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Sport Aerobatics



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NOVEMBER 1985

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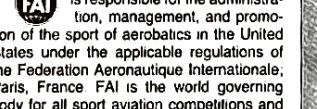
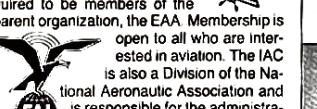
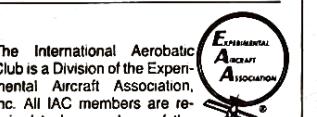
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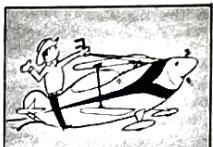
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which establishes rules worldwide for aerobatic competition.



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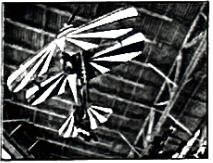
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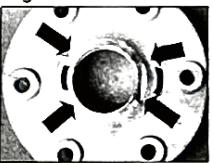
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ON THE COVERS:

Front: IAC's public relations representative catches a spectacular shot of Bob Davis piloting his Laser Super Akro over Lake Michigan. Davis, who built his monoplane himself, is an IAC Director and competes in the Unlimited category.

(Photo by Dave Gustafson, Communication Resources, Inc.)

Back: William B. Dehon of Fort Meyers, Florida, took this self photo while doing a loop in a Grob Astir glider. Dehon is a dentist and member of the Soaring Society of America. IAC Director Steve Powell, who is actively involved with the Soaring organization and glider aerobatics, obtained this photo for us to share with IACers.

President's Forum

By Mike Heuer



The largest and most successful U.S. National Aerobatic Championships was concluded the last week in September at the Grayson County Airport, Denison, Texas. Full coverage will be forthcoming in the December issue of SPORT AEROBATICS but the highlights of the results are covered in "Lines & Angles Notes" in this issue. We now have a new set of National Champions in all four categories as well as a 1986 U.S. Aerobatic Team — the first team chosen under the new, more rigorous selection process instituted by IAC this year.

New U.S. National Aerobic Champion is Kermit Weeks of Miami, Florida, who flew his Weeks Solution to his second victory in a row. This is the latest in a string of wins for Kermit in his distinctive black biplane. U.S. Advanced Aerobatic Champion is Jimmy Goggan of Springfield, Tennessee — a good friend and a welcome sight at many of the contests this year. Jimmy flew a Pitts S-2B. Intermediate Champ was Phil Sisson of Litchfield, Illinois, flying a Pitts S-1S. Phil was Sportsman Champion in 1984. Sportsman's winning pilot was Chip Corley of Ft. Smith, Arkansas, flying a Pitts S-2A. Chip is in his first year of competition and has piled up an impressive record so far.

Last month, I talked about "people helping people" being a hallmark of IAC and this was in evidence at the Nationals again this year. Aerobatic instructor and Intermediate pilot Sandy Barrows critiqued and coached the first three place winners in Sportsman at the Nationals — Chip Corley, Bill Denton, and Barry Brown. Something to be proud of!

The 1986 U.S. Team consists of male pilots Kermit Weeks, Clint McHenry, Henry Haigh, Gene Beggs, and Harold Chappell. Female pilots will be Debby Rihn, Julie Pfile, Linda Meyers, Patty Wagstaff, and Brigitte de Saint Phalle. This makes for a full contingent of male and female pilots — another first. I know each of these pilots will acquit themselves well in England next year.

On another tack — it is time to take a long look at safety. I have previously discussed the rather awful accident rate we have experienced so far this year. We sadly report the death of aerobatic veteran Art Scholl, a long-time IAC member, in the crash of his Pitts S-2A while filming in California on September 16th. Art was spinning the aircraft and reported problems over the radio. Whether or not we will ever know what happened is open to conjecture. This accident rocked the aerobatic community. We can only believe

some sort of mechanical malfunction was the culprit as there are few people in the world more experienced in all phases of aerobatics and spins than was Art Scholl.

Mechanical problems with aerobatic airplanes is one of the reasons we have a Technical Safety Program under the leadership of Fred Cailey. Fred has been responsible for the dissemination and collection of a ton of material and information to the membership over the past several years. This is why he was so deserving of the EAA Outstanding Safety Award presented at Oshkosh this year. Making sure our pilots are aware of potential problem areas is extremely important and we will never know how many lives have been saved due to the efforts of Fred and Nancy Cailey. Fred is also a devoted motorsport fan in other areas including auto racing and motorcycles. He periodically sends me copies of articles that appear in publications dealing with these sports and one that was published in the August 1985 issue of SUPER STOCK by Dave Emanuel really hit home. Those of you who follow pro stocks probably heard of the death of Lee Shepherd, a well-known race driver, earlier this year. Dave's article focused on this accident and the lack of detailed safety standards in the drag racing sanctioning body's rule book. We have a similar situation in IAC. Never a popular subject, technical safety standards, with a few exceptions such as the crankshaft and seat belt rules, have never been adopted. The sport has been small until recent years and our efforts to keep costs down to encourage participation have always ruled out detailed standards. Maybe it is time for a change? How far can we go with regards to safety standards in order to fulfill our responsibilities as a sanctioning body? What level of acceptance will there be among pilots and owners? Let me quote from Dave's article and you substitute the words "pilots" and "aircraft" in a few key locations.

"On the other hand, one cannot focus the spotlight of responsibility entirely on the sanctioning bodies. To a degree, racers themselves are a part of the problem. They react negatively to any type of rule, but especially to those that cause added expenses with no possible influence on performance. Tell a racer that his car has to weigh an additional 100 or 200 pounds and that the seat belts and shoulder harnesses must be replaced every year or two and you'll get a fight. The prevalent philosophy is that all one has to do is stand under the 'It can't happen to me' umbrella and he's out of harm's way."

The article continues . . . "The type of people who drive race cars have a fire deep within. It drives them to compete and fuels their resolve to press on in the face of overwhelming odds and impossible predicaments. It also blinds them to the risks they face . . . Would a few extra pieces of tubing or a well advertised seat belt/shoulder harness specification have saved Lee Shepherd's life? That will always be a matter of conjecture. But one thing is certain. It couldn't have hurt."

Amos Buettell's accident early this year generated a wave of discussion regarding safety standards and Dan Rihn presented an excellent array of recommendations in an article in this magazine. Some pilots, concerned about surviving a fire, started wearing Nomex flight suits including Lee Manelski and Pete Anderson, both Unlimited pilots. Pete also wears a "head sock" to protect his face in a fire. As an Air Force pilot for 13 years, I have personally worn Nomex flight suits, flight jackets, flying gloves and even Nomex long underwear for many years. My belief in this equipment transcends the Air Force's requirement for its use — I have never forgotten a lecture I attended by Gen. William Spruance, an Air National Guard pilot who was badly disfigured in a T-33 accident many years ago when cotton flight suits and leather flying gloves were in use. Gen. Spruance's mission since then was to convince young second lieutenants of the need for proper use of the professional gear they were all issued. His personal appearance and a graphic slide program were grim reminders of the devastation of aircraft fires. Could Nomex flight gear have saved Amos? We don't know. But it wouldn't have hurt. Let's look at it.



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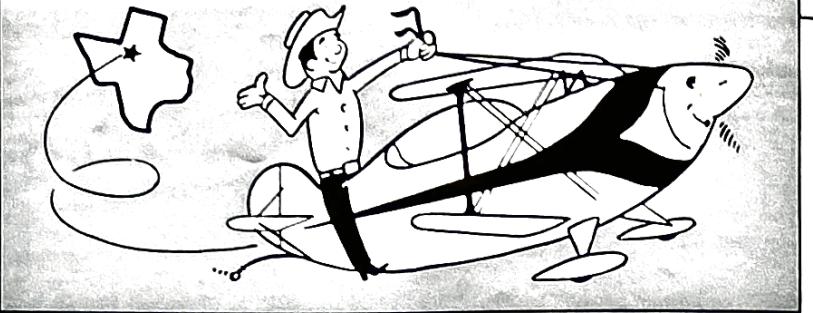
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SPINOFFS

Design Deficiency

By Gene Beggs
Contributing Editor

After my years of spin tests and after spinning dozens of different models of aircraft, I now believe that in those extremely rare instances when we encounter a spin mode in an aircraft where the power-off, hands-off, opposite-rudder method of emergency spin recovery will not work, what we have discovered is not a flaw with this "new" method of emergency spin recovery, but rather a design deficiency in that model of aircraft. In the overwhelming majority of spinable aircraft, the power-off, hands-off, opposite-rudder method of emergency spin recovery that I advocate works beautifully in all spin modes in spite of being different from the method of spin recovery shown in the aircraft flight manual.

It is my belief at this point that when we encounter an aircraft that has a spin mode in which we cannot recover using this "new" method, we have found an aircraft that does not have enough tail damping force (TDF) to overcome the "pro-spin" forces created by the wing during auto-rotation. That aircraft has simply demonstrated that it has a design deficiency and needs more tail damping force.

Tail damping force is provided by the overall side area of the fuselage and the nose section, landing gear, vertical stabilizer, rudder, dorsal fins, vertical fins, etc.

In those extremely rare instances, where we encounter a make and model of aircraft that has a spin mode from which we cannot recover using the "new" emergency spin recovery, it might very well be that with a very slight modification, such as the addition of a little bit more dorsal fin area or rudder area or perhaps by increasing the rudder travel by a couple of degrees, this would completely eliminate the problem with that particular aircraft. Of course, we must remember that this can only be determined by very careful, in-flight tests. Please bear in mind that even in those extreme cases such as the spin mode discovered in the C-150 to the left and the spin mode to the right in the T-6, (EDITOR'S NOTE: Refer to the "SPINOFFS" article in the October 1985 issue of SPORT AEROBATICS.) the only thing else that had to be done was to push the stick forward, after the aircraft had shown that it did not have enough rudder power to stop the rotation and allow the nose to fall through on its own.

It would be such a shame to discredit this wonderful, life-saving method of emergency spin recovery that works so astonishingly well in the overwhelming majority of spinable aircraft for the sake of a handful of poorly designed aircraft insofar as spins and spin recovery are concerned.

It amazes me that there are some individuals who are so adamantly

against adopting this "new" hands-off, power-off, opposite-rudder method of spin recovery as the "standard" recovery. I think it is just natural human nature to resist change. Actually, when you analyze it, this method is not so different after all. The only thing that is actually different is to let the stick (or yoke) go free and leave it to do its own thing, which eliminates any chance of the pilot aggravating the spin by erroneous control inputs from the elevators or ailerons if he is confused or disoriented. Remember, if you cut the power and let the stick go free, there is no possibility at all of making a mistake!

The airplane cannot make a mistake! The flow of air over the control surfaces and the laws of physics and aerodynamics will place that stick in the most perfect position for the recovery, which will be accomplished by looking right straight down the cowlings and pushing and holding full opposite rudder. If the aircraft is properly designed and has enough tail damping power, the spin will slow and stop and the nose will drop, the controls will abruptly snap to the true, neutral position, and you are out of the spin! In those extremely rare instances in those rare aircraft in which the stick remains in its stalled position, the only thing else that is necessary for the pilot to do is to look at the stick and either push it forward or pull it back, depending upon whether the stick was forward or back. So

How Would You Score It?

Compiled By Ben Lowell
IAC Judges Chairman

THE EPISODE: — The jungle tom-toms continue to sound out questions from our Tong members as they congregate at the Club Herpes in LAX and the Fickle Finger Saloon in DCA. So, this month's Episode will consist of several of these vexing quodlibets (questions or academic debates). The answers supplied by our Expert Elves will inform, amuse, astound and/or baffle you — or possibly none of the above.

Quodlibet 1 — While flying a program a pilot was called low on three

successive maneuvers, say 5, 6, and 7, by four of the Judges. Should he be given one low penalty or three low penalties?

Quodlibet 2 — A pilot received the following scores on a figure in his free program: 8.0-7.0-7.5-7.5 and a 1.5. May the pilot file a protest against the 1.5?

Quodlibet 3 — A pilot flew a loop followed by a $\frac{1}{4}$ loop with a $\frac{1}{2}$ roll on the down. A prospective Judge argued that the radius of the $\frac{1}{4}$ loop was smaller than that of the full loop and therefore should be graded down. Yes or no?

Quodlibet 4 — In his program two,

a pilot showed a Humpty-Bump with an inside snap on the up with an inverted exit from the figure followed by a loop with an inverted entry and exit. He fell out of the up snap, recovered in a diving attitude, realized he was upright and while still diving on a 40° angle rolled to inverted, flew a horizontal line with wings level and flew the loop entering inverted and exiting inverted. Should he receive an interruption of program for inserting the $\frac{1}{2}$ roll from upright to inverted?

* To find the ANSWERS, turn to page 22 of this issue.

SPINOFFS . . .
(Continued from Page 6)

what is so different about that? What is there really to disagree about?

The beautiful part about this power-off, "stick-free," opposite-rudder method of spin recovery is:

1. The pilot does not need to recognize what type of spin he is in. The recovery procedure is the same whether the spin is upright or inverted, left or right.
 2. There is no possibility of the pilot simply reversing the spin with the rudder while desperately clutching the stick and holding the elevator in the stalled condition. With the stick "free," it will snap to the neutral position as the rotation stops and the nose goes down and no further spinning is possible.
 3. It is impossible for the pilot to "transition" an upright spin into an inverted spin or vice versa by overcontrolling.
 4. It is impossible for the pilot to aggravate the spin by inadvertently cross-controlling with opposite aileron, which will produce a flat spin in many aircraft.
 5. It is impossible for the pilot to unknowingly create an accelerated spin by applying nose down elevator while "pro-spin" rudder is still present.
- So there you have it. The facts have been presented. Decide for yourself and draw your own conclusions. Please understand that I am not advocating doing away with the old, tried and true "standard" method of spin recovery, which is power-off, full opposite-rudder followed immediately by a brisk application of full nose-down elevator. We use exactly this method to make a precision recovery from an intentional spin in an aerobatic routine in competition. The hands-on method works great and we must use it in competition in order to get top scores.
- In closing, let me emphasize some very important points:
1. My primary concern when developing my advanced spin training course was with those pilots who were flying aerobatics in the Pitts Specials and the Christen Eagles. I can assure you there will be no problems or surprises with those aircraft.
 2. If I have not thoroughly tested a particular make and model of aircraft, of course, I cannot assure you that my methods and theories will apply to that particular aircraft.
 3. I am providing this information to our readers in the hope that they will seek out a qualified, professional aerobatic instructor, who can familiarize them with the latest discoveries regarding spins and spin recoveries. I am not recommending that pilots go out and experiment on their own. There can be no substitute for good dual instruction from a competent, professional instructor. If a pilot has the slightest doubt in his mind about his ability to recover from any spin, he should not go out and experiment on his own.
 4. Never spin an aircraft that is placarded against spins! To do so is inviting disaster! In this type of aircraft the answer is to simply be proficient enough at slowflight and stalls so that you will never accidentally stall. If you avoid accidental stalls, you eliminate the possibility of an accidental spin!
- My good friend, Jim Patton, who heads up the NASA spin research program at the Langley Research Center, said it very well when he quipped, "Beggs, what you really need, in addition to this Advanced Spin Training Course, is a course designed for those who do not want to spin!"
- How true it is, Jim. What you are referring to there is an "Advanced Stall Training Course." If a pilot is thoroughly familiar with all types of stalls and is proficient in stalls in his aircraft, he need not be concerned with entering an inadvertent spin.
- I teach two distinctly different types of spin recoveries in my aerobatic courses: (1) the hands-on, precision method of recovery and (2) the "stick-free," "emergency" method of recovery. If a pilot knows exactly where the aircraft is and what it is doing, then he should use the precision hands-on method. If he is confused or disoriented and the requirement is to simply get the aircraft out of the spin in the shortest period of time with the least loss of altitude, then he should go immediately to the power-off, hands-off, opposite-rudder method.
- If you have any questions or if you have anything positive and constructive to add to this, please call or write to me either in care of SPORT AEROBATICS magazine or at my office: P.O. Box 6411, Midland, TX 79701. Phone: 915/563-1441. Happy flying!

EDITOR'S NOTE: The following article and pictures are reprinted by permission from the February, 1985 issue of *SOARING*, the Journal of the Soaring Society of America. We thank IAC Director Steve Powell, who is also a Contributing Editor to *SPORT AEROBATICS*, for acquiring the approval to share with IACers this interesting account of learning sailplane aerobatics. Incidentally, two of the persons mentioned here, Les Horvath and Nancy Blank, are members of the current U.S. Glider Aerobatic Team, which represented our nation at the World Glider Aerobic Championships in Austria in late August and early September. An article on the event will be appearing in a future issue of our magazine.

The soaring season in Edmonton, Alberta, Canada, is not famous for its extended duration. Frustrated by the unusually short 1984 season, we four instructors from Edmonton Soaring Club decided that the time had come for decisive action to extend the season and our own flying horizons. We decided to attend Les Horvath's sailplane aerobic program at Estrella Sailport.

Because of the relatively savage exchange rate on the Canadian dollar, we had to economize by driving to Arizona. The trip was scheduled for mid-October to minimize the chance of encountering a blizzard en route. This precaution failed completely, as a very respectable early blizzard hammered all of Alberta the day before our departure. It was moving south, too, right along our intended route.

In the interest of developing an aerobatic program in the Province of Alberta, we were provided with sufficient emergency funds by the Alberta Soaring Council to make flying down possible. Two of us were also receiving government scholarships as coaches developing new skills. The involvement of the Public Purse, and a good-natured rivalry among the group members, left a certain pressure not to fail the course — and especially not in any sudden, dramatic fashion.

This is the brief story of our pilgrimage. It is intended to entertain and to provide the reader with sufficient detail to whet his appetite for aerobatics. IT IS NOT INTENDED TO TEACH ANYONE SAILPLANE AEROBATICS. As will become obvious below, trying to learn aerobatics by reading, or by trial and error, is about as smart as enrolling in a correspondence course in the manufacture of nitroglycerine — you will probably not have to worry about tak-

Basic Sailplane Aerobatics Course

**Four Canadian
Soaring Instructors
Beat Winter By
Flying Upside
Down In Arizona**

By Dave Runyan
Chief Flying Instructor
Edmonton Soaring Club

ing the final exam.

Sunday, October 21, found us bound for Las Vegas on a late night "gambling special" flight. Singularly appropriate. By flying to Las Vegas, we could get a cheap excursion rate, and a car thrown in with which to drive to Phoenix. Our first look at the empty country around Estrella convinced us that bringing a vehicle had been an excellent idea, except that it was not a Land Rover. Betty Horvath is probably still laughing as a result of my innocent telephone inquiry about the availability of taxis at Estrella.

Estrella Sailport is located about 30 miles south of Phoenix and seven miles west of the very small town of Maricopa, a center for cotton-growing. The reason for our visit was such

that we did not really mind the isolation and relative barrenness of the locale. The reason was Les Horvath, 1978 U.S. Standard Class Champion and one of the few men in North America teaching sailplane aerobatics professionally. We had not come as tourists, but as students, to sit at the feet of the Master and learn to fly upside down.

Having stayed the night in Kingman, Arizona, we rolled into the gliding field on Monday just at the 11 a.m. start time of our first lesson. Baggage was promptly chucking into the spartan but completely equipped bunkhouse, and we sat down to "ground school" in an outdoor pavilion, trying hard not to grin too much while basking in the lovely warm sunshine. My compatriots found less

trouble in restraining their smiles than I did, as they had the previous night discovered a slight snoring problem of mine, which I had not wished to worry them about in advance. I felt completely refreshed and ready.

Les Horvath is a most impressive instructor, both in technique and in the enthusiasm he exudes. He immediately demoralized everyone by announcing that we would be doing a great deal of inverted flight and that he would expect very high standards of precision and smoothness in all of our maneuvers. He emphasized that we were to release the controls immediately if told to do so, to avoid interfering with his attempts to save our young lives after we had gotten into some colossal mess. I was sure

that I could earn high marks in both the colossal mess and the releasing of controls departments. Les also explained that we were probably in the habit of flying the aerotow in an incorrect fashion — i.e., by the horizon. Saying this to four glider instructors who fancied themselves quite proficient at flying behind a towplane seemed a bit unreasonable. It turned out that the Estrella horizon is quite lumpy.

Fate did not demand that I be first to actually demonstrate my ineptitude, but it awaited my turn patiently enough. The first maneuver we tried in the air was a loop, which I had done under supervision a few times. The loop is not too intimidating, and it served to introduce the standard entry to an aerobatic ma-

The view from upside down can be fatally disorienting if it has never been encountered before. A major advantage of basic acro training is to remove the shock and strangeness from the physical sensation and sights of unnatural sailplane flight attitudes.

neuver in a sailplane. This consisted of a dive at a 45-degree angle, held until the airspeed reached the desired value for the entry — in this case, 100 knots. At this point, the pilot directs his attention to the accelerometer, or "G" meter, and commences a pullup at 4 Gs. This means that you have effectively four times the pull of gravity on the body and is not unpleasant except for a tendency for the face to sag. As the sailplane goes "over the top" the pull on the stick is relaxed so that the loop remains round and is not tightened into an oval shape. Smooth back pressure is again applied to 4 Gs and the plane dives through the bottom, completing the circle. We all had a tendency to release back pressure too soon, with resulting loss of speed at the top of the loop. I was pleasantly surprised that, once 4 Gs had been attained by reference to the accelerometer, it was not too difficult to attend to other things, maintaining the Gs by the seat of the pants (literally).

Les was true to his word, and the very next maneuver was an entry to inverted flight, the "easy" way, off the top of a loop. As the nose approached the horizon (coming down), he moved the stick forward to check the descent, and we were flying upside down. I had been told to hold my shoulder straps with both hands and not touch the controls. It's damn good thing. The initial impression is that one will fall through the canopy, and only by force of will can the novice cease clutching the straps and grasp the stick when finally told to do so. The problem of the Other Hand now surfaced. To my horror, I found my left hand lying on the harness quick-release instead of exerting a death-grip on the spoiler lever as we had been told. As I willed it gingerly to its proper place, I resolved to cut it off if it ever exhibited such behavior again. I had the dubious distinction of being the only one of the four of us who flew from the back seat, owing to my weight, but it was reassuring to see Les ahead of me, completely at his ease.

Inverted flight demonstrated vividly how one could have a very bad experience in trying to learn on their own. At first, I was unable to concentrate on anything but the novelty of being upside down in an airplane. Only after practice was I able to con-

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trol airspeed, monitor altitude, locate myself in relation to the field, watch for traffic, and thermal (just kidding).

A more fundamental problem was the unexpected nose-high attitude while inverted. A pilot experimenting by himself would be unlikely to realize in advance that the sailplane flies this way inverted: that is, with the nose high above the horizon, or very "low" as seen by the upside-down pilot. The consequence of not pushing the stick firmly forward to maintain that attitude was an immediate and precipitous increase in airspeed. If one were to then panic and follow the initial impulse to "pull through" as from a loop, one would probably die in an airplane with no wings. To steel myself to push forward to slow the plane, pulling even more negative Gs against the harness, was all I could manage, even with Les' calm voice encouraging me. Combine all this with the fact that on some days there was moderate thermal turbulence and you have a really stimulating ride.

The thing I thought would be difficult, turning while inverted, was relatively easy. This involves using the stick and rudder in a cross-coordinated manner, with the stick being pushed "away" from the desired direction of turn and the rudder pedals being used "normally" in reference to the desired direction. I did not mention this pleasant discovery to my fellow students, as comments concerning the advantages of never having learned proper normal coordination would have been quite inevitable.

In subsequent lessons we covered the split-S (pull through from inverted), the half-roll from inverted, the aileron roll and the Cuban-8. Speed control was always a nagging problem, as it was easy to become caught up in the intricacies of performing seemingly unrelated tasks with the rudder and ailerons and forget to keep the stick forward. We all experienced the "short-arm" syndrome at one time or the other. This is the tendency to pull the arm toward the body when under stress and G-loads, resulting in less than full aileron or elevator deflection even when the pilot feels he has the stick against the stop. We learned to tense our neck and upper body muscles under positive G to avoid blood draining from our heads and to relax them (!) under negative G.

On Wednesday, we were turned over to Les' assistant, Nancy Blank, to be schooled in the art of the full

roll. Les had taught the half roll to inverted, inverted flight, and the half roll back to normal flight. Putting these together smoothly should theoretically result in a full aileron roll. I cannot adequately cover all of the technique here, but the roll is certainly a demanding maneuver, especially if one is to maintain a straight course while doing it. On my first roll with Nancy as instructor, I was treated to the unnerving sight of her hair standing on end! I am sure it was the negative G. Nancy was slightly less free-wheeling than Les in handling the airplane, as Les typically did a circuit at 100 feet and 100 knots. Nancy also gave us a few tips such as "no aerobatics in the rain (impossible to maintain inverted flight) or with a poor horizon." She settled once and for all the question of what real aerobatic pilots call what they are doing. You read it here first — it's



Grob Twin II Acro has proven to be a robust and responsive mount for dual instruction in aerobatics. It is basically a strengthened version of the standard two-seat trainer.

called "aco," plain and simple. From that day on we endeavored to use the word "aco" as many times as possible in every sentence.

Thursday brought the return of Mr. Horvath, who promptly announced that we must now prove to him that we were safe to do solo "aco" in his airplanes. I was a nervous wreck. On my last dual of the day, I got a chance to thermal awhile and relax, and it finally started coming together. Upon landing, Les said, "Rest for half an hour, then have a go," and walked away. I was tempted to rest for considerably longer than a half an hour. When the time came, I found that by saying, "Well, let's move the plane out onto the runway," very slowly and deliberately, I was able to avoid choking on the very sound of the words.

Once on tow, everything was fine. After release, and a short pause for reflection, I put the nose down, aimed

at a cactus, and hung on for 100 knots. To make a long story short, I did all the maneuvers we had been taught and found that once each had begun, there was a pleasant sense of commitment and everything occurred almost automatically. We had apparently been taught well. Party time! We had already decided that real pilots flew upside down, drank Coors, and ate rattlesnakes. That evening, we went to a restaurant in Phoenix and did our best to consummate the process of becoming real pilots.

Our first flush of success was tempered on Friday and Saturday by the discovery of just how difficult it is to put these maneuvers together smoothly, with no pause between each for getting the heart rate down. We were quickly disabused of any illusions that we were hotshots, as there was a veritable epidemic of the old "short-arm" and other illnesses. We were shown film shot over the head of a passenger in the front seat, with Les flying from the back. Watching the whole world go topsy-turvy as the yaw string just lay there was a humbling experience.

I have already mentioned that Les Horvath could convey a sense of reassurance that was sometimes sorely needed. The other very important positive factor was the aircraft we used in the course, the Grob Twin II *Acro*. I shall never forget the visual impression the *Acro* made as it roared across the field inverted. With the dark tinted canopy showing clearly below, the big plane looked like a spaceship from some remote planet.

It is difficult to express the feeling of security and solidity we felt when flying this sailplane. First, it is big, 17.5 meters in span. The nicely appointed interior is more the size of an armchair than a glassfibre sailplane, complete with real padded armrests and a more upright seating position than is currently in vogue. The *Acro* is also heavy, at 830 pounds empty. While the roll rate is naturally moderate, the aircraft is light on the stick, responsive, and thermals well.

The *Acro* should be no problem for anyone who has flown glassfibre, but Les cautioned that, like many glass ships, it should not be held in a spin for more than a couple of turns, since there is a tremendous amount of inertia in those wings. We were also instructed to always land fully flared, even slightly tailwheel-first, to make sure that this massive ship was landed with minimum kinetic energy. The effect of the spoilers on the descent profile was mind-boggling, allowing landing from base-leg al-

Aerobatics QA

By Drew Detsch
Contributing Editor

Q — Our local GADO office is uninformed and rather unconcerned about helping our chapter members obtain or renew their Statement of Aerobic Competency to fly at low altitude for practice in our waivered box or to perform at airshows. Can the IAC get authority to recommend pilots for the low altitude waiver?

• • •

A — In calling around to find out the answer we discovered that the mechanism for solving the problem has been in the FAA GENERAL AVIATION INSPECTORS HANDBOOK for nearly a year. Actually, it turns out that there are two different solutions.

First, the easy one: FAA Order 8440.5A states that "pilots competing in aerobatic competition not associated with an airshow or practicing in a prescribed aerobatic practice area authorized by FAA Form 771-1 CERTIFICATE OF WAIVER OR AUTHORIZATION for that specific purpose are not required to have FAA Form 8710-7" (Statement of Aerobic Competency). This means, of course, that to practice in a waivered box sans airshow you no longer need a Statement of Aerobic Compe-

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titudes approaching 900 feet above the ground!

As a cross-country machine, the *Acro* has no need for excuses, with a 36:1 L/D. It is mildly shocking to note that the L/D of the *Acro* at 80 knots is equal whether in normal flight or inverted and is better when inverted at higher speeds. This makes for some rather interesting inverted cross-country possibilities, but they might require Arizona-strength thermals.

The *Acro* is a slightly-modified version of the Grob Twin II, with steel control pushrods and more beef in the main spar. At no time did the airplane give me cause to worry about its

tendency. Unfortunately, some GADOs haven't been doing their homework and are still writing clauses into box waivers requiring the Statement of Competency. You'll have to point this out to them and get your waiver changed.

As you can see now, the only reason that you need a low altitude waiver is to fly airshows. That problem is also made easier by the same FAA order, which sets up the A.C.E. program, which stands for Aerobic Competency Evaluators. The A.C.E. program permits qualified individuals to evaluate and recommend pilots to the FAA for the issuance of the low altitude waiver. The program guidelines were set up by Charlie Hillard in conjunction with the International Council of Airshows (ICAS).

The evaluators are selected by the FAA General Aviation and Commercial Division (AFO 800) from recommendations by FAA inspectors, ICAS and the IAC. The requirements include: commercial or ATP certificate with 1,000 hours as P.I.C., holder of Statement of Aerobic Competency for three years as well as being an active airshow pilot, performing at least four airshows in the last 12 months.

Once selected, the evaluators are given an outline to use to evaluate a pilot, including both an oral exam and a flight test. The oral exam goes over the applicant's flight time, personal motivations for the waiver, aircraft

limitations, review of the sequence, engine out emergencies, and safety procedures. The flight test includes observation of the precision of the maneuvers, the ability to adhere to altitude and airspeed limits, the ability to compensate for wind drift and adherence to deadlines.

The FAA Handbook also includes a list of the names, addresses and phone numbers of 26 current approved evaluators. The list reads like a who's who of aerobatics. If you can't find someone on the list who is near to your home, you might consider getting someone selected as an evaluator. The system to do it is already in place.

• • •

"Aerobatics Q/A" is your chance to get all those "I wonder whys, whos, or whats" solved. It's a column geared to provide still another format of disseminating information about our sport and its participants, frequently in a more light-hearted vein. Questions can be of a personal, entertaining, educational and/or technical nature. They can be directed to a particular individual or group of individuals. If you have a question you'd like asked, send it to Drew Detsch, 331 Montcalm, San Francisco, CA 94110 or phone 415/826-7187. Also, please advise him to whom you would like it addressed, if you have a preference.

attitude toward acro, for one thing. Acro is not only for high-timers, but would make better pilots of most of us. It must, however, be approached seriously, under experienced supervision, and in proper equipment. We were given a step-by-step methodology for safely introducing ourselves to acro in other capable sailplanes, too.

Best of all, we rediscovered the thrill of being students again, and of being completely absorbed in the stimulating process of learning. Having been shown, by Les and Nancy, instructional professionalism of the highest order, we hope we have taken the first tiny step toward an aerobatic program in Alberta that will develop safer pilots and add a rich new dimension to our soaring.

LINES & ANGLES

By Mike Heuer

U.S. NATIONALS CONCLUDED

Weather beautiful, excellent flying, the largest turnout ever — these were the features of U.S. Nationals 1985 held at the Grayson County Airport, Denison, Texas, on September 21-27, 1985. It truly was the best Nationals ever. All together, 102 pilots flew in the event, 29 Sportsman, 22 Intermediate, 23 Advanced, and 28 Unlimited. National Champions were named in all four categories and a new 1986 U.S. Aerobatic Team was selected. Contest Director Herb Cox ran a smooth contest that went virtually without a hitch other than a couple of brief shutdowns due to weather. Only one protest was filed — another record.

This year was the first time a rather rigorous Team selection procedure was used — a total of eight flights were scheduled with a cut down to fifteen male pilots occurring after the first four flights were flown as of Sunday night, September 22. Five female pilots competed and all qualified for the Team under the 75% of possible points rule established for membership on the Team and these women were not required to fly the remaining four flights. These last four included a Known, a Free, and two Unknowns. It was felt that the Unknowns would provide a greater test of man and machine than another Four-Minute Free. However, the last four flights did not alter the make-up of the Team if it had been done on the basis of the first four. It is likely, however, that this procedure will stand in future years.

Here are the highlights of the results:

Pilot	City/State	Aircraft Type	Total
SPORTSMAN			
1. Chip Corley	Ft. Smith, AR	Pitts S-2A	2451.1
2. Bill Denton	Dallas, TX	Pitts S-2B	2442.4
3. Barry Brown	Dallas, TX	Pitts S-1	2417.5
4. Ken Stout	Woodbine, KS	Decathlon	2416.8
5. Ole Olsen	Midland, TX	Eagle II	2416.6
6. James Henry	Refugio, TX	Pitts S-1S	2413.4
7. Leon Boyd	Dallas, TX	T-Craft	2411.8
8. Glenn Frick	Weatherford, TX	Skybolt	2406.9
9. Pat Day	Midland, TX	Starduster	2403.9
10. Jim Jones	Odessa, TX	Pitts	2379.8



(Photo by David A. Gustafson)

Members of the 1986 U.S. Aerobatic Team. Standing (left to right) are Julie Pfile, Linda Meyers, Debby Ruhn, and Patty Wagstaff. Kneeling (left to right) are Gene Beggs, Clint McHenry, Kermit Weeks, Henry Haigh, and Harold Chappell. Not appearing is Brigitte de Saint Phalle who could not attend the photo session at the end of the U.S. Nationals. This photo will appear in full color next month in the magazine.

INTERMEDIATE

1. Phil Sisson	Litchfield, IL	Pitts S-1S	5322.0
2. Randy Henderson	Frisco, TX	T-Craft	5259.8
3. Ken Larson	Dallas, TX	Jungmeister	5219.8
4. Sandy Barrows	Denton, TX	Pitts S-2B	5174.7
5. Dale Donaldson	Westlake Village, CA	Pitts S-2A	5158.8
6. Woody Woods	Crystal Lake, IL	Pitts S-1S	5160.1
7. Howard Stock	Woodstock, IL	Pitts S-1S	5148.2
8. Gary Henry	Refugio, TX	Pitts S-1S	5114.6
9. Bob Freeman	Roy, UT	Acroduster II	5100.4
10. Mike Plyer	Denison, TX	T-Craft	5064.3

ADVANCED

1. Jimmy Goggin	Springfield, TN	Pitts S-2B	9058.9
2. Perry Rhoads	Carlinville, IL	Pitts S-1S	9037.9
3. Tom Adams	Minneapolis, MN	Pitts S-1S	8943.4
4. Dan McGarry	Olympia Field, IL	Pitts S-2A	8924.2
5. Herb Hodge	Overland Park, KS	Pitts S-2B	8818.8
6. Bob Sears	Wingate, TX	Pitts S-2S	8735.8
7. Jerry Spear	Centralia, IL	Pitts S-1S	8668.9
8. Kirk Fulton	Lubbock, TX	Pitts S-2S	8556.8
9. Dick Blatter	Litchfield, IL	Pitts S-2S	8601.0
10. Larry Owen	Miami Shores, FL	Pitts S-1S	8587.9

UNLIMITED (After 8 Flights)

1. Kermit Weeks	Miami, FL	Weeks Solution	37473.5
2. Clint McHenry	Boca Raton, FL	Extra 230	37227.7
3. Henry Haigh	Howell, MI	Superstar	36960.5
4. Gene Beggs	Midland, TX	Pitts S-1T	36777.9
5. Harold Chappell	Ortonville, MI	Pitts S-1S	36713.1
6. Peter Anderson	Madera, CA	Pitts S-1T	35543.5
7. Tom Jones	Oklahoma City, OK	Pitts S-2S	35417.5
8. Bob Davis	Woodstock, IL	Laser	34922.3
9. John Gardner	Lake Orion, MI	Pitts S-1S	34662.3
10. Ray Williams	Springfield, TN	Pitts S-2S	34388.3

OTHER AWARDS

Chapter Team Trophy — Chapter 88, Michigan
Best First-Time Sportsman — Bill Denton, Dallas, TX
(second place)

Mike Murphy Trophy — Presented to U.S. National Aerobatic Champion and sponsored by IAC. Recipient - Kermit Weeks.
Bob Schnuerle Memorial Trophy — Presented to winner of Unlimited Four-Minute Free Program at U.S. Nationals. Recipient - Gene Beggs.

High Performance Aircraft Engines Award — Plaque and \$750 cash award to highest placing pilot in percentage of possible in all categories. \$750 also donated to IAC trophy fund. Cash awards and plaque sponsored by High Performance Aircraft Engines, Mena, AR. Recipient - Kermit Weeks, 89.9% of possible.

IAC President's Award — Presented to Doyle Dobbins, Grayson County Airport Manager, for his outstanding service to the U.S. Nationals.

A special thanks goes to Pat Chase and the entire staff of Washington Air at the Grayson County Airport for all of the assistance to the pilots and officials of the contest. Don Ort and Ava and Jimmy Ray also deserve our thanks. Without these local people helping us, the contest would not be possible.

More coverage coming on the Nationals in the December issue!

FOND DU LAC 1986 DATES

For your planning purposes, the 1986 Fond du Lac competition will immediately follow the EAA Fly-In Convention in Oshkosh in 1986. The Convention will run from August 1-8 and the Fond du Lac contest from August 11-15, 1986.

Dates for the U.S. Nationals in 1986 have not been established but will most likely be the same as this year, the last week in September.

1986 U.S. TEAM SELECTED

The following pilots will represent the United States at the XIII World Aerobatic Championships to be held in England on August 1-17, 1986:

Men's Team

Kermit Weeks, Miami, FL
Clint McHenry, Boca Raton, FL
Henry Haigh, Howell, MI
Gene Beggs, Midland, TX
Harold Chappell, Ortonville, MI

Women's Team

Debby Ruhn, LaPorte, TX
Julie Pfile, Albuquerque, NM
Linda Meyers, Miami, FL
Patty Wagstaff, Anchorage, AK
Brigitte de Saint Phalle, San Jose, CA

Team Manager will be Bob Carmichael of Plano, Texas. Final selection of the remaining ground support personnel remains.

DEADLINE ON APPLICATIONS FOR U.S. TEAM

The U.S. Aerobic Foundation has established November 1, 1985, as the cutoff date for submission of applications for ground support positions on the U.S. Aerobatic Team. On two occasions, we have run the summaries of what each job entails and we encourage anyone who is interested in committing the time required and who believes themselves to be qualified for the jobs to submit applications. A letter and resume should be sent to:

Joe Moriarty, President
U.S. Aerobatic Foundation, Inc.
70 Clark Road
Rye, NH 03870

All applications will be initially screened by the Executive Committee of the Foundation and will then be presented to the Team pilots who will make the final selection. This selection will actually occur at the Hilton Masters of Aerobatics the second weekend of December 1985. Selectees will be notified shortly thereafter.

ART SCHOLL KILLED

Veteran aerobatic pilot Art Scholl (IAC 395) of Rialto, California, was killed on September 16 near Palomar, California, when he was apparently unable to recover his Pitts S-2A from an inverted flat spin. He radioed twice to his crew that he had a problem. He was about five miles offshore flying a sequence for the Paramount picture "Top Gun." Art was 53 years old. Past U.S. National Aerobatic Champion, Art served as pilot on the U.S. Aerobatic Team in past years. In addition to being a top notch competition pilot, he was a master airshow performer whose pyrotechnic devices and use of music were pioneering efforts. In the past several years, he had also been heavily involved in flying for Hollywood productions. He will be sorely missed and our sincere condolences to his family and many friends.

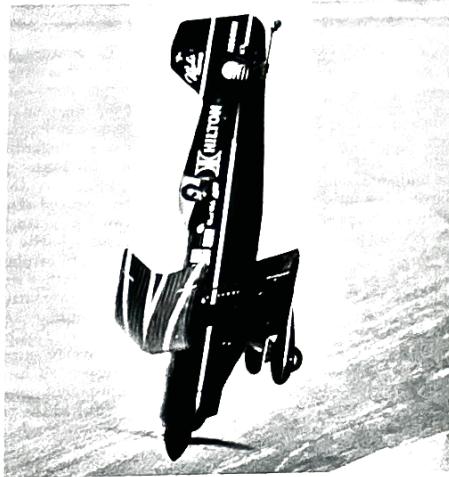
1986 EAA SCHOLARSHIPS ANNOUNCED

Scholarships awarded through the EAA Aviation Foundation have helped launch the aviation careers of more than 70 recipients since the program was initiated in 1971. Awards ranging from cash grants to assist aspiring pilots and mechanics to full engineering scholarships have been awarded through this program.

EAAers and their family members are urged to seek qualified applicants from their area in addition to applying themselves. Applicants are not required to be EAA members. The 1986 EAA Scholarship Program promises to surpass the record 1985 awards of more than \$100,000. Help us find qualified, deserving recipients for these awards.

For further information and application materials, contact Chuck Larsen, Education Director, EAA Aviation Center, Oshkosh, WI 54903-3065. Phone 414/426-4800.

NOTES



(Photo by David A. Gustafson)
Kermit Weeks, Miami, Florida, in the one-of-a-kind Weeks Solution. Kermit has again retained his title of U.S. National Aerobatic Champion and will also be a member of the 1986 U.S. Aerobatic Team. This photo will appear in full living color next month.

JUDGES APPLICATIONS

Are you close to applying for your Regional Judge's certification? Please keep in mind that the latest JUDGE'S HOME STUDY PROGRAM must have been completed for certification. If you have not completed the latest but have sent in last year's, you can satisfy this requirement by completing the brief "1985 Judges Annual Recency Examination" which is available from Jean Sorg at IAC Headquarters in Oshkosh. Judge Chairman Ben Lowell will wait until this exam is completed before sending you your card. The same procedure will be true next year, i.e. completion of the newest home study booklet or the 1986 Recency Examination. This new examination will not be written until the 1986 rules are finalized in November.

LORAN C DONATED TO TEAM FUNDRAISING EFFORTS

A number of avionics dealers and distributors conducted their own sweepstakes during which they raised money for the U.S. Aerobatic Team by offering a Loran C to the winner. The winning ticket was drawn at the U.S. Nationals on September 27 and the winner was Dottie Pizzica, Bensalem, Pennsylvania. The unit is an Apollo II Loran C and was donated by:

Don Hawkins, President Hawkins Avionics	Ray Morrow, President Morrow, Inc.	Edmo Distributors Roanoke, VA
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Team Manager Bob Carmichael was responsible for the coordination of this project which raised a few thousand dollars for the Team. Incidentally, IAC Chapter 71 of Midland, Texas, was a real supporter of the project — they purchased \$1,200 in tickets (but still didn't win)! Thanks, 71 and Chapter President Paul Erdmann.

The Glory That Was

By Jean Sorg
Editor

Step through the doors of the EAA Aviation Center Museum and Complex. Pause a minute amid the leafy, light-filled, impressive atrium area of the main entrance. Now look up. High above, suspended in angled, inverted flight attitudes are three red Pitts. Do you see the one with the N number of 442X?

That's a mighty special biplane hanging there. Why? Well, many in our sport will, of course, remember the glory surrounding 442X. Charlie Hillard certainly does! The 1972 Men's World Aerobatic Champion flew it to his title victory. And Bob and Mike Heuer also remember it well. Bob, our first IAC President, and his son, Mike, our current leader, built this outstanding aerobatic aircraft.

Is luck the secret to the success surrounding the Charlie/442X combo? Not hardly. As the aerobatic ace laughingly quips, "It wasn't coincidence. I tell you the more I practiced the luckier I got!" And the Heuers are known to have put just as much painstaking effort into building a structurally-sound, maintenance-free and top performing competition aerobatic mount. Charlie states, "Bob Heuer is just an absolute master mechanic. I had seen several airplanes he had built before. We've known each other for a long time and when he put his airplane on the market that was the only one I really looked at because I knew the construction of it would be very safe as far as structural welding and stuff like that."

"It was superbly put together. I had no maintenance problems at all other than minor routine things. And I flew that airplane probably as hard as you can physically, humanly fly it. Because, when I got it, I only had six months to get myself ready for a World Championship and I had to do it in a brand new airplane that I had never flown before!"

The ex-competition pilot made very few alterations to Heuers' construction. "And those were just minor," he points out. For instance, he elected to use the canopy during competition not just cross country and he installed anti-skid heel rests for the rudders.

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To capture our sport's ultimate crown, it is often said that it takes the right combination of man and machine, plus the right moment with them coming together in perfect harmony. Regarding this, Mike comments, "It's a combination of pilot and machine and those two things cannot be divorced. The combination of the two has gotta be right at that moment. Charlie was right and he had the right airplane."

His father adds, "I knew Charlie had the versatility and the dedication that could make him fly that airplane to a World's Championship. So I was not overly surprised that he won because I felt he had the best piece of equipment goin' and I felt the equipment had the best driver goin'."

Charlie, who has the distinction of having flown four different types of airplanes in four different World meets, recalls what led him to the decision to switch to a Pitts. In the 1966 World Aerobic Championship (WAC), he piloted the Krier Kraft biplane, which he describes as a sort of cross between a Great Lakes and a Bücker Jungmeister; 1968, a De-Havilland Chipmunk; 1970, the Spinks Akromaster; and 1972, the Pitts S1S or 442X. "I tried to fly a better competition airplane every time I flew in the World," he explains.

Although the Spinks Akromaster was owned by M.H. "Pappy" Spinks, who had provided the funding for its creation, Charlie was the actual designer and builder of it. "You might say I had a lot of loyalty to the Spinks, but I felt like that airplane had a lot of problems and I felt like I couldn't be competitive in it in 1972," he declares.

Then he goes on to say, "I had competed in 1971 at the National Championships in it and Gene (Soucy) and I were practically tied going into the Unknown flight. I mean there were very few points separating us. I really felt like I could beat Gene flying the Spinks in a Freestyle, but I knew that if we'd get a hard Unknown and they'd put the routine together a certain way, it would be really difficult to get that airplane through it. It just didn't have the capability of the Pitts." Gene's aircraft was a Pitts.

"Well, as it turned out," the sixth WAC victor continues, "they did put it together the way I feared and liter-



442X

ally the airplane would not do the routine. I zeroed the last maneuver. Then I won the last flight of the contest and came in second behind Gene. I really felt like I had been just out-airplaned!

"So, that's why I decided to look for a Pitts . . . Of course, as I mentioned before, I had known Bob Heuer for years and knew about his and it just happened that he put it on the market about the same time I decided to change airplanes. I felt like I was very fortunate in buying that particular airplane because I really felt like it was one of the best if not the best Pitts that had ever been built."

This Heuer-built Pitts has a 200 HP Lycoming in it and is one of the first to sport that beefed up power. In addition it has a 60-degree pitch prop which added about another 15 MPH top speed. Charlie relates he believed, with those features, he would be able to get the airplane moving faster and keep it moving. And he did. Plus, with the indicated speed of 230 he was getting for starting maneuvers, he then had some capabilities in performance there that others didn't have at the time. This performance coupled with the institution of the 4-Minute flight in world competition contributed to his win he maintains. The 4-Minute allows maneuvers to enter the contest format that would ordinarily be disallowed if they did not appear in Aresti's catalog. Hence, it was at that contest where Charlie premiered the multiple torque rolls and double reverse vertical rolls that had not been seen in competition before.

The effectiveness of 442X in carrying out Charlie's demands on it is not only credited for saving the day for its pilot and the U.S. in the World 72's 4-Minute, but also in the Unknown. "I don't think I could have won the World title in 1972 in the Spinks," acknowledges the champion. "I was more worried about the Unknown than any other flight because that's the flight that you can't control your own destiny on, and as it turned out,

(Photo by EAA Photographer Jim Koepnick) Pictured here in the foreground as it hangs in the EAA Aviation Center Museum is 442X. This is a mighty special aerobatic biplane surrounded by glory. See the accompanying article for highlights of this aircraft's history.

that particular flight in that contest in '72 was the hardest Unknown I've ever seen in the contest. I guarantee you the Spinks wouldn't even have made it halfway through the flight. I mean it would have just fallen out of the sky. I KNEW that I had made the right decision to go to the Pitts when I saw that Unknown!"

Mike imagines Charlie was probably flying better aerobatics at that time than he ever had. And the champ, himself, agrees that he managed to peak during that World. Mike expresses that even though he wasn't surprised by Charlie's monumental achievement, the lack of surprise certainly didn't diminish the elation over the feat. The Heuers remain delighted and even proud. "I mean you just can't help but be proud for Charlie and the U.S. and the fact that you had a part in it," says Mike.

He adds, "Because I still remember very well working on that airplane and getting it in the air. You know — the sanding, the painting, the welding and all of those jobs that just take a lot of work, dedication and time. So, when the airplane finally gets into the air and you know you've created something with your own hands, it's something good. AND then, when it goes on to win a world title, my God, you're really proud that!"

The birth of 442X cannot really be ascribed to a set of stock Pitts plans even though Bob considers it a basically stock plane. Its life began as a fuselage owned by Bill Dodd that had been constructed by Phil Quigley in Homestead, Florida. Quigley worked for Curtis Pitts and was very instrumental in the development of the single place Pitts Special as we know it today, according to the Heuers. As they tell it, the Pitts fuselages were all short, up until about 1967 or 1968, and just wouldn't accommodate a large person very well or even a small one with a military-style parachute. Curtis Pitts then modified his namesake's fuselage, extending the cockpit area about four inches. The Heuers received one of those first modified fuselages.

At that point in time, the only plans available for a Pitts were for the SIC model. However, 442X is an S1S with the S referring to its symmetrical wings. "I think we got the fifth or

(Continued on Page 22)

SPORT AEROBATICS 15

1ST OKIE TWISTOFF

The anticipation of putting together your first contest! Well, you ol' timers know the feeling. But the Okie Twisters are the new kids on the block. Thank, God, it's over and we feel like we "done good."

We must have had 25 chairmen to cover every detail and they each performed as though they had done this before. Then comes May 30th — zero hour! The sheer relief comes when the first pilot arrives and steps out of his aircraft. It happened to be Ron Innes of Canada in his Eagle. I could have kissed him. Who knows he may be the only one to show and wouldn't you know it — the first contestant to arrive expecting a new car and the agency screwed up. Oh, well, they provided a free van for the rest of the contest for the error.

Thursday morning arrived hot and steamy. Sure enough more pilots and aircraft started arriving. It looked like we would have a contest. Technical inspection ran smooth and, of course, registration was a breeze. Pro Sharon Heuer arrived in the dawn hours to assist Teri Hill and Cheryl Underwood in that department. We realized we could have been in trouble right off the top without Sharon's assistance — Sharon, we thank you.

The day was not only registration but also practice day. Pilots found it hard to hold an altitude in all that hot humidity. Bill Larson said he started at 4,000 feet and ended up at 1,000. But then he's awful bad about truth stretching.

Evening found pilots gathered around the main hangar waiting for

large portions of beer and prairie burgers. As it turned out the social director had lost her head. She had enough burgers to feed an army and just enough beer and twister punch to wet your whistle. Sorry, guys and gals! Won't happen next year! We decided to adjourn to the hotel and enjoy the pool and spa where we all learned Herb Hodge has a knack for telling blue jokes by the hour.

Sam Burgess, who was to be our Chief Judge, ended up in the hospital in San Antonio with pneumonia. Sam, we look forward to next year. So, we drafted IAC President Mike Heuer and the Honorable Ben Lowell

By Wallena Haynes
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to the up front duties. Mike presided over Unlimited and Intermediate and Ben, over Advanced and Sportsman. Veva Becker had arrived to assist Pat Smart in the computer room. With this army of experts, we were ready to proceed with the business of having a contest.

Friday morning Mother Nature decided to change her strategy. The day would be clear to partly cloudy, mild winds and a much lower temperature. Well, we did have a couple of problems. Pilots are ready to fly, but we are short on judges and boundary judges seem to be out of radio contact. Oh, well, what's a problem or two? After a short delay we are off and running. We were able to complete two flights of Advanced, Intermediate and Unlimited. As dark closed in and the aircraft were tucked away, we again adjourned for beer and snacks. Guess what? We ran short of beer again!

Saturday morning's pilots briefing was held at 7 a.m. Won't start that early again!!! We begin with Sportsman. First-time competitors are taken aside and given further guidance and information. In all we had three. Sportsman pilots go on the flight line and Tom Jones immediately notices the lack of color in the first-timers' faces. Tom says he was cussed, kicked and threatened with bodily harm for talking them into entering.

Dan Stroud, Okie Twister President, then turned red as a beet and had to be buckled into his airplane for at that point he had lost his memory. Bill White, upon returning from his flight, discovered the reason the box had shrunk was because he'd flown his entire sequence from the center marker to the north end of the box. Montie Barrett ended up with buck fever.

It was starting to become evident that time was to be our enemy, because Mother Nature had changed her disposition. From the West she was gathering a black head of steam, throwing bolts of lightning and mov-

ing fast. While preparing for the next Sportsman flight, Judges started leaving the Judges line to save their airplanes — for at this point to heck with judging. Contest Director Buddy Haynes had given the word all airplanes in the hangar.

The mad dash was on — 45 airplanes all headed in the same direction! It took less time to put them away than it takes to fly a sequence. Just as the last van load of pilots arrived at the terminal building, a mini "Okie Twister" arrived carrying winds up to 70 MPH and a torrent of rain. Of course, we planned it for a finale of the day — our timing was just off!!!

After a brief discussion with the Chief Judges, Contest Director Buddy decided enough flights had been flown to call it a contest. The lack of volunteers in all directions left it impossible to continue on Sunday.

Saturday night's banquet, the Chuck Wagon Feast, featured many pounds of Okie fries, prairie chicken and all the fixins. Chapter 59 Vice President Buck Waggon served as the master of ceremony. It turns out he is really a comedian in disguise as a physician.

Canadians Ron Innes and Grant McKay had requested permission to make a special invitation to Mike Heuer. As Grant handed Mike a huge snowball, Ron stepped up from behind and poured a huge sack of shaved ice (snow) over Mike's head — Mike's official invitation to the Calgary contest!!! The shocked look on Mike's face was priceless.

After all the thank yous, praise and razzing, it was time to grab your partner. It was square dance time! Because we lacked enough females to make enough squares, we had to draft four men to dance as partners. Never did decide who was the guy and who was the girl.

Soon it was time to call it a day and an end to our first contest. Volunteers and pilots, many thanks from the Okie Twisters. You helped make our first a success. In all, pilots arrived from 16 States and Canada with a total of 45 contestants.

Winners were Roger Nelson, first; Leon Boyd, second; and Tommy Tom-

- OKIE TWISTOFF RESULTS -

CHAPTER 59 — STILLWATER, OKLAHOMA
MAY 31-JUNE 1, 1985

PLACE	PILOT	AIRCRAFT	SPORTSMAN		
	CITY/STATE	N NUMBER	KNOWN	TOTAL	% OF POSSIBLE
1	Roger Nelson Chandler, AZ	Pitts S-1S-N66RB	1149.9	1149.9	80.41
2	Leon Boyd Dallas TX	Taylorcraft N46WW	1144.5	1144.5	80.03
3	Tommy Tomlinson Stillwater, OK	Decathlon N50702	1136.0	1136.0	79.44
4	Glenn Pickle Weatherford, TX	Skybolt N4477T	1100.6	1100.6	76.97
5	Bob Roberts Bossier City, LA	Decathlon N5778Z	1091.8	1091.8	76.35
6	Chip Corley Ft. Smith, AK	Pitts S-2A-N625CC	1099.9	1099.9	74.82
7	Ken Shout Woodbine, KS	Decathlon N5022A	1061.1	1061.1	74.20
8	Dan Clark Ft. Worth, TX	Pitts S-1C-N3961	1046.3	1046.3	73.17
9	Buck Wagon Midway City, OK	Decathlon N50702	1024.4	1024.4	71.84
10	Dick Smart Verdun, OK	Pitts S-1/N73KB	1012.7	1012.7	70.82
11	Dan Stroud Oklahoma City, OK	Decathlon N5020D	1003.1	1003.1	70.15
12	Mike Williams Kansas City, MO	Decathlon N5002	999.4	999.4	69.89
13	Bill White Yukon, OK	Christen Eagle N84BW	989.7	989.7	69.21
14	LaVeme Pendergrass Memphis, TN	Decathlon N5962Z	983.4	983.4	67.37
15	Harley Lawrence Lenexa, KS	Decathlon N5002Z	981.0	981.0	67.20
16	Monty Barrett Tulsa, OK	Skybolt N478MB	—0—	—0—	—0—

PLACE	PILOT	AIRCRAFT	INTERMEDIATE			
	CITY/STATE	N NUMBER	KNOWN	FREE	TOTAL	% OF POSSIBLE
1	Ken Larson Dallas, TX	Bucker 21-K	1780.5	2254.4	4044.9	85.69
2	Al Grefenius Des Moines, IA	Acrodruster 72M	1733.3	2195.6	3928.9	83.23
3	Joey McKinney Stillwater, OK	Decathlon 50702	1741.8	2151.9	3893.7	82.49
4	Buck Carroll Memphis, TN	Pitts S1D-104BC	1677.7	2206.2	3883.9	82.28
5	Bill Larson Edmond, OK	Pitts 49013	1664.1	2126.5	3860.6	82.21
6	Jerry Holzweig Dallas, TX	Pitts S1-54L	1723.0	2136.1	3861.1	81.80
7	Randy Henderson Frisco, TX	Clipped T-Craft 44054	1749.8	2109.9	3859.7	81.77
8	Gina Taylor Washington, OK	Pitts 66RB	1634.6	2157.4	3792.0	80.33
9	Jim Amos Dallas, TX	Pitts S2B-532G	1649.2	2001.7	3550.9	77.34
10	Ron Innes Edmonton, Alberta	Christen Eagle II-C-GRW	1520.0	2109.2	3629.2	76.88
11	John Chown Shreveport, LA	Pitts S2B-531J	1632.9	1900.5	3533.4	74.86
12	Grant McKay Calgary, Alberta	Christen Eagle II-C-GMBP	1464.7	2066.9	3531.5	74.82
13	Not Wheeler Cleveland, MS	Decathlon 2962Z	1265.3	2177.3	3462.6	73.36
14	Harry Cooper Springfield, MO	Pitts S1T-S1HC	1634.8	1823.7	3458.5	73.27
15	Joe Lindwood Guthrie, OK	Pitts S2S-5324U	1584.1	1864.9	3449.0	73.07
16	Pal Peavy Shreveport, LA	Pitts S2B-531J	1689.3	1724.5	3413.8	72.32
17	Lorraine Hodge Overland Park, KS	Pitts IPW	939.4	2168.6	3108.0	65.84
18	Ric Miller Denver, CO	Pitts 22R	1638.1	—0—	1638.1	34.70

PLACE	PILOT	AIRCRAFT	ADVANCED				
	CITY/STATE	N NUMBER	KNOWN	FREE	UNKNOWN	TOTAL	% OF POSSIBLE
1	Tom Adams Minneapolis, MN	Pitts 12TA	3008.4	3536.6	1690.1	8235.1	79.10
2	Ed Bowes Lincoln, NE	Pitts 170B	2978.4	3431.7	1787.0	8175.1	78.53
3	Herb Hodge Overland Park, KS	Pitts IPW	2914.2	3488.2	1673.3	8075.7	77.57
4	Jimmy Goggin Springfield, TN	Pitts K260J/G	3019.2	3199.4	1821.1	8039.7	77.23
5	Gary Hartnett Denton, TX	Pitts S1EN20GH	2872.0	3113.3	1731.0	7571.3	73.89
6	Burl Cawle Atlanta, GA	Pitts S1S1718C	2476.1	3320.1	1391.1	7187.3	69.04
7	Fails White El Reno, OK	Pitts S2S-N43PW	1735.6	2610.5	826.2	5372.3	51.80

PLACE	PILOT	AIRCRAFT	UNLIMITED				
	CITY/STATE	N NUMBER	KNOWN	FREE	UNKNOWN	TOTAL	% OF POSSIBLE
1	Tom Jones OK City, OK	Pitts S2S-N280TJ	4152.4	6464.3	3272.4	13888.1	80.37
2	Mike Stauffer Valdai, OK	Pitts S1T-621MS	3957.4	6319.3	3159.5	13436.2	77.75
3	Ray Williams Springfield, TN	Pitts S2B-260G	4013.0	5776.7	3383.7	13183.4	76.29
4	Larry Blankenhagen Houston, TX	Pitts S1T49314	3713.0	5971.8	3043.7	12728.5	73.86

linson, third in Sportsman; Ken Larson, first; Al Grefenius, second; and Joey McKinney, third in Intermediate; Tom Adams, first; Ed Bowes, second; and Herb Hodge, third in Ad-

vanced; and Tom Jones, first; Mike Stauffer, second; and Ray Williams, third in Unlimited. High scoring first-time competitor was Bill White of Oklahoma City. The Challenge Tro-

Technical Safety Report

Please send correspondence to
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 TECHNICAL SAFETY COMMITTEE
 1004 WOODLAND AVENUE
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A FORTUNATE ACCIDENT

Most accidents are not considered as "fortunate" or as a "stroke of good luck." However, in a recently received report of a crankshaft flange failure, the term "fortunate" might be applied because the failure happened on the ground rather than in flight. In fact, the crank flange failure was caused when a ground strike occurred during a run-up test by some repair station personnel. The aircraft was a 1977 Great Lakes, powered by a Lycoming AEIO-360 with approximately 500 hours total time.

Now the real interesting portion of this report — note in the accompanying photograph of the failed crankshaft flange that there were two "old" fatigue fractures that were slowly working their way across the shaft. If there had not been a ground strike, it would probably have been only a matter of time until there was a fatigue failure.

The IAC member who sent in the photo and the report noted that these incipient fractures were about one-inch long with 45° runners on the ends. This is similar to several previous reports of crankshaft failures in the shaft area directly behind the propeller mounting flange and they are classic examples of a torsional failure mode. Also note that the two incipient fractures are located 180° to each other, indicating the shaft was also subject to a bending mode. Also, as most IACers probably spotted immediately, this crank flange does not have lightening holes between the prop bolt bosses.

Most of the 25 to 30 crank flange failure reports compiled by the IAC Tech Safety Committee have been on crankshafts which have incorporated flange lightening holes, with the failures being cracks through the lightening holes. (Page 18 of the April 1984 issue of SPORT AEROBATICS shows a crankshaft flange failed through the lightening holes.) However, four to five of the reported crank failures have occurred in the shaft area directly aft of propeller mounting flange — same as noted in this report. The new "thick" or "heavy" flange Lycoming O-360 crankshafts do not incorporate lightening holes, which should improve the flange integrity; however, Lycoming has previously advised that the shaft wall thickness in the area behind the flange has NOT been increased.

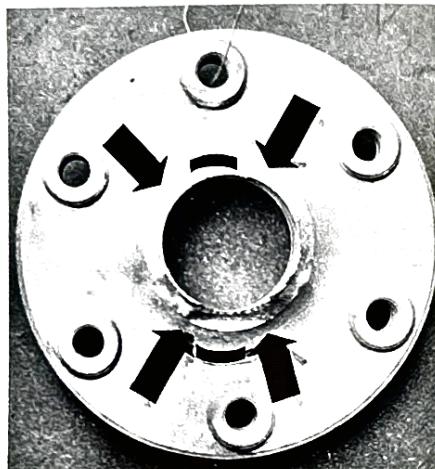
Several IACers have expressed concern that we may be "chasing the problem" from cracking between the lightening holes to shaft breakage just aft of the prop mounting flange. For any aircraft engaged in aerobatics, the entire

nose section of the crankshaft should be suspect and closely monitored.

In the past, it has been suggested that cracks through the lightening holes might first be initiated in the holes that are aligned with the propeller blades. Although the prop orientation with relationship to the two incipient fractures on the Great Lakes crank flange, referred to in this Tech Safety article, is not known, the fact that there are two fractures might give some credence to the "prop alignment theory."

Some IACers trying to enhance the false sense of security notion of "it can't happen to me because . . ." have noted that their crankshafts do not have lightening holes or they are not flying a Pitts. To repeat previous IAC Tech Safety articles, most of the crankshaft failures have been reported on O-360 cranks with lightening holes in S-1 Pitts aircraft. However, as exemplified in here, there have been reports of failures on "holeless" crankshafts and on other than Pitts aircraft — and on O-235s, O-320s, O-360s, and O-540 Lycomings.

Many, many thanks go to the IACer who forwarded the report and crankshaft photo relating to his Great Lakes crank problem. All of us, working together, can keep our sport safe.



IAC member photo of failed crankshaft flange shows two "old" fatigue fractures that were slowly working their way across the shaft.

COMPETITIONS CALENDAR

NOVEMBER 1-3, 1985 — ROCKY MOUNT, NORTH CAROLINA — 1985 First Flight Championship sponsored by IAC Chapter 19. Four to five categories. For information contact Contest Director Tim Culbreth, Rt. 1 - Box 314-A, Liberty, NC 27298. PHONE 919/622-4633 or Bill Hood, 919/726-2278.

DECEMBER 6-8, 1985 — ELOY, ARIZONA — Arizona Championship Regional Contest sponsored by IAC Chapters 69 and 62. Four categories. Registration and practice, Thursday, December 5. Three Sportsman flights. 1985 Arizona Champions will be named based on scores attained at all three Arizona contests: Copperstate, Tequila Cup and Arizona Championship. This is in addition to normal contest awards, plus Christmas party. For information contact Contest Director Floyd Colyar, 3411 W. Pierson, Phoenix, AZ 85017, PHONE 602/973-5761 or Bill Larson, 6916 E. Cholla St., Scottsdale, AZ 85254, PHONE 602/991-4875.

FEBRUARY 5-9, 1986 — PHOENIX/MARICOPA, ARIZONA — U.S. National Sailplane Aerobatic Championships. National titles to be won in three categories of Sportsman, Intermediate and Unlimited. For information contact LeRoy Peterson, 2605 W. Naranga Ave., Mesa, AZ 85202. PHONE: 602/838-7783 Or Les Horvath, PHONE 602/568-2318

CONTEST RESULTS IN

REBEL REGIONAL
 CHAPTER 27 — ARLINGTON, TENNESSEE
 MAY 25-27, 1985

PLACE	PILOT CITY/STATE	AIRCRAFT N NUMBER	BASIC			% OF POSSIBLE
			KNOWN	FREE	TOTAL	
1	Steve Powell Memphis, TN	Decathlon 36628	737.1		737.1	72.9
2	George Flinn Memphis, TN	Pitts S2A/31450	804.5		804.5	61.0
3	Gene Beggs Midland, TX	T-Craft 46WW	291.1		291.1	28.8

PLACE	PILOT CITY/STATE	AIRCRAFT N NUMBER	SPORTSMAN			% OF POSSIBLE
			KNOWN	FREE	TOTAL	
1	Chip Corley Fort Smith, AR	Pitts S2A/625CC	1229.6	1150.7	2380.3	83.2
2	Jim Buckley Olivette, MO	Decathlon 36628	1192.9	1175.6	2368.5	82.8
3	Leon Boyd Dallas, TX	T-Craft 46WW	1116.1	1239.7	2355.8	82.3
4	Dave Stanton Alpharetta, GA	Decathlon 4119Y	1178.8	1172.8	2349.6	82.1
5	Roger Brown Memphis, TN	Pitts S2B/53144	1128.8	1179.3	2318.0	81.0
6	Bob Tberg Springfield, TN	Pitts S2B/260JG	1178.5	1090.6	2269.1	79.3
7	Bob Wagner Miami, FL	Decathlon 26628	1119.4	1089.8	2206.2	77.2
8	LaVerne Pendergrass Memphis, TN	Decathlon 36628	1079.6	1108.9	2188.5	76.5
9	Bill Freeman Nashville, TN	Pitts S2A/260JW	1123.8	1060.1	2183.9	76.3
10	Charles Wright Memphis, TN	Decathlon 36628	1053.2	1060.1	2173.3	75.9
11	Linda Hamer Peru, IL	Skybox 230A	1036.2	1099.7	2135.9	74.6
12	Ed Weber Germantown, TN	Pitts S2A/8025	1065.6	1056.3	2121.9	74.1
13	John Martin N. Mankato, MN	Decathlon 36628	1018.1	1037.1	2111.8	73.8
14	Scott Kashif Atlanta, GA	Decathlon 2976R	1063.8	1026.6	2110.4	73.7
15	Steve Van Eck Holland, MI	Pitts 12J	1025.5	1038.7	2064.2	72.1
16	James Edwards New Albany, MS	Pitts S1/JE	932.7	1036.1	1968.8	68.8
17	Clyston Murray Mascoutah, IL	Pitts S1/21RK	1013.5	941.0	1954.5	68.3
18	Bob Scott Killeen, TX	Decathlon 2887Z	767.2	1058.2	1845.4	64.5
19	Linda Gilmore Lindenfield, IL	Decathlon 36628	837.9	788.8	1626.7	56.8
20	Richard Blatter Litchfield, IL	Pitts 6CB	0.0	1213.9	1213.9	42.4

PLACE	PILOT CITY/STATE	AIRCRAFT N NUMBER	INTERMEDIATE			% OF POSSIBLE
			KNOWN	FREE	UNKNOWN	
1	Morne Ray Memphis, TN	Pitts S2B/5314Y	1650.9	2149.9	1119.7	4920.5
2	Jerry Holzswart Dallas, TX	Pitts S1/5AL	1682.0	2121.3	1077.9	4872.2
3	Phil Sisson Litchfield, IL	Pitts S1/1GB	1573.2	2187.5	1091.4	4852.1
4	Randy Henderson Frisco, TX	T-Craft 44054	1674.7	2058.7	1099.1	4825.5
5	Harry Cooper Springfield, MO	Pitts S1T/51HC	1690.0	2066.4	1007.0	4783.4
6	James Fulton Gadsdenville, TN	Chippunk 48262	1592.9	2132.0	1020.8	4745.7
7	Nott Wheeler Cleveland, MS	Decathlon 2982Z	1479.9	2163.0	1097.9	4740.8
8	Buck Carroll Memphis, TN	Pitts S1D/104BC	1553.7	2169.2	1010.2	4733.1
9	Edward Jones Montgomery, AL	Pitts S2B/260EJ	1562.4	2102.6	1044.6	4709.6
10	Frank Metcalfe Adams, TN	Pitts S1S/592Z	1555.2	2048.2	1035.3	4646.9
11	(Bill) J.N. Hamilton Ontario, Canada	Pitts S2B/C-GCRN	1493.4	2075.3	1032.3	4601.0
12	Lauren Cagen Memphis, TN	Pitts S2A/31450	1592.7	2035.8	942.2	4567.7
13	Patricia Crucible Toronto, Canada	Pitts S1S/CF-PFM	1555.7	1904.3	1041.8	4501.8
14	Bill Larson Edmond, OK	Pitts S1T/49313	1543.8	1969.4	912.0	4445.2
15	James Amos Dallas, TX	Pitts S2B/532BG	1512.0	1975.5	917.8	4406.3
16	John Bingham Germantown, TN	Pitts S2A/31450	1406.0	1659.7	691.3	3759.0

PLACE	PILOT CITY/STATE	AIRCRAFT N NUMBER	ADVANCED			% OF POSSIBLE
			KNOWN	FREE	UNKNOWN	
1	Perry Rhoads Carlinville, IL	Pitts S1S/6CB	3204.0	3475.7	1970.7	8650.4
2	(Fred) H.A. Johnson Germantown, TN	Pitts S1T/200ST	3140.4	3632.5	1863.7	8636.6
3	Jimmy Goggin Springfield, TN	Pitts S2B/260JG	3035.5	3702.1	1837.7	8576.3
4	(Butch) James Dunaway Fairfield, OH	Pitts S1T/665BD	3058.0	3507.3	1987.2	8552.5
5	David Van Lere Huntington, IN	Pitts S1S/62L	3141.8	3520.5	1808.2	8471.5
6	(Moon) F.W. Wheeler Shov Lake, WI	Pitts S1/55MW	3093.3	3519.4	1813.8	8426.5
7	Bur Carlisle Atlanta, GA	Pitts S1S/171BC	2961.1	0.0	1852.8	4813.9

PLACE	PILOT CITY/STATE	AIRCRAFT N NUMBER	UNLIMITED			% OF POSSIBLE
			KNOWN	FREE	UNKNOWN	
1	Michael Stauffer Valiant, OK	Pitts S1T/621MS	4081.5	6162.4	3488.4	1527.8
2	Ray Williams Springfield, TN	Pitts S2B/260JG	3396.9	6261.6	3466.5	1562.3
3	Gerry Younger Guelph, Canada	Pitts S1T/CGSKF	3845.0	5726.4	3514.1	1518.7
4	Tom Jones Oklahoma City, OK	Pitts S2S/260TJ	3323.4	5722.8	3538.1	15126.7
5	Larry Blankenhagen Houston, TX	Pitts S1T/49314	3668.8	5122.5	2984.6	13953.1

CURRENT IAC JUDGES

(As of Sept. 12, 1985)

The list printed here represents the current listing of Approved IAC Judges as of Sept. 12, 1985. These are the only names reflected on the IAC computer file as current. All Contest Directors are provided copies of the latest list at the time their contest occurs. If Contest Directors desire an advance copy of the list, they should contact IAC President Mike Heuer for a printout. This is a recommended procedure so that one can start advance planning and contacting judges for use at a contest. A follow-up current list will still be sent if there are any problems with this list or you do not appear and you think you should, contact Mike Heuer or Ben Lowell. Their phone numbers and addresses are found on page 5 each month of SPORT AEROBATICS.

JUDGES TYPE	NAME	CITY/ST	IAC #	CHAPT
Regional	Fred Abramson	San Carlos, CA	6865	38
National	Charles Alley	North Hollywood, CA	2827	49
Regional	Roscoe Adams Ammon, III	Bedford, NH	5185	35
National	Peter Anderson	Madera, CA	7160	26/49/1238
Regional	George Andre	Overland Park, KS	5058	15
Regional	Arnold Arington	Raleigh, NC	6125	19
Regional	Joan M. Babin	Huntsville, AL	4516	27
Regional	Joe Bailey	Arlington, TX	8884	24
National	Rev James A. Barney	Black River Falls, WI	1271	
National	Val J. Baudrault	Weare, NH	1653	35
National	Vera Becker	Lomont, CO	6958	12/23/61
National	Don Berliner	Alexandria, VA	1026	11
Regional	Kehr J. Behl	Beechwood, NJ	6000	94
Regional	Shirley A. Bier	Vincentown, NJ	7394	94
Regional	Richard Bier	Vincentown, NJ	1037	94
National	Larry Brinkenhagen	Houston, TX	8104	25
National	Robert D. Bloodwell	Orlando, FL	3709	23
Regional	Robert A. Brandt	Ramona, CA	3280	36
National	Richard W. Brown	Tucson, AZ	6115	62
National	Ward Bryant	Jaffrey, NH	635	35
Regional	Martha J. Buckley	Des Plaines, IL	8633	70/161
National	James E. Buckley	Olivette, MO	2917	61
National	Sam Burgess	San Antonio, TX	23	
National	Robert E. Carmichael	Piano, TX	374	24
Regional	Andrea L. Chappell	Ortonville, MI	8702	34
National	Harold Chapman, Jr.	Ortonville, MI	5410	88
National	Carolyn Elizabeth Clarke	Salt Lake City, UT	5017	
Regional	Roy W. Collier	Talent, OR	1130	77
Regional	Lorraine C. Colton	Roselle, IL	6429	1
Regional	Aryn Cook	Alta Loma, CA	6520	49
Regional	W.R. Cooke	Houston, TX	8933	25
Regional	Barbara J. Cooley	Boulder, CO	10299	12
National	Herbert E. Cox	Stuart, FL	761	61
Regional	Richard H. Crofton-Sleigh	San Francisco, CA	5361	38
National	Timothy M. Culbreth	Liberty, NC	9181	19
National	William H. Curry, Jr.	St. Helena, CA	7647	38
National	Robert V. Davis	Woodstock, IL	103	170
Regional	Jeff Davis	Wilson, WY	9921	19
Regional	Averilie A. Dawson	McKinney, TX	6902	24
Regional	Brigitte de St. Phalle	San Jose, CA	3563	38
Regional	W. Dave Detour	Vancouver, WA	7257	77
Regional	Drew Detour	San Francisco, CA	7904	38
National	Dale Donelson	Westlake Village, CA	6703	49
Regional	Del Donner	Bedford, TX	3787	24
Regional	Dean S. Dudley	Lincoln, NE	7890	80
Regional	Denne Earhart	Hawthorne, CA	9054	
National	James M. Edwards	New Albany, MS	721	27
Regional	Ernest C. Eid	Hopewell Junction, NY	8392	52
Regional	Joy Ellison	Homewood, IL	4025	1
Regional	William K. Engel	Peoria, IL	5033	1
Regional	Lorraine English	Fresno, CA	7067	26
Regional	W. Rogers Fassnacht	Orford, MI	4371	88
National	John D. Gardner	Lake Orion, MI	1560	88
National	Richard Ganty	Anapolis, MD	2218	11
National	Alan W. Genge	Selma, CA	5273	26
National	Lynne Genige	Selma, CA	7421	26
National	Jeanette Goodman	Stockton, CA	4254	38
Regional	Robert S. Green	Collierville, TN	2801	27
Regional	Cindy Green	Collierville, TN	8824	27
Regional	Marlene D. Hagg	Portland, OR	7969	77
National	Diane L. Hakala	Little Falls, NJ	9157	94
National	Linda L. Hamer	Peru, IL	7223	61
Regional	Wayne Handley	Greenfield, CA	9508	
Regional	Hayden H. Harris	Chester, MI	4092	88
National	Eban Harvey	Pasadena, TX	750	25
Regional	Gary J. Haupt	Tewsbury, OH	8658	
Regional	Curts C. Hawks	Mountain View, CA	3022	38
Regional	Donald Henry	Ponte Vedra Beach, FL	5085	63
Regional	Michael D. Herald	Kent, WA	4403	77

(Continued on Next Page)

Letters

and intentional spins were tried with the correct method of recovery. To the best of the author's present knowledge full credit for this amazing combination of wisdom and courage should be given to at least two men, who are said to have made the discovery independently: the American inventor, Orville Wright, and the British physicist, F. A. Lindemann.

By the way, I don't believe it is the planned 1 or 2-turn upright spin that will be likely to end your flying career, but rather the unexpected, unplanned and unwanted son-of-a-gun that sneaks up on you. For instance, when you are trying your first vertical roll up, pushing outside in a loop, pushing over the top of a Family 9 Humpty Bump, or let's say you left in power and controls too long doing a Lomcevak, that's when it will grab you. In the latter example, I'll guarantee you, it'll be on your back, flat and spinning fast. At least that's the way it works in my Pitts.

Please don't misunderstand, I'm not claiming to know all about spins. No way! When I stop learning I'll stop living. I would like very much to take this course from Gene to learn more about spins.

I would like to end this letter by giving a big thanks to Gene Beegs for seeing the need and being so concerned that he took it upon himself to fill the void that so many flight instructors across our land left. Thanks Gene. And to you (the pretty Jean), keep up the good work in SPORT AEROBATICS. You are doing a super job!

Sincerely,

Olin Pash

IAC #2710

1305 Lincoln Ave.

Harlan, IA 51537

Dear Jean:

I have been noticing articles in SPORT AEROBATICS on the new Basic Category. I'm rebuilding a Smith miniplane and plan to fly it within a month or so.

From being from Krebs, Oklahoma, doesn't give much advantage to participate in aerobatics or even get started. I do, however, visit the Nationals in Sherman/Denison every year and have a great time there. Where did we go wrong?

On page 198 of the 1941 Civil Pilot Training Manual, 2nd Edition, it states and I quote, "There is no occasion to fear a spin if it is performed under the proper circumstances, one of the most important of which is adequate altitude for recovery. An airworthy airplane will recover from a spin of its own accord if the controls are released." As far as the age-old argument on who and how normal spin recovery was discovered, it says on page 201 of the same manual, "In the very early years of aviation all spins were fatal, no matter how high they began. After the theory of the spin was discovered

sure these people don't realize their effect on newcomers. They are the heroes of the sport and should be commended by all. They are doing a fantastic job for this organization and our country.

Jean, you're doing a really good job with the magazine and I look forward to getting it each month. Keep up the great work!

Thanks very much,

Dennis DeFrango

Box 61

Krebs, OK 74554

Dear Mike:

I write to express the sincere appreciation of the EAA Aviation Foundation for your contribution to the EAA Air Academy. I add the appreciation of the young people who will benefit from this support as they come to the Aviation Center and experience many of the facets of the aviation activities to which we are devoted.

The future of our organizations lie in its youth such as those who will attend the Academy. I am sure that each Academy participant will return home as an ambassador for sport aviation activity. I am sure you agree this can only have a positive effect on the future of IAC and aviation activity in general.

Again, I thank you and the IAC for this support.

Sincerely,

EAA AVIATION FOUNDATION, INC.

Chuck Larsen

Education Director

Dear Mike:

On behalf of the EAA Aviation Foundation, I would like to thank you and the officers, directors and members of the International Aerobatic Club for your contribution of \$1,000.

Your support of the Academy and the Foundation is greatly appreciated. Programs such as this benefit all of aviation.

With best regards,

EAA AVIATION FOUNDATION

Tom Poberezny

President



National	Richard Rahn	El Cerrito, CA	5866	38	National	Noel B. Summer	Pompano Beach, FL	629	23
Regional	Richard D. Robarge	Mesa, AZ	2257	69/34/76	Regional	Craig B. Sutter	Rolling Meadows, IL	5521	
Regional	Galen Rosen	S2015 Hökerum S., SWEDEN	3280	22	Regional	Regina M. Taylor	Washington, OK	7029	59
National	Roger E. Rourke	Los Angeles, CA	2594	26	National	Ken Terry	Holly Hill, FL	6753	78
Regional	Frank Roth	Asheboro, NC	9121	19	National	William H. Thomas	Mesa, FL	177	37
Regional	Richard Rannels	Orange, MA	8064	35	Regional	Roy L. Thornton	Kansas City, MO	9529	15
Regional	R.C. Ruppel	Baltimore, MD	5079	11	Regional	Thomas H. Tiedt	Ridgefield, CT	8337	94
Regional	L.R. Rutt	Elizabethtown, PA	6572	58	Regional	Asby Toumim	Dallas, TX	933	24
Regional	Gregory Sanders	Niles, IL	7766	1/15/70	National	John Tuvefalk	S126/45 Hagerst, Sweden	5631	22
National	C.R. Sanford	Chama, NM	42	49	National	Gert J. Vanderzel	Grover City, CA	1492	26
Regional	Dennis Sawyer	Tyngsboro, MA	4934	35	Regional	Frank Versteegh	6224 BN Arnhem, Holland	10412	
Regional	Al Schaaf	Scottsdale, AZ	10441	69	Regional	William A. Wallace, Jr.	Portland, OR	6733	77
National	Robert B. Schaefer	Greendale, WI	4794	8	Regional	Norman R. Way	Stockton, CA	3866	38
Regional	Ralph Sebezen	Staten Island, NY	2538	94	National	Frederick G. Weaver	Medford, NJ	1017	94
National	Was Selvage	Buttonwillow, CA	6559	26	National	William C. Weaver	Enterprise, AL	767	27
Regional	Dick Smart	Verden, OK	3610	59	National	Elizabeth Weaver	Medford, NJ	7988	94
Regional	Dwight Snyder	Linhom, NE	8184	80	Regional	F.H. Wheeler	Silver Lake, WI	1632	8/27/61/70
National	James R. Stanton	Ocean City, NJ	2728	94	Regional	Not Wheeler	Cleveland, MS	6253	27
Regional	Robert C. Stephens	Ely, OK	4893	59	Regional	Fans Whitley	El Reno, OK	6954	59
National	George F. Stock, Jr.	Woodstock, IL	342	70/18	National	David H. Williams	Lancaster, MO	4249	15
Regional	Howard K. Stock	Woodstock, IL	5402	70	Regional	John Willkomm	Kenosha, WI	7388	8
National	William E. Stone	Boring, OR	2236	77	Regional	Edwood E. Woods	Crystal Lake, IL	8080	70
National	Joan C. Stone	Boring, OR	3493	77	Regional	Lewis R. Wooley	Arlington, TX	5275	24
Regional	Patti Stone	Gresham, OR	4797	77	National	G.M. Zimmerman	Brighton, CO	88	12

How Would You Score It?

Compiled by Ben Lowell
IAC Judges Chairman

ANSWER 1 — Three low penalties. See page 24, Chapter 4, paragraph P of the OFFICIAL CONTEST RULES book.

ANSWER 2 — Yes. He can also file suit against the Archbishop of Boston as being his illegitimate father. In either case his chances of winning are slim and none and slim has left town. Any Contest Jury receiving such a protest should, without hesitation, deny the protest and thank the protestant for his \$25. Should such a protest be upheld it would be the beginning of the end of our system of grading figures and reduce our contests to mere fly-ins.

ANSWER 3 — No down grade. The loops and part loops in ANY ONE

FIGURE must have the same radii except in the case of a Humpty-Bump where the $\frac{1}{2}$ loop at the top of the figure need not have the same radius as the $\frac{1}{4}$ loops at the entry and exit of the figure. The $\frac{1}{4}$ loops in the hum should be of equal size however. Different figures may have different radii. See Chapter 7, page 37, paragraphs F-2 through F-2.2. in the "RED BOOK."

ANSWER 4 — No interruption of program. All the errors made by the pilot were confined to the family 9 figure. Since the pilot did the $\frac{1}{4}$ roll before ever flying a straight horizontal line with wings level, he completed the figure after the $\frac{1}{2}$ roll. He obviously zeroed the Humpty-Bump but entered the next figure in the proper attitude with no extra figure inserted into the program.

"How Would You Score It?" episodes are based on actual flights where the circumstances either called for a protest or presented the possibility of one.

If you know of an incident where the interpretation kicked up a ruckus and you think it would interest our competitors and judges, please send a description of the incident and your interpretation of the rules to Judges Chairman Ben Lowell. He will seek the wisdom of our IAC experts and report back in a future issue of the magazine. Send your suggestions addressed to Lowell at 3001 N. Lakewood Trail, Boulder, CO 80302.

* The EPISODE with its Quodlibets/Questions for this month is found on page 7 of this issue.

The Glory That Was 442X

(Continued from Page 15)

sixth set of symmetrical wings," Bob tries to recall. "Basically it was a stock airplane with minor modifications," he continues. "Up until that time nobody had had a successful inverted oil system for example."

His son picks up the story here: "Dad built the engine mount from scratch and those plans weren't real easy to come by either at that time. We started work on the fuselage in 1968 and ordered the set of wings from Curtis. We picked them up in January '69 in our pickup with a rack on it that we built."

"Now, you gotta keep in mind that Dad had flown the Pitts before and I had never flown the airplane. But neither of us had flown it with symmetrical wings so we were kinda shootin' in the blind here a little bit."

In the hands of the Heuers, 442X began logging many a win for its pilots. Mike flew in Advanced; Bob, Unlimited. Then the elder Heuer decided to back off of competition flying. "The boys were at the age that it was time that they get some other experiences and get into the aviation industry," he recollects as he leads into what prompted him to sell his beautiful, exceptional homebuilt. "And I felt that at that time it would be better off for the boys to devote their time to other phases of aviation, to finish their education and get on towards getting a job. My interest after they were out of competing was I didn't feel that I needed to be running all over

more power and he found an engine at the right price. The latter was about as instrumental as anything in the decision according to son Mike. "Plus," he comments, "we were having trouble with the PS5C fuel or pressure carburetor at that time. Never would run right. And the fuel injection was much superior in the 200 in addition to the power, so it was a natural choice."

Also entering into the decision for the shift was the opinion that "the 200 is a much more efficient engine for what we were going to use it for," according to Bob. He elaborates: "The airplane, the way it was built for heavier people, too, was bordering on being out the rear CG. So, the additional weight of the 200-horse engine brought the CG right into the center of the CG range, which improved its flight characteristics, too."

In the hands of the Heuers, 442X began logging many a win for its pilots. Mike flew in Advanced; Bob, Unlimited. Then the elder Heuer decided to back off of competition flying. "The boys were at the age that it was time that they get some other experiences and get into the aviation industry," he recollects as he leads into what prompted him to sell his beautiful, exceptional homebuilt. "And I felt that at that time it would be better off for the boys to devote their time to other phases of aviation, to finish their education and get on towards getting a job. My interest after they were out of competing was I didn't feel that I needed to be running all over

the country flying airshows and competition. Plus, we had devoted about the past five years to competition aerobatics and quite frankly, I think we were gettin' little burned out."

Accordingly, 442X was eventually launched on its course of the making of aerobatic history. When Charlie purchased it, it moved one step further along destiny's path. Next stop was the World Contest and the laurels gained there with Charlie at its controls. Ultimately it arrived at the EAA Headquarters for permanent public display — a gift from Charlie. Now all who enter the EAA Museum may gaze upon the striking sight of 442X and wonder over its fantastic accomplishment — the aircraft which carried the first U.S. pilot to an individual World Aerobatic Champion ship triumph — thanks to the efforts of the Heuers and Charlie, certainly.

Naturally we would be remiss if we failed to mention the major role played in that accomplishment by the originator of the Pitts aircraft itself. Bob is quick to stress his conviction here.

"The person who really put us miles ahead in competition aerobatics in the U.S. is without a doubt, Curtis Pitts," he exclaims. "Curtis Pitts is probably one of the finest flight airplane designers who ever came down the course and . . . it's the Pitts Special that made the United States come up to the front. We're there now and we've since gotten later and better equipment coming along. BUT the Pitts Special is STILL the aerobatic

(Continued Next Page)

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