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THE TALK OF THE TOWN

FIELD STUDIES UP AND AWAY

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Beate Liepert is an atmospheric physicist at Columbia University. She has trouble telling left from right—a result, she thinks, of being forced, as a young girl in Bavaria, to write with her right hand. Now she’s ambidextrous, and can read backward, although she used to have a problem with certain word pairs: she’d call sugar salt or a table a chair, and would insist, after being corrected, that she’d been misheard.

Liepert mentioned all this near the end of a drive the other day from upper Manhattan to an airfield in western New Jersey, where she was to embark on a flight in a hot-air balloon. A passenger’s initial unease over the balloon flight—“We go up to six thousand feet,” Liepert had said, “and we have no safety equipment”—had been displaced by that of riding in a rickety convertible driven by an absent-minded academic. Crawling along in the fast lane on I-78, Liepert tried, in a sturdy German accent, to explain her research.

“We try to see how much air pollution is locally emitted and how much goes around the world,” she said. To that end, she (and her colleague Steven Chillrud, who was both afraid of heights and on vacation) had been measuring particles and light transparency in the air column over New York City in recent months. Liepert had been analyzing climate satellite data for NASA, but she wanted to gather more nuanced information. “Within a balloon, you are part of the air,” she said. This was her eighth and final flight.

Liepert was one of the early proponents of the idea that air pollution blots out the sun—that the emissions that cause global warming can also mask its effects. This politically charged observation has led some to suggest that we should pollute the air on purpose. Liepert, for her part, is squarely in favor of producing fewer particles, not more. At any rate, she was particularly interested in the boundary layer between the low-lying Northeast Corridor pollution—the gray haze over New York and Philadelphia—and the globe-trotting stuff way up there, which can be less visible but more insidious. On an earlier flight, she had detected particles from a forest fire in Alaska.

The first balloon aeronauts, in 1783, were a sheep, a duck, and a rooster. For this particle-measuring flight, a sunset cruise, the load consisted of Liepert, an assistant, a guest, and the pilot, Marty Pfenninger, the owner of a paving business, who has been flying balloons for twelve years. “Every flight is different,” Pfenninger said. “You never land in the same place twice.” (You can’t really steer.)

At one end of the runway, a crew used a giant fan to inflate the balloon, which was yellow and patterned with red flames. The basket was made of wicker and was about the size of a booth at a diner. As Pfenninger fired up the burners, the basket went upright and started to buck. Liepert loaded up the particle counters—two metal boxes with plastic tubing attached—and climbed in.

The basket rose above the treetops. Pfenninger sat on the basket’s edge; he was not wearing epaulets or a commodore’s hat, but there was something august about him as he worked the burners and the balloon shot up, its shadow shrinking in the fields. It was headed south at twenty miles per hour. The barking of dogs fell away, the Delaware River came into view (from the Water Gap down to Trenton), and in the splendid silence Liepert began reading out numbers: altitude, wind speed, temperature, humidity,

particles per litre of air. Pfenninger radioed driving directions to the chase van: “Take 519 into Baptistown, toward Rosemont.”

It was a gorgeous, seemingly low-particle evening. You could clearly see both Manhattan and Philadelphia, and miles of farmland, forest, and sprawl. But at five thousand feet Liepert said, “We are so high, yet we still have so many particles. Do you see? It’s kind of fuzzy.”

“Let’s try to get to six thousand,” Pfenninger said. He topped out at six thousand six hundred and fifty feet—Liepert’s highest flight ever.

“There are a thousand times fewer particles!” Liepert said.

The first hot-air balloon, in 1783, landed in a pasture, and peasants attacked it with pitchforks. Pfenninger gradually descended, sailing low over a gulch—deer fleeing, kids waving—while eying various fields and back yards. The chase van had lost track of him. He brushed the treetops and brought her down, the basket bumping along the grass—“Hold on!”—before coming to an agitated state of rest. There was a house. Pfenninger ordered the guest out. “Go get the address, will you?”