

Skydiving™

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Jump Shack Plans Move to Florida

The Jump Shack, Inc. distributors of the SST line of harness/container systems and dealers for a wide variety of parachute gear, will move to Zephyrhills, Fla., this fall. President John Sherman told *Skydiving* that his company expects to be settled into the loft at the Z-Hills Parachute Center by October 1, but admits that the schedule is "extremely tight."

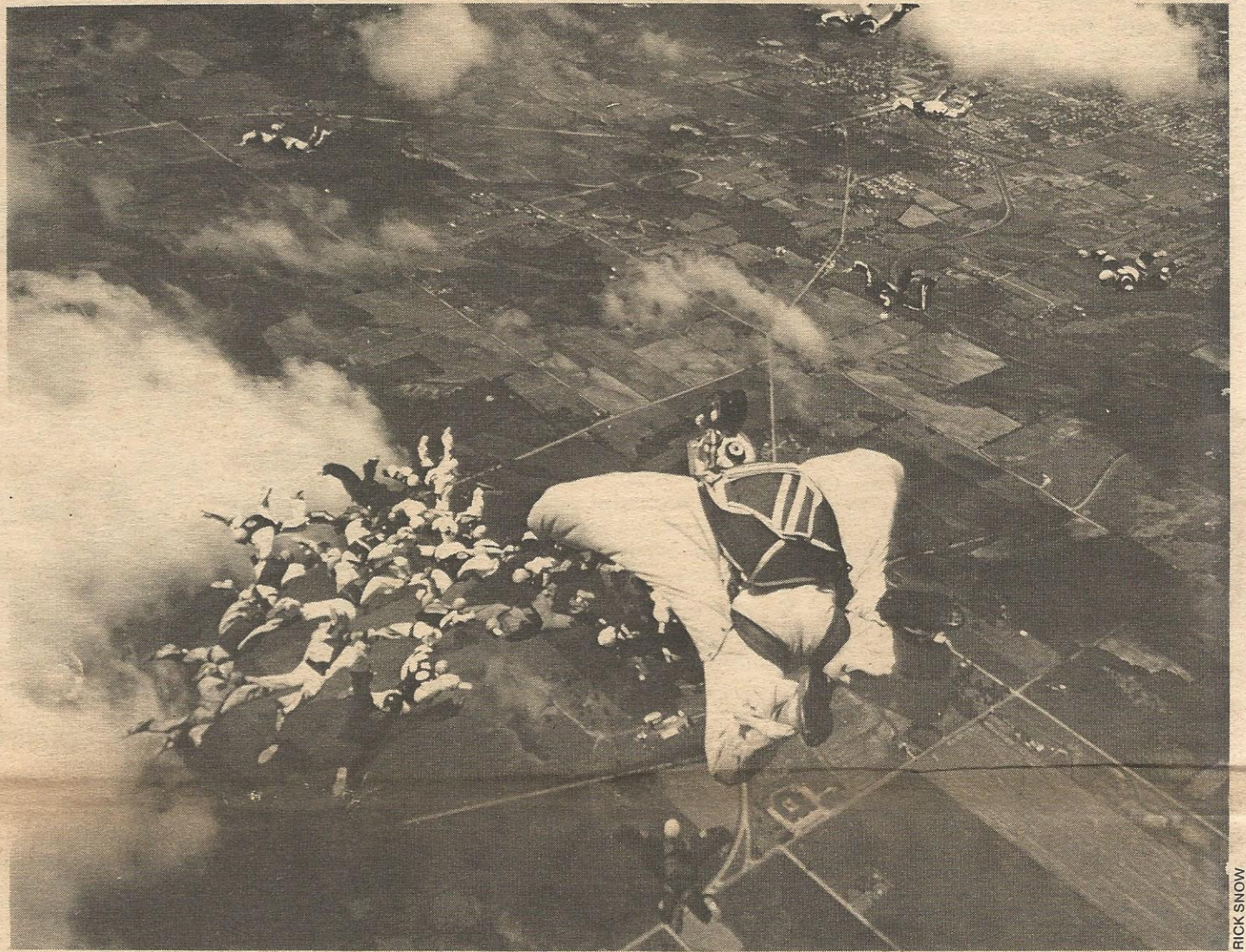
The initial set up at Z-Hills will include sales and service but no manufacturing, as SSTs will continue to be built in Michigan. The SST line, which includes the SST Racer and the SST Model T, is built by a separate company, Lite Flite, Inc., and distributed and sold exclusively by the Jump Shack to its dealers and the public. Sherman hopes to eventually move the manufacturing company to Florida once a suitable building is located or built.

"We'll probably always keep a shop in the Midwest," Sherman reported. "We've tied up sales so well in this part of the country that we want to stay around."

Perry Engstrom will move down from Michigan to manage the operation at Zephyrhills. It will employ one or two full-time riggers in the completely equipped loft.

The Jump Shack was founded nearly 10 years ago by Sherman and Mike Johnston in Michigan. It became well known as the manufacturers of the SST tandem system, one of the first light-weight piggybacks. The SST features the Pop Top reserve, built under license from Strong Enterprises, a reserve system where the pilot chute is externally mounted.

The Jump Shack isn't the first major parachute company to move to Florida in recent years. Strong Enterprises moved from Massachusetts to Orlando three years ago.



RICK SNOW

Camerman Rande DeLuca was filmed by fellow photographer Rick Snow over Richmond, Ind., last month.

Pelicanland Open for Business, Again

Pelicanland drop zone, closed since last winter when the management faltered, is open for business again.

Bob Branch of Mooresville, Inc., has signed an agreement with the Pelican Skydiving Club and the land owner to provide jump aircraft and management support for the DZ. Pelicanland is

located outside the small town of Ridgely on Maryland's rural eastern shore, about 90 miles from Washington, D.C.

Branch sent Chris Price from Indiana to Maryland last month to manage the DZ. Price brought a Twin Beech and a Cessna 180 with him, and jump operations resumed on July 21.

A DC-3 was not immediately brought in, as Pelicanland's sod runway was too wet. Branch has made arrangements with the new owner's of "Pacific Galactic," a well-known jump DC-3, to provide the aircraft.

The former managers and the club erected a new metal building last year to house a snack bar, pool room, classroom rigging loft and hot showers. Pelicanland has excellent facilities: the building, grassy packing area, pea gravel pit and parking area are all surrounded by farm land. Price says a campground will be set up next to the airport, and he's making arrangements with local residents to house visiting jumpers for extended visits.

Jim MacIntyre will continue to be Pelicanland's chief instructor. The drop zone has always had an active student training program, sometimes

training more than 100 first-jump students on one weekend.

Although the drop zone welcomes visitors, it is the home of the Pelican Skydiving Club, one of the oldest jump clubs in the United States. Membership is fairly restricted and pretty valuable: once in, a member is entitled to a discount on jumps.

The club has scheduled a grand opening, an Octoberfest Boogie, in early October to bring the region's jumpers out again. Local skydivers claim October offers excellent jump weather.

Ladies' Weekend Planned

DeLand Air Sports will host a Women's Weekend on September 29-30. The goal, according to Organizer Sheila Whitten, "is to get women together for an enjoyable weekend of WSCR attempts and perhaps a record attempt or two. Women from several states are already planning on being down here, so we should keep the DC-3 pretty busy."

Whitten emphasized that the event is "an open, good vibes" affair where everyone is welcome, males as well as females.

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Winners of annual collegiate championships would be eligible

PEIA, NCPL Consider Scholarship

The Parachute Equipment Industry Association is considering the establishment of a scholarship that would be awarded to a competitor in the annual National Collegiate Parachuting Championships. Alan King, the director of the National Collegiate Parachuting League, proposed that the PEIA consider "primarily scholastic standing and ambitions with consideration of personal financial status" in making the award.

Under King's proposal, the top finishers in any of the eight individual events and the members of the first-place RW team at the collegiate championships would be eligible for consideration. Cadets of any of the three military academies would not be eligible, as their educations are "free" in exchange for several years of active military service after graduation.

The NCPL Director and the PEIA awards committee would jointly determine the recipient after considering applications submitted by the top competitors. The cash award would be made directly to the winner's school to help defray actual educational expenses.

King is soliciting comments to his proposal, the full text of which is available from the NCPL at 806 15th Street NW, Suite 444, Washington, DC 20005.

The PEIA, which would provide the funds for the scholarship, will consider the issue at its next meeting.

The NCPL currently administers one other scholarship, the Istel Memorial

Scholarship. A substantial sum of money was donated in the early 1970's by Jacques Istel, a New York businessman and leader of the sport in the 50s and 60s, in honor of his father. The money is held in a permanent trust account and the interest that accumulates each year is awarded to the overall NCPL champion.

Historically, the Istel Memorial Scholarship has been won by very experienced jumpers who have returned to college after spending several years fulfilling military obligations or working.

Skydiver Bails Out of F-4 Phantom II

Robert "Lizard" Waltzer of Andrews Air Force Base, Md., a skydiver and member of the Marine Corps Reserve, was forced to eject from a McDonnell Douglas F-4 Phantom jet fighter last month when it collided with another F-4. The accident took place near Twenty Nine Palms Marine Corps Base in California on July 26th.

There were two people aboard each of the F-4s, and all four safely parachuted to the desert floor. Waltzer was riding in the rear seat of one aircraft while a photographer from Time magazine took pictures from the rear seat of the other.

Waltzer was able to log about three seconds of freefall after the rocket-powered ejection seat blew him through the F-4's plexiglas canopy and hurled him clear of the damaged jet.

He was back on the East Coast in a few days and made a jump out of the Twin Beech at Pelicanland, Md., on July 29th. Waltzer jumped with the Roller Ball Rules 8-way and the High Speed Dirt 4-way teams at this year's national championships.

Golden Knights Seek Applicants

The U.S. Army Parachute Team is seeking jumpers who want to try out for a slot on their team. Enlisted individuals on active duty in the Army with at least 200 freefalls and a perfect military record may apply for the try-outs, providing they are Airborne qualified and have at least two years of active duty remaining upon selection (or are willing to extend or reenlist).

Forms are available upon request from the team by writing Commander, U.S. Army Parachute Team, P.O. Box 126, Ft. Bragg, NC 28301. The application forms must be received by September 11, and those who are selected will then attend the try-outs which are tentatively scheduled from October 25 through December 10, 1979.

The Golden Knights represent the Army by performing many demonstration jumps at airshows and other events across the United States. Besides demonstration jumps, a portion of the team forms the competition squad which attends parachute meets worldwide.



Robin Heid launches off the railing of the Royal Gorge Bridge in Colorado. See page 19.

TROY LONEY

Suave Logs 4000th

Dave Suave made his 4,000th freefall over Tecumseh, Mich., last month and added his name to the short list of eleven skydivers who have logged that many jumps in the U.S.

Suave has been on the U.S. Parachute Team several times, most recently in 1972. A school teacher, Suave has been jumping since 1960.

Skydiving

Parachuting's Newsmagazine

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Skydance Plans Labor Day Boogie

Skydance, Inc., the company that operates the parachute center at Tahlequah Municipal Airport in Oklahoma, has scheduled a DC-3 boogie for August 30 through September 3. Manager Ken Hills decided to hold the boogie after the success of the one he hosted in late July.

"We had Sy Fraser's "Sky Train" in here in July on short notice and over a hundred jumpers showed up to make 20 loads," Hills reported. Nothing formal is being planned for Labor Day, and the \$5 registration fee is spent on food and beer for the participants. "Everyone definitely gets his money's worth," said Hills.

More information is available from the center by calling (918) 456-5114.

Hills also reported that federal funds are being used to strengthen and lengthen the airport's runways and taxiways. The result of the construction will be that the airport will be more suitable for the heavy use of larger aircraft such as DC-3, Twin Otters and Skyvans.

Although the airport currently has excellent drop zone facilities, with permanent showers, extensive lawn areas, a camping area and an administration building, the comparatively short and narrow single runway and taxiway make it difficult to conduct high-intensity jump operations with such aircraft.

Tahlequah has been the site of many U.S. National Parachuting Champion-

ships in the past, but the big runways and extensive taxiways at Richmond, Ind., attracted the USPA in 1978. Tahlequah is expected to bid for the event in 1980, proposing the use of Twin Otters or Skyvans as the RW aircraft. These two turbine-powered aircraft can easily operate from the existing facilities.

Connecticut Parachutists Schedule Meet

The Connecticut Parachutists, Inc., are planning a unique meet for the third weekend of September, according to the *CPI Newsletter*. The competition will feature a 2-man style sequential event that has been popular at the DZ near Ellington, Conn.

The event will be run in at least two classes and involves this sequence of maneuvers: 2-man, both right turn, 2-man, both left turn, 2-man, both back loop, then another 2-man. Points are awarded for every completed maneuver. The jump isn't over yet, as team accuracy then follows, all on the same jump.

Rules and other plans are being finalized, with more information being available from P.O. Box 953, Manchester, CT 06040.

U.S. Parachute Team Practices for World Meet

The U.S. Team's preparation for the World Parachuting Championships in RW was progressing well as *Skydiving* went to press. Both the 4-way and 8-way teams were fairly satisfied with their aerial performance, although some team members were concerned that the lack of money was seriously jeopardizing the teams' chances of winning at the world meet in France in late August.

Official team training was at Tecumseh Parachuting Service in Tecumseh, Mich. A Short Brothers Skyvan was contracted to provide aircraft support as it is an aircraft that most simulates the tailgate and exit airspeed of the Nord Atlas that will be used during the competition.

The last word from the meet organizers in France was that the Nord would be flown at 115 mph. The U.S. 4-way Champions, Tesseract from Athol, ID., had trained practically exclusively from 4-place Cessnas, Mirror Image prepared for the 8-way event from DC-3s. This meant that both teams were accustomed to exiting from the side of an aircraft that was traveling about 35-40 mph slower than the competition aircraft.

This was a matter of concern because both the events require a quick and stable first formation if maximum points are to be scored.

The Skyvan usually flies much slower on jumprun than 115 mph, but flying with increased power brings the speed up to the target airspeed.

The 8-way team had real problems at first, funneling their first seven exits. Things smoothed out after that however, and the team found it could consistently take a 4-man base off the tailgate with two floaters hanging on if the formation stayed stable enough. The last two jumpers would free-fly in.

After several jumps the team began to experiment with several first formations — a diamond, a T, and a star — which could be more easily gripped-switched to the first formation.

First formation times ranged from seven to eleven seconds after about ten practice jumps from the Skyvan. These times were comparable to the team's performance out of DC-3s.

Mirror Image took several weeks off after the nationals so the individual team members could prepare for the next month of practice and competition. One jumper quit his job as an airline steward as he was unable to get additional leave from his job with Pan American Airlines.

As a result of the layoff, the team found that it was relatively "uncurrent" in the air. A spokesman for the team said it took only a few jumps in Tecumseh, however, before the team was again beginning to "center point" formations, meaning that all eight jumpers would simultaneously fly in to build a formation, instead of building the formation man-by-man.

The top several teams at the nationals this year reported that center pointing was essential if a team expected to win.

Tesseract was having less problems than the 8-way team, although it too was putting much of its energy towards perfecting its exit. Like the 8-man squad, Tesseract had absolutely no tailgate experience before team training started. After several jumps they decided to continue to attempt to take the required first formation off the

tailgate instead of exiting in same formation each time and then transitioning to the first formation. Team Member Jeff Wragg reported that they would tighten the first formation up on the tailgate and hop off, hold on, and hope for the best.

Besides being "preoccupied with exits," as Wragg put it, the 4-way team had to become accustomed to new jumpsuits as they had been jumping the same suits for two years before switching before practice started. The team bought Super Suits built by Earl Bartel in the Northwest. (Bartel purchased the business from Tim Classon, who manufactured similar suits.) The suits have very little wing area.

"The 8-way team funneled their first seven exits."

Wragg reported that the British 4-way team is also doing quite well. He commented that their jumpsuits are extremely small, "practically Pioneer jumpsuits with modest arm and leg bells."

Besides exits, Tesseract was also working to improve their performance during the first six to eight seconds of freefall. "We've always felt one of our strong points was our ability to start scoring points in the first few seconds of the jump," Wragg said.

He also reported that random rounds were being practiced most.

Although the 8-way team was scheduled to leave Tecumseh on Friday, August 10 Tesseract had decided to stay through the weekend and jump out of Cessnas. Such practice jumps would be paid for out of the jumpers' own pockets.

Money and logistical support was frequently brought up by the several team members that talked to *Skydiving*.

For instance, only a fixed amount of money was available for practice jumps, enough to make about 25 jumps from the nationals to the beginning of the world meet. The Skyvan was contracted at an hourly rate, so efficient flying by its pilots and filling the aircraft with "fun" jumpers in addition to the team

"Central Atlantic Team Fund" Exits, money a problem

Schultz Establishes Fund for Team

Michael Schultz has established the Central Atlantic Team Fund to help raise money for practice jumps for the 1979 U.S. Parachute Team. According to Schultz, the team "is again the victim of the poverty syndrome," as the USPA is unable to provide "sufficient" money for practice jumps. According to Schultz, "The logistical needs for their travel, housing and entry into the world meet are satisfied, but their practice jump funds, at this moment, are *in vacuo*."

Schultz, who has been a member of the U.S. Team in the past and has competed at the national level in both RW and individual events, is sending out requests to clubs and other parachuting organizations in New Jersey, North Carolina, South Carolina, Virginia,

would mean that the cost per jump would be reduced, and the practice budget could be stretched further.

The result of this arrangement was that several competition members of the team became deeply involved in running the aircraft and managing the money. They would coordinate manifest, hustle jumpers, and insure the aircraft owners were paid at the end of the day. "You can guess what effect this is having on my concentration," one member-manager remarked.

Another was even more blunt: "I don't think a member of the U.S. Team should have to run a boogie during the practice session."

Other problems, caused primarily by money, were reported.

There were also reports of lost clothing and other irksome snafus. The team will rest in Paris several days and then travel to a small drop zone nearby where it hopes to make 12 to 15 jumps. Apparently the individual members of the team are required to arrange and pay for all their travel expenses inside the U.S., including travel from the jumpers' West Coast homes to Tecumseh to New York for departure for the USPA-funded flight to Paris. Likewise, they will have to return home from New York with their own money after the meet is completed.

Support for the team from the local businesses and residents of the Tecumseh has been "outstanding," according to a member of the 8-way squad. Harold and Judy Lange, who operate the parachute center, have arranged for free lodging for many of the team members at Boysville, a Catholic home for orphans and problem children. The team member added that "We fit right in at Boysville."

In addition, the local community has raised over \$600 in cash to help pay for practice jumps and Lange was confident the figure would reach \$1000. Also, two vans were loaned to the team by a local car dealer.

Aside from some poor jump weather which has restricted practice, there were relatively few incidents. Mike Eakins, a member of Mirror Image, dislocated a toe playing hackey and was required to see a doctor, but the injury was repaired with the help of a fat anesthetic needle.

Another Mirror Image member, Craig Fronk, suffered two malfunctions only a few days apart. The first occurred after he strapped on his brand new Wonderhop, fresh out of the shipping crate, and jumped it, since it was already packed. It was packed or assembled incorrectly, however, and Fronk had to breakaway from the Para-Flite Cruisair.

Then, five jumps later, the French rapid link on one riser opened up because the barrel was not securely tightened. Several lines popped off and another breakaway was necessary. Both landings under the Para-Flite Safety-Flyer reserve were uneventful.

Craig, who has over 3,000 jumps and a rigger's certificate, was advised to thoroughly inspect new parachute gear before jumping it.

The U.S. Team isn't the only national team practicing at Tecumseh. Both Canada and Great Britain sent 4- and 8-way teams. The British team has a helmet-mounted Polaroid PolaVision instant movie camera which was used to film some of the U.S.' jumps. Jeff Wragg made several favorable comments about the system.

The USPA had earlier looked into the possibility of borrowing the ground-based video unit from DeLand Air Sports, the company that had loaned the association the unit for use at the nationals. But there was no way of transporting the unit from Florida to Michigan, nor was a trained operator available, so the project wasn't pursued.

The teams did make use of a video system at Tecumseh, however, as a portable unit was aboard the Skyvan to film exits.

The U.S. Team flies to Paris on August 13th. After several days rest, it will travel to a small drop zone nearby to make perhaps 10-12 practice jumps from a single-engine, side-door Pilatus Porter. Then on to central France for the world championships.

Schrimsher Picked as U.S. Judge

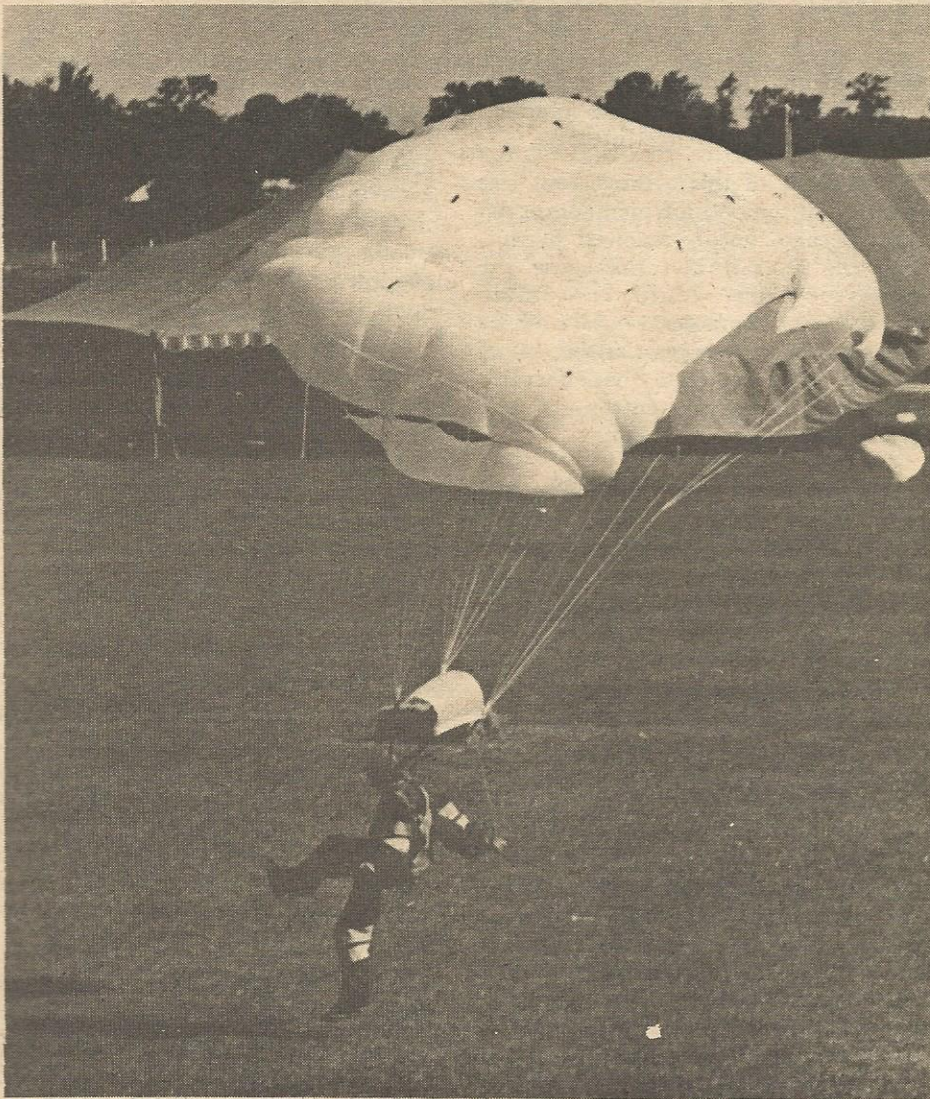
Sherry Schrimsher of Dallas, Tex., has been selected by the USPA to attend the world meet later this month as the United States' judge. She will join the staff comprised of judges sent by many of the countries of the International Parachuting Committee of the FAI.

Schrimsher received her international judge rating in the spring of 1978 after having been active in judging since 1968. She served at the 1974 U.S. nationals as a training judge and has judged in every nationals since then. She was chief of judges' training in 1978.

She has been active in several areas of the sport besides judging. She holds a USPA Class C license, jumpmaster rating and an FAA rigger's certificate. She's also a certified pilot.

Schrimsher served as an officer in the Dallas Parachute Association for ten years. Her husband Jerry was USPA Southwest Conference Director for six years, and she helped with the "paper work," including analyzing accident reports and publishing the conference newsletter.

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Pioneer Merlin touches down at Richmond, Ind., during the national championships.

Pioneer Merlin Almost Ready

Jim Mowrey, marketing representative for Pioneer Parachute Company, reports that the company's 200 square foot 7-cell ram-air canopy should be available from dealers by the first of September. Final design refinements were being completed in early August. A suggested retail price was not available.

As reported in a previous issue of *Skydiving*, the Merlin will compete with the Para-Flite Cruisair, the GQ Security Unit and the NAA Jalbert 200 for the mid-size canopy market.

Like the Merlin, the Jalbert 200 is not yet being sold, leaving the market temporarily to Para-Flite and GQ Security. Both of these companies are continuing to experiment with even lighter and less bulky versions of their popular canopies. GQ Security, for instance, has installed extremely thin Kevlar lines on several factory-owned Units and report

that the decreased drag has resulted in a noticeable increase in forward speed.

Kevlar is a synthetic fiber that is much stronger per unit weight than nylon, so that a suspension line that tests at 400 lbs. is not much thicker than a pencil lead. Kevlar is widely used for drogue and recovery parachutes in other aerospace applications, but its relatively high cost, low abrasion resistance and inelasticity has effectively prevented manufacturers from using it successfully on sport parachutes.

Para-Flite, on the other hand, has released several Cruisairs for field tests that weigh less and pack up much smaller than the current design. Whether the new design will be mass produced will depend on the result of the field tests, as the company must be satisfied the lighter design will provide sufficient durability.

Adoption may be a long time away

New TSO Standards Drafted

The TSO Committee of the Parachuting Equipment Industry Association has completed its final draft of a new set of TSO standards that, if adopted by the FAA, will result in safer parachutes for skydivers and civilian pilots and passengers.

According to federal law, reserve and emergency parachutes carried for use in the United States must be manufactured and tested according to Technical Standard Order-C23b, or TSO-C23b. TSO-C23b is primarily a list of performance tests to which a manufacturer must subject his parachute designs. The tests include drop tests, pull tests, and other experiments which are meant to insure the parachute will work as designed once it is sent to the field for use by the public.

The current TSO standards were adopted in 1949. Since they are thirty years old, they don't take into account today's parachuting technology and parachute materials. Most manufacturers and FAA officials have recognized that TSO-C23b is outdated, that certain tests needed to be added while others deleted.

Dan Poynter chaired a committee of industry representatives in 1974-75 that met several times and hammered out a draft of a revised set of standards. The committee was formed under the auspices of the National Automotive Society, a private association that the FAA looks to provide expert recommendations on reasonable safety standards for a variety of transportation modes, including flight. The society wrote NAS 804 back in the 1940s, and The FAA adopted that document as the standards of TSO-C23b.

The recommendation of Poynter's committee were soon officially adopted by the National Automotive Society which in turn forwarded it to the FAA in 1976, proposing that they be adopted as the new TSO-C23c. The new standards were designated AS 8015, to replace NAS 804.

The FAA contacted Poynter three years later, in March of this year, saying they were ready to act on the proposal, although a few changes were in order. The PEIA, which had formed in the intervening years, quickly decided that it would like to reconsider AS 8015, as developments in the sport in the last three years had made such a review necessary.

The PEIA formed a committee earlier this year and selected Elek Puskas, president of Para-Flite, Inc., to chair it. The committee met three times to draft their recommendations for changes to AS 8015, which they hope will be adopted as the new TSO-C23c.

The latest recommendations were finalized in mid-July and were submitted to the National Automotive Society on August 1. Major changes from the current TSO standards include:

- **Environmental tests.** Packed parachutes must be tested at extreme environmental temperatures for periods of time and then tested to see if they function properly.
- **Recognition of auxiliary parachutes.** The current standards do not recognize the difference between emergency and reserve parachutes, but the proposed document does.

• **Qualification of individual components.** A manufacturer could, under the proposed TSO, certificate individual components such as canopies and ripcords instead of being required to TSO entire assemblies as is now required. A manufacturer would have to publish a list of component interchangeability to help insure riggers combine only the proper components.

There are other changes in the proposed standards, such as the elimination of the Low Speed and Standard categories in favor of three weight/speed categories. Each proposed change was carefully considered to insure innovation wouldn't be restricted, but that the parachutes would be safe. Also, the committee tried to keep the standards as simple as possible without compromising safety.

It is expected that the NAS will make no changes to the new standards before they are forwarded to the FAA later this year.

But no one knows how long it will take the FAA to act on the proposals, or what the agency's action will be. Since parachutes do not receive the same amount of attention as airliners, FAA action on changes to parachute regulations has been very slow. It took the FAA over eight years to extend the reserve repack cycle from 60 to 120 days, in spite of persistent requests by the USPA.

And recent events such as the McDonnell-Douglas DC-10 crash near Chicago has brought the FAA under fire for being too cooperative with aviation equipment manufacturers during the certification process. The result of this criticism is that the FAA is expected to be tougher on manufacturers who are designing and testing new aircraft and aviation components.

The recent resignation of Transportation Secretary Brock Adams may also ultimately delay the agency's response. The FAA is an agency of the DOT, so a change of secretaries may be felt throughout the department as the political axe swings.

In other words, it may take several years before the new TSO standards are adopted.

Corrections & Clarifications

Issue #2 of *Skydiving* stated incorrectly that the Jump Shack's Model T SST for students had a "universal emergency handle." Actually, the rig has a canopy release system that is independent of the reserve ripcord handle. The Model T does have a static line from the main risers to the reserve ripcord assembly. This static line will deploy the reserve if the jumper breaks away from a partial malfunction. However, pulling the reserve ripcord handle manually will not jettison the main canopy; the wearer must do this separately.

Issue #2 also incorrectly stated that three competitors had won the Combined Overall RW award for the last three years. Actually, only two were consecutive winners, Mike Eakins and Mike Gennis.

We regret these errors.

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"Lopo Lite" will complement the company's other reserve

Strong Enterprises Offers Lightweight Reserve

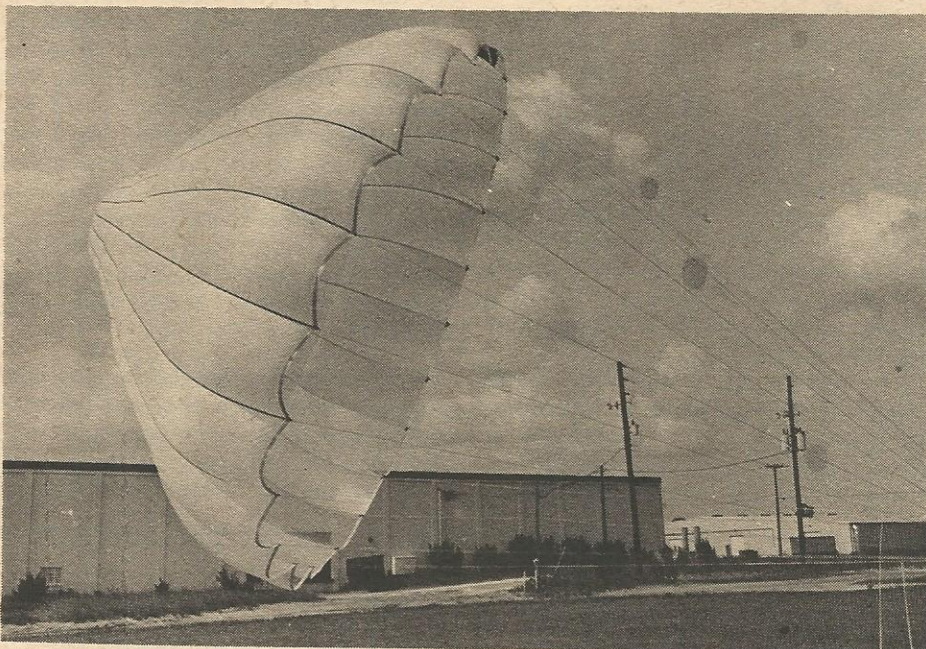
Strong Enterprises of Orlando, Fla., has completed the TSO testing of a lightweight version of its Lopo reserve and is preparing to market the canopy in September. The reserve, called the Lopo Lite, was designed to meet the needs of jumpers and pilots who want the minimum in weight and pack volume.

The Lopo Lite is very similar to the Strong Lopo, a reserve the company has been selling for about eight years. The Lopo Lite has gores of the same size and shape as the Strong Lopo and is built from the same 1.1 oz. low porosity fabric. Steering ability and forward drive is the result of the same mesh-covered tri-vent modification developed by the company in the late 1960s. And, like the Strong Lopo, the Lopo Lite features a deployment diaper, another concept made popular in the sport market by Strong Enterprises.

In spite of similarities, the Lopo Lite incorporates several significant design changes from the other reserve. The lines are 400-pound test uncoated nylon, making them less bulky than the 650-pound lines on the Strong Lopo. Thinner reinforcement tapes have been used throughout in another effort to reduce weight and pack volume. The apex of the Lopo Lite for example, is considerably less bulky than that on the other reserve.

A major design change is the "removal" of two gores; the Lopo Lite has 22 gores and suspension lines instead of 24 as in the Strong Lopo. Ken Colman, production manager, told Skydiving that removing the two gores did not affect the rate of descent or other flight characteristics of the canopy.

The deployment diaper was also redesigned. On the Lopo Lite, all suspension lines stow on the diaper so that the stowed lines are carried away from the jumper during deployment. This is important if the jumper is tumbling or otherwise unstable during deployment as it helps prevent the jumper from entangling with the lines towards the canopy, where the results could be disasterous.



The Strong Lopo Lite. The canopy has 22 gores, a mesh-covered tri-vent modification and deployment diaper.

figure of a bit less than six pounds. This weight includes suspension lines and two French rapid links but does not include pilot chute or bridle. The canopy will be shipped with separable connector links instead of the French links so it will be compatible with the reserve risers found on most harnesses. French links are slightly lighter than connector links.

The Lopo Lite will first be certificated in the FAA Low Speed category for use as an auxiliary parachute or an emergency parachute up to speeds of 150 mph. The company intends to then subject it to the tests required for Standard Category certification. Meeting these so-called "high speed" requirements would make the canopy suitable for pilots who fly high-performance aircraft.

Coleman explained that the Lopo Lite will not replace the company's other reserve. "We intend to keep manufacturing and marketing both.

Some jumpers will want the heavier Strong Lopo because of its excellent reputation and the fact that it is, by design, more durable. But jumpers who want a 'Piglet-size' canopy to fit the smallest rigs that are being made today

will probably opt for the Lopo Lite." The Piglet is a small reserve designed and manufactured by Para-Innovators of Elsinore, Calif.)

Both canopies have the same suggested retail price: \$345. The company intends to build the Lopo Lite in white only while continuing to offer the Strong Lopo in a variety of colors and patterns.

FAA Comes Down on Pilot

The Federal Aviation Administration reports that a federal grand jury has indicted a California man for making false statements on an FAA medical certification application. The pilot is charged with making misrepresentations to the FAA on his 1977 and 1978 applications.

The FAA said that although the man claimed he had no record of traffic or other convictions, his record actually included convictions for possession of dangerous drugs, being under the influence of dangerous drugs in public and drunk driving. If convicted on both counts he could face up to ten years in prison or a \$20,000 fine or both.

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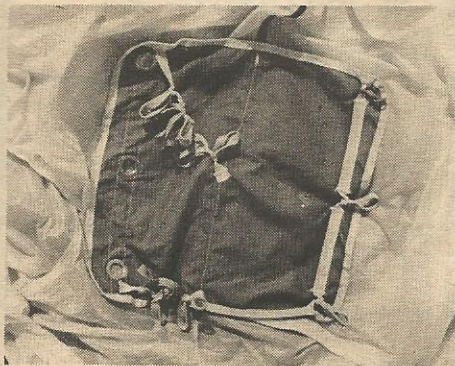
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Skydiving, August 8, 1979/5

Army Will Field A 4-Way RW Team in 1980

The U.S. Army Parachute Team will field a competition RW team for the 1980 season, contrary to reports immediately after the U.S. nationals that said the team might be disbanded.

Commander Jerry Fry told *Skydiving* that these earlier reports were "absolutely untrue." The team finished first in the 8-way event in 1978, and the rumor at Richmond was that Fry was unhappy with the team's third place finish in 1979.

Fry explained that the team lost three members of the 1978 squad and therefore got off to shaky start in 1979. The team's bronze medal this year was considered by Fry to be "a significant

accomplishment" and he was "very happy" with the team's performance against the other highly competitive 8-way contestants.

The team held a meeting in Richmond to hash out what should be done for the remainder of the year. It was decided to disband the 8-way team and form a 4-way team. Apparently this 4-way team will compete in the 1980 season and an 8-way team will probably not be formed.

The decision was reached for several reasons. Four regular 8-way members are either getting out of the Army or being reassigned elsewhere. Matt McManus will be discharged next month,

Bill Wenger gets out next spring, Greg Van Camp will become a civilian next summer and Mike Sweeney is on orders for Italy.

Unlike civilian competition teams, the Golden Knights cannot draw highly experienced jumpers and put them in the line-up immediately. "We're not in the same situation as other teams. We have to take a guy that comes to the try outs, teach him everything, and integrate him into the team," Fry reported. This restrictive process means that losing even one or two experienced team members can seriously hamper the team's performance for months, until replacement jumpers can be found and trained.

Another reason for shifting the emphasis to 4-way is money and aircraft availability. A 4-way squad can train with the style and accuracy team out of a single-engine DeHavilland Otter,

rather than requiring a larger airport and a twin-engine DeHavilland Caribou. Since the entire Army Parachute Team operates on a very tight budget, according to Fry, supporting an 8-way team becomes a very expensive proposition.

The 4-way team began training in July. In addition to practicing for the 4-way sequential event, the RW team is helping to teach relative work to the style and accuracy squad. (Several of the international military meets that the style and accuracy team enters now include RW.) Also, the 4-way team is performing some demonstration jumps in the Ft. Bragg area, filling in for the regular demonstration squad when it is on the road.

The 4-way team is currently jumping the same gear the demonstration team jumps: full-coverage Bell helmets, French paraboos, and Pioneer "slick" jumpsuits. Not only is this type of gear necessary when training the style and accuracy team, it was also required because of budget considerations.

"A lot of people think we have an unlimited budget. That's not true; money is always very tight. Money that we have wanted to use to buy the latest jumpsuits, for example, might instead be spent to make an unexpected repair on one of our aircraft," Fry explained.

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Techniques Found that Reduce Canopy Stack Oscillations

Tom Courbat, the administrator of the CRW awards, reports that two different ways have been found to reduce the oscillations of big canopy stacks. The problem with building big stacks has been that pendulum-like oscillations set in, making it difficult for more jumpers to dock or causing the stack to fragment into two or more smaller stacks.

The two techniques were discovered independently by the two teams that formed several big stacks over Richmond, Ind., last month.

The team from Xenia, Ohio, found that stack oscillations could be reduced

if each jumper holds the upper leading edge of the canopy below him or her as far out towards the wing tips as possible. If an oscillation starts, the jumper should firmly press down on the side which is oscillating up, repeating the pressure with the other arm if the oscillation continues to the other side.

The other method was discovered by Courbat while he was jumping with the Cheap Trick CRW team. He discovered that the seventh person down in an 8-stack can effectively damp the stack's oscillations by pulling on the leading edge suspension lines. If the canopy below begins to oscillate to the

left, pulling up firmly on the right center A-line will reduce the amplitude, or severity, of the oscillation. When the canopy below begins to swing back the other way, to the right, pulling up sharply on the left center A-line will help make the stack stable again.

Courbat points out that the bottom person in the stack can do almost nothing to stop an oscillation except cross his legs to form only one pendulum point instead of two. The key person in smoothing out a stack is the second one

from the bottom if Cheap Trick method is used.

The teams also discovered that line docks instead of cell docks tended to keep the stacks stable. A line dock is where the upper jumper gently docks into the lines of the lower canopy and doesn't touch the canopy itself except to get grips.

The techniques apparently work, as the Xenia team built a 12-stack on July 6 while Cheap Trick built a 10-stack at the same time.

"Open" Jump Training Proposed for U.S. Army

A proposal to open airborne training to soldiers who are not being assigned directly to an airborne unit is being considered by the Pentagon. Expanding the program would allow the Army to rebuild its paratroop force to desired levels.

Several options are being considered, including:

- Permitting soldiers who are headed for a short non-airborne assignment to attend airborne training before departure. They would fulfill their airborne service obligation upon return to the United State later.

- Sharply increase the number of combat service and support personnel

attending airborne training, such as cooks, administration specialists and maintenance specialists.

The shortage stems from a regulation change four years ago which prohibited airborne training for soldiers unless they were scheduled to move directly to an airborne assignment following jump school.

Exceptions to this policy are military academy and ROTC cadets and National Guardsmen who can attend jump school only during the summer. New second lieutenants are eligible for airborne training regardless of their assignment, also.

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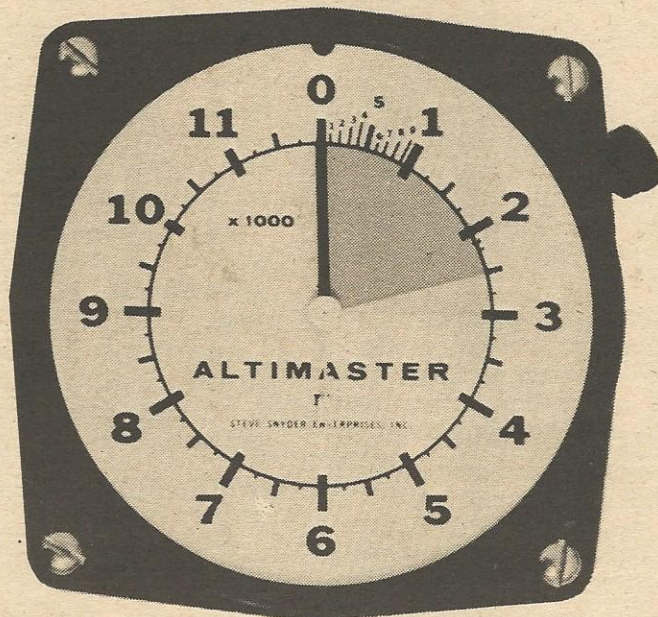
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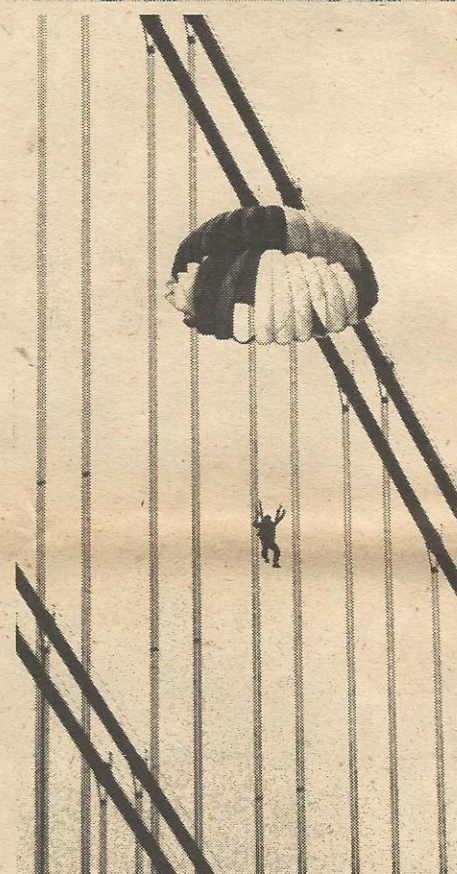
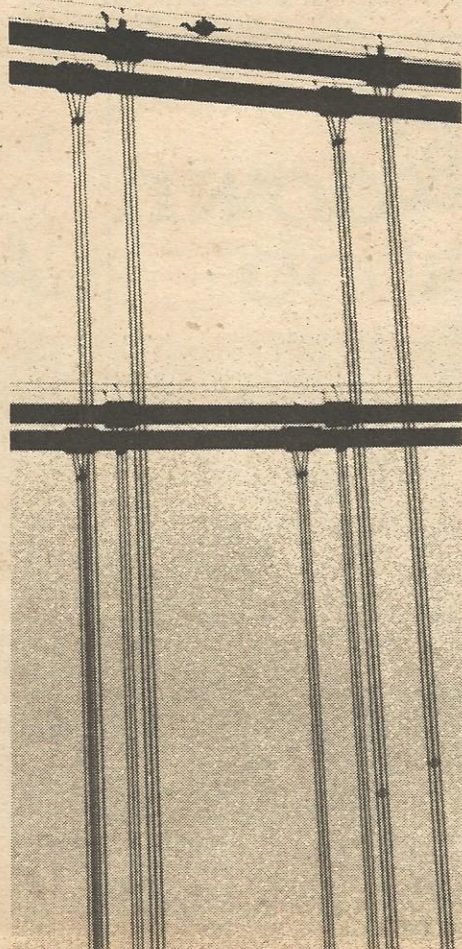
Jumper Leaps Off Verrazano Bridge

Gary Jensen of the Long Island Sky Divers celebrated his 39th birthday by making a static line jump off the Verrazano Bridge in Brooklyn, N.Y., on July 16. Jensen climbed to the uppermost part of the suspension network that supports the big bridge, tied his static line to the handrail, and leaped out over the water 370 feet below. The 28' canopy opened quickly. Jensen wore a life vest for the subsequent water landing.

The jump was witnessed by a crowd of about 100, including his wife. He had been talking about the jump for about a year.

Bill Delaney, the club's secretary, observed the jump and commented, "The last time I witnessed anything as exciting as that was when Artie Perkins made his 1000th jump. To see a guy get into a star, open his main, cut away and fly back into the star again takes some flying."

These four photos show the sequence of Jensen's jump. He probably fell only 100 to 150 feet before full canopy inflation. He jettisoned the canopy soon after he entered the water, as planned, due to the swift current. Photos by Rose Fazio and Bill Delaney.



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Skydiving, August 8, 1979/9

Using Smoke Requires Extra Preparation

BY C.J. WENTZEL
Diagrams by Karen Juba

With the advent of legal smoke procurement right around the corner, organizers of demos might want to consider the more frequent use of smoke in their shows.

If you've never used smoke before, I strongly urge you to learn all you can about it before you try. Dan Poynter published a comprehensive article on using smoke in the January, 1972, issue of *Parachutist*, and Bill Cole authored one for the March, 1972 issue of *Canadian Parachutist*.

There are several precautions that I suggest to people using smoke for the first time. Learn about it before you are required to use it. If possible, wear smoke on a skydive or two just to get used to it. Everything is a little easier the second time around and during a demo is NOT the place to learn a routine. (When jumping smoke for practice, be sure to tell everybody, including the pilot, what's happening.)



An M-18 smoke grenade.

The most commonly used smoke canisters were originally made for the military who used them in the field to signal aircraft and similar purposes. They are designated "M-18 grenades," and the color of the smoke is painted on the top of the canister. They typically burn for 50 to 90 seconds, with some colors, such as red, burning relatively cool, while others, such as green and white, burn hot.

Some white grenades are dangerous as they contain phosphorus and burn very hot (some even explode). Some veteran demo jumpers avoid all white smoke canisters to be safe. Those canisters marked WP-M15 will explode — they have detonating fuses — and obviously shouldn't be used for anything

except destroying an invading force.

Smoke canisters should be handled and stored carefully. High humidity and temperature will damage smoke, causing it to burn poorly or not at all. The dye used to color the smoke usually can't be washed out of your jumpsuit or gear, let alone the inside of a car or airplane. And a burning canister sprays out a hot waxy residue that both burns and stains.

One final warning: several jumpers have been killed when their smoke brackets entangled with their deploying main or reserve canopies, resulting in horseshoe malfunctions. Using a bracket that can be quickly jettisoned will help somewhat, but being careful at pull time is the best precaution.

Remove the spoons for smoke carried aloft. It is important not to drop anything during parachute event, not even a measly smoke spoon. See diagram (F) on how to do this. Smokes used by your ground crew *must not* have the spoons removed. The spoon or handle controls the ignition by a ground user, so leave it in place and keep your helpers happy.

One of the first considerations is placement of the aerial smoke. Will it be connected to the jumper's leg or ankle by means of a bracket, or will it be free swinging on a lanyard? Obviously for freefall smoke, the question is a moot point, but there still remains the question of how many to carry. Two in freefall is my usual and I prefer a single bracket for each smoke canister I carry. If a demonstration warrants more, however, I've worn as many as four on one leg. A simple smoke bracket can be constructed very easily. You can spare yourself the trouble of making the brackets by buying them from most parachute equipment dealers.

Positioning the smoke bracket on your leg is important. For years, I wore my bracket with the smoke facing to the rear. Somehow, it always looked right. But there was always the dye residue on my container and jumpsuit. We finally tried wearing the smoke pointing away from the leg at 90° perpendicular. This worked much better. The problem became obvious when leg placement in freefall was considered. Occasionally, it is necessary to tuck up drastically and

this freefall body position causes the smoke to come in close proximity to the jumper's rig. An outboard smoke placement tends to burn away from the body as its slipstream is away from the jumper's burble. See diagram (G). This technique is not foolproof, however. A burn or two still occurs now and then.

That might alleviate this problem is to put a baffle over the generating end of the smoke can. You can make one out of a tin can and use a hose clamp to attach it, as shown in diagram H.

Green smoke burns out of both ends and can't be effectively baffled. It also burns much hotter, and I don't recommend it for freefall use.

Smokes on a lanyard always add a colorful touch when we spiral down under canopy to the crowd. I've done my

In the case of multiple smokes on a lanyard, I suggest a 40" separation between each smoke. It has proved to be the best distance when you don't want the colors to mix. When you want a heavy smoke flow of the same color, clamp them close together. I use at least 15' of 550 cord or tubular nylon between me and the highest smoke on the lanyard. Be sure to leave at least 10" of chain between the top smoke and your lanyard bridle. Lanyards are carried inside the jumpsuit or in a smoke "pocket" until canopy inflation and brake release.

One of the most popular combinations that I developed for demo jumps is what I call my "rainbow jump." Here I dangle four smokes in

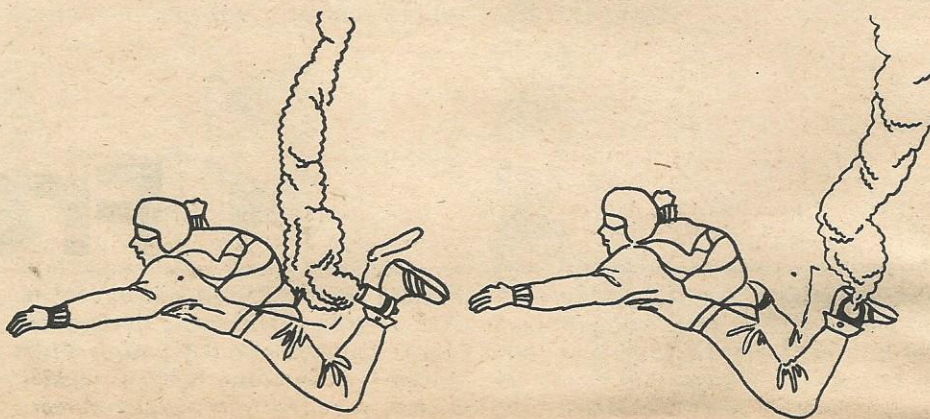


Fig. G. The right way and the wrong way to wear a smoke grenade in freefall. On the left, the wrong way, tends to direct the smoke flow towards the jumper's rig and jumpsuit. On the right, the smoke tends to burn away from the jumper.

spins with smoke on an ankle bracket and people liked it, but it always made a better impression when the smoke was flown at the end of a free flying lanyard. A lanyard is very easy to construct. See diagram (I). I've found a light-weight tangle-free chain the best to use. The smoke grenades are attached to the chain with a hose clamp. If you can find the ones with the little knob for tightening, instead of the ones which need a screwdriver, great.

their order in the spectrum, from the top down: red, yellow, green, then violet. (Eventually, we'll have orange and blue smoke as well, and that will complete the effect. Imagine red, orange, yellow, green, blue, then violet. It will be fantastic. But for now, the only colors readily available are the four I mentioned first.) Dream up as many combinations as you can, and let me know the ones that turn out really sharp. I'll try it on my next demo.

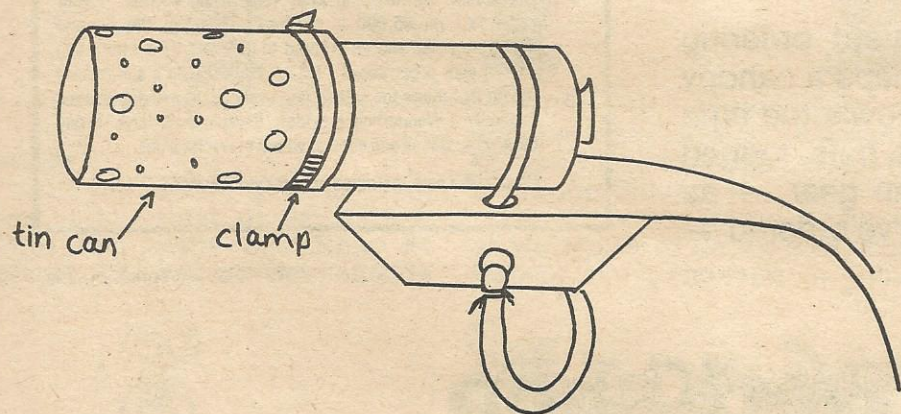


Fig. H. This diagram illustrates a baffle that traps much of the dye residue while still allowing the smoke to flow freely. It can be made easily by clamping a tin can with holes punched in it over the smoke with a hose clamp.

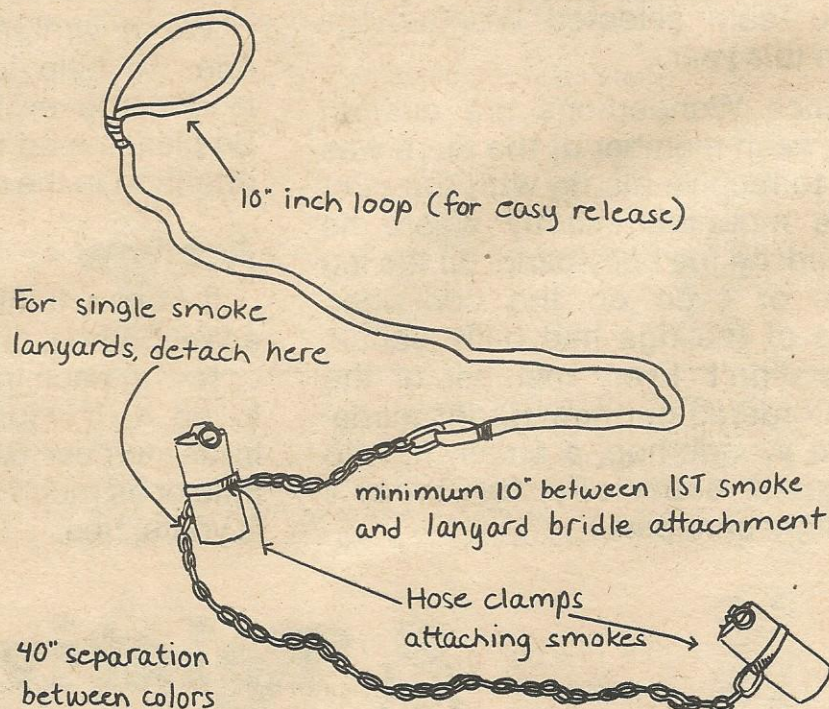


Fig. I Illustration of a multiple smoke lanyard for use when under canopy.

Suggestions for Using Smoke

1. Store, handle, and use smoke very carefully.
2. Use ground crew to secure smoke after the jumper lands.
3. Keep canisters away from spectators. Kids love the canisters, but they'll get burned if they pick up a hot one.
4. When using lanyards, keep your canopy off of the downed smoke canisters. The canopy will melt if it lands on a smoke, whether smoke is being generated or not.
5. Take time to teach your demo team members and ground crew how to handle smoke. Used correctly, it's an asset. Melted canopies and burnt fingers certainly can be prevented.
6. Don't drop ANYTHING on a spectator, even the lightweight spoon or pin.
7. If you use a single smoke on a bracket in freefall, and use a hand deploy pilot chute, wear the bracket on the opposite side from the hand deploy. Pilot chutes and smoke brackets DO NOT MIX. Being stable during main and reserve deployment is important.
8. DO NOT remove spoons for the ground crew's smoke!
9. When pulling the safety rings either on the strut, in freefall, or under canopy, keep them; DON'T DROP THEM.
10. Inspect your brackets for wear. Replace bungee cords or release tapes *before* they fall apart. Preventive maintenance will save more grief than you can imagine.
11. Green smokes burn the hottest. Don't wear them on an ankle bracket.
12. Position safety ring so it can be freely pulled and won't snag. Straighten the pin before you exit so it can be extracted easily.
13. Attempt NO smoke spoon removals near fuel or flammable materials of any kind.
14. If an inadvertent ignition happens inside the aircraft, *get the smoke outside the door at once*. Discuss this procedure in great detail with the pilot and other jumpers and/or spectators. You can prevent this necessity by taking care not to allow a smoke to go off until you are ready.
15. Don't use the term "smoke bomb" around the FAA or demo sponsor; call it a "smoke canister" or "smoke generator" instead.

About the author

Chris Wentzel has been parachuting since 1970, making his first jumps with the Army Special Forces. A year later, he returned to the University of Maryland, joined the local skydiving club and has been an active skydiver ever since. From 1976 to 1978, Chris was the fulltime NCOIC for a National Guard parachute demonstration team in Maryland, the Minutemen. He organized several hundred demos during that tour. Along with

parachuting for the public, Chris has been shooting still pictures and 16mm movies ever since he began skydiving. He is a member of USPA, holds a "D" license, held a jumpmaster and instructor rating and has logged over 1300 freefalls. Chris has earned the SCR, SCS, NSCR, WSCR, XX, PHD, Gold Wings, and 4 stack CRW awards. He is currently training the Wings Parachute Teams, a series of parachute demonstration teams that will operate on the eastern seaboard.

AN-2 Flying at Southern Cross

Southern Cross Paracenter's Antonov AN-2 jumpship got back into the air on the weekend of August 4th. Mechanical and legal problems have kept the aircraft grounded at the center near Downsville, Md., for ten months.

The huge single-engine biplane was built in Poland for parachuting and cargo operations and was imported to the U.S. several years ago. The aircraft does not have a U.S. type certificate so it has been flying under an Experimental certificate issued by the FAA. One of the restrictions of an Experimental certificate, however, is that the aircraft cannot carry passengers for hire.

Southern Cross flew jumpers with the AN-2 for a while until the FAA stepped in and stopped such flights months ago. Drop Zone Owner George Kabbler, who leases the AN-2, has been waging a legal battle with the FAA since then.

The aircraft has also had electrical

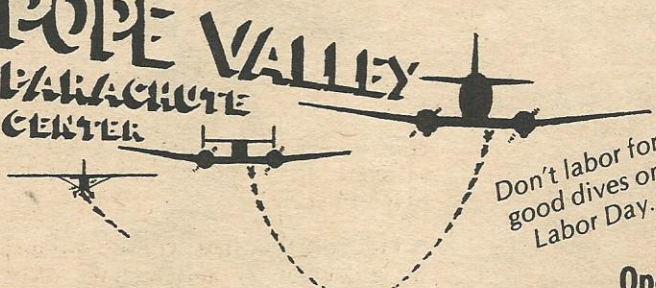
problems which apparently have been solved by the extensive installation of U.S. equipment.

Whether the aircraft will now be used for regular jump operations wasn't clear at press time, so skydivers should contact the center first before they travel just to jump the unusual aircraft. Southern Cross also has an eight-place DeHavilland Beaver.

Although the AN-2 is unique in this country, many thousands of the Russian-designed aircraft serve as utility aircraft in communist countries around the world. Besides hauling cargo and jumpers, AN-2s serve as crop dusters and passenger aircraft.

The AN-2 at Southern Cross has a factory-installed inflight jump door, an in-the-floor spotting window, a jumpmaster's seat with flight instruments and other features for skydiving. Its big cabin can accommodate at least 12 jumpers.

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CALENDAR

August 25-26: Mid-Eastern Parachute Association Meet, Ripcord, New Jersey. Three classes of accuracy, two classes of RW. FMI: Frontier Skydiving Club, (716) 751-9981.

August 30 — September 3: Skydance DC-3 Weekend. Tahlequah, Okla. FMI: Skydance, Inc., P.O. Box 1153, Tahlequah, OK 74464. (918) 456-5114.

September 1-3: Labor Day Boogie, Pope Valley, Calif. FMI: Pope Valley Parachute Center, Box 166, Pope Valley, CA 94567. (707) 965-3400.

September 1-3: Skyvan Boogie, New Hanover, Penn. FMI: Walt Schneider, (201) 689-5649, days.

September 8-9: Carolina Council Parachute Meet, Barnwell, S.C. FMI: Jo Matthews, 308 Elaine St., Spring Lake, NC 28290. (919) 497-6962.

September 15-16: Two Man Style Sequential Meet. CPI DZ, Ellington, Conn. Two classes with team accuracy. FMI: Connecticut Parachutists, Inc. P.O. Box 953, Manchester, CT 06040. (203) 633-4258.

September 15-16, Freefall Scrambles and CRW 4-Stack Meet, Xenia, Ohio. FMI: Patt Valley, (513)372-7073.

September 1-3, Labor Day Boogie, Abbotsford, B.C., Canada. Twin Otter aircraft. RW, accuracy, style, night accuracy, large stars. FMI: Gerry Harper, 1359 Kingsway, Vancouver, B.C. 853-9866.

September 22-23: 3rd Annual Upside-Down Skydiving Meet & Boogie, Star, Idaho. 4-man teams. \$100 first prize, plus more prizes. \$25 registration fee includes two jumps and all you can eat & drink. Boogie on Sunday. FMI: Greg Brown, 3266 Brampton Way, Boise, ID 83706. (208) 345-8705 (res.).

September 26-29: 23rd Annual Symposium and Banquet, The Society of Experimental Test Pilots, Beverly Hills, Calif. FMI: SETP, P.O. Box 986, Lancaster, CA 93534. (805) 942-9574.

October 19-21, USPA Board of Directors Meeting, Washington, D.C. FMI: USPA, 806 15th Street NW, Washington, DC 20005, (202) 347-5773.

September 29-30, Women's Weekend, DeLand, Fla. Organized WSCR dives, all around good dives from Mr. Douglas, party. All women - and men - are welcome. FMI: Sheila Whitten, (904) 736-7589 days, or (904) 985-5152 eves.

October 20-21, DeLand Para-Ski Meet, Lake Winnemessett, Fla. Slalom water skiing, accuracy on land. Hosted by Bill Booth and his jet boat. FMI: Bill Booth, Relative Workshop, 1050 Flite Line, De Land, FL 32720. (904) 746-7589.

October 27 — November 4: Zhills Pumpkin Meet, Zephyrhills, Fla. 8-way sequential, 16-way speed formations, and 10- and 20-way speed star events. FMI: Zhills Parachute Center, P.O. Box 1101, Zephyrhills, Fla. 33599. (813) 782-2918.

October 27-28: Halloween Party, Pope Valley, Calif. FMI: Pope Valley Parachute Center, P.O. Box 166, Pope Valley, CA 92567. (707) 965-3400.

12/Skydiving, August 8, 1979

November 17-21: RW Training Camp, Perris Valley Parachute Center, Perris, Calif. Pat Works will teach his method of RW instruction using video, seminars, and freefall classes. FMI: RWU, 1656 Beechwood Ave., Fullerton, CA 92635.

November 17-25: Zhills Turkey Boogie, Zephyrhills, Fla. FMI: Jim Hooper, Zhills Parachute Center, P.O. Box 1101, Zephyrhills, Fla. 33599. (813)782-2918.

November 17-25: Turkey Day Boogie, Pope Valley Calif. FMI: Pope Valley Parachute Center, P.O. Box 166, Pope Valley, CA 92567. (707) 965-3400.

December 2-6: SAFE Symposium, Las Vegas, Nev. FMI: SAFE, P.O. Box 631, Canoga Park, CA 91303. (213) 340-3961.

December 22 — January 2, DeLand Christmas Boogie, DeLand, Fla. DC-3, Cessna, showers, warm weather, clean airport, good vibes. FMI: DeLand Air Sports, P.O. Box 1657, DeLand, Fla. 32720. (904) 734-5867.

December 22 — January 6: Christmas and New Year's Boogie, Pope Valley, Calif. FMI: Pope Valley Parachute Center, P.O. Box 166, Pope Valley, CA 94567. (707) 965-3400.

Readers are encouraged to supply information for calendar listings. Information on upcoming events should be supplied as far in advance as possible to Box 189, Deltona, Fla. 32725.

Data for DC-10 Engine Performance Compiled

Data compiled by the FAA Flight Standards Division for 1978 and 1979 reveal that the frequency of McDonnell-Douglas DC-10 engine in-flight shut-downs to be less than those for the Boeing 747 and the Lockheed L-1011. The DC-10 recorded 0.30 engine shut-downs per 1,000 flight hours for 1978 compared to 0.82 for the 747 and 0.62 for the L-1011. Data compiled so far this year shows rates of 0.32, 0.69 and 0.56 for the three aircraft.

The data came as a surprise to many airline observers, as press reports int he aftermath of the DC-10 crash in Chicago gave the impression that emergency landings and turnbacks were much more common with the DC-10 than the other two U.S.-built jumbo jets.

Silly Suit



Sky Supplies is putting the final touches on its new harness and container system, which will be available upon TSO approval.

Jumpers learned long ago that a good jumpsuit is a relative worker's most important bit of gear. A good suit transmits the control motions of your arms and legs to the passing blast of air for precise maneuvering. (Nothing is worse than fighting a suit that is either hopelessly inflated or wildly flapping — the suit is flying you!)

"Flyability" is the biggest feature of the Silly Suit. It helps you fly — swoop, float, stop and maneuver — without getting in the way.

And since a Silly Suit is custom built to *your* specifications, you can select exactly how much float you need. You can order huge wings and bells or more conservative sizes, depending on what kind of jumping you do.

Size isn't the only custom feature. The Silly Suit is available in our popular two-piece model or our new one-piece step-in. Both models are built from the finest acrylic fabric, constructed with interlocked seams and sewn with nylon thread for unsurpassed durability. Nice features such as bloused bells and elastic swoop cords are standard.

Colors? Your Silly Suit can be built from such unique shades as tan,

brown and light blue as well as all the more typical colors. Our striking color pattern is new for 1979, too.

But when you're shopping for a jumpsuit, remember that it must do more than just look good — it has to fly, too. As satisfied skydivers around the world have discovered, a Silly Suit does both.

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STRATO CLOUD TM LITE and CRUISAIR from Para-Flite are in stock now at P.A.I.

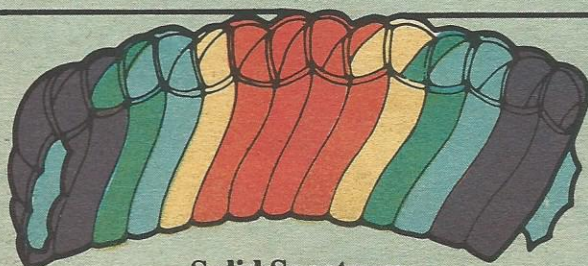
The Strato Cloud TM Lite

At 230 sq. ft., it is still the performance standard. The lightweight material allows it to fit in the smallest container and it weighs in at 11½ pounds. Larger stabilizers add even more control to the undisputed world champion.

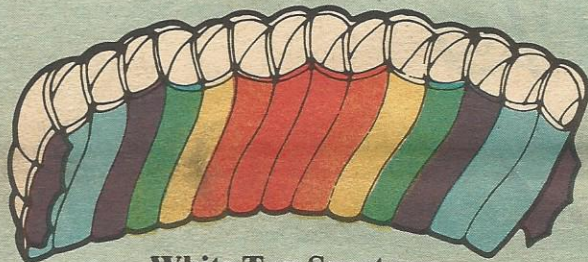
P.A.I. has both the Strato Cloud TM Lite and Cruisair in stock now in the colors shown and in solid colors, white, black, red, gold or blue.

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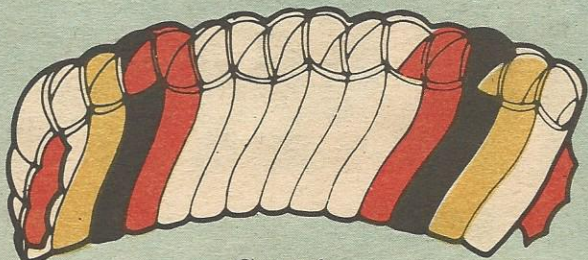
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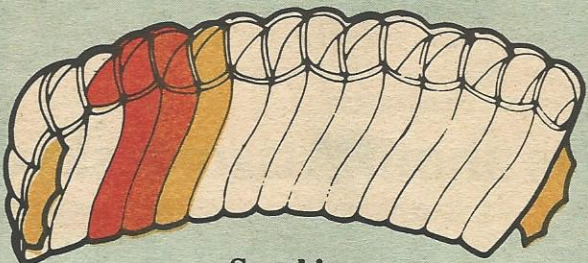
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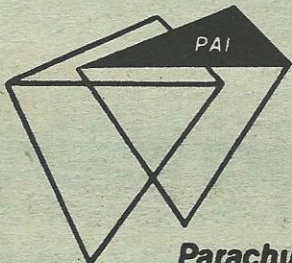
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From the Loft

This column is written by Bob Stroud, a Master Parachute Rigger and DPRE from Edmond, Okla., who has extensive sport parachute rigging — and jumping experience. Bob will be happy to answer your equipment and rigging questions. Address them to Bob Stroud, c/o Skydiving, P.O. Box 189, Deltona, Fla. 32725.

High-speed freefall movies taken recently by Lew Sanborn of Strong Enterprises clearly showed what may happen if the slider is *not* stowed in a rubber band on a free-packed canopy.

The films were made in support of a

test program the company conducted. Although filming the action of the slider wasn't the objective of the tests, the movies provided real insight into what may be contributing to the damage that free-packed canopies sometimes suffer.

The slow motion movies show the slider "falling down" the suspension lines as the canopy is extracted from the container, before line stretch had been achieved. Although the jumper had pulled the slider up against the stabilizers during packing, the weight of the slider tended to allow the canopy to pull away from it during deployment. The several frames taken right before the canopy inflated show the slider had

slid down to a point about six feet below the canopy.

The subsequent inflation — and opening shock — was very fast and violent. The canopy blew up in the second sequence and had to be jettisoned.

Stowing the slider securely to the tail of the canopy with a rubber band would probably help keep the slider up against the bottom of the canopy until inflation is well along. The slider, then, would be in the best position to slow down the inflation and spreading of the canopy and therefore decrease opening shock.

Stowing the slider in a rubber band is a moot point if the canopy is deployed from a bag instead of free packed. The bag insures the slider is kept in position until full line stretch occurs. Some manufacturers are convinced that ram-air canopies open softer and more consistently when bag deployed.

AvGas Prices Continue to Climb

The average price of 100 octane avgas has reached \$1.05 a gallon, according to a survey of the nation's FBO's conducted by a major general aviation publication. The cost of 80 octant isn't very far behind at \$1.04 per gallon. That's an increase in price of three cents per gallon for 100 octane and eight cents per gallon for 80 octane compared to the previous month's average price. The highest price reported for 100 octane was \$1.30; the lowest was \$.78.

Prices are not expected to level off for sometime. To make matters worse, several major oil producing countries were giving indications in early August that they were going to decrease production to tighten world supplies and drive the price of crude oil up even higher.

"60 Minutes" to Look at General Aviation

The CBS television network is planning a report on the safety of general aviation to be aired this fall on its news show "60 Minutes."

"60 Minutes" reported on general aviation once before, when it presented a rather harsh report last year on the use and abuse of corporate aircraft.

It is doubtful skydiving will receive any scrutiny.

All-Woman 9-Way Over Georgia

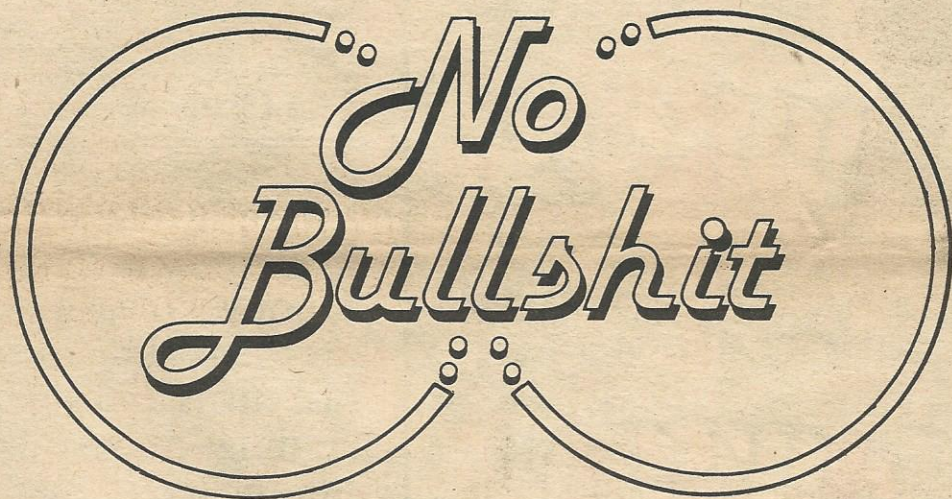
A 9-woman star was built over Dalton, GA on August 4, the first time an 8-way or larger all-woman star was built over that state. The record was one of several accomplishments made by jumpers at Dalton Air Sports that weekend.

Participants in the 9-woman were Beth Pline, Beth Leverett, Tinsley Turner, Tanya McCormick, Allison Kitchings, Vicki Valentine, Gale Oliphant, Maggie Glankler and Bonnie Chalfant.

Several men, including B.Z. Shaw, Joey Pruett, Victor Hart, John Moorhead, and Dave Murphy earned their WSCRs on the following day. A WSCR is an award for accomplishment in women's relative work, and men are eligible if they close 9th or later on an 8-woman formation.

Phil McCormick took 16mm films of the jumps which were shown on local television. The women's jumps were featured in a three-part TV news series which included a freefall "buddy" jump and the SCR jump of a player with the Atlanta Flames professional hockey team.

A DC-3 was brought into Dalton Air Sports for the big weekend, supplementing the center's Twin Beech and Cessna 180.



Here are the plain facts about Arizona skydiving:

1. Marana, Arizona, has the best weather, 365 days a year.
2. Marana has good skydivers. As good as anybody, anywhere.
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4. Marana has the services, complete with a tradition of quality and excellence unmatched anywhere.

So come and enjoy our weather, our people, our aircraft, our services and our facilities. Swim in our motel pool (even in December, if you want to. It doesn't get cold here in December).

Have a super time.

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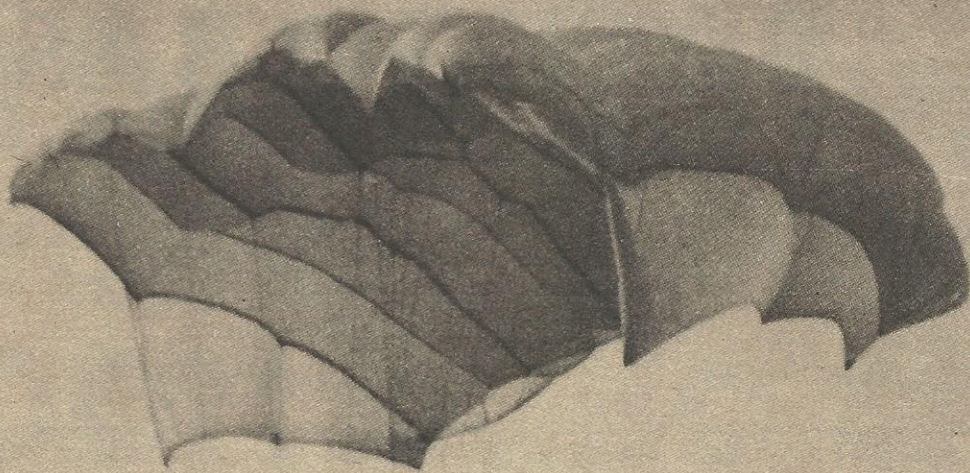
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BACK ISSUES

Back issues of *Skydiving* are available for \$2 each from P.O. Box 189, Deltona, FL 32725. Please include your remittance with order.

Number 1. Nationals preview, gas shortage survey, Paralert, NPRM, jump plane crash, Sky van Boogie, Fatality Report.

Number 2. Complete report on U.S. Nationals and USPA Boogie, CRW world record, trouble in Oregon, new DZ near Houston.



The new Safety-Flyer ram-air reserve has an honest 3:1 glide angle and 20 to 30 mph forward speed. Both are several times greater than *any* round canopy.

So instead of drifting around under your reserve, a Safety-Flyer lets you fly back to the DZ and pick your landing spot. A reserve ride doesn't have to become a cross-country hike or a tree-climbing ordeal. No other reserve has the great maneuverability, durability, and reliability of the Safety-Flyer. Available now from Para-Flite, of course. Order yours today.

The Safety-Flyer™ gets you back.

More About the Safety-Flyer

The Safety-Flyer is a ram-air emergency parachute system. It is FAA TSO'd in the Low Speed Category for use as an auxiliary parachute.

Canopy deployment times and distances are comparable to round sport reserves. Flight characteristics are the same as the Strato-Flyer (see the specifications below). It is recommended that the jumper have about 25 ram-air jumps before he or she begins to wear a Safety-Flyer.

SPECIFICATIONS

Wing span: 14' Wing chord: 12' (approx.)

Wing Area: 160' (approx.)

Empty weight: 130 - 140 lbs

Suspension lines: 40/10/051

Glide ratio: 3:1 Forward speed: 20 - 30 mph

(Proper flaring permits landings at 2 to 3 fps descent rate and 0 to 5 mph forward speed.)

\$540 includes canopy, pilot chute, and deployment bag.

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Robin Heid contributed this issue's skydive. Actually, it's a series of jumps that are helpful when learning or polishing your RW skills.

BACK TO BASICS

This set of skydives is designed for novices too inexperienced to get on "hot loads" and tired of the endless succession of funneled 3- and 4-way stars. These jumps can help a fledgling jumper improve his flying skills through emphasis on basic techniques and maneuvers. (These techniques are

basic in that they're used in every RW jump; they're not basic because they're easy — because they're *not* easy.)

These jumps provide good practice for synchronizing flight with others, non-momentum movements stopping and starting, back-ins, side docks and movements in all directions.

Try these exercises with two people at first. After a while, add a third or a fourth. Having fewer people will mean each individual will get more flying per jump.

Remember that skill isn't important, but motivation is. You have to approach these jumps with real concentration, with a real desire to learn, for them to be really effective.

Most of these maneuvers involve no-grip flying, with grips being taken only occasionally. You'll be flying right next to each other at times, maybe even bumping lightly, but *don't hang on!* Remember, you're learning to fly, not hang on to something until pull time.

Dive #1

Exit together (but not hooked up) and settle down. Jumper #1 should relax and take a heading, then #2 sets up, close enough to touch, but doesn't take the grip. Check the ground to make sure you're on a heading and not in a synchronized turn.

Then establish eye contact and rotate 90°, jumper #1 to the left, #2 to the right. You might want to signal by nodding before you start your rotation. If you ever did ballet or gymnastics, you know your body

tends to follow your head. So establish eye contact, nod, and initiate the rotation by looking over your shoulder in the direction you want to go. Spread out a little to compensate for the tendency to sink during a turn.

(You don't want any horizontal movement when you rotate. Try to imagine that there's a 12,000-foot rod passing through your body at your navel. When you rotate, you turn around that point.)

Remember: slow, easy movements.

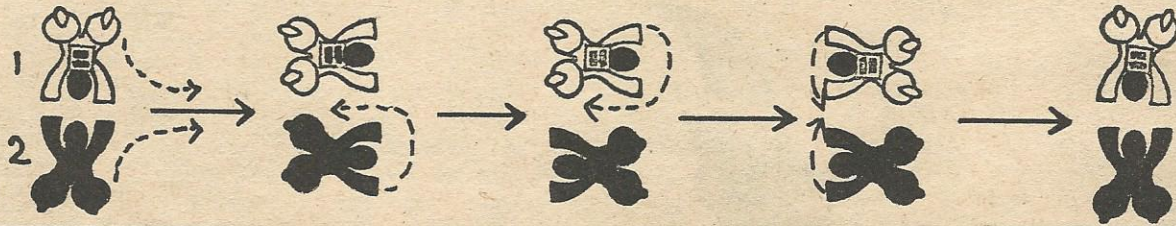
As soon as your rotation begins, look back at your partner and reestablish eye contact. This will stop your rotation while allowing you to keep track of your partner so you can adjust your altitude.

After stopping in a side-by-side position, relax and fly together for a while. Stay aware of your altitude.

Next, jumper #2 should rotate to the inside 180° to the compressed accordion position. Maintain eye contact during the rotation. Since

eye contact is very important — it's probably the most important way to communicate in freefall — don't wear dark goggles on these jumps.

Now jumper #1 follows the same procedures to complete a 180° rotation to the inside. You're side-by-side again. Check your altitude and check the ground to determine your heading; you should be 90° off from where you started. Rotate back to a no-grip 2-man, geek, giggle and git.



Dive #2

this one starts out the same as #1; exit and get settled facing each other in a no-grip 2-man. Then simultaneously slide past each other so you're falling side-by-side. Simply extend your legs and plane your hands to move forward. This must be done with almost no momentum, as there's no for-

mation to absorb it and help you stop. Extend your legs just for an instant and drift to a side-by-side position.

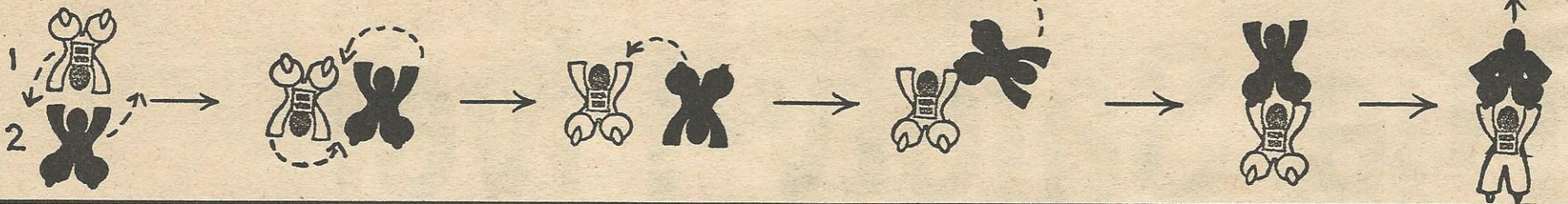
From the side-by-side position, both of you rotate to the inside 180°, essentially changing headings but ending up in another side-by-side formation. During the rotation, keep track of your partner

as you'll probably have to spread out or tuck up a bit to stay on the same level. Be smooooooth.

Now, a grip. Number 1 reaches over and takes a grip on the inside right knee of #2. Grip on the inside of the knee, and be sure you don't grab below the knee as it will hamper his flying by restricting his leg motion.

Number 1 should shake when he has a good grip. Number 2 then makes a gentle rotation to the left of about 180° and #1 grips the inside of his left knee. Presto: 1 cat!

Check your altitude and if enough remains, track the cat by having the jumper in the front sweep his arms back while the other extends his legs.



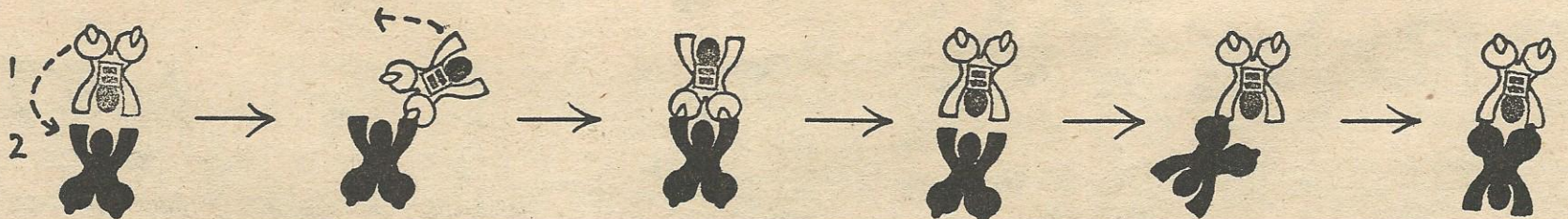
Dive #3

Back-in practice! Start with a no-grip 2-man. Jumper #1 starts a slow rotation to the left to place his right knee into #2's right hand. LOOK at his right hand during the rotation, guiding your knee right

into it. This maneuver is difficult because your head is rotating away from your target. After your partner grips your leg (inside of knee is ideal, but anywhere may be necessary the first time), look the other direction and steer your left

leg into position to complete the cat.

Once the cat is smoothed out, drop the grips and return to the no-contact 2-man. Now jumper #2 does it. If time permits, keep alternating.



Dive #4

Start with a no-grip 2-man with two to four feet of separation. Relax and settle out. Now, #1 rotates 90°, extends his outside

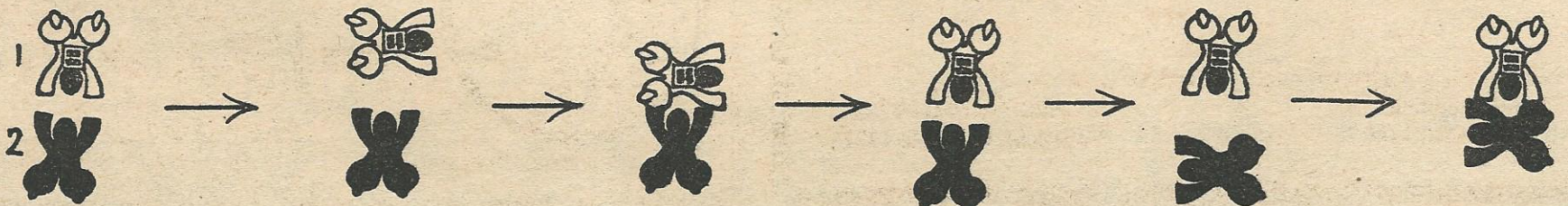
arm and leg a bit to slide towards #2, and, with eye contact, slides into the grip. Side dock!

Let go, return to the 2-man as above and let #2 do the side dock. Repeat the sequence to other

direction.

After each jump, spend a few minutes to dwell upon what you learned. Talk it over with your partner. The goal is to learn in a few jumps what others took hundreds

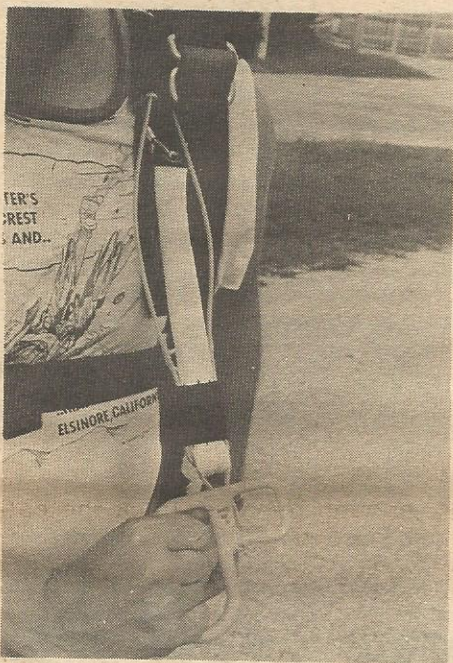
of jumps to learn. By concentrating, by devoting 100% of your mental energy to the jump from dirt dive through de-brief, you can learn to fly circles around many gold wingers. Smoothly, too.



Malfunction of Canopy Release Reported

A jumpmaster from Connecticut Parachutists, Inc., of Ellington, Conn., reported a malfunction of the single-point release system manufactured by Strong Enterprises of Orlando, Fla. Bob Bonadies was evaluating the company's new student tandem in late July and rigged an intentional streamer of the main canopy. He then went up and jumped the streamer to how well the rig would work in response to this type of malfunction. The streamer failed to separate from the harness when he pulled the release handle, apparently because the release system malfunctioned. The release system is the "wrap" type that Strong has been marketing for about two years.

The rig that Bonadies jumped has a combination canopy release/reserve ripcord handle. Pulling the handle activates the canopy releases after a few



This photograph shows the combination canopy release/reserve ripcord handle extracted to a point where the main risers have released but the ripcord pins have not yet been pulled.

inches of travel. Pulling the handle completely then deploys the reserve. This system is designed for novice parachutists who can be basically trained to pull the handle in response to either a partial or a total malfunction. Not only is training simplified, but there is much less of a chance that the jumper will make a mistake in the air in an emergency and "pull the wrong handle first."

Bonadies pulled the handle completely, which resulted in the reserve being opened into the still-attached streaming main. The reserve opened normally.

The "wrap" single-point release uses 12" lengths of special webbing sewn to the lower ends of the risers to wrap around a solid connector link sewn to each main lift web. The webbing makes about three turns around the link and is then secured with a plastic-coated release cable which in turn routes to the release/ripcord handle. Pulling the handle extracts the cable and allows the webbing to unwind, resulting in the release of the risers.

Apparently Bonadies' malfunction was caused by the failure of the wrap to unwind after the cable was extracted. The main canopy, reported to be a flat circular, was tied off in several places so it could not inflate. This resulted in a very low drag streamer with most of drag coming from the single MA-1 pilot chute.

CPI is evaluating several types of student gear as it wants to purchase at least 16 sets.

Experienced jumpers in the club had put at least four intentional breakaways on the rig before Bonadies' jump, but each of the previous tests were with fully inflated main canopies. The system worked perfectly on these tests with full reserve canopy inflation was achieved after only 100-150' below breakaway altitude. (Strong Enterprises' student tandem also has a static line from one main riser to the reserve ripcord cable. This static line will deploy the reserve

after a breakaway from a partial malfunction in the event the jumper doesn't pull the handle far enough to extract the pins manually.)

The rig was assembled by a rigger on the DZ "strictly by the book," Bonadies reported. "We wanted to be sure everything was done right." He exited from 5,000 AGL and immediately pulled, deploying the streamer. He was wearing a chest-mounted reserve as a back-up.

The streamer provided enough drag that he was falling in an almost vertical position.

Bonadies came in pulled the reserve handle vigorously at about 2,800' AGL. He quickly received an opening shock and looked up to inspect the canopy. He discovered the main still in tow and trailing behind the perfectly opened reserve.

He then tried to disconnect the risers from the harness by hand but encountered considerable difficulty as they were hard to unwind by pulling on the risers.

The subsequent landing was uneventful. Bonadies has about 850 jumps and is a USPA-rated Jumpmaster. He liked the rig, but suggested the wrap single-point release should be replaced with another design.

Neither Bonadies or the riggers that inspected the rig immediately after the jump could find a cause of the hang-up. The club returned the rig to the manufacturer.

Skydiving contacted Strong Enterprises to see if the company could find a reason for the malfunction. The company had loaned CPI the rig for the evaluation program.

President Ted Strong reported that there was no easy explanation for the hang-up. He explained that his com-

pany had test jumped the rig with intentional streamers several times and that it worked perfectly each time. Movies of the tests were made available and they showed nearly instantaneous reserve deployment after an equally fast canopy separation.

Mr. Strong further explained that the webbing used to construct the releases is specially treated at the mill to have a controlled degree of friction, and that just any webbing wouldn't work perfectly. The company further processes the webbing at their facilities to further "season" the webbing before using it to build the risers. The process makes the webbing release even better, so that no more than 8-9 pounds is required to release the risers.

The same wrap has been in use on the Eagle System Tandem since 1977.

The incident involving Bonadies isn't the first time a single-point release system has failed to work properly. There have been reliable reports of malfunctions of all the systems currently on the market, although some designs seem to have a higher rate of failure. Still, most manufacturers and jumpers alike agree that modern single-point releases offer significant safety advantages and much greater reliability than Capewell lanyard releases or its variants when used by sport jumpers in the field.

The Strong Enterprises student tandem is in regular use at the drop zone near Stormville, N.Y., and there have been at least three instances of novices using the release/ripcord handle. Two of the students had less than five jumps. The rig worked as designed all three times. "So now there are two DZs, 100 miles apart, that have really different opinions of the rig. The guy at Stormville is as happy as a clam," Strong said.

How a Balloonsuit turns base material into flying material

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Video Judging Procedures Described

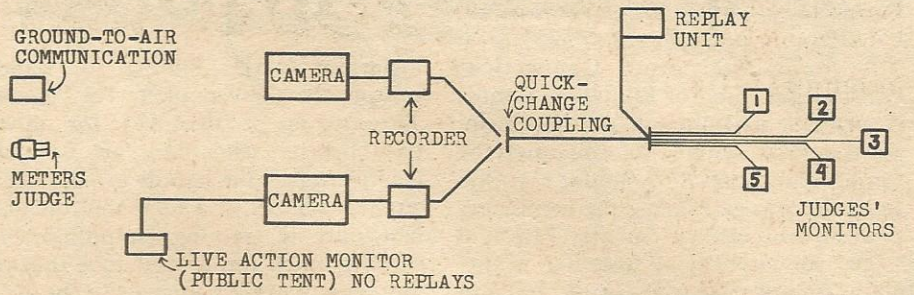
The following is a description of the video judging procedures used at this year's National Parachuting Championships. It was written by Randy Livingston, a principle judge of the meet. Since meet managers, judges and competitors are becoming increasingly interested in using video to judge parachute meets, his report is published here.

General Procedure

The meters judge tracks the aircraft and works with the ground-to-air controller (who mans the radio). When

both video cameras have the aircraft on the screen and are recording, the ground-to-air controller gives a "stand-by" command at a set signal from the meters judge. Approximately 10-20 seconds later the aircraft is given the "exit" command. The team has 20-30 seconds to exit, which should give the video the best possible angle to view the entire skydive.

Both cameras record all competition jumps. This enables the judges to review the same jump from two different angles, if necessary. Or, if one camera should miss a jump, the other camera can serve as a back-up.



The author's diagram of the video set-up at the 1979 U.S. National Championships.

The aircraft should be set up on a jump run that will allow the cameras to track each team from exit to canopy opening. The way that works best has

the aircraft coming toward the camera with the team exiting just short of vertical. This gives the best presentation of the first formation.

The camera operator and the recorder should start recording audio and video prior to the stand-by command. The recorder should make a list of the footage on the recording unit's tape counter and the team number. The audio should include the team number, pass number, aircraft number, and round number. Also, anything unusual such as a rejump, freefall cameraman, haze, clouds, sun reflection, canopies blocking screen, camera being bumped, etc., should be mentioned.

There should always be good communication between the two cameras.

Other Considerations

In the case of the traveling rounds in the 8-way dives, assign each camera a portion of the screen. This is unnecessary because sometimes it is impossible to keep the entire team on the screen at one time.

The figure shows a good way to divide the screen for such jumps.

Ideally, the camera should have the ability to zoom and focus during the jump. But lenses of that caliber are very expensive which makes them a luxury only for the financially secure.

To give the best possible image, the camera mounts should have an effective damping system to reduce vibration and the resulting shaking images.

The method used this year to handle the tapes was fairly simple. When a tape cassette was filled, it was given to the judges along with the sheet that listed footage, aircraft number, team number and round number. The judges then went off and scored that tape while other competition dives were being recorded.

Five judges viewed each dive made at the nationals this year. Each jump was viewed at least twice, with as many replays as a judge wanted. There wasn't any stop action or slow motion.

This scoring method increases the time spent judging each dive at least two-fold, but it also increases the quality and continuity of the scores. It also allows a meet to progress as fast as possible for the competitors, as the video can record a jump without having to pause to verify a score or deal with an unusual situation. In fact, the judges do not have to be on site while the jumping is held, theoretically.

(continued on the next page)



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Video

(continued from page 18)

A big drawback to this method, however, is that the official scores take considerably longer to post.

Summing it Up

The video judging system, even considering the problems of equipment availability and learning the proper use of the system, is the best way to judge the freefall portion of any large meet.

About the Author

Randy Livingston has been jumping for about ten years and has logged about 1900 jumps. Besides being a USPA-rated National Judge, he is also a USPA I/E, FAA Master Prachute Rigger with Ram-Air Rigger Examiner Rating, a pilot and holder of D-3950, SCR 3133, SCS 1257 and CCR 80. He lives in Portland, Ore., and normally jumps at the Pacific Parachute Center in Sheridan, Ore.

Competitors Suggest Video Changes

Discussions with several top competitors after the nationals resulted in this list of observations and recommendations:

1. The video record of a competition jump should be available for review during a protest. (This year, the video couldn't be reviewed once the score was officially posted.) Using the video to help resolve protests is an obvious benefit of video judging, so the rules should be changed to take advantage of the system.

2. Competitors must continue to make sure they "show" the formations to the video (and therefore the judges). Although video scoring generally allows a team to fly closer and faster, weather conditions and viewing angles still make it necessary that the jumpers adjust their jumping to insure the proper completion of formations and transitions is evident.

3. Video makes it easier on judges and competitors alike, but the need for excellent judges has not diminished. A solid understanding of the rules by both the judges and the jumpers before the meet begins is essential.

4. Judging with a video unit removes the need that a judge develop the ability to accurately and simultaneously score every competitor on the screen at the instant and only viewing. Not only does this remove much of the mystique of judging, which has always been a difficult and thankless task, it questions the necessity of having an elaborate judge training program.

5. The USPA should be willing to take whatever steps are necessary to insure adequate video systems will be on site to judge the nationals in the future. There is some question whether the systems that were donated for use in 1979 will be available on the same basis in 1980.

Bill Booth invites you to his

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First Skydivers off the 1,000'-high bridge in 9 years

Four Leap into Royal Gorge

In a dramatic leap that left onlookers startled and local officials in an uproar, four skydivers jumped from the Royal Gorge bridge outside Canon City, Colo. last week.

John Noak, Springfield, Ill., Dave Blattel, Los Angeles, and Robin Heid, Denver, jumped from the 1,053 foot high span, the world's highest, about 9:35 am on August 11th and landed on railroad tracks at the bottom of the gorge without incident. Forty minutes later, photographer Carl Boenish exited the bridge and deliverately landed in the Arkansas River.

Noak and Boenish did static line-type jumps, their hand deploy pilot chutes held by bridge cameraman Larry DeKock. Noak's canopy opened in 100-150 feet; Boenish experienced a slow opening with his and fell 500-600 feet before getting open. Blattel and Heid both did three-second delays. Blattel's slow opening and Heid's pilot chute hesitation contributed to open canopies approximately 400 feet above the fast-moving mountain river.

The jumpers were taken into custody by police after the jump and held for several hours while Canon City officials

figured out what to do with them. After finding no city ordinance regulating skydives from the Royal Gorge, and determining the had been made only after careful preparation, the foursome was released with a smile and a warning not to do it again.

Only one other person is know to have jumped from the bridge with a parachute; Don Boyles did it with a cheapo and a spring-loaded pilot chute in 1970.

The jumps were filmed extensively with both still and movie cameras and a movie of the dives will probably be available in the future.

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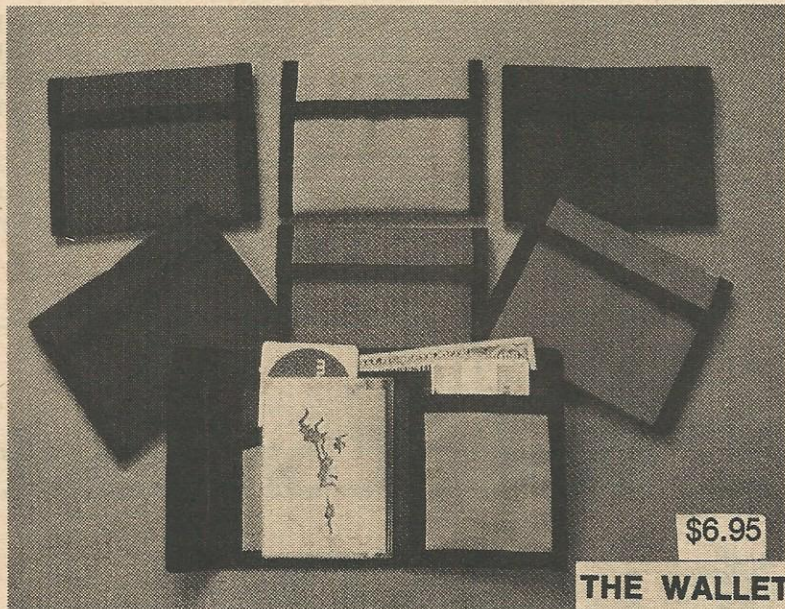
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20/Skydiving, August 8, 1979

GA Stocks a Good Buy

A comparison of the growth in value of 10 major general aviation stocks with the increase in value of corporate stocks as a whole reveals that investing in general aviation is a smart financial decision.

An investor who sunk one dollar in 1971 into the 500 corporate stocks listed by the Standard & Poors company would find that his invested dollar would be worth about \$1.04 today. That's not even keeping up with inflation.

If at the same time the person had invested a dollar in the ten major and general aviation manufacturers, his investment would be worth about \$2.85 today, which represents a substantial return.

The ten general aviation stocks used for this comparison were Avemco, Bangor Punta, Beech Aircraft, Butler Aviation, Cessna Aircraft, Flight Safety International, Gates Learjet, King

Radio, Page Airways and Van Dusen Air, Inc. The value of the stocks were based on monthly closing prices.

Nylon Prices Rise

The *Wall Street Journal* reported July 31st that the major makers of textile nylon — the type that is used to make parachutes — plan to boost prices about a nickle a pound, effective with September shipments.

This is the fourth price increase for nylon so far this year. The manufacturers said it is necessary to raise the price mainly because of rising costs of the oil-based raw materials from which nylon is synthesized.

Generally, typical prices for nylon yarn will go from about 65 cents per pound to 70 cents. All told, nylon has increased in price about 12% per pound since January 1.

Skylab Disrupted Air Travel

The reentry of the Skylab space laboratory over the Indian Ocean and parts of Australia last month disrupted some air travel. The FAA had set up an elaborate worldwide warning system to direct aircraft out of the 4,000 mile flaming path of the dying satellite. Sections of airspace 1000 miles long and

some 110 miles wide were cleared of traffic immediately before and during reentry.

European countries are said to have initiated precautionary measures, also, with the Italian Transport Ministry grounding all flights for a six-hour period preceeding Skylab's fall.



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From England, Italy

Zephyrhills Gets Ready for Foreign Visitors

Zephyrhills Parachute Center in Zephyrhills, Fla., is preparing to host several large groups of jumper from countries outside the U.S., according to Manager Jim Hooper.

"The British Air Force will be flying 60-plus military freefallers into [nearby] MacDill AFB. These jumpers are taking part in the British Military Adventure Training Program, which includes skydiving among the list of action activities it offers its participants. The group will be here December 5th and stay for five weeks," Hooper reported.

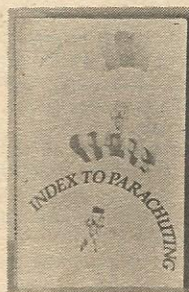
A group of about 30 British civilians will arrive independently in mid-December for a visit of several weeks, followed by some 50 jumpers from Italy.

Zephyrhills, the site of several well-attended meets and boogies each year, usually attracts substantial numbers of jumpers from overseas who take advantage of the good Florida weather during the winter. The center owns a DC-3 for jumping.

Hooper also reported that his center recently purchased — for \$13,000 — a new engine for the center's Cessna 195. The six-place single-engine jump aircraft, which has been down for about nine months, will be flying again by September.

Zephyrhills has scheduled two fall events, the competitive Pumpkin Meet in late October and the informal Turkey Boogie in late November.

Books



Index to Parachuting, 1900-1975, Michael Horan, 174 pages, soft-bound, \$7.60 ppd., Parachuting Resources, P.O. Box 1333, Richmond, IN 47374.

Mike Horan recently sent Skydiving a copy of his book, *Index to Parachuting, 1900-1975*, providing me with my first opportunity to review this unique publication.

Index to Parachuting delivers exactly what the title promises: it is an annotated bibliography of every book, magazine, and publication on parachuting that Horan could find. It

took several years to compile and organize the information in the *Index*, as the author indexed every major U.S. sport parachuting periodical including *Parachutist*, *Skydiver* and *Spotter*. All told, about 200 publications were scoured for information on parachuting, including magazines such as *Aviation Week and Space Technology*, *Seventeen*, *Nature*, and *Military Review*.

Except for a brief history of the sport, which serves as a lengthy introduction, this book has no literary content. It is a bibliography, page after page of references listing the title, author, date, source and a short description of articles, books and papers.

The *Index* is logically laid out and easy to use, with each source listed under one or more of seventy categories. Categories include, for instance, rigging, relative work, history, psychology, and instructing.

Besides the listings, Horan has published the names and addresses of the books and magazines covered by the index. Such information is useful to anyone who is trying to locate the original sources of the cited material.

The *Index to Parachuting* will be most useful to students, reserachers and writers, people who have a need to go through the sport's fifty-year old collection of literature. The book is a research tool, not a source of entertainment. It also serves to advance the science of parachuting by several steps binding together the sport's literature into one volume.

So if you're looking for fireside reading to help occupy yourself during a winter storm, don't expect to find it in the *Index*. But if you have an interest in what's been written on skydiving, and want to find some of that writing, then *Index to Parachuting* deserves a slot on your bookshelf. **MFT**

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EDITORIAL...

Student Gear : Too Soon?

After many years of discussion, experimentation and research, several manufacturers are now beginning to market "student rigs" — tandem systems especially for novice jumpers. Such rigs will be a boon to jumpers on static line or early freefall, as they will provide more safety, comfort and performance. Instructors and center operators are also eager to use the rigs, as they should simplify training and perhaps improve their student retention rate.

The manufacturers of such rigs are to be commended. They're taking a chance that there is a decent market for such gear, that drop zones will buy them even though they can buy "good old reliable" surplus gear for much less.

The manufacturers also realize that they're probably increasing their exposure to product liability suits as they forge ahead into this new market.

Even through the sport has been waiting for years for such gear, it should wait a little longer. Crucial questions about the design of student gear haven't been adequately answered. Although only two models of student piggybacks are available right now, both take very different approaches to the design of the emergency system.

The owners of the two companies involved are very convincing when they argue the advantages of their different approaches. They obviously believe their design is the best, in spite of the fact that experts of equal stature strongly disagree. And the dissenters can list their equally convincing objections one by one.

Who's right? The problem is that no clear consensus has emerged as to which approach is best. Worse yet, it seems as if everyone — the industry, instructors, center operators, and the USPA — is going to sit back and watch the novices find out in the air. After a protracted series of "field tests" are conducted, a decision will be made, maybe.

The attempt should be made to make the decision now, before the rigs are in widespread use.

Why not convene a forum to discuss the issue? Invite the industry, instructors, etc. Set up an agenda. Have several recognized experts give a talk or two to get things going. Show the test jump movies that are so impressive. With adequate preparation, such a forum would do wonderful things to get the design of "student gear" squarely headed down the right track. Even though it's pretty late in the game, it's better to do it now, before the rigs are shipped to all corners of the globe.

Such a forum might make some paranoid manufacturers worry about divulging proprietary information. Others might worry that it would be a kangaroo court of some sort, ignorantly passing quick judgement. And cynics would be quick to say that such a forum would be another ineffectual, toothless committee action that would take forever to accomplish nothing.

Perhaps. But one take-charge leader could probably pull it off very quickly and show results that would really help the sport enter a minor era of profoundly better student gear. —MFT

BUYING AND SELLING USED GEAR

Using classified ads to buy and sell used gear is both popular and effective. A seller can offer his gear to thousands of potential buyers for just a few dollars; he is literally able to reach jumpers around the world. And buyers are at an equal advantage, since classified ads list a variety of offers and frequently contain a real bargain or two.

Buying and selling used gear by mail has a certain degree of risk to it, but the risks are more than compensated by the advantages mentioned above. Here are some tips for both parties that should be useful:

If you have something to sell:

1. Adequately describe the item in your ad. For instance, say "Wonderhog II" instead of just "Wonderhog," or "Lightweight Strato Cloud" instead of just "Cloud."

2. Include a telephone number in your ad. Including a mailing address will help bring in more responses, too.

3. Include an asking price for the gear you're selling. Such information will weed out those buyers who don't want to spend that much money. Or, if your price is comparatively low, that good price will generate responses.

4. Be prepared to run the ad more than once, perhaps lowering the price after the first few times if the responses have been light.

5. Guarantee your buyer's satisfaction. Since he's buying your gear by mail and can't inspect it first, give him the option of returning it within a few days if it is not satisfactory.

On the other hand, don't send the gear without first being paid, or send it C.O.D.

6. Don't try to sell unsafe or non-TSOed gear.

If you have something you want to buy:

1. Consider placing a "want to buy" ad. It will generate offers that will give you a greater variety of choices and prices.

2. It's usually a good idea to call the seller before sending your money. You can find out if the item is still for sale, how payment is to be made, etc. Find out what you're to do if you don't get what you expect to get.

Before any used gear is placed into service, have a loft or rigger thoroughly inspect it. Look for wear, damage or homemade "improvements" that may make the gear unsafe.

26' Navy conicals are excellent reserves; but those manufactured in 1966 and 1967 are especially susceptible to sunlight damage. Such canopies (and other older surplus reserves) should be carefully checked for such damage.

Greene Star Express harnesses have failed during actual use and should be purchased with caution.

A piece of gear with the serial number crossed out or missing frequently means the gear was stolen, although the present seller may not have been the thief.

What about price?

Here is a list of prices currently being asked for used equipment sold through classified ads. The information may be helpful to both buyers and sellers.

Reserve Canopies	Condition or No. of Jumps	Where	Price (\$)
26' Navy	unk.	WI	150
Piglet block	like new	FL	250
26' Navy	unk.	FL	135
Strong Lopo	unk.	ID	255
26' Security 4-line	like new	FL	225
26' Security 4-line	like new	CO	275
24' Ripstop	unk.	ID	45
Main Canopies			
Cheapo (28')	excel.	CO	100
Thunderbow	unk.	FL	75
Para-Sled	unk.	FL	200
Comp. PC	good	FL	130
PC	excel.	CO	175
Sierra	unk.	ID	100
PC	unk.	FL	100
Piglet 21	excel.	VA	225
Viking	new	ID	450
Strato-Cloud	unk.	WV	500
Strato-Cloud	200	VA	500
Strato-Cloud	unk.	TX	650
252 Para-Foil	50	FL	600
Unit	unk.	UT	650
Cruisair	100	FL	600
Strato-Flyer	60	MD	300
	good	MD	400
	very good	TX	325
	"mint"	TX	350
	100	IL	350
	good	OH	175
	new	MI	450
	100	MO	375
	50	NJ	200
	30	KS	475
	15	UT	275
	unk.	TX	375
	100	ID	375
	75	OK	325
	unk.	TX	420
	17	MS	400
	less 50	PA	425
	75	OK	415
	new	CO	400
	3	Can.	450
	150	FL	325
Strato-Star	good	MD	325
	100	TX	330
	good/125	IN	295
	good	NY	395
	90	FL	375
	brand new	FL	475
	good	FL	375
	125	FL	300
	400	FL	300
	1000	FL	300
	unk.	WV	200
	good	OK	200
Rigs			
Centaurus	new	CO	275
Won. Hog	unk.	TX	225
Won. Hog II	unk.	IL	250
System	20	CO	225
Spanish Fly	30	KS	200
Crossbow	unk.	FL	50
Won. Hog II	75	TX	325
Won. Hog II	good	WV	275
Classiflyer	unk.	ID	340

LETTERS.....

Manufacturers Please Note

There is a bunch of rigs on the market these days. Many have special instructions for packing — in particular the reserves.

In the interest of safety through knowledge, I am compiling a notebook of packing instructions for every rig being manufactured or jumped. When completed, this notebook will be available to all.

Please send packing information and any other information regarding your rigs which should be known for its use. If you object to your information being reproduced by me, please let me know. I will kindly oblige, but would still like it for my own information.

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Longmeadow, MA 01106

Skydiving's "Letters" column is the place to publish your tips, suggestions, announcements, observations, corrections and amplifications.

Send your letters to Skydiving, P.O. Box 189, Deltona, Fla. 32725. Generally, letters cannot be acknowledged or returned. Skydiving reserves the privilege of editing a letter to meet space requirements.

CLASSIFIED ADS

1978 Wonderhog I, star sized, red with black trim: \$300. 26 ft. Security Lopo: \$100. MK III Para-Commander, Merry Widow, with NAA conventional Mini-System and extras: \$250. Call (812) 422-1507.

SST, custom color black-and-gold, 100 jumps, leg deploy, R-3s, excellent: \$300. RWPC, solid gold, no malfunctions, no burns, soft toggles, excellent: \$375. Strong Lopo reserve and MA-1: \$300. Complete: \$800. Well cared for and maintained. Nick Mickelson, 37 Nevins Ave., Longmeadow, MA 01106.

Strato-Star, Blue with two gold stripes, excellent condition, strap and Zoo toggles included: \$350. (716) 283-3607 (nites).

Para-Plane Cloud, modified, O/W/B, Hot Dog, blue Guardian conventional rig, R-3s, matching Mini-System reserve, 4-line release: \$450. John Musgrave, 4615 Gardendale #1402, San Antonio, TX 78240. (512) 699-9142.

Complete Rig: Wonderhog, black spectrum Strato-Cloud, red, Joe Smith reserve, all in good shape. \$950. Call (301) 896-3259 after 5 PM.

Altimaster Altimeter: \$50. Frap Hat: \$45. Strong all black jumpsuit, small: \$10. Nikon 55mm Macro Lens: \$150. 1536H Spartan Village, East Lansing, MI 48823.

Complete Rig. Multi-colored Wonderhog II with 5-cell Para-Foil and white 24' 4-line release reserve, Zoo toggles. Wonderhog is new and foil and reserve are in excellent condition: \$650. (301) 721-2494. Karen. Leave message.

Units — New. Four available, \$650 each. New Racer, 3-Ring, P.O.P., \$340. Zoo toggles, trim tabs, altimeter mounts, etc., available at LOW prices. P.S. Enterprises, 10014 Buffalo Ave., Niagara Falls, NY 14304. (716) 283-3607 (nites).

Looking for new gear? Call us after you've called the rest: we will deal! P.S. Enterprises, 10014 Buffalo Ave., Niagara Falls, NY 14304. (716) 283-3607 (nites).

24' RESERVES: \$45 to \$90. **COMPLETE STUDENT RIGS:** \$150, includes main (28' or T-10), container, harness and reserve. **SPEED LINKS:** \$10/dozen. Quantity prices quoted. Call or write Dennis Foster, 5900 Lee St. NE, St. Petersburg, FL 33703. (813) 522-3579. (3)

STARLITE TANDEM, custom-made for small girl— good for a short person. With Strato-Star and 26' Navy conical: \$500 complete. Call Sandy or Allen after 5 PM at (904) 775-2042.

DO YOU NEED A FREEFALL CAMERAMAN? I am available for your private and commercial projects, worldwide. Contact Chris Wentzel, 1704 Swinburne Ave., Crofton, MD 21114, (301) 721-2687.

CAMERA PERSONS. 8 mm freefall movie outfits to mount on your helmet. Includes new Chinon slow motion camera, mount, mirror ringsight, hardware, and instructions. \$250. Also custom mounts for your camera. FMI: write or call Bill Sutton, 3630 Paskin Place, Apt. 5A, Baltimore, MD 21207 (301) 521-2566.

FRENCH PAP. Multi Color with risers, sleeve and pilot, 75 jumps. Sage green Mini System. Both \$250. Penny Adams, 641 Cameron Way, Modesto, CA 95351 (209) 527-2086.

ROD'S REBEL II, RW&B, 10 jumps, \$150. **DYNA-SOAR** RW jumpsuit, white, large, \$40. **ADIDAS SUPERLITE** boots, black, size 12, \$40. Allan Manning, 705 Kings Ct., Alexandria, VA 22302. (703) 549-4240. (3)

STRATO-STAR, gold and black, 100 jumps, excellent condition. Asking \$325. Candi, (904) 789-4212. (1)

STRATO-STAR, double spectrum, 150 jumps; 26' NAVY CONICAL reserve with 4-line. Both in excellent condition. Make reasonable offer. Call days: Mike Harris, (216) 825-7319. (3)

STRATO-FLYER, white and yellow, brand new, still in factory carton, never even packed, asking \$350. **STRATO-STAR**, red, orange and black, also brand new and never jumped, asking \$400. Cathy Collingwood, (305) 391-8728 or (714) 270-2493. (1)

VIDEO TAPES OF THE 61-WAY BUILT AT THE SKYVAN BOOGIE. Freefall and ground coverage, an excellent look at the world's best. This tape is a great promotional tool. Approx. 15 minutes in length. \$85 to Divers, Ltd., 1704 Swinburne Ave., Crofton, MD 21114. Please specify format: Betamax, 3/4", VHS, etc. (1)

MUST SELL: New SST RACER, blue and white, Pig/Flyer size, std. harness, asking \$300 or best offer. **WONDERHOG 2**, red and blue, double shorty, womens harness, excellent condition, \$225 or best offer. Contact Cheryl at Sky Supplies, (904) 734-9641. (3)

SKYDIVERS! I collect brochures from drop zones the world. Please send any promotional literature that you have about your operations to me. DZs, demo teams, skydiving services, etc. Thanks, C.J. Wentzel, 1704 Swinburne Ave., Crofton, MD 21114.

MUST SELL — Custom Cruisair, black, white and red, excellent condition: \$600. Piglet reserve, block const...new: \$260. Silly Suit, rust, for woman or smallish man: \$50. Wonderhog II, rust and black, for Pig/Flyer, step-in, latest model with no belly band: \$350. Everything: \$1200, or make offer. Candi Prosser, (904) 789-4212. (1)

LIGHTWEIGHT 5-CELL PARA-FOIL. White and yellow. 200 jumps, excel. cond. Asking \$525. Scott Parker, 3702 NW 59th Ave., Miami Springs, FL 33166. (305) 871-5138.

STRATO-STAR. White and blue, 400 jumps, good condition; opens and flies well. \$325. P.O. Box 883, DeLand, FL 32720.

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If you're the kind of jumper who controls his canopy with gentle pressures rather than by sweeping tugs on the toggles, you'll like flying a Strato-Cloud.

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Whether it's stepping on the disk, docking on a stack, or gentle landings, a Strato-Cloud flying overhead will make it easier.

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