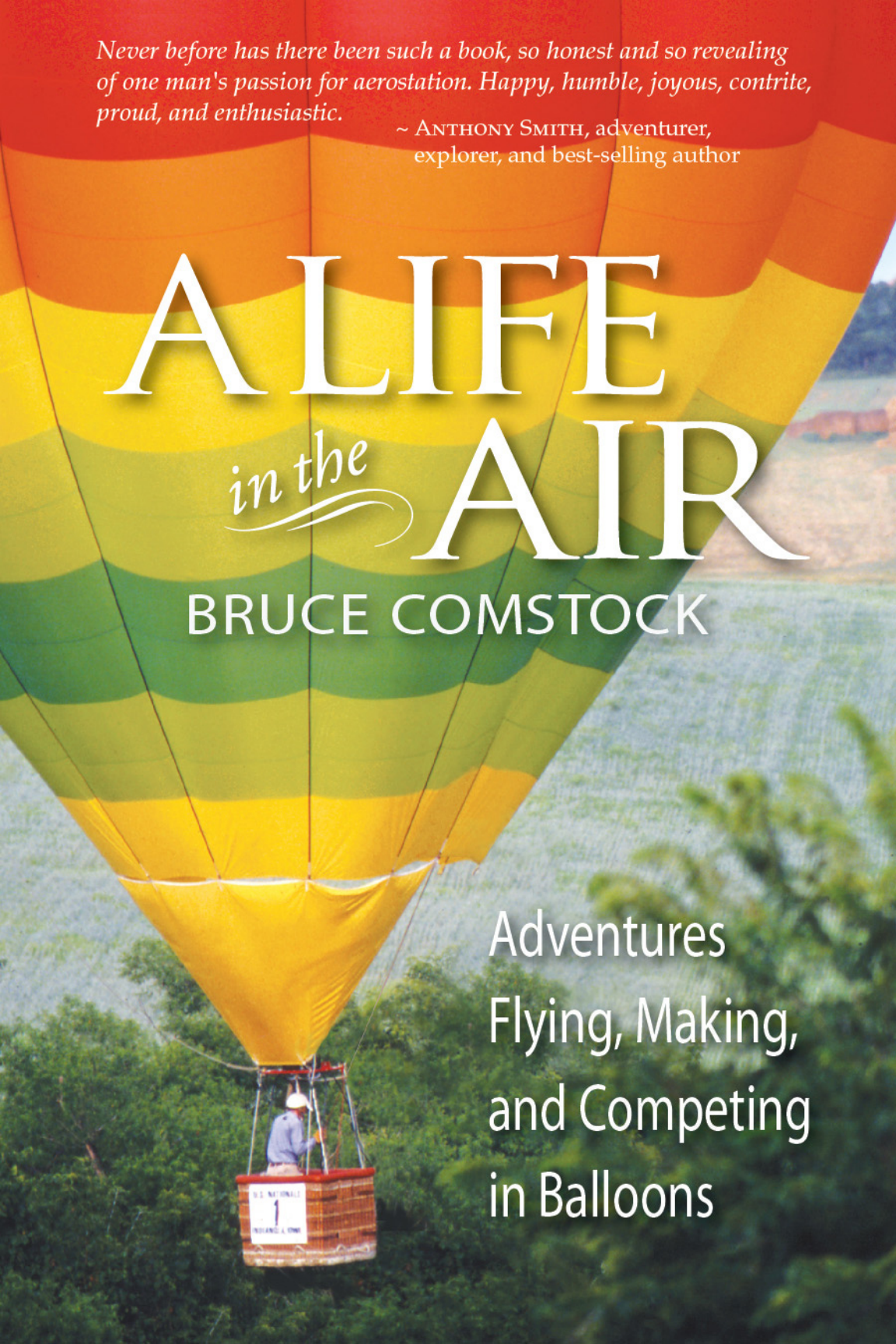
Never before has there been such a book, so honest and so revealing of one man's passion for aerostation. Happy, humble, joyous, contrite, proud, and enthusiastic.

~ Anthony Smith, adventurer, explorer, and best-selling author

A LIFE *in the* AIR

BRUCE COMSTOCK

Adventures Flying, Making, and Competing in Balloons



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WILLOW PRESS
Ashland, Oregon

Willow Press
241 Village Park Drive
Ashland Oregon 97520

www.alifeintheair.com

Cover photo by Thom Roberts
Cover and interior design by Chris Molé Design
Editing by Carolyn Bond, Editorial Arts

ISBN 9780967918631
Library of Congress Control Number: 2013944245

Publisher's Cataloging-in-Publication
Comstock, Bruce.
A life in the air : adventures flying, making, and competing in balloons / Bruce Comstock.
LCCN 2013944245
ISBN 978-0-9679186-3-1
ISBN 978-0-9679186-5-5

1. Comstock, Bruce. 2. Balloonists--Biography.
I. Title.

TL620.C64A3 2013 629.13'092
QBI13-600113

Manufactured in the United States of America
10 9 8 7 6 5 4 3 2 1

For my Mom and Dad,
who started me off in the right direction,
though they could never have imagined where it would lead

Once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return.

~ attributed to LEONARDO DA VINCI

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FOREWORD

Hot air ballooning in the United States in the 1970s was a sport for sturdy and adventurous people. A bit rough around the edges, the equipment was relatively new, some of it untested, and all of it was part of a magical era in aviation.

Bruce Comstock was there at the beginning of the era, learning to fly the earliest modern hot air balloons, making adventurous flights in sometimes crazy circumstances, and proving that analysis and innovation could improve the sport for all of us.

The work he did to understand weather, terrain, and ballooning technology helped him master the art of controlling a huge nylon envelope filled with hot air. His involvement in all aspects of the sport made him one of a kind—a ballooning scientist. With his efforts, modern ballooning was made better through manufacturing techniques that improved the safety of equipment and through changes to balloons that only a competitive pilot would understand.

I was always awed by Bruce and his work. His balloons were the best in the air, and his skills as a pilot were uncanny. His descriptions of national and international competitions are right on the mark, and reading this book brought back memories of many a humid evening as Bruce, seemingly out of nowhere, would float down out of the sky in his balloon and drop a marker just inches from a target he had flown miles to reach. He made it look effortless.

Reading this book has been an adventure anew. It will surely delight those new to the sport as well as those who were there in the early years. It's a look at the life of America's greatest balloonist and the indelible mark he made on the sport and science of ballooning.

Brian P. Lawler
editor, *Ballooning* magazine 1979–84

INTRODUCTION

For most of my adulthood, ballooning was my life. From the time I discovered hot air balloons, through the next three decades, I lived a long series of varied balloon adventures, some involving flights, others not. I shared many flights with friends, taught people to fly, chased national and world championships, broke world records, manufactured balloons, helped others try to fly solo nonstop around the world, and made exciting epic balloon voyages of my own. Most of this time I felt as though I was living a wonderful fairy tale.

Because of the cost in time, money, and personal commitment for the kind of ballooning I did, especially the more magnificent adventures, most people are not able to have these experiences. My hope is that I can share the excitement and beauty of my experiences in this book. I myself am a reader of adventure memoirs. While I am an experienced balloonist, I am a marginal mountaineer. I have rock climbed and I have slogged up several high volcanic mountains, but these experiences have given me only a glimpse into mountain climbing. Luckily, I have a shelf full of books that bring the mountaineering adventures of others vividly to life for me.

While I was doing the things described in this book I did not really appreciate what drew me to them. They just seemed exciting or fun. Especially exciting was setting out to achieve some goal that seemed impossible to most people but I could see how to reach. Once I had envisioned a challenge, I learned what I needed to know, made detailed plans, and acquired or created the necessary gear. When the challenge included flying, I also carefully planned the flight itself.

At the time, I assumed the reward was the satisfaction of reaching whatever goal I had set, often with the bonus of a breathtaking flight. Many times I repeated to my daughter, who was growing

up through much of this period, the mantra: "It's the doing, not the having done, that is important." Back then, by these words I meant that reaching the goal is what matters; once achieved, the goal becomes unimportant. Over decades of ballooning, however, I gradually discovered a deeper meaning of this mantra. That discovery is an important part of what I hope to share in this book.

So *A Life in the Air* tells two parallel stories. One is the outward story of my discovery of ballooning and the progression of adventures that followed. The other is the inward story of my learning how ballooning could give me so much happiness. These two stories wind through three periods in my life, each triggered by a precipitating event, and each building upon my prior experiences in ballooning.

THE ANN ARBOR GANG

Flying for Fun and Flying to Win

1

DISCOVERING BALLOONING

My journey toward a life in the air began unexpectedly one pleasant autumn afternoon in 1967. I was mowing the lawn of my Ann Arbor home when something in the sky caught my eye. I looked up and saw a hot air balloon floating low above the hill behind the house.

Captivated by the sight of the colorful object floating past our house, I called to my wife, Tucker, and we jumped into our car to follow the balloon. As we drove, we speculated on what a balloon like the one we were watching might cost. I was already calculating if I could somehow do this.

At the time, I was barely aware that hot air balloons existed. I knew that a couple hundred years earlier people had started flying hydrogen-filled balloons, but this had faded away after the invention of the airplane. And about the time I graduated from high school, I had read a spell-binding book about then Air Force Captain Joe Kittinger's series of jumps from balloons at the edge of space. But neither of these was anything I could hope to do. Furthermore, up to then there had been virtually no mention of balloons in the media. I had seen just one such piece, a feature article in the *Wall Street Journal* describing several companies that built hot air balloons and a few daredevils who flew them. So I was awed to see a balloon with my own eyes, let alone close enough to even hear the burner.

The balloon landed in an unused field a mile or two from our house. Tucker and I joined the small group of people who had stopped to get a closer look. The balloon lay deflated on the ground. It had no

gondola or basket, only a seat slung beneath it, obviously where the pilot sat in flight, with a fuel tank on each side and a burner just above.

The pilot, a fortyish-year-old man nattily dressed in red plaid pants, a dress shirt, and leather shoes, politely answered our many questions. An unpleasant surprise was that the balloon cost five times as much as we had guessed. At the time, I was a graduate student at the University of Michigan, studying economics. Tucker and I were getting along on the combined income from my teaching fellowship and her beginning clerical job. We thanked the balloonist and drove home.

Fascinated by what I had seen, a few days later I tracked down the *Wall Street Journal* article at the university library and wrote to the three companies it mentioned. One sent me a slick, four-color brochure that described the two balloon models they offered. Another sent a quickie-printed black-and-white brochure, with misspellings and poor grammar, that extolled how much one could earn making appearances with a balloon at carnivals. The third did not respond. In addition to the out-of-reach cost of a balloon, it turned out that the nearest instructors were either 600 miles to the west of Ann Arbor or 600 miles to the east. Disappointed, I filed all this information away.

Several months later, however, our lives began to change. Tucker applied for a receptionist job at a local "software" company, which she had assumed sold something like Tupperware. When the interviewer learned that Tucker spoke and read German fluently, he asked if she would like to do computer programming. The first IBM 360 mainframe computers were about to be delivered, and the software company planned to provide programming services to big companies that bought or leased them. At the time almost no one knew how to program these computers, yet, oddly, IBM provided programming manuals only to their own customers. The software company had somehow obtained a manual in German, and Tucker could learn programming from this. She took the job.

I found myself as interested in learning computer programming as I was in musing over whether monetary policy or fiscal

policy provided the best tools for managing the economy. So I began traveling with Tucker to her company's clients' computing sites on weekends, when large blocks of time were available to test and debug programs. I quickly got good at finding and fixing program bugs, and Tucker's boss noticed. Late one Saturday night in the break room at a client's otherwise deserted computing facility, he offered me a job for more than I could hope to earn with a Ph.D. in economics, which I was still years away from earning.

I was weary after years of studying, my experience teaching economics had dulled my enthusiasm for that career, and the seemingly unresolvable disagreements among economists were making this discipline less attractive to me. I told myself I could take a year off from school and save up a lot of money. I took the job.

Getting in on the ground floor of the application of computers to business was heady stuff. Tucker and I were so engaged in the work that it seemed like play. Sometime during this period Tucker's mother, worried about our long work hours and hoping to spur our interest in something else, gave us the book *Jambo*, about British author Anthony Smith's adventures flying an old-fashioned netted hydrogen balloon across East Africa. I read this book entranced, but the story still seemed disconnected from both the small hot air balloon we had seen and anything we ourselves could hope to do.

After a couple years, the late hours and long drives to customers' computer sites began to wear on both Tucker and me. As a boy, seeing my father spend up to three and a half hours a day commuting, I had promised myself I would never do the same. Not long after Tucker and I realized that we were doing exactly this, we both found programming jobs near home at the University of Michigan—Tucker at the Data Systems Center and me at University Hospital.

One pleasant May evening three years after we had chased that hot air balloon, while out on a drive, Tucker and I came upon a small carnival where a guy with a bubble-cockpit helicopter was

selling short rides. We handed over the ticket fees, squeezed into the cramped cockpit with the pilot, and made a five-minute flight from the athletic field, across the adjoining woods, and back to where we had started. I didn't like the noise and vibration, but while we were low above the treetops I found myself wondering what it would be like to be there in a balloon instead. That moment of wonderment changed the course of my life.

The next day I pulled out my balloon file and wrote to the one company that had sent an impressive response to my inquiry three years earlier. They wrote back with information on buying a balloon as well as the contact information for someone 35 miles north of us who could teach us how to fly one. Tucker and I decided we should contact him, that one of us should learn to fly first, and that this should be me. We would not commit to buying a balloon until Tucker had also at least flown in a balloon, and until I had soloed. Tucker would then learn to fly in our own balloon.

I phoned Dennis Floden, the nearby balloonist. Sure he could teach me, he said. "How about Saturday morning?"

In that conversation Denny referred to himself as "Captain Phogg" and said his partner, Professor Pritchard, would also probably come out. I was not sure what to make of Denny's pseudonym or his partner's "professor" title, but nonetheless I would be flying in a balloon on Saturday morning. This would also be my first training flight. Wow, was I excited!

As the days passed, I wondered if being high above the ground in a balloon basket would terrify me. I thought back to a few summers earlier when Tucker and I had made a grand tour of Europe and how I had felt queasy when I found myself in exposed high places, such as climbing the stairs of the Eiffel Tower and standing atop the Arc de Triomphe. So every day that week I parked on the top level of the parking structure at work so I could stand at the edge and peer down at the ground far below. I told myself that the uncomfortable feeling was just a natural human response to being high above the ground, and that I could get used to it. I hoped I was right.

While I waited anxiously for my first balloon flight, the physicist part of my brain, honed during my undergraduate education,

sought to understand how these magnificent craft can float in the air. I realized that we live at the bottom of a sea of air held against the earth by gravity. Because we cannot see it, the air seems to be nothing at all and to weigh nothing. In fact, based on the atmospheric pressure at sea level, I calculated, a one-square-foot column of air all the way up through the atmosphere must weigh about a ton. So, in a way, air is like thin water.

Put a chunk of steel in water and it sinks. Put a chunk of wood in water and it floats. The steel sinks because it weighs more than the water it displaces. The wood floats because it weighs less than the water it would displace if it were submerged. In fact, the wood sinks just far enough into the water to displace the amount of water that weighs what the piece of wood weighs.

Similarly, if a balloon can be made as light as the air it displaces, it should float in the air. A typical hot air balloon contains about three tons of air before the air is heated. Heat the air 150 degrees hotter and it expands, driving about half a ton of the air out of the balloon. This makes the balloon light enough to float half a ton of balloon and passengers. Heat the air in the balloon hotter to drive a bit more air out, and the balloon ascends. Allow the air in the balloon to cool, bringing more air back in, and the balloon descends.

That week before my first flight I also phoned Bill Grabb, the balloonist we had chased three years earlier. I told him I would be starting balloon pilot training the following Saturday and asked if Tucker and I could come out the next time he flew.

"Sure," he said. "I'll be flying at 6 p.m. Friday. You're more than welcome."

We met Bill at the field at the appointed time and helped him carry his gigantic heated squirrel cage inflation blower to the launch site and spread the fabric balloon envelope. We then held the mouth open as the inflator filled the envelope with heated air and the balloon stood itself up. Bill sat down on the canvas seat between the fuel tanks, added a few long bursts of heat with the balloon's burner, and, waving, rose gently into the sky. We waved back to him, got into his convertible, and followed to retrieve him from wherever he ended up.

Driving along the rural Michigan roads that day, I felt as if I had stepped into a dream. I had helped to inflate a balloon. I was following it as it flew, this time not as a spectator but as a nascent balloonist. Best of all, soon I myself would be floating up into the sky in a balloon.

The next morning, Tucker and I got up at 3:30 a.m. so we could arrive at Denny's place alongside Lake Fenton before the 5 a.m. sunrise launch time. As we drove north from Ann Arbor, in the first traces of light, the sky was clear and the air calm—perfect conditions, I guessed, for flying a balloon.

Denny turned out to be quite a character. A successful insurance salesman by occupation, he was in performance mode most of the time. Later in my training, while reveling in how adeptly he had handled a disgruntled landowner on whose property we had landed, he would describe himself as a "silver-tongued smoothy." Nonetheless, Denny was organized in his approach to flying and able to explain clearly what needed to be done and why. I could learn from him what I needed to know.

That morning, Denny explained to me how to work the crown line, attached to the top of the envelope, during the inflation to prevent the balloon from rising too soon while he added heat with the burner. Hardly 15 minutes after we had arrived at the small field near Denny's house, the balloon was inflated and ready to lift off.

"Climb aboard," Denny said.

I did and, after about 15 seconds of more loud heating, we rose slowly, and suddenly quite silently, into the beautiful morning sky.

Even my best imaginings of flying in a balloon had not been able to simulate the actual experience. To fly in a balloon is not to fly at all. Unlike other craft that struggle into the sky by powering themselves *through* the air, a balloon simply makes itself as light as the air, joins it, and floats along as part of it. Keeping a hot air balloon in the air does require the occasional noisy blast of heat, but there is no vibration, and most of the time the only sound is the faint hiss of the burner's pilot light.

On this initial flight, my task was to learn to fly level. Because a balloon continuously loses heat, and thus lift, through its uninsulated gossamer skin, flying level requires heating just the right amount. The trick was to heat in bursts, or "blasts," of a few seconds each, with the right length of time between them. When I heated a bit too much, the balloon would begin to climb. When I heated a bit too little, it would begin to descend. Worse, once the balloon's several tons of mass were moving upward or downward, it either took a lot of waiting for the balloon to cool or a lot of full-on heating to get the balloon back under control. After a while, I began to get the right rhythm down.

Denny and I flew for about an hour that morning. After that flight, I spent the day in a state of wonder, feeling blessed to be living my dream. That evening we flew again for about an hour and a half. This time I piloted the balloon to a final landing on a small beach between the edge of a secluded lake and the surrounding woods—the only suitable spot anywhere nearby.

Meanwhile, Tucker was learning how follow the balloon in Denny's stake truck. This was far more truck than we needed, but the local Pepsi bottler, who nominally sponsored Denny's balloon, had loaned it to him. For her deft, aggressive handling of this truck and her reliable appearance at every landing, Tucker soon became known by the nickname "Parnelli" after then-famous racecar driver Parnelli Jones.

The combination of weather, Denny's schedule, and our Monday-through-Friday jobs created long gaps in my training. After the first day's two flights, it was three weeks before my next flight, then another three weeks before the flight after that. (Later, when we were on our own, I would begin to feel disconnected from ballooning if I went three weeks without flying.)

During my flight lessons, with Denny's help, I began to unravel some of the mysteries of moving about in the atmosphere. On one early flight, as we ascended I felt a gentle breeze, and the direction we were moving across the ground shifted to the right.

"See how we just changed direction and speed?" Denny said.

"That's because we ascended into a different layer of air. Remember that. You can use that later in the flight to steer to a good landing place."

On many flights with sunrise takeoffs, as we climbed through the lowest several hundred feet, our direction of flight turned to the right as much as 45 degrees and our speed also increased. This predictable and very useful wind shift with altitude, common on mornings that followed clear nights, seemed not to exist in the late afternoon, the other time of day suitable for ballooning. Regardless of the time of day, I learned to note whatever winds we found and use them to navigate.

In late July, I set out with Denny's partner, "Professor" Frank Pritchard, to make the flight in control to 5,000 feet required at the time by the pilot certification rules. Frank's lithe and winsome 18-year-old daughter, Lesley, came along with us. Lesley was already a student pilot. She had even inadvertently soloed when the restraining line of the balloon she had been piloting tethered had broken.

Under Frank's guidance, I piloted the balloon to more than a mile above the ground. There we were, by far the highest I had ever been in a balloon, outdoors in the crisp morning air, able to view the panorama of lush Michigan summer landscape for almost 100 miles around. My concerns about fear of heights were laid to rest on that flight; I was completely comfortable being high above the ground in a small aluminum gondola with only low rails.

The most striking maneuver we did on that flight was a "terminal velocity descent," which is what happens when you quit heating for a long time. As the balloon cooled at first the speed of descent increased rapidly, then more slowly, until we were descending at about 1,000 feet per minute. Eventually, our downward speed alternatively decreased and increased, as though the balloon was taking very slow, gigantic breaths. The quiet unpunctuated by the usual regular heating, the air rushing up past us, and the strange oscillation in our rate of descent all unsettled me. Finally, at Frank's instruction, I heated continuously for a long time—almost a minute—to stop the descent and return to the more comfortable level flight.

On another beautiful morning in late July, Tucker took her first flight in a balloon. She climbed into the gondola of the inflated balloon with Frank at the controls. Frank opened the blast valve and heated for takeoff, stopping only after the balloon was tens of feet above the ground and ascending smartly. During the heating, Tucker had been looking up at the flame pouring heat into the envelope. As she watched the last of the flame die out after Frank stopped heating she asked when they were going to lift off.

"We're 50 feet in the air, Tucker," Frank said, obviously amused.

After a short pause to gather her thoughts, Tucker exclaimed, "It's just like a big benevolent dragon. It's big like a dragon, it roars like a dragon, and it's benevolent."

On the last day of July, I flew with Denny for a half hour and then, at Denny's instruction, landed and kept the balloon inflated. To my surprise, Denny climbed out, looked me in the eye, and said simply, "Go fly."

That first solo flight seemed to be a rite of passage. Having no one else there to second-guess my decisions or to save me from my mistakes evoked feelings of both freedom and responsibility. It also delivered a message: that I was good enough at this to fly by myself, though perhaps not yet with passengers. After 10 minutes of flying with no instructor, I landed.

Later that evening Tucker and I ordered our first balloon, a Raven S-50A, through Denny, who was a dealer for Raven, the first modern hot air balloon manufacturer. Most balloonists name their balloons. It was clear to both Tucker and me that our balloon's name would be *The Benevolent Dragon*.

Around that time we mused over how long ballooning might engage our combined interest. After about 50 hours of flying on our own, we agreed, we might sell our balloon and move on to something else. We did not then know that ballooning had much bigger plans for us.

Balloons are treated as registered aircraft by the Federal Aviation Administration (FAA). Like airplanes, they must carry identification numbers, be registered with the FAA, meet

airworthiness standards, and be inspected at regular intervals. And like airplane pilots, balloon pilots must have an FAA pilot certificate to fly. To get a balloon pilot certificate in 1970, one needed to complete eight hours of flight instruction, including a flight in control to 5,000 feet, pass an FAA written exam, and pass an oral exam and a flight test given by an FAA examiner.

At the time, little written material was available to help a prospective pilot prepare for the written exam. There was only a balloon exam guide created by the Lockheed Employee Recreation Club balloon group in Southern California, an FAA book on aviation weather and weather reporting and forecasting facilities, and the published FAA regulations for balloon pilot certification as well as rules for flying and tethering balloons. I studied all these for hours every evening for a month. Still not sure if I knew what was needed to pass the exam, I decided to go take the test. If I failed to get the minimum required score, I could study more and retake the test after waiting the requisite month.

When the exam results arrived in the mail, I learned I had missed only one answer. Several years later, I revisited that test question and realized that my answer had in fact been correct; the answer the FAA had been looking for was not.

By late September I was ready to take the oral and flight test, using Denny's balloon, since our balloon would not arrive until a few weeks later. The FAA sent out two operations inspectors as examiners. After some casual conversation at Denny's balloon field, one of them told me to go ahead and inflate the balloon. I guessed our conversation had been the oral exam.

I inflated the balloon, and from the gondola looked toward the two inspectors, who were standing a safe distance away. "What should I do?" I called to them.

They looked at each other quizzically. Then one looked toward me and said, "Just go ahead and fly."

I heated up, took off, flew somewhat sloppily for about 20 minutes, and landed a ways back from the road in an unused field. The inspectors followed in their gray government car, in which they remained at the side of the road while Tucker, Denny, and I packed the balloon out in the field. Back at Denny's place, one of

the inspectors handed me my commercial balloon pilot certificate, which read "limited to hot air balloons with or without airborne heater only." I had become a balloon pilot—approximately the 40th active balloon pilot in the United States.

After the FAA inspectors left, Denny looked me in the eye and said, "You are now one of the old men of ballooning." After a moment's reflection, I realized what he meant. I was a pioneer in a sport that would grow unimaginably in the years to come.

ACKNOWLEDGMENTS

Writing can be a lonely journey. Creating this book, I have been fortunate to have some great companions long the way.

My brother Craig Comstock, a skillful writer and a book creation coach, listened patiently for many hours to my long descriptions of pieces of this book, from its earliest journal-like form to its final edited version, and made many insightful comments along the way. My sister Kani Comstock, herself author of two books, steadily encouraged me whenever I doubted myself and gave me much valuable advice and assistance.

Author and editor Barbara Sjoholm read the first version of the manuscript and suggested in the broad terms appropriate at that stage how I might turn it into a flowing, cohesive story. Book editor Carolyn Bond helped me reorganize the story into logical pieces, smooth the flow of the writing, ferret out inconsistencies, and proofread the result. Book designer Chris Molé created a beautiful book from the manuscript that Carolyn and I hammered out over most of a year.

Most of the photographs in this book were taken before digital photography had been invented. Finding usable ones as much as 40 years later was no small task. Several people helped in this process. Becky Wigeland, of the National Balloon Museum, invited me to look through the entire collection of the photos of the late Indianola photographer Thom Roberts, and Roberts' widow, Diane Roscoe, generously gave permission for me to use the photos I found there. Brian P. Lawler pored through his many catalogued photos from the late 1970s and early 1980s and found more photos for this book. Early hot air ballooning photographer Richard Stamberg undertook to find relevant photos from the 1970s in his large

collection—a task that turned out to be like trying to find a needle in a haystack.

Without the enthusiastic collaboration and assistance of my former wife, Tucker Comstock, during my first quarter century of ballooning, I would have no story to tell. What she and I did together formed the bulk of my ballooning experience. The ballooning projects I did later on my own were built upon that substantial foundation.

For 18 months my life partner, Karen Weiseth, listened patiently to my detailed descriptions of various struggles I was having researching and writing this book, and endured my regular unavailability. Without her interest and forbearance, this book would not exist.

I am indebted to these people. I thank each of them.

APPENDIX A
Championship Results

SUMMARY

Championship (number flown)	*Won*	*Top 3*	*Top 5*
World (7)	1	3	4
Continental (8)	0	4	6
National (22)	6	12	14
All (37)	7	19	24

INDIVIDUAL EVENTS

Year	*Championship (location)*	*Finishing Position*
1971	U.S. National (Indianola, Iowa)	5
1972	U.S. National (Indianola, Iowa)	1
1973	World (Albuquerque, New Mexico, USA)	4
1973	U.S. National (Indianola, Iowa)	49
1974	U.S. National (Indianola, Iowa)	44
1975	U.S. National (Indianola, Iowa)	>25
1976	U.S. National (Indianola, Iowa)	1
1977	U.S. National (Indianola, Iowa)	1
1977	World (York, England)	2
1978	U.S. National (Indianola, Iowa)	~22
1979	World (Uppsala, Sweden)	6
1979	U.S. National (Indianola, Iowa)	1
1980	U.S. National (Indianola, Iowa)	4
1981	World (Battle Creek, Michigan, USA)	1

Year	*Championship (location)*	*Finishing Position*
1981	U.S. National (Indianola, Iowa)	2
1982	U.S. National (Indianola, Iowa)	1
1983	North American Continental (Battle Creek, Michigan, USA)	3
1983	U.S. National (Indianola, Iowa)	20
1984	North American Continental (Grande Prairie, Alberta, Canada)	4
1984	U.S. National (Indianola, Iowa)	2
1985	World (Battle Creek, Michigan, USA)	21
1985	U.S. National (Indianola, Iowa)	2
1986	North American Continental (Barrie, Ontario, Canada)	3
1986	U.S. National (Indianola, Iowa)	3
1987	U.S. National (Indianola, Iowa)	1
1988	U.S. National (Indianola, Iowa)	2
1988	North American Continental (Saint-Jean-sur-Richelieu, Quebec, Canada)	2
1989	U.S. National (Baton Rouge, Louisiana)	10
1989	World (Saga, Kyushu, Japan)	3
1990	U.S. National (Baton Rouge, Louisiana)	2
1990	North American Continental (San Antonio, Texas)	?
1990	Pacific Continental (Saga, Kyushu, Japan)	5
1991	U.S. National (Baton Rouge, Louisiana)	DNF
1991	World (Saint-Jean-sur-Richelieu, Quebec, Canada)	7
1991	Pacific Continental (Saga, Kyushu, Japan)	3
1992	U.S. National (Middletown, Ohio)	~20
1992	Pacific Continental (Saga, Kyushu, Japan)	~20

APPENDIX B
World Records and Other Significant Flights

WORLD RECORDS

First Ever 24-Hour Hot Air Balloon Flight and Hot Air Balloon World Duration Record

With David Schaffer
Cameron A-210
June 17–18, 1980
Battle Creek, Michigan to Farmington, Michigan
24 hours, 7 minutes, 58 seconds
FAI Classes AX-10, AX-11, AX-12, AX-13, AX-14, AX-15

Longest Distance Hot Air Balloon Flight Up to That Time and Hot Air Balloon World Distance Record

With Jeffrey VanAlstine
Cameron A-210
December 3, 1980
Anderson, Indiana to Ogburn Crossing, North Carolina
794.06 km. (493.4 miles)
FAI Classes AX-10, AX-11, AX-12, AX-13, AX-14, AX-15

Highest Altitude Rozière Flight up to That Time and Rozière Balloon World Altitude Record

With J. Stephen Fossett
Cameron R-77
September 22, 1996
Erie, Colorado to Carlton, Kansas
8,377 meters ASL (27,484 feet ASL)
FAI Classes AM-8, AM-9, AM-10, AM-11,
AM-12, AM-13, AM-14, AM-15

OTHER SIGNIFICANT FLIGHTS

645-Mile Long Jump Flight, Which Doubled the Longest Long Jump Flight to That Time

Solo
Cameron N-105
January 15, 1994
Atlantic, Iowa to Huntland, Tennessee
645 miles
The previous Long Jump flight record was 303.5 miles.

30,820 Feet MSL Flight

Solo
Cameron N-105
May 31, 1994
Brooke Field, Marshall, Michigan to 12 miles east
30,820 Feet ASL
This flight completed the final requirement for the FAI Gold Badge with All Four Diamonds (the second ever).

1519-Mile Rozière Flight

With Ed Heltshe
Cameron R-77
October 6–9, 1995
Snowmass, Colorado to Sinking Valley, Pennsylvania
1519 miles in 61 hours and 25 minutes
Possibly the longest distance ever Rozière flight purely for pleasure.

Tucker, Courtney, and Bruce enjoy a weekend morning flight in southeast Michigan.

In competition mode: Bruce tracks a pilot balloon; Tucker records the magnetic bearings. *Photo: Thom Roberts*

Finishing the parachute valve of *Humungi* in the basement balloon repair station.

Bruce lands the closest to the final target, sealing his first win of the national championship.

Christian unexpectedly sweeps Bruce off his feet and carries him to the front of the room to receive the world championship trophy. *Photo: Battle Creek Enquirer*

David Schaffer and Bruce share a moment of levity before the start of a pilot briefing at the 1982 national championship. Al Nels looks on from beyond Bruce. *Photo: Thom Roberts*

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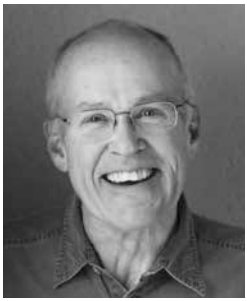
l ef t :
Ballooning magazine cover features the Iowa terrain over which the national championships took place from 1970 through 1988.

bel ow :
Then current world champion Bruce wins his fifth national championship in 1982.

Bruce nails the center of the target with his scoring marker to win a task.

l e f t:
Prepared and inflated by Bruce and co-launch director Nick Saum, Steve Fossett's balloon stands ready to take off on Steve's solo Pacific flight.

l e f t :
Bruce and Steve Fossett at the reception, held at the National Air and Space Museum, Washington, D.C., celebrating Steve's successful solo flight around the world.



World and six-time U.S. national hot air balloon champion **Bruce Comstock** also set world records for duration, distance, and altitude. As president of the Balloon Federation of America and editor of *Ballooning* magazine in the 1970s, he helped guide the early development of the sport. He later built a major balloon manufacturing company, and designed and built the autopilot that made possible a solo balloon flight around the world. Always looking to push limits, Bruce on one flight flew in an open basket to over 30,000 feet, on another eked out 645 miles on the fuel normally used for a local pleasure flight, and on yet another cruised more than 1500 miles from Colorado to Pennsylvania. It is no surprise that he is in both the international and U.S. ballooning halls of fame. *A Life in the Air* tells his story.

www.alifeintheair.com

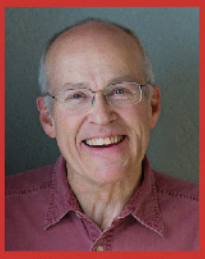
MEMOIR / BALLOONING

This is a life-affirming book—a fascinating insight into the mind and (often crazy) antics of a master of his craft. Bruce Comstock's achievements are extraordinary. In A Life in the Air *he takes the reader with him on his adventures—breaking world records, winning competitions, and achieving many firsts in the world of balloon flying. The pursuit of his dreams is recounted with humor and a refreshing modesty, while not disguising the strategic thinking and attention to detail that single Bruce out from the crowd.*

~ Judy Leden, adventurer, hang-gliding and paragliding multiple world champion and world record setter, author of *Flying with Condors*

A Life in the Air *is an engaging tale, especially of the evolution of competitive ballooning, and of a talented and focused man who lived it. More than a collection of stories of the adventures of Bruce Comstock, his family, and their cadre of ballooning friends, this book reveals how one man's passion and creativity shaped a life that forever changed one corner of aviation.*

~ Al Nels, multiple world and U.S. national hot air balloon champion



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$18.00
ISBN 978-0-9679186-3-1
51800>
9 780967 918631

WILLOW PRESS
Ashland, Oregon

Cover photo: Thom Roberts
Cover design: Chris Molé