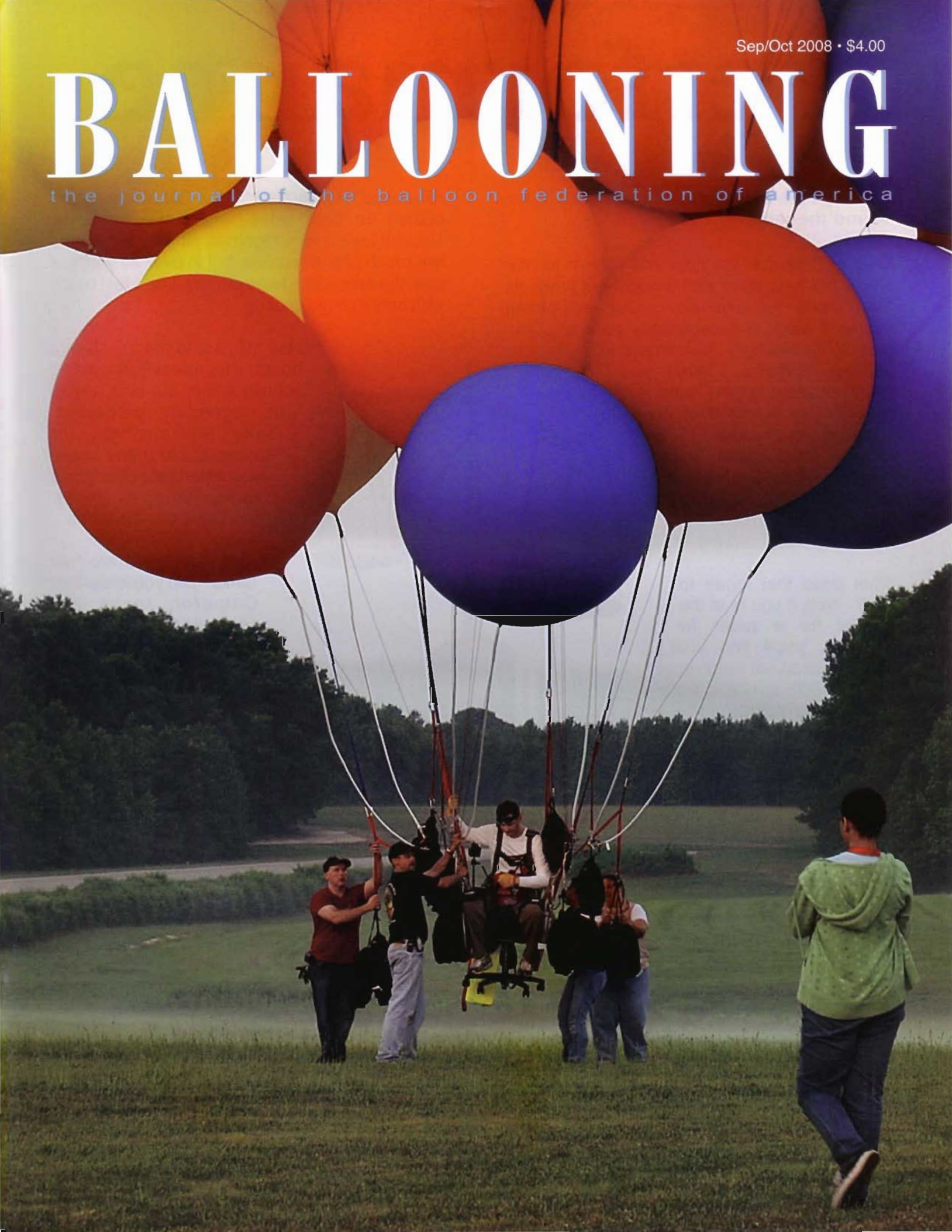


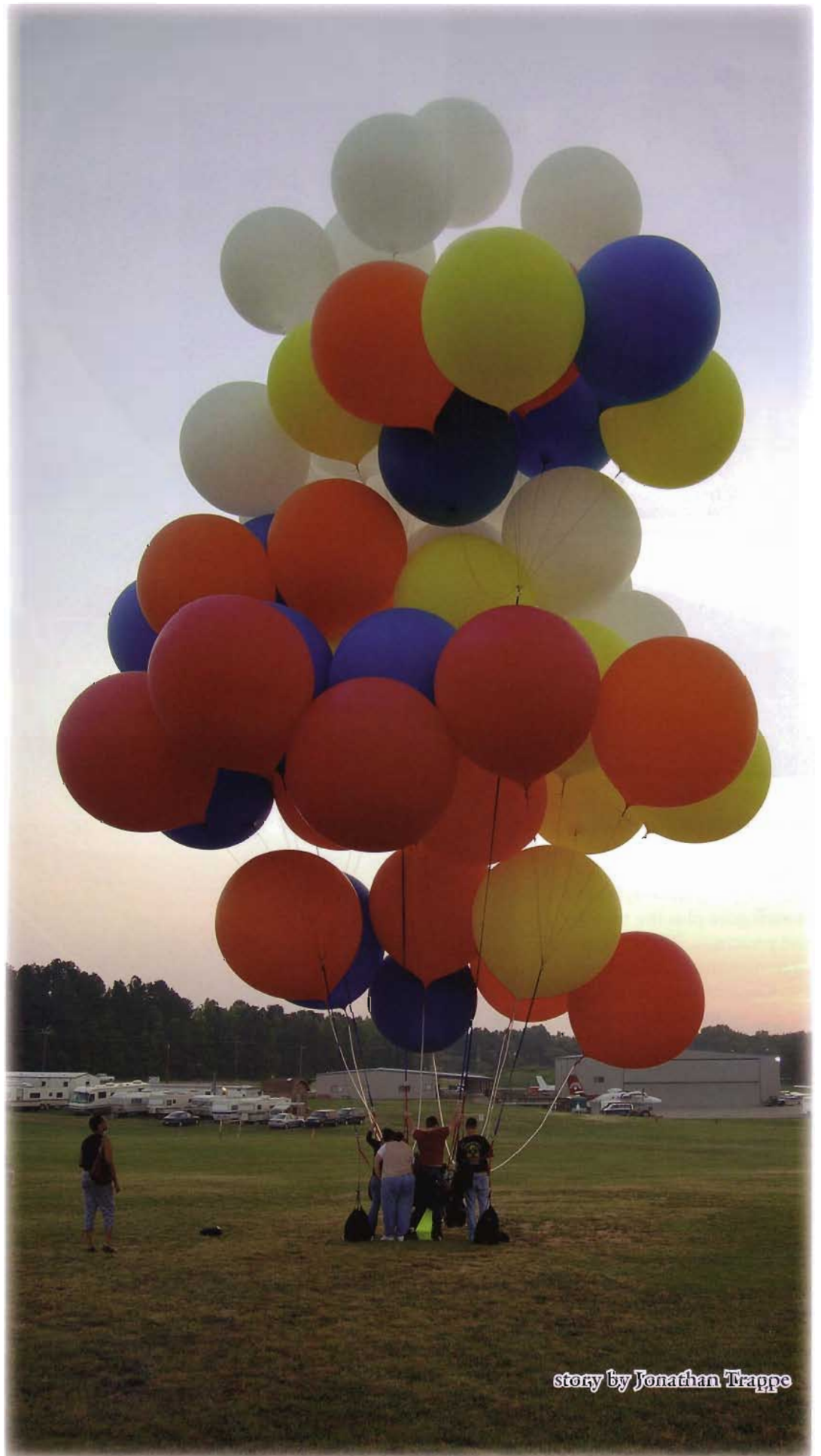
Sep/Oct 2008 • \$4.00

# BALLOONING

the journal of the balloon federation of america



# Chairway to Heaven



story by Jonathan Trappe

**C**luster ballooning has been much in the news over the past summer. On

July 5th Kent Couch gained national media headlines after making a cluster balloon flight of over 200 miles from Bend, OR to Cambridge, IA.

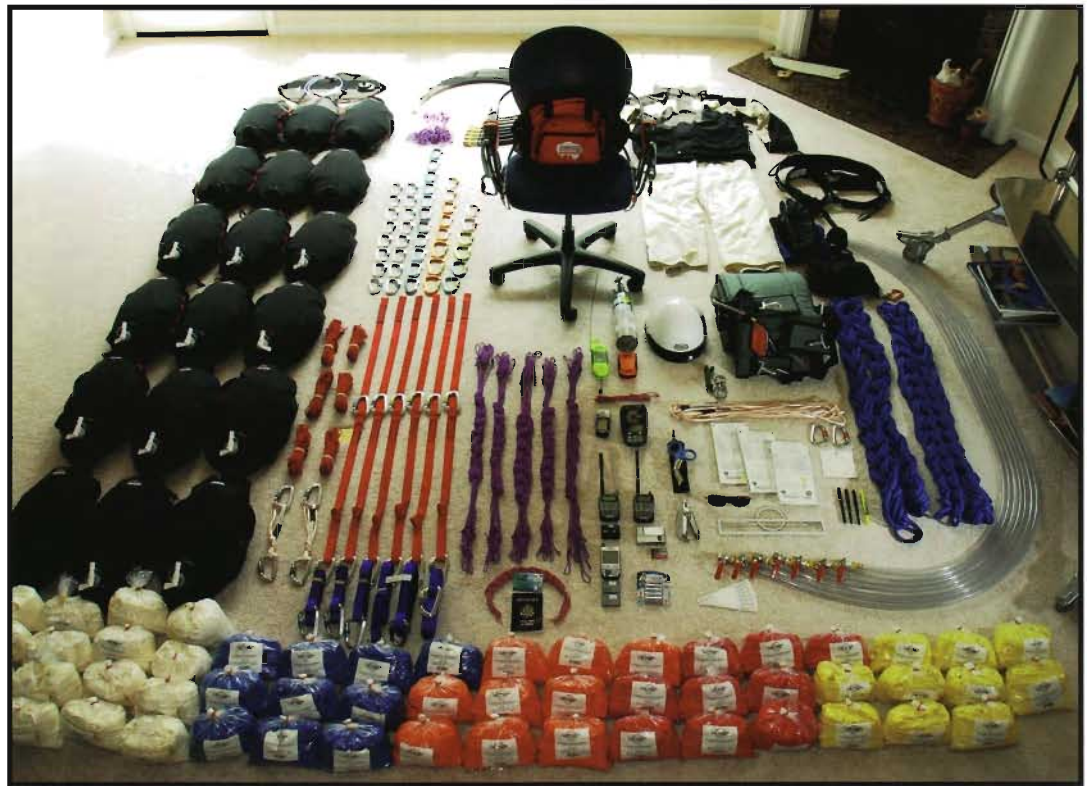
On the same day the body of Brazilian Priest Adelir Antonio di Carli was found 60 miles out to sea in the Atlantic. He had disappeared in April after attempting a cluster flight below a group of 1,000 party balloons. Just prior to this, BFA member Jonathan Trappe quietly went about his own cluster flight. He garnered no national headlines, but he conducted his flight the right way - with proper licensing and training. Here is his story...

**June 7th, 2008: 6:42am**

I was alone, sitting in an office chair, floating high above the earth. As I climbed through 9,000 feet, I decided it was time to go to oxygen. The regulations didn't require it for a couple thousand more feet, but I knew that by that time, I might be a little busy.

Between you and me, let me tell you: There is no way to look cool wearing one of those oxygen masks. But there I was, flying silently, suspended beneath a beautiful burst of giant balloons. Now at 10,000 feet, I opened the vents from my bottom tier balloons. I had been climbing steadily for the better part of an hour, and it was time to arrest this ascent.

The main components of the system consisted of 55 giant rubber balloons, and my office chair from work. (Borrowed, and later returned.) By 11,000 feet, I had achieved every inch of



*Gear up! A cluster flight is not simple undertaking.*

altitude I had dreamed of, and it was still early. And, I was still climbing.

I had rigged some very clever vents for the bottom eight balloons in my system. ("Micro-vents" I had dubbed them.) By 11,500 feet, I had opened every one of them—and they were just a little "too" micro. They were very clever vents, and were quite ineffective in arresting my 400 feet-per-minute ascent. I kept climbing.

Now at 12,000 feet, I was preparing to cut away balloons that my dedicated crew of 20 had spent the early pre-dawn hours carefully inflating and assembling. I looked up at the balloons above my head. I could only see the bottom layer, but I knew the full system towered 50 feet above me. I looked at the chair that had been my gondola that morning, the chair that I have spent a good part of my professional career in. I looked down, to the earth slipping by silently, 2.5 miles below me.

I took out my EMT shears, and prepared to cut away the balloons that were holding me aloft. I checked my parachute, and verified that I could pull the quick release which would free me from the system. Before snipping the line, I took a deep breath and had the briefest moment to reflect: Tell me again Jonathan, just exactly how did I get here?

#### THE DREAM

I believe there is near universal magic in a cluster balloon flight. In children's eyes, a cluster balloon launch embodies all the magic that is in the world. In adult's eyes, seeing a cluster stirs a dream that so many of us once had, but has grown quiet: Didn't we think of this ourselves, in early childhood? Didn't we dream of holding a bunch of balloons close, and taking to the skies?

At some point, most of us became sensible adults. At some point, we became reasonable and we no longer

thought of going aloft under colorful helium balloons. Somewhere between the early childhood years and our late teens, we became sensible in regards to flying colorful little balloons, and most of us don't seriously revisit the idea again.

Then again, some of us do. With the BFA, the Experimental Lighter Than Air society, with the Gas Ballooning division of the BFA, I think I've found that group that might still cherish this dream. Even more, I think I've found the group that is eager to help take the next step, and make the dream a reality.

#### THE FLIGHT: 6:52AM

12,500 feet. I had closed the micro vents. Scissors in hand, I looked at the six lines that went to the very top of my cluster stack. Far out of view, each of the lines was connected to one 'individual release balloon' at the top of the stack. I released my breath, and cut the line.



The view from Trappe's office chair at 14,000 feet was spectacular. Photo by Jonathan Trappe.

"SSscchwhipp!" The rope shot up through the system, and was gone in a heartbeat! Oh, how I would have loved to see this from the side view! Suddenly freed from the system, the balloon came off the top of the stack, shooting heavenwards. My system shook as the cell came free, but I was delighted to find that I was not, in fact, dropping out of the sky. I had ballast close at hand, if needed to partially counteract the 15-pound negative lift input that cutting the balloon represented.

But I didn't need the ballast. I certainly didn't need the quick-release that would cause me to fall and allow me deploy my emergency pilot parachute, in the event of uncontrolled descent.

I certainly didn't need any of that. I was at 12,750 feet.

I was still climbing.

## THE ORIGINS

I actually entered ballooning specifically to become a Cluster Balloonist. Back in 1937, Dr. Jean Piccard flew a cluster system

to over 11,000 feet. If you were to look at the October 1957 edition of Life Magazine, you would see Jean's son, Don Piccard, flying another early cluster system. I see 1982 as the birth of modern cluster ballooning when an inexperienced aviation dreamer named Larry Walters made his unplanned cluster balloon flight in the San Diego area. With his unprepared flight, Lawnchair Larry both launched the current sport of Cluster Ballooning, and set it back 10 years.

I admired the core idea of a cluster system, but unlike Larry's launch, I was determined to make a safe, legal, and well informed flight. As I came to know the wonderful people involved in this ballooning sport of ours, I also became determined to make a flight that would reflect well on our ballooning community.

## TRAINING BACKGROUND

With my goal of becoming a cluster balloonist, I had started crewing for an experienced commercial

pilot in my local area. Tom Tomasetti is the proprietor of 'Above and Beyond' hot air balloon company, and is a commercial pilot with 19 years of lighter-than-air experience in my local Raleigh, North Carolina area. He was happy to have new crew and to teach me the fundamentals of ballooning.

I attended rallies and researched type-certified aircraft that would help me achieve my dream and goal of cluster flight. Lindstrand, Cameron, and UltraMagic all offer cloudhoppers, the beautiful one-man hot-air balloons that could serve as excellent stepping stones towards cluster flight.

After considering the cloudhopper offerings, I worked closely with Andrew Baird of Cameron USA to select a Cameron-M34 cloudhopper as my first balloon. It was an unusual first hot-air balloon, but perfectly logical in helping prepare for solo flight in my gas cluster.

There really isn't anywhere one can go to get specific cluster balloon training. There is only one person in the world that has extensive experience flying clusters,

but he declined to discuss cluster systems, citing liability concerns.

Researching flight schools, I made a connection with Beth Wright-Smith and her Part 141 flight school in Albuquerque New Mexico, 'Airborne Heat.' I made arrangements to attend formal ground-school and flight training with Airborne Heat; the foundation of safety I rely on today was laid at Airborne Heat.

I attended the Albuquerque International Balloon Fiesta and visited the manufacturer's tents. On the Albuquerque launch field, I flew Keith Sproul's one-man sky-chair to a tethered altitude of about...15 feet. The next day, I took the plunge and ordered the Cameron cloudhopper. Immediately after Fiesta, I started my flight training.

## THE FLIGHT: 6:54AM

Taking out my radio, I spoke with my crew. I had cut away a balloon. I was at 13,000 feet. I was still climbing.

I know what to do. Snip! Schwwhipp! Another cell off the top of the stack.

13,200 feet, still climbing.

## GAS FOUNDATION

With my private license completed, and my wonderful Cameron M-34 delivered, I was out in the fields with that cloudhopper at every weather opportunity. As I practiced, I listened carefully to the advice of experienced hopper pilots like Rick Jones. Clearly, the hopper was a fantastic step towards my end goal.

But there was still significant training experience to be had. I still had the 'airborne heater' restriction on my license, limiting me to hot-air balloons. Even though my flight would ultimately take

place under Part 103 rules (which don't specifically require gas training, or for the 'airborne heater' restriction to be lifted), I felt it would be foolhardy to launch a gas aircraft without gas-specific training.

The BFA convention was scheduled in Louisville and it promised a session hosted by eminent gas balloonist Troy Bradley. I attended the session and had this tremendous experience that has happened again and again in ballooning: I connected with people who were excited about helping me in this sport of ours.

Troy delivered an enlightening session. For me, it was simply fantastic to get clear details on the flight I had been pursuing so closely. Troy has taught many experienced hot-air pilots to fly gas and he owns a gas

balloon that would make an excellent sea-level gas training balloon. (In fact, in solo flight, Troy has set a number of FAI/CIA World Records in this same balloon.)

I shared my excitement about my cluster flight with Troy, and after some weeks of planning we did something amazing: together we ascended in the first standard gas balloon to launch in the Carolinas in over 20 years. In his 14,000 cu/foot balloon, we launched out of my home community, and I received specialized gas balloon instruction from one of the best in our field. [For full details on this gas training flight, see the BFA Gas Division Newsletter, Aug 2008.]

#### **THE FLIGHT: 6:55AM**

I'm at 13,500 feet. I'm breathing oxygen. I'm climbing.

I advise my crew on the ground that I am cutting another cell. Snip. Schwipp!

And then the amazing happened. I leveled out. 13,500 feet. The glorious North Carolina countryside spread out below me. I was flying level at over 2.5 miles high.

There was no sound. No propellers, no jet engines. No burner, no heart-thumping rotors of a helicopter. Not even the wind that gliders experience. This was true, silent flight.

What a wondrous experience. What a wonderful moment. I had achieved what I set out to do. Through our ballooning community, we achieved success in the skies over North Carolina. I was flying level, as the early morning sun shone on my balloons.

Yes: the early morning sun shone on my balloons and warmed them using them to expand. Causing me to climb... again.

14,000 feet. Superheating (solar greenhouse effect) is expected in gas balloons. And it was a wonderful place to be, so high in the sky! You can imagine my delight, as I floated there.

You can also imagine: I'm at 14,000 feet, in an office chair.

I'm still climbing.

#### **EQUIPMENT TESTING Cluster Cells:**

During my gas training flight, we flew the 14,000 cubic foot gas balloon along with two cluster balloons, to test their performance at altitude. (Do they burst when subjected to the decreased pressure at altitude? Answer: not as we filled them, not when flown to the altitudes we tested.)

#### **Gondola:**

On separate occasions, we test-flew the gondola

(read: office chair) unmanned, under gas cluster cells. I tested for overall stability and balance of the chair. To most people's surprise, the chair was well balanced in flight and was surprisingly stable.

Further stress-testing of the chair was conducted by suspending the chair off the ground, as it would be configured in flight, and loading it with multiples of human weight. This was an extremely valuable exercise: I learned (as I lay flat on my back, after tumbling from a failed system that was previously suspended two feet off the ground) that the initial steel cables I had chosen would not withstand loads within a reasonable safety factor.

Throughout this testing, the gondola itself, the unmodified 'Steelcase Uno' office chair, did not fail or display signs of impending failure. It withstood tests of multiples of human weight, while suspended in the air, plus ballast and gear.

#### **THE FLIGHT: 7:07AM Approaching 14,500 feet.**

At this point, the Class A airspace is coming within range. Though I have made my presence known to air traffic controllers, and I am visible to them, I have not obtained a waiver to enter Class A.

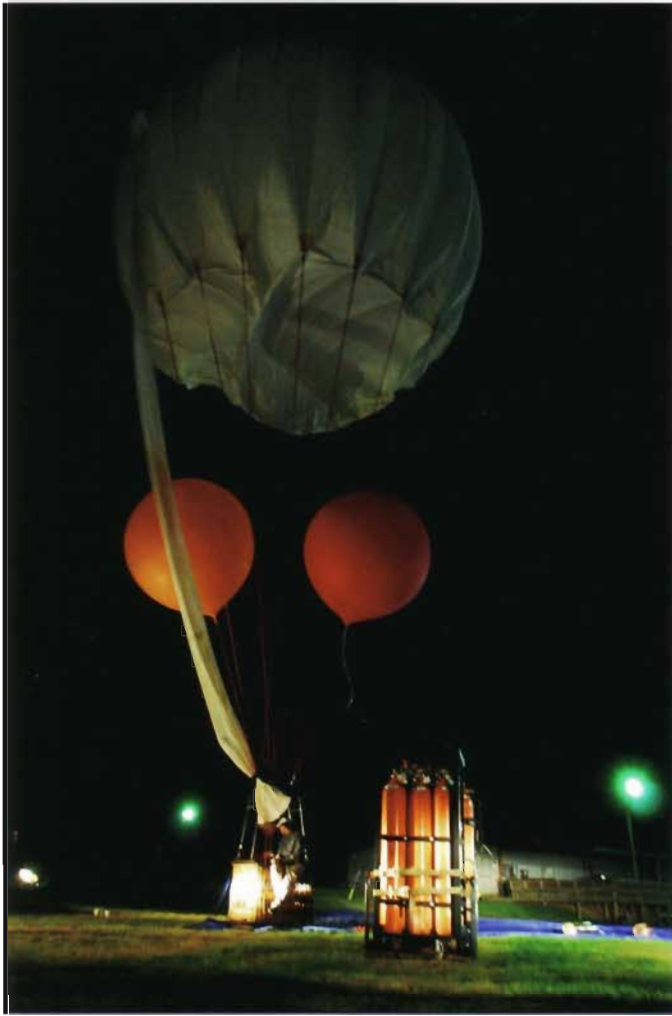
I have cut away three of my six 'individual release' cells. I've been climbing for an hour, and I have plenty of ballast, should I need to slow a descent.

I think you know how this goes: Snip! Schwipp!

Another white cluster balloon off the top of the stack! (All the top-level cells were white, to minimize solar superheating.) With this fourth cell cut away, something wonderful happened: a



*The author tests his 'gondola' on tether below a small cluster of helium cells.  
Photo by Nidia Ruiz Ramir*



*A gas training flight with Troy Bradley provided valuable flight training as well as an opportunity to test the gas cluster cells. Photo by Jonathan Trappe*

steady, easy descent.

Yes, the system shook or jolted with each cluster cell release. But now, with plenty of ballast, plenty of balloons, and plenty of time before thermal activity would start, I began a long, unhurried descent.

However, I did wish all of my individual-release cells hadn't been attached to the front part of my gondola. With them cut away, the chair tilted distinctly forward. While it is true I enjoyed a beautiful view of the earth below me, and I was clipped into the system, I would rather have preferred to be pitched...less earthwards.

## FLIGHT PREPARATIONS

Flight preparations were extensive. About two months

before the cluster flight, things had stepped into high-gear. Through our balloon e-mail distribution list 'The Reflector', I started an e-mail communiqué exchange with our ballooning community. I had substantial contributions from the stalwarts in our field; I had contributions from those who had gone before and those who had tremendous experience. I had the benefit of pilots with wonderful ideas on how to make the flight safer.

From my gas training flight, I had obtained permission to launch from an airport that conducts skydiving activities. It served as a wonderful staging ground for the helium delivery (55 tanks of helium!), and it was a great rallying spot. I owe the owners of this site, Paul

and Nancy of Carolina Sky Sports, a debt of gratitude for allowing me to use their world-class facility.

Though I intended to stay clear of the Raleigh-Durham International Airport, I was well aware that I did not, in fact, control the wind. I contacted the controllers by phone a month in advance of the flight, informing them that there would be a gas flight in the vicinity in the coming month. I found that, not surprisingly, these guys love aviation, and they were very curious about something 'new' in their area – like the 225-year old gas balloon technology.

I again spoke with RDU ATC the day before the flight and then 20 minutes before launch. I received a discrete code for my beloved battery-powered transponder, so that I could 'see and be seen', along with a radio frequency to monitor. They were well informed of my launch, and I was clearly visible to them while in the air.

## THE FLIGHT 7:10 -8:00AM

Despite the somewhat disconcerting pitch of my gondola (that is, a rather more earth-facing view than I had originally anticipated), the next hour of flight was a simple delight. It was a smooth, wonderful descent, with gentle 360-degree rotations.

The two commercial balloon pilots that fly in my area had very graciously chosen to be part of the cluster launch. My friend Tom Tomasetti launched 15 minutes before me, and radioed back observed wind conditions every 500 feet. Brian Hoyle launched in his 'Big Red' balloon at the same time as my cluster and served as a gracious host to a news reporter and one of my crew members.

By this point in the flight, these airborne companions had landed, and I was well away from the RDU 'Class C' airspace.

## WEATHER

One of the most significant benefits of my gas-training was a new approach to weather. Flying hot-air, I was accustomed to the micro-environments that impact our hot-air flights. In training for gas, I was introduced to the larger picture that must be considered when planning for a gas balloon flight.

There are some fantastic long-distance estimation tools available to pilots, such as the NOAA Hysplit model, to help with trajectory planning and selecting the best flight altitude for distance flights.

In some regards, I had very fortunate weather for my cluster flight. There was no projected precipitation, there was a wonderful high pressure zone parked nearly on top of me, and wind conditions were acceptable.

But there was also tremendous heat forecast. My local newspaper put it well: "Mostly sunny with almost unbearable heat. High 102, low 78."

To avoid flying in dangerous thermals, I would need to either land before thermal activity picked up, or I would have to plan on flying above the thermals for a long flight, not descending until sunset. That would mean a 14 hour flight in 102-degree weather.

## THE FLIGHT 8:01AM

After descending almost an hour, I saw that I could easily ride my descent all the way to the surface. However, it was still early, I was in clear communication with my crew, I was floating

in wonderful countryside, and I had safe conditions to continue flight.

By this point, I was also having so much fun I never wanted it to end!

As trained, I slowly released water ballast to arrest my descent. The water dropped slowly, spectacularly. It sounds simple, but this was one of the most beautiful moments of the flight. I wish I could capture it for you, the wonder of water pouring silently, turning from a stream into raindrops, and falling for thousands of feet under you.

One note: if you are hanging a battery-powered transponder below your aircraft, and you are using water as ballast, you might want to make sure to bring the transponder up before releasing that ballast. The water has a tendency to fall towards the things hanging below you. Like the transponder. Lesson learned. (Sorry Mark! Thanks for the transponder

loan! Can I still have my deposit back?)

I called to my crew, trying to explain the beauty of it all. My crew chief and girlfriend, Nidia Ramirez, called back to me: "We're glad to hear it honey. Enjoy it." Oh, the things she put up with during the year leading up to this! For example, ballooning totally dominating the conversation, and balloon equipment totally dominating the living room-- and the rest of the house-- for extended periods. (Sound familiar, anyone?)

After releasing water ballast, and pulling up the transponder to a higher spot on the system, I climbed steadily for nearly another hour.

I had learned a trick to help the chair balance. Since it was pitched forward, I simply lifted my knees, which balanced me further back in the chair. I also learned that lifting your knees for four hours is an "amazing" abdominal workout.

By 9:00 am, I was



*Inflight ... photo by Shawn Corkery*



## THE CHAIR

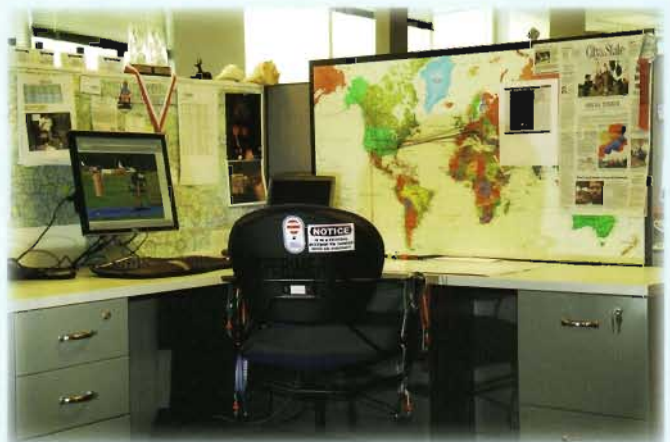
Ok, so why the chair?

There is this wonderful contradiction here. The chair can represent work, the things we must do, the obligations we have. It is, after all, my daily work chair. It represents the common, the usual, the every day. We must work.

The balloons represent fantasy. They represent dreams. They represent the uncommon, the unusual, the unlikely, the impossible but true. We must dream!

As it turns out, I didn't come up with all that. Others in the ballooning community suggested it, when hearing of my flight plans. I just thought it would be wonderful to fly my chair, and then I would have my gondola with me every day at work—to be able to remember this flight each time I came in for a day at the office. It would be a wonderful reminder of the adventures we can have!

It was also a wonderful way to have my work life and my hobby interact. Colleagues and friends from my work came out to the airfield at 3:00am to help launch this cluster flight. What a wonderful interplay and balance between work and outside life!



again above 10,000 feet. I had again switched to oxygen, and I was talking to my friend, mentor, and experienced gas balloonist Troy Bradley, who was part of the chase crew following me. (He conducted my flight training and then came out from Albuquerque to North Carolina again, to help launch a safe gas cluster flight. Is this guy amazing or what? He's a BFA Gas Division Director—I'm lucky to have met him.)

## TOPOGRAPHY

My launch was 92 miles from the Atlantic coast, well within range of this gas flight. The last person

to attempt a cluster flight, a Brazilian Priest named Adelir Antonio de Carli, was lost at sea after his attempt a month prior. Unfortunately, Rev. Antonio de Carli had not pursued balloon training, nor had he the wonderful benefit of our ballooning community to help advise a safe flight, with appropriate weather and wind conditions for launch.

Keeping his flight in mind, I was always very cautious of approaching the coastline, lest I be swept out to sea.

## The Flight 9:04am

By this time, my flight had achieved all of my goals. I had dedicated friends close

below me, ready to tell me surface conditions and help me in any way they could at landing.

Speaking with them by radio, they reported that they were starting to see the first soaring birds: a clear sign of thermals. I had to either land or fly on to sunset. With my current track and the speeds I had observed, I would be well past the coastline and out to sea by sunset.

With my dreams in the bag, it was time to plan for landing.

I arrested my second ascent by popping balloons, which was an experience in itself. (Imagine holding a tightly inflated toy bal-

loon right next to you, right against your body and popping it with a pin. Now think of holding a giant 8-foot balloon right next to you, and popping it with a knife. Now imagine doing that at 13,500 feet. Also, imagine that the thing you are popping is the thing that is holding you at 13,500 feet.)

I started another descent, taking me towards a large field.

## SUCCESS

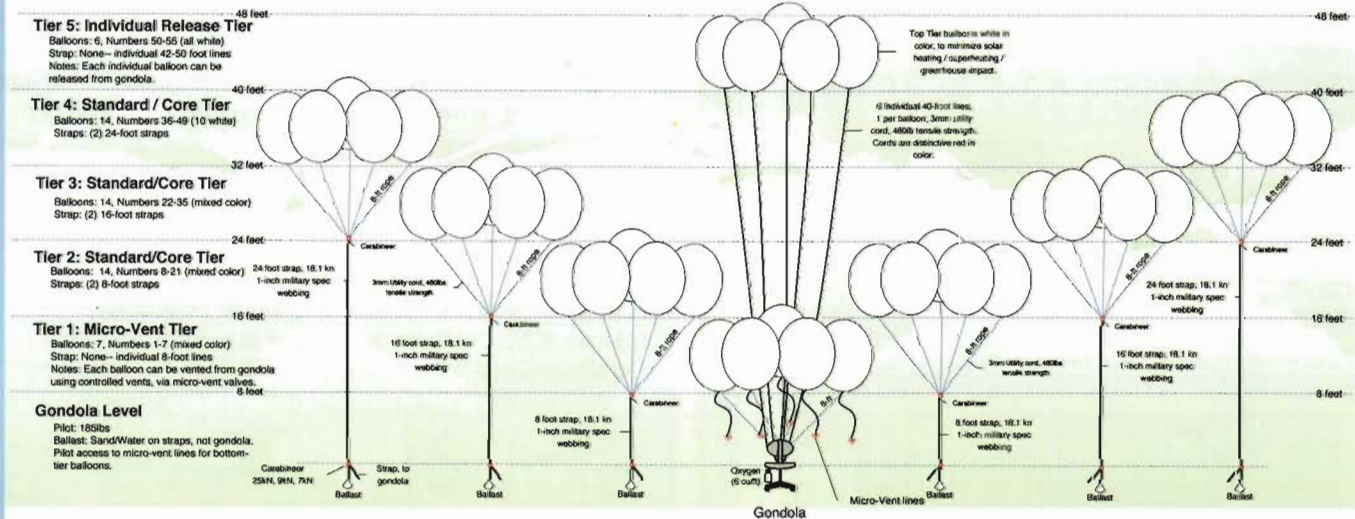
It should be clear that this was a success achieved by our larger ballooning community. The BFA, BALLOONING magazine, the BFA convention, the XLTA-

## Gas Cluster Balloon

'Double Barrel' Design

Jonathan R. Trappe

[jtrappe@yahoo.com](mailto:jtrappe@yahoo.com)



### Specs:

Balloons: 8-foot chloroprene cloudbusters, 268 cuft  
 Balloon count: 55  
 Total envelope size: 12,045 cubic feet (filled to 219 cuft per envelope)  
 Lifting gas: Helium (He)  
 Straps: (6) 1-inch 18kN rated tubular webbing  
 Carabiners: Black Diamond Quicksilver Screwgate; Rated 25kN (vertical, closed), 9kN (gate open), 7kN (horizontal); 2 carabiners per strap: base and bud.  
 Individual Ropes: (55) 3mm 480lb tensile strength utility line (49 8-foot lines, 6 40-foot lines)  
 Gross lift per balloon, at 219 cu/ft per balloon : 10.4lbs (observed), 14.44 lbs (theoretical)  
 Gross Lift: 572lbs (at 10.4 lbs/balloon), 794 lbs (at 14.44 lbs/balloon)

### DANGER!

Cluster ballooning is potentially extremely dangerous and could result in serious injury or death. Do not undertake any ballooning activity without training from an FAA qualified instructor.

Individual 7-Cluster:  
Top View



Individual 7-Cluster:  
Side View



Double Barrel:  
Idealized Top View



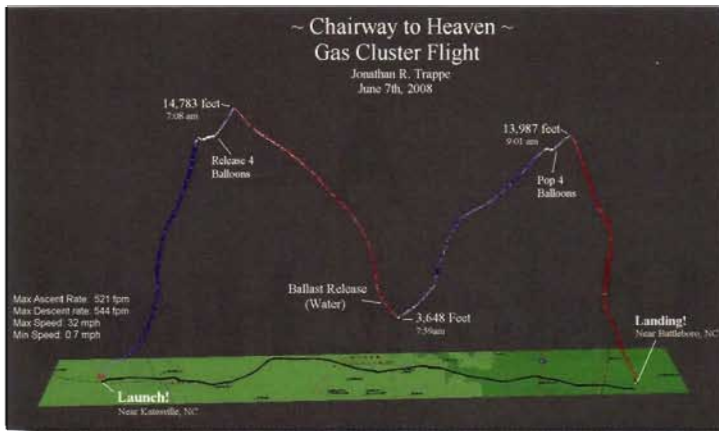
Double Barrel:  
Probable Top View



Assembled View:







- it was the contributions of our larger group that allowed me to achieve everything I had been planning for in this flight.

Thank you, to all those involved.

**THE FLIGHT**  
**9:50AM-10:00AM**

It became clear that my current descent would take

me into a batch of trees. I had to either release ballast, to overfly the trees and look for the next field, or enter a sharper descent and take this field.

I'm not one to pass an opportunity. I didn't want to be thinking, "Man, I wish I took that field back there."

I cut my two final 'individual release' cells

and brought my system down into a farmer's empty field. My return to earth was greeted by 150 yards of glorious, soft, rock-free mud. I released an entire tier of 7 balloons (as a giant 'vent') which slowed me considerably. I also popped one more cell, slowing the system further. I approached the tree line at the edge of the field, and I was happy to have my cluster cells interact with the trees. (The trees kindly popped the rest of my balloons.)

I was safe and my crew was right behind me with their tools in hand, ready to cut away or pop balloons as needed. I had flown about 4 hours, to altitudes approaching 15,000 feet.

**PAST IS PROLOGUE**

I entered ballooning to become a Cluster Balloonist. One might argue that I

have had the most wonderful beginning.

My office chair has returned to its normal duties. It has retired, undefeated. However, I have ordered another cluster gondola, and by the time this article makes print, it will be calling me to flight. Check in with me at <http://www.clusterballoon.com>

I am excited about making another safe, legal, wonderful cluster flight. If you know of a festival or event that would be excited about having a cluster launch, it would be my distinct pleasure to show up, ready to fly.

