A Condition of Complete Simplicity

Learning to Fly with Helium Balloons used to mean heavy envelopes, huge bulky baskets, and quite possibly registering for a Gordon Bennett qualifying race. Not this time...

BY JOHN NINOMIYA

Ernie Hartt photo

John Ninomiya photo

Left: Crew inflates one of the Mylar Piccard Pleiades envelopes for the first flight. Above, Don Piccard, Phil Brandt, Ernie Hartt, Richard Douglass and John Ninomiya after the flight of the Silver Pleiades. *Facing page: John Ninomiya lifts off for the Walters commemorative flight.*

photo on facing page by Dean A. Ekdahl

This year I learned to fly with helium balloons. I have flown hot-air balloons for over ten years. Until now, my most unusual trait as a balloon pilot has been my preference for Cloudhopper-style harness balloons. But before and during all my years in ballooning, I have wanted to fly with helium balloons.

"Fly with helium balloons" did not, to me, mean "fly a gas balloon." I made two gas training flights years ago in a netted Skypower balloon, and, while I greatly enjoyed them, it was not exactly what I was seeking.

As a boy I had a book with a photograph of a man flying in a harness attached to orange weather balloons. I was later enchanted by the children's film 'The Red Balloon,' at the end of which the young hero flies high over Paris with a huge bunch of toy balloons.

Years later I read about Larry Walters, who flew over Los Angeles in a lawn chair attached to 40 weather balloons. I thought, "What an idiot!" and wondered why I envied him.

Many people's first dream of flight involves believing they could really fly if they could just get the balloon man to give them *all* the balloons. Most people get over it. As for me, it still seemed like a good idea. Hot-air ballooning was great, but it wasn't the same.

The cluster or multi-cell balloon has a significant place in the history of ballooning. It was invented by Jean Piccard, who in 1937 was the first to go aloft with a cluster of 98 latex weather balloons.

Later flights included a scientific flight to 40,000 feet using 105 balloons by Audouin Dolfus in 1959 and flights in 1957 and 1962 by Don Piccard. His 1962 flight was an ascent to 17,747 feet in a chair seat attached to eight plastic balloons. Piccard suggested the term, "Pleiades" as a generic term for this type of aircraft, from the name given by his father to the first such balloon in 1937.

I wanted this to be something more than just a stunt. I wanted to learn to launch, fly, maneuver and land a Pleiades cluster safely and legally. I envisioned doing a series of training flights to obtain substantial knowledge and experience flying with helium balloons.

This year I found myself in transition, leaving a job I'd held for ten years to go to graduate school. I had planned this move for several years, so was able to enjoy the time between work and school. This would be the year I could make time to learn to fly with helium balloons.

Silver Pleiades

So what kind of balloons would I use? I began to inquire of various scientific and advertising balloon manufacturers, and got as far as actually ordering some balloons.

Then, through an Internet ballooning list, I learned that Don Piccard had designed some Mylar balloons intended to be flown with gas in multi-balloon clusters. The balloons had not been free-flown yet—Don had inflated them for a race in Germany, but not flown because of weather.

I emailed Don, offering to purchase balloons from him. He agreed, and expressed interest in coming to California for the flight. Having access to Don, who had flown a multi-cell balloon, would be invaluable. I decided to fly using seven of Don's balloons attached to my paragliding harness.

The Piccard Mylar balloons are "natural shape," and made of the same type of thin, light, metallized material used for novelty balloons. The balloons I purchased were about 14 feet in diameter, and would hold a little under 1,000 cu.ft. each for 50 to 60 lbs. of lift.

A long webbing line tied to one end of the balloon attached it to the basket or harness. Small open vents are located near the bottom of the balloon. To vent gas, the pilot pulls on another line running to the top of the balloon. Tipping the balloon allows gas to flow out through the vents.

To deflate, the line going to the top of the balloon is tied down, and the regular attachment line cut. Then the balloon turns upside down, and gas flows out through the vents.

The open vents are similar to the appendix at the bottom of a spherical gas balloon. As the balloon ascends, the lifting gas expands and some flows out the vents. Lift is lost, the rate of ascent slows, and the balloon levels out at equilibrium altitude. This helpful control feature is not found in a sealed balloon like a weather balloon.

I wanted my regular crew chief, Ernie Hartt, to help out with the project. Ernie has his private certificate, and has been crewing for ride operators in the Del Mar, California area for years. I broached the topic cautiously. Ernie seemed generally okay about gas ballooning. He was used to my flying around in a harness. But seven separate cells? "Cells?" he asked.

"Uh, like seven separate balloons," I said, a little uneasily, "in, like, a kind of bunch."

"And how are they attached?" he asked slowly.

"Well, each balloon is tied to a webbing line, and the lines will be tied to my harness." He didn't say much. I think the fact that Don Piccard built the balloons finally persuaded him this was not some craziness, or that it was at least professional craziness. He agreed to help.

John Ninomiya photo

At the start of the second flight, Mylar Piccard envelopes shine through the brightly colored chloroprene balloons.

My mentor arrived from Minnesota, and along with Ernie and two other curious balloon pilots, we went up to El Mirage Dry Lake in the high desert north of Los Angles.

There, on April 15 of this year, I flew my aircraft, dubbed *Silver Pleiades,* to 4,000 AGL (***Ballooning,*** July, 1997). It was my first lesson in how to fly with helium balloons.

Mixed Bouquet

Don went home, and I was left with seven garbage bags containing Mylar balloons and the question of what to do next. I was committed to continuing my helium balloon education.

Prior to contacting Don, I had purchased some eight-foot round balloons made of chloroprene, an elastic rubber derivative. They were sturdy, designed for outdoor display use.

The balloons came in blue, orange, red and yellow. Inflated to a little over six feet, they would hold 125 cu.ft. of helium and provide seven or eight pounds of lift each. This was still only half their rated capacity of roughly 250 cu.ft. at an eight-foot size, leaving plenty of room for safety and expansion of gas at altitude.

I decided to carry 16 of these balloons in addition to my seven Mylar cells, for a total of 9,000 cu.ft. of helium in 23 balloons. The additional 2,000 cu.ft. in the chloroprene cells would provide extra lift for a higher, longer flight.

In flight, I would be able to pull the individual chloroprene balloons down in order to burst them when I wanted to "vent."

I would maneuver in this fashion at altitude, but probably burst the chloroprene balloons before landing with the vent system on the Mylar cells. I called my hybrid *Mixed Bouquet.*

I explained to Ernie that I would fly the *Pleiades* again, this time with an additional 2,000 cu.ft. of helium in 16 chloroprene balloons.

"Chloroprene?" he asked.

"Well, kind of like rubber, but with other chemicals." I watched his expression. He was pretty hard to read.

"The same sort of design as the Mylar balloons?" he asked.

"More like, uh, really big party balloons, 6-foot size."

He didn't say much, but he was there to help me again.

Crew for this flight consisted of Ernie and Jenny Hartt and local balloonists Phil Brandt and Doug Spencer.

I scheduled the flight for Tuesday, June 10. Forecasts were marginal, but having made all my arrangements for this date, I decided we should go up to the high desert anyway. We arrived with our truck full of helium tanks and other chase vehicles late that afternoon.

I guessed that the prevailing winds would start early out of the south or west, so we spent time driving the area north of the lake to figure out chase access. Once we were off the flat clay surface of the lake bed, we were on dirt roads that crossed a desert terrain full of brush, joshua trees and occasional piles of rock. There were widely scattered houses: ramshackle, sand-scoured compounds with chain-link fences and "No Trespassing" signs.

For a while we were completely lost. I wondered what survivalists or polygamists or other privacy-needing groups would do if a man flying with a bunch of 23 helium balloons landed on their premises.

Finally at dusk we found our way to the main east-west road and went back to our motel in Victorville. We met at the vehicles at 3:00 a.m., and when we rolled out on the El Mirage lake bed, it was calm.

By the light of headlights we began the inflation. Ernie and Phil, our gasmeister from the

previous flight, began inflating the Mylar balloons. Each took about ten minutes. Meanwhile, Jenny, Doug and I filled the 16 chloroprene balloons.

While Jenny, Ernie and Phil finished the inflations, I had Doug get into a harness and began clipping on Mylar balloons. Each had about 50 lbs. of lift, and required some positioning to assure a symmetrical cluster and get the vent lines outboard. With three balloons and no ballast, Doug was light enough to jump 10 or 15 feet into the air.

While the inflation of the remainder of the balloons continued, Doug bounced around on the lake bed—one of the perks for crewing on a Pleiades balloon. Finally all the balloons were inflated. I got into the harness, and with the assistance of crew positioned the last two Mylar balloons. Then I had crew bring the two clusters of eight chloroprene balloons.

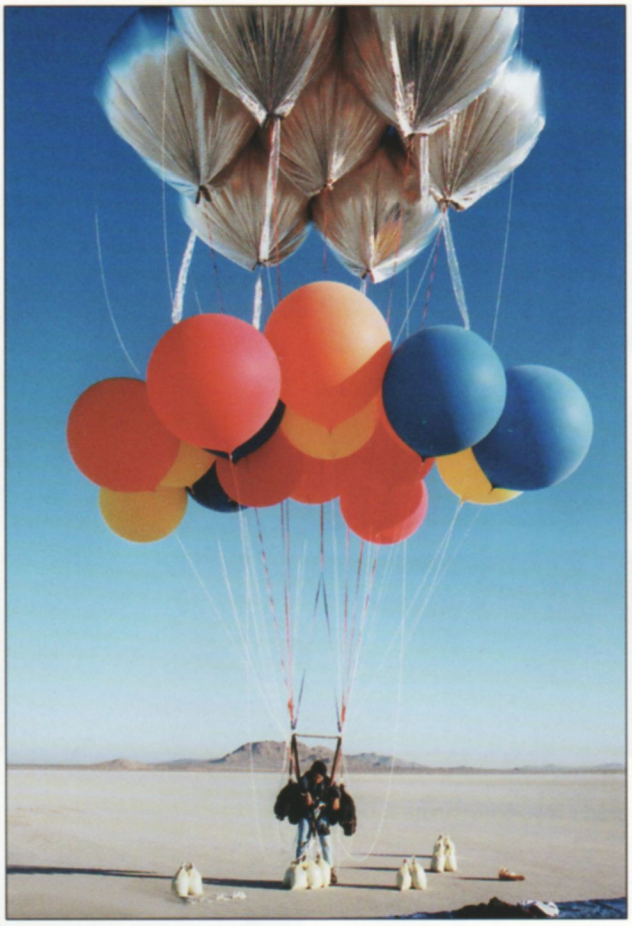
At 6:45 a.m., with the addition of the chloroprene balloons, I had pulled up on my quick-release, about 15 lbs. buoyant. My toes just brushed the ground. I pulled the pin and up I went.

The lake bed dropped away. Crew were laughing, shouting, telling me there were birds pecking my balloons—ha ha. I rose higher, and dropped ballast to hold about a 300 FPM rate of climb. It was a gorgeous day.

The simple colors of the chloroprene balloons were bright in the morning sun, the Mylar cell sparkling silver above them. I soon passed my 4,000 AGL maximum from the last flight, and continued to climb.

After half an hour, I was at 9,000 AGL (12,000 MSL). I was down to 96 lbs. of ballast out of my original 144, and crew told me the surface winds were picking up to about 6 KTS. I had hope to reached 10,000 AGL, but decided to play it safe and start down.

I pulled in a chloroprene balloon on its string and opened the knife on the lanyard around my neck. Looking away, I stabbed. Chloroprene is a rubbery elastic material, but the balloon was inflated to only half its maximum volume, so it burst with a loud "fllmmphh" rather than a bang. I looked at the vario strapped to my hip. The needle bobbled, then showed me descending slowly.



Jenny Wolf photo

John Ninomiya prepares to launch Mixed Bouquet *from the desert lake bed.*

I still had many balloons and was bursting them and dropping water ballast for control. I landed with over 60 lbs. of ballast, and a dozen chloroprene balloons still inflated. I had flown slightly over 14 miles in an hour and a half, double the distance of my first flight, and at 9,000 AGL, well over double the maximum altitude.

I had hoped to burst all the chloroprene balloons and fly just the Mylar system before putting down, but the windy terminal forecasts convinced me not to fly on. In fact, the wind picked up to seven or eight before we finished putting away, and by the time we got back to the motel, the desert wind was once again howling.

Celebration

On the way home from the second flight, I already knew what I wanted to do for the third and final one.

"You know," I told Ernie, as we drove down back to San Diego, "July 2 is the 15th anniversary of the flight of that guy Larry Walters - you know, the lawn chair balloon?"

He nodded.

"I thought I'd do a flight that day, sort of a commemorative flight, in my harness again, using all chloroprene balloons. I think I'll need about 60."

Ernie looked at me, then back at the road again. "Okay," he said.

It was a bittersweet moment. I had somehow lost the ability to surprise Ernie.

The third flight would take place in Temecula. The area where hot-air pilots typically fly there is open, with vineyards, orchards and scattered houses. To the west is the city, which I could not fly over due to congested area restrictions. To the east lay mountains where access was poor. It was a more challenging place to fly than El Mirage, but also more scenic.

Flying with a cluster of sounding balloons presents one particular challenge, keeping them from tangling. Don had told me about a flight he attempted using a large number of such balloons attached to a basket. During inflation and assembly, the balloons got so tangled that cutting away a string would not reliably release a balloon, nor could a balloon be pulled down to the basket for bursting. Lacking any way to "vent" helium to descend, Don had to abort the flight.

Larry Walters, the lawn chair man, had gotten around this by attaching four clusters of ten balloons at at widely spaced heights along a central cable. News accounts of the time said, "40 foot cable," but probably meant "400 foot," as the photos from his flight clearly show.

While it solved the tangling problem, this configuration raised the question of how one would be able to reach those upper clusters if there were a need to jettison them, plus the question of how an aircraft that tall would respond to wind direction changes at landing.

I felt that I could keep the balloons untangled but still reasonably near the pilot by using separate balloon clusters on webbing straps. I would run four straps roughly 25 feet long up to carabiners, to which four clusters of seven balloons each would be attached; this would be the top tier.

Seven balloons forms a natural cluster, with one inside and six outside. I would keep the lines to the individual balloons a short seven feet, to minimize the chance of tangling.

Dean A. Ekdahl photo

Launch site for the Celebration *flight commemorating Larry Walter's lawn chair voyage. Dean Ekdahl's front yard was buoyed by balloons.*

The second tier would be another four clusters of seven, riding just below the top tier, mounted on shorter 15-foot straps. Finally, two more clusters of balloons would be on very short straps attached to my flight harness.

With this configuration, I would be able to pull any of the lowest tier balloons down to burst, as I had during the prior flight. In an emergency, I could also cut away the straps securing one or more upper clusters, with a reasonable probability of jettisoning them cleanly. The middle tier would be only 20 feet over my head, and in a pinch I could pull down one of those clusters for bursting.

Ernie and I built a model of this configuration using 72 fourteen-inch balloons. There were a lot of balloons, but the clustered bunches of seven kept the configuration reasonably clean. It would require careful work under calm conditions to assemble the balloons in this way, but it looked feasible.

The model looked big, there in my living room. We needed a GI Joe or some kind of Extreme Sports Barbie to test-fly it, but neither of us had kids to borrow one from. I dubbed my new craft *Celebration* in honor of my first hot-air balloon.

Mike Prentice and Brenda Thiem of our local repair station helped me put together the webbing from a mountain climbing shop, rated to several thousand pounds.

I used teal for the upper tier straps and purple for the lower ones—if I were skittering toward powerlines at landing, I wanted to be clear on which straps would release 50 pounds of lift when cut, and which straps would just tangle a lower cluster of balloons with the upper clusters.

I was optimistic about the maneuverability of *Celebration*. With some misgivings, I decided to carry a BB gun on the flight—shooting at your aircraft seems a very unprofessional way to control it. But if something went wildly wrong, flying around with no way to get down doesn't seem all that professional either.

Most of my control input would be the same as in the last flight: pulling down and bursting balloons from the lower tier of 16. This had turned out to a be pretty acceptable up at El Mirage: seven or eight lbs. of lift is a reasonable unit of control, and it avoided a problem with the increasing difficulty of venting from the Mylar balloons as they became less full.

As the day approached, my feelings about the upcoming flight were mixed. I was certainly looking forward to flying *Celebration*. The Piccard Mylar cells were visually striking, but as Phil had said, they looked from the distance like some sort of special effect from the X-Files.

The chloroprene balloons just looked like a bunch of large balloons. There was something wonderful and naïve about flying with a bunch of huge party balloons. There was a kind of simplicity to it, maybe because the pilot would have to be completely simple, someone suggested. I knew it was the closest to the essence of my dream of flying with helium balloons that I had ever been.

At the same time, knew I was straying from the known technology of the Mylar balloons, where I at least had the benefit of Don Piccard's design and construction expertise. It didn't seem unreasonably dangerous, but was there something I hadn't thought through, something the newspaper articles would later refer to as "his terrible miscalculation?" It was a strange feeling.

Dean Ekdahl, local balloonist and photographer, had offered us the use of the front yard at his ranch in Temecula to do the inflation. We pulled up in front of Dean's house at about 3:30 a.m. We had lined up a dozen crew for this flight, since inflating the chloroprene balloons was much more time-consuming than filling the Mylar cells.

John Ninomiya photo

After launching Celebration *(left), John Ninomiya soared to 15,000 feet above the California summer landscape.*

photo at left by Ernie Hartt

Ernie, Jenny, Doug Spencer and Phil Brandt, my crew from the second flight, were all present. Also joining us were local balloonists Gary Eaton, Kim and Dave Lynch and Brenda from the repair station.

We paired crew in four teams of two, grouped around the back of the rental truck in which we'd brought the helium tanks. The whole process took five or six minutes per balloon. Additional crew circulated to help with tying off, and to trade the empty helium tanks for full ones. The inflated balloons were attached to carabiners held down by sandbags as the clusters of seven were assembled. Soon Dean's front yard began to fill with multicolored clusters of huge balloons.

By 6:00 a.m. most of the teams had inflated their clusters. I put on my harness and had Ernie assemble those crew people who were not needed for the inflation.

We attached a fairly even canopy of balloons 25 feet above me, then repeated the process with another four clusters on 15-foot straps, forming the middle tier of balloons. By this time, the two lowest clusters were ready.

Fully ballasted, I was tethered on my quick-release above some sandbags, my feet about a foot off the ground.

Launch altitude was 1,500 MSL in Temecula. Although I carried the same ballast and used roughly the same helium as the last flight, instead of being 10 to 15 lbs. buoyant I was about 30 lbs. light. It was already 6:20 a.m., too late to disassemble the clusters. It would have to do.

Jenny was hot-inflating her Cameron 105 nearby. She would lift off shortly after me and follow. I suffered through being handed a lawn chair, which I held up for a photo.

I looked up. Seventy-two balloons is really a lot of balloons. I cleared my throat and, because this was a commemorative flight, made a brief statement regarding Larry Walters' historic flight. My statement ended as follows:

"...While we may question [Larry Walters'] good sense, I think we should admire the spirit and exuberance of his flight, and try to keep those qualities in our own lives....So, thank you for coming today, and my balloons and I will see you later."

I pulled the pin of the quick-release. There was a slight jerk as it fell away, and then I was rising soundlessly, at a little over 400 FPM. I could see the upturned faces of crew, Dean's front yard, the surrounding fields and orchards dropping swiftly away. I waved until I could no longer hear the shouts and laughter of the crew.

The day was clear and the Temecula vineyard country beautiful. I could see Jenny's Cameron already small below me. By the time her passengers were aboard, I was at 2,000 AGL. I considered slowing down, but this silent, effortless soaring was too good to stop for a photo opportunity. She never caught up.

I maintained an over 400 FPM rate of climb, with no ballasting. With Don's Mylar balloons or a conventional open-appendix gas balloon, your helium expands as the pressure drops, you lose gas through the open vent, and the balloon eventually levels off to an equilibrium altitude.

With the sealed chloroprene balloons, this does not happen. The pressure differential between the inside of the balloon and outside pressure was probably rising a little as the balloon material stretched, but the loss of lift was relatively small. Basically, I just kept rising at 400 FPM. It was magical.

At 12,000 MSL I could see the ocean to the west, Palm Springs over the mountains to the east, and a patch of glare to the southeast that I later figured was the Salton Sea.

I intended to stop at 14,000 MSL since I had no oxygen. I burst a balloon, but my vario reading didn't change. I burst a few more. I was still showing 400 FPM up, at 15,000 MSL. The 16 balloons in the lower cluster were accessible, but it still took time to pull them down. I burst three more, and slowed to 200 FPM. I was at 16,000 feet.

I was starting to feel the altitude, or possibly the combination of euphoria and worry. I was counting on the accessible lower tier of 16 balloons for maneuvering at landing, and had already expended seven.

Hoping to conserve my lower tier balloons, I pulled out my pellet gun, and shot at balloons in the middle tier. I got one to burst, but a couple of other just acquired small BB holes, and began hissing slowly.

I remembered Don Piccard's warning me about this happening with his father's sounding balloon flights, but had assumed that my balloons, which were more rubbery and toy-balloon-like than real weather balloons, would pop — bad assumption. I went back to pulling down and bursting balloons from the bottom tier.

Finally, with a total of ten balloons burst, I leveled out a little below 16,500. Two more balloons got me into a nice 300 FPM descent.

While I was busy trying to level out and start back down, I had moved much farther east and was well beyond the area that Ernie and I had reviewed on the map and driven. I was moving to where the brushy terrain rose in a series of higher wooded hills and valleys.

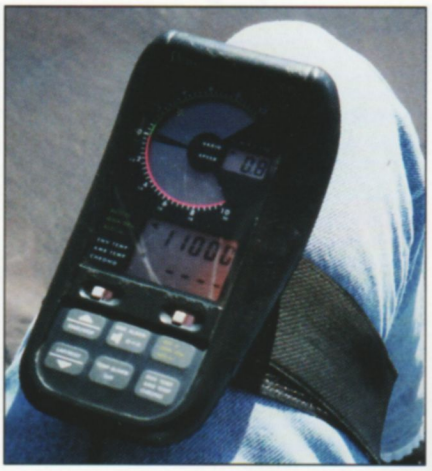
I continued to descend, now north of Lake Hemet. At this elevation, the grassy yellow hills of summer Southern California gave way to more green. I could see stands of pine with big meadows in between, dotted here and there with ranch buildings. I dropped ballast to slow to 200 FPM down. I also pulled three balloons down and tied them closer to me for ready access.

I leveled out at a few hundred feet. Ahead, a steep, rocky hill rose in my line of flight. I dropped ballast to clear it. On the other side was a meadow with small clumps of pine, and further on a dirt fire road.

I burst a balloon, did the spit test, and saw that lower winds would keep me out of the burn area by the fire road.

I burst another balloon, felt the wind shift fairly strong on my face, slowed and started drifting back the other way, toward the meadow. At 50 feet I ballasted to level out, with ground speed of a knot or two. I burst a balloon and dropped in to land lightly on my feet.

The crew received directions from the local sheriffs. Winds were calm, and I spent the time making little ten-foot jumps in the meadow.



John Ninomiya photo

Watching the altimeter strapped to his leg unwinding the altitude, John Ninomiya navigated to a gentle landing in the desert.

Jenny Wolf photo

The crew arrived about ten minutes later. I let them put on my harness and play balloon-jumping for half an hour, then we burst the balloons and started the long, circuitous drive back to Temecula. In an hour and a half, I had flown a straight line distance of 25 miles, at a maximum altitude of just under 15,000 AGL relative to launch.

The Dream of Ballooning

With that flight, my initial mission was accomplished. I had flown several different variant Pleiades cluster balloons, in different locations. I had flown to a substantial altitude, and also flown a 25-mile flight, modest for a gas balloon, but still something of a treat for me. I had learned to how to fly with helium balloons.

I plan to fly with helium balloons again. I'd like to try for the world altitude record in this category of gas balloons. I'd also like to try an all-day flight, launching in the morning and landing in the evening. This would be in the stable atmospheric conditions of winter to encounter as little thermal activity as possible. My goal would be to cover 100 miles.

Third, I'd like to build a cluster balloon for use with ammonia, to see if there's a safe way to get the cost of flying these gas balloon clusters to a level where people who wanted to could reasonably afford to do it on a regular basis.

I hope my flights have helped restore Pleiades ballooning to the forefront of aerostation. The relatively sparse recent history of these types of flights, so far as I can tell, includes only the Larry Walters lawn-chair flight, a couple of sky-diving descents from balloon clusters in the Northeast and in England, and two tethered publicity stunts in the UK.

None of these flights seemed to be oriented toward the safe and controlled operation of a cluster balloon as a free-flight aircraft, or if that was Larry Walters' intent, he fell a bit short of the mark.

I hope my flights, and Don's recent flight in Boise, will show that Pleiades flight is more than just a stunt or some variety of crackpot activity—you can ascend, maneuver and fly to a controlled landing with clusters of helium balloons, without personal injury, parachutes or appearing on America's Funniest Home Videos.

Some may wonder why I did all of this. But most balloonists probably understand. You don't choose to fly balloons because they are the most efficient or cost-effective. It is the enactment of a dream, and worth whatever dreams are worth.

For me, learning to fly with helium balloons was just such a dream: a dream of simple, silent, buoyant flight, a child's naïve and wonderful dream of being carried away by a bunch of helium balloons, a condition of complete simplicity, regained at some substantial price in persistence, hope and nerve.

As a boy I dreamed of being carried aloft by those huge, colorful globes, becoming a bright confetti spot on the blue zenith, buoyant and beautiful above all the earth.

Now, through strange good fortune, I have lived my dream, there in the morning sky.