the 180-degree yaw, or pivot, portion of the maneuver. The pivot is initiated with rudder, whose effectiveness is greatly increased by the airflow over it from the propeller. During the pivot, torque from the engine will try to roll the aircraft; this is opposed by adding opposite aileron. As the aircraft yaws, the propeller creates a significant gyroscopic force, causing the aircraft to pitch while it is yawing. This is countered with elevator, whose effectiveness is also increased by the airflow over it from the propeller. The aircraft should yaw 180 degrees in one plane of motion, with no roll or pitch. Before the aircraft reaches a vertical down attitude, rudder is used to attack the inertia of the rotation and stop the aircraft vertical down, with the removal of the elevator and aileron as appropriate.



Scott Duncan, a Gauntlet Warbirds student, clears the area before beginning a maneuver.

On the vertical downline, the speed of the aircraft will be increasing rapidly because thrust and gravity are opposing drag, and the potential energy built up during the first half of the maneuver is traded for kinetic energy. The vertical downline is then held until the desired exit speed is reached, and the aircraft is flown through a quarter-loop back to level flight. The amount of g forces pulled in the exit will control the airspeed gained. An aggressive pull will create enough drag to prevent most if not all aircraft from gaining airspeed, thus allowing tremendous flexibility in setting the length and exit energy of the vertical line.

Mastering the Maneuver

The hammerhead is usually a pilot's first exposure to vertical flight; as such, this aspect of the maneuver

There aren't too many situations when an inverted spin is preferable, but this is one of them.

will be discussed in detail along with the pivot at the top of the maneuver. From level flight, you should accelerate to a slightly higher airspeed than you would normally enter a loop, then pitch up just as if you were beginning any looping maneuver. As you look left, watch for the wing to approach the vertical. When it is vertical, stop the pitch with assertive forward stick.

Vertical Line

Once the aircraft is on the vertical line, it must be actively flown to stay there. Imagine that you are balancing the aircraft on the tail. If you simply set the line and leave it alone, the aircraft won't maintain vertical for any length of time. Pitch is often the most challenging alignment, largely because it requires a new level of precision while using wingtip reference. You must now look to see the exact angle the wing is making with the horizon and keep this angle constant. The aircraft will be trimmed for one airspeed and power setting. Since the airspeed is changing rapidly, the required pitch forces change rapidly as well. Sights can be useful tools to aid maintaining a vertical, but they can also cause people to fixate on the sight to the exclusion of all other references.



Greg Morris and a student before a training flight. Professional aerobatic instruction is the best way to learn the hammerhead.

With good instruction, only a few attempts at the vertical line should be required to learn the proper sight picture. When flying vertical, being pitched off vertical toward upright flight is called being positive, while being off vertical toward inverted flight is called being negative.

In yaw, the wingtip reference is the same as during a loop. The rudder is used to keep a spot on the wing on the horizon or the wing a certain distance from the horizon, depending on your aircraft. As the airspeed changes on the vertical, the amount of rudder required will change. Thus, as with all control inputs on a vertical line, the aircraft must be actively flown in yaw. When the aircraft is viewed in plan form, the wings must be parallel to the horizon. If one

wing is slightly behind, the trailing wing is "dragging."

Roll is the most straightforward of all the axes, largely because it is easiest to see roll errors on the vertical. If the wing is moving around the horizon, you are rolling. Fix it with aileron. Michael Church has an excellent drill to refine wingtip reference skill for vertical lines and loops. In straight and level flight, he instructs students to look at the wingtip they will reference for looping maneuvers, and then yaw the aircraft one way and then the other smoothly while keeping the aircraft from rolling or pitching off the level flight attitude.

The vertical downline at the end of the maneuver is initially much more intuitive than the vertical upline

because you are looking over the nose at a reference point. Find the point on the ground directly below you and fly the aircraft toward it. This uses the same set of skills used when flying straight and level and should require no special effort other than being aware of your airspeed.

The easiest, most efficient and fun way to perfect your vertical is to fly a number of vertical lines without worrying about the pivot. When the aircraft slows at the top of the line, simply push or pull the aircraft off vertical and let it swap ends in a whipstall. When the aircraft is nose down, close the throttle and execute a standard nose-low unusual attitude recovery. By breaking the maneuver into elements, you can focus on one at a time until it is second nature, and then proceed to the next element. Do not attempt to learn this or any aerobatic maneuver without a qualified aerobatic instructor who is familiar with the aircraft you are flying and the maneuver you wish to learn.

Pivot

It is impossible to fly a good pivot without a precise vertical line, so do not rush into learning the pivot until your vertical lines are nearly flawless. The pivot presents an interesting challenge in choosing a reference point to use. As the aircraft is yawing, both the wingtip and nose will be moving significantly. To solve this, look out one side of the canopy and focus at the point on the horizon you were looking at during the vertical line. Continue to watch this point until the nose is on the horizon and you are looking over it. When you are looking over the nose, simply follow it to the vertical downline.

The first difficulty in the pivot is learning when to start. Despite the temptation, do not attempt to use the airspeed indicator. You are busy enough as it is. If you shift your reference to the airspeed indicator, you will destabilize your line, and as noted previously, a true vertical is crucial to make the pivot work. The time to pivot is signaled by a slight airframe buffet caused when the spiraling slipstream tightens around the fuselage. When this happens, rapidly and smoothly add full

rudder in the direction you want to pivot. This will almost always be left in aircraft with engines that rotate clockwise as seen from the cockpit because of the strong left yaw tendencies created by the prop. Some people will say you kick the rudder at this point, but this description is seriously flawed because it implies a lack of smoothness and control. No control should ever be kicked; speed of control application has nothing to do with smoothness or feel for an aircraft.

Once the rudder has been applied and the aircraft starts to yaw, add aileron to prevent torque from rolling the aircraft. In an aircraft with a Western engine, this is right aileron. Most aircraft do not have enough aileron authority to fix roll errors after they occur because the ailerons, unlike the elevator and rudder, do not have the benefit of propwash to increase their effectiveness, so roll errors must be prevented and usually cannot be fixed once they occur.

After adding aileron, immediately add some elevator to prevent the aircraft from pitching due to gyroscopic forces. The direction of the control input depends on both the direction of rotation of the engine and the direction of the pivot. A Western engine and a pivot to the left would create a pitch-up requiring forward elevator to correct. This input will be of a much smaller magnitude than the aileron input, as the elevator's effectiveness is increased because it is in the propwash.

When the nose is approximately 45 degrees from vertical down, apply full opposite rudder to stop the pivot and fly the vertical downline. Simply look over the nose and find the point on the ground you are directly over, and keep the nose on that spot. In competition, if you are slightly off vertical, simply hold the line you have established and remember to fix it next time. To finish the maneuver, complete the last quarter of a loop to level flight.

Common Errors and Potential Hazards

Not Maintaining a Vertical Upline. Without a good vertical upline, the aircraft cannot pivot in plane and consequently the maneuver will not work. If you are not vertical up when it is time to pivot, abandon the maneuver by pitching the aircraft off vertical.

Improper Application of Rudder. Adding rudder to start the pivot either too early or too late will prevent the maneuver from working. If the rudder is added too early, the aircraft will fly over the top with a sluggish yaw rate. If the rudder is added too late, the aircraft will fall out of the maneuver with little initial yaw rate followed by an unmistakable sinking feeling before it flops over into the relative wind.

Insufficient aileron or elevator during the pivot. Not using enough aileron or elevator will cause the aircraft

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to roll or pitch out of the desired plane of motion. If the error is with the elevator, it can be fixed in the maneuver. However, most aircraft do not have enough aileron authority to correct roll errors. Next time you fly the pivot, add more aileron earlier to keep it from rolling in the first place.

Penduluming. Once the aircraft is pivoting nicely, we still have to stop the pivot correctly to have a successful maneuver. Unless opposite rudder is added assertively before the vertical downline is reached, the aircraft will swing side to side in yaw as it seeks the vertical downline. Next time, add more rudder earlier to stop the pivot.

Tailslide. Tailslides are the greatest potential hazard in vertical flight. If the aircraft is kept vertical to the point of having zero airspeed, it can slide. A slide can cause significant damage to the control surface hinges (unless the aircraft was designed for tailslides and has reinforced hinges). If the aircraft begins to slide, leave the power at full and put everything in the front left corner—aileron, elevator, and rudder. This will get the aircraft off vertical as quickly as possible, avoiding the slide, but may cause an inverted spin. There aren't too many situations when an inverted spin is preferable, but this is one of them.

Inverted Spin. An inverted spin can result from a botched hammerhead, especially after a tailslide or if the pivot rudder and forward elevator are held through the vertical down. If the aircraft spins inverted, simply recover as normal. The hammerhead should not be attempted without good instruction, familiarity, and comfortable recovering from inverted spins.

Above: In the pivot, look at the horizon the aircraft has yawed 90 degrees, then track the nose through the second half.

Left: The wingtip reference point is different for every aircraft; in some, such as the back seat of a T-6, the wing will be in front of the reference.

During the pivot, torque from the engine will try to roll the aircraft; this is opposed by adding opposite aileron.

Tips

Don't think about control inputs. If you try to think about the controls while in the air you will end up reacting to the aircraft instead of flying it. Spend quite a bit of time on the ground making the maneuver second nature. Know the inputs and develop your reactions before you ever start the engine. Once you do go fly, don't get in the airplane, put it on. Make the aircraft an extension of yourself, feel the aircraft, and work with it to achieve your goals.

Look outside. The instruments are useful to spot trends. If a pilot looks inside more than once every five seconds (and even then for more than a quick glance), he or she is spending too much time head-down in the cockpit.

Be smooth. Control inputs should be assertive, quick, and smooth. Aerobatics is not about beating up airplanes or forcing them through maneuvers; it is about dancing with them.

Energy management. The hammerhead is an incredibly versatile maneuver in sequences. To enter you just need enough energy to draw a vertical line and pivot. You can exit on any heading by adding rolls on the upline or downline, and you can exit at any airspeed desired by changing how long you drive your vertical downline because the entry and exit altitudes do not need to match. 

Greg Morris is chief pilot of Gauntlet Warbirds, providing Decathlon, T-6, and L-29 instruction and rentals in the Chicago area (www.GauntletWarbirds.com). He is active in the IAC and Commemorative Air Force.

m i s h a p s d a t a

Compiled by Bruce Johnson

MISHAPS BY MONTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	0/0	1/2	1/1	1/0	1/1	1/0	0/0	1/0	0/0	1/1	1/1	1/2
2007	0/0											

MISHAPS BY YEAR

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Mishaps	20	26	21	24	20	18	12	9	15	9	10	16

Numbers depict accidents/fatalities of total accidents in the U.S. by aerobatic aircraft. Accidents included are only those which occurred during aerobatic maneuvering (including air shows) or during an IAC-sanctioned competition.

An old saying goes: "Among the more useless things to a pilot are the runway behind you, gasoline in the fuel truck, and altitude above you." The mishap presented below reinforces the altitude part, as it appears to be one of the factors that contributed to the accident. Time after time we see mishaps reported where just a little more air below the aircraft could have been the difference between a wonderful aerobatic experience for the passenger or a very bad day. Let's take some of that useless air over our head and put it to work as insurance under the aircraft.

Preliminary

Accident occurred Saturday, December 9, 2006, in Bakersfield, California.

Aircraft: John Lauer Harmon Rocket II, Registration: N604JL **Injuries:** 2 Fatal

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed.

On December 9, 2006, about 1040 Pacific Standard Time, an experimental amateur-built Lauer Harmon Rocket II, serial number 129, N604JL, collided with terrain while maneuvering near Bakersfield, California. The owner/pilot was operating the airplane under the provisions of 14 CFR Part 91. The

airline transport pilot and a passenger sustained fatal injuries; the airplane was destroyed. The local area personal flight departed Bakersfield Municipal Airport (L45) about 1020. Visual meteorological conditions prevailed, and no flight plan had been filed. The approximate GPS coordinates of the primary wreckage were 35 degrees 14 minutes north latitude and 119 degrees 08 minutes west longitude.

Witnesses reported seeing the airplane performing aerobatic maneuvers just prior to the accident. As it was completing a loop, it impacted into a fallow agricultural field in a wings-level, nose-high attitude. The accident site was approximately 10 miles southwest of L45.

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CALENDAR OF EVENTS



The 2007 aerobatic season is underway. Check updated contest listings at www.IAC.org.

2007 Contests

MID-AMERICA

Heuer Classic

Friday, June 8 - Sunday, June 10, 2007
Practice/Registration: Thursday, June 7 - Friday, June 8
Power: Primary through Unlimited
Location: Aurora Municipal Airport (ARR): Aurora, Illinois
Contest Director: Bob Hart
Phone: 815-363-8967, E-Mail: hrtlnfrm@aol.com
Website: www.IACChapter1.com
Enterprise Rent-A-Car available at this location.

Ohio Aerobic Open

Friday, June 22 - Saturday, June 23, 2007
Practice/Registration: Thursday, June 21
Rain/Weather: Sunday, June 24
Power: Primary through Unlimited
Location: Union County Airport (MRT): Marysville, Ohio
Contest Director: Brian Cooper
Phone: 513-503-7766, E-Mail: briancooper@fuse.net
Website: www.IAC34.com
Enterprise Rent-A-Car available at this location.

Henry Haigh Challenge Michigan Aerobic Open

Friday, July 6 - Sunday, July 8, 2007
Practice/Registration: Friday, July 6
Power: Primary through Unlimited
Location: Reynolds Field (JXN): Jackson, Michigan
Contest Director: Dick McDonald
Phone: 810-632-7395, E-Mail: rmac@cac.net
Website: www.MyWebPages.Comcast.net/iac88

Salem Regional

Saturday, July 14 - Sunday, July 15, 2007
Practice/Registration: Thursday, July 12 - Friday, July 13
Power: Primary through Unlimited
Location: Salem Leckrone Airport (SLO): Salem, Illinois
Contest Director: William Perman
Phone: 636-236-8691, E-Mail: perman@slu.edu

Doug Yost Challenge

Saturday, August 4 - Sunday, August 5, 2007
Practice/Registration: Friday, August 3
Power: Primary through Unlimited
Location: Cumberland Municipal Airport (UBE): Cumberland, Wisconsin
Contest Director: Mike Niccum
Phone: 952-652-2245, E-Mail: PGNic@aol.com
Website: www.IAC78.org

Illinois State Open

Friday, September 7 - Sunday, September 9, 2007
Practice/Registration: Friday, September 7
Power: Primary, Intermediate, Unlimited
Location: Illinois Valley Regional Airport (VYS): Peru, Illinois
Contest Director: Bob Hart
Phone: 815-363-8967, E-Mail: hrtlnfrm@aol.com
Website: www.IACChapter1.com
Enterprise Rent-A-Car available at this location.

NORTHEAST

Kathy Jaffe Challenge

Friday, August 24 - Sunday, August 26, 2007
Practice/Registration: Thursday, August 23

Power: Primary through Unlimited
Location: Flying W Airport (N14): Lumberton, New Jersey
Contest Director: Ron Chadwick
Phone: 732-671-6089, E-Mail: bubbaron@comcast.net
Website: <http://IAC52.org>

NORTHWEST

Apple Cup

Friday, June 22 - Saturday, June 23, 2007
Practice/Registration: Thursday, June 21
Rain/Weather: Sunday, June 24
Power: Primary through Unlimited
Location: Ephrata Municipal Airport (EPH): Ephrata, Washington
Contest Director: Ann Marie Ward
Phone: 206-579-6866, Alternate Phone: 206-575-8827, E-Mail: amward@relparts.com
Website: www.IAC67.org

Beaver State Championship

Friday, August 10 - Saturday, August 11, 2007
Practice/Registration: Thursday, August 9
Rain/Weather: Sunday, August 12
Power: Primary through Unlimited
Location: Eastern Oregon Regional Airport at Pendleton (PDT): Pendleton, Oregon
Contest Director: Robert Toppel and Bob Harris
Phone: 503-292-6630, Alternate Phone: 503-757-1247, E-Mail: rboydt@comcast.net
Website: www.IAC77.org

SOUTH CENTRAL

Chuck Alley Cajun Aerobatic Contest

Thursday, April 12 - Saturday, April 14, 2007
Practice/Registration: Wednesday, April 11 - Thursday, April 12
Rain/Weather: Sunday, April 15
Power: Primary through Unlimited
Location: Southland Field Airport (UXL): Sulphur, Louisiana
Contest Director: Bubba Virdine
Phone: 337-886-7822, Alternate Phone: 337-278-7992, E-Mail: bubba26m@earthlink.net

Okie Twistoff

Thursday, May 17 - Saturday, May 19, 2007
Practice/Registration: Thursday, May 17
Glider: Sportsman through Unlimited
Power: Primary, Sportsman, Intermediate, Unlimited
Location: Claremore Regional Airport (GCM): Claremore, OK
Contest Director: Tom Culver
Phone: 918-496-1579, Alternate Phone: 918-519-2874, E-Mail: tculver@pdr-usa.net
Enterprise Rent-A-Car available at this location.

Lone Star Aerobatic Contest

Friday, June 8 - Saturday, June 9, 2007
Practice/Registration: Thursday, June 7
Power: Primary through Unlimited
Location: Grayson County Airport (GYI): Sherman/Denison, TX
Contest Director: Pat Clark
Phone: 817-845-6445
Enterprise Rent-A-Car available at this location.

9th Annual Okie Dust Devil

Friday, July 13 - Saturday, July 14, 2007
Practice/Registration: Thursday, July 12 - Friday, July 13
Power: Primary through Unlimited
Location: Thomas P. Stafford-Weatherford (KOJA): Weatherford, Oklahoma USA
Contest Director: John Creswell
Contact Information: Primary Phone: 580-774-1971
Alternate Phone: 580-774-9176
E-Mail: creswell@classicnet.net

Hill Country Hammerfest

Friday, August 3 - Saturday, August 4, 2007
Practice/Registration: Thursday, August 2
Power: Primary through Unlimited
Location: Llano Municipal Airport (AQO): Llano, Texas
Contest Director: Jeffery Poehlmann
Phone: 512-423-5333, E-Mail: jeffery@texas.net

Rocky Mountain Invitational

Saturday, October 6 - Sunday, October 7, 2007
Glider: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Lamar Municipal Airport (LAA): Lamar, Colorado
Contest Director: Jamie Treat
Phone: 303-648-0130, E-Mail: jamietreat@hughes.net
Website: www.IAC5.org

SOUTHEAST

Keystone Aerobatic Kickoff

Saturday, March 24 - Sunday, March 25, 2007
Practice/Registration: Friday, March 23
Rain/Weather: Monday, March 26
Power: Primary through Unlimited
Location: Keystone Airpark (421): Keystone Heights, Florida
Contest Director: Aaron Prosser
Phone: 404-433-3734, E-Mail: aaronp@eaglesport.org
Website: www.IAC288.org

SOUTHWEST

Copperstate Aerobatic Championships

Thursday, March 15 - Saturday, March 17, 2007
Practice/Registration: Thursday, March 15
Glider: Sportsman through Unlimited
Power: Primary through Unlimited

Location: Coolidge Municipal Airport (P08): Coolidge, Arizona
Contest Director: Robbie Gibbs
Phone: 602-663-3062, E-Mail: bud1011@aol.com

Borrego Minifest

Saturday, April 14, 2007
Practice/Registration: Friday, April 13
Power: Primary, Sportsman
Location: Borrego Valley Airport (L08): Borrego Springs, CA
Contest Director: Joshua Muncie
Phone: 562-688-1466, Alternate Phone: 949-852-8850,
E-Mail: jlmuncie@yahoo.com
Website: www.IAC36.org

Reno Freezer Mini-Fest

Saturday, April 28 - Saturday, April 28, 2007
Practice/Registration: Friday, April 27 - Saturday, April 28
Power Categories: Primary Sportsman
Location: Reno Stead Airport (4SD): Reno, NV
Contest Director: Timothy Brill
Contact Information: Primary Phone: 775-329-3366
E-Mail: tim@aerobaticcompany.com
Enterprise Rent-A-Car available at this location

Northern California Aerobatic Supremecyfest

Friday, June 8 - Saturday, June 9, 2007
Practice/Registration: Thursday, June 7
Rain/Weather: Sunday, June 10 - Sunday, June 10
Power: Primary through Unlimited
Location: Paso Robles Municipal Airport (PRB):
Paso Robles, California
Contest Director: Tom Myers
Phone: 650-605-2343, Alternate Phone: 650-328-2141,
E-Mail: tom.myers@stanfordalumni.org
Website: www.IAC36.org

Borrego Akrofest

Friday, October 19 - Saturday, October 20, 2007
Power: Primary through Unlimited
Location: Borrego Valley Airport (L08):
Borrego Springs, California
Contest Director: Ron Rapp
Phone: 714-743-0360,
Alternate Phone: 949-852-8850,
E-Mail: ron@rapp.org
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meet a member

By Scott Westover

Name: Giles Henderson

City, State: Charleston, Illinois

Occupation: Retired Chemistry Professor

Family: Wife, Lyn, and two adult boys

Pilot certificate: Commercial Pilot

What aircraft have you flown? I have piloted approximately 50, including the PT-22, PT-23, PT-26, AT-6, T-34, T-28, 450 Stearman, Pitts, Smith Miniplane, Bücker Jungmann, Great Lakes, Cassutt racer, Globe Swift, Dart, de Havilland Chipmunk, Clipped Wing Luscombe, Clipped Wing T-Craft, Clipped Wing Cub, and various vintage, experimental, and general aviation aircraft.

What drew you to flying? I remember watching a small aircraft doing aerobatics as a youngster in the late 1940s.

What was your first experience with aerobatics? Aileron rolls during my first hour of dual.

Can you share a little about your airplanes? I have owned and flown a Cub for 40 years. I clipped the wings (removed the first inboard bay of each wing), installed heavier struts, and started competing in Aerobatic Club of America contests in the late 1960s with 65 hp, a wood prop, and no inverted system. Over the years the Cub was upgraded with a 90-hp engine, full inverted fuel and oil systems, air show smoke, modified landing gear, and an elevator servo system.

I also have a Cassutt racer that was originally built in 1969 by the late Pete Myers. The Cassutt is a small mid-wing aircraft designed as a Formula One racer. Pete and the Cassutt were well-known for their air show performances in the Midwest and the Rockford and Oshkosh conventions. I completed a restoration of the Cassutt five years ago, and it now has the same color scheme as the Cub. It is also configured with full inverted systems.

What is your most memorable contest moment? Although the Cub and I have won the IAC Sportsman championship as well as the Soucy Award four times, perhaps the biggest thrill was the first time in 1971. A comparable moment was a telephone call inviting me to perform in the EAA air show at Oshkosh.

Tell me about a person in the sport you admire. In the early days many of us managed successful competition and/or air show careers without any aerobatic dual or coaching. We



Courtesy Giles Henderson

Giles Henderson and his Cub have been a winning team for more than 40 years.

did, however, have the benefit of some written instructional materials. One of the most practical and useful books for the self-taught aerobatic pilot of that time was Duane Cole's *Roll Around a Point*. Duane was an aerobatic instructor during World War II. He and his brothers started their more than 50-year professional air show careers (Cole Brothers Airshows) in the 1940s and were well-known to the EAA membership as performers at Rockford and, later, Oshkosh. Duane's low-level, extreme-outside routine with his 85-hp Taylorcraft made him and his aircraft legends in their own time. His example of what was possible with good airmanship and an inexpensive, low-performance aircraft was an incredible inspiration to many of us.

In addition to Duane, Frank Price and Pete Myers were also heroes that inspired many of us. All of these pilots demonstrate exceptional airmanship and high achievements with limited resources.

How does your family feel about your aerobatics? In 1960 on our first date, my wife, Lyn, went for an airplane ride that included some aerobatics. During all these many years she has made sacrifices and supported my aviation career. I have indeed been blessed.

How have you stayed involved in the sport? I retired from air show and serious competition flying in 1991. My resource limitations and love affair with the Cub resulted in a "lifetime Sportsman" career. However, I continue to attend five or six Midwest contests each year to help out on the judges' line or wherever needed—and sometimes I fly Primary or Sportsman with the Cassutt or the Cub for fun.

**Remember,
things don't always go
according to plan!**



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