

BALLOON

ALTITUDE

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BY CHRISTOPHER KEITH

Lifeline

Clotho

Balloon: Altitude

Balloon: Solitude

Balloon: Latitude

FACTS

A high-altitude record was set in 1927 by Hawthorne Gray on his first balloon flight when he reached 29,000 feet. Despite attaining 42,000 feet on his second flight, it did not count as an official record because he had to parachute from the balloon to save his life. He reached 42,000 feet again on his third flight, but ran out of oxygen on the descent, passed out with hypoxia and was found dead in a tree.

In 1934, Americans William Kepner, Albert Stevens and Orvil Anderson reached 60,000 feet. They were the first humans to report seeing the curvature of the Earth with their own eyes. They had to descend by parachute when their hydrogen balloon exploded.

In 1956, Lieutenant Commanders Malcolm Ross and Lee Lewis of the US Navy flew to 76,000 feet, claiming the new record. In October, 1957, they reached a staggering 85,700 feet.

1960 was the year Joe Kittinger set a new altitude record, and one for the highest parachute jump at 102,800 feet. He was also the first person to jump from the stratosphere.

In 1961, Lieutenant Commander Malcolm Ross was back in a space balloon, this time with Lieutenant Commander Vic Prather, launching from the deck of an American aircraft carrier to achieve a record height of 113,740 feet.

That record only lasted five years when, in 1966, Nicholas Piantanida, an amateur parachute jumper, skydived from a crewed balloon from 123,500 feet. The record would stand for the next 46 years.

Austrian skydiver, Felix Baumgartner, jumped from a helium balloon in 2012 as part of the Red Bull Stratos Project. He set two world records that day, jumping from just over 128,000 feet and reaching an estimated top speed of 843.6 miles per hour, exceeding the speed of sound.

Just two years later, in 2014, Alan Eustice from Google broke Baumgartner's altitude record when he jumped from a space balloon at 135,908 feet, more than one mile higher. However, reaching a maximum speed of 822 miles per hour, he did not break Baumgartner's fastest skydive record.

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1

It should have been the highlight of his career, a day for celebrating. Instead, hundreds of thousands of people had just lost their lives.

There was no time to ponder what had happened.

No time to mourn the dead.

In a guarded crouch amid a ring of debris, Will put his fist to the floor as the dust dispersed and settled around him. His spacesuit, forty-five kilos of engineering brilliance, was custom-made using a complex system of equipment and layers to keep him safe and comfortable. But his breathing was rapid, and he had to focus on slowing it down. Panic was more taxing than physical exertion and would drain his oxygen tanks.

The more he allowed his pulse to quicken and his mind to race, the less time he would live.

He stood slowly and switched on the EVA headlamps mounted on the sides of his helmet. The twin lights speared through the dust and smoke as he swung his head around the office, just the nine desks, each one broken or tipped over. Damaged computer hardware and a tangled nest of cables and wires littered the floor. He glanced up at the steel beams hanging precariously above him. The roof had been ripped off, revealing a rust-coloured sky, bringing premature darkness to the mid-afternoon hour.

The unstable floor gave way, and Will dropped like a brick, surfing concrete for three storeys as it came tumbling and crashing down to the ground in a deluge of debris.

Stunned and covered in dust, he found himself swinging inches above the ground, his legs treading the air.

His parachute canopy was snagged high up on a strut, and he was still strapped into the harness.

One of two quick-release buckles was stuck. As thick, black smoke poured in from a hole in the wall, choking the office, he reached for a glass shard in the rubble, struggling to grip it in his gloved hand.

Have you ever tried tying shoelaces while wearing boxing gloves? Ariane's words earlier that day, not his own. *That's what doing anything wearing a spacesuit is like.*

Sawing through the harness strap with the glass, he shrugged himself out of the parachute pack and dropped the remaining distance.

Despite the pain in his bad leg and hip, intensified by the crash-landing, he crossed the office, the glass fragments and plaster crunching beneath his boots.

He leaned against a door, never so aware of his heartbeat. The sound of his breathing grew louder inside his cocoon. He gagged but held it down with determination. It was not like he could flip his visor up unless he wanted a slow, agonising death, so his options were to keep his stomach contents down or decorate the inside of his helmet and put up with the stench.

The stop brought him the half-moment he needed to compose himself. He had to escape from this demolished office block before it came down on top of him.

He fumbled his way through the door into the next office, finding the south wall collapsed, forming a heap of bricks that stood four metres tall.

It left him shocked but was nothing compared to the disturbing sight awaiting him as he climbed up the bricks to the top.

His visor was bathed in an apocalyptic, orange glow from the out-of-control fires bearing down on the town spread out before him.

Destroyed or damaged buildings, their doorways and windows spewing flames and smoke, were heavily engulfed in waves of blazing-red fire. Several emergency alarms blared into the dust-filled air.

On the fringes of the town, fire raced through woodland, leaping from tree to tree.

It would burn for hours, days, maybe even weeks.

He raised his eyes to the dark, orange sky, searching for his crewmates. 'This is Will. Do you copy? Where are you? Did you make it back?'

Dazed by the unreality of it all, the horror too awful to grasp, he clenched his teeth so hard he thought his jaw might crack.

There was no time to process any of this. Not with a depleting life support system.

'Jefferson, it's Will. Do you copy?' His voice was filled with emotion, close to breaking were it not for conscious effort. 'Donavon? Ariane? Anyone? Can anyone hear me? Do you copy? I'm in a town. I don't know where this is. I don't even know if it's still England. The damage here is catastrophic.'

Scanning the town again, he saw no signs of life.

No one crawled out of the ruins.

The death toll would take months to tally and would shock the world.

Where was his crew? Their radio silence sent a wave of dread through him. Were they alive?

Jefferson would know from the flat or fluctuating bio-signs on his monitor. If he was still alive himself.

Checking the readouts on his solar-rechargeable wrist computer, he noted the time was three o'clock. His oxygen had dropped to ninety-four per cent. He had less than eight hours to reconnect with the crew and find shelter.

He drew a cool, unspoiled breath and let it out like it was his last.

2

Earlier that day

The lighthouse stood at the precipice of a sheer cliff overlooking the Celtic Sea. Located in St. Ives, Cornwall, it was one of the oldest lighthouses in the country and tallest at forty-four metres.

Architecturally speaking, it was an ugly structure, but it had fulfilled its lifetime mission. The lamps, with a range of twenty-two nautical miles, occulting every nine seconds, had guided thousands of mariners to safety over its many years of service.

The tower itself, white with a navy-blue band around its middle, was first lit in 1837 and had become automated one hundred and fifty years later. But major advances in satellite technology meant ships were less likely to get lost or caught in stormy weather because they relied on VHF radio *and* hi-

tech navigation to guide their vessels to safety, making the lighthouse concept redundant in the modern world.

The lighthouse had belonged to Jefferson's family for several generations, serving maritime pilots at sea around the South West Peninsula. Since its decommission, it served as a family heirloom to Jefferson and a tourist icon to the rest of the country.

While no longer providing navigational aid to mariners, it had been repurposed to provide navigational support to Fable Sky, the world's largest helium balloon, tethered to the cliff two hundred metres away, ready for its inaugural launch into space a few hours from now.

Jefferson had amassed a hefty fortune out of property management and an impressive investment portfolio. But instead of investing in overdue lighthouse maintenance, he had sold off his assets and poured all his money into the balloon project, converting the watch room into a flight control room and the basement into a preparation hub. For the most part, its anatomy was in its original condition. The interior walls were cylindrical bare brick and the wooden floorboards and window frames had never been replaced.

Although the flight control room was compact in a rounded space, Jefferson liked that it was his, and he had no one overseeing his work. Computers lined a long desk with various ethernet and power cables hooked up to high-definition screens and complex navigational instruments that communicated directly with the balloon. Employing cutting-edge meteorological forecasting techniques, these computers could process a large amount of data in real time.

Across the room was Todd's workstation, also covered in all manner of computer hardware.

The flight control room would oversee the journey to the edge of space – a kind of mission control base. And Jefferson, once head keeper of the lighthouse, responsible for entering the names of passing ships in the logbook, repainting all the wooden structures and keeping the area clean right down to the coastline, was now the flight director. He handled all the administration, from IT to book-keeping. Should the flight succeed, he hoped it would kick-start space tourism and replace the heavy losses accrued from owning an obsolete lighthouse. That money would feed back into its upkeep and replenish his retirement savings.

Plain and simple business strategy.

Inside the lighthouse tower, dressed in his freshly dry-cleaned suit, a blue so dark it seemed black, the fifty-five-year-old stared at his screens, deep in thought. He'd always been a reliable sleeper. In recent weeks, with the launch growing nearer, he had not slept well, some nights staring out of his bedroom window until dawn slowly crawled across the glass. Reading before bed, cups of herbal tea and soothing meditation apps hadn't helped. Last night, he had managed no sleep at all.

Jefferson's day had begun at three in the morning in darkness. By four, he had showered and dressed in his best suit to show respect for the occasion and was sitting inside his Range Rover towing the gondola from a garage to the cliff where two helium trucks had arrived to inflate the balloon. It took just over an hour. Despite his fatigue, he

looked his best, his short, grey hair neatly held in place with spray and his moustache and goatee clipped and shaped. A demon for details and a prodigious capacity for hard work, Jefferson had everything organised perfectly.

At a quarter past six, Todd came bounding up the steep, wooden staircase leading into the flight control room.

Todd was Jefferson's nephew and subordinate, a fresh-faced young man with foppish gold hair in a ponytail and a left earlobe punctured with a series of black studs at regular intervals. Genetics had screwed him in two ways, giving him the acne of a teenager and the build of a twelve-year-old. He arrived out of breath and sweating.

'Someone needs to get themselves fit,' said Jefferson. 'How old are you?'

Todd bent over, breathing heavily, and looked up at his uncle. 'Twenty-two.'

'Your grandfather used to run up those steps in his sixties without breaking a sweat.'

'That's ... not normal.'

'If they tire you that much, why not use the lift? That's why it was installed. So everyone in the family could come up and enjoy the view.'

'That old thing?' He inhaled a deep breath. 'It scares the crap ... out of me.'

'Why?'

'It makes funny ... noises.'

Jefferson shook his head. 'You're the one who makes funny noises.'

Todd leaned out of the window to get some fresh air, staring across the cliff-top. Jefferson joined him. The pre-dawn sky was streaked orange and mauve with the sun just teasing the horizon. It lit up a small flotilla of boats off the coast, ready to watch the launch. Fable Sky, also basking in the orange dawn, swayed gently against its ropes.

Taller than the Eiffel Tower at 1,300 feet, the zero-pressure balloon dwarfed the lighthouse. The measured helium bubble pumped inside the ultra-thin polyethylene material, twenty microns thick, had accumulated at the top, vertically stretching the balloon in the shape of an inverted teardrop. At high altitude, the helium would expand, filling it to roughly 3,000,000 cubic feet.

The balloon had begun to attract attention from the public. News vans were parked up, too, confirming media interest in this morning's flight.

'You said there'd be big crowds,' said Todd, wiping his sweaty brow with the back of his hand. 'There's less than a hundred people down there.'

'I was expecting a lot more by now.'

'Maybe they'll turn up in time for launch.'

Jefferson glanced at his watch. 'That's in less than two hours.'

Todd spotted the three technicians circling the balloon. They climbed aboard the red gondola, which resembled a circular raft, measuring three by three metres with a seating capacity of six. Made from the highest-grade aluminium, the seats had engineered foam and fabric, making them more robust. They were equally spaced around the open deck,

wide enough to accommodate spacesuit-wearing individuals and could both recline and swivel.

Above, a hi-gain antenna was mounted to the frame, and special reflective tape was fitted to the envelope seams for easy detection by commercial planes on radar.

The technicians were busy lashing spare oxygen tanks with a bungee net inside a hexagonal storage cage, central to the six recliner seats with access points on all sides. It also housed the solar wing camera and the Akroid balloon, tied down firmly with bungee nets and straps.

To initiate the electronics, one of the technicians turned on power switches and batteries, then ran diagnostics on the transponder's signal output.

Off in the distance, Todd saw a line of military trucks driving along the country lane, speeding to the horizon.

He turned away from the window and faced his uncle, now back at his computer. 'What do you want me to do?'

Before taking on the Fable Sky project, Jefferson had spent twenty-five years at the Met Office, specialising in atmospheric and oceanic administration that served civil aviation and the shipping industry. Todd, on the other hand, was gifted with computers. In fact, he was knowledgeable about engines and most technology, expert at sniffing out issues and doggedly resourceful in his ways to repair them, though there were some power tools with which he should not be trusted. He had inherited these technical skills from his father, Jefferson's brother, a self-taught mechanic and an IT specialist. But his inexperience in navigational support and weather data interpretation limited his duties.

‘Why don’t you go downstairs and check on the crew, see if they need anything?’

‘I just came from there.’

Jefferson wheeled his chair back, stood and took off his suit jacket. ‘How are they doing?’

Todd folded his arms. ‘Tense doesn’t come close.’