

IN PURSUIT OF AN ALTITUDE RECORD: JULY 1927

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### Eight Miles—Straight Up!

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How does it feel to soar more than eight miles into the air, higher than man has ever gone before, up where the air becomes too thin to support life; where the thermometer, headed for the absolute zero of outer space, has already reached nearly seventy below zero?

A few weeks ago I did it, reached 42,470 feet above sea level, and broke every world's altitude record for any kind of craft—airplane or balloon. Within a few weeks I am going up again, confident of making more than 43,000 feet. An 80,000-cubic-foot balloon took me up from Scott field, Belleville, Ill., and once I had reached its ceiling, it brought me back so fast that I had to leave it and step off in space with a parachute to check my descent.

At 42,000 feet, having been kept alive by compressed oxygen for the last four miles, I was listening to a jazz orchestra playing in St. Louis, the music coming in clear and loud on my radio, without a single trace of static. That was the only connecting link with the world I had left. Far below, cruising along the top of the cloud banks at 13,000 feet, two escort planes, one with a movie photographer aboard and the other, with the post surgeon as passenger, hovered and watched me, though I could not pick them out of the mist. Below them, the clouds covered the land, except for an occasional rift. Once, through such a crevasse, I caught a magnificent view of the Mississippi and the Missouri, tracing their winding course for miles and miles to the north and the south.

Up above, the cloudless sky was a deep, almost cobalt, blue. The dust particles that turn sunlight white were all below me and in the

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thin and rarefied air above, the sky was magnificent in the depth of its coloring.

At 40,000 feet I had released the last of my 4,700 pounds of sand ballast and came to a stop. But I had prepared for that by having special parachutes built to carry the weight of each piece of equipment. One was attached to an oxygen cylinder which had been emptied on the way up, and the cylinder, a twenty-five-pound steel flask, was dropped over the side. In the rare air, and weakened by breathing oxygen for some time, it seemed to me to weigh at least 150 pounds as I struggled to lift it over the basket rim. The release of its weight was sufficient to send the balloon up another couple of thousand feet—which broke the last world's record, the airplane mark of slightly over 40,000 feet claimed by a French pilot last fall.

At that height, though still distended, I knew the gas bag above contained less than one-eighth of the gas I had started with. As the balloon had climbed into lighter air and the pressure against it was removed, the gas had rushed out through the big appendix in the bottom, keeping the silvered fabric from bursting. So long as I stayed up, the balloon would be full, but once I started down the gas would begin to contract under the increasing air pressure, so that if I could keep all the gas I had, there still would be less than 10,000 cubic feet when I reached the ground.

It was time to start back, and a slight pull on the valve cord, which passes up through the inside of the bag to the valve at the top, was sufficient to start the bag downward, and once started, it began to drop faster and faster, as the statoscope, which records the rate of ascent or descent, indicated. To check it, I began to attach parachutes to other articles of equipment and drop them over the side. The parachutes were designed to fall at sixteen feet a second, the same rate as the large chutes used by flyers, but the bag was falling so much more rapidly that when I dropped things over the side they appeared to fly straight up in the air, because I went past them so fast. It was queer to see twenty-five-pound steel bottles apparently flying upward. Two more oxygen tanks, the storage battery used to run the electric heater in my oxygen mask, my radio batteries and loud speaker, and finally the wooden framework which

supported the sand-ballast bags, with all the empty bags still attached, were released to lighten the balloon. They served to check the descent somewhat, but not enough. Ordinarily a badly deflated balloon will flatten out and “parachute” as it comes down, but for some reason mine didn’t. At 8,000 feet I got a sight over a tree top on a small marsh beyond, and discovered that the spot I was looking at kept right in line with the tree top, sure proof that my rate of descent and drift before the wind were just right to land me in the swamp. The bag was still falling 1,800 feet a minute, which is twice the safe landing speed in a parachute, so I finally was forced to leave my ship.

Climbing up on the side of the basket, I held on to the load ring above, in which all the rigging is concentrated, reached for the valve line, pulled it down and tied it to the ring, so that the bag, when it reached the ground would deflate itself. Then I jumped and pulled the rip-cord ring of my chute, and drifted downward, while the movie plane circled around and filmed the final chapter.

Freed of my weight—some 240 pounds, of which 183 were me, stripped, and the rest flying clothes—the balloon had risen slightly and drifted off before the wind, to come to earth ten miles farther on. I had lit more than 110 miles from the starting point. Before the start, I had prepared a typewritten slip and an empty envelope, to be attached to each article I planned to drop, with instructions to the finders to fill in the slips and return by mail to me. My faith in human nature was the cause of considerable amusement at the field. But within a few days after the flight, five of the seven articles—all but one oxygen cylinder and the oxygen-heater battery—had been found and notices returned to me.

The successful record-breaking flight, my 107th in a balloon, had been the second within a little more than a month. On the first, worn out by the labor of handling two and a quarter tons of sand, lifting each thirty-three-pound bag into the basket, cutting the bottom with a knife, and pouring the ballast over the side, and hampered by defective oxygen equipment, I had passed out at 27,000 feet and for forty-five minutes, the barograph record showed, the balloon had drifted along at that height, until I finally recovered enough to pull the valve cord and release sufficient gas to start the descent.

Warned by that lesson, I had designed a new type of sand bag for the second flight. Instead of the usual squat canvas sack, with a drawstring at the top and a hook on the end of the string to hang it to the rigging, the new bags were long slim pouches, each of fifty pounds' capacity, with a flap door in the bottom, which was opened by pulling a cord, just as the rip cord releases the parachute.

All the bags were hung from a wooden framework suspended outside the basket, and when I got ready to cast them loose on the descent, the whole framework, with the empty bags, was released at one time.

The oxygen apparatus was improved by adding a hollow asbestos-covered cylinder, in which was suspended the electrical heating element, operated by a two-volt cell of a storage battery. The heater warmed the stream of oxygen as it passed and made breathing much easier. With the canister, the oxygen helmet greatly resembled a war-time gas mask. Inside, however, the helmet was quite different. The oxygen tubes ended in flat metal pipes which projected right up against the glass of the goggles, so that the passing stream of oxygen would keep the glass from frosting when I reached the extremely low temperatures of the upper air. Official calibration of my instrument showed that the lowest point was sixty-seven below zero.

Next time I am going to be prepared to drop additional equipment at the top, instead of on the way down, and thus I hope to pass 43,000 feet. A lot has been said and written in the past about the coming conquest of the 50,000-foot mark, but recent research indicates it may never be realized, at least with any existing type of equipment. The doctors have found in the rebreather tests, in which men breathe oxygen in a partial-vacuum chamber as a test of their ability to withstand high altitudes, that somewhere between 40,000 and 50,000 feet there probably lies a point at which the air pressure becomes so slight that the muscles of the body can no longer function to operate the lungs, so that a man who took in a breath of oxygen could not exert enough muscular action to expel it. At that point he would die.

The action of oxygen is peculiar. I believe I was perfectly normal every minute while at the top, yet I would not swear to it, for I have watched others in the rebreather chamber and seen them try to put a

finger on one button to press it and stab at something two or three feet away, yet come out declaring they were perfectly normal throughout the test and did everything correctly.

My tube thermometer was broken on the first flight, and on the second, I had no means of knowing the temperature reached, as the recording thermometer was sealed. It was not uncomfortably cold, however, as I had dressed for the occasion. Over the heaviest of woolen underwear I wore two woolen shirts, a sweater and a winter uniform. On top of that was a flying suit, leather on the outside, reindeer fawn skin on the inside, and two thicknesses of heavy woolen blanket cloth between. My flying boots were built on the same plan.

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