The Leading Edge
The newsletter of the MIT Soaring Association
May 1998

Contents

News briefs

Mark Tuttle

New instructors: Karl Kruger has joined the ranks of MITSA instructors. Karl's name will appear in the instructor column of the next duty roster.

New pilots: Steve Glow and his wife Krista announced that their daughter, Madeline Heath Glow, was born just after noon on Tuesday, April 14, weighing six pounds and twelve ounces.

Good soaring: April 18 was a windy, turbulent day. Phil Gaisford writes, "It was an interesting day's flying at Sterling on Saturday. Both Bob Fletcher (90) and Doug Jacobs (DJ) landed for relights, which you don't see too often. According to my GPS, the wind speed at 6,000 feet was about 40 knots. I found some wave in the lee of Wachusett, and climbed (slowly) to 10,500 feet, which got me just about as far as Gardner, where I retreated and got blown back to Sterling."

On Patriot's Day, April 20, Mike Baxa drove to Keystone Gliderport and wrote, "Went to Knauff's on Monday hoping the lows had cleared out. They had two solid days of rain over the weekend and the field was soft. I flew Tuesday with strong thermals until the high cirrus shut things down. I flew 60 miles, but the day pooped out by 3:30. A couple of Canadians went north and made it to Elmira and back. A few ships landed out, including an L-23 from a mid-Atlantic club. There must have been at least 20 Canadians down, with some staying three weeks. I packed up and came home on Wednesday as another low pressure system moved into the area. It felt good to get in the big bird again and stretch my legs."

Sterling operations: Our chief instructor, John Wren, wrote to the club at the end of April to straighten out some confusion about the new launch procedures at Sterling.

The first problem was that we were using our old launching point on 34. MITSA no longer uses the old box painted on 34 as a launching point. All pilots (glider and power) operating from Sterling should be able to have some sense as to where to expect each other's operations. It is not fair or safe that a returning power pilot entering the pattern at Sterling should have to take "pot luck" as to where MITSA has decided to have its operation that day.

The second problem was that we were *not* using our old launching point on 16, and the club was launching the L-23 trainers off the grass on 16. Launching the trainers off the grass is not currently authorized on either end, and the proper launching point for the trainers on the 16 end is the same location as we have always used.

There is a "red book" at the field describing launch procedures, and all members are required to read it before becoming involved with the operation. DO's and instructors should make sure all MITSA members are adequately briefed before flying. If you have any questions, contact John Wren at (978) 244-0647 or glider@mediaone.net.

Boston Marathon: For those of you who remember Jim Reardon, there was a great picture on Channel 5 of Jim finishing the Boston Marathon in just under 2:42. Mark Koepper also has a marathon connection: "I couldn't resist the opportunity to plug a new book by Michael Conelly, my brother-in-law. I think '26 Miles to Boston' is quite good, and I'm not even a marathon fan. Michael covers some history and gives personal accounts of his running the 100th marathon two years ago. Copies are in the major book stores now, and seem to be selling well."

Leonard Tanner: Mark Koepper wrote on April 17 to say that, "Leonard Tanner, owner of Tanner-Hiller Airport, passed away last night after a long bout with cancer. I learned to fly at his airport, and his signature is on the annual inspection records for my Dart going back several years. Len was quite a strong-willed character and was a supporter of soaring for decades. He will be missed. A memorial gathering of his friends and family is scheduled for Sunday, April 19, 1998 at his airport. Contact Bob Burchard at Burchard Aviation (508 867-3585) for details."

Minutes of the Board of Directors

Walter Hollister

These minutes have been edited for publication in the newsletter. —Editor

May 7, 1998

All members of the board were present, plus Bill Brine, Ian Clark, Adam Dershowitz, Richard Gammon, Steve Kazan, Steve Sovis, and John Wren.

Steve Glow gave a review of the MITSA finances. Expenses exceeded income by a significant amount during the 1997 calendar year. The primary reasons for the shortfall were higher than normal maintenance expenses and lower than normal towing revenue. The single most significant maintenance expense was the replacement of three cracked cylinders on the tow plane, which accounted for a considerable fraction of the shortfall. The low number of glider tows was blamed on the shortage of instructors and new student pilots. Ian Clark stated that a lot of the current maintenance on the tow plane was to correct problems arising from maintenance neglect in the past. There was considerable discussion about proper cool-down procedures for the tow plane following glider release. It is essential for *all* tow pilots to use proper cool-down procedures after *all* tows.

Carl Johnson reported on negotiations with the Greater Boston Soaring Club concerning a greater sharing of resources between the two organizations. Both organizations want to proceed slowly. The first step has been an offer by GBSC to tow MITSA gliders for a to-be-determined fee. Carl suggested that MITSA return with a counter-proposal involving reciprocal use of the gliders. Several strategies were discussed. Among them was a plan for each organization to offer an associate membership to those in the other organization. This would take care of the insurance coverage issue and would be a step toward combining the two organizations. It was also suggested that tow and glider usage charges to associate members be based on current rates charged by commercial operations. It was agreed that Carl should be given authority to negotiate on behalf of MITSA. John Wren requested that any proposed agreement be reviewed by Roy Bourgeois before proceeding.

Adam Dershowitz, our chief tow pilot, expressed concern about the possibility of a prop strike while operating the tow plane on the grass. Besides the safety issue, there is a considerable cost associated with the ensuing engine tear-down and propeller repair. John Wren, our chief instructor, pointed out that there should be little added risk if tow pilots exercise care and are well-briefed. Someone mentioned that several members had trouble launching the Blaniks off the grass. John pointed out that the new operations manual (the "red book") requires that the Blaniks be launched off the asphalt runway, and John asks that everyone familiarize themselves with the new operations manual.

Richard Gammon reported on an in-depth investigation being conducted by Ian and him on possible modifications to the tow plane to give greater prop clearance and tow performance. While the investigation is still underway, the prospects for a reasonable modification were not promising. After considerable discussion, there was a general consensus that our long term goal is to get a better tow plane, and now is the time. The president appointed a sub-committee consisting of Bill Brine, Adam Dershowitz, Bruce Easom, Jim Emken, and Steve Glow to come up with a plan for buying a new tow plane.

Phil Gaisford reiterated the importance of recruiting new members in light of the competing presence of GBSC on the field. Several ideas were encouraged. Among them were MITSA T-shirts to be worn at the field, particularly by the duty officer, instructors, and tow pilots; MITSA logos on the gliders; and name tags for everyone.

Plans are being made for a cookout with GBSC on Memorial Day weekend.

Low-altitude spins

T. Guy Spencer

T. Guy Spencer is an honorary lifetime member of the club for the years of instruction and service he provided to the club. —Editor

Kudos to Mike Baxa for his contribution on spins. In the spirit of Ronald Reagan's band-leading story, I would like to repeat a theory that I have long held, while generally marching alone. It is something I conceived while pondering the question of how, or why, so many experienced pilots manage to exit in low-altitude spins, and it focuses on the rudder part of the equation.

Glider pilots are accustomed to many hours of circling at higher altitudes where the earth appears to sweep *forward* under the low-wing side as you turn. However, below a certain altitude (for a given turn rate) the ground will appear to sweep rearward under the low wing during a turn, just like looking out a car window. Herein lies a trap.

After hours and hours of building himself to expect the ground to "go forward" under his wing, what happens when our pilot, now flying "slow and low" in some unexpected situation demanding attention to other matters, subconsciously tries to "correct" for the ground going the "wrong way?" To do so, he must kick a little bottom rudder which at slow speed is all that is needed to stall the low wing, causing instant spin.

Perhaps the reason this theory has not been widely accepted is the horrible implication that, under stress, the experience on which we usually depend rises up as our worst enemy. If so, no amount of skill training can save us; the only defense is to avoid, by careful planning and conservative choice, those situations in which our conscious attention to basic flying is diminished.

Gliding in eastern Australia

Andrew Watson

One of the compensations of traveling on business is that occasionally the job takes you somewhere that you'd actually want to go. About once every two years my little band of computer standards gypsies goes to Australia, usually late in the southern summer, and during the last two trips I've taken the opportunity to try a little gliding down under.

The first time was March 1-2, 1996, just before a meeting in Brisbane. After scanning the ads in the back of *Sailplane and Gliding* magazine, I emailed a commercial operation called "Sunstate Soaring" at Dalby, a small farming town about 110 miles west of Brisbane, and booked a couple of days there. Summer is the rainy season in Brisbane, and it was rather discouraging to make the drive out to Dalby late on February 29 in a continuous torrential downpour, but after a good night's sleep at a local motel I turned up at the airfield to be greeted by mostly overcast skies and 3,000 foot ceilings. Sunstate is a two-man operation using a large GA airfield which sees a lot of crop spraying traffic early in the growing season, but is otherwise very quiet. Apparently the crop sprayers liven things up by taxiing out of their hangar at one end of one runway and taking off down it, regardless of wind direction, then on their return flying a straight-in approach in the opposite direction, touching down a few hundred feet short of their hangar and taxiing back in. Knowing this certainly promotes vigilance on the part of the visiting glider pilot.

Gliding in Australia is regulated in the same way as Britain: the Australian Civil Aviation Authority (their equivalent of the FAA) delegates control of gliding to the Gliding Federation of Australia. To fly a glider there you simply join the GFA (I got one month membership) and convince a GFA-certified instructor that you're competent to make your chosen flight. My check flight was with Sunstate's Mark Laird in a Puchatek, a roomy Polish two seater with aluminum wings and a metal and fabric fuselage. The main operating difference between Australia and everywhere else is that Australia flies low tow, apparently to reduce the risk of a tow plane upset should the glider fly through a strong thermal on tow. After a normal take-off, the glider continues flying a few feet above the ground and lets the tug climb until the glider is positioned in low tow, from where things continue as normal. They even release from low tow, which didn't sound very appealing, but seems to work provided you release when the rope is under tension, so its elasticity makes it spring clear. As long as you turn away promptly, by the time the rope's end returns, you're out of the way. However, I'm still somewhat dubious, and certainly wouldn't like to make a slack-rope release from low tow.

On my check flight Mark pointed out the surrounding landmarks. Dalby is in the middle of the Darling Downs, a gently undulating plain at about 1,000 feet msl, with dark

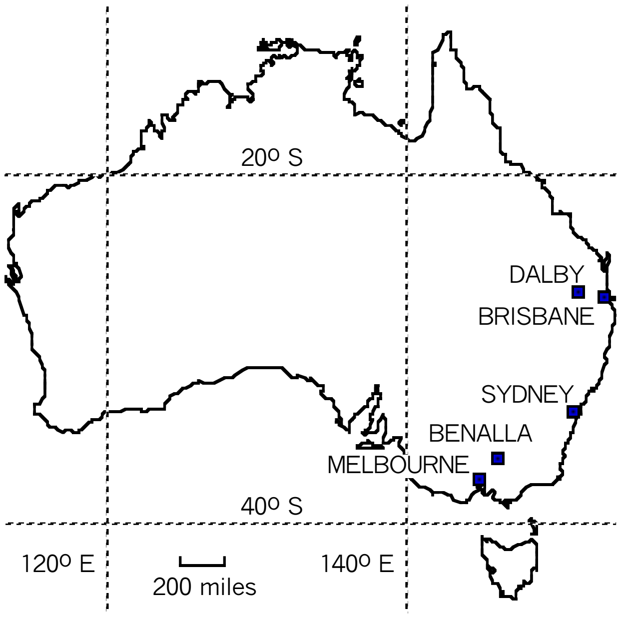

Figure 1: Andrew Watson's travels around Australia

fertile soil that makes it ideal for wheat farming. Consequently, the fields (which they call paddocks) are flat and absolutely huge. With the harvest in, virtually every field was landable, the only hazard being the almost invisible power transmission lines (on which more later). Mark told me that if I did land out, they would probably land the tow plane in the field and tow me out. Navigation wasn't too bad either: although the towns are well separated, they're linked by ruler-straight roads with prominent white-painted grain silos every few miles. All in all, it's close to ideal cross-country territory.

After the check flight, I looked over my chosen single-seater. The Glasflugel Hornet is a standard-class machine comparable to the Astir or Standard Cirrus, with a best glide of 38:1 at 56 knots. Although there are almost none in the UK or USA, it is the ubiquitous club single-seater in Australia. Its most noticeable feature is its trailing-edge dive brakes, where a chunk of the trailing edge is rotated about its center so that it projects both above and below the wing. As brakes they're very effective, but they also have a small flap effect, increasing the lift and decreasing the stalling speed slightly. This means that (unlike normal airbrakes) it is not advisable to close them during a held-off landing to try to float down the field: you're likely to precipitate an immediate and rather hard landing instead. I took three tows in the Hornet that first day and spent 90 minutes scratching around in weak lift getting used to it. The stick has a parallelogram action and a convenient trigger trimmer which automatically trims to your current stick position with one pull of the little finger. The handling is generally pleasant, although perhaps because of the high wing loading it has a tendency to drop a wing during take-off and at the end of the landing roll.

My second day looked much more promising, with a sky full of beautiful fluffy cumuli by 11 am. After a 2,800 foot tow at 11:40, I spent an hour local soaring to sample the conditions, which were excellent: a 15 knot easterly wind, 6,500 foot cloud bases, a sky full of Cu's, and every single one working at four to eight knots. Essentially this was a classic British summer day on steroids; conditions that I understood, and I was determined to make the most of them. I sketched a 170 km triangle on my chart and set off to attempt my longest cross-country up until then. I only had to circle a couple of times during the first leg, 44 km north along the road to the town of Jandowea. The rest was just dolphining along between 5,000 feet and cloud base at 6,500 feet. After taking an imaginary turn point photo of the grain silos just south of the town (pity I forgot to actually bring my camera!) I found a cloud street running straight along the road to Chinchilla, my second turn point 48km downwind to the west. The street was working at anything up to four knots, and I just zipped along it at yellow line speeds to arrive at the end, 10 km short of the town, in a matter of minutes with 6,500 feet in hand, only to find that my chosen turn point was right in the middle of a big blue hole. Based on a best guess of wind strength and my position (a few more landmarks would have been nice at this point!), a couple of twists of the invaluable JSW calculator revealed that I'd lose about 1,000 feet getting there, and another 2,000 feet plugging back into wind to return to the area of working Cu's, leaving a 2,500 foot safety margin in case of sink; and sure enough, that's almost exactly the way it worked out. There were a couple of tense moments on my return from the hole when the first two clouds weren't working, but scratching under the third got me back to 4,000 feet, and the fourth took me to cloud base at 7,000 feet with six knots on the averager, from which the 60 km to Dalby was one final glide slightly into wind. Definitely the place and the day to keep you hooked on gliding.

My second taste of Australian gliding was in March of this year, when a trip to Melbourne allowed me to visit Benalla, home of the Gliding Club of Victoria. Benalla is about two hours out of Melbourne on the railway line to Sydney, and since I had to go from one to the other anyway it made sense to take the trip across a weekend, by train, and break for a couple of day's flying. Unfortunately, this time my flying weekend was much later in the southern summer (April 24-25), but beggars can't be choosers.

For many years, the general manager at Benalla was John Williamson, former British national champion and national coach (that is, the most senior BGA instructor). I'd heard that John had just retired, but when I strolled over to the club from my motel on the first morning it was to find that John was still there to tie up a few loose ends, and would be acting as my instructor for the day. He gave me a ground briefing on the airfield, and showed me a sample of the dreaded Single Wire Earth Return (SWER) cable that's the bane of Australian gliding. To get electric power to outlying farm houses cheaply, the utility company strings a single twisted steel conductor about the thickness of barbed wire (but without the barbs) between widely-spaced poles up to 300 yards apart. That single conductor carries 12,500 volts, and the return half of the circuit is made via a large earthing spike in the ground, which I imagine gives the earthworms a bit of a headache. The wire is completely invisible from more than 300 feet, and the poles take apparently random paths to the farms, without necessarily following roads, field boundaries, or indeed straight lines, so if you don't want to make the intimate acquaintance of a lot of thin, taught high-tension cable, it's vital to make a very careful scan for the widely-spaced poles when selecting a field for an out-landing.

John gave me a familiarization flight in an IS-29d and also took me out to look at the paddocks and the infamous SWER lines in a Falke motor-glider. Benalla lies in the middle of several thousand square miles of sheep and cattle country, so the out-landing prospects are less rosy than at Dalby. The paddocks are a lot smaller, rougher, and tend to have a scattering of fixed trees in addition to the moving livestock. However, most also have a small artificial pond, which helps the glider pilot in two ways. Firstly, the wind-shadows on the water indicate wind direction: water on the upwind side of the pond is in the bank's wind shadow, so looks smooth, while the rest of the water is ruffled by even the slightest breeze. Since John pointed this out to me I've been looking out for it, and it really does work. Secondly, if the field slopes then the farmer will have banked up the ground on the lower side to make the pond, indicating the slope very clearly from the air.

Although not a great day, it was locally soarable, so I chose the club's PW-5 to try out. It is indeed a very nice glider to fly, with light, well-coordinated controls, good responses, and no particular vices that I could find. According to John, the only problem they have with the PW-5 is that it flies so smoothly that pilots are sometimes deceived into thinking that it has better performance than its actual best glide of 32:1 at 48 knots.

Unfortunately, my second day at Benalla was completely washed out by the first real rain after their El Nino summer drought, but it was still very pleasant sitting and chatting to the members in the magnificent club house built when they hosted the world championships a few years ago. I was told that several of the syndicate gliders at Benalla have partners from Japan and the UK who head south during the northern winter for a couple weeks of Christmas gliding. This seems like sound thinking, and after last winter in Massachusetts, I'm already working to ensure that my 2000 Australian trip falls squarely in late January.

Figure 2: Pilots rig their gliders at Sterling on one of the first good days of the season. (Photo by Bill Brine.)

Emergency egress

Mike Baxa

Safety: First… middle… and last
Keeping an ace up your sleeve,
and knowing how and when to use it.

In the early seventies while in the military in San Diego, I was playing poker with the boys one Saturday night and I came up with a winning hand. I considered myself a pretty good poker player, but then again when you are in your twenties you think you are good at everything. I had "bet the farm" on this hand and it was down to me and my buddy Rick. Rick raised the pot, but all I had was already on the table. I asked if he would take an IOU. He sat back and smiled for what seemed an eternity. You see, the group of us was always playing some kind of practical joke on one another, and I had recently nailed Rick. As I recall, it involved getting him in trouble with his girlfriend, who was no longer returning his phone calls. Finally, Rick said, "the only marker I'll take from you is that you will agree to do whatever I do, if you lose." I agreed and laid down my full house and Rick laid down his cards. Oops. I nervously asked Rick what we were "going to be doing" as the boys giggled with anticipation like schoolgirls while fresh beer cans began popping around me. Savoring his moment of payback, he slowly but methodically asked a series of questions all regarding and confirming my fear of heights. Finally, he announced that one month from today we both would be taking our first parachute jump. At the pronouncement there were wailing howls of approval from the boys. Just prior to slipping into a catatonic state of shock, I recalled thinking, "he set me up."

A parachute is defined as a device used to retard the fall of a body or object through the air. The use and care is a little more complicated than that. Few of us who strap these things on really know much about them other than it gives us some comfort to know they are there. We have each asked ourselves, "Would I really jump, if I had to?" We then say, "Ya, I guess so," without really making the effort to understand this expensive piece of equipment or what we are supposed to do with it. The focus of this article is to give the soaring pilot insights into the use of a parachute. The likelihood of having to use your chute for an emergency bailout is about the same as having a tree fall on you and totaling your vehicle, while rolling down the road at 40 mph on your way to work. By the way, take a wild guess at why I am driving a new pickup truck. Yes, the unexpected sometimes happens.

FAR 91.307 states that we may use chutes in an emergency. Gee, thanks. If we need to bail out, the FAA has graciously allowed us not to spend time in the cockpit reading and complying with section 105, the regulations governing sport jumping. Parachutes are mandated when we do any aerobatic maneuver involving a bank of more than 60 degrees, or a nose up/down attitude of 30 degrees or greater. The exception to this is when there is a flight instructor on board performing training. Parachutes are required for all sanctioned SSA contests. The vast majority of cross-country pilots routinely fly with parachutes, primarily, I believe, out of habit versus any thought to actually using them.

Many years ago, I was advised by an accomplished instructor that it was better to stay with a sailplane rather than bail out, but *only* if you have control over the aircraft. This still stands true in my mind today. I believe the determining factor on staying or jumping would be your given altitude in relation to the severity of the situation. A collision with a duck while going 65 knots could do significant damage to a control surface, glider wing, or pilot. Given a low altitude and a semi-stable glider, you would be safer staying in the glider and doing a tree landing, if that were your only option. As an aside, I recently spoke with a FAA inspector who said that of all the accident sites he has visited, those involving tree landings tend to be situations where the pilot has walked away. Trees can be very forgiving by cushioning the impact during a forced landing. This is something for us cross-country folk to keep in mind, and for those of us who have a rope break under 200 feet with no other options. The other end of the spectrum would be cruising at speeds in excess of V_{ne} or close to V_{ne} in turbulent conditions. We may go into irreversible flutter with subsequent structural failure, and at 3,000 feet agl the decision to jump is obvious.

There is one truism to commit to memory. Once you decide to jump, waste no time in doing so. According to Allen Silver, a Master Rigger and FAA Examiner in the San Francisco Bay area, the primary reasons for unsuccessful bailouts are waiting too long and not knowing what to do. Allen states the first step is to rehearse or practice your exit from the glider before each flight and after each landing. Doing so will reinforce the procedure in your mind and save valuable time in an actual emergency exit. Go through this physical and mental exercise we will outline later. *Do not ever* get in the habit of taking off your chute while still sitting in the cockpit. Guess what you will be conditioned to do while your mind is racing and you need to bail out? Free falling with your chute still in the aircraft may not be what you want to be remembered for, not to mention the somewhat adverse side effects to long term health.

It probably takes an average pilot five to eight seconds to exit his glider. If you can get your exit time less than five seconds you are doing very well. If you lost a wing and are spinning out of control, you may be pulling eight G's with your glider losing altitude like a leaf with a rock tied to it. It may take every ounce of strength to actually get out. *Never ever give up.* A leading factor in any survival situation is a positive "can do" attitude. Once out of your sailplane, you should wait a minimum of one second before pulling the ripcord to assure your chute will clear the tail. You will drop about 20 feet in that one second. Once you pull the ripcord, it will take another two to three seconds for your chute to fully deploy. Our MITSA chief instructor, John Wren, reminded me of a German study dealing with emergency exits from gliders. The study indicates a pilot needs a minimum of 600 meters agl to exit from a glider and survive.

Now, let's back up and take a look at our parachute. The FAA mandates a chute be packed and certified every 120 days by a certified parachute rigger (FAR 105.43). The packing data card must be on every chute, usually in a small pocket. Do a preflight on the chute looking for any unusual signs such as tears, chew marks from rodents (mice think these things are great as a source of nesting material), unusual stains, a damp or wet area, and so forth. Take a look at the snaps and hardware for play and corrosion. A chute should always be stored in a cool, dry area in its bag. High heat for a long period of time such as sitting in your car trunk or exposed cockpit for the day could melt the rubber bands onto the delicate chute fiber. High humidity contributes to shortened parachute life. Chutes are highly susceptible to chemicals such as the adhesive on tape, fuel, and so on.

The *Soaring Manual* tells us we should put our chutes on while in the standing position. Having a snug fit while standing assures you will have a little play and some comfort in the straps when seated. Do not overly tighten your straps once seated in the cockpit. This I know something about. I once ended up black and blue after a jump and I walked like a bow-legged Texan fresh from a mule ride for sometime. It is a long sport jump story, but just trust me. Don't overly tighten your straps after seated. Also, it is very important that the vertical harness straps (main lift webs) run up and down in a straight line. The body harness is designed to distribute the load evenly when the chute pops open. Over-tightening of the chest strap and forcing it out of vertical alignment, may over-stress the harness elsewhere resulting in a harness failure (another fun thought). If different people wear the chute, it must be adjusted each time. You know you have a good fit when in a standing position and you feel some moderate pressure on your shoulders. If your chute harness is correctly adjusted, relax, as you are not going to fall out of your harness (you probably hadn't given that one much thought either). I suspect many of you are starting to think tree landings are looking reeeeal good about now! Don't. Jumping is fairly straightforward and I wouldn't hesitate if I had to in an emergency. In fact, there have been a few instructional flights where there was no emergency but I was tempted to jump anyway (just kidding, students).

Let's get serious now and get down to business. You will need to bail out if you have structural failure, lack of control, or you are involved in a mid-air collision resulting in severe damage. The following scenario is fictitious, but the procedure is from Allen Silver, who has 35 years experience and 2,700 jumps. I should also note for the low-time pilot that gaggle flying in and of itself is not inherently dangerous. If you do enough soaring, you will eventually find yourself in a gaggle. However, there are rules that must be followed.

Despite the forecast of a great cross-country day, it has turned into a warm and stable summer afternoon. Since everyone is rigged, a small fleet launches around 1:30 pm after watching the trainer wallow in a thermal at 2,000 feet agl over the local gravel pit. Very quickly it is discovered that it is the only good thermal in the area and the ships begin converging on the gravel pit. Soon there are four gliders circling. They are all flying clockwise and are vertically stacked at intervals of about 200 to 300 feet. You are in the middle portion of the gaggle at about 2,300 feet agl. You are continually monitoring the guy directly above you and below you, while you concentrate on the yaw string to get every foot of climb you can.

The tow plane has just dropped a glider east of the gravel pit and the pilot shoots for the thermal. He has never flown in a gaggle before and does not know much about gaggle flying. He races directly for the circling sailplanes while flying into the sun. He is anxious to join in the fun and show his skill in trying to out climb everyone. His high speed gets him there quickly and he soon realizes he is going to overshoot his entry.

You glance up just as a dark object appears from nowhere. The impact to your high wing throws you violently nose-up and then sideways. The next thing you see is the spinning terrain. Your exit practice and clear survival thinking now pays off:

- Step 1: Canopy released and away clear.
- Step 2: Seat belts released.
- Step 3: Roll out and over either side.
- Step 4: Find, reach, and pull (focus only on finding the ripcord and pulling it).

In a moment you feel a body jolt and hear a loud crack above you. Scared, you look up and you are overcome with joy to see your colorful chute fully deployed. You are now floating easterly in an eight knot breeze. You are clear of the other gliders and estimate your height at over 1,000 feet agl. You remember to reach up and grab the left and right steering toggles with each hand and not to let go (assumes your chute can be steered). When you pull the left toggle you turn left, and right toggle right. You also recall that pulling both down at the same time accelerates your descent, which you do not want to do. You begin searching immediately for a clear landing spot. You know to stay away from roads and buildings, as there will be wires, which must be avoided.

You see a moderately-sized open field just downwind and to the right. You pull your right toggle slowly but firmly and you turn in that direction. You estimate you'll be over the field and landing in another minute. Under 500 feet it seems your speed is increasing even though you feel no wind on you. You recall that like a balloon you are floating at the same speed with the wind and that there is the illusion of increased speed as you approach the ground. At 300 feet you are almost in the center of the grass field and if you don't do something soon you will overshoot it. You execute a 180-degree turn into the wind by pulling the right steering toggle six to twelve inches and then return the toggle to the neutral position. You remember any final turns should be done no lower than 200 feet, unless you must turn to avoid a life threatening obstacle. As you turn into the wind you begin to feel the wind on your face and glancing down you see you have only a slight backwards drift. When you glance down, your descent looks very fast and you will be on the ground any moment.

You think clearly and recall:

- Step 1: Land into the wind.
- Step 2: Keep knees and feet together with knees slightly bent.
- Step 3: Look straight ahead at the horizon with elbows around the head to protect it.
- Step 4: Tense muscles to absorb the shock and then roll with the impact.

The ground comes up very fast and you hit with your knees bent *(never locked)* and you roll, letting your entire torso absorb and distribute the impact. It feels like a ten-foot jump onto a hard surface. You are okay except you feel a pain in your left ankle. It must have twisted as you forgot to keep your feet together. You get up and circle around your chute. Doing so wraps the suspension lines around it and the chute collapses. If you are injured or cannot get up because the wind is dragging you, roll onto your back and grab a set of lines on one side, pulling yourself hand over hand. This will collapse the chute.

You are alive and have survived a mid-air collision. You get out of your harness and spread the chute out so it is easier to spot you by any circling aircraft. It isn't long before you hear the sound of sirens. The ambulance EMT's insist on taking you to the hospital. The ankle is not broken but the emergency room doctor gives you a prescription for something to help you sleep that night. You will need it. A club member shows up at the hospital and gives you a ride back to the field, but you insist he stop at where your ship "landed." Your glider augured into a small pasture and it is hard to tell what it was. It is in thousands of elongated and splintered fiberglass pieces. It looks like the insurance company might be able to salvage a few instruments. The FAA is on site within two hours of the accident to conduct a NTSB investigation. He decides to interview you the following day, but after interviewing other witnesses and investigating the crash sites, he has a pretty good idea what happened. The other pilot did not survive. He only flew locally at this stage in his soaring development. And, as we all know, you do not need to bother with a parachute when you fly locally (?).

I recently spent some time with my parachute rigger reviewing my emergency jump procedure and getting his insights for this article. Randy Thompson, Master Parachute Rigger of New England Parachute Company in Danielson, Connecticut, has more than 8,000 jumps and works as a parachute consultant for the military besides running a business and serving as a Jump Master for his club in Ellington, Connecticut. I found my time with Randy to be well worth the effort. I reviewed my emergency procedure, asked questions about my chute, and at the end felt more comfortable and reassured. I highly recommend you take the time and make the effort to do the same.

Jumping odds and ends

Before you buy a new or used chute, talk with other experienced pilots. Ask them if you can try their chute on, what they like or dislike about the chute, and so forth. You should also talk with a master rigger. Comfort is very important but so is matching a chute to your weight.

Many older used chutes may have factory Service Bulletins or FAA AD's, just like we have on our aircraft. If you buy an old chute, make sure your rigger does the research.

My personal opinion is that if you are in the cockpit at 1,500 agl and need to jump, it will be a race to survival. A lot will depend on the nose attitude of the glider.

If landing in the trees or wires, think thin. Cover your head with your arms and try to present a "thin" profile. Never try grabbing a branch on the way down. It won't work and you may severely injure yourself in the attempt.

If you land over water, use the same technique as you would over land. You will not know how deep the water is. Don't try the "release out of the harness" thing before you hit the water, like they do in the old war movies. You can't gauge heights over water. Hold your breath, and once you resurface, release the harness and swim away from the chute.

When your chute is due for a repack, strap it on your back at home in the living room and walk yourself through the mental bail-out exercise, including pulling the ripcord firmly all the way out (arm out stretched at the end of the pull).

Jumping at 2,500 feet and not deploying a parachute will result in impact in a little more than 15 seconds, depending on variables. It takes ten seconds to eat up the first 1,000 feet. Once you reach terminal velocity, the next 1,000 feet will be eaten up in five seconds and you will be traveling at a speed of approximately 120 mph.

Sport jumpers use a minimum altitude of 2,000 feet agl for opening their chutes. Few sport jumpers would jump out of an airplane at 1,500 feet agl unless they had to, such as after an aircraft engine failure. At 1,500 feet they would deploy their emergency chutes as they open faster and emergency chutes are considered more reliable by sport jumpers than their back chutes.

Reality check

Now that I have you thinking about jumping, let me give this final helpful hint. *If you need to jump, be prepared for a difficult exit and exit quickly.* Why? It is possible that your disabled aircraft could enter an increasing high-G configuration. To drive this point home to you, do the following. Sit in your favorite recliner at home and ask your wife or significant other to lay on top of you. Now ask a neighborhood kid half your weight to come lie on top of both of you. Next, count to three and then try to roll off quickly either side of your recliner. You have just simulated a two-and-one-half G emergency exit. If your glider is disabled and building G's, you must exit before the G's have you pinned helplessly in your cockpit.

I didn't eat, sleep, or talk much up until the day of the jump. I can honestly tell you I didn't think I would survive until towards the end of the pre-jump training session. They had us practice jumping off platforms at various heights sideways, backward, eyes closed, and so on. By the time it came for the real thing at the end of the day, I had "falling" down pretty well. I was also thankful that it was a static line jump because in the mind-blurring excitement of stepping out on the wing strut, I forgot virtually everything. The exhilaration upon landing is something I will carry with me all my days. Both Rick and I were so charged, we did several other jumps. We also swore a pact to stop the practical jokes, which lasted less than a week. And, yes, I overcame my fear of heights. However, to this very day, whenever I come across a flight of stairs or look over the roof of a building, I have an irresistible urge to close my eyes and jump backwards!

Credits

Special thanks to Allen Silver of Silver Parachute Sales and Service, Hayward, California (510 785-7070). I have talked with Allen on several occasions and used his articles in *Soaring* as a reference for this article, especially the bail-out procedures and insights. You can visit his web site at http://www.pia.com/silver/ to review his articles: "Before you buy your parachute," "Emergency bailout procedures," "How to take care of your expensive cushion," "All parachutes are not created equal," and "Is your life worth $50.00 a year?" Allen is an expert on parachute issues and a great guy to talk to.

I also want to recognize Randy Thompson of New England Parachute Company, Danielson, Connecticut (860 779-0229). I appreciate Randy giving me his time and insights, too.

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The Leading Edge is the newsletter of the MIT Soaring Association, Inc. The newsletter is edited by Mark Tuttle, and published every other month (more frequently during the soaring season). The submission deadline is the first of each month. Please send any inquiries or material for publication to Mark Tuttle, 8 Melanie Lane, Arlington, MA 02174; tuttle@crl.dec.com.

Iced up and nowhere to go

Eric Geiselman

After Mike Baxa's article about spinning last month and my own experience trying to finish up my instrument training, I was quite surprised to see this article by a Caesar Creek pilot about flying an iced-up glider. This article originally appeared in the April 1998 issue of AOPA Pilot *in the "Never again" column. —Editor*

It was a cold, ugly January day at our club's gliderport near Waynesville, Ohio. I was a new private pilot working on a glider rating. Although there were few takers that day, conditions were acceptable to bang out some training flights. The temperature dropped steadily all day, and by early afternoon activity at the club had slowed to a crawl. It was time to call it a day. I decided to log a solo flight and land long upon my return, stopping the glider at the midfield turnoff so that we wouldn't have to walk the glider down to the hangar.

I was strapped into our venerable Schweizer 2-33, when a slight drizzle began. "Not ideal," I though. But there I was, ready to go, with the tow plane fired up and in position. I didn't consider that had it been raining five minutes earlier, I wouldn't have been sitting in the glider.

On my tow up to 3,000 feet agl, I noticed that the droplets running back along the canopy were acting in accordance with the yaw string to indicate the quality of my coordination. I decided to explore this phenomenon a bit. After dropping off tow, I was trying some slips and skids when I noticed that the flow was no longer reacting to my purposely uncoordinated flight. The drops were freezing. "Ice, freezing rain," I thought. Now this *was* something to be concerned about. My body responded with an adrenaline surge. I had the presence of mind to get down — now.

By design, a glider does not like to lose altitude. I also had to consider my distance from the airport. Entering the pattern with excess energy would be as much of a problem as entering too low. I decided to get over the field and enter the pattern a little high so that I would have enough airspeed to make up for any decreased wing efficiency because of the ice, which continued to accumulate as I flew on. I was impressed with its rate of growth on the canopy. Soon I lost all forward visibility and could not see the yaw string attached to the variometer probe. I looked up at the rear cockpit string taped to the canopy just above my head. It would be usable, perhaps, but it was wet and possibly rigid.

Bringing my attention forward again, I wondered if the pitot-static system was being affected. What effect would the ice blockage have? I scanned the instruments again. Airspeed wasn't zero. Did that mean that it was working? Even if I knew what was blocked, I could do nothing to fix the erroneous indications. I'd use what I knew was accurate — the view out the side of the canopy, the sound of the slipstream, and the feel of the stick.

At midfield on downwind, I was pleased to find that the spoilers opened easily. I reminded myself to fly a good pattern and land long. I'd give myself some room for error. After my turn to base, I looked out the left side of the canopy while the approach end of the field slid by. When I was turning onto final, a difference in slipstream noise registered in my mind. I watched my intended touchdown point drop from sight as the airplane rolled right. I felt the sickening sensation of the nose dipping down. The spin entry caught me totally off guard. "So this is how it will end," I thought.

To my surprise, the glider responded easily to my recovery inputs. The familiar sound and feel of the ship returned. With a newfound clarity of mind, I quickly took stock of my predicament. Any confounding emotions at this point were shoved aside in favor of pure survival instinct.

I was now turned to a heading of 45 degrees for my westbound landing. From memory I imagined the forward view. Because I was set up for a long landing, I had enough altitude to attempt the 135-degree left turn onto final. The bank increased until I felt a slight tail buffet — just like thermaling. But I tried to rush the turn with too much rudder and a skid resulted. I felt a mush and a quick yaw to the left. This time the left wing dropped and I quickly and aggressively recovered. I now found myself heading south. I came to the conclusion that I wasn't going to get away with turning. I was now down to about 150 feet agl and committed to landing straight ahead. In front of me was a road perpendicular to my flight path and a plowed field beyond it. By this time the ice on the canopy was starting to break up. I touched down lightly in the field and rolled out straight ahead. After getting out, I saw that the glider skin did not match the ice-encrusted mental image I had fostered. There was very little ice at all. Most was on the nose and canopy.

The rest of my crew pulled up to the edge of the field, looking a little shaken. I later learned that they had witnessed my lumbering maneuvers on final. They saw the nose dip as the glider disappeared behind the trees standing between their line of sight and my flight path.

As I recall that day, I'm sure that the problem started when I decided to launch on the flight. Since then, my go/no-go decisions are based purely on safety. If I'm uncomfortable with flight conditions for any reason, I remind myself to ignore extraneous factors. I had also failed to properly fly the airplane and was fortunate enough to live through it. Perhaps my desire to see ahead led me to cross the controls and enter a forward slip. The high adverse yaw characteristic of gliders probably worked to increase the slip leading to the first spin entry. These days, the more stress I feel, the more concentration I afford to the basics of flying the airplane.

Eric E. Geiselman, of Dayton, Ohio, is a commercial pilot and CFI who flies out of the Caesar Creek Soaring Club and Waynesville Airport.