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WAS JEANNE CALMENT THE OLDEST PERSON WHO EVER LIVED—OR A FRAUD?

Some researchers have cast doubt on the record of the celebrated supercentenarian.

By Lauren Collins

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Since Calment died, in 1997, at a hundred and twenty-two, her claim to the longevity record has come under attack. Illustration by Gérard DuBois

People in France remember the summer of 1997 for the deaths of Princess Diana, Mother Teresa, and Jeanne Calment. The first became a household name by marrying into royalty; the second, by caring for the world's sick and poor. Jeanne Calment, however, was an accidental icon, her celebrity the result of a form of passivity. For a hundred and twenty-two years, five months, and fourteen days, Calment managed not to die.

She was born at home on the Rue du Roure, in Arles, one of only four addresses she ever held. That February morning, in 1875, lavender smoke commingled with the cold in the tight streets of La Roquette, a traditional neighborhood of fishermen and the maritime trades. Plastic, tea bags, public trash cans, and the zipper had yet to come into the world. The life expectancy for a French woman was forty-five. Approximately one billion five hundred million people walked the planet, and Calment would outlive them all.

Later in life, Calment claimed to have known Vincent van Gogh, telling different versions of an encounter with him in 1888. "Van Gogh was very ugly. Ugly like a louse," she once remembered. "We called him *le dingo*." According to one anecdote, van Gogh came into her family's drygoods store, on Rue Gambetta, wanting to buy canvas. Calment sometimes said that her father waited on him. Her father, however, was a shipbuilder; the store actually belonged to her husband's family. Another time Calment recalled, "My

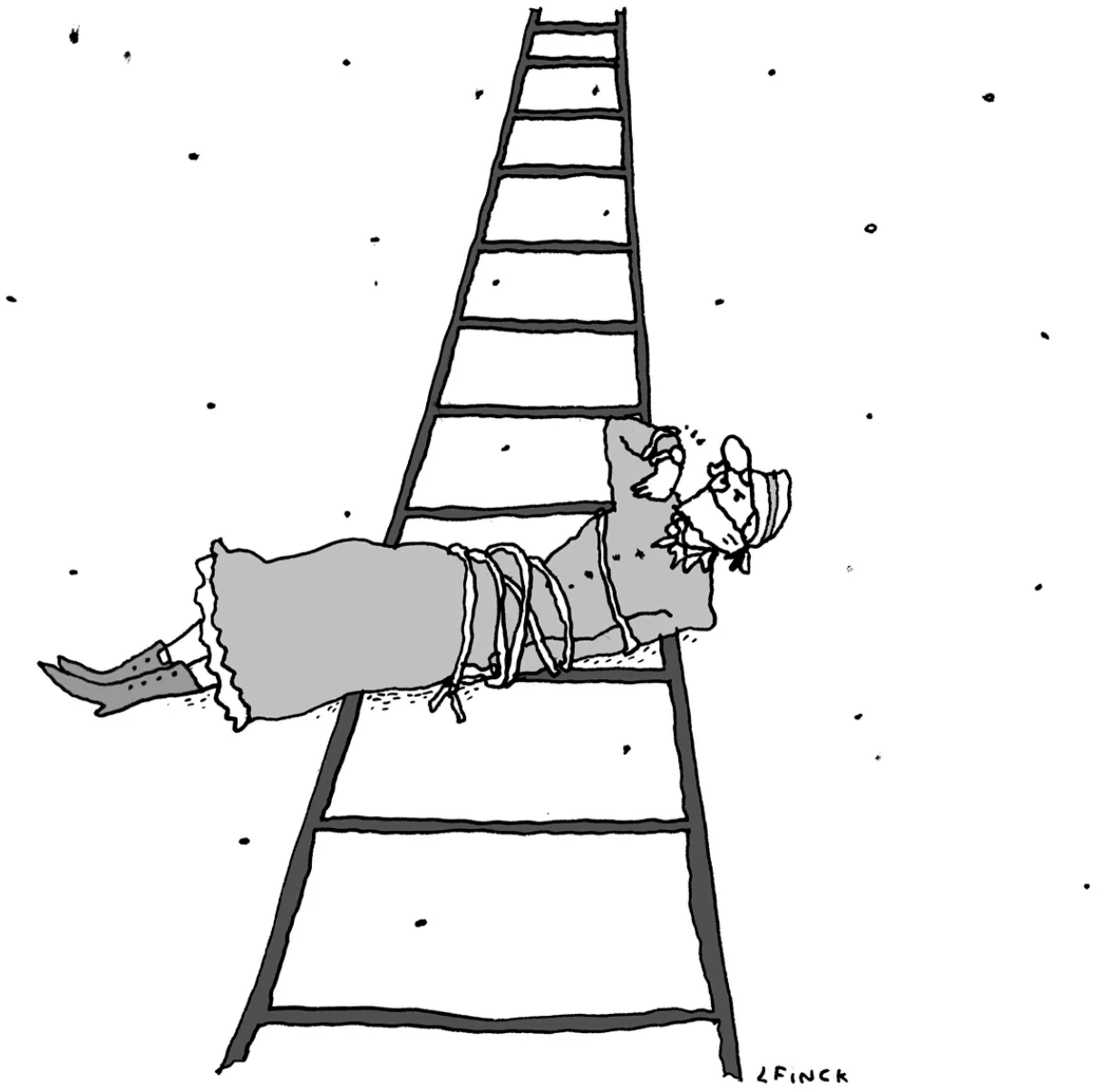
husband said to him, 'I present to you my wife.' " This recollection was also blurred: Calment, an adolescent in 1888, didn't marry for another eight years.

She had known her husband, Fernand Calment, her entire life. Their paternal grandfathers were brothers, and their paternal grandmothers were sisters, making Jeanne and Fernand double second cousins. They had a daughter, Yvonne, in 1898. Jeanne never worked, but led a busy life of recreational pursuits, including tennis, roller-skating, and stalking wild boar. The Calments lived in grand apartments above the family store. Jeanne appeared occasionally, cutting an imperious figure. "Madame Calment wanted to impose her taste on me," a woman later said, remembering a girlhood errand to buy fabric. "Stubborn, I stuck with my choice, replying in a tone that didn't please her. I haven't forgotten the pair of slaps."

In 1934, Yvonne died of complications from tuberculosis, leaving behind a husband, Colonel Joseph Billot, and a seven-year-old son, Freddy. Jeanne and Fernand took care of the boy as though he were their own. In 1942, some friends of the Calments invited the couple to their country house. During the visit, Fernand gorged on cherries, while Jeanne had one or two. The cherries were tainted with chemicals, and, within a few months, Jeanne was a widow. Two years later, women got the vote in France. The Eiffel Tower was just past fifty. Calment was sixty-seven, with nearly half her life in front of her.

Following the death of Calment's husband, she and her son-in-law, Joseph, shared an apartment. Freddy, an otolaryngologist, lived nearby with his wife. In 1963, Calment lost her last intimates. That January, Joseph died after a long illness. In August, Freddy was killed in a car accident. Calment coped by never staying still. In the decades that followed, her staccato footfall was as integral to Arles as the sound of the mistral, the rattling Provençal wind. One biographer wrote, "Everyone knew the 'little old lady' who dashed all over town, who went down the steps of St. Trophime church like a kid."

The ground floor of the Calments' limestone building is now occupied by a supermarket. On a recent winter morning, the current owner showed me around the third floor, above where Calment lived. It was easy to imagine her waking each day, shuffling down a hallway of white tiles with red Occitan crosses, warming herself in front of a fireplace with an ornately carved walnut mantelpiece, and unlatching the floor-to-ceiling shutters, to let in the southern light. On the roof, a faded sign glowed in the sunshine: MAISON CALMENT.



"Late, as usual."

Cartoon by Liana Finck

When Calment was ninety-four, in 1969, her notary bought her apartment. The purchase was made under the French *en viager* system, in which the buyer agrees to make regular payments on a property that the seller continues to live in. In such an arrangement, the buyer essentially wagers on how quickly the seller will die. The Calment apartment proved to be an epically terrible investment. By the time the notary died, in 1995, he'd spent nearly two hundred thousand dollars, more than twice the value of the place, without ever taking occupancy.

As Calment approached her hundredth year, she was still riding her bicycle. Just before her birthday, the mayor of Arles offered to organize a celebration. Calment declined, calling the mayor *un rouge*, a Communist. Not long after, thinking better of her manners, she went to see him at the town hall. "In the waiting room, there were several people," he later said. "I didn't spot a centenarian. In fact, she was right in front of my eyes. A little woman in a gray suit, wearing a hat with a fine veil. I noticed her heeled shoes and seamed stockings. Very elegant, she seemed twenty years younger."

At a hundred and ten, Calment was still living alone, in the Rue Gambetta apartment, where she had never bothered to install a modern heating system. One day, she climbed up on a table to unfreeze the boiler with the flame of a candle, starting a small fire. She agreed to move to a local retirement home, the Maison du Lac, until the weather improved. She ended up staying, and, in 1988, at a hundred and twelve, was briefly recognized as the "doyenne of humanity," the oldest person in the world. Soon afterward, the title was given

to a Florida woman three months her elder, who had spent seventy-five years in a mental hospital after being diagnosed with "post-typhoid psychosis," a disease that doctors no longer believed existed. After the woman died, at a hundred and sixteen, in 1991, Calment became the oldest person ever known to have lived.

A team of three researchers who spent several years validating Calment's age—Victor Lèbre, her personal doctor; Michel Allard, a gerontologist; and Jean-Marie Robine, a demographer—described her as a "tough cookie." At the Maison du Lac, she maintained a rigid schedule, rising at six-forty-five, saying her prayers, performing calisthenics, and listening to classical music on her Walkman. She proudly told *Paris Match* that her breasts remained as firm as "two little apples." At night, she insisted that her bed be turned down, as though she were a guest in a hotel. Behind her back, the nurses called her *la commandante.* She quit smoking at a hundred and seventeen, but never gave up having a nightly glass of port.

The longer Calment lived, the more famous she became. On Grandmother's Day, a well-known television presenter offered her a kilo of chocolate. "I want a ton!" Calment replied. Several weeks later, two trucks showed up. Even the validators were dazzled by their subject. They recorded hours of conversations with her, excerpts of which they later published in a book, "Les 120 Ans de Jeanne Calment." Occasionally, she'd use a word so antiquated (like *mahonne*, a kind of round-bottomed barge that her father had built) that the validators had to look it up. "We were truly in the state of excitation of an Egyptologist who, while walking through an unexplored labyrinth of a pyramid, discovers an unknown room filled with treasures," they wrote. Calment lived through twenty French Presidents and survived periods of terrorism that no one even recalled. She died on August 4, 1997, of unspecified causes. She was buried in her family's tomb, where she rested in peace until early last year.

The first public attack on Jeanne Calment's authenticity appeared in the tabloid *Komsomolskaya Pravda*, in November, 2018. In an interview, Valery Novoselov, a geriatrician and the director of the gerontology chapter of the Moscow Society of Naturalists, announced his intention to disprove Calment's claim to the longevity title. A burly former doctor in the Russian Army, Novoselov said that he had been looking at some photographs of Calment and found that she simply didn't display the physical characteristics one would expect of a person her age. "In the picture of 110-year-old Jeanne, I see a strong lady a little younger than 90," he declared.

He had shared his doubts with Nikolay Zak, a mathematician he knew from Facebook. In contrast to Novoselov, Zak had a dishevelled look and résumé, having published little since a 2007 thesis. He was working as a glassblower, fabricating flasks and beakers for the chemistry department at Moscow State University. Intrigued, he agreed to work on the Calment case. Using a database of centenarians, he calculated that the probability of someone reaching the age of a hundred and twenty-two was "infinitesimally small." As Zak explained to *Komsomolskaya Pravda*, the numbers were telling him that Calment couldn't have lived that long.

He started scouring the Internet. He found it strange that Calment didn't mention the cholera epidemic that ravaged Arles in 1884; that, upon moving out of her apartment, she had enlisted a relative to burn her personal effects; that her grandson had called her Manzane, a portmanteau of *maman* and a childish pronunciation of her first name. Calment had often equivocated in conversations about her family. ("That's a useless question!" she once barked, when an interviewer asked if she'd loved her grandson.) An identity card from the nineteen-thirties said that she had black eyes, but, at the end of her life, one report recorded them as gray. Furthermore, according to the card, Calment's height, in middle age, had been a hundred and fifty-two centimetres. If that

was true, then how could she have still stood a hundred and fifty centimetres tall at the age of a hundred and fourteen, as one record suggested, having lost almost no height? Meanwhile, her signature, Zak thought, had changed tremendously over the years, acquiring a looping "J."

There were the van Gogh stories, in which she'd mixed up her husband and her father. In addition, Calment had told her validators that she had been escorted to school by a maid named Marthe Touchon. Census documents confirmed that a Marthe worked for the Calment family in the early nineteen-hundreds. She was listed as Marthe Fousson, a variation on the name that seemed reasonable, given that Calment had difficulty enunciating at the end of her life. Yet, when Zak tracked down Fousson's birth certificate, he found an odd discrepancy: Marthe Fousson was ten years younger than Jeanne Calment and thus couldn't very well have taken her to school.

Zak started fiddling with Photoshop, examining Calment's lower lip, the skin on her chin, the tip of her nose, and the shape of her skull at various ages. Soon he had developed a theory: the person the world had known and fêted as Jeanne Calment was actually her daughter, Yvonne. According to Zak, Jeanne had died in 1934, but the Calment family had presented the corpse to the authorities as Yvonne, in order to avoid inheritance taxes. This, he said, would explain "the strange cohabitation of 'mother-in-law' with 'son-in-law'; the 'grandson' who called his 'grandmother' mom," not to mention the advantageous *en viager* deal. In the course of more than six decades, he posited, a family secret had metastasized into a national conspiracy. *Komsomolskaya Pravda* declared that the reputations of Calment's validators would soon "pop like a soap bubble."

A carnival atmosphere often surrounds the very old—gilded proclamations, giant cakes—but they are critical to science, which relies on extreme cases to define its sense of the possible. If, for the general public, supercentenarians

—people who live to or beyond the age of a hundred and ten—are emissaries of the past, for biologists they are messengers from the future. Supercentenarians often look and feel younger than their age might suggest, and they tend to elude the diseases, such as cancer, Alzheimer's, and diabetes, that kill off most of their peers. Some scientists believe that clues to extending and improving human life are embedded in their DNA.

Herodotus wrote about the Macrobians, a legendary people who drank milk, ate boiled flesh, and "lived to be a hundred and twenty years old." Methuselah was supposed to have lived almost a millennium. The Victorians became obsessed with the phenomenon of longevity, attempting to tap the fountain of youth as they had the natural resources of the Empire. In 1873, William Thoms, a librarian at the House of Lords, set forth a system of age validation that more or less remains in use today. Through archival research, he debunked the legend of Thomas Parr, a Shropshire man whose longevity so impressed the Earl of Arundel that, in 1635, he sent him on a palanquin to London, to meet the king. Parr dropped dead soon thereafter, at the alleged age of a hundred and fifty-two. After a thorough autopsy—the king's coroner examined Parr's genitals, concluding that he'd been sexually active into his fourteenth decade—Parr was buried at Westminster Abbey.

According to a 2010 paper, "Typologies of Extreme Longevity Myths," sixty-five per cent of people who purport to be a hundred and ten are wrong or lying. For those who claim to be a hundred and fifteen, the rate of inaccuracy is ninety-eight per cent. Sometimes people don't know their real ages. Other times, people exaggerate for reasons of prestige, financial gain, religious practice, family honor, or regional or national chauvinism. Pension scams and the desire to avoid or participate in military service are frequently the causes of incorrect age claims, as are administrative errors. (The United States didn't have a centralized birth-registration system until 1933.) Some people's motivations

are as unpredictable as human nature. In the nineteen-fifties, men posed as Confederate veterans in order to sustain a myth of Southern imperishability: “If we couldn’t beat ’em, we can outlive ’em.” Norris McWhirter, the co-founder of Guinness World Records, wrote, “No single subject is more obscured by vanity, deceit, falsehood, and deliberate fraud than the extremes of human longevity.”

The only known photograph of Jeanne (right) and her daughter, Yvonne, as adults. **Photograph by Nolwenn Brod / Agence VU / Redux**

In a field plagued by data-quality issues, Jeanne Calment had long been considered the gold standard. This was partly due to chance: because she’d married her cousin, she’d had the same name throughout her life, the entirety of which she’d spent in Arles, which possesses some of the most well-preserved

archives of any municipality in the world. Working with a genealogist, her validators reconstructed the Calment family tree going back seven generations. The Thoms method of validation required five "species of evidence." They had dozens, including Calment's original birth certificate, her marriage certificate, and seventeen census documents in which she appeared, dating back to 1876.

Over the years, questions about Calment's record had surfaced occasionally, but nothing much came of them. A book about the French insurance industry, published in 2007, claimed that an insurer had uncovered Calment's real identity in the nineties, but that French authorities didn't want to undermine "a figure who'd become mythic." Scientists, too, had raised doubts about Calment. Leonid Gavrilov and Natalia Gavrilova, husband-and-wife demographers at the University of Chicago, wrote that Calment's hundred-and-twenty-two-year life span was "particularly provocative" because it so handily outstripped the competition. The second-longest-living person died in 1999, at a hundred and nineteen. The gerontologist Tom Kirkwood asked of Calment, in a 1999 book, "Could she be a fraud?" He concluded that "any deception on Madame Calment's part would have required extraordinary prescience and the connivance of surviving relatives and we should banish such thoughts from our minds." Even Calment's validators explored the possibility of a switch, in a 2000 publication, but surmised that it was a "crackpot" idea.

In gerontology, three years might as well be a century. According to the Gompertz law—formulated in 1825 by a British actuary named Benjamin Gompertz—the mortality rate for adult humans roughly doubles with every additional eight years of age. In other words, however likely you are to die in 2020, you will be twice as likely in 2028, and four times as likely in 2036. But the Gompertz curve seems to flatten after about a hundred years of age, creating what some scientists call the "late-life mortality plateau." Gavrilov and Gavrilova have explained that the deceleration of the death rate in old age, if accurate, could suggest that there is no fixed limit to the human life span.

Scientists disagree about whether the late-life mortality plateau is the consequence of faulty data.

The passage of time often quells controversy, but, in the Calment case, it only unsettled the dust. As the world's population continued to grow, the cohort of people living to the age of a hundred and twenty-two did not. More than two decades after Calment's death, her record still stood, making her a more conspicuous outlier with every year that went by. Either she had lived longer than any human being ever or she had executed an audacious fraud. As one observer wrote, "Both are highly unlikely life stories but one is true." In "Les 120 Ans de Jeanne Calment," her validators had reproduced the only picture known to exist of the two Calment women as adults. In it, Yvonne appears to be sitting on a windowsill. Jeanne stands to her left, behind a table, looking down at a basket of flowers and a wrapped gift. The women are both wearing white shirts and dark sweaters. Accompanying the photograph was a tantalizing caption: "Jeanne and Yvonne, her daughter. Which one is which?"

On December 19, 2018, Nikolay Zak posted a preprint—in academia, a draft of a paper that hasn't yet been peer-reviewed—to ResearchGate, a social network for scientists. It began with a quote from Genesis ("Then the LORD said, 'My spirit will not contend with humans forever, for they are mortal; their days will be a hundred and twenty years' "), and reiterated in somewhat more decorous language the case that he and Novoselov had made to *Komsomolskaya Pravda*, adding some new details. On one page, Zak would perform complicated mathematical equations; on the next, he'd cite Wikipedia or the *Daily Mail*. At times, his logic leaped into the realm of pure speculation. "Being in the nursing home and not being able to destroy the documents herself, Jeanne resorted to the help of a distant relative," he wrote, referring to Calment's decision to burn most of her personal papers. "Most likely, it was a result of cold calculation and acute necessity instead of an emotional act."

Zak's paper, though unconventional, was enticing. The A.F.P., France's wire service, picked it up, and, on New Year's Eve, articles about the controversy appeared in a number of newspapers. Soon the Calment story had become an "*affaire*," an appellation that, in France, describes a dramatic episode while more or less guaranteeing its escalation. France 2, the national television broadcaster, devoted a prime-time special to the "enigma of Jeanne Calment," and *Le Monde* examined the "crazy hypothesis of two Russian researchers," citing experts who likened the Russians' methods to those of "fake news."

The case might have remained largely the concern of gerontologists and the French had Aubrey de Grey not got involved. The posh, wild-bearded panjandrum of the anti-aging movement, de Grey was born in London in 1963. After a career in artificial intelligence, he began studying biology, earning a Ph.D. from Cambridge at the age of thirty-seven. Now, as the chief science officer of the SENS (Strategies for Engineered Negligible Senescence) Research Foundation, a nonprofit organization based in Mountain View, California, he is attempting to develop medical therapies that will reverse aging. He claims that there are human beings alive right now who could live more than a thousand years.

Species such as sea anemones and hydras show no signs of senescence, and many researchers believe that aging is not inevitable. As Tom Kirkwood, the gerontologist, has written, "Ageing comes about through the gradual build-up of unrepaired faults in the cells and tissues of our bodies as we live our lives, not as a result of some active mechanism for death and destruction." In recent years, the desire of Silicon Valley moguls to acquire the one thing you can't buy has kicked off a sort of space race for "life extension." The PayPal co-founder Peter Thiel has donated at least five million dollars to de Grey's projects. De Grey himself contributed another thirteen million in 2011, after receiving an inheritance from his mother. A certain eccentricity has only added to his aura. "De Grey relaxes by hoisting a pint in his local pub and occasionally picnicking

nude with his considerably older wife," the L.A. *Times* noted, in a review of a 2014 documentary called "The Immortalists."

De Grey is the editor-in-chief of *Rejuvenation Research*, a biogerontology journal, which, in February, 2019, published an article by Zak, "Evidence That Jeanne Calment Died in 1934—Not 1997." The article was based on his preprint, with some changes and new conjectures. Notably, Zak contended that photographs of Yvonne showed the presence of a fibroma—a fleshy bump—on the tip of her nose, which matched with one in a picture of Calment as an old woman. "Interestingly, it is absent from later photos, indicating that it was removed," he wrote, to account for pictures of Calment as an even older woman with no such fibroma. Earlier, Zak had raised the possibility of exhuming Calment's body; now he proposed another way to examine her DNA. Calment had reportedly given a blood sample to researchers as part of the Chronos Project, a pioneering survey of more than a thousand French centenarians, conducted in the nineteen-nineties by the Fondation Jean Dausset-CEPH, a renowned genetic-research center. Zak asserted "that biological material from the person who died in 1997" was likely still in storage.

S. Jay Olshansky, a gerontologist at the University of Illinois at Chicago, told me, "I did not find the paper to be of a very high quality. If I were the editor, I would not have accepted it." Many readers were confounded: why had de Grey decided to bestow the imprimatur of academic respectability on Zak's work? Outlandish conspiracy theories proliferated. Was de Grey, an "international adjunct professor" at the Moscow Institute of Physics and Technology, somehow in league with the Russians? Was it Big Pharma? Was it Putin? Or was there a plot involving the Lifeboat Foundation, a techno-survivalist organization to which de Grey and Zak both belonged, which had been infiltrated by Russian spies? "These are bad guys, playing nasty games," Robert Young, a consultant for Guinness World Records and a director of the Gerontology Research Group, which maintains a database of

supercentenarians, told me. “This is a manufactured controversy—we don’t even consider the case to be disputed.”

Calment’s validators suddenly had to defend work that they’d done twenty-five years earlier. One of them, Victor Lèbre, had died. Michel Allard, the gerontologist, had retired and was living in a village in central France. When I spoke with him, he seemed mildly amused by the whole thing. He’d initially been open to the possibility of fraud, but he’d dug up his files and concluded that the idea was ridiculous. “I tried to construct a scenario, but can you imagine that someone would do all that?” he said. “At a certain point, we need to be reasonable.” As for the DNA, he said, “It’s not in my fridge.”

The third validator, Jean-Marie Robine, was a director at INSERM, France’s national health-research institute. He took the Russians’ attacks on his reputation seriously. “It’s nonsense, and not only is it nonsense but it was a hostile approach and not a scientific approach,” he told me, of Zak’s *Rejuvenation Research* paper. “Why did they launch this operation like kamikazes? Why did they throw down sixty weak arguments?” Robine did not think Putin or the K.G.B. was involved. De Grey, he believed, wanted access to Calment’s blood, which was said to be stored in a refrigerated biobank at the Fondation Dausset.

Claudine Serena was a little girl when she saw Jeanne Calment one day near her school. Her mother had just arrived for pickup. “What do you know, here comes Mother Calment,” she said, as a slender, fast-walking figure proceeded down the street. Serena’s family wasn’t fond of the local haute bourgeoisie. “My grandfather was a Communist, and Jeanne didn’t like Communists, because she accused them of the Russian Revolution,” Serena explained. Like Calment, her grandfather lived almost his entire life in Arles. “He would have known the difference between her and her daughter,” Serena said. “And if he’d had the slightest suspicion he would have denounced her.”

We were sitting in the courtyard of a café in Arles, with Cécile Pellegrini, another native Arlésienne. They were both members of a Facebook group called Contre Enquête sur l'Enquête Jeanne Calment (Counter-Investigation of the Jeanne Calment Investigation), which was using the collective talents of more than a thousand ordinary people to try to clear Calment's name. Neither Serena nor Pellegrini could quite believe what they'd got into. Serena was retired from the Maison du Lac retirement home, where she'd worked as a caregiver for fifteen years, ten of them looking after Calment. "She had these small eyes, with an incisive look," she recalled. "Very condescending, '*ma fille*,' et cetera." She added, "I didn't like her, so I'm impartial." Pellegrini, a social worker, normally spent her time online posting pictures of her four cats. Now both were devoting hours a day to detective work and sparring with Zak. (Gamely, they'd allowed him to join the Facebook group.)

"*C'est du James Bond*," Serena said.

I asked why they'd got involved.

"In spite of it all, this stung me," Serena said. "We're not idiots. What's insulting is that Zak doesn't believe us."

"As if we were hiding a secret villain," Pellegrini said.

"He lives behind his computer on the other side of the world," Serena added.

Arles has a huddled, electric energy. For millennia, the Rhône was its lifeblood,

but the city faces inward, as though it were too vain to acknowledge its benefactor. Plant a flower in Arles, hit a Roman relic with your shovel. The mistral might blow the teeth out of your mouth. The designer Christian Lacroix, who was born there, wrote of a sombre palette: "the funereal blue of cypresses," the "sky baked white." Van Gogh painted the city in violet, cobalt, gold, and chartreuse. As Lacroix put it, "It's not so much Arles that gave its colors to van Gogh but van Gogh who gave Arles its colors." Serena mentioned that her great-grandmother slept sitting upright in a chair, so as to preserve her traditional Arlésienne coif.

Zak argued that the people of Arles were too close to the Calment case to be rational. But the counter-investigators were mounting a meticulous defense. They started off by toppling Zak's theory about the Calments' financial motive. One of the group's best researchers, a telecommunications engineer named François Robin-Champigneul, showed that, in 1934, inheritance taxes for the family would likely have amounted to six per cent of Jeanne's assets, which totalled around two hundred and fifty thousand francs. This was a rate that they surely could have managed, particularly given—*et voilà!*—the group's discovery that Jeanne had inherited a minor fortune from her father, in 1926.

Moreover, Yvonne would have had to pretend to be her own father's wife. It also beggared belief that Freddy, a seven-year-old, either would not notice that his mother had taken his grandmother's place or would accept the switch and say nothing about it for the rest of his life. Only a few people who ever saw the family members together are still alive. One of them, Gilberte Mery, whose grandfather was Jeanne's first cousin, told *Le Journal du Dimanche* that the switch theory was "completely idiotic." Recalling the Arles tradition of promenades, she said, "We looked at who walked with whom, we noticed if someone changed her dress. Can you imagine if, all of a sudden, people no longer saw Aunt Jeanne but Yvonne?"

Zak quickly came up with a new rationale for an identity switch: Jeanne had contracted tuberculosis, and the family lied about it to protect its livelihood and shield itself from social stigma. Why would the Calments cover for Jeanne's tuberculosis by saying that Yvonne had died of tuberculosis? In Zak's scenario, Yvonne was infected with the disease first, and transmitted it to Jeanne sometime around 1926. In the following years, Jeanne started to show symptoms. Fearing that news of her illness would affect business at the store, she began to spend most of her time outside Arles. Zak had noticed, in the France 2 special, a partly blurred-out page of a medical student's 1993 thesis on Jeanne Calment. The words *séquelles pleurales*—pleural effusions, or buildups of fluid around the lungs, which are sometimes a marker of tubercular infections—were just visible. Yvonne, he believed, had recovered from the disease. In her mother's absence, she would occasionally use the older woman's I.D. card to sign important documents. The fraud was meant to be temporary, but, once it got going, it became impossible to stop.

Some of the members of the Facebook group called themselves "Jeanne's Angels." They kept turning up new pieces of evidence, such as a 1983 letter, proffered by a family member, in which Calment used an abbreviation—"Xbre" for *décembre*—that was popular in the nineteenth century. Calment had told her validators stories about her dressmaker, her midwife, and her math teacher. The group found all of them in old documents, living in the right place and at the right time. "No matter how much you formatted someone, I can't imagine them coming out with that," Karen Ritchie, a neuropsychologist who examined Calment in 1993, told me, adding that Calment had recounted the names of the makers of her wedding cutlery and crockery.

Calment's piano teacher, Césarie Gachon, proved to be a compelling witness from beyond the grave. Documents confirmed that Gachon, born in 1867, lived in an apartment behind her parents' bakery, just as Calment had once recalled. In order to rule out the possibility that Yvonne had had the same memories, a

group member examined several censuses. By 1911, when Jeanne was thirty-six and Yvonne thirteen, the bakery was gone and Gachon's parents were dead. "These can't be Yvonne's memories, then, but those of Jeanne," the group member wrote, in a Facebook post. "Too precise, in my opinion, for the daughter to have heard them from the mother and remembered them to recount eighty years later."

In the comments, Zak chimed in, claiming that Calment had once said that she began playing the piano at the age of seven. Gachon would only have been fourteen then, and thus, Zak wrote, "this is yet another argument for the I.D. switch."

Calment, photographed in 1989, at a hundred and fourteen years old. Photograph by Eric CATARINA / Gamma-Rapho / Getty Images

As for the dressmaker, Zak posited that if she were "a famous couturier she could leave a label with her name on the dress and people could remember her after her death."

A group member sarcastically wrote back, "Celebrity in Arles isn't quite Chanel."

The group's most important discoveries involved Yvonne, whose apparently short life was much less well known than her mother's long one. A letter showed that, in 1928, Yvonne was sick enough for Joseph Billot to have requested a five-year leave of absence from the military. "It's with regret that he leaves the Army, but his interests and the health of his wife oblige him to go live in the Midi, near Arles," a superior of Billot's wrote. Newspaper articles, preserved on microfiche, described Yvonne's funeral—a public event, not the rushed burial that one would expect from a family trying to get away with a body switch. A priest administered the last rites and led a funeral Mass at St. Trophime. According to one account, a "particularly abundant crowd" of mourners processed from the Billot residence, where, per local custom, they would have been able to view the corpse.

One photograph of Yvonne was especially mysterious. It had first appeared in 1995, on the cover of a special edition of *Le Figaro* magazine, mislabelled as an image of Jeanne. Now everyone agreed that the subject of the photograph was Yvonne, but questions about its provenance persisted. The photograph was

clearly taken on a summer day in the mountains. Fir trees and a chalet are visible in the distance. In the foreground, Yvonne poses on a balcony with an ornate railing, holding an open parasol over her right shoulder. Her dark, side-parted bob is held back with a barrette, and she is wearing what appears to be a fashionable outfit of sleeveless camp shirt and billowing pants. She doesn't really resemble her mother. She looks staunch, like the sort of person who would remember to label a covered dish.

The group initially assumed that the picture had been taken in the French Alps, maybe the Pyrenees. Then a member started searching the Internet for information about sanatoriums. This led her to an image of a sanatorium with balcony railings that looked just like the one in the picture of Yvonne. Other members picked up the trail. One of them analyzed eleven photographs he'd found of a particular cement wall. Soon they had a positive identification: the photograph showed Yvonne, at age thirty-three, standing on the east terrace of the Belvedere sanatorium, in Leysin, Switzerland, in August of 1931. Yvonne had definitively visited a treatment center for tuberculosis, then. No such evidence existed for Jeanne.

On March 10, 2019, Aubrey de Grey e-mailed Jean-Marie Robine and Michel Allard, Calment's validators. De Grey reminded them that a sample of Calment's blood was thought to be in safekeeping at the Fondation Dausset, in Paris. A test of the sample could resolve the question of Calment's identity, since Jeanne had the usual sixteen distinct great-great-grandparents, whereas Yvonne had only twelve, because of her parents' consanguineous marriage. "Personally I think that the current balance of evidence does not favour the hypothesis of an ID switch—in other words, I think it is likely that Jeanne really did live to 122," de Grey wrote. He felt, however, that the discussion around Calment presented "a huge opportunity." He went on:

I am very unhappy to see that you two are being publicly criticised for having failed, 20 years ago, to discover various items of evidence that have recently been discovered by others, including several photos from the middle of the century. . . . I believe that a request, from you, for access to the cells at Dausset would be a powerful way to end this unfair criticism of your work.

Two weeks later, the SENS Research Foundation sponsored an anti-aging conference in Berlin, where several hundred attendees, paying up to nine hundred dollars a ticket, gathered to encounter "leading researchers from around the world." De Grey invited Nikolay Zak to speak. His bio for the conference included a quote from de Grey: "Zak's just-published investigations have cast considerable doubt on Calment's actual age at death, and lend credibility to the possibility of an identity switch with her daughter." On the second day of the conference, Zak, wearing a black T-shirt bearing the face of Charles Darwin, delivered a "special lecture" on the identity-switch hypothesis. De Grey joined him onstage, calling it "scandalous" that the Calment blood sample had been forgotten. Were it to be tested, he added, "I'm not going to say that the information will tell us the fountain of youth, but it might definitely give us some cool ideas for new experiments."

When I spoke to de Grey, in November, I asked him about the switch hypothesis. "I have much bigger fish to fry," he said. "I'm a very prominent person in the gerontology field, and I'm out to save lives. So this is not a big deal to me—you need to know that." De Grey denied that he wants Calment's blood sample for his own use. He seemed to be trying to remain publicly evenhanded about the case, while using it to shake something loose at the Fondation Dausset. He had entreated Allard and Robine to enlist Yves Christen, a famous French biologist, in the campaign to retrieve the blood sample. "I believe it falls to people like you to get Christen," he told me. "The single best thing you could do to save lives, to hasten the defeat of aging, is to get to Christen and get him to see that he has the capacity to go to Dausset and

get them to release that sample!"

The examination of Calment's DNA poses ethical difficulties. Calment gave the sample on the condition of anonymity, but it is presumably identifiable by her age. Furthermore, it was intended only for certain purposes. "Jeanne Calment participated in the Chronos Project within the limits of an informed consent she signed that prevents any use of information beyond this project," Jean-François Deleuze, the scientific director of the Fondation Dausset, said.

Some people I spoke to believed that a breach of these conditions would be justifiable under certain circumstances, but it was unclear whether, in the Calment case, the benefits outweighed the costs. Establishing the truth about Jeanne Calment would be interesting, but it certainly wasn't essential. Members of the counter-investigation group argued that Calment's identity was already well established; questions about it were being used as a wedge, they suspected, to open the door for all manner of testing. The intrigue surrounding the sample grew to fill the void of authoritative information. Neither Allard nor Robine ever replied to de Grey's e-mail. "The naïveté of these people," Robine told me. "You go to the best jeweller in the world and demand that he gives you his biggest diamond?"

As the controversy continued, Zak's theories became increasingly baroque. As soon as one idea was disproved, he came up with another. Calment's late-life height, it turned out, was really a hundred and forty-three centimetres, reflecting the loss of stature that one would expect. The caption that the validators had used for the photo of Jeanne and Yvonne—"Which one is which?"—seemed to come from the slogan for a brand of soap. Zak eventually dropped the fibroma argument.

Even Zak's adversaries gave him credit for doggedness, and an unusually rich

imagination. His latest idea was that the sole existing joint photograph of Jeanne and Yvonne had been taken at the sanatorium in Leysin. In this scenario, Jeanne was the patient and Yvonne was just visiting. The flowers in the shot, he said, may have been carline thistle, "a stemless alpine plant native to Switzerland and used as a herbal remedy for lung diseases including tuberculosis." In the photograph, the right side of Jeanne's body was in shadow. Zak claimed to be able to make out that the right side of her jacket was shorter than the left. From this, he concluded that Jeanne may have had her right arm amputated, "probably before she came to Leysin."

Even at his most intransigent, Zak welcomed debate. At the end of November, he agreed to meet me at a pizzeria near his home, in Moscow. He arrived in a red T-shirt and black athletic pants, with yellow circles under his eyes. I knew,

from my own Internet research, that his father was a prominent mathematician. The Nikolay Zak in me found it striking that Nikolay Zak, who had once attempted to follow in his father's footsteps in algebraic geometry, had become obsessed with the idea of Yvonne taking Jeanne's place. But Zak didn't seem particularly interested in talking about his biography. Of his glassblowing job, he said, "I'm still there, though I don't work for very long hours. I just come and go." He was not being paid by de Grey, he said, as many of his detractors had alleged. "I already have money, so it's not a problem for me."

Zak said that he'd first heard about Jeanne Calment after getting interested in longevity, about ten years ago. "I read about her life style, and that she used olive oil, and I researched and found the best olive oil in the world," he said. "They make it on Corfu." In the summer of 2018, when Valery Novoselov became the head of the gerontology chapter of the Moscow Society of Naturalists, he issued a call for papers. Zak's initial subject was the naked mole rat, a hairless rodent with front teeth that look like fingernails and an unusually long life span. From naked mole rats, he pivoted to supercentenarians.

At the pizzeria, Zak said that he was "99.99 per cent" convinced that Calment was a fraud. I asked why hardly any experts in the field agreed with him. "I already told you, I get a lot of letters from people," he said. When I asked for their names, he demurred, saying, "Those who think I am right, they will still be silent until it is all proved." Talking to him felt like talking to a Magic 8-Ball.

I knew from Facebook that Zak had a habit of leading people so deep into the microdetails of Calment's life that larger, more obvious questions were easily overlooked. I was hoping to get him to address some gaps in his reasoning. Why, if Calment were hiding something, would she have agreed to the validation interviews? Why would she have given a blood sample, if she knew that her sixty-year secret could be betrayed with one drop? Why, for that

matter, wouldn't she have chosen to be cremated, the ultimate form of burning one's personal effects?

"She was a bold liar," Zak replied. "If I were her, I would arrange something to show, sometime after my death, that I cheated all of you. It's much more fun for her that way, so I don't see any problem. She's already dead and got everything she ever wanted." I brought up her specific recollections of the dressmaker, the midwife, the math teacher, the piano teacher, but he didn't yield. Picking at a mushroom pizza, he added, "I'm younger than my father by thirty-four years, and I'm not very close with him, but I know the name of his math teacher."

Yvonne, Zak continued, could have been coached. This was a good point: Calment's validators, in the first chapter of their book, mention that they occasionally "re-injected" certain biographical details into their conversations with her, in the hope of activating dormant memories. When I spoke to Michel Allard, I asked him whether they had ever attempted to re-inject a false piece of information, as a sort of control. He said that they hadn't.

I agreed with Zak that the validators had sometimes taken a boosterish approach to their task, but I didn't see evidence of a conspiracy. Zak had been lobbying them to release the interview tapes, implying that they might be hiding something. The tapes, I learned from Allard, were sitting in a box in his basement; he simply hadn't bothered to fetch them. When I pushed Zak about the inconsistencies in his theory, he became annoyed. "You misunderstand the whole thing about the validation of extreme age," he said. "Everybody agrees that the burden of proof in extreme age is on the claimant and the validators, not on the skeptics."

That morning, I had met with Valery Novoselov, at Moscow State University's Zoological Museum. He greeted me in a domed entryway lined with murals of

wildlife, and we proceeded through a series of faded corridors—past a mastodon skeleton and a glass case emptied of all but a set of doilies—before arriving in a dusty classroom, where we sat down at a long wooden table. We were joined by two of his colleagues from the Society of Naturalists, and I had brought an interpreter. Novoselov had a boisterous, orotund way of talking that even the interpreter seemed to have trouble making sense of. After a discourse on his research into the cause of Lenin's death, Novoselov turned to Jeanne Calment. "This was taken in 1955, so she was past eighty here," he said, pulling up a photograph of Calment on his laptop. "The woman is still full of estrogen—she is just entering the early stages of menopause. It's clear that, hormonally, she is still a woman."

Novoselov remained certain that Calment couldn't have been a hundred and twenty-two years old, but he was now agnostic about the possibility of a switch. He felt that Zak, as a non-scientist, had been too hasty in publishing some of his work. "We are the people of the Soviet Union, Zak is a person from Russia," Novoselov said, at one point. "We are analog people, he is a digital person." I asked Novoselov why, given his belief in the importance of scientific method, he was willing to rely so heavily on photographs, which are notoriously open to interpretation. He started talking about the youthful look of Calment's legs. At one point, he said that he had asked specialists at the Investigative Committee, Russia's equivalent of the F.B.I., to perform a forensic analysis of some photographs. He had a letter from the committee, which I did not read until later. It stated that "the quality of the photos you submitted of Jeanne Calment and her daughter . . . does not meet the requirements for forensic portrait examination."

It felt like we weren't getting anywhere. One of the most compelling points of the case mounted by Novoselov and Zak, it had always seemed to me, was that the collective assumptions of a society can suppress unlikely truths. Every time I found myself convinced that their accusations were impossibly far-fetched, I

wondered whether I wasn't just being complacent: who would have believed, for instance, that Jack Nicholson's sister was actually his mother, before *Time* sprang the news on him, in 1974?

"How old do you think I am?" I asked Novoselov.

"Seventeen," he said.

"Seriously, how old do you think I am? This is one of your methods, looking at someone and estimating their age. Write it down."

Novoselov obfuscated, but eventually I persuaded him, along with each of his colleagues, to jot down on a slip of paper the age that he perceived me to be. One of them wrote twenty-eight and another thirty-five. Novoselov's guess was forty-two. I am thirty-nine.

It's hard to find a smoking gun if there hasn't been a crime. As time went by, I grew increasingly convinced of the veracity of Jeanne Calment's record, but several loose ends troubled me. I wanted to know more about the claim, in the book about the insurance industry, that an insurer and French authorities had turned a blind eye to fraud. The source, it turned out, was a former employee of the French treasury, who did not want to be named. An insurance company had acquired the annuity (the *rente viagère*) on Jeanne Calment's apartment sometime in the sixties. According to the source, officials at the company noticed that Calment was an actuarial outlier and inquired with the treasury about the account. The source's superiors signalled that he should back off. Later, after Calment's death, one of the insurance-company officials told him that she had switched places with her daughter. The official died in the two-thousands, and, along with him, the origin of the tale.

Months after my first conversation with Michel Allard, I e-mailed him to see if, by chance, he'd unearthed the taped interviews with Calment. "You've come at just the right time," he replied. He'd got them out of his basement and, he said, was about to take them to be digitized. He agreed to allow me to listen to them before he did. It was crazy to be able to hear a voice from the nineteenth century, a soul reconnected with her memories, some of which I'd already encountered on the page. "She never performed nude!" Calment said, of La Belle Otero, a famous actress of her day. "Never!" She spoke passionately,

without as much prompting as I'd imagined.

In Arles, I'd met a woman named Maguy Raspail, a retired nurse who seemed to be the only person in town who supported Zak. She told me, "I found Nikolay very intelligent, and I told myself that maybe he was able to see what we, the French, weren't able to see." Raspail couldn't rebut much of the evidence attesting to Calment's authenticity, but she did tell me something interesting. Laure Meusy, the head nurse at the Maison du Lac at the time that Calment lived there, had told her that another nurse had called Calment "Yvonne" in front of the staff and other residents. Meusy confirmed this in a text message. "She would say loudly that Jeanne was her daughter, but I was her boss and she couldn't say it in front of me," she wrote. Meusy said it was "impossible that someone as natural as Jeanne was a liar." I called the other nurse, but she hung up when I mentioned Calment's name. The next time, she stayed on the line. She said that she had never doubted Calment's identity. "Are you joking, asking me that?" she said, of the rumor that she had addressed Jeanne as "Yvonne." "Not possible."

The end of Jeanne Calment's life was tumultuous, even sordid. As her fame grew, the Maison du Lac struggled to manage the demands of journalists and well-wishers. Meusy became her unofficial handler, performing the job with a clumsy mix of hawkishness and impotence. In Calment's hundred-and-twenty-first year, barely able to speak, she recorded a rap CD. Another day, as she sat immobile in her wheelchair, a Japanese clown kissed her on the mouth. After the airing of a documentary that suggested Calment was not being treated properly, the retirement home's management intervened, transferring Meusy for "failure to observe the obligation of reserve, discretion, and restraint." Calment's visitors were severely restricted, and her validators were barred from seeing her. Allard said, "She was thrown in the dungeon."

Calment died on a Monday in August, in the middle of *les grandes vacances*.

One biographer conjectured that she died of boredom. Jean-Marie Robine told me that Calment had agreed to donate her brain to science. “We had a team waiting in Paris around the clock, ready to board a flight,” he recalled, but Calment was buried with such “violent haste” that the team was unable to harvest the organ. Although Calment had been a devout Catholic and a celebrity, only a handful of people, mostly retirement-home personnel, were allowed to attend the burial. The next day, hundreds of mourners gathered at St. Trophime, her longtime church. In lieu of a coffin, a large picture of her stood at the altar.

Her family tomb, in the Trinquetaille Cemetery, in Arles, lies at the end of a long row of mausoleums. It’s a relatively modern and simple monument in black granite. The names of Joseph and Freddy Billot are inscribed on a plaque. In the middle of the tomb, there’s a marker in the shape of an open book that reads “Jeanne Calment, 1875-1997, La doyenne de l’humanité.” Yvonne is buried there, too, but her name is absent. “Why there is no Yvonne’s name on family grave, while there are names of Joseph and Frederic?” Zak wrote, when a Facebook fight erupted over the subject. “Explanation in the switch scenario is easy: she didn’t want her name to be on the grave because she was alive.” But Fernand and other relatives are buried there, too, and their names aren’t marked, either. According to counter-investigators, the tomb was redone in the sixties, and is engraved only with the names of family members who have died since.

The secret of Jeanne Calment may reside in a village about an hour’s drive from Arles. Renée Billot Bonnary, Freddy’s widow, lives there, near the Mediterranean Sea. Bonnary, a retired dentist, was born in 1926. She is one of the last living links to the time when the Calments were a thriving Arlesian dynasty, to the long middle of her former grandmother-in-law’s epoch-spanning story. Several sources suggested to me that Bonnary and Calment had a dispute after Freddy’s death. The desire to keep such a conflict private could

help explain why Calment chose to destroy her personal papers. It could also attest to her authenticity: if Calment had been involved in a scam, it's conceivable that Bonnary would have known and would have been motivated to expose her. I sent a letter to Bonnary and contacted a relative of hers, who eventually asked me to leave them alone.

So I went to Marseille. First, I walked from the train station to the Aix-Marseille University medical school, where I checked out Catherine Levraud's thesis from 1993, "Jeanne Calment: 118 Years, Prototype of Longevity." Levraud spent several months visiting Calment at the Maison du Lac, and charted her medical history. On page 10, I found the passage that had raised Zak's suspicions when it appeared, partially, in the special on France 2. It read, "The blood report is that of a woman of thirty years old in good health. The X-rays, however, show hyper-transparence because of the demineralization of the bones, and pleural effusions on the thorax." Zak was right: both mother and daughter may have had tuberculosis. This does not mean, however, that the person who died in 1997 was Yvonne. "Jeanne could have been touched in passing by the illness and not even known she had it," Catherine Levraud, now a doctor in Arles, told me. "In that population, it was extremely frequent." For another opinion, I called Petros Karakousis, a tuberculosis expert and a professor of medicine at Johns Hopkins, who confirmed that the presence of pleural effusions can indicate a previous tuberculosis infection, but said that they can also be attributable to "plenty of other causes," such as mild heart failure, from which Calment suffered. It made sense, Levraud added, that someone strong enough to recover completely from a disease that felled many of her peers would go on to become a supercentenarian.

François Robin-Champigneul, the telecommunications engineer who calculated the Calments' inheritance taxes, had tipped me off that there might be some interesting documents in the departmental archives of the Bouches-du-Rhône, in Marseille. (Robin-Champigneul recently published a paper in

Rejuvenation Research defending Calment's record, and he is working on a book.) I took an Uber there and walked across a windswept plaza into a huge rectangular building of white iridescent glass. I applied for a card, stuffed my bag in a locker, and, with the help of a librarian, punched some codes into a computer. Within twenty minutes, I was sitting in front of thick, flaky ledgers containing Fernand Calment's estate documents from 1943, along with mortgage contracts from the purchase of several properties.

The documents suggest a couple in optimistic spirits. They had plenty of liquidity, with Fernand possessing a greater share of the assets. In February, 1933, they bought a country house outside Arles. Frédérique Skyronka, the granddaughter of Joseph Billot's brother, remembered spending her summer vacations in the sixties nearby. "She was already an 'old lady,' but extremely dynamic," she told me, of Jeanne. "She walked, walked, and walked—that's the secret."

A typewritten document of six time-splotched pages recorded the sale of Jeanne's childhood apartment, at 53 Rue de la Roquette, on November 28, 1931, to a M. Honoré Mistral and his wife, Mme. Clarisse Raoux, for thirty-five thousand francs. At some point, someone had underlined parts of it with an oily dark-green crayon. I flipped through, trying to focus. *Entrée en jouissance, régime dotal, impositions foncières.* The archives were closing soon.

It wasn't until weeks later, in Paris, that I understood the significance of the

all gathered to sign the contract. According to the document I'd held in my hands, not even five years later Jeanne was standing in front of Arnaud again, to

sign for the sale of 53 Rue de la Roquette. In Zak's scenario, Yvonne had already started impersonating her mother in 1931. She would have shown up before Arnaud with her hair dyed white and a looping "J" in her signature that wasn't quite right.

It is next to impossible that Yvonne could have fooled Arnaud. She could have bought him off, but the documents I had seen also showed that Jeanne appeared in front of his successor, Louis David, in 1933 and 1942. In neither case would Yvonne have been likely to present an I.D. card, false or otherwise, as Zak claimed. Both Arnaud and David knew Jeanne too well to ask for identification. How many people would Yvonne have had to co-opt? Two notaries, a priest, a seven-year-old boy, a crowd full of mourners, a whole city? The theory made no sense, and, even though I knew it, I was already thinking about what Zak would say next. ♦

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