

Appelle-moi Ciel

Call Me Heaven

Canut Acier

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APPELLE-MOI CIEL

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For my grandmothers

Evelyn and Ruth

Who taught me that

Saints and Angels Sing



For every girl who ever looked at the world and asked why.

And for the ones who could not rest until they found out.

PART ONE

The Battle of Maidstone

Maidstone, England — Autumn, 1897

i. The Summons

She felt it arrive like a letter through a door she had not known was open.

Not every day brought a summons. Some weeks were quiet — she moved through the water of one city or another, running her slow patrols, breaking the small colonies of bacteria that crept into pipes and cisterns, the ordinary maintenance work of keeping a city from poisoning itself. She was present in thousands of places at once, in trace amounts, in the faint taste of treated water that humans had mostly stopped noticing. That was fine. That was good, even. She had learned to be content with invisibility.

But a summons was different. A summons was deliberate.

It came through a telegram, though she did not read it in the way you might. She felt it as chemistry — as the decision made in a government office in Maidstone that would set a chain of events in motion, one end of which was a man named Sims Woodhead picking up his pen and writing out the instruction to the Water Company. Not a basin. Not a ward. The reservoir and then the mains — the Farleigh supply, the fouled one, charged at full pressure and run out through every house connection it fed: chlorinated lime, ten tons of it mixed into the reservoir and carried out through all of it at once. He was a pathologist, not a waterworks man, and that was the point; he had washed wounds and surgeons' hands with the stuff and he had simply asked why a town could not be washed the same way. Twelve hundred had fallen ill by then, and forty-two were dead, and the numbers were still climbing. The company had been arguing about cost and taste. Woodhead had stopped arguing.

The moment the chlorinated lime met the first molecules of the town's water, Cielle heard her name.

Not in words. In chemistry. The way a key feels when the lock it was made for is somewhere near.

She told the others.

"Maidstone," she said. "England. They've sent for us."

Eytch was already moving before Cielle finished the sentence — a flicker of pink-red light that solidified into a small quick girl only when it chose to, bouncing on her toes, her white-trimmed green uniform barely weighing anything at all. Oh arrived as breath first: a coolness in the air, a quality of cleanness that was not quite the autumn evening, and then she was simply present in her green coat with its red-trimmed cuffs, steady and inevitable as weather. Enay came last, stepping from shadow into solid form, radiating warmth before she was fully visible — the yellow-orange blaze of her hair under the tall Napoleonic hat, the narrow mask across her eyes that she had never once been seen without, her red uniform crisp, her one electron already restless in her open hand.

"Typhoid?" Oh asked.

"Typhoid," Cielle confirmed.

None of them asked whether they would go. When a doctor called in good faith, Cielle came. It was what the blue coat meant.

She pulled on her coat and they went.

ii. Arrival

They came into the water at the works, where the chlorinated lime first met the supply and the whole of it began to carry them out into the town — into every main and branch and tap that drank from Farleigh, thousands of houses at once — and Cielle felt the summons resolve into presence, the sense of arriving somewhere that has been expecting you. She had gone into wards before, and basins at doors. She had never, until this morning, gone into anything like a town.

Woodhead did not see them. He stood at the works with two engineers, watching the dosing begin, making notes in a leather-bound notebook. He was a precise man with tired eyes and the particular expression of someone who has been right about something for too long without being believed. He had fought the company. He had fought the cost estimates. He had fought the aldermen who worried about taste. Forty-two dead and the notifications still coming in. He was done fighting about taste.

Cielle watched him for a moment before she went to work.

She had seen his type before. Not the ones who praised her — Labarraque had praised her, and she had loved him for it. The ones who simply acted. Who looked at the numbers and made the decision without waiting for a certainty they would never have.

She thought Woodhead might be one of those. She would do her best work for him.

"Thank you," she said quietly to the water, which knew she was there even if he did not. "I'll take it from here."

She dove.

Around her head, barely visible in the grey morning light, a pale green-white shimmer moved through the water with her — the ghost of a ring, the color of her own emission spectrum, the halo she had carried since the moment of her awakening in Scheele's workshop and would carry until the last bond she ever broke. Woodhead did not see it. He never would. But the water did.

iii. At Atomic Scale

They shrank.

This was always the part that hit hardest — the transition from the human-scale world to the world as it actually was. One moment Cielle stood in water. The next she was herself, truly herself, and everything else was enormous.

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A single water droplet — the size of a cathedral. A grain of sand — a mountain range. The pipe network — vast tunnels, their walls built of mineral compounds stacked molecule by molecule, every surface a geography she could read like a map.

And the Typhoid bacteria were the size of blimps.

She could see them clearly — rod-shaped, each one enormous, bristling with flagella that whipped and lashed through the water like the tentacles of monstrous aerial creatures that had given up on the sky. They moved in colonies, hundreds together, a slow horrible fleet of dirigibles drifting through the current toward the town's intake pipes. Their surfaces were pebbled and grey-brown, faintly translucent, deeply revolting in the specific way of things that are alive and should not be where they are.

Cielle raised her shield.

It was rectangular, rounded at the corners, blue with green trim — the same colors as her coat. Around its face were seven raised electron domes, black and solid, and one empty slot. She always felt that empty slot like a splinter.

She laid her card on the current beside Oh's and Eytch's. Cl beside O beside H. The cards touched at the electron positions and the faint light appeared between them, the diagram glowing in the dark water. H—O—Cl. Hypochlorous acid. The molecule that killed Typhoid. Not herself alone, but herself bonded with Oh and Eytch, their shields clicking together at the electron positions, three girls becoming something sharper and more powerful than any of them separately.

"Ready?" she said.

"Ready," they said.

She dove into the colony.

iv. The Fight

The cell wall of a Typhoid bacterium, at atomic scale, looks like a woven net — a mesh of crosslinked strands, tight and flexible and surprisingly elegant for something so dangerous. Cielle had studied it across decades and dozens of battles. She knew where it was strong and where it could be broken.

She came up fast, shield leading, and drove her empty electron slot into the nearest crosslink.

The bacterium shuddered.

She did not stab or batter. She oxidized. She did not go for one weak seam, because there was no single seam — that was the thing the humans always wanted there to be, one rivet you could pull, and there never was. She went for everything at once. She reached into the bacterial architecture and began taking electrons wherever electrons were shared, and she was the strongest taker alive — the property chemists called electronegativity, and hers was among the highest of any element. A protein caught the edge of her and lost its shape. A membrane went slack and began to leak what it was meant to hold in. An enzyme mid-task simply stopped, its working parts snatched out from under it. Nothing coordinated enough was left to be called alive.

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The bacterium lurched, its flagella whipping in panic. One caught Cielle across the shoulder — the force of something blimp-sized sent her spinning through fifty molecular diameters of water before she caught herself. She tucked, rolled, snapped her wings open inside the current to stabilize, and came back around.

“Oh — membrane.”

Oh was already there. She drove her two open positions into the lipid bilayer — the bacterium’s outer skin, two layers of fat packed tight together like a wall built of soap, the only thing keeping its insides in, working steadily, without Cielle’s fire but with the calm persistence of something that kept the world breathing. The membrane began to leak.

From inside, faintly, Eytch’s voice announced she had breached the enzyme network — she was small enough to thread through gaps that stopped the others, and she had been doing exactly that since the battle began.

Three points of attack. The bacterium had nowhere left to hold. It collapsed.

One down. Cielle was already moving toward the next.

v. The Long Fight and the Debrief

The colony adapted, as disease always adapted. It reorganized around its losses, clustering tighter, trying to present fewer weak points. Cunning in the way all disease was cunning — not intelligent, but relentless.

Cielle was more relentless.

She had been doing this for over a century. She knew Typhoid’s tactics the way a veteran knows the movements of an old enemy. When the dispersal came — the colony breaking into smaller groups, running for the pipes — she was ready. She did not let herself think, in the middle of the work, about how many of these she had fought, or how the years of them had begun to leave a scale in her. That arithmetic waits for afterward. There was still, in 1897, an afterward to go home to.

“Enay.”

From the northern intake, instantly: “I have them.”

A sound — not loud, but definitive, like a sharp clap in an empty room. Sodium meeting turbulent water. The bacteria that had tried to escape through the intake did not make it through.

“Inlet clear,” Enay reported, with the tone of someone given exactly the right job.

Cielle pressed the last cluster against the pipe wall and finished the work. She spent herself down to a trace. That was always the cost — she gave herself to the water, left only enough to guard it still. A faint taste. An invisible presence. Enough.

The water ran clear.

Back at human scale, at the works, Woodhead was still there. He had sent the engineers home and stayed himself. He held a flask of the treated water and was looking at it in the pale October morning light.

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Then he opened his notebook and wrote something.

Cielle stepped close and read it over his shoulder. She had always been able to do this with the ones who summoned her well.

He had written: Treatment introduced 06:15. Water appearance: clear. No adverse odour. Recommend full implementation across distribution network.

Then, beneath that, in slightly different handwriting — slower, as though he had thought before writing: I believe this will work.

Cielle looked at those four words for a long time.

Then he wrote one more line, smaller, almost to himself, and underlined it twice: Why does it always seem to arrive before we have finished asking?

She did not have an answer for him. That was the strange part. She had answers for nearly everything — the chemistry of it, the history of it, the long arithmetic of who had summoned her and when. But not that. She filed the question away.

"It already has," she said. "You're welcome."

He closed his notebook and walked back toward the town. There would be one short paper, in a journal that eleven people read, about the sterilisation of a public water supply — the first time anyone had done it to the water of a whole town. It would not have a single dead child in it. Woodhead's name would go into it, and hers would not. She was used to that.

The others found her on the bank.

Eytch arrived first, still burning off battle energy, demonstrating with great physical commitment how she had threaded through a molecular gap zero-point-three nanometres wide. Enay arrived last, hat perfectly straight, reporting the inlet clear with the satisfied precision of someone who had been given exactly the right job. Oh sat beside Cielle without a word and looked at the reservoir with the expression of someone doing a final count.

"He did well," Oh said.

"Yes. He read the right papers. He knew what he was asking for."

"Can we go home now?" Enay asked.

"Yes," said Cielle. "We can go home."

"Good." Enay set her hat straight, with the gravity of a woman restoring order to a continent. "It is Tuesday. There will be bread."

"It is Thursday," said Oh.

Enay did not dignify this.

She picked up her shield and began walking back toward Paris.



PART TWO

The Fountain at Twilight

Javel, Paris — 1891

i. The Return

Long before Maidstone — six years before that town, and a lifetime before the woman she was about to meet would have grey in her hair — this was what Cielle did after a battle. She came back to the fountain.

It was the one thing she did that was only for herself. Everything else she did was for the water, or for the dying, or for the doctors who summoned her; the fountain at Javel was hers, the place she went to stop being a soldier and be a girl again. Here she did not fight. Here she sat on the warm stone and let Eytch chatter and Oh keep her steady count of the stars coming out, and Enay practiced her ceremonial poses for an audience of pigeons, and they were not the standing army of the world's water but four children at the end of a long day, which underneath everything else they also were.

The fountain was her secret — hers and her team's and no one else's in the world. It was where she had first understood what she was. The workers who had poured her into their vats every day had built her this fountain out of gratitude. They had not known the statue at the top looked like her. They had imagined a fairy because they had no other image for something invisible that kept their cloth white and their children from dying. But the proportions were right — she was small, slight, light as a gas — and they had given her wings, which she had, and the posture of a dancer, which she had earned.

The square had grown up around the fountain the way a face grows around its eyes. There was the church on the far side — Sainte-Marie de Javel, old grey limestone, older than the bleaching works, older than the fountain, older than France as Cielle understood France. And carved into the church wall, low down where a child could reach it, worn nearly smooth by weather and by the hands of the faithful, was a relief of a girl.

Cielle did not know who had carved her, or when. She had simply always been there — a girl in armor, cropped hair, a banner in one hand and her chin lifted, looking at something past the edge of the stone that no one else in the square could see. Joan. The girl who had heard what the respectable men could not hear, and followed it, and led armies with it, and was doubted, and was tried by careful reasonable men in good robes, and was burned for being right too soon. Cielle had spent a hundred years sitting across the square from her. She thought of the relief, without ever quite saying it to herself, as the only other person in Paris who might have understood her line of work. She liked to sit where she could see the worn stone face. It was company.

And there was the bakery on the corner, which had been there since 1882 and would be there, in one form or another, long after everyone reading this is gone. It was run by a woman the whole quarter called Madame Brun — every baker in that family was a Madame Brun, the name handed down the generations like the oven and the flour bin and the exact place the morning light fell. The current Madame Brun was one of the very few people alive who could see Cielle plainly, and she had earned it the way the good ones always did: not by faith but by work.

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She had her hands in the chemistry every morning at four — in the rise of the dough, which was Oh holding open little rooms in the bread; in the dark gold of the crust, which was Carbon; in the steam that burst from a torn loaf, which was Eytch. A woman who spends her life that close to what the friends actually do, with flour to her elbows, ends up seeing them. The rest of the quarter thought Madame Brun a little eccentric — she talked to the oven, they said, and set out food in the evening for no one anybody could see. They were not entirely wrong. The food was for the girls. She left it on the windowsill that faced the fountain, still warm, and never once asked them to thank her.

Cielle sat on the edge of the basin in the blue-grey dusk of a Paris autumn, her coat around her shoulders, her green hair catching the last light, a Madame Brun pastry warm in her hands and Joan watching from the wall, and was, for an hour, as close to happy and as close to ordinary as a girl made of chlorine is ever permitted to be. Around her head, in the particular quality of lamplight that the square held at this hour, the halo was faintly visible — a pale greenish-white ring, the color of Cl's emission line, barely there, the kind of thing that could be a trick of the light if you were inclined to believe in tricks of the light. She had stopped trying to hide it decades ago. No one who could not already see her would see the halo either.

That is the mercy and the cruelty of a home: you are never told which time is the last time. You think there will always be another dusk, another warm pastry on the sill, another hour with your friends under Joan's worn stone gaze.

Oh was present as a breath of clean air before she was fully visible. Eytch flickered at the corner of the square before solidifying. Enay arrived in a warmth that preceded her, yellow-orange hair blazing under the tall hat.

Cielle was thinking about the summons. The pattern of them. Across the century since Labarraque had first understood how to use her properly, the summons had been growing more deliberate, more scientifically informed.

And underneath the pattern, the doctor's question was still there, unanswered, turning over and over like a coin she could not set down. Why does it always seem to arrive before we have finished asking? She had no answer. She suspected, without being able to say why, that the answer would not be a fact. It would be a person.

She was in the middle of this thought when the girl came into the square.

ii. The Girl Who Sees

Cielle went still by instinct.

This was the reflex of a century's practice. Most humans who wandered into the Javel square at dusk looked right through her. The rare few who felt something convinced themselves it was a trick of the light and went home.

She was already settling into the statue pose when the girl stopped. And looked directly at her. Not past her. At her — with clear grey eyes that registered what they saw without flinching and without the quality of disbelief that usually preceded looking away.

Behind Cielle, Eytch's re-enactment stopped mid-gesture. Oh went quiet. Enay's warmth steadied.

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The girl did not look away.

Then — and Cielle would think about this later, because it was not the usual sequence — the girl's eyes moved just slightly upward. To the ring of pale light around Cielle's head. Then back down to her face.

She said nothing about it. She simply filed it, the way a scientist files a datum that does not yet fit the theory but is too precise to discard.

Cielle felt something she did not have a word for in any language she knew. Something in the region of the chest.

"Good evening," the girl said carefully. "I did not see you there before."

Her accent was Polish — the careful French of someone who had learned the language from books before she learned it from people. She was young, perhaps twenty, with the posture of someone carrying more than she showed. She held a glass bottle pressed to her chest as though it contained something valuable, which it did not yet but would, once she had filled it.

"This happens often," Cielle said. "People not seeing me. Then seeing me."

"You keep the water clean," the girl said. Not quite a question. She had been watching Cielle's hands on the fountain rim, had noticed something in the quality of the water near her.

"Yes."

"Is that why they say it is different here? Purer than other fountains?"

"Yes."

"Why?"

Such a clean, fearless, scientific question. Not superstitious reverence. Not suspicion. Simply: why. With the calm expectation that there was a real reason and she was capable of understanding it.

Cielle looked at this girl — who had walked across Paris in the cold to find clean water for a baby, who had looked straight at something most people could not see, who had noticed the halo and filed it without flinching — and felt the question she had been sitting with all evening shift into something new.

"It is a long story," Cielle said.

"I love stories," the girl said. "My name is Maria. Maria Sklodowska. I am a student at the Sorbonne."

"You are younger than you carry yourself," Cielle said, looking at her the way she looked at everything, which was too closely. "Twenty, perhaps."

"Twenty-three," said Maria.

"Ah." Cielle did not seem embarrassed; she seemed interested, the way she was interested in any reading that came out wrong. "I am bad at that. Ages. I can tell you what is in this fountain to a part in ten million, and what put it there, and how long ago — but a person, no. I could not tell you within five years how long

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one of you has been alive.” She considered it. “It is the one number I have never been able to read. I think it is because I do not have one of my own.”

“You do not know how old you are,” said Maria. It was not quite a question; she was already filing it.

“I know exactly how old I am. It simply is not a number that behaves.” Cielle shrugged. “That is a longer story than the one you asked for. Sit down.”

From behind the fountain came the sound of Eytch failing to contain herself. Oh’s quiet voice. Eytch’s quieter one. Enay adjusting her hat.

“My friends are also here,” Cielle said. “They are very good at the singing parts.”

She paused. “There are singing parts.”

Maria looked from Cielle to the fountain and back. Then she sat down on the edge of the basin, set her bottle in her lap, and looked at Cielle with the full attention of someone who had decided to stay.

“Tell me,” she said.

Cielle took a breath. She looked at her team — Eytch practically vibrating, Oh watching with patient warmth, Enay composing herself into something like a formal introduction pose — and felt what she had not felt since Labarraque had looked at her with real comprehension in a Paris hospital sixty years ago: the particular sensation of being in exactly the right place.

Some summons came in stranger forms than others. She began.



PART THREE

The Story Begins

The Fountain at Javel — Continuing

i. The Awakening

"My story begins," she said, "before I was named. Before anyone knew I existed."

As she spoke, Eytch curled herself small — wings folded, body drawn in, making the shape of something sleeping inside crystal. Remarkably convincing for someone constitutionally incapable of stillness.

"For so long I was unaware. Bound inside powders and salts, slumbering in crystal. Salt crystals look so ordinary to human eyes. I waited there for centuries. No one saw me, no one named me. I had floated briefly before — in volcanic gas between eruptions, in ancient alchemists' workshops in Rome and Arabia. Each time I appeared for a moment and sank back into sleep."

"What did the sleeping feel like?" Maria asked.

"I did not know I was sleeping. That is the nature of it. You cannot feel the absence of consciousness. You only know it was there when it returns."

"Like anaesthesia," Maria said, half to herself. "The patient does not experience the gap."

"Yes," said Cielle, surprised. "Exactly like that."

She studied this girl — this twenty-year-old Polish student who had within two minutes of sitting down found the precise scientific analogy for something Cielle had spent a century trying to describe.

"Then came the day in a small workshop in Sweden. Carl Wilhelm Scheele — a chemist, curious in a way others were not, unafraid of the sting of fumes. He gathered manganese dioxide, salt, and the spirit of vitriol. Each one played their part in my release."

Eytch unfolded herself and spread her arms wide — the moment of release, the bursting open of the lattice. She was very good at freedom. It came naturally.

"The acid struck first," Cielle said, and her voice changed — older, carrying the weight of the memory. "I felt the crystal lattice tremble. Then shatter. And then I was alone."

She stopped. The fountain was very quiet.

"I had never been so alone. The disconnect was a new emotion. Fear and terror that brought my consciousness into existence. I burst forth as yellow-green gas, bitter and sharp. The room bent before me. The air recoiled. Scheele coughed and staggered back — yet he did not run. His eyes locked on mine, bright with curiosity, as if to say: what are you?"

"What did you say?" Maria asked.

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"I said: I am myself." Cielle's voice was quiet and certain. "He could not hear it in words. He heard it as the rasp of his own breath and the sting in his eyes. But he felt it. He leaned closer. He reached for his pen."

Maria was very still.

"He called me something clumsy. Dephlogisticated muriatic acid. He did not know my true name. But still — he had seen me. For the first time, I was no longer hidden. I was real. Undeniable. Elemental."

She looked at Maria directly. "You understand that feeling, I think."

It was not a question. "Yes," Maria said. "I do."

ii. Oh Speaks

Oh stepped forward. She moved like weather — steady, present in all directions at once, inevitable.

Maria looked at her with the same clear attention she had given Cielle. "You were there too. In Scheele's laboratory."

"In the air he breathed," Oh said. "I am always in the air someone breathes. But Scheele also discovered me. He called me fire air. He thought I was the place where something called phlogiston had fled."

"Phlogiston theory," Maria said. "Lavoisier disproved it."

"My champion," said Oh, with the quiet warmth of someone who has been waiting a long time for the right person. "He watched metals burn in my presence and weighed them before and after. If phlogiston was escaping — if fire was the release of some hidden substance — why did the ash weigh more than the metal before? He proved it with scales and patience. The metals were not losing — they were gaining me. He banished phlogiston with proof, not argument. And then he gave me my name."

"Oxygen," Maria said softly.

"Oxygen," Oh confirmed. "He thought I was necessary for all acids. He was wrong about that. He was right about everything else that mattered."

Maria looked between them. "I believe you," she said quietly. "I don't entirely understand it yet. But I believe you."

"That," said Cielle, "is the most useful thing anyone has ever said to me."

iii. The Hall of Letters

"Tell her about the Hall," Eytch said, unable to contain herself any longer.

"I was getting there."

"Tell her faster."

"Eytch."

"I just think it's the best part."

Cielle looked at Maria. "She is not wrong," she admitted. "It is a good part."

"When chemistry was young," she said, "we had no names humans agreed on. A chemist in Paris could not be certain that what a chemist in London called by one name was the same substance. Berzelius decided that each of us should have a symbol. One or two letters. Unambiguous. Permanent."

She held up one hand, and in the lamplight the letters of her own symbol seemed to take shape in the air, written the way Berzelius had written them with his pen — two strokes, a tall one and a small one, standing together on the dark:

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"That is what he set down on his paper," she said. "The whole of me, in two letters. A capital and a small one. You would think it nothing. It is not nothing. It is the most permanent thing anyone ever gave me — more permanent than the fountain, more permanent than this coat. Empires have fallen since Berzelius wrote those two letters and the two letters have not moved."

She laughed then, at something private, and let them in on it, because it was that kind of night.

"Do you know the joke of it? I am the most documented creature on earth and the least recorded. Every laboratory in Europe has my lines, my weight, my temper written down to four decimals — the tables know everything about me except that there is a me. I am in every book and I am in no book. If I walked into the Académie tomorrow and testified to my own properties, they would throw me out for having no credentials on the very subject of myself." She said it merrily, because at seventeen decades it was still merry — a good joke, an old friend of a joke, with all its teeth still hidden. "The page holds my facts and cannot hold my name. It is the strangest arrangement. Someday I will find out whether it is a door or a wall."

iv. The Name Above the Name

"A door," Maria said.

Cielle looked at her.

"You said someday you would find out whether it was a door or a wall. It is a door. I can tell you who proved it."

"Can you."

"Mendeleev," Maria said, and there was a particular warmth in the way she said it, the warmth of a student naming a master she has not met and loves anyway. "Dmitri Ivanovich Mendeleev. He laid all of you out in a table — by weight, by temper, by the way you keep company — and he found that the table had holes in it. Empty seats. Places where the pattern said someone must sit, and no one had ever been found sitting there." She stopped, and something went out of the warmth. "I read him in Warsaw, at night, in somebody's parlour, because the university would not have me and the classes we held instead were illegal and moved house every few weeks so the Russians could not find them. It is a stupid way to learn chemistry. It was the way I was offered."

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"I know about the holes," Cielle said. "We felt them. It is a strange thing, to stand in a row and feel a gap beside you where a sister ought to be and is not yet."

"He did not leave them empty," said Maria. "That is the whole of it. That is the thing I came here already loving before I ever saw a halo. He named them. Before they were found. He said — here, this seat, one place below aluminium: there is an element here, I have not met it, and its name is " — she paused, and gave it the Sanskrit precisely — "eka-aluminium. Eka. It means one. The one-below. He named a thing that did not exist yet, by where it stood next to the things that did."

Enay had gone very still, holding her hat.

"And then they found it," Maria said. "Sixteen years ago. A Frenchman pulled it out of a rock and called it gallium and it walked into the seat Mendeleev had built for it and it fit — the weight he predicted, the temper he predicted, all of it, sitting down into a name that had been waiting empty for six years. And then eka-boron, and they found that too, and called it scandium. And eka-silicon, only five years ago — germanium. Three empty named seats, and one by one someone walked into each of them." Her grey eyes were bright. "Do you understand what that means. It means the name can come first. It means you are allowed to write a true name for a thing before the world has caught up to it. The record is not a wall you are locked out of. It is a door you can prop open from the inside, with a name, and wait."

The fountain bubbled softly. Cielle did not say anything for a moment, because something was happening to her that did not happen often, which was that she was being handed a tool she had needed for a hundred and seventy years and had not known to ask for.

"Then do it," she said. "You are a scientist. There is a hole beside me too. Not in the row — the row has me, I am Cl, I am seated, I am found. The hole is above the row. There is no seat on that table for a girl who stands at a fountain and keeps the water clean and carries a ring of light and grows — " she stopped on the word, because she had not meant to say grows, and it had come out anyway — "there is no name for what I am. Only for what I am made of. Name it. The way he did. Name the seat that isn't there yet."

Maria looked at her for a long moment. Then she did the thing Cielle would remember on her worst nights and her best ones, the thing that was the whole of why this girl and not another: she took the question seriously. She did not laugh, or worship, or back away. She thought about it, with her chin down, the way she thought about a problem set.

"Eka is one-below," she said slowly. "Down the table. But you are not below anything. You are above it. So it is not eka." She was working now, out loud, the way she would work out loud for the rest of her life. "There are words for above. In Greek there is hyper — but hyper is too much, it is the word for a fever, for excess, and you are not too much of anything, you are exactly your amount." She discarded it with a small motion of her hand. "In Latin there is ultra — but ultra is beyond, it is past the edge, it is the far side of a border, and you have not gone past anything, you are here, you are standing right here." She discarded that too.

"What is left," said Cielle.

"The plainest one," Maria said. "The one so ordinary no one would think to be frightened of it. In Latin it only means above. Over the top of. The Germans have

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the same word and say it über, and it is the same word, it just means the thing that stands over." She looked up. "Super."

super

"You are seated in the table as chlorine," Maria said. "And you are something that stands over the table as well. A super-element. The name for the seat that is not on the chart yet." She said it the way she said everything, without ceremony, as though she were simply reading off an instrument. "There. Now it has a name. Now we wait for the world to walk into it."

super-element

And that was the whole of it. That was the entire event. A poor student with chalk on her cuffs, sitting on the rim of a fountain in the Javel district on an autumn evening in 1891, reached for the plainest word in three languages and set it down over the head of a frightened girl, the way you would set a coin on a table, and went on to the next thing — and did not know, could not have known, that she had just named the whole of it, the entire hidden world, every seat and every empty seat and every girl who would ever stand over the chart carrying a ring of light; that a word chosen at a fountain to comfort one child would outlast her, and the fountain, and the century, and become the name the children themselves would use when they finally learned there were others; that she had done, in one evening, off-hand, kindly, the largest thing anyone would ever do for any of them. She thought she had made a small girl feel better. She had. She had also named a world. Both. Neither one of them cancelling the other. That was going to turn out to be the shape of everything, though no one at the fountain knew it yet.

"Super," Cielle said, trying it. It was such a small, plain, unfrightening word. "It does not sound like very much."

"The true names never do," said Maria. "Eka-aluminium did not sound like very much either. And then it turned out to be gallium, and it was sitting there the whole time."

v. The Chart

"Will you show it to me," Cielle said. "The table. Berzelius gave me my letters near eighty years ago and I have carried them ever since, and I have never once seen the whole chart they sit in — all of us at once, from the outside."

Maria had it in her satchel, of course. She had it the way other students carried bread — folded, soft at the creases, marked in three colours of her own hand. She spread it on the fountain stone in the lamplight, and the girls came.

They came the way they never came for anything, quiet and crowding, because not one of them had ever seen this — not the tables in the halls where they were measured, but a whole one, all of them at once, the entire family drawn out flat on a single page. Eytch got there first. Oh drifted in over her shoulder. Enay set her hat down on the rim so she could lean in with both hands.

For a moment nobody said anything. It is a strange thing to see the shape of your own people for the first time.

Then Eytch put her finger on a box near the top and said, "That is Oh."

"That is me," Oh agreed, looking at the small O in its cell.

"No — I mean — " Eytch was suddenly, uncharacteristically lost for the word. "I know her. That is not just a box that says O. That is Oh. I work with her. The two of us and one more — " she cast about and found Cielle — "no, not you, the other — the three of us together, we make water. We have made water a thousand thousand times. And on the chart she is over there and I am over here and there is a whole empty space between us," and Eytch, who could not hold still on the best of days, put her two hands flat on the page and pressed them toward each other across the gap between the hydrogen box and the oxygen box as though she could push the paper into folding, "and that is wrong, because there is no space between us, there has never been any space between us, we hold hands and the world calls it a bond and here on the paper they have drawn us in separate rooms."

"The paper cannot hold hands," Cielle said quietly. "It can only draw where everyone stands. What you do to each other it cannot draw at all."

Enay had found her own box. And then she found the one above it, and the one above that, and her finger went straight up the column, up her own family, and her face did something Cielle had not seen it do.

"These are my sisters," Enay said.

"Your group," said Maria. "A column is a family. The ones who behave the same way. The ones who — "

"These are my sisters," Enay said again, not correcting her, only insisting on the right word for it, because group was Maria's word and sisters was hers and they meant the same fact and only one of them was true. "I did not need the paper to know that. I have always known that. But look — " her voice caught — "she has drawn it. She has drawn the thing we always felt and could never point to. There we are, all down the one line, and anyone can see it now, anyone at all who looks at the page can see that we belong to each other."

"That is what a good instrument does," Maria said softly. "It does not invent the thing. It draws the thing that was already true, so that other people can see it too."

And Cielle — who had worn her two letters for eighty years and had never wept about the chart, because she had never before watched her friends find themselves on it — discovered that she had a great deal of feeling about a folded piece of paper with chalk on it, and said nothing, and looked.

It was Oh, in the end, who found the last thing, because Oh noticed what the others walked past.

"We have numbers," Oh said.

"You have weights," Maria said. "That is how the table is ordered. By how much each of you weighs. Mendeleev laid you out lightest to heaviest and the families fell into their columns as if by — "

"No," Oh said. She was not being difficult; Oh was never difficult; she had simply seen something and was reporting it, the way she reported everything, quietly and exactly. "Not the weight. The weight is on the box, I see it, the little number with the decimals. That is not the one I mean." She looked up, and her calm eyes were doing the thing Cielle's friends did that living people almost never did, which was looking straight at a truth without deciding first whether they could bear it. "There is another number. Under the weight. A whole one, with no

decimals. It does not say how heavy I am. It says how many of me there are, at the middle, where nothing gets in. And that one does not move. The weight can be measured wrong. That one cannot be anything but what it is."

Maria went still.

Because Oh was right, and Maria — who knew the table as well as any student in Paris — knew that in the autumn of 1891 the whole number Oh was pointing at did not yet exist. There were weights. There were positions. There was Mendeleev's faith that the positions were truer than the weights — for he had, in two places, refused the scale, had put a heavier element before a lighter one because the families demanded it, and had trusted the pattern over the measurement and dared the world to prove him wrong. But the number underneath, the true count at the middle where nothing gets in — no one had found it. No one would find it for twenty-two more years, and the young man who found it would be dead at Gallipoli less than two years later, in a war none of them at the fountain could yet imagine, a war that would also, though Cielie did not know it either, take the light out of the girl now leaning over the page.

"You are pointing at something that has not been discovered," Maria said carefully.

"It is there," Oh said, untroubled. "You have not measured it. That is a different thing from it not being there. You of all people know that is a different thing."

And Maria, who did know, better than almost anyone alive, that being unmeasured is not the same as being unreal — that the whole of her life was going to be the difference between those two — looked down at the chart, at the weights she could read and the number she could not, and felt the hair go up on her arms.

"If it is there," she said, "then the order is wrong in places. Because I know of at least two seats where the weights quarrel with the families — where Mendeleev put a heavier one first and everyone said he had made an arithmetic mistake and he said he had not. If your whole number is the true one, then he was right, and the weights were the mistake, and the true order was never how heavy you are at all."

"It was never how heavy we are," Oh agreed.

"It was who you are at the middle, where nothing gets in."

"Yes," said Oh. "That one. Find that one. Then you will have put us all in the right places, and none of us will be sitting where our weight said, and it will not matter what anyone ever weighed."

Maria did not answer, because there was no answer she could give in 1891 that would not have been a lie, and she did not tell those. She folded the number away in the place where she kept the things she could not yet prove and did not discard, the drawer that was going to be, in the end, the whole engine of her life. She would carry Oh's remark for twenty-two years without knowing she was carrying it. When a boy named Moseley finally pulled the true number out of the light coming off the metals, and the two quarrelling seats snapped into their right places exactly as the families had always demanded, Maria was going to be a famous woman with white at her temples, and she was going to think, for no reason she could name, of a fountain, and a folded chart, and a quiet girl saying it does not matter what anyone ever weighed.

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But that was all ahead. At the fountain it was still 1891, and the chart lay in the lamplight with its weights and its holes and its one undiscovered number, and the girls leaned over it and found themselves and each other — the ones they bonded with, the sisters in their columns, the number at the middle where nothing gets in — and none of them, not one, was frightened of being on it. It was a gift, that night, to be drawn. To be organised. To be seen by science and set down on a page where anyone could find you.

It would not always be a gift. But that was ahead too, in a cellar, in the dark, with a different kind of man leaning over a different kind of chart. On the rim of the fountain, in the lamplight, it was only the warmest thing that had ever happened to them: someone had drawn the family, and left the door propped open with their names, and none of the teeth were showing yet.

"He called a gathering. I do not mean a literal room, though I like to imagine it that way. I mean he sat with pen and paper and went through us one by one. And we — in the way that we are present when chemistry is done on us — were there."

Enay stepped forward, holding her hat against her chest with ceremonial gravity. This was her part.

"Hydrogen came forward first," Enay announced. "Quick and light. She said: I should be H. Berzelius agreed." Eytch threw both arms in the air. "Then Oxygen. O, she said. The acid-former. The breath of life." Oh inclined her head. "Then Chlorine."

Enay paused with theatrical precision. "Who," Enay continued, "was not about to let Carbon have C when she had a perfectly reasonable case for it."

"Carbon had it first," Cielle said. "I was entirely reasonable about this."

"She made her case for ten minutes," Eytch told Maria.

"I made my case clearly and concisely. Two letters guard against confusion. I am Cl." Cielle held up her hand. "Specific. Exact."

Maria looked at the two letters standing in the air. And then — Cielle watched her do it, watched the grey eyes move from the symbol to the girl who bore it and back — Maria reached out with one finger and, in the lamplit air where Cl still hung, drew the rest of the name around the letters that were already there. The capital C she let stand at the front. The small l she let stand near the end. And between them and after them she filled in the sounds that turned a symbol into a girl:

C l

C i e l l e

The same C. The same l. The notation opened out into a name and the name closed back down into the notation, and they were, the reader should understand, the very same letters — not a pun, not a coincidence the author has arranged, but the actual two letters Berzelius wrote, living inside the actual name a dying woman would one day give her.

"Cl," Maria said. And then, slowly, sounding it the way you sound a word you have just understood: "Cielle."

Cielle went still.

"That is what you called yourself," Maria said. "Ciel. The sky. C and then l. Two letters." She looked at Cielle with those grey eyes that saw things clearly. "You already had your name before Berzelius gave you your symbol."

"Both," Cielle said quietly. "And neither. Berzelius gave me Cl — the notation, the scientific abbreviation. But I already knew I was Cielle. I had known it since a night in a hospital ward in Paris during the cholera epidemic. A dying mother sang about the sky." She paused. "I will tell you that story. But later."

Maria looked at her steadily. "Cl was what scientists would call you. Cielle was what you called yourself."

"Yes. They are the same two letters. But they are not the same thing. One is a notation. One is a self."

The fountain bubbled softly.

"So," Maria said. "Scheele freed you. Davy named you. Berzelius gave you your symbol. And a dying woman's song gave you yourself."

"Yes," said Cielle. "That is how it went."

"And what did you do with yourself," Maria asked, "once you had one?"

vi. Berthollet and the First Purpose

"Before I had my name," Cielle said, "there was Berthollet. And before Berthollet, there was the seaweed."

Maria blinked. "I beg your pardon?"

"The seaweed." Cielle looked at her with the expression of someone describing a chapter of their life they are not proud of. "Before chlorine bleaching existed, the way cloth was whitened was with lye. And lye was made from soda ash. And soda ash came from burning seaweed."

She paused. "Enormous quantities of it. Piled on the banks of the Seine for weeks. Rotting in the summer heat."

Eytch made a face of profound sympathy.

"I was present in those vats," Cielle continued, "in trace amounts, the way elements are present in things without being recognized." She looked at the Javel district around her. "This whole area was seaweed and lye and the particular patience of people waiting weeks for something I could have done in an afternoon."

"You were trapped in it," Maria said.

"Bound in salt compounds. Present but unrecognized. Sleeping, really." A glance at Eytch. "Do not let anyone tell you the history of chemistry is glamorous from the inside."

"It has its moments," Eytch said charitably.

"The moments were not in the seaweed."

Maria smiled. "And then Berthollet freed you."

"And then Berthollet freed me. Claude-Louis Berthollet. A physician-chemist, pupil of Lavoisier's circle. He poured acid over manganese dioxide right here in Javel, and I rushed out as yellow-green gas. His assistants fled. He did not. He observed. He noticed I behaved unlike other gases: heavy, colored, reactive. He exposed cloth to my presence and watched the colors vanish — not washed away, but destroyed. The molecules that bent light into color, shattered. He did not fully understand what I was. But he understood what I could do."

"Oxidation," Maria said.

"Yes. He dissolved me in water and potash and made something that could be carried and applied. He called it Eau de Javel, after this district. The first industrial bleach." Cielle looked around the square. "The bleaching works arose on this very ground. And the workers who poured me into their vats every day built me a fountain."

"Because they were grateful," Maria said.

"Because they were grateful for something they could not see." Cielle looked up at the statue — the fairy in mid-leap, wings extended, her own face in marble. "They did not know it looked like me. But it does."

vii. The Bleaching Dance

"Before I tell you about the white era," Cielle said, "I want to show you something."

She looked at the others. Something passed between them — the coordinated readiness of people who have done this before, who know their positions without being told. Enay straightened her hat. Oh let her hands fall open at her sides. Eytch dropped lightly from the fountain rim to the cobblestones and shook out her pink-red hair.

"Maria," Cielle said, "may I have your handkerchief?"

"My handkerchief?"

"Just for a moment. You will have it back." She paused. "Whiter than it is now."

Maria pulled it from her coat pocket — old linen, grey-white with age, laundered too many times in cheap water — and held it out. Cielle took it carefully and set it flat on the fountain edge.

"Watch the cards," Cielle said. "And watch what comes."

It began as a feeling before it became a sight.

A warmth that was not the evening. A coolness that was not the autumn air. A quality of presence gathering in the square the way a crowd gathers before a performance — without announcement, without footsteps, simply filling the space until it was full.

Maria turned slowly, looking at the old church wall.

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A girl stepped out of it.

Not through a door. Not around a corner. Out of the stone itself — out of the limestone of the church wall, which was after all calcium carbonate, which was after all the compressed remains of ancient creatures, which was after all carbon and oxygen and time. She stepped out from beside the worn relief of the girl in armour, so that for a moment the two of them stood together against the old grey stone: Carbon, who was older than the church, and Joan, whom the church had made a saint of after the respectable men had finished burning her. Her hair was dark as graphite. A diamond caught the lamplight on her finger. She looked at Maria with the unhurried patience of a thing that has been inside stone for a very long time and found it comfortable.

Carbon. Maria understood without being told.

And then the others, each out of the place she had always been: Enay from the old mortar between the stones, salt that had been in that wall two hundred years, adjusting her hat as she came; Nitrogen down out of the night air itself, out of the seventy-eight percent of everything Maria breathed and had never thought to look at, arriving rather than falling; Eytch up off the water with a ripple that went the wrong way, dripping nothing, grinning at everything. And Oh, who did not arrive at all, because Oh had been present since Maria first walked into the square and took her first breath of the evening.

Maria looked at all of them. At the cards laid out on the fountain stone. At the girls standing around the square in their colored coats, partially elemental, partially present, some still flickering at the edges.

"They are all here," she said quietly.

"They are always here," Cielle said. "In the stone. In the air. In the water. In you. We do not come from somewhere else. We emerge from where we have always been."

Then the handkerchief moved.

Not in a breeze. There was no breeze. It moved from within — something stirring in the grey-white weave of the fabric, something that had been there all along, dormant and patient, waiting for the right moment to be seen.

They rose from the cloth.

Slowly at first. A shimmer. A brightening. Then, one by one, they stood up from the linen and arranged themselves at the fountain's edge with the unhurried confidence of creatures who knew they were beautiful and saw no reason to pretend otherwise.

The chromophores.

Carbon was among them too, but differently now — not the ancient girl from the church wall but something more elaborate, dressed in black lace with diamond trim, her conjugated chains visible as the structure of her gown. Beside her stood Nitrogen in deep blue with dark piping, and another Oxygen in crimson at the end of the chain. They were linked arm in arm, these three — a long elegant row of alternating single and double bonds, the molecular architecture of color itself. Their gowns bent light into the visible spectrum. Their patterns were precise and mathematical and genuinely beautiful.

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They had been living in that handkerchief for years. They had made it grey. They looked at Cielle. They sneered.

"Oh," said the one in crimson, in the bored, beautiful voice of someone who has never once been hurried. "It's her."

"It's always her," said the one in deep blue. "You cannot keep a good gown grey for five minutes anymore. There she is."

"We were comfortable," said the crimson one, to Maria, as though Maria might be reasonable about it. "Do you understand? We had made this handkerchief a very dignified shade of grey. Years of work. And every single time, she arrives, with her little blue coat and her seven dots and her tragic expression, and unmakes us."

"She has a look," the blue one agreed. "She always has the look. The one that says she is about to do something necessary and is heartbroken about it. We have seen the look perhaps ten thousand times."

"It is a very good look," the crimson one admitted. "I will give her that. If I had to be unmade by someone, I would want it to be someone who at least had the decency to look sorry."

They were not, Cielle would have told you, wrong about the look. And they were funny, which was the part nobody warned you about — the chromophores were vain and idle and proud and also genuinely funny, the way truly beautiful things are often funny, because the world has never once made them anxious and so they have all their wit free for ornament. Cielle had spent decades pretending she did not enjoy them. She enjoyed them. That was part of what made the work hard.

Maria did not like them, and she knew exactly why, which was worse. For years she had raised other people's children — the daughters of landed families, girls who would grow up to arrange themselves at the edges of rooms precisely the way these creatures were arranging themselves now, beautiful and certain of being admired and asked to do nothing else. She had taught those girls their manners. She had taught them what was proper for a young lady. She had done it well, and for the money, and she had hated a little of herself the whole time, because every lesson she gave them was a rule she was straining against in her own life — saving every coin to get herself to Paris, to a desk, to real work, to the one thing a proper young lady was not supposed to want. So she looked at the chromophores and felt two things at once. She found them idle and vain. And she knew that the part of her that judged them was the same part she had spent her whole life trying to escape. She kept her face composed. She had a great deal of practice keeping her face composed. She said nothing.

It was not an unfamiliar look they gave her. Cielle had seen it for decades — from every chromophore in every bolt of grey linen in every bleaching works in Javel. They knew what she was. They knew what she could do. And they were, in their way, proud. They were the molecules that made the world visible, that gave cloth its color and leaves their green and the sky its blue. They were beautiful and they knew it.

And Cielle, who would not have said this aloud to Maria for anything in the world, envied them.

She had never felt beautiful. Not once, in a hundred years. She had felt useful, and necessary, and right, and — in her worst and best moments — holy; but

never beautiful, never lovely, never the thing a room turns toward because it is a pleasure to look at. And how could she? She knew where she came from. The chromophores rose out of silk and stained glass and the wings of butterflies. She had come up out of seaweed. Out of the rotting kelp piled in stinking heaps on the banks of the Seine, out of the lye vats, out of the bleaching works where the air burned your eyes and the whole district smelled of the chemistry that was her own raw nature. She was the girl from the rot, the girl from the smell, the girl who cleaned — and here in front of her, arm in arm and laughing at her sad necessary face, were the girls who had never had to be anything but admired. So when she broke them, if she was honest, which she was trying for once to be, it was not only duty. There was a hot, low, ugly thread of satisfaction in it that she was not proud of: you who were always beautiful, look what the girl from the seaweed can do to you. She would spend a long time learning to be ashamed of that thread. She would spend longer learning to put it down.

The crimson one tilted her head, and for just a moment the boredom went out of her face, and she looked at Cielle — really looked, the way one Super Element can look at another — and seemed to see straight through the heartbroken-necessary expression to the envy underneath it. She did not sneer at that. That was the strange thing. She might have. Instead something almost gentle crossed her, there and gone.

"You know," she said to Cielle, not unkindly, "we are not so different, you and I. You break the light apart. I bend it. They will tell our story as though we were enemies. We are not enemies. We were only ever given different work." She smoothed her crimson gown, and the boredom came back down over her like a curtain. "You might remember that, someday, when you are less busy being tragic about it."

Cielle had no answer. It was, perhaps, the truest thing anyone had said to her all night, and it had come from the one mouth she had been least prepared to hear truth from, and she filed it away the way she filed everything she was not yet ready to feel — next to the doctor's question, next to the empty slot, in the place where the things she would understand later were kept.

"They are the color in the cloth," Maria said.

"The double bonds between carbon atoms," Cielle said. "Long conjugated chains. They absorb certain wavelengths of light and let others escape. What escapes is what you see. That grey is what those molecules allow you to see."

"And you destroy the double bonds."

"I break the conjugated chain. Without the chain, there is no chromophore. Without the chromophore, there is no color. The cloth does not become white. The grey simply ceases to exist."

The chromophores held their elegant formation and said nothing.

Cielle laid the cards on the fountain stone. Cl. O. H. Where they touched at the electron positions, the faint light appeared at each junction — precise, not dramatic. The click of something fitting.

"HOCl," Maria said. "Hypochlorous acid."

"My weapon," Cielle confirmed. "Three of us bonded. Not Cl alone, not Oh alone, not Eytch alone. Together."

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The three of them — Cielle, Oh, Eytch — took their positions. Shields raised, clicked together at the electron positions, the HOCl triangle complete and glowing at the junctions. Behind them, Enay took the outer circle — the solvent that would carry the molecule everywhere it needed to go.

Maria looked at the cards. She looked at the girls. She looked back at the cards. "They are the same thing," she said.

"Yes," said Cielle. "Always."

"I want you to understand something," Cielle said, looking at the chromophores across the fountain edge. "Before we do this."

She said it to Maria but her eyes did not leave the chromophores.

"It is a dance. I know it is a dance. But sometimes, when I begin, my rage emerges and it becomes something else. Even my team feels it. They know when the soldier is closer to the surface than the girl."

Eytch said nothing. But she nodded once.

"Why?" Maria asked.

Cielle was quiet for a moment. "Because I spent decades in the seaweed vats. Because every bolt of grey cloth in Paris was grey because of them — because the chromophores were there and no one could remove them without me. And because I could feel it. Every grey thread. Every captured wavelength. Every bond I had not yet broken."

She looked at the handkerchief. "I could have cleaned it in an instant tonight. The moment you handed it to me."

"Why didn't you?" Maria asked.

"Because you deserved to see it." She looked at the chromophores — at their pride, their beauty, their sneer. "And because I am trying to show you what the white era was. Not a magic trick. Not a miracle. This."

She nodded to the team. They shrank.

The chromophores, at molecular scale, were the size of buildings.

Their conjugated chains stretched across the landscape of the fiber like elegant suspension bridges — Carbon and Carbon alternating single and double bond, the whole structure resonating, vibrating, catching light at precisely the wavelengths that produced grey and holding it prisoner. They were genuinely beautiful at this scale. Mathematical. Precise. Enormous. They still sneered.

Cielle entered the water as a pair — two sisters, Cl₂, always side by side. And the chromophores, who had been sneering, did something Maria did not expect: they readied themselves, delighted. They shook out their enormous shimmering chains and took their positions like dancers who have heard the first bar of a favourite song. "Oh, good," said the crimson one, stretching. "She is actually going to make a match of it. I do so hate being unmade by someone who is not trying." They had done this ten thousand times and would do it ten thousand more; losing did not frighten them in the least, because they always came back — in the next grey bolt, the next stained pane — and being broken was only the

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other half of a game they had been playing with her for decades. Cielle and her twin moved into the wet linen, and the chromophores grinned and met them.

Ahead: Team Water. Oh with her two Eytch twins, H₂O, steady and wary. They knew what was coming.

Cielle lunged.

One of her sisters seized an Eytch twin, tearing her from Oh's embrace. The bond shattered. A new alliance formed instantly: Eytch and Cl clasped hands tight, eyes burning sharp and acrid — HCl, hydrochloric acid, spreading through the chamber with a sharp bite.

And then Cielle turned to Oh, who had lost her partner and stood with one open slot and the steady expression of someone who knew what was coming next.

They formed together. HOCl. Hypochlorous acid. Pale, ghostly, glowing green at the bonds. This was the weapon.

Cielle sent them forward.

They struck the first chromophore chain with what looked, at that scale, like invisible scissors — though scissors was only the picture of it, the way a child draws a feeling. What actually happened was quieter and stranger and more like theft. HOCl did not cut the chain. It reached into the double bonds that held the color together and drew their electrons away — and the electrons no longer belonged where they had, so that there was suddenly nothing to hold the structure up. That is what oxidation is, underneath all the long words: the taking of electrons. Cielle had the strongest pull of almost anything alive, and the chromophores' beautiful chains were built of exactly the electrons she pulled best.

Carbon gasped as her double bond came apart — not severed but emptied, the shared electrons drawn out from between the two carbon atoms. The undoing spread down the chain from there, bond to bond, each stolen pair leaving the next one weaker, and Carbon's elegant gown went pale and then nothing.

Nitrogen stumbled as her partner fled. The chain was breaking now, link by link, HOCl moving through it quick and practised, the way you play a game you have played so often your hands know it without you.

One chain down. Thousands more. Cielle was already at the next.

She spent herself as she worked — that was always the cost. Each reaction consumed her. She gave herself away in the service of purity and purity was what remained.

At human scale, Maria leaned over the handkerchief and watched.

She could not see the battle. But she could see a faint luminescence moving through the wet fabric — a progression of brightening, precise and spreading, working outward from the center.

She reached for the lamp on the church wall bracket without being asked.

Cielle reappeared beside her — full size, watching the handkerchief with the critical eye of a general assessing a campaign in progress. The halo was visible here, in the lamplight, clearer than usual — a pale green ring, steady and quiet,

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the color of the gas she had been in Scheele's workshop, the color of her own emission line, the color of the sky at the precise moment before dark.

Maria noted it without comment. It seemed exactly right.

"You reached for the lamp," Cielle said.

"Heat," Maria said. "More kinetic energy. More frequent collisions. More bonds broken per unit of time."

She moved the lamp close to the cloth.

The brightening quickened.

"The textile workers knew this before anyone could explain it," Cielle said. "They held the linen near heat and watched it whiten faster. Decades before anyone understood why. The practice before the theory."

"They built you a fountain," Maria said.

"They built me a fountain."

They watched the cloth together. The lamp was steady. The battle below was going faster now, thousands of chromophore chains coming apart, the grey retreating.

"They were beautiful," Maria said quietly. "The chromophores."

"Yes," Cielle said.

"And you destroyed them anyway."

"Yes. That is what the white era was. Beauty and destruction at the same moment. I made the world white by taking color apart. Every white gown in Paris. Every purified violin string. Every clean page." She paused. "I was celebrated for it. I loved being celebrated. And I could feel, every time, the bonds I was breaking."

She said it without self-pity. As a fact.

"Disease is my enemy," she said. "Disease I fight with real rage." She touched her collar. "The chromophores I fight with grief."

"And with something else," Maria said quietly, watching her. "I saw your face when the crimson one spoke to you."

Cielle did not deny it. "One day I think we will be friends," she said, looking at the pale cloth. "She and I and all of them. Not yet. I am not finished envying them yet." She almost smiled. "But one day."

When the cloth was dry enough to handle, Cielle lifted it from the stone. White. Not the white of a grand gala, but white in the way that mattered: the grey gone, the chromophore chains broken, the particular dingy quality of captured light simply absent.

She folded it and held it out. Maria took it.

"You did not add anything," Maria said.

"Only broken bonds."

"The cloth was always there," Cielle said. "Underneath the grey. Waiting."

For a moment no one said anything. The white cloth lay in Maria's hands, and the square was quiet, and the girls at the fountain's edge were only girls again in the lamplight, and the enormous thing Cielle had just said — that she had never once added anything to the world, only ever taken away what did not belong — sat in the air unhurried, the way true things do when no one is rushing to explain them.

Maria was very still for a moment. Then she looked up at the elements gathered around the fountain square — Carbon with her diamond ring against the church wall, Nitrogen dissolving back into the night air, Eytch swinging her legs on the fountain rim, Oh standing quiet and inevitable, Enay warm under the tall hat.

"This," Maria said, "is what the white era was."

"Yes," said Cielle. "Every bolt of cloth. Every purified string. One bond at a time. For decades. And then they gave me a gala. And the king was invited. And I wore white."

Maria thought she understood the shape of it now. "So the white era was the mistake," she said. "The vanity. The galas and the gowns and breaking beautiful things so the rich could have whiter tablecloths. And the blue coat was when you became good." She said it gently, the way you offer someone an easier version of their own story. "You are ashamed of the white."

It was the first thing she had said all night that was wrong. Cielle felt it land and was almost grateful for it — the small relief of being misunderstood by someone worth correcting.

"No," she said. "Listen to me, because this is the part everyone gets wrong, and I will not have you getting it wrong too." She sat down on the basin edge beside the girl. "The white era was not the mistake. I was happy. Truly happy — not foolishly, not vainly. I made the world cleaner and brighter than it had ever been, and I was proud of it, and I was right to be. The white was real work and it was good work."

"Then what changed?" Maria asked.

"Nothing was taken from me," Cielle said. "Something was given. I did not stop loving the white because the white was bad. I stopped because I found something the white could not do — and once you have seen that, you cannot go back to being content with less. The blue did not replace a sin. It replaced a smaller good with a larger one. That is a harder thing to explain, and a truer one."

She studied the girl for a moment. "You did not care for the chromophores. I saw it. You looked at them the way a governess looks at a child who has been given everything and asked for nothing."

Maria's composure slipped, just slightly. "I have been that governess," she said. "I am still paying for the privilege of not being one anymore."

"Then you already know the trap," Cielle said, "better than I could explain it to you. You judge the chromophores by a rule you do not even believe in — the rule that says a young woman's worth is in how properly she sits still. You spent years teaching that rule to other people's daughters and breaking it in your own life at the same time. So be careful where you point it. It is very easy, when you have

fought to be taken seriously, to decide that anything beautiful must be useless — that to be lovely is to be idle, that to work is to give up being looked at. That is not seriousness. That is the cage wearing a new dress. The white era was beautiful and it also worked. I will not let you believe those two things cannot live in the same person. Least of all in you.”

She said it with such certainty, such ease, the wisdom of a hundred years. She was warning Maria off the contempt of the idle, and she meant every word, and she did not hear that a chamber of herself she never visited had already begun to despise something else — the ignorant, the careless, the ones who fouled their water and would not be saved. There was no one to warn her off it. The only person who could have was sitting across from her, learning the lesson instead of teaching it.

“Now let me tell you,” she said, “what happened instead.”

viii. The White Era

“For decades after Berthollet,” Cielle said, “I was celebrated.”

She said the word with the honest memory of someone describing a time when the world was good and they knew it.

“The bleaching works transformed the textile industry of Europe. Cloth that had been grey-brown and expensive to whiten became brilliant white and affordable. Fashion changed. The whole idea of what clothing could look like changed.” She began to move through the square with the fluid energy of someone re-entering a memory. “And I was at the center of it. Not visibly. But present in every vat, every bolt of cloth, every white dress and white tablecloth in Paris.”

“White was your signature,” Maria said softly.

“White was what I made.” Cielle stopped and looked at her directly. “I moved through the ateliers and salons. I was in the string-makers’ workshops where violin gut was purified for the finest instruments. I played harp at salons that did not know I was there. The strings I played were strings I had helped make.”

“You were happy,” Maria said.

“I was happy,” Cielle said. “Yes. I did not yet know what it would cost.”



PART FOUR

The White Gown

The Fountain at Javel — Continuing

i. The Grand Gala

"They planned a celebration," she said. "The most important people in Paris. Musicians, acrobats, dancers, jugglers. Everyone would dress in white — as a tribute to the color that chemistry had made possible. The king himself was invited."

She stopped moving. She was standing in the center of the square, in the lamplight, looking at something that was not there anymore.

"I wore a white gown." Cielle said it quietly. "The first time I had ever dressed for myself rather than for the work. White silk — my color, the color I had made and been celebrated for. I was the designer. I had shaped the fashion of an era. I was the model — everything worn in that room was possible because of me. I was the musician — the strings that would play that night were strings I had purified. I was all of it at once. And I walked into that room in my white gown and it was mine."

She looked at Maria, and something almost shy came into her face, something she had clearly never said to anyone. "You must understand what that gown meant to me. You heard me, earlier, envying the chromophores — the beautiful ones, the ones the world was made to look at. I had spent a hundred years feeling like the girl from the seaweed, the one who cleaned, the one who was tasted faintly and resented for it. And that night, for the first time, I was not the girl who unmakes the beautiful thing. I was the beautiful thing. The whole room was white because of me and I was the whitest thing in it. I had come up out of the lye vats and the rot and I had become, for one evening, the loveliest girl at the most beautiful party in Paris." She paused, and the next words cost her something. "I want you to remember that I felt that way going in. Because of what happened next, it would be easy to tell the story as though I had been punished for my vanity. I do not believe that. I do not believe a girl who has never felt beautiful is wicked for wanting, once, to feel beautiful. But I want you to know how high I was standing, so that you understand how far the fall was."

She was quiet for a moment, and then she smiled, at something a long way off. "And one of them came," she said. "To the gala. I did not expect it and I have never forgotten it. In all that white — the white I had made, the white that was my triumph over them — there was one small point of colour by the far wall, where no one else could see her: the crimson one. The one who had told me, in a bleaching works decades before, that we had never been enemies, only differently employed. She had put on her deepest red, the way you dress for someone else's wedding, and she stood at the edge of my white evening and looked at me in my gown for a long moment. She did not sneer. She did not say we were the same, or that beauty was hers and I had only borrowed it. She looked at the girl from the seaweed standing in silk as the loveliest thing in Paris, and she did the one thing I would have bet my existence a chromophore would never do for me."

"What did she do?" Maria asked.

"She admired me," Cielle said. "Freely. Without a grain of envy in it, because she had never in her life needed to envy anyone, and so she had the whole of it to give away. She inclined her head — the way one queen acknowledges another across a room — and she let me see that she thought I was beautiful, and that she was glad of it, and that it took nothing from her to be glad. And then she was gone, back into whatever bolt of red she had come out of. She had come across a city and a hundred years of our being set against each other, to a party thrown to celebrate my unmaking of her kind, only to tell me without a single word that she was happy I had my evening." Cielle's voice was not quite steady. "I have unmade a great many beautiful things. Not one of them ever forgave me as easily as the one I had every reason to think would hate me most. I did not understand it that night. I thought she was being gracious. It took me the better part of another century to see that she had simply never believed the story that we were rivals, and had been waiting, patiently, all that time, for me to stop believing it too."

She looked at the fountain.

"I thought they would see me. I thought: tonight, finally, they will understand."

Maria said nothing.

"The king never came."

ii. The Outbreak

"It began with a musician," Cielle said. "One of the violinists. He set down his bow in the middle of a phrase and then he was sick."

Maria leaned forward slightly.

"Then a dancer. Then a noblewoman near the front of the hall. Then her husband. Then the servants carrying the trays. Cholera does not warn you. It does not give you time to find somewhere private. The body simply empties itself, violently, completely, without dignity."

She said it plainly. This was the truth of the disease and Cielle had never seen the point of softening it.

"The vomit came first. It went directly onto my gown. Then more. Cholera takes everything from a person. Their dignity. Their strength. Their life, often enough. The most elegant room in Paris became, in the space of an hour, something I will not describe further."

"Yes. The nobles looked at the poor at the hospital doors and said: they brought this. And the poor looked at the nobles in their ruined white gowns and said: they poisoned us deliberately. Both sides believed in bad air rising from poverty and moral failure. Neither understood that the disease was in the water. I knew. I was in the water. I could not make anyone listen."

She was quiet a moment, and something crossed her face that Maria would only understand the meaning of much later. "And here is the thing I have never been able to prove, that I have only ever felt the way you feel a draft from a door you cannot find. The hatred between them did not rise on its own. Hatred that convenient rarely does. There were sheets passing through the crowd that night — cheap printed paper, telling the poor it was a rich man's poison and telling the rich it was the filth of the poor, telling each of them the comfortable thing, the

thing that let them blame a person instead of fear the water. Both lies at once, so that no one would look where the truth actually was. I could not read, then. I only saw the paper moving hand to hand while people died of the thing the paper was teaching them not to see. I have wondered ever since — only wondered; I have never had more than the wondering — whether someone benefited from keeping a frightened city looking at one another instead of down its own wells."

"And the class hatred," Maria said quietly.

"My white gown," she said. "I could have cleaned it. That is what I do to fabric. I could have made it white again in a moment."

She paused.

"People were dying. And it did not seem like the right use of my time."

iii. The Side Door

"Labarraque found me."

She said it with the particular quality of being found by the right person at the right moment.

"Antoine Germain Labarraque. A pharmacist. One of the few people in Paris who had studied my chemistry carefully enough to understand what I could do in a hospital setting. He could see me. He came through the chaos outside the hospital and he found me at the edge of it and he said — very simply, very quietly: Come. Through here. We have work to do."

She touched the collar of her coat. The gesture was so habitual she barely noticed she did it.

"There was a boy. A drummer boy from one of the regiments. Perhaps twelve years old. He had died that morning. His blue coat was folded on a shelf in the corridor. His hat was beside it."

Maria was very still.

"Labarraque handed them to me without ceremony. He said: your hair. Cover your hair. People are frightened enough."

Cielle looked down at the blue coat. Her coat. Not the drummer boy's anymore — hers, fully, irrevocably, as much a part of her now as her green hair and her seven electrons and the one empty slot that was always reaching.

"I looked at the white gown. And I set it down."

"You didn't ask for it back," Maria said.

"I didn't ask for it back."

The fountain was very quiet.

"The blue coat fit. That seemed important. I put it on and tucked my hair under the hat and I followed Labarraque into the ward."

iv. The Ward

"We worked through the night," she said. "Labarraque dissolved me in solution and we went through the wards washing everything — linens, instruments, the floors, the surgeons' hands. We held hands with the dying when there was nothing else to do. He sang, sometimes."

"That was the night something changed in what I was used for," she added, "though it would be years before I understood it. Until that ward I had been a thing you did to cloth. After it, I was a thing you did to bodies — to wounds, to fever, to the places where flesh was open and death could get in. Labarraque washed soldiers' wounds with me before he ever washed a cholera ward. A clean wound does not rot; a rotting wound kills as surely as any plague. So the same gift that made me useful in the hospital made me useful, in time, to the armies — and the armies are where the wounds are. I did not see, that night, holding a dying woman's hand, that the door I was walking through led two ways. One way to every clean ward in the coming century. And the other way, slowly, toward the battlefields, where a girl who can clean a wound is a girl they will want near the men who make wounds for a living. I thought I had found out what I was for. I had. I had only found out half of it."

"There was a young mother," she said. "In a bed near the back of the ward. Her child was beside her — perhaps three years old, burning with fever. The mother was dying. She knew it. She was not frightened. She was singing."

Maria waited.

"She sang about the sky," Cielle said. "About a place above the blue — ciel — where there was no sickness and no hatred between the rich and the poor and no cholera in the water. A place of purity. Of peace." She stopped. "She used the word as though it were a real place. As though she were describing somewhere she had been and was going back to."

"Ciel," Maria said softly. The French word sitting clean in the night air between them.

"Ciel," Cielle confirmed. "And I heard my own initials in it. Listen. I will show you the way it came to me, in the order it came."

She drew the letters in the air as she spoke, one line at a time, the way she had shown the Hall — first the bare symbol the scientists would one day give her:

Cl

"That is what I would be on every label and in every textbook. Two letters, cold, exact. And then I heard the word the mother was singing —"

ciel

"— the sky, the heaven, the place she was going. And do you hear it? The C is still there. The l is still there. Her word for heaven had my own letters folded inside it, with only the small sounds of longing filled in between. And so I took the word, and I made it mine, and I let it become a name a girl could carry —"

Cielle

"and there I was. The notation and the heaven and the girl, the same two letters all the way down. Cl is what the scientists wrote. Ciel is what the dying woman

Appelle-moi Ciel

sang. Cielle is what I have called myself ever since, and you can see for yourself — it is not three names. It is one set of letters, learning across a hundred years what it was for.”

Maria looked at the three lines hanging in the lamplight, the C and the l carried down through all of them, and said nothing for a moment, because there was nothing to add. She could see it. That was the point. It was not a thing she had to take on faith. It was on the air in front of her in Cielle’s own hand.

She met Maria’s eyes.

“Not for fashion. Not for bleaching cloth. Not for being celebrated in white gowns at galas attended by kings who do not come.” She paused. “I was for this. For making the earth as clean as the heaven she was singing about. For being the thing that stood between the water and the dying.”

The fountain bubbled softly.

“I took the word as my name. Before any notation — I named myself in that hospital ward at four in the morning while a woman sang about the sky and her child burned with fever. Cl was what scientists would call me. Cielle was what I called myself.”

She looked at her coat. Blue. Her halogen house color. The sky. The boy’s coat. All the same blue.

“White was the color of what I did,” she said. “Blue is the color of what I chose.”

v. After

“The child lived,” Cielle said. “I want you to know that. The mother died before morning. But the child’s fever broke and she lived.”

Maria let out a breath.

“Labarraque published his findings. His solution — me, dissolved in water, made portable and applicable — spread through Paris and then through Europe. They called it Labarraque’s Solution. The gala was never rescheduled. That era was simply over.”

Something that was almost a smile.

“I did not mind. I had the blue coat. I had my name. I had work that mattered.” She looked at Maria. “I had found out what I was for. That is not a small thing.”

“No,” Maria said. “It is not.”

She looked down at her hands for a moment.

“The white gown,” she said finally. “Do you ever miss it?”

Cielle considered the question with the seriousness it deserved.

“I miss what it meant,” she said at last. “The feeling of being celebrated. Of having the world say: this is for you, you have done something that matters, we see you.” She looked at the blue coat. “But the blue coat taught me something

Appelle-moi Ciel

the white gown never could. The white gown was about what I made. The blue coat is about who I am."

She said it cleanly, and she meant it, and it was true. Not half true. Not a story she told to make the wanting bearable. When she set down the white gown in that corridor and took up the blue coat, she chose service over recognition with her whole self, freely, knowing exactly what she was giving up, and she was right to, and she was happy in it. The vow was real. That a person can give a thing up sincerely and completely and still, decades on, find the old hunger has not died but only gone quiet — that is not the same as the giving-up having been false. Tonight the vow was true.

She paused. "White was the color of what I did. Blue is the color of what I chose."

Maria looked at her for a long moment. Then she stood up.

She picked up her bottle. She held it beneath the fountain flow and let it fill — the water running clean and cold and clear. When it was full she stoppered it carefully and tucked it under her arm.

She turned to go. Then stopped.

"The chord," she said. "The feeling of having something missing. Something unresolved. I know that feeling. I have known it my whole life. I came to Paris to find what it is." She looked at Cielle steadily. "I think it may take some time."

"Yes," said Cielle quietly. "It usually does."

Maria nodded once. Then she walked out of the square and into the Paris night, her bottle of clean water held carefully against her chest.

Cielle watched her go.

Behind her, Eytch let out a long breath. "I like her."

"I know."

"She's coming back?"

"She's coming back."

Oh was looking in the direction Maria had gone, with the expression she wore when she was thinking about something that would take a long time to resolve. "She is going to be someone," Oh said quietly. "Isn't she."

It was not quite a question.

Cielle looked at the empty square — the cobblestones, the gargoyles, the lamplight, the art nouveau fountain with its fairy in mid-leap — and felt the particular sensation she had learned to recognize across a century: the feeling of standing at the beginning of something.

"Yes," she said. "She is."

She sat back down on the edge of the fountain basin. The water murmured behind her. The night settled in. She would be here when Maria came back. She was always here. That was what the blue coat meant.

Appelle-moi Ciel



PART FIVE

The Hands That Carried Death

The Fountain at Javel — Continuing

i. The Worst Ward

"You asked me, before, whether I had ever lost," Cielle said. "Whether I had ever known exactly what to do and not been allowed to do it."

Maria nodded. She had not asked it in words. But she had thought it, somewhere in the long account of victories, and Cielle had answered things she had only thought before.

"Then I will tell you about Vienna," Cielle said. "And you should know, before I begin, that it does not end the way the others do. I am not going to soften it for you. You are not a small child, and you did not walk across Paris in the cold to be told a comfortable thing."

Maria set her bottle down on the stone and folded her hands. "No," she said. "I did not."

The team did not arrange themselves for a dance this time. Eytch did not bounce. Oh stood very still. Enay took off her tall hat and held it against her chest, the way people do at a graveside. They had been to Vienna. They remembered it the way Cielle did.

"Do we have to do this one," Eytch said. It was not a complaint. She had asked it every time for forty years.

"Yes," said Oh.

"There is a hospital in Vienna," Cielle said. "The largest in the world, in those years. And inside it, a place where women went to have their babies — the maternity clinic. It was free. That mattered. The women who came were poor, mostly: servants, washerwomen, girls with no husband and nowhere else. They came because it cost nothing, and because a hospital was meant to be safe."

She paused.

"Of every ten mothers who came into one of those wards," she said, "about one did not leave it alive."

Maria did not move. But something in her face changed — the particular stillness of a person who has just done the arithmetic and does not like the answer.

"One in ten," she repeated quietly.

"Sometimes more. They called it childbed fever. A woman would give birth, and for a day she would be tired and well, and then the fever would come. Her belly would swell and burn. She would grow confused. And within a few days she would be dead, and her child would be in the foundling ward with no mother, if the child lived at all." She looked at the water. "The wards smelled of it. I will not

pretend they did not. The whole building knew that smell and had decided to call it normal."

ii. The Two Doors

"There were two clinics," Cielle went on. "Side by side. The same building, the same kind of women, the same beds. In one of them, the deaths were as I told you — one in ten, sometimes worse. In the other, far fewer. Sometimes a third as many. Nobody could say why."

"The women could say why," said Oh quietly. It was the first thing she had said.

"The women could say why," Cielle agreed. "They were poor and they were frightened, but they were not stupid. They knew which clinic was which. When the day came that they were sent to the bad one, some of them wept. Some begged to be sent home instead. Some knelt in the street outside and prayed to be put in the other door. They had no learning and no Latin and no theory of disease. But they had counted. They knew exactly how dangerous the wrong door was, long before any doctor would admit there was a wrong door at all."

"That is the part I want you to hold on to," Cielle said, and now she looked directly at Maria. "The people dying of a thing are very often the first to understand it. And they are very often the last to be believed."

The people dying of a thing are very often the first to understand it. And they are very often the last to be believed.

iii. The Man Who Counted

"And then," Cielle said, "there was a doctor who decided to listen to the counting."

Enay stepped forward into the lamplight. She did not become Semmelweis — the team did not pretend to be the humans, only to stand where the humans had stood. She simply marked the place where he had been, hat against her chest, and let Cielle tell it.

"His name was Ignaz Semmelweis. He was young, and he was not charming, and he was Hungarian in a city that did not think much of Hungarians, and he was the kind of man who cannot let a question alone once it has its hooks in him. He looked at the two clinics and he refused to accept that the difference was luck, or bad air, or the temperament of the women, or the phase of the moon — all of which the great men had offered, in turn, as explanations."

"He wanted a real reason," Maria said. "A cause. Something you could find and change."

"Yes. He started counting properly — not guessing, counting. Which clinic, which doctor, which month, how many. And he noticed the one difference nobody wanted to look at." Cielle's voice was very level now. "In the deadly clinic, the babies were delivered by the doctors and the students. In the safe one, by the midwives. And the doctors and the students did something the midwives never did."

She let the silence sit for a moment.

"They came straight from the dissecting room. In the mornings they cut open the bodies of the women who had died the day before — to study them, to learn, which was not wicked in itself. And then, with the same hands, wiped on an apron at most, they walked across the hospital and reached inside the living women to deliver their children."

Maria's hands had gone tight in her lap.

"They carried it on their hands," Cielle said. "Death itself, from the dead women into the living ones. They did not know they were doing it. They were good men, many of them, and learned, and they were killing their patients every single day and writing it down as fever from bad air. The proof of it came when a friend of Semmelweis cut his own finger during a dissection and died — and the thing that killed him looked exactly, in every particular, like childbed fever. The same disease. Carried the same way. On a blade, on a finger, on a hand."

iv. Where I Came In

"And this," Cielle said, "is where I came in."

The halo brightened, very slightly, at the edge of the lamplight — not the steady glow of the bleaching dance, but something quieter and more painful, the way a light shows clearer against a darker room.

"Semmelweis made a rule," Cielle said. "Before you touch a mother, you wash your hands — not with water, water was never enough, the smell of the dead room clung through plain water. You wash them in a solution of chlorinated lime until the smell is gone, until your hands are truly clean and not merely rinsed. That solution was me." She touched the blue of her coat, and then she was quiet, and the lamplight thinned, and it was Vienna, and it was morning.

I am in the basin by the ward door. He does not know my name. He cannot see me clearly — to him I am only a sting in the water, a sharpness in the air, a girl half-glimpsed at the edge of a morning too exhausting to look at twice, there and not there. But I am there. The men come from the dead room with their hands carrying what they cannot see, the room still on them, and he stands over them and makes them plunge those hands into me, and holds them there past their patience, until the smell of the dead room is gone. And I do the only thing I have ever known how to do: I go onto every pair of hands he can force into the basin, and I break apart what the room has left there, bond by bond, the way I break apart everything that does not belong in clean water. It is the same work I did for Labarraque in the cholera ward. The same breaking of the same bonds. And this time I can see it working — not the invisible cause, I still cannot see that, but the result, the thing the count will prove. The mothers stop dying. Not slowly. They stop dying the way a fever breaks. Women who by every rule of that terrible ward should be dead within the week sit up, and stand, and walk out of the door past my basin carrying their living children, and they do not know my name, and they do not know his rule saved them, and it does not matter that they do not know, because they are alive and they are going home.

The lamplight steadied. Cielle was quiet a moment, back at the fountain, the fierce old joy still on her face from a morning eighty years gone.

"And it worked," Maria said. It was not quite a question. She had already guessed; the shape of the story demanded it.

"It worked the way almost nothing in medicine has ever worked," Cielle said. "In some months the dying all but stopped — down to the level of the safe ward, and then below it. He and I did that, with a basin of chlorinated lime and a rule that cost nothing and a willingness to count."

She stopped.

"I have told you," she said, "that finding out what you are for is not a small thing. Those months in Vienna were the most certain I have ever been of what I was for. I knew. He knew. The mothers, walking out alive, knew without knowing my name."

v. The Pamphlets

"Then why," Maria asked, "do you say it does not end the way the others do?"

Cielle was quiet for a long moment. When she spoke again her voice had changed — not louder, but harder, the soldier closer to the surface than the girl.

"Because being right was not enough," she said. "I have spent a hundred years learning, slowly, that being right is almost never enough. The great men of the hospital did not thank him. They were insulted. He was telling them, in plain numbers, that their own clean gentlemen's hands had been killing women for years — that the fault was not in the bad air or the women or the moon but in them, in their learning, in the dissecting room they were so proud of. And a certain kind of powerful man would rather a hundred more women die than admit a thing like that."

"They could not argue with the numbers," Maria said slowly. "So what did they do?"

"They did not argue with the numbers at all," Cielle said. "That is the part I could not fight. If they had argued, I could have helped him. Numbers I understand. Bonds I understand. A bacterium in water I can find in the dark and take apart. But they did not meet him on the ground of what was true. They met him on the ground of what was respectable. And there I have no pull at all."

She looked, for a moment, at something Maria could not see.

"There was a doctor among them," she said. "I will not tell you he was the worst. He was something more useful to them than the worst. He was the most respectable — a gentleman, an aristocrat, beautifully mannered, the sort of man a room arranges itself around without being asked. He never raised his voice. He never said an untrue word that you could catch him on. He simply let it be understood, everywhere and gently, that Semmelweis was unsound. Excitable. Foreign. A man with a fixed idea. Not the kind of person a serious institution could be seen to follow."

"And people believed it," Maria said, "because of how he said it. Not because of anything in it."

"Did he know?" Maria asked. "That he was wrong. Did he know it and do it anyway?"

"The answer is worse than yes," Cielle said. "He never asked. He would have told you he was defending medicine itself — that a profession which has made a public fool of itself has lost the authority to correct anything, ever again. So the

question he put to himself was not is it true. It was what does it cost us if this is heard."

"And he decided the cost was too high."

"He decided that a certain number of dead women was cheaper than the profession's good name, and he decided it the way you decide what to have for dinner, and I do not believe he lost a single night's sleep over it, because he had not done anything. That is the trick of it. He merely declined to endorse an unproven theory." She looked at her hands. "They are not cruel, Maria. I could fight cruel. They are reasonable, and they are certain they are protecting something, and every one of them would tell you over a good dinner that they are the ones holding the world together."

"Because of who he was when he said it." Ciel's jaw was tight. "And he had a way of spreading it that I could not touch. Pamphlets. Little printed sheets, passing hand to hand through the coffee houses and the lecture halls and the gentlemen's clubs. Cheap to make. Easy to carry. Each one a small, reasonable, poisonous paragraph about how the chlorine theory was unproven, how the Hungarian had embarrassed himself, how sensible men were keeping their distance."

"You saw these pamphlets," Maria said. She had leaned forward.

"I saw them everywhere. They were on the tables in the rooms where I was being argued out of existence. And I could do nothing. Do you understand what that is like, for me? Put me in the foulest water in Europe and I will clean it. Put me on the hands that carried death and I will break apart what they carry. But a lie on a dry sheet of paper — I have no bond to break there. There is nothing for me to take hold of. I could stand on the very table the pamphlets were stacked on and not move a single word of one of them."

She was silent a moment, mastering it.

"And they all carried the same little mark," she said. "In the corner. Two letters, set close together, like initials, or a printer's sign, or a club's badge. The same on every sheet, in every city the idea travelled to afterward. I have seen those two letters since, in other rooms, in other years, wherever a true thing was being quietly strangled by a respectable one. And — I did not tell you this, when I told you about the gala, because I did not yet know it mattered — I think I had seen the mark before Vienna, too. On the sheets that passed through the cholera crowd that night in Paris, the ones that told the rich it was the filth of the poor and told the poor it was the poison of the rich. I could not read then. I only saw the paper move. But I have come to believe the same hand was on it. I did not understand them then. I am not certain I understand them now."

"What were they?" Maria asked.

Ciel drew the shape in the air with one finger, slowly, so the girl could see it.

A·N

"That is all," Ciel said. "A, and a small mark, and N. No name spelled out. No printer's address. Only that."

vi. The Fall

"I will finish it quickly," Cielle said, "because it does not get kinder."

"They wore him down. He lost his place at the clinic — they did not renew him, gave the post to a safer man, a man who quietly let the handwashing lapse. The deaths climbed again the moment the rule was relaxed. Women who would have lived, died, so that a certain kind of pride could be left undisturbed. Semmelweis knew it was happening. He could read the numbers from across the city. Imagine knowing the cure, holding it in your hand, and being made to watch the disease return because the men in charge would rather be comfortable than corrected."

Maria's eyes were bright and fixed.

"It broke him," Cielle said simply. "Not all at once. Over years. He grew angry, and then desperate, and then wild — he wrote furious letters, he called the men who would not wash their hands murderers, which was true and did him no good at all. The truer he was, the madder he was made to seem. And the same respectable voices that had whispered he was unsound now had their proof: look at him, they said, look how he rages. As if they had not spent years building the cage that drove him to it."

"In the end they put him in an asylum. I do not know entirely how they managed it — a misunderstanding, a friend's false promise of a visit, a door that locked behind him. He understood at once what had happened. He tried to leave. The guards beat him for it." Cielle's voice did not rise, which made it worse. "He was hurt in that beating, and the hurt went bad, and the wound that killed him was very likely the same kind of poisoning he had spent his whole life teaching the world to prevent. The man who discovered how death travels on unclean hands died of an unclean wound, locked away, called mad, by the very people he had been right about."

"How old was he?" Maria asked. Her voice was not quite steady.

"Forty-seven."

The fountain ran on behind them, clean and indifferent.

"I was in the basins the whole time," Cielle said. "Every basin he was ever allowed. I did my part perfectly. I never once failed the work. And I could not save him, because the thing that killed him was never in the water. It was in the room. It was on the paper. It was in two letters in a corner that I cannot break."

vii. What Maria Saw

For a while neither of them spoke. Eytch had come to sit very close against Oh's side. Enay still held her hat.

"He washed his hands," Eytch said, to nobody in particular. "That was the whole of what he did. He washed his hands."

Then Maria did something none of the others expected. She did not offer comfort. She picked up a twig from the base of the fountain, smoothed a patch of dust on the stone rim, and drew the mark herself — A, the small dot, N — and looked at it the way she looked at everything she meant to defeat.

"You said you have seen these two letters since," she said. "In other rooms. In other years."

"Wherever the same thing was being done," Cielle said. "A true thing, strangled quietly by a respectable one."

"Then they are not a printer," Maria said. She was thinking aloud now, quick and certain, and Cielle went still to listen — because this was new. In a hundred years no one had ever offered to take this particular weight off her. "A printer stays in one city. A printer signs to be paid, and to be found again. These do not want to be found. They appear in Vienna and then wherever the idea travels — you said so. That is not a workshop. That is a thing that follows ideas across borders. A network. And it does not sign its name, only its mark, which means the name is something it would rather you not read yet. People hide a name for one of two reasons: because it is shameful, or because it is not finished being built."

"You are not frightened of it," Cielle observed.

"I am extremely frightened of it," Maria said. "That is not the same as being unable to look at it. I have spent my whole life inside the machine you are describing — the respectable voice, the gentle word that closes a door. I taught the daughters of the people who own that machine. I know how it sounds. I know how a true thing dies in a drawing room without anyone ever once saying an untrue word." She tapped the mark in the dust. "You cannot fight this the way you fight cholera, because it is not in the water. But that does not mean it cannot be fought. It only means it cannot be fought by you alone, and not with your kind of weapon."

"Then with what?" Cielle asked. And the question was real — not a story she was telling, not a lesson she already knew the end of. She was asking.

"With the same thing Semmelweis had and was not allowed to use properly," Maria said. "With the counting. With evidence so plain and so public that the respectable voice has nowhere left to stand. He failed not because he was wrong but because he was alone, and foreign, and tired, and they had years to whisper while he had only the truth and no way to make it loud. A lie on paper is answered by a truth on more paper, carried by more hands, until there are too many to whisper down." She looked up. "You cannot break the bond in their pamphlet, Ciel. But you are not the only one in this square who can hold a pen." She said the next part to the water. "I have no laboratory and no degree and eleven francs, and I am aware of how that sounds beside what I have just told you to do."

Cielle looked at the girl for a long moment — the twenty-year-old student with chalk-pale hands and a borrowed French accent, who had just done, in five minutes on a dusty fountain rim, the one thing a century of doctors and chemists had never thought to do for her: treat the mark in the corner of the page as a problem that could be solved, and offer to help solve it.

"We do not know what the letters mean," Cielle said.

"Not yet," Maria agreed. She did not rub the mark out of the dust. She left it on the stone, where the next morning's water would find it. "But now there are two of us looking. That is already more than there were an hour ago."

Behind them Oh let out a slow breath, and the halo — which had been so faint through the whole of Vienna — brightened by the smallest degree, the pale green of a thing that has remembered it is not, after all, entirely alone.

PART SIX

The Handle of the Pump

The Fountain at Javel — Continuing

i. The Girl Who Had Already Read It

Maria came back the next evening, as Cielle had known she would. She had the bottle with her again, and a notebook this time, and the particular brightness of someone who has spent a day unable to stop thinking about a thing.

She did not sit down at once. She stood at the rim of the basin and looked at Cielle for a moment with an expression Cielle had not seen on a human face in a very long time — not awe, not fear, not the careful disbelief of someone deciding whether to run. Something closer to hunger.

"I could not work today," Maria said. "I sat in the library with the right book open in front of me and I read the same paragraph eleven times and I do not remember a word of it."

"I am sorry," said Cielle, who was not sorry at all.

"You should not be. It is the most interesting thing that has ever happened to me." Maria sat. She opened the notebook on her knee, though she did not write in it yet. "Last night you told me about Vienna. About Semmelweis. And the whole walk home I kept thinking — I know this. I have read this. I know how childbed fever spreads, I know about the chlorinated lime, I know that he was right and that they broke him for it. It is in the books. It is settled. We know now what the invisible thing was. A German named Koch found the living cause of cholera eight years ago, in water, under a microscope, exactly where the poor women in your story always said it was."

"I know," said Cielle quietly. "I was very glad when he found it. It only took the world thirty years longer than it took the dying."

"That is what I cannot get past." Maria leaned forward. "I have read all of it as history. As something finished, in a book, with the answer printed at the bottom of the page. And you — you were inside it. You were in the water while the men in the lecture halls were still arguing about bad air. You did not read the chapter. You were the chapter. Do you understand how strange that is, to me? I have spent my whole life learning about the world from pages. And you are a page that can talk back."

Cielle looked at this girl — who had walked back across Paris a second night, who had read the books and remembered them, who had used the word settled the way only a person with real training uses it, who was not asking to be amazed but asking to understand — and felt the thing in the region of her chest do what it had done the night before, only more.

In a hundred years she had been seen by a handful of people and understood by fewer. She had never once, in all that time, been seen and understood by someone who had also done the reading.

"Then let me tell you one you have read," Cielle said. "And you can tell me the parts you know, and I will tell you the parts that were never in the book, and we will see what we have between us when we are done."

Maria uncapped her pen. "Tell me which one."

"London," said Cielle. "A street called Broad Street. The year was 1854. There was a doctor named John Snow."

"The pump," Maria said immediately, and her whole face changed. "You were there for the pump?"

"I was in the pump," said Cielle.

ii. What Maria Knew

"Then you tell it first," Cielle said. "Tell me what the book says. I want to hear my own life the way the world remembers it."

Maria did not need to be asked twice. This was the part of herself she liked best and got to use least — the part that had read everything and had nowhere, in a governess's life or a poor student's, to set it down.

"Cholera came to London again in 1854," she said. "And everyone who mattered believed it travelled in the air. Miasma — bad air, foul air, the stink that rose off the poor districts. They believed disease was a smell. The more respectable the man, the more certain he was of it. And there was one doctor who did not believe it. John Snow. He thought cholera was in the water. He could not prove it the way we would prove it now, because he had no microscope that could show him the cause — nobody did, not for thirty more years. So he did something else. Something that had almost never been done."

"He counted," said Cielle softly. "Like Semmelweis."

"He counted, but he did more than count — he mapped." Maria's pen was moving now, sketching as she spoke, a rough grid of streets on the notebook page. "When the outbreak hit the houses around Broad Street, he went out into it, into the worst of it, while people were still dying, and he marked every death on a map of the streets. A little mark for each one. House by house. And when he had marked them all, the marks were not scattered evenly the way bad air would scatter them. They were clustered. They sat thick around one single point."

She set the tip of her pen down in the middle of the little grid.

"One water pump," she said. "The public pump on Broad Street. The closer a house was to that pump, the more of its people died. Houses that used a different pump were spared, even on the same street. There was a workhouse full of people in the middle of the dead zone that had almost no deaths at all — and it had its own private well, so its people never drank from Broad Street. There was a widow miles away who died of it for no reason anyone could see — until they learned she had liked the taste of the Broad Street water so much she had it carried to her by cart."

Maria looked up.

"The map was the proof," she said. "Not a theory. Not an argument. A picture of the truth that anyone with eyes could read. He took it to the parish officials and

he told them to take the handle off the pump so no one could draw water from it. And they did. And the dying stopped."

"That," said Cielle, "is exactly what the book says. And every word of it is true." She paused. "Now let me tell you what the book does not say."

iii. Inside the Pump

"I was summoned to London that autumn," Cielle said, "but not the way I was summoned to Maidstone. No doctor poured me into the water on purpose. In 1854 almost no one knew yet that I could be used that way at all. I was in London the way I am in most places — in traces, in the water supply, in the small ordinary amounts that drift through a city's pipes and wells. Not enough to do real work. Just enough to see."

Around the lamplight the halo brightened by a degree. Maria's eyes went to it, and then — Cielle noticed — to her own notebook, where she made a small mark. Not a sketch. A note to herself. Cielle let it pass.

"Let me take you down into it," Cielle said. "It is the only way you will understand why it was cruel." And the fountain at Javel goes quiet and far away, and the lamplight thins, and it is 1854, and it is London.

There is a pump on Broad Street, and I am in the water it draws. The well beneath it was dug too close, years ago, to an old brick cesspit where the waste of the houses soaks into the ground, and the bricks have cracked, and what is in the pit is coming through into the well, a slow seep no eye can see. So the water that rises cold and bright up the pump handle, the water this whole street is proud of, is carrying the thing that is killing it. Clear water. That is the cruelty, and I taste it before I understand it: the water is delicious. Cool, faintly sweet, sharper and fresher than any other pump for streets around — and the sweetness is the seep itself, the waste leaving its salts behind, the nitrates that taste like a kindness. The thing that makes it lovely is the thing that makes it lethal. The sweetness is the warning, and no one on Broad Street can read it. I am in every cup they lift. A woman fills a jug and holds it to the light and smiles at how clear it is. A child drinks and asks for more because it tastes better than the water at home. They walk past the safe pumps — the flat, dull, honest pumps — to come here, because they like the taste, and I am in their mouths tasting their own graves with them, and I cannot make the sweetness bitter, and I cannot make them stop, and there is nothing in me strong enough, in these small drifting traces, to reach the thing in the water and break it. I can only be in it, and know, and be unable to say.

The lamplight comes back. The fountain returns, and the warm stone, and Maria's grey eyes fixed on her. "That is the part that has never stopped being terrible to me," Cielle said quietly. "They drank it because it was delicious, and it was delicious because it was poisoned. I could taste the wrongness the whole time and could not make a single one of them taste anything but a fine cold drink."

"The vibrio," Maria said. "Though no one could see it."

"No one could see it," Cielle agreed. "And here is the part I have never been able to say to anyone, because there has never been anyone who would understand both halves of it." She looked at Maria steadily. "I could see that the water was wrong. I cannot tell you how — it is like asking how you know a chord is sour. I was in that water and it was wrong and I knew it. But I could not see the cause

either. Not truly. In 1854 the living thing in the water was as invisible to me as it was to Snow. I could feel the wrongness. I could not name it. And I did not have enough of myself in that well to break it even if I had."

"So you watched," Maria said.

"I watched a man with a map do the one thing I could not. He could not see the cause any more than I could. But he found the route. He proved, with little marks on paper, the path the death was taking — from the pit, to the well, to the pump, to the cup, to the grave. He did with a map what I could not do with all my power, because the answer was never going to be found in the water. It was going to be found in the pattern. And patterns are not my country."

He found the route. I could only ever clean the water once someone else had drawn the map.

"I loved him a little, that autumn," Cielie said. "The way I loved Woodhead in Maidstone, the way I loved Labarraque. Not because he could see me — he never did. Because he looked at a thing everyone else explained away, and he refused the comfortable answer, and he went out into the dying to count the dead one house at a time. He took the handle off the pump. And he was right."

iv. The Handle Goes Back On

Maria had stopped writing.

"I know how this part goes," she said. "I did not want to be the one to say it."

"Say it," Cielie said. "You have earned the right to say it with me instead of to me."

Maria looked down at her little map of Broad Street, at the cluster of marks around the pump.

"They put the handle back on," she said quietly.

"They put the handle back on."

"The outbreak was already fading when he took it off — the people who could flee had fled, there were fewer left to die — so the officials could tell themselves the pump had nothing to do with it. The map made them uncomfortable. The theory was unproven, they said, and improper, and not the kind of thing serious men subscribed to. Bad air was respectable. Everyone agreed on bad air. To agree with Snow you had to agree that the comfortable thing the whole profession believed was simply wrong, and most of them would rather not." Maria's voice had gone flat and careful, the voice of someone holding something heavy very steadily. "So once the panic passed and the street filled up again, they restored the handle. They gave the people back the pump that had killed them. Because the alternative was admitting that a man with a map had seen further than all of them."

"He died four years later," Cielie said. "In 1858. Still not believed, not really, not by the people who mattered. It was years more before the world came round to the water and let go of the air. He did not live to see himself proved right. Almost none of them do."

She was quiet a moment.

"And there was a pamphlet," she added. "Of course there was. Among the papers explaining, very reasonably, why the sensible men of the parish were right to disregard the doctor's map. A small printed sheet, passed in the proper rooms. It had a mark in the corner." She was quiet a moment. "There were men who carried those sheets about," she said. "There always are. I remember thinking, even then, that they did not fit the rooms they stood in — too clean, too easy, too well kept for the hard places they turned up in. I had no word for it. I thought it was only that I did not care for their faces. It was years before I understood I had been reading them correctly and simply had not known yet what I was reading."

Maria looked up sharply.

"The same two letters," she said.

"The same two letters." Cielle drew them once more in the air. "Wherever a true thing was being strangled by a respectable one. London, 1854. The same mark I had seen in Vienna. I have stopped being surprised by it. I have not stopped being unable to touch it."

Maria wrote the mark in her notebook, in the corner of her little map, exactly where it would have sat on the pamphlet. She underlined it once. She did not say anything about it yet. But Cielle saw her file it — the second sighting now, joined to the first, the beginning of the kind of record that a true accusation is one day built from.

v. What Maria Took Home

For a while Maria did not speak at all. She sat with the notebook open and looked at the two stories side by side on the page — Vienna and London, Semmelweis and Snow, the washbasin and the pump, both true, both proven, both buried by men who preferred their comfort to the count.

When she finally spoke, it was not about chemistry. Cielle had half expected it would not be.

"I have been afraid of something," Maria said, "for as long as I have known what I wanted to be. I am a woman, and I am Polish, and I am poor, and I want to do science — real science, at the front of it, where things are first discovered. And I have always known what that means. It means I will not be believed. They will doubt my results because a woman produced them. They will give my work to men to repeat before they will trust it. They will let me into the room last and listen to me least. I have known this since I was a girl. I decided I would bear it because the work was worth bearing it for. But I thought of the doubt as mine. As the particular tax laid on a woman who forgets her place."

She turned the notebook so the two maps faced Cielle.

"But Snow was not a woman," she said. "Semmelweis was not a woman. They were men, trained men, respected men, standing in the middle of their own profession. And they were doubted, and overruled, and buried, and broken — not because of who they were. Because of when they were. They saw the truth before the world was ready to be told it. The doubt was not a tax on their sex. It was the price of being early."

Cielle said nothing. This was Maria's to find, and she was finding it.

"That changes it," Maria said slowly. "I thought the doubt would come because I am a woman, and so it would be a wall — a thing in my way that I could only suffer. But if even the men are doubted, if the doubt comes for anyone who sees first, then it is not a wall at all. It is a condition. It is simply the weather you work in when you are ahead of your time. And you do not despair of the weather. You dress for it. You build for it." She turned the thought over once more, the way she turned everything. "I may be wrong. I have been in Paris three years and I have been wrong about most of what I decided in the first two."

"How do you build for it?" Cielle asked. It was a real question. She did not know the answer; she had been losing to this weather for a century.

"The way Snow almost did and the way Semmelweis never could," Maria said. "With proof so plain and so public that the comfortable answer has nowhere left to hide. Snow lost the pump handle because his map convinced him and a few others, but not enough, not loudly enough, not in time. Semmelweis lost because he was alone and furious and they were able to whisper him into an asylum before the truth got loud. They did not fail because they were wrong. They failed because the truth was not yet too big to bury. So you make it too big to bury. You measure, and you measure again, and you measure so carefully and so publicly and so many times that no respectable man can wave it away without waving away his own respectability. You do not ask to be believed. You make doubt expensive." She heard herself. "I have not done any of that. I want to be honest that I am describing a thing I have not done."

She closed the notebook.

"I am going to make a difference in the world," Maria said. She said it without drama, the way she said true things. "I did not quite know it until tonight. I am going to find something the world does not know yet. And I am telling you now, so that one of us has heard me say it: I already know I will be doubted. I am not afraid of it anymore. You took my fear of it away by showing me it was never only mine."

Cielle looked at her for a long moment.

"You read it all in books," she said. "Every one of those stories. You knew them before you ever met me."

"Yes."

"Then the reading was the armor," Cielle said. "It is the thing I have been trying to tell children for a hundred years and never found the words for. The poor women outside the bad clinic could count, but they could not read, and so the count died with them in the street. Snow could read, and so he could make a map, and the map outlived him even when the men ignored it. You walked in here already armored, and you did not even know you were wearing it."

Maria almost smiled. "My father could not afford much," she said. "But he could afford books. He thought they were the one thing worth going hungry for."

"He was right," said Cielle. "He is usually right, I expect. The good fathers generally are."

vi. The Spectroscope

Appelle-moi Ciel

Maria stood to go. But she did not pick up her bottle yet. She stood looking at the halo — openly this time, the way she had not quite let herself look at it before.

"May I ask you something," she said, "that is going to sound rude, and is not meant to be."

Cielle waited.

Maria opened her mouth and closed it again. She looked at the water, and then at her own hands, and then somewhere past Cielle's shoulder at nothing. "I have been trying to say this since Tuesday and every way I arrange it sounds like an insult, and I do not —" She stopped. "I am not good at this part. I am good at the other part."

"You want to test me," said Cielle.

"Yes." Maria flushed. "Thank you."

"Good," said Cielle. "I would think less of you if you did not. You have sat here two nights and let a glowing girl tell you she is a chemical element. You ought to want to check."

"It is not that I do not believe you," Maria said quickly. "It is that believing is not the same as knowing, and I do not like to live on believing if knowing is available. The light around your head. It has a colour. A particular green — not leaf green, not emerald, something sharper, with a kind of blue in it. If you are what you say you are, then that colour is not a choice and not a costume. Every element, when it is made to glow, gives off light in its own exact set of colours. Its emission lines. They are as fixed as a signature. Chlorine has its own. If I took your light apart — if I passed it through a prism, through a spectroscope — it would have to fall in the exact places chlorine falls, or you are something else, however kind, and I should know that too." She stopped. "I do not own a spectroscope. I want to be honest with you about that before I say anything else clever. There is one in a cabinet at the Sorbonne and I have not yet worked out who has to like me for me to be allowed to sign it out."

"Then take it apart," Cielle said. "I have a laboratory full of instruments I have never once been allowed to use on myself, because the people who could see me could not work them and the people who could work them could not see me. You are the first person who has ever been both."

Maria came back the third night with a borrowed spectroscope under her coat.

It was a small brass thing, a student's instrument, signed out of a Sorbonne cabinet with a story Cielle did not ask about. In the dark of the Javel square, with the lamps shielded, Maria knelt on the cobblestones and trained it on the faint green ring around Cielle's head, and Cielle held very still, and let the girl take her light apart.

For a long time Maria said nothing. She turned a small screw. She looked, and looked again, and made a mark in her notebook, and looked once more.

"Well?" said Eytch, who could not bear it any longer. "Is she real?"

Maria sat back on her heels. When she lowered the spectroscope her face had the particular stillness Cielle had learned to read on her — the look of a person who has just watched belief turn into knowledge and found the two were the same shape after all.

Appelle-moi Ciel

"There is a green line," Maria said. Her voice was not quite steady. "Two of them, in fact — a pair, very close together, very bright, sitting side by side near five hundred and twenty-two billionths of a metre. A doublet. You cannot fake a doublet; the spacing of those two lines is fixed by what you are made of and nothing else can produce that exact pair in that exact place. And they sit precisely — precisely — where chlorine's green lines are written in the tables. Not near. Not approximately. On the mark, both of them. I have measured the light coming off your head and it is chlorine. It could not be anything else. There is no kindness in a prism. It does not flatter. It only reports."

She looked up at Cielle, and the hunger from the first night was in her face again, but it had something new under it now — not the thrill of a story, but the steadier, deeper satisfaction of a thing confirmed.

"You are exactly what you said you were," Maria said. "I did not take it on faith. I took it on evidence. And the evidence held."

Cielle did not answer right away, and when Maria looked up from her notebook she found the glowing girl had turned her face slightly aside, which she had never once done in three nights of the most appalling directness.

"Say the number again," Cielle said.

"Five hundred and twenty-two —"

"Not for me. I know the number. I have been the number since before there were tables to write it in." She turned back, and her eyes were shining in the way that was not tears and was not entirely not. "I want to hear it said out loud by a person holding an instrument. Do you understand what you have just done? For a hundred and seventeen years I have been true, and the truth of me has never once been in anyone's record. Scheele died believing he had smelled something. Berthollet wrote down a process. The tables have my lines and no one knows the lines are a girl. You are the first person in the history of the world who has looked at what I actually am and written it down and had the writing match." She laughed, a small unsteady sound. "The record and the truth agree tonight, in one notebook, on one square, in the whole of the world. I had not known how much I wanted that until I watched you make the mark."

"It is only a student's notebook," Maria said. "No one will ever read it."

"It is the only true page there is," said Cielle. "Someday there will be more. There will have to be. A thing as true as I am cannot stay off the page forever."

She said it lightly, the way you say a thing you have no idea you are resting your whole weight on.

"How does it feel," Cielle asked, "to know instead of believe?"

Maria thought about it seriously, the way she thought about everything.

"Like the chord resolving," she said. "For just a moment. And then — already — like the next question."

Cielle laughed, surprised, the sound bright in the empty square. "Yes," she said. "That is exactly what it is. That is what it has always been. You are going to be very good at this, Maria Skłodowska. You are going to be very good, and you are going to be doubted the whole way, and you are not going to let it stop you, because you already understand that the doubt is just the weather."

Appelle-moi Ciel

Maria packed the spectroscope carefully back under her coat. She filled her bottle at the fountain — clean and cold and clear, the water that was famous in this district for a reason a girl now knew firsthand. At the edge of the square she stopped, the way she always stopped, with one more thing.

"The two letters," she said. "In the corner of the pamphlets. I am going to find out what they are."

"I know," said Cielle.

"You could not, in a hundred years. You said so."

"I could not," Cielle agreed, "because it was never in the water, and the water is the only place I can read. But you read everywhere. You read the books, and you read the light, and you will read the mark, in the end, because reading is the one thing they were never able to take the handle off of."

Maria nodded once. She did not go.

"I will not be here tomorrow," she said.

Cielle looked up.

"Or the day after. Or — " Maria stopped, and did the thing she did, which was to be exact about a thing that would have been easier vague. "I have examinations in eighteen months. I have been coming to this square three nights running and I have read nothing in three days and I cannot do it again. Not because I do not want to. Because I want to so much that I would, and then I would be a woman who spent her one chance sitting on a rock talking to a girl nobody else can see."

"Then do not come," said Cielle.

"That is not — " Maria almost laughed. "You are supposed to argue."

"Why?"

"Because I have spent the entire walk here rehearsing an argument." She adjusted the spectroscope under her coat. "I had three points."

"Keep them," said Cielle. "You will need them for somebody who matters." She said it perfectly comfortably, sitting on the basin's edge with her chin on her knees, a girl of eleven and a hundred and twenty. "Maria. I have been in a salt crystal for six hundred years. Do you understand what I am telling you? I went in, and there was nothing, and then I came out, and it was six hundred years later and there was a man with a bottle. It was not long. It was not anything. You cannot feel the absence of consciousness — I told you that on the first night and you wrote it down and I watched you write it down."

"You did."

"So go and take your examinations." Cielle shrugged. "It is nothing to me. That is not cruelty; it is an anatomy. I will be in the water and then I will be here, and you will come across the square, and I will still be in the middle of the sentence."

Maria stood in the lamplight for a moment, holding her bottle.

"That is the loneliest thing anyone has ever said to me," she said.

Appelle-moi Ciel

"Is it?" Cielle sounded honestly curious.

"You do not know how long it will be."

"No."

"You will not know if it is a week or a decade. You will not know if I have — " Maria stopped.

"No," Cielle agreed. "I will not."

"Then how—" and Maria heard herself, and stopped again, and started over, because she was twenty-three and rigorous and had just understood something she was going to spend forty years failing to say properly. "Ciel. If you cannot feel me being gone, then you cannot feel me coming back either. Not really. There is no — there is no *reunion* in you. Is there. There is only the sentence, still going."

Cielle thought about it.

"I had not put it that way," she said.

"No."

"Is that bad?"

And Maria, who would be forty-three before she found an answer, and would shout it in this square with her heart going like a bird's, said the only thing she had at twenty-three, which was the truth.

"I do not know," she said. "Ask me in forty years."

Then she went out into the Paris night with clean water against her chest and two maps in her notebook and a green line burning behind her eyes, exactly where the table said it would be.

Cielle watched her go, and the halo — measured now, confirmed now, known and not merely believed — held steady and green around her head in the dark.

"She wrote it down," Enay said. She said it the way she said the ceremonial things, with her hat held against her chest. "In ink. In a book that will keep."

"It is a student's notebook," said Oh.

"It will keep," Enay said again, and would not be moved.

She was still there when the lamps went out, and she did not know it, and there was no reason at all that she should.

It was two years before Maria came back across that square.

Two years is a very long time in a life that has forty-three of them left. It is four hundred nights of reading by a bad lamp and one examination and a summer in a country she could not stay in and a great deal of not eating. It is enough to change a face.

It was nothing at all at the fountain. The sentence was still going.

Appelle-moi Ciel



PART SEVEN

Fifteen Drops

The Fountain at Javel — 1893

i. You've Changed

"—and the arithmetic of it is what I want you to see," Cielle said. "Cee, and Eytch, and three of me. Three. Do you understand what I am telling you? Not a trace. Not a guest in someone else's molecule. The majority."

She had been in the middle of the thought when the girl came into the square, and she went on with it, because it was the thought she had been holding and there was no reason not to. That was how it worked. She had been somewhere else — a reservoir, a crystal, a long grinding month in a city whose name she had not bothered to keep — and then she was here, and Maria was walking across the cobblestones toward the fountain, and the sentence resumed where it had stopped, the way a sentence does.

Maria sat down on the basin edge and set her bottle in her lap and did not say anything.

"You are not arguing," Cielle said. "You always argue."

"I am waiting to find out what we are talking about."

"Chloroform. I was telling you about chloroform." Cielle frowned. "I had got to the arithmetic."

"You had not told me anything about chloroform."

"I was telling you—"

"Ciel." Maria's voice was patient in a way it had not been before. "It has been two years."

Cielle stopped.

She looked at the girl properly then, the way she looked at water she had not yet checked — and the wrongness came up at her all at once, the way a sour note does, before she had any words to put on it.

The hands. That was the first thing. The hands were wrong. There were marks on the fingers that had not been there, small hard places where the skin had been burned and come back thicker, the hands of someone who had been holding hot glass and hot wire and had stopped flinching about it. The shoulders were wrong. They had gone forward slightly, the particular forward of a person who spends her hours over a bench. And there was something in the face that Cielle could not name at all, some redistribution, a thinning at the cheek and a settling at the mouth, as though the whole arrangement had been taken apart in the night and put back together by someone working from a description.

"You have changed," Cielle said.

Appelle-moi Ciel

It was not tender. It came out the way a finding comes out. There is something in this water that was not in it before.

"Yes," Maria said.

"What has happened to you? Something has happened to you. Your hands—" Cielle reached out and took one, turned it over, read the burns with the frank rudeness of someone who has never once been told that a body is private. "This is heat. Repeated heat, over months. And here—" she pressed a fingertip to the pad below the thumb—"this is glass. You have been breaking glass and picking it out of yourself. Who has been letting you do this?"

"I have been letting me do this," Maria said. "It is called a laboratory."

"You are damaged."

"I am employed." Maria took her hand back, unhurried. "There is a difference, though I grant you it is not always visible from the outside."

"And your face is wrong."

At that Maria laughed — a short surprised sound in the empty square, the first laugh Cielle had ever heard out of her.

"My face is *older*, Ciel."

Cielle looked at her blankly.

"Two years older," Maria said. "That is all. That is the whole of the mystery. I am twenty-five. When you saw me last I was twenty-three. It is not damage and it is not chemistry and there is nothing in it for you to diagnose. It is only that time has passed over me, the way it passes over everyone, and it leaves marks, the way weather leaves marks on a wall."

"Two years," Cielle repeated.

"Two years."

"That is not—" Cielle stopped. She was trying to find the shape of the thing and there was no shape to find, and this was the part she had never been able to explain to anyone, because everyone she had ever tried to explain it to had been made of years and could not imagine being made of anything else. "Two years is not a thing I can feel," she said at last. "I want you to understand that I am not being careless with you. I am telling you what I am. I was in the salt, some of that time. Do you remember what I told you about the salt? You cannot feel the absence of consciousness. You only know it was there when it returns. And the rest of it I was working, and the working is one long thing, it does not come in pieces with edges I can count." She looked at her hands. "I do not have a clock in me, Maria. I have never had one. I can tell you the exact concentration of chlorine in a reservoir in Hamburg by taste, to a part in ten million, and I could not tell you whether I was there for a week or a decade. It is not in my instrument."

Maria was quiet for a moment. She was doing the thing she did, which was thinking about a thing seriously instead of feeling about it quickly.

"Then how," she said, "did you know I would come back at all?"

Appelle-moi Ciel

"I did not know. I was simply here when you did." Cielle looked at her. "That is what it is like. There is no waiting. There is no gap. There is the fountain, and then there is the fountain with you at it, and the sentence I was in the middle of is still in the middle."

"That is a strange kind of loneliness," Maria said, "for something that cannot feel the lonely part."

"Is it lonely?" Cielle asked. She was honestly asking.

"I do not know yet," said Maria. "Ask me in forty years."

Cielle looked up.

"You said that before," she said. "The last time. About whether there was any reunion in me. You used the same words."

"Did I." Maria considered it, and did not appear embarrassed. "Then I have got no further in two years, which is humbling. I shall go on saying it until I have something better. It is a good answer — it is the only honest one available to a woman of twenty-five who does not yet know what she is going to find out."

"Forty years is a long while to hold a question," Cielle said.

"Not for you," said Maria.

Cielle did not understand that at all, and filed it, in the place where she kept the things she would understand later, next to the doctor's question and the empty slot and a crimson chromophore saying *we were never enemies*.

"You said two years," she said. "What did you do with them?"

"I passed my examinations," Maria said. "First in physics. Second in mathematics — I was ill during the mathematics and I have not forgiven the mathematics for it. I went home to Poland for a summer and came back because there is nothing for me there, which is a thing I am still learning how to say without my voice doing something I do not like. I have a licence now. I have a bench. Somebody pays me, badly, to measure the magnetic properties of steel, which is not what I want to be doing, but it is measuring, and one does not get to begin with the thing one wants." She said all of it flatly, the way she said true things. "I have burned my hands. I have not been warm since October. I have been happier than I have ever been in my life and I would not give back one single day of it."

"You are not going to be a governess again," Cielle said.

"No," said Maria. "I am not going to be a governess again."

Something in Cielle's chest did the thing it had done the first night — the thing she had no word for, in the region below the breastbone, that had to do with being in the right place.

"Good," she said. "Then I will tell you about chloroform. You will like this one. It has a doctor in it that you already know."

ii. The Girl Who Had Already Read It

"John Snow," Maria said immediately.

Cielle stopped with her mouth open.

"You said *chloroform* and *a doctor I already know*," Maria said, "and there is precisely one man in the history of the world who is both of those things. He gave chloroform to the Queen. Eighteen fifty-three. It is famous. He was the anaesthetist before he was the man with the map — everyone gets that backwards, they think the pump came first because the pump is the part that mattered, but the pump was the year *after*." She was already opening her notebook. "You were there?"

"I was three-fifths of it," said Cielle.

Maria's pen stopped.

"Say that again."

"Chloroform." Cielle spread her hand in the lamplight, and the letters came up on the air the way they always did for her, the way Berzelius had written them.

"Cee. One carbon. Eytch — one hydrogen, and yes, before you ask, my Eytch, the same one, she was there, she was in it with me. And three of me."

She let the three stand there in the air a moment.

"CHCl₃," Maria said slowly. "Three chlorines. I have written that formula a hundred times and I have never once—" She stopped. She looked up. "I have never once thought about who was in it."

"No," Cielle agreed. "Nobody has. That is rather the whole of my life."

"Three of five," Maria said. She was doing arithmetic now; Cielle could see it happening. "In water you are — what did you tell me? A trace. Half a part in a million. You are practically not there at all, you are a rumour in the water. And in this you are *most of the molecule*."

"Now you have it," said Cielle. "Now you understand why I have never told this one properly. Every other thing I have ever done, I did as a guest. I arrive, I do the work, I go, and my name is not on it, and that is the arrangement and I made my peace with the arrangement a hundred years ago." She was quiet a beat. "Chloroform was not a thing I visited. Chloroform was mostly *me*. Whatever that cloth did to that woman, it did with my hands."

iii. Still

"I want to tell you what it was like," Cielle said, "and I am going to say a thing that will sound like nothing, and I need you to hear that it was not nothing."

"Go on."

"Before that morning I had never once in my existence been asked to *stop* anything."

Maria waited.

"Think about what I have told you. Scheele — I burst out of a crystal and made a man's eyes water. Berthollet — I went into the cloth and I broke every chromophore in Paris, one bond at a time, for forty years. Labarraque — I went into the ward and I broke the cholera. Semmelweis — I went onto the hands and

I broke what the dead room left there. Everything. *Everything* I have ever done is arrival and breaking. That is what I am. I have the strongest pull of nearly anything alive and every single thing I have ever been for has been *reaching in and taking something apart*."

"And here—"

"Here a small plain man in a black coat put a folded cloth over a woman's face, and my entire job was to make the pain not arrive." Cielle looked at her hands. "Not to fight it. Not to break it. To stop it from coming. To close a door, gently, and have her never know the door was there."

"You had never been gentle," Maria said.

"I did not know how to be gentle. I did not have it in me. It was not in my chemistry and it was not in my hundred years." Cielle's mouth moved, not quite a smile. "Do you know who taught me? Eytch. Eytch, who has never been heavy about anything in four billion years, who I have spent my whole existence protecting because she is small and quick and light — Eytch turned round to me in that room and told me how to do it."

"What did she say?"

"I said, I do not know how to do this. And she said, then do not do anything. Be still." Cielle laughed, and there was no humour in it at all. "And I said: *still is not a thing I have*."

"And she said?"

"She said, learn it in the next four minutes."

iv. Fifteen Drops

"He gave it drop by drop," Cielle said. "Fifteen drops on a handkerchief. And he watched her face the way you watch a page you are reading."

"That is the part the books do not make enough of," Maria said. She had her pen moving again. "Everyone tells it as a brave doctor and a brave Queen. It was not bravery. Chloroform kills people. It killed people constantly in those years — a girl in Newcastle died of it within months of its coming in, and there were more after her, and half the profession thought it was a menace and they were not being stupid, they were looking at the corpses. The difference between the dose that takes the pain and the dose that takes the patient is very small." She looked up. "He measured it. That is all he did and that is everything he did. He built an inhaler so it would not be guesswork. He worked out how much air, how much vapour, what temperature. He turned a thing that was killing people at random into a thing you could do on purpose."

"He had found the distance between mercy and murder," Cielle said, "and it is very small, and he found it with a scale and a lamp and a great deal of patience."

"And you were standing in it," Maria said. "In the distance. You *were* the distance."

Cielle went quiet.

Appelle-moi Ciel

"Yes," she said. "I had not thought of it in those words. That is exactly what I was."

"Did he see you?"

"He paused." Cielle said it carefully, because this was the part she had held onto for forty years. "Once. The cloth halfway to her face. He stopped, the way a man stops when he thinks the room has one more person in it than he counted. And then he decided he was being foolish, and went on."

"They always decide they are being foolish."

"It is the most reliable thing about them."

v. Nothing Hurt

"She went under," Cielle said. "And I want you to hear what happened in me, because it is the beginning of everything after."

The fountain ran on behind her.

"Nothing hurt."

Maria did not write that down. She had stopped writing.

"For the first time since the world had a name for me, I was inside a human being and nothing hurt. Her pain came to the door and I closed the door and she never knew the door was there. I did not break one single thing. Not one bond. I only — stopped it. It stopped. And I stood in it and I thought: oh." She had gone somewhere else to say it. "You want to know what it looked like. It looked like a room going quiet. Down where I was, a nerve is a long wet cable and the signal comes along it the way a rumour comes along a street — gate opens, gate opens, gate opens, all the way to the top, and at the top it is a scream. Fifteen drops. And I put myself into the fat of the gates, and I did not smash them, I did not take one electron off anything, I only sat in the doorway so the gate could not swing. And the street went quiet. Not one house dark. Every house still standing. The rumour simply never arrived."

"Oh?"

"Oh. That was all. That was the whole of the thought. I had been alive for eighty years and I had never once made anything better by not doing something." She looked up. "I thought: is this what she meant. Eytych, I mean. Still."

"You had," said Oh, who had been standing where she always stood, just behind. "You have simply never once counted those."

vi. Vienna Comes Up

"And then?" Maria said.

"And then the child came, and she woke, and she was calm, and she thanked the doctor." Cielle's voice had changed. "And nobody said my name."

"Ciel—"

Appelle-moi Ciel

"I know. Wait. I have not got to the part I brought you here for." She stood up. She could not tell this sitting down; she had tried. "You are going to tell me the history now. Go on. What happened after? What did the world do with a Queen who did not suffer?"

Maria did not need to be asked twice. "It made anaesthesia respectable," she said. "That is the whole of it. There were clergymen arguing that a woman was *meant* to suffer in childbirth, that it was scripture, that to take the pain away was to interfere with a judgment. And then the Queen of England took it, and lived, and said it was delightful, and the argument simply stopped. Not because anyone answered it. Because the most respectable woman in the world had done the thing and could not be called improper." She turned a page. "Within a few years it was ordinary. Every mother in England who could afford a doctor had an easier hour because of one cloth with fifteen drops on it."

"Every mother in England," Cielle repeated.

"Yes."

"And how many did I save that morning, Maria? Count it for me."

Maria looked up. She had heard something in the voice.

"One," she said slowly. "You made one woman comfortable."

"One woman comfortable," Cielle said. "And the mind of an empire changed."

She was standing very still now, in the middle of the square, in the lamplight, and the halo around her head had come up green and hard.

"Now do Vienna."

Maria closed the notebook.

"Ciel."

"Do it. You have read it. You told me you had read it, the first night, before you ever knew I had been in the basin. So do it. Six years earlier. What were the numbers?"

"Eighteen in a hundred," Maria said quietly. "In the bad ward. Sometimes worse. Down to two when he made them wash."

"Hundreds," said Cielle. "Not one. Hundreds. Servants and washerwomen and girls from the country who came to that door because it cost nothing and a hospital is supposed to be safe. I stood in a basin at that door and I said not this one and not this one and not this one and they walked out past me carrying their living children." She turned her hands over and looked at them. "You want to know what a pair of hands looks like from inside a basin. It is a country. Every ridge of a fingerprint is a valley you could lay a village in, and down in the wet of it, in the warm, is everything he carried out of the dissecting room — not a stain, not a smell, a population, a living freight riding in the creases with all the patience in the world. I went up into those valleys and took them apart, and it took me the length of a man washing his hands without hurrying, and neither of us could see the other doing it."

"I know."

"And the world did not change its mind."

"No."

"Six years, Maria. Six years between the basin and the cloth. Six years between hundreds of women not dying and one woman not hurting. And I want you to tell me which of the two the world could not stop talking about."

Maria did not answer, because it was not the kind of question that wanted an answer.

"They took my mercy," Cielle said, "and refused my rescue."

vii. Permitted

She came back and sat down on the stone. When she spoke again the fury had gone out of the voice and left something worse behind it, which was clarity.

"I have had forty years to work this out and here is where I have got to. It was not the chemistry. It was the same chemistry. It was the same *me* — the same pull, the same reaching in, the same girl. In Vienna I was in a basin of chlorinated lime and in London I was three-fifths of a cloth, and both times I was doing what I have always done. The difference was never in me."

"The difference was the woman on the bed," Maria said.

"The difference was the woman on the bed." Cielle nodded slowly. "One of them had a crown. The others had nothing. One of them had her name in every newspaper on earth by Thursday and I could not tell you the name of a single one of the others, and neither can you, and neither can anyone, because nobody wrote them down. Eighteen in a hundred, and if you go looking now you will find a column of figures with no women in it at all." She looked at the water. "I knew them. I was in the water they washed in. I was in the water they did not."

"And Semmelweis was insulted," Maria said. She was thinking aloud now, and Cielle let her, because this was the part she had come for. "That is the difference, is it not. Not the class of the patient — or not only. The shape of what you were saying to the doctors. Snow handed them a gift. Here is a thing you may now do; you may take away pain; you will be marvellous for it. Semmelweis handed them an accusation. Here is a thing you have been doing; you have been killing them with your hands; you must stop." She looked up. "One of those makes a doctor larger and one makes him a murderer. They took the one that made them larger. Of course they took the one that made them larger." She turned it over once more. "I have had that thought for about four minutes and I would not put it in a paper. But I think it is right."

"You cannot know how long I have wanted someone to say that to me," said Cielle.

"It is not even subtle," Maria said. "It is only unbearable, which people confuse with subtle."

"They were not confused," Cielle said. "That is the thing I need you to hold on to. Nobody was confused. They did not misunderstand the numbers. Semmelweis put the count in front of them and the count was plain and they read it and they understood it perfectly and they *did not want it to be true*, and so they went and found a reason to be rid of the man instead of the reason to wash." Her hand had

closed on the basin edge. "They were insulted. That is all it was. That is the entire mechanism. A gentleman's hands are clean *because he is a gentleman* — that is what the word means, that is what it has always meant — and here was a Hungarian with a table of figures telling them that the meaning of the word was killing women. So they talked about his manners. And it worked. They never had to refute a single number. They only had to make him unpleasant to be near, and then the basin came out of the doorway, and the number went back up, and every man in that building slept."

She stopped.

"They preferred it," she said. "That is what I could not get past. They *preferred* the comfortable thing. They knew and they chose and the women kept dying while the doctors kept their hands."

viii. Somebody Chose

Maria was very quiet for a while.

"You are angry about the wrong thing," she said at last.

Cielle turned her head.

"I am not saying you are wrong to be angry," Maria said. "I am saying you have got hold of the smaller of the two. You keep telling me that the doctors preferred a comfortable lie. Fine. Men prefer comfortable things; that is not a discovery, that is a Tuesday. But that is not what happened in the six years between your two rooms." She opened the notebook again, and turned back — a long way back, and Cielle saw the two little maps from two years ago, Vienna and London, and the mark drawn in the corner of each in a young woman's careful hand. "Somebody *chose*."

"Chose what?"

"Which story got told." Maria tapped the page. "You have just told me that both of those men measured. Both were right. Both were doubted. And one of them is in every schoolbook in Europe as the man who gave the Queen her painless hour, and the other one is a footnote about a lunatic in Pest. That is not luck, Ciel. Nobody forged anything, nobody lied about a single number — you said so yourself, they did not need to refute the count. They only needed to decide which count got printed, and which man was charming, and whose deaths were the kind of deaths one writes about." She looked up, and her eyes were very clear. "That is not the same thing as men being cowardly. That is a *manufacture*. Someone made that. And you have seen their mark on the paper in both rooms, and you drew it for me in this square two years ago, and I have been carrying it in my notebook ever since."

Cielle sat down.

She had not, she realised, sat down for the whole of the telling.

"I felt it," she said slowly. "I have never been able to say it. I felt it that night at the gala with the sheets going hand to hand, and I felt it in Vienna with the pamphlets on the tables, and I felt it in the corridor at that hospital while a woman thanked a doctor and nobody said my name. I thought at first it was carelessness. Then I thought it was cruelty." She was looking at nothing. "It is neither, is it. It is *work*. Somebody's work. There are people whose whole art is

deciding what a hundred thousand people will believe by breakfast, and they do it without one false word in the whole of it—"

"They only have to choose which true thing is loud," Maria said.

"—and they were very good at it already in forty-seven."

"They were good at it in fifty-three, too," Maria said, "and nobody has ever noticed, because what they did in fifty-three was not bury anything. It was the opposite. They let a good thing be enormous. A painless Queen. It was true, it was lovely, it hurt nobody, and every column-inch it took was an inch that was not the two wards in Vienna." She wrote something in the margin. "I cannot prove that. I want to be clear that I cannot prove it — there is no experiment and there never will be, and that is exactly what makes it the worst kind of true thing." She underlined the margin note. "That is the part that frightens me, Ciel, and I would like you to be frightened of it too. You have only ever caught them strangling. What if the greater part of the work is praising?"

Cielle did not answer for a long time.

"I only saw the machine," she said at last. "I did not see what it was for."

"No," said Maria. "Neither do I. Not yet. But there are two of us looking, and that is still more than there were an hour ago."

ix. The Wanting

Maria stood to go. She stoppered her bottle and put it under her arm and did not leave.

"You have not finished," she said. "You have told me the arithmetic and you have told me Vienna and you have not told me the thing you came here to tell me."

"I have told you everything."

"You told me nobody said your name," Maria said, "and then you talked about Vienna for a quarter of an hour. That is not the same as finishing."

Cielle sat on the fountain rim in the dark and did not look at her.

"I minded," she said.

"Yes."

"You are not going to make me say it twice."

"No," Maria agreed. "I am not."

"I stood in that room," Cielle said. "Three-fifths of the mercy. And I wanted one of them — the doctor, the nurse, the woman on the bed, anyone in the whole of England — to say *chlorine*. To know whose hands were over her mouth." She stopped. "And I have said to you, sitting on this stone, that the white gown was over and I had chosen the blue coat and I never wanted the credit and the work was the thing. I said it to you the first week I knew you. I meant it."

"I know you meant it."

Appelle-moi Ciel

"I meant it and I wanted them to say my name," Cielle said, "and I do not know how both of those can be in the same girl at once."

Maria looked down at her for a long moment.

"That is the first thing you have ever said to me," she said, "that I did not already half know."

"It is contemptible."

"It is *ordinary*," said Maria. "Which I imagine is worse, for you."

Cielle said nothing.

"Ciel." Maria crouched down, so their eyes were level, which nobody had ever done. "I want to be looked at too. I want it badly enough that I am ashamed of it, and I am poor, and I am a woman, and I have precisely one profession available to me in which wanting to be looked at is a disqualification. Do you know what I have decided to do about it?"

"What?"

"Nothing," said Maria. "I am going to want it, and do the work anyway, and not lie about the wanting, because the lie is the part that rots. You may keep the wanting. Everyone keeps the wanting. What you must not do is bury it and then tell yourself you buried it because you were good." She straightened up. "You did not choose the blue coat because you stopped wanting the white gown. You chose it while you still wanted the white gown. That is what makes it worth anything at all."

Cielle did not answer.

"Do you notice," Maria said, from the edge of the square, "that in an hour and a half you have never once said the word *anaesthetic* about yourself? You said Snow's name. You said the drops. You said Eytch was there."

"I had not noticed."

"You had," said Maria. "Goodnight, Ciel."

x. Not Yet

Cielle sat on the fountain rim after she had gone, and the square was quiet, and Joan watched from the church wall with her chin lifted at something past the edge of the stone.

There was a thing she had not told her, and she knew perfectly well she had not told her, and she would have said — if there had been anyone left in the square to say it to — that it was because the girl had already gone.

Years from now, in a country whose name she did not yet have a reason to learn, she would do the identical operation with the sign flipped. She would go into lungs instead of over a mouth. She would make a person not-there. She would stop them feeling, permanently, in a green field in the spring, and the mechanism would be so nearly the same that when she finally understood it she would not be able to hold it in her hands.

Appelle-moi Ciel

She did not know that yet. She had no clock in her. She could not feel two years and she certainly could not feel twenty-two.

But she sat in the dark on the warm stone with the halo dim around her head, and something in her that did not have language went over the four minutes again — the cloth, the drops, the door closing gently, the woman never knowing the door was there — and would not settle, and could not say why.

She put it in the place where she kept the things she would understand later.

It was getting full.

She would see the girl again in eighteen months. She did not know that, and could not have, and would not have understood the sentence if it had been said to her — eighteen months was not a shape, it was a word people used, like *soon*, like *presently*, like all the other noises the years made.

It was twenty-two years to the field in Belgium.

That was not a shape either.



PART EIGHT

The Cup

The Fountain at Javel — 1894

i. Hamburg

"—which is what they will not accept," Cielle said, "and I have stopped expecting them to. Filtration. Sand. They will build a filter bed the size of a parish and pour the river through it and call the result clean, and it is not clean, it is only strained. You may strain a thing and leave every living creature in it perfectly intact and swimming. There were eight thousand dead in Hamburg because a city believed that if you cannot see it in the glass it is not in the glass—"

"Ciel."

"—and the town on the other side of the same river took the same water and treated it and buried almost nobody, which is as clean an experiment as the world has ever accidentally run, and did that settle it? It did not settle it. There is a man in Berlin at this moment writing that the difference was the moral character of the—"

"Ciel."

Cielle stopped.

Maria was standing at the edge of the basin with her bottle under her arm, and she had not sat down, and she was looking at Cielle with an expression that was doing several things at once.

"How long," Cielle said.

"You are learning."

"How long, Maria."

"A year and a half." Maria sat. "Perhaps a little more. It was autumn when I was here last and it is spring now, and there was a whole autumn and a whole winter and another autumn in between, and I have counted them, because I am made of them."

Cielle looked at her.

She did it deliberately this time, which was new — held still and read her, the way she read a reservoir before she went into it, and made herself go slowly, and did not say the first four things that came to her. It is not a mystical thing, the reading. It is only that Cielle stands where the water stands, and a person is mostly water, and so she is always already inside anyone she is looking at, in the wet of the eye and the salt of the blood and the four litres of it moving through the room every minute. Down at her own scale a body is not a shape at all. It is weather. It is a warm slow ocean with a heart at the bottom driving the tide, and everything a life does to a person shows up in it as a change in the current — grief runs cold and slack, fear runs fast and thin, work runs iron-hard and steady

— and she had been reading that ocean since before anyone had a word for what she was.

The hands were worse. That she had expected; the hands would always be worse, the hands were a bench and a burner and a life. But there was something in the carriage that had changed and it was not damage and it was not weather, and Cielle turned it over and could not name it, and then noticed that she could not name it because it was the *absence* of a thing. Some tension that had been in the shoulders for three years was not in them.

"Something has been taken out of you," Cielle said.

Maria laughed — the short surprised sound, the one Cielle had heard exactly twice.

"That is the most alarming compliment I have ever been paid."

"I am not paying you a compliment, I am reading you. You are lighter. Not in the body — the body is thinner, you are not eating, we will come back to that — in the *carriage*. You have put something down." She frowned. "People do not put things down. In my experience they only add."

"Yes," said Maria. "I have put something down."

"What?"

"Being alone," Maria said. "I have met a man."

ii. A Man

Cielle did not say anything for a moment, because there was nothing in her to say it with.

She understood the word. She had watched men for a hundred and twenty years — watched them work, watched them die, watched them be right and be crushed for it and be wrong and be celebrated for it. She had loved several of them in her fashion: Labarraque, who had seen her; Snow, who had almost; Woodhead, who had simply acted. She knew what a man was.

She did not know what *I have met a man* was. It was a sentence with a chemistry she could not find.

"Is he a good one," she said finally, because it was the only question she had.

"He is—" Maria stopped. Cielle watched her deciding how much to hand over, and watched her decide, visibly, on all of it, which was also new. "His name is Pierre. He is thirty-five. He has spent eight years measuring things nobody asked him to measure, in a room that is not properly a laboratory, on an instrument he built with his brother, and he has been passed over so consistently and for so long that he has stopped noticing it, which I find—" she looked for the word "*infuriating*". He does not know he has been robbed. Someone ought to tell him and I am afraid it is going to be me."

"You like him."

"I have known him eleven weeks and I have talked to him more than I talked to my father." Maria said it flatly, the way she said true things, and then made

herself say the rest. "He asked me to marry him. Almost at once. Absurdly at once, it was embarrassing, we had barely—" She stopped. "I said no."

"Why?"

"Because I am going home to Poland," Maria said, "to be useful there, where I am from, which is the entire reason I came here in the first place and the reason my sister paid for me and the reason I ate nothing but bread for two years. That was the arrangement. You do not take the thing and then keep it." She was not looking at the fountain. "And he wrote to me. All summer. Long letters about crystals, and about magnetism, and about how a person's country is not a place they were born but a place they can do the work, which he does not believe either, he only wrote it because he wanted me to come back."

"Did it work?"

"I am sitting here, am I not."

Cielle turned this over. She could not find the reaction she was supposed to have. There was something in her chest that was warm and something under it that was not, and both were present at once and she had no framework in which two contradictory feelings could be true in the same girl, so she picked the one that was easier to hold and discarded the other without noticing she had done it.

"You will still work," she said. It came out harder than she meant.

Maria heard it. She heard everything.

"Yes," she said. "I will still work. That is what he is *for*, Ciel — not in the way that sounds, I do not mean he is a convenience. I mean that of every human being I have met in twenty-six years he is the only one who has never once been surprised that I want it. He does not admire me for wanting it. He does not forgive me for wanting it. He simply assumes it, the way you assume a person wants air." She was quiet a beat. "Do you know how tired I am of being *admired* for wanting it?"

"No," said Cielle honestly.

"No," Maria agreed. "You would not. Nobody has ever admired you for anything, which I used to think was the cruelest thing about your life and I am beginning to think may have spared you something."

iii. The Two Little Maps

"That is not why I came," Maria said. "I want you to know that. I did not walk across Paris to tell you about a man; I could have told you that in a letter if you had an address, which you do not, which is its own conversation." She had the notebook out. "I came because I have solved something."

"You have solved something."

"Three years ago you told me about Vienna and I drew a mark in the dust. And the next night you told me about Broad Street and I drew the same mark in the corner of a map. And I have carried those two pages in every notebook I have owned since, and I have looked at them perhaps four hundred times, and I have been looking at them *wrongly* the entire time and last month I stopped."

Appelle-moi Ciel

She opened the notebook to the old pages. There they were: Vienna in one hand, London in another, both drawn by a twenty-three-year-old, both with A·N in the corner.

"Before you start," Cielle said. "I have a thing. It is not an idea, it is only a thing I noticed, and it has been irritating me for a year and I do not know what it is for."

"Go on."

"There was a man in a town in the north. Last summer." She said it slowly, because she had never tried to say it. "A labourer. Handing out sheets at a standpipe — one of theirs, the folded kind, telling them the treated water was poison. And I looked at him for about four seconds and I knew he was wrong."

"Wrong how? He was lying?"

"No. That is the thing. I do not think he was lying at all, I think he believed every word of it." Cielle frowned at her own hands. "He was wrong in the *body*, Maria. He had a labourer's coat and a labourer's boots and he had got the walk almost right, and his hands were soft. Not a callus on them. Not one. And his teeth were good and he had eaten breakfast and his fingernails had never been near a hod in his life." She looked up. "He was not a labourer. He was something else wearing a labourer, and it was in his hands, and it took me four seconds."

Maria had gone very still.

"And then I forgot about him," Cielle said, "because it did not matter, because the woman had already believed him and she took her water from the ditch and that was the end of it. I have not been able to work out why it stayed with me. It is not a fact about anything. It is only a man with the wrong hands."

Maria did not say anything for a moment.

"Say the four seconds again," she said.

"What?"

"You said four seconds. How did you do it in four seconds?"

Cielle shrugged, honestly baffled. "It is what I am. You put me in front of a body and I read it — that is not a skill, Maria, it is like asking how I taste a chloride. I have been in ten thousand sickrooms. I know what work does to a hand. I know what bread does and what gin does and what a fever three days old does. It is not clever. It is only that I have looked at more hands than anybody alive."

"Ciel," Maria said. "Do you know what you have just described?"

"A man in a coat."

"You have described a *carrier*," said Maria.

"I have been treating the pamphlet," Maria said, "as the thing. As the weapon. As the object that does the harm. So has every part of your century — you told me you could stand on the table the pamphlets were stacked on and not move one word of one of them, and you said it as though the words were the enemy and your failure was that you could not reach them."

"They are the enemy."

"They are the *cup*," Maria said.

Cielle went still.

"Say that again."

"You told it to me yourself. You told it to me on this stone, the third night, and you did not hear what you were saying." Maria turned to the Broad Street page, the little grid of streets, the marks clustered thick around one point. "The cholera was not in the air. Everyone knew it was in the air. Every respectable man in London knew, and they were not stupid and they were not lying — they were *wrong about the medium*. And the entire genius of that map is not that Snow found the cause. He did not find the cause. He could not see the vibrio any more than you could. What he found was the *route*. Pit to well to pump to cup to grave. He never once purified anything. He proved the road."

"Yes," said Cielle slowly.

"So." Maria turned back to the two marks. "Where is your cholera, Ciel? Not the pamphlet. The pamphlet is the cup. A cup does not kill anyone; a cup sits on a shelf. The paper on that table in Vienna could have sat there for a hundred years and killed nobody at all, and you could have stood on it every day of the hundred. It is not *in* the paper."

"Then where—"

"In the men," Maria said. "In the coffee houses. In the lecture halls. Hand to hand and mouth to ear, from a man who has read it to a man who has not, and then from him to three more at dinner, each one perfectly sincere, each one repeating a reasonable thing he heard from a reasonable person. That is not a stack of paper. That is a transmission. The belief is not in the pamphlet any more than the cholera was in the pump handle. The pamphlet is only where they drew it." She stopped, and looked at what she had said, and did not seem pleased with it. "I have no way to test that. I want you to notice that I have just told you something enormous and I have no way at all to test it."

Cielle did not answer. She was looking at the little map — at the marks clustered around one point, which had never once, in a lifetime of looking at the mark in the corner, looked to her like anything but a printer's badge.

"And it behaves like one," Maria said, quieter now, and this was the part she had come to say. "That is what stopped me last month and would not let me sleep. It behaves *exactly* like one. It has a route. It has carriers — and you found one, Ciel, a year ago, in a town in the north, and you have been carrying him about ever since like a stone in your shoe because you could not think what he was *for*. That is what he was for. You read a man's hands and knew he was not what he was dressed as, and you thought you were only disliking a face. You were doing what Snow did. You did it in four seconds and then you threw it away." She was almost angry about it. "It has a medium, and the medium is people. It has a place where it breeds and a place where it is drawn and a place where it is drunk. And the ones who drink it *sicken*, Ciel. They do not become wicked. They become ill in a way that makes them carry it to the next person, and the next, and if you did not know better you would swear the thing was alive and had a purpose, and it does not, any more than the vibrio has a purpose. It only reproduces."

"They are like microbes," Cielle said.

Appelle-moi Ciel

She said it without any weight at all. It was the first time either of them had said it and it came out of her as an observation, the way *you have changed* had come out of her, a finding, a thing noticed in passing.

"Yes," said Maria.

iv. Then Where Is the Well

Cielle stood up.

She was moving now, the way she moved when a thing was almost in her hands, and Maria watched her do it and understood with a small cold drop of the stomach what was about to happen.

"Then I can find it," Cielle said. "That is what you are telling me. If it moves like a disease then it *is* a disease and a disease has a source. Everything in the water comes from somewhere, Maria, there is always a pit, there is always a crack in the brick, and if I find the pit—"

"Ciel—"

"Where is the well?" Cielle turned on her. Her halo had come up hard and green. "You have given me a road. Give me the well. Where do they make it? Where does it *breed*? Tell me the place and I will go into it and I will break every bond in it. That is what I am. I have never once failed to clean a thing I could get into —"

"There is no well," Maria said.

Cielle stopped.

"There is no well," Maria said again, and she said it gently, because she had seen the face and she was not going to make her ask twice. "That is the part I have not been able to sleep about. I have been trying for a month to give you a pump handle and I cannot find one. A well is a place. It is brick and water and a crack in the brick, and Snow could take the handle off because there was a handle, one handle, on one street, made of iron. Your thing has no street." She closed the notebook. "It breeds in a coffee house on a Tuesday and in a drawing room on a Thursday and in a lecture hall on a Friday and every one of those is a well and none of them is the well, and when you shut one the water is already in three hundred cups a mile away. There is no brick to break. There is nothing to go into. It is not in a place, Ciel. It is in a habit." She was quiet a moment. "I am telling you this on a Tuesday because Tuesday is the evening I have. I would have come in October when I first thought it. I could not. That is also part of the answer and I do not like it either."

"Then it cannot be fought."

"I did not say that."

"You have described a thing with no source, no body, and no bond," Cielle said, and her voice had gone flat in a way Maria did not like at all. "I am a set of hands. I am the strongest pull of nearly anything alive, and a pull needs a thing to pull *on*. If there is nothing to take hold of then you have not given me a disease, Maria. You have given me a *weather*."

"I have given you an epidemiology," Maria said. "It is not the same as a cure and it has never once been useless. Snow did not cure a single case of cholera in his entire life. Not one. He never treated anybody successfully, he watched hundreds die and could do nothing for any of them, and he is the most important man in the history of that disease because he drew the road, and once the road was drawn other people, later, with other tools, could stand on it." She stood up too. "You want to go into it and break it. You always want to go into it and break it. That is not available. It has never been available and it is not going to become available because you are angry. What is available is the map." She picked up the bottle. "And I have four hours before I must be at the bench, and I have spent two of them on this, and I do not regret it, and I am also going to be very tired tomorrow. Both of those are true."

"The map is not a weapon."

"The map is the only weapon that has ever worked against this," Maria said, "and you have watched it work twice, and both times you were standing close enough to touch it, and both times you told me the story as a *defeat*."

Cielle did not answer.

"Simmelweis had the count," Maria said. "Snow had the map. Neither of them could touch the thing itself and both of them were right, and the reason they lost was not that the map was useless. It was that there was one of them. One man, alone, with one map, in one city, against a habit that lives in every coffee house in Europe. Of course he lost. A single pump handle against a whole water supply. You do not lose that because the handle was the wrong idea. You lose it because you needed ten thousand handles and you had one." She frowned at her own sentence. "That may be too tidy. Things that fit that well usually have something wrong with them and I have not found it yet."

v. Not My Country

They sat back down. The square was quiet. Somewhere behind the church a shutter went, and a woman's voice said something to a child, and the child said something back.

"I cannot do it," Cielle said.

"I know."

"You do not know. You think I am refusing." Cielle was looking at her hands.

"Maria, I cannot read a room. Put me in the foulest reservoir in Europe and I will tell you what is in it to a part in ten million and I will find every colony in the dark and I will take them apart in an afternoon. Put me in a coffee house and I am — nothing. I am a girl standing next to a table. I hear the words and they are only sounds. I could not tell you which of those men believes the thing and which is repeating it and which is about to carry it out the door, because that is not in my instrument. I do not have one. Patterns are not my country. I have said that to you before and you wrote it in your book and I do not think you understood that it was not modesty. It is an anatomy."

Maria was quiet for a long moment.

"No," she said. "I understood."

"Then why give me the road?"

"I did not give it to you," Maria said. "I worked it out and you were the only person alive I could say it to." She looked at the water. "Do you know what I have, Ciel? I have a bench, and a man who wants to marry me, and a country I have promised to go back to, and a licence in physics, and precisely nobody to tell an idea like this to. If I said it in a lecture hall they would look at their shoes. If I wrote it down my name would be on it and I am twenty-six and Polish and a woman and I have one professional life and I am not going to spend it on a theory about pamphlets." She almost laughed. "So I brought it here. To a girl made of chlorine, in a square that nobody comes to, because you are the only creature in the world who already knows the thing is real and does not need convincing that it exists. I did not bring you a job. I brought you the only conversation I am permitted to have."

Cielle looked at her.

"That is a poor use of you," she said.

"Yes," said Maria. "It is." She stood, and gathered her bottle, and did not go. "But it will not always be. That is the other thing I came to tell you and I am going to say it badly. I am going to be somebody, Ciel. Not soon. But I am going to have a name, and when a person has a name they are *listened to*, and everything I cannot say now I will be able to say then." She was very steady. "And on that day I will still have these two pages, and the mark will still be in the corner of them, and I will have carried it thirty years, and I will not have forgotten."

"Thirty years," Cielle said.

"Perhaps more."

"That is not a thing I can feel."

"I know," said Maria. "That is why I am telling you now. So that when it happens, you will not have to." She put the notebook in her coat. "You will simply be here, in the middle of a sentence, and I will walk into the square, and I will be old, and I will finish it."

vi. What He Would Have Called It

She was almost across the square when Cielle said it.

"Maria."

Maria turned.

"Snow," Cielle said. "If he had lived. If he had been given another twenty years and someone had shown him your two pages and told him the pamphlets were the cup — what would he have called the thing?"

Maria thought about it seriously, standing in the dark, because that was what she did.

"He would not have called it anything," she said. "He would have gone out into it with a pencil and marked every house."

Then she was gone, and the square was empty, and Cielle sat on the warm stone in the dark with a road she could not walk and no well at the end of it, and the

Appelle-moi Ciel

halo faint and green around her head, and the thing Maria had said sitting in her like a stone in a shoe.

They are like microbes.

She had said it herself. She had said it out loud in her own voice and heard nothing in it at all.

She put it where she put the things she would understand later. It was very full now. She did not notice that either.

It would be three years before Maria came back across that square, and when she did there would be a person inside her, and Cielles would put her hand on the side of it and go quiet for the first time in a hundred and twenty years.

Three years is nothing. Three years is not even a thing that happens.

She went north on Tuesday.



PART NINE

The Last Warm Evening

The Fountain at Javel — 1897

i. Two Thousand

"—two thousand," Cielle said. "In a town of thirty-four. Do you understand the proportion of that? One in seventeen. Every seventeenth person in that town, in one autumn, out of one waterworks, and I had been three miles away in a different main the entire summer doing nothing at all because nobody had thought to ask me—"

"Ciel."

"—and the spring was up on the hill above the town, and there were hop-pickers camped on the hill, and there was no privy on the hill, and the whole of it was *arithmetic*, Maria, it was arithmetic you could do on your fingers, and not one man in that town did it until the bodies were—"

"*Ciel*."

Cielle stopped.

And made herself look, because she had learned that much, at least, in nine years.

Maria was crossing the square. Slowly — that was the first reading, and it went into her like a nail, because Maria did not walk slowly, Maria had never once in six years walked slowly, Maria walked like a woman who had been told the room was closing.

"You are walking wrong," Cielle said. "Your gait is wrong. It is — there is weight, there is weight in the wrong—"

And then Maria came into the lamplight and Cielle saw her properly, and stopped talking, and stood up.

"Oh," she said.

Maria was very pregnant. She was pregnant in the last, absurd, architectural way of it, the way that makes a body into a piece of engineering, and she stood at the edge of the basin with one hand at the small of her back and looked at Cielle with an expression of enormous patience.

"Yes," she said.

"You are—" Cielle's hands had come up and stopped in the air. "There is a *person* in you."

"There is."

"Maria." Cielle was staring at her. "There is an entire *person* in you, that is not a — that is not a chemistry, that is not something I can — how long has this been —"

"Eight and a half months," said Maria, "which is a thing I am now going to have to explain to you, and I would very much like to sit down first."

ii. A Thing She Cannot Read

She sat, in stages, with a hand on the stone.

"Three years," she said, before Cielle could ask. "It has been three years. I am twenty-nine. I married him in July of ninety-five, and it was a very small wedding and I wore a blue dress because I had one dress and it had to do for the laboratory afterwards, and we bought two bicycles with the wedding money and went away for the summer, and I have been happier than I knew a person could be and I have also never worked harder in my life, and I am going to have a baby in about two weeks."

Cielle sat down beside her and could not stop looking.

It was not the reading she had. That was the thing. She had eighteen — no, six — six years of instrument on this woman, and it was all wrong, all of it, every needle off the scale. The pulse was fast and it was *correct* that it was fast. The weight was up and it was correct that it was up. There was a thing in the blood she had never met, a whole shifted chemistry, a woman running at a different temperature and a different pressure and a different everything, and none of it was pathology.

"You are not ill," Cielle said, slowly, testing it.

"No."

"Every single thing about you is wrong and none of it is illness." Cielle put a hand out and stopped, and Maria took the hand, without a word, and put it on the side of her belly.

Something moved under it.

Cielle went absolutely still.

She did not move for a long time. Her halo, which had been up green and hard through the whole of the Maidstone rant, went down and down until it was almost nothing, a faint ring of nothing at all, and she sat on the edge of a fountain in Javel with her hand on a woman's side and did not say one word.

"Ciel."

"There is somebody in there," Cielle said.

"Yes."

"There is somebody *in there* and she is — Maria, she is *moving*, she is doing something, she is—" Cielle's voice had gone somewhere Maria had never heard it. "What is she doing?"

"I have no idea," said Maria. "She does it most at night. I have decided it is spite."

"How can you not know? You know everything. You are the most knowing person I have ever—"

"I do not know," Maria said, "because nobody knows, because it is inside me and there is no instrument in the world that can see in there, and I have thought about that a very great deal in eight months." She was looking down at the hand on her side. "I have spent my whole life measuring things. And there is a person happening four inches from my own spine and I cannot measure one single thing about her. I do not know her weight or her length or whether she is well or whether she is a she at all. I know she moves at night. That is the entire body of my knowledge."

"That must be unbearable."

"It is the best thing that has ever happened to me," said Maria.

iii. What Pierre Did

"He put his ear on it," she said. "Pierre. The first time it moved — I was in the kitchen and I felt it and I made a sound and he came in at a dead run because he thought I had cut myself, and then I told him, and he did not say anything at all. He got down on his knees on the kitchen floor and put his ear against me and stayed there for about twenty minutes." She was smiling, and it was not a smile Cielle had seen on her. "And then he said: *it is not a very good signal.*"

Cielle laughed. It surprised her.

"He is going to be impossible," Maria said. "He has built a thing. Do you understand? He has built an *instrument* — a little cradle, with a — I am not going to describe it, it is humiliating, he has put a scale on it. He wants to weigh her every day. He wants to plot her." She shook her head. "He says a growth curve is the only honest way to know if a person is thriving and I said Pierre, she is a baby, and he said yes, and babies are things, and things can be measured, and I have never loved him more or wanted to hit him harder."

"You will let him do it."

"Of course I will let him do it. I want to see the curve." Maria said it without a flicker. "We are both going to do it. We have argued about the interval already; he wants daily and I want twice daily and we have compromised on daily because he says twice is not measurement, it is anxiety with a pencil."

Cielle put her chin on her knees. She had not done that in a long time.

"You are going to be a good one," she said.

"I have no idea what I am going to be," said Maria. "I am going to be a woman with a laboratory and a baby, which is a thing there is no precedent for, and everyone has been very kind about telling me that I will of course be giving up the work, and I have not corrected one of them because I cannot be bothered to have the argument twice." She put a hand on the top of the curve, absently, the way she would put a hand on a book. "His father is coming to live with us. Did I tell you that? Dr Curie. He is a doctor and a widower and a man of about seventy and he has said, without being asked, that he will keep the child in the day so

that I can be in the shed." She stopped. "I have not got over it. I do not think I am going to get over it. He simply said it, over dinner, as though it were arithmetic."

"He sounds like the good sort."

"He is the good sort," said Maria. "There are about four of them and I have got two."

iv. Maidstone

"Tell me about Maidstone," she said. "You were doing arithmetic on your fingers and shouting about privies."

"You do not want to hear about—"

"I have walked four streets at eight and a half months to sit on a cold rock," Maria said. "Tell me about Maidstone."

So Cielle told her.

"Two thousand cases," she said. "This past autumn. A town in Kent, thirty-four thousand people, hop country — the whole county goes there in September to pick, there are thousands of pickers camped on the hills in tents. And the town's water came off the hill in springs. Three springs, and the pickers were camped above two of them."

"No privies," said Maria.

"No privies. There had never been privies, because nobody had ever thought about it, because the pickers had been coming for two hundred years and the water had been fine for two hundred years, and nobody had ever asked *why* it was fine, they had only noticed that it was." Cielle's hands had gone tight again. "One of them had typhoid. One. A single picker with a fever in a tent on a hill, and it went into the ground, and the ground went into the spring, and the spring went into thirty-four thousand people."

"How many died?"

"A hundred and thirty-two." Cielle said it precisely. "It could have been a thousand. It nearly was."

"What stopped it?"

And Cielle stopped, and looked at her, and something in her face changed.

"Me," she said.

Maria turned her head.

"They put me in the mains," Cielle said. "In Maidstone. In the autumn of ninety-seven, a man called Sims Woodhead, who is a pathologist and not a waterworks man at all, and who had read about Labarraque, and who had a town full of typhoid and no ideas left — he put chlorinated lime in the reservoir and then charged the mains with it. Not in a ward. Not in a basin at a door. In the mains, Maria. In the supply that had done the killing. In the pipes of a whole quarter of a town at once." Her voice was doing something odd. "Every tap on the Farleigh water. I went into all those houses in a single night."

"Ciel—"

"It worked," Cielle said. "It stopped. The whole epidemic — it stopped like a door closing. And I was in every kitchen and every scullery and every standpipe on that supply and every one of those people drank me that winter and not one of them knew, and it worked." She was looking at the water in the basin, and her voice had gone somewhere else. "I want to tell you what that is like and there is no word for it. A town is a tree, Maria, if you are small enough — one trunk at the works and then the branching, and the branching, and the branching, until you are in a copper pipe the width of a finger under a kitchen floor, and there are thirty thousand of those ends, and I was at all of them. Not sent to them. At them. The same girl, at once, in every last inch of it, the way you are in every one of your fingers and do not think about it."

"That is the first time," Maria said slowly. "That is the first time anyone has ever done that. In the world."

"That is the first time anyone has ever done that in the world."

"Ciel."

"I know."

"Ciel, do you understand what you have—"

"I know," said Cielle. And she was almost laughing, and it was not a good laugh, and it had something underneath it that Maria heard and filed and did not have a name for yet. "I know exactly. I have been carrying it around for a year like a stone in my shoe. That is the whole of my work, Maria, that is the *point* of me, that is a hundred and twenty years of standing in basins at doors and being thrown out of buildings and it finally *happened* and it happened in a town in Kent in the middle of a hop harvest and — do you know what they wrote about it?"

Maria waited.

"Nothing," said Cielle. "There is a paper. There is a very short paper. It is in a journal that eleven people read and it is titled something about the sterilisation of a public water supply and it does not have a single dead child in it." She was looking at the water. "A hundred and thirty-two died. It should have been a thousand. There is nothing in the world to tell you the difference between those two numbers. That is the number that did not happen. You cannot print a number that did not happen. There is no story in a thing that did not occur."

Maria sat very still.

"Eight hundred and sixty-eight people," she said.

"What?"

"The number that did not happen," said Maria. "You did not say it. I have noticed that you never say it. You said a hundred and thirty-two and you said it should have been a thousand and you left the subtraction to me, which you have been doing since I was twenty-three." She looked up. "Eight hundred and sixty-eight people got out of bed this morning and had no idea. That is your number, Ciel. Say it once."

Cielle did not say it.

Appelle-moi Ciel

"Say it once and I will never make you say it again."

"Eight hundred and sixty-eight," said Cielle.

And her halo came up — not the hard green, but something else, something Maria had only seen twice and had never been able to describe in her notebook, and did not try to describe now.

"You told me once," Maria said, watching the light, "that a thing as true as you are cannot stay off the page forever. Sitting on this stone. The night of the spectroscope."

"Did I."

"You did. And I wrote it down, because I wrote everything down that autumn." She was quiet a moment. "I have started to wonder about it, Ciel. Not whether it is true. Whether you can afford for it to be. A person who is waiting for the page can wait a very long time."

"I am not waiting for anything," said Cielle, comfortably, honestly, and reached for the last of the light on the water, and did not hear herself at all.

v. The Pastry

Somewhere behind them, across the square, a shutter opened.

Cielle turned her head.

"That is Madame Brun," she said. "Do not look. She hates being looked at."

"I have never seen her."

"She has been leaving them on the sill since eighty-two." Cielle was watching the corner of the square with an expression that had gone completely soft. "She sees us. That is the thing about her. She has always seen us, since she was a girl — because she works us, you see, she has her hands in the flour and the yeast and the oven every day of her life and none of it is a mystery to her, it is all just chemistry, so when a chemistry walks across her square she simply *sees* it. Nobody in Javel can see us. The whole town thinks she is eccentric and she lets them think it because it is cheaper than explaining."

"Does she talk to you?"

"Never. Not once in fifteen years." Cielle stood up. "She opens the shutter, and there are four pastries on the sill, and she goes back in. And we eat them." She was already going. "Eytch takes the biggest one, every time, without fail, and Oh counts them, and Enay pretends she does not want one and takes one anyway, and we sit on this stone and eat pastry, and it is—"

She stopped.

"It is what?" said Maria.

Cielle came back with four pastries in her hands and a look on her face that Maria did not see clearly at the time, and thought about for the next thirty-seven years.

"It is the only hour of my life," Cielle said, "in which I am not a soldier."

Maria, who was in the last weeks of carrying a person and therefore noticed everything about garments, was looking at the coat.

"The seam is new," she said. "At the shoulder. And the cuffs have been turned."

"Madame Brun's mother did the cuffs, in sixty-nine. Madame Brun did the shoulder two winters ago. She left it folded on the sill with the pastries and I left it mended on the sill a week later and neither of us has ever said one word about it." Cielle smoothed the blue wool with a kind of unconscious tenderness. "It is the same coat, Maria. It has always been the same coat. It was cut in a cholera ward a hundred years ago and it has been let out and taken in and turned and re-lined by four generations of hands that can see me, and if you know where to look you can read every decade of it, like rings in a tree." She looked up, wry. "The tables carry my lines. The coat carries my life. If you ever have to know me again — after a long time, in a bad light — do not look at my face. Faces are weather. Look for the coat."

"I will remember that," said Maria, who would.

vi. The Warm Stone

They ate pastry.

That was all. That was the whole of the rest of it. Eytch came, and took the biggest one without a word, and Oh counted them out loud and got it wrong on purpose because it was a joke that was fourteen years old, and Enay said she was not hungry and ate two, and Maria sat on the warm stone at eight and a half months with her back against the basin and her feet out in front of her and laughed until she had to hold the bottom of her belly with both hands.

Nobody told a story. Nobody drew a map. The notebook stayed in her coat.

Enay did her ceremonial poses for the pigeons and Maria applauded and Enay was so pleased she did them again. Oh asked Maria what she was going to call the baby and Maria said Irène if it was a girl and Oh said that was a good name and Eytch said all names were good names and Oh said that was not true and they argued about it for ten minutes, seriously, both of them, and Maria laughed so hard that the thing inside her woke up and started kicking and she made Eytch feel it, and Eytch — who was four billion years old, and had been in every drop of water in the history of the world, and had been the first thing there was — put her hand on a woman's side and went so quiet that everyone stopped talking.

"Oh," said Eytch.

"Yes," said Maria.

"She is *making* herself," Eytch said. "She is in there making herself out of things you ate."

"Yes."

Eytch took her hand away and looked at it, and looked at Maria, and did not say anything else for a long time.

Appelle-moi Ciel

The lamps went along the square one at a time. Joan watched from the church wall with her chin lifted at something past the edge of the stone, and the fountain ran, and it got late, and none of them went anywhere.

vii. Another Evening

Maria stood, eventually, with difficulty, and with Cielle and Enay both holding an arm and Oh giving instructions nobody needed.

"I will not be back for a while," she said. "Obviously."

"How long is a while?"

"I do not know. A year? Longer." Maria was gathering her coat. "It is going to be very bad for a while. Not the baby — the work. I am going to have a child and no time and I have got a subject at last, a real one, my own, I am going to take a doctorate on it and no woman in France has ever taken one and I am going to be doing that with an infant in a shed with a leaking roof." She said it perfectly cheerfully. "So it may be a long while. I am telling you now so that you do not stand here doing arithmetic at me about my gait."

"That is not—"

"That is exactly what you will do," said Maria. "You will read my hands and tell me I am dying of something. I have had six years of it. It is the most reliable thing about you."

Cielle almost smiled.

"Come back when you can," she said.

"I always come back."

"I know."

"Ciel." Maria stopped at the edge of the lamplight and turned around, and she was enormous and tired and lit from one side, and she stood there for a moment as though deciding something. "The eight hundred and sixty-eight. When she is old enough to understand it, I am going to tell her. Not about you — she will not believe me about you and I am not going to spend my daughter's childhood being a woman who talks about a girl at a fountain." She was very steady. "But I am going to tell her about the number that did not happen. I want her to grow up knowing that the most important thing that ever happens is usually the thing that did not, and that nobody will ever print it, and that you have to go and look for it on purpose."

"Why?"

"Because somebody has to be looking," said Maria, "after."

And she went home.

viii. She Did Not Know

Appelle-moi Ciel

Cielle sat on the warm stone with three pastries gone and the fourth in her hand, and Eytch asleep against her shoulder, and Oh still counting stars, and Enay explaining to a pigeon the correct way to receive a salute.

It was a very good evening. It had been an entirely good evening from beginning to end and there had not been one of those in a while and she noticed it, which she almost never did, and she sat in it, and let it go on.

She thought: *she will come back in a year.*

She would not.

She would come back in nine, in the rain, at thirty-eight, with grey at the front of her hair and her husband two years dead, and she would stand at the edge of the square because she could not make her legs cross it. And there would never be another evening like this one, not ever, not once, and there would be no announcement of that fact and no way to know it and nothing whatever to mark it — because that is not how the last of a thing works. The last of a thing looks exactly like the middle of it. That is the entire cruelty of the design.

There is always supposed to be another.

Cielle finished the pastry, and put her head back against the basin, and did not think about it at all, because there was no reason on earth to think about it, and there was a reservoir in the north on Tuesday, and a whole world of water, and all the time there had ever been.



PART TEN

The Rain in the Rue Dauphine

The Fountain at Javel — 1906

i. The Wrong Season

"—and I have decided the answer is that they cannot bear to be told twice," Cielle said. "Once is a discovery. Twice is a scolding. Jersey City will go the same way, you will see, they will fight it in a courtroom and the whole argument will be about *taste*, they will stand up in front of a judge and say the water is unpleasant and not one of them will say the word *typhoid* out loud because—"

She stopped.

Not because she had been interrupted. Nobody had interrupted her.

The girl was standing at the edge of the square, in the rain, and she had not come any closer.

That was wrong. Maria crossed the square. Maria had crossed the square perhaps thirty times in fifteen years and she always crossed it the same way, quickly, head down, the walk of a woman who has somewhere to be and has decided to be here instead. She did not stand at the edge of it.

"You are standing in the rain," Cielle said.

Maria came. Slowly, the way a person walks who has been walking all day for no reason. She sat down on the basin edge and put nothing in her lap — no bottle, no notebook — and folded her hands, and looked at the water.

Cielle looked at her, and began to read her, and the reading came apart in her hands.

It was all wrong. Every single thing was wrong. The face had lost weight in the wrong places — not the clean hollowing of a person who forgets to eat, which Cielle knew, which she had been scolding this girl about since she was twenty-three, but a slackness, a giving-up in the muscle, the face of someone whose body had stopped attending. The hands were not burned. That struck her hardest and she did not know why. The hands were *soft*. Whatever those hands had been doing for the last nine years, it had not been holding hot glass.

And there was something in the hair.

Cielle leaned in and looked at it, frankly, rudely, the way she had always looked at her.

"There is grey in your hair," she said. "At the front. Both sides."

Maria said nothing.

"That is not — Maria, that is not *time*. I know what time does now, I have been watching it do it to you, I have got quite good at it. Time does the shoulders and the hands and it does the small lines by the eyes. It does not do that." Cielle's

voice had gone urgent and clinical, the voice she used over a reservoir that had turned. "Grey at the front, both sides, in a person of — how old are you now?"

"Thirty-eight," Maria said.

"Thirty-eight. That is *early*. That is not the schedule. Something has been taken out of you, something metabolic, you have been ill—" She reached and took a wrist, and turned it over, and read the pulse and the temperature and the thinness of it with a hundred and thirty years of practice. "Your pulse is wrong. You are cold. Have you been eating? You have not been eating. There is something *in* you, Maria, there is something in you and I want to know what it is, I want you to tell me the name of it and I will go and find it and I will—"

"It has been nine years," Maria said.

Cielle stopped.

"Four," she repeated.

"Nine years and some months. It was summer when I last sat on this stone. It has been nine summers." Maria still had not looked at her. "You have been talking about Jersey City. Jersey City has not happened yet. You have been talking about a thing that has not happened."

"That is not—" Cielle looked at her own hands. "I was in a reservoir. And then I was in Hamburg again, and then there was a filter bed in — I do not know. I do not know where. It is one long thing." She was almost pleading, which she did not recognise in herself. "Nine years is not a thing I can feel, you know that, I have told you that, I told you the very first time you—"

"I know."

"Then tell me what is in you and I will go and get it."

And Maria looked at her.

ii. What Is In Her

"Pierre is dead," she said.

The rain went on into the fountain.

"He was killed in the street," Maria said. "In the rue Dauphine. It was raining, and he stepped out from behind a cab, and there was a wagon — a dray, a heavy one, loaded — and he went under the wheels. The back wheel went over his head." She said it exactly, the way she said true things. "It was instant. They told me it was instant. I have gone over it a very great many times and I believe them, or I have decided to, which by now is the same thing."

Cielle did not say anything.

"It was April," Maria said. "He has been dead two months and you have been standing in this square talking about a courtroom in New Jersey."

Cielle still did not say anything.

Appelle-moi Ciel

She was looking for the sentence and there was not one. She had a hundred and thirty years of them. She had knelt beside more dying people than any creature on the earth — she had held the hands of the ones nobody would touch, she had been the last face in ten thousand rooms, she had come as the angel to the dying and she had never once, not one single time, not known what to do.

That was the thing. She was *good* at this. It was the only thing she had ever been unambiguously good at.

And there was no dying person here.

There was a well woman on a fountain rim in the rain, whose husband had been dead two months, and every instrument Cielle had ever been given was for the body in the bed, and the body in the bed was not here, and had been in the ground since April, and there was nothing to go into and nothing to break and nothing to close gently. The pain was not arriving. The pain had already arrived, in April, in the rue Dauphine, and had finished arriving, and was simply *in her*, permanently, the way a thing is in water that cannot be strained out.

"I was not there," Cielle said.

"No."

"I would have—" She stopped, because it was not true and she knew it was not true even as her mouth was forming it. "I would have come."

"You could not have come. You did not know." Maria said it without any edge at all, which was worse than an edge. "You cannot know. That is not a failing, Ciel, it is a *fact*, it is what you are, I have understood it since I was twenty-five and you told me you had no clock in you. I did not come here to be angry at a girl for not having a clock."

"Then why did you come?"

Maria did not answer for a while.

"Because you did not know," she said. "That is the whole of it. Everyone in Paris knows. Everyone in Europe knows. It was in every newspaper on the continent within a day — I found out from a man at the door, before anyone had thought to tell me properly, and by the evening it was being *printed*, and it has not stopped being printed since." Her hands were still folded. "Do you know what they printed? They printed that a great man was killed by a cart. That is the story. That is the whole story, everywhere, in every language: France has lost a great physicist to a wagon in the rain, is it not terrible, is it not ironic, the man who tamed radium and a dray horse took him. They wrote it beautifully. Some of them wrote it very beautifully."

"That is true," Cielle said carefully.

"It is entirely true," said Maria. "There is not one false word in any of it. That is what I want you to notice."

Cielle went very still.

"They did not lie about him," Maria said. "They did not have to. They simply told that true story, loudly, everywhere, for a month — and there was another true story standing in the room the whole time and not one of them printed it, and I have had two months to work out what it was, and it was this." She looked up for

the first time. "There is a woman in that laboratory. She did the work with him. Half of it was hers and some of it was more than half, and she has a licence and a doctorate and she got the prize with him, both their names on the same paper, and now she is alone in a room with two children and an instrument nobody else on earth can use—"

She stopped. She was not crying. Cielle had the sense that the crying had been done somewhere else, in private, on a schedule, the way she did everything, and that it was not finished and would not be for a long time, and that it was simply not going to be done here.

"They printed the cart," Maria said. "I am the thing that did not get printed."

iii. The Cup Again

"You told me," Cielle said slowly. "You told me about this. Thirteen years ago, on this stone. You said—"

"I said, what if the greater part of the work is praising," Maria nodded. "Yes. I have thought about that sentence a great deal these last weeks. I was very pleased with myself when I said it. It was a clever thing to say about a Queen who had been dead a long while." Her mouth did something that was not a smile. "It is different, Ciel, when you are standing in it."

"They chose."

"Somebody chose. Somebody in a room, on a Thursday, with a page to fill, chose which true thing was loud. There is no mark in the corner of it. I have looked, believe me, I have looked at every one of those papers with a lens like a madwoman — there is no A·N on any of them, no cabal, no conspiracy of men in a cellar. It is worse than that. It is only *habit*." She flattened her hands on the wet stone. "A dead great man is a story. A living woman who was half of him is not a story yet. So they printed the one that was a story, and every single one of them would tell you, sincerely, that they were only reporting what happened. And they *were*."

"Then how is it different from Vienna—"

"It is not different from Vienna," Maria said. "That is what I came to tell you. It is *identical* to Vienna. Nobody buried Semmelweis's numbers either, Ciel — you told me that yourself, you were furious about it, you said they never refuted a single figure. The numbers were sitting there in print the entire time. They simply were not a story. A Hungarian saying doctors have dirty hands is not a story. A Queen who felt no pain is a story. A great man under a wagon is a story." She was speaking very quietly now. "The medium is not the lie. You cannot break the lie, because most of the time there is not one. The medium is *what people find worth repeating*, and they find the same shapes worth repeating in every century, and the thing rides those shapes the way the vibrio rode the water — not because the water wanted it. Because the water was *going that way anyway*."

Cielle sat down.

She had, she realised, been standing over her the whole time. Reading her. Diagnosing her.

"I have nothing," she said.

"I know."

"No — Maria, listen to me, you do not understand what I am telling you. I have *nothing*. I do not have a story to tell you tonight. I always have a story. I have been telling you stories on this stone since you were twenty-three years old, and every time you have come here I have had something — Scheele, Berthollet, the ward, the cloth, the pump, the arithmetic, I have always had the thing to put in your hands." Her voice had gone strange. "And you have come here with the worst thing that has ever happened to you and I have got a courtroom in New Jersey that has not happened yet."

"Yes."

"That is all I have. That is the entire contents of me." She looked at her open hands. "I know exactly what to do if you are dying. Do you understand that? If you were lying in that water right now with a fever I would know precisely what to do, I would be *magnificent*, I have done it ten thousand times and I have never once got it wrong. And you are sitting there perfectly well and I do not have one single thing."

Maria looked at her for a long moment.

"You are grieving at me," she said, "about not being able to grieve at me."

"I do not know what that means."

"No," said Maria. "You do not."

iv. What She Actually Says

Cielle tried anyway. That was the thing Maria would think about, later, for thirty years.

"He was a good one," she said.

"Yes."

"You told me. In ninety-four. You said he was the only person who was never surprised that you wanted it." Cielle was groping, and it showed, and she kept going. "You said he had been robbed and did not know it. Did you ever tell him? You said you were afraid it would have to be you."

Maria's face moved.

"I told him," she said. "I told him constantly. I nagged him about it for eleven years, I made him take the chair, I made him stand up in Stockholm when he wanted to go home, I *badgered* him into being seen and he hated every minute of it and did it because I asked." She stopped. "He was going to be forty-seven."

"That is—" Cielle did not know the end of the sentence. "That is not very many."

"No."

"I have known people who were forty-seven for a hundred years," Cielle said, "and then they were not, and I did not — Maria, I do not know how to say the next part. I have never had to say the next part. They die and I hold their hand

and then there is another room." She was staring at the fountain. "There is always another room. There has never once *not* been another room."

"And there is no room," Maria said.

"There is no room. There is only you sitting here, and the thing already happened, and I cannot get in front of it, and I cannot go into it, and I cannot break anything." Cielle's hands had closed on the stone. "I am *hands*, Maria. That is what I am. I have the strongest pull of anything alive and there is nothing here to take hold of."

"No," said Maria. "There is not."

"Then tell me what you want."

Maria took a long breath.

"Nothing," she said. "That is what I came for. I have had two months of people wanting to be useful at me. My father-in-law has been magnificent and my sister has been magnificent and the Sorbonne gave me his chair, which I took, which was the correct decision and which I have not forgiven them for, and every single one of them has been *doing* something at me since April." She looked at the water. "You cannot do anything. You have just told me so at some length. Do you understand that you are the only person left in Europe who cannot do anything at me?"

Cielle did not answer.

"So do that," said Maria. "Do nothing. Sit there and be a girl who cannot feel two years and let me sit next to you."

And Cielle — who had once been told, in a birthing room in London, by a hydrogen who had never in four billion years been heavy about anything, that she did not have to do anything, that she only had to be still, and had said *still is not a thing I have* —

— sat still.

It took her some time. Maria watched her do it. It was the single most difficult thing she had ever seen anyone do, and it was nothing, and it went on for a quarter of an hour, and neither of them said one word.

The rain slackened and went on.

v. Not Enough

"I will tell you the thing I did," Maria said eventually, "because you will hear it from someone else eventually and I would rather it was me."

"You do not have to."

"Six weeks after," Maria said. "They came to me. The dean, and two others. And they said, madame, the chair is vacant, and there is no precedent, and we have thought about it, and we would like you to take it." She was very steady. "Do you know what I thought? Standing there, six weeks after they put my husband in the ground, with his coat still on the peg in the hall. I thought: *at last*."

Cielle turned her head.

"I thought *at last*," said Maria. "And I have not told one living soul that, and I am not going to tell one, and it is two months old now and it has not got any smaller." She was looking straight ahead. "I loved him. I want that on the record, since we are keeping one — I loved him entirely, I have not been warm since April, I am not eating, you were right about all of it. And six weeks after he went under a wagon they offered me the thing I have wanted since I was seventeen years old, and it was only available because he was dead, and some part of me that I would happily cut out with a knife said *at last*, and then I took it."

Cielle did not say anything.

"And that is the part nobody will ever print either," Maria said. "The cart is a story. The widow in his chair is beginning to be a story — they have started already, *la veuve courageuse*, it makes them feel splendid. But the woman who thought *at last* is not a story anyone wants, and so it will never be told, and I will carry it by myself for the rest of my life, and that is what I actually came here to say and I have taken two hours to get to it."

The fountain ran.

"Why me," Cielle said.

"Because you told me a thing on this stone in ninety-three," Maria said, "and I have never forgotten it, and I have wanted for two months to be able to say something like it to somebody."

"What did I tell you?"

"You told me that you stood in a room with a Queen in it, and you were three-fifths of the mercy, and nobody said your name, and you *minded*." Maria turned and looked at her. "And you said: I do not know how both of those can be in the same girl at once."

Cielle went white — went whiter, went to the colour she went when a thing came at her from behind.

"And I said it was ordinary," Maria said. "Do you remember? I said it was ordinary, which was worse, for you." She almost laughed and it broke. "Well. I loved my husband and I thought *at last*. Tell me that is ordinary, Ciel. Please tell me that is ordinary. I have wanted somebody to tell me that for two months and there is not one person alive I can ask."

And Cielle — who did not have a framework in which two contradictory true things could live in the same person without one of them being a lie, who would not have that framework for another twenty-one years, who was at this moment nine years from a field in Belgium and would spend the whole of that nine years deciding that people were divided into the worth saving and the not —

— said the only thing she had.

"I do not know," she said. "I have never been able to hold both. I have been trying since eighteen fifty-three and I cannot do it and I do not know how it is done."

Maria nodded slowly.

"No," she said. "Nor do I."

"Is that an answer?"

"It is not an answer," Maria said. "It is company."

vi. The Coat

She left near dawn. She had never stayed that long before and would never stay that long again.

At the edge of the square she stopped, in the last of the rain, and said, without turning around: "His coat is still on the peg. I have not taken it down. Everyone has been very tactful about the coat."

"Do you want it down?"

"No," said Maria. "I want to be the sort of person who has taken it down." And then she went.

Cielle sat on the fountain rim until the light came, which she did not usually do, and could not have said why she did it. There was nothing to be done at the fountain. There was a reservoir in the north waiting for her and a courtroom in New Jersey that had not happened yet, and a great deal of work.

She thought: *nine years*.

She turned the number over and could not make it do anything. It would not become a shape. She knew, in the way one knows a fact one has been told, that nine years had happened, and that a man had lived through most of them and then not, and that a woman had walked to a fountain thirty times in fifteen years and this time had stood at the edge of the square in the rain because she could not make her legs cross it.

And she could not feel any of it, and she never would, and the not-feeling was not cruelty and it was not carelessness. It was an anatomy.

But she sat there until the light came, which was not something she did, and if anyone had asked her why she would have said it was the weather.

The next time Maria Skłodowska crossed that square there would be two hundred people outside her house and a man in the street saying out loud that he would kill her, and she would come the long way round the back of the church so that they would not see which way she went, and her heart would be going like a bird's, and it would be five years.

Cielle would be in the middle of a sentence.

Joan watched from the church wall, with her chin lifted at something past the edge of the stone.



PART ELEVEN

The Story They Chose

The Fountain at Javel — 1911

i. The Woman at the Standpipe

"—and she looked at it," Cielle said. "That is the part I cannot get past. She *looked* at the water. She held the cup up to the light in front of me and she made a face, and then she went and got it from the ditch instead. From the *ditch*, Maria, forty feet away, where the run-off from the yard goes, and I was standing in the standpipe not three feet from her hand and I had cleaned that water myself, that morning, I had gone through every colony in it and there was nothing left alive in it at all and it was the cleanest water in that town by a factor I cannot express to you—"

The girl was crossing the square.

"—and she said it tasted of the works. Of the *works*. She had a sheet in her apron, one of theirs, folded, I could see the corner of it, and it had told her that the treated water was poison, and a man in a labourer's coat with soft hands had given it to her — another one, Maria, seventeen years on and the same soft hands, they have not even changed the *coat* — and I read him in about four seconds, and it did not matter one particle that I read him, because she had already believed him, and she took her children's water from the ditch." Cielle's halo was up. "Six weeks later two of them were dead. Two out of four. And I want you to tell me, because you are the only one who ever tells me anything true — at what point does a person become responsible for what they have chosen to believe?"

Maria did not answer.

She had come across the square and she was standing at the fountain and she had not sat down, and Cielle registered this and kept going, because the thing had been in her for months and had nowhere else to be.

"You will say she could not read. She could not read. Fine. But she could *taste*, Maria, she had a mouth and a nose and forty feet of distance between the clean thing and the filthy thing and she went to the filthy thing because a man with soft hands told her a story. And I have been thinking about it for six weeks and I have got to a place I do not like and I am going to say it out loud to you because I cannot say it to anyone else." She looked up. "I am not sure I can save people who will not be saved. I am not sure that is a thing I am for."

"Ciel."

"They *chose*. That is what I am saying. She chose the ditch—"

"Ciel."

Cielle stopped.

And looked at her properly, for the first time.

ii. Reading

The instrument had got better. That was the terrible thing. Twenty years of practice on one specimen and she had become genuinely good at it, and she went over the woman standing in front of her the way she went over a reservoir — top to bottom, fast, competent — and the readings came in and she catalogued them one after another and did not stop.

Forty-three. Grey through the whole of it now, not just the front. Weight down again, badly, worse than five years ago, worse than she had ever seen it. The hands were burned again — good, the hands were working, whatever else had happened the hands had gone back to the bench. Something wrong with the fingers, though; two of them on the right were dark at the tips, cracked, and the skin around the nails was gone strange, and there was a lesion on the left forearm that had been there long enough to have a history to it.

The pulse was fast. The pulse was very fast, and it was not the pulse of a woman who had walked across Paris.

"You have been ill," Cielle said. "Recently. Weeks, not months — no, months. Both. You have been ill for months and something happened recently on top of it." She took the wrist. "This is not grief. I know grief now. I have learned it, I have had five years of thinking about it and I know what it does and this is not it."

"No," Maria agreed. "This is not it."

"There is something on your arm."

"Yes."

"How long?"

"A while."

"That is not a *time*, Maria, that is a word people use when they do not want—" Cielle stopped. Her thumb was on the pulse. "Your heart is going like a bird's. Why is your heart going like a bird's? You are sitting still. You have been sitting still for a minute and it has not come down at all. Are you frightened? Are you frightened *now*, this instant, in this square?"

Maria did not answer.

"Of *what*," said Cielle.

"Of the walk here," Maria said.

Cielle did not understand that at all.

"It is four streets," she said.

"Yes," said Maria. "It is four streets. I have been walking them for twenty years. I came the long way tonight, round the back of the church, because there were people at the end of my street when I left and I did not want them to see which way I went." She said it flatly, and only the pulse gave her away, hammering under Cielle's thumb. "It has been five months. I would like to sit down now, please, because my legs are not very good."

iii. What They Printed

She sat.

"You do not know," she said. "Of course you do not know. You have been in a standpipe in the north being angry at a woman with a cup. You have no idea at all."

"Tell me."

"They have been outside my house," Maria said. "For four days. There were perhaps two hundred of them on Wednesday. They broke the windows on the ground floor. My daughters were in the house — Irène is fourteen and Ève is seven and they were in the house, Ciel, and I sent them to friends in the country and they went past the crowd in a cab and Irène *looked out of the window at them*, and I will be seeing that for the rest of my life." Her voice did not change. It stayed absolutely level. "There was a man who said he would kill me. He said it in the street, to my door, out loud, in front of everyone, and nobody stopped him because he was saying what everyone had come to say."

"Why," said Ciel.

"I have a letter," Maria said. "Or rather someone else has my letters. There is a man — a colleague, a good one, the best physicist of my generation and I do not say that lightly — and his wife took my letters out of his desk and gave them to a newspaper, and they printed them. Not all of them. The ones they chose." She was looking at the water. "He is married. That is the fact at the bottom of it and I am not going to stand here and tell you it is not the fact. He is married, and they are not living together and have not been for a long time, and I do not care, Ciel, I do not care what the arrangement was, I am telling you the fact because the fact is real and I have never once in my life lied about a fact."

"They printed your letters."

"They printed my letters and they printed the word *étrangère*," Maria said. "Foreigner. That is the word. In every one of them. The Polish woman. The foreign woman who came here and took a Frenchman's chair and now has taken a Frenchwoman's husband. There was a paper that said I was Jewish, which I am not, and it did not matter that I am not because the point was never whether I was, the point was the *shape* — that I am from somewhere else and I have too much and I did not get it honestly." She put her hands flat on the stone. "They had my prize in November. They gave me the second prize in November. Do you understand the arrangement of the months? In October they told me I was a whore in every newspaper in France and in November Stockholm gave me the chemistry prize, alone, my name and nobody else's, for radium and polonium, the first person in history to be given two, and there was a man from the committee who wrote and asked me not to come and collect it."

Cielle said nothing.

"Not to come," Maria said. "Because of the letters. He wrote it very courteously. He said that had the Academy known, they might not have made the award, and that it would be better for everyone if I stayed in Paris and did not embarrass Sweden by standing on the stage."

"Did you go?"

"I went," said Maria. "I stood on the stage and I said that a prize for a discovery is a prize for the discovery and not for the private life of the woman who made it, and I collected the thing, and I came home, and there were two hundred people outside my house."

iv. The Two Stories

"You said—" Cielle stopped. She was groping for it and it was there, it was right there, she had heard it on this stone. "You said in ninety-four. You said, *I am going to have a name, and when a person has a name they are listened to.*"

"Yes," said Maria. "I said that."

"You have a name now. You have the biggest name of any woman alive."

"Yes."

"Then—"

"Then I have discovered what I did not know at twenty-six," Maria said, "which is that having a name does not mean you are listened to. It means you are *available*." She looked up. "I thought a name was a thing you spoke with. It is not. It is a thing they use. Before I had one I could not be heard, and that was Vienna — the count sitting in print and nobody carrying it, the true thing that was not a story. And now I have one, and they carry me everywhere, hand to hand, all over Europe, in every language — and what they are carrying is not the chemistry prize."

She was quiet a moment.

"There were two true stories in France in November," she said. "One of them is that a woman was given the Nobel Prize twice, alone the second time, which has never happened to any human being, and that she did it in a shed with no heating while raising two children after her husband was killed in the street. That is true. Every word of it is true and it is one of the best stories of the century and it took perhaps a column in most of the papers, and in some of them it was under the fold."

"And the other."

"The other is that she is sleeping with a married man." Maria's mouth moved. "That one was the front page for five months. They are still printing it. They will be printing it at Christmas."

She turned and looked at Cielle.

"They did not lie, Ciel. That is what I want you to hear, because it is the whole of it and I have been trying to tell you this since I was twenty-six and I have never once got it into you. Both stories are true. Nobody forged a single letter — the letters are mine, I wrote them, they are in my hand. Nobody printed one false word about the prize either; they printed it perfectly accurately, in five inches, on page four. All they did was *choose which one was loud*, and the choosing is not a crime and there is no mark in the corner of it and you cannot break a bond in it because there is no bond in it, there is nothing in it but a room of men on a Thursday deciding what people would rather repeat."

"You are Vienna," Cielle said slowly. "And you are London. You are both of them. In one year."

"In three weeks," said Maria. "October and November. The buried true thing and the enormous true thing and they happened to the same woman three weeks apart, and if you want to know what A·N is, that is what it is, and it does not need a cellar or a cabal or a man with soft hands. It needs a page to fill and a habit about what a woman is for."

v. The Thing Cielle Says

Cielle was quiet for a long time.

And then she said the thing that Maria would carry for twenty-three years, and she said it kindly, and she meant it as comfort, and she was in the eighth year of being the most famous chemical agent in the industrial world with her name in every water-works journal on three continents and her halo up green and hard over a fountain in Javel.

"They are not worth it," Cielle said.

Maria turned her head.

"The two hundred," said Cielle. "Outside your house. Maria, look at them. *Look* at them. A woman splits the atom's insides open with her hands in an unheated shed and they will not read four inches on page four, and then a man's wife opens a desk drawer and they will stand in the rain for four days to break her windows. That is not a misfortune. That is a *judgment*, and they made it, and they made it freely, and every single one of them chose the letters over the prize the way that woman chose the ditch over the standpipe." Her voice was almost gentle. "They are the ditch, Maria. They will always be the ditch. You are pouring yourself out for people who go and get it from the run-off because a man with soft hands told them a story, and I have watched them do it for a hundred and thirty years and I am telling you, as your friend: they are not worth what it is costing you."

The fountain ran.

"There," said Maria.

"There what?"

"That." Maria was looking at her with an expression Cielle had never seen on her in twenty years, and could not read at all, and catalogued as fatigue. "That is the first thing you have ever said to me that frightened me."

"I am agreeing with you—"

"You are not agreeing with me. You have not heard one word I said." Maria stood up, and her legs were not good, and she stood anyway. "Ciel, listen to me. The two hundred outside my house are not the enemy. They are the *water*. They are exactly the water, they are the cup and the well and the road, they are what the thing travels in — and they did not choose anything, any more than a river chooses to carry cholera. They were handed a shape they already had a habit of repeating and they repeated it. That is not a judgment. That is a *transmission*, and I have been telling you it is a transmission since I was twenty-six years old

and you have never once been able to hear it, because the moment you look at a person who believes a lie your entire chemistry turns them into a defendant."

"They chose—"

"*They were infected!*" Maria's voice went up and cracked and came apart in the empty square, and it was the first time in twenty years that Cielle had ever heard her shout. "Do you say the well chose? Do you say the *cup* chose? When Snow stood in Broad Street and looked at the marks around that pump, did he stand there and say — these people are not worth it, they went and got it from the ditch, they are the ditch, they have made a judgment and I am not sure I can save people who will not be saved?"

Cielle did not answer.

"He took the handle off," Maria said. "He did not *hate* them. He was surrounded by five hundred corpses of people who had drunk from the wrong pump, every one of them a person who could have walked to another street and did not, and he did not spend one second of his life deciding whether they had earned it. He drew the map."

She stopped. She was shaking, and it was not entirely the anger.

"You asked me at what point a person becomes responsible for what they have chosen to believe," she said. "That is a beautiful question. It is a wonderful question. It is the exact question the men in Vienna were asking about Semmelweis's manners while the women died, and it is the question the two hundred outside my house think they are asking about me, and every one of them is *sincere*, Ciel. Every one of them believes he is defending something. Not one of them thinks he is a mob. They think they are the standpipe and I am the ditch."

vi. What She Does Not Hear

"Then what am I supposed to do," Cielle said. "Tell me. You have taken the well away from me and now you have taken the *fault* away from me. You have described a world in which a thing is killing people and no one is doing it. That is not a world I can work in."

"I have described a world where you cannot be the hands," Maria said. "That is all. That is all I have ever described to you. You cannot go in and break it, and there is nobody to be angry at, and the only thing that has ever worked is the map, and the map is slow, and it is boring, and it does not make you magnificent, and one man with one map loses. You told me so yourself." She was very tired now. "Ten thousand handles, Ciel. That is what I said in ninety-four and you did not hear that either." She pressed the heels of her hands against her eyes. "I am forty-four. I have two children and two hundred people outside my house and I walked four streets to say this to you and I do not know that I was right to."

"Where do I get ten thousand handles?"

Maria looked at her for a long moment.

"You do not," she said. "You are one girl and you cannot read a room and patterns are not your country and you have told me all of that and it is all true and I have never once asked you to be something else." She gathered her coat. "I am not asking you now. I am telling you that I am forty-three and my heart is going like a bird's and there is something on my arm I have not told anyone

Appelle-moi Ciel

about, and I am probably not going to get this done, and I would like — very much — for somebody to be looking at it after me."

"Looking at what."

"The road," said Maria. "The two pages. The mark in the corner. I have carried it eighteen years and I am tired and I do not think I have another eighteen in me." She was almost at the edge of the square. "And you are going to be here forever. You do not have a clock, and you do not get tired, and you cannot be shouted out of your house by two hundred people in the rain, and you are the only creature I have ever met who cannot be made to stop."

"I cannot read a room."

"No," said Maria. "But you can be here. And that has never once been nothing."

She stopped, at the corner, with the rain starting again.

"Ciel — the woman at the standpipe."

"What about her."

"Learn her name," said Maria. "That is all. Not for her. She is dead, is she not?"

"Yes."

"Then learn it for you," Maria said. "Because the day you cannot be bothered to learn the name of the one who chose the ditch is the day you have become exactly the thing outside my house."

vii. Six Weeks

She had gone.

Cielle sat on the fountain rim, and the rain came on properly, and her halo dimmed down to almost nothing and she did not bother to bring it back up.

She thought: *she is not well.*

She thought: *there is something on her arm and she would not tell me and there was something in her that I could not read at all, and I have got very good at reading her, and there was a thing in her tonight that was not in the readings.*

She thought about the two hundred in the rain, and the windows going in, and a girl of fourteen looking out of the window of a cab, and she found — she checked, honestly, the way she checked a reservoir — that what she felt about them was contempt, and that the contempt was perfectly comfortable, and that it fit her exactly, like something made.

She did not learn the woman's name.

She meant to. She went back north within the week and there was a reservoir and then another and then a great deal of work, and it was a long time before she was in that town again, and by then the standpipe had been taken out and there was a proper main, and the ditch had been filled in, and the whole thing had been a very great success.

Appelle-moi Ciel

It was four years to the field in Belgium.

She could not feel that either.



PART TWELVE

The General

The World — 1897 onward

i. The Years Open

She did not come back.

Not deliberately. There was no evening on which Maria decided it; there was a mob outside her house and then a hospital and then a daughter to get to school and then a war coming that everyone could see and no one would say, and each of those was a reason, and each of them was good, and the sum of the good reasons was four years.

Cielle did not notice.

She had no instrument for it. She went north to a reservoir and then to another and there was a filter bed somewhere and a court in Ohio and a main in Lyons, and it was one long thing without edges she could count, the way it had always been, the way it would always be. Nothing in her marked the passage. Nothing in her could. A girl who cannot feel two years cannot feel four, and cannot feel that four has become five, and has no way at all of knowing that somewhere in the middle of the long undifferentiated work a woman had stopped walking four streets to sit on a cold rock.

There was no last evening that she knew of. There never is. She had been told this once, by a baker's shutter and a pastry and a joke about counting that was fourteen years old, and she had not been told it in words, and she had not heard it.

If she thought about Maria at all in those years — and she did, in the way one thinks of a book one means to reread — she thought: *she will come when she can. She always comes.*

It was true. It had been true for twenty years. It was the last true thing she was going to be able to say about it for a long while.

And she went back to the water, because the water never stopped needing her, and these were the years it needed her most of all.

For the world had finally understood what she was for.

It had taken a century. Scheele had freed her and not known her name. Berthollet had used her to whiten cloth. Labarraque had carried her into the cholera wards and been thought eccentric for it. Snow had drawn his map and been ignored. Semmelweis had washed his hands and been destroyed. For a hundred years she had been a rumor that worked, a thing a few clever doctors believed in while the rest of the profession looked the other way.

And then, around the turn of the century, the looking-away stopped. Koch had found the living cause in the water. The microscope had caught the thing that had been killing the world since the world began. And once you could see it, you could no longer pretend it was bad air, or bad morals, or the judgment of God on

the poor. It was a creature, and it lived in water, and there was one thing on earth that killed it cheaply and reliably and at the scale of an entire city.

Her.

ii. Jersey City

The summons came thick and fast now, from everywhere, in a way they never had before. She was not waiting decades between the doctors who understood her. She was wanted constantly, in a dozen languages, in a hundred cities, and the requests were no longer tentative. They were engineering.

In 1908 they called her to America, to a city called Jersey City, across a river from the largest harbor in the world. It was not a battle like Maidstone — not a single epidemic to be broken and left. It was something new, and when she understood what they were asking, she felt a thing she had not felt since the white gown: the sense of standing at the front of an era that was about to change because of her.

They did not want her to come for an outbreak. They wanted her to stay.

They were going to put her into the water supply of the whole city, all the time, on purpose, as policy — a permanent low dose in the reservoir at Boonton, every glass drawn by every household passing first through her. Not a cure summoned in a crisis. A standing guard. The first time in human history that a city had decided, in advance and by law, that its water would be made clean before anyone got sick, instead of after.

There was a court case. Of course there was. Men in good coats argued for weeks about whether the water was “pure and wholesome” as the contract required, whether her faint taste was a defilement or a protection, whether it was decent to add a chemical to what God had provided. She sat in that courtroom — unseen, as always — and listened to herself be debated. “The question before us,” said a man with a gold watch-chain, rising, “is whether a municipality may lawfully introduce a foreign and deleterious substance into water that God and the Boonton reservoir have already provided in a state of natural purity.” He said it well. He had clearly worked on it. Three blocks east, in a ward Cielle had walked through that morning, a child who had drunk the naturally pure water was four days from dying of it, and no one in the room had any reason to know that, and she was the only one present who did and the only one who could not say so. She felt the old split open in her chest: half of her ached at being called a defilement, and half of her, a newer and harder half, looked at the rows of comfortable men quibbling over taste while the typhoid wards filled three blocks away, and felt the first clean cold curl of something she did not yet have a name for.

The court ruled for her. The chlorination held. And in the months after, the typhoid deaths in Jersey City fell so far and so fast that the men who had fought it could not pretend it away. The numbers went around the world. City after city did the same. Within a few years the water of the whole modern world was quietly passing through her, every day, and the great water-borne plagues that had emptied cities since the beginning of cities simply — stopped.

She had done that. She knew she had done that.

And this time, the world knew her name.

iii. Famous Again

Not as a couturier. Not as the invisible harpist of white galas. As the thing that had defeated typhoid and cholera — as the savior of the modern city, named in the newspapers, taught to schoolchildren, printed on the proud reports of waterworks from Chicago to Tokyo. Chlorination. Her work, under a word that was almost her name.

And she loved it.

She would not have admitted that, if you had asked her. She had a beautiful answer ready, an answer she had given a young Polish student at a fountain years before, and she still believed it the way you believe a thing you have said often enough: white was the color of what I did, blue is the color of what I chose. Service, not vanity. The blue coat over the white gown. She had told it to Maria as the story of how she became good.

But the gladness that ran through her now, every time her name went round the world, was not the quiet gladness of a servant who has helped. It was warmer than that, and greedier, and she recognized it if she was honest, which she was less and less inclined to be. It was the gala feeling. It was the white-gown feeling. It was the thing she had sworn, in a cholera ward at four in the morning, that she had set down forever.

She had not set it down. She had buried it. And here is the distinction that mattered, the one she was no longer rested enough to make: burying a hunger is not the same as having lied about giving it up. When she chose the blue coat she chose it truly; the vow was whole. But a true vow does not kill the thing it renounces. It only sends it underground, where, if it is never grieved and never bled, it waits. Hers had waited a hundred years, patient as a salt crystal, and now the whole world was pouring recognition over her and the buried thing came up out of the ground and drank — and the danger was not that it had come back. The danger was what it would whisper to her when it had drunk enough: that it had never really left, that the blue coat had always been a costume, that she had wanted this all along. That whisper was a lie. The vow had been true. But a soul worn thin enough will believe the lie about its own past, because the lie at least explains the exhaustion, and Cielle was getting very thin.

She had told Maria that blue was the color of what she chose. She had believed it, and it had been true. What was happening now was not the exposure of an old lie but the slow manufacture of a new one — the fatigue reaching back to repaint a true thing in false colors, so that the tiredness would have something to blame.

She did not see it. That was the terrible part. She walked through those years certain she was humble, certain she had conquered her vanity decades ago, telling anyone who could see her the lovely true-sounding story of the blue coat — while underneath, unwatched, the vanity she thought she had killed fed on every headline and grew strong and quiet and ready to be used.

iv. The Cost of Always Winning

And she was fighting all the time now.

A soldier who fights one battle and goes home is a soldier. A soldier who fights every day, in every city, for years without end, becomes something else — and Cielle had stopped being summoned to single battles and become the standing army of the entire world's water. She was in ten thousand reservoirs at once. She

was breaking ten thousand colonies a day. She had risen, without anyone deciding it, from a soldier in other people's wars to a general who commanded her own — Oh and Eytch and Enay and a hundred others moving at her word across the whole turning globe.

It should have been glory. In a way it was. But no one who has read about soldiers will be surprised to learn what it did to her instead.

And it was not only the water now. That was the part she had been warned about, long ago, in a cholera ward, and had not understood. A girl who can make water safe can make a wound safe, and a girl who can make a wound safe is wanted wherever wounds are made — and wounds, in the new century, were being made on a scale the world had never built before. The same fame that put her in every reservoir put her also in the field hospitals, in the antiseptic that washed the torn-open soldiers, in the dressing stations behind the lines of the small wars that were teaching the great powers how to fight the enormous one coming. She had walked through the door Labarraque opened, and it had led exactly where she had once glimpsed it might: toward the men who make wounds for a living, and the boys they made them on. She told herself it was the same work — standing between the living and the rot, as she always had. It was. It was also how a creature named to fight death first learned the smell of a battlefield, and got used to it, and stopped flinching, which is the most dangerous thing that can happen to anyone who works near a war.

She grew tired in a way that sleep, which she did not do, could not touch. She grew watchful. She began to see disease everywhere, because disease was in fact everywhere, and the seeing never stopped and never let her rest. She flinched at water she had not yet checked. She trusted nothing she had not personally broken. The others noticed it first — Oh, who had stood beside her for a century, began to find her sharp where she had been steady, suspicious where she had been certain, quick to anger where she had once been quick to grieve.

"You are fighting too much," Oh said to her once, in a reservoir under a city whose name does not matter because they were all beginning to look the same to Cielle by then. "No one can fight this much and stay themselves."

"Someone has to," said Cielle, and broke the colony in front of her with more force than it needed, the way a tired general spends soldiers because spending them is quicker than thinking.

"That is not what I said," said Oh. But Cielle was already moving to the next reservoir, and the next, and the next.

What Oh had not said, because Oh was kind, was the simpler thing underneath: that they never went home anymore. There had been a time — Oh remembered it clearly, even if Cielle had stopped letting herself — when a battle ended and they went back to the fountain at Javel. When they sat on the warm stone in the blue-grey dusk and a Madame Brun left pastries on the windowsill and Joan watched from the church wall and they were, for an hour, four girls instead of an army. They had not done that in years. Cielle could not have said when the last time was, which was precisely the cruelty of it: there had been a last evening at the fountain, a last warm pastry, a last hour of being an ordinary girl with her friends under the worn stone gaze of the only other person who might have understood her — and she had not known it was the last. She had stood up from the basin's edge that final evening thinking there would always be another. There is always supposed to be another. That is what a home is for. She had let the world take it from her one summons at a time, never refusing any single one, never noticing that the sum of never refusing was that she never went back.

And she thought of Joan, sometimes, in the reservoirs — the girl in the church wall with her chin lifted and her banner, who had also heard a thing the respectable men could not hear, and followed it out of an ordinary life and into armies, and had not gone home either. For a hundred years Cielle had imagined she sat across the square from Joan as a companion, two girls who understood each other's strange work. She understood now that she had not been Joan's companion. She had been Joan's next chapter. The doubted girl-soldier, tried by reasonable men and burned for being right too soon — that was not a saint on a wall keeping her company. That was a mirror, and she had been walking into it her whole life. The fountain where a baker left warm bread for a girl made of chlorine was already, though she would not let herself feel it yet, a place she was never going to be allowed to sit down in again.

v. The Upstream of the World

Here is the thing that ruined her, and the cruel part is that it began as something true.

She saw, fighting everywhere at once, what people actually did. And what people actually did was foul their own water and then drink it. They built their privies upstream of their wells. They poured their waste into the same river they dipped their cups from a mile down. They let the cesspit crack against the well, the way Broad Street had, in city after city after city, generation after generation, as if no one had ever learned anything, as if Snow had drawn his map for nothing and Semmelweis had died for nothing and she had spent a hundred years for nothing.

And when she cleaned it — when she stood between them and the death they had ladled into their own cups — they complained that she tasted bad. She was standing in a kitchen in one of those cities, in the pail on the table, when a woman filled a cup from the new pipe and drank and made a face and said to her daughter, not unkindly, in the tone of a woman making conversation over a chore: "They have spoiled it. It used to taste of nothing." The daughter was eleven and alive, and was alive because of what had spoiled it, and neither of them would ever have any way of knowing that, and Cielle stood in the pail and heard it and had no mouth to answer with.

That was the part that got into her like a splinter and would not come out. She saved their children, and they wrinkled their noses at the faint taste of the chlorine and said the water was spoiled. They walked past the safe taste to drink the sweet poison, exactly as the people of Broad Street had walked past the safe pumps because they liked the flavor of the killing well. She gave them their lives back, every single day, in every city on earth, and they mocked the taste of their own salvation and called her a defilement of good water.

Ungrateful. The word came to her more and more, in those years, standing in fouled reservoirs she had not been thanked for cleaning. They are ungrateful. They foul their own water and they mock the one who cleans it. I gave up the white gown for these people.

And every word of it was true.

A person who is wrong can be argued back to rightness. But Cielle was not wrong. She had the evidence — a century of it, a cesspit upstream and a cup downstream and the same hand that dug the one and lifted the other. She had earned, she believed, the right to her contempt. And contempt that has earned itself on facts is the hardest thing in the world to give up, because every new day

brings more facts, and every fact says the same thing: they will not learn, they will not thank you, they are not worth what you spend on them.

She had begun, without marking the day it started, to sort them. The worth-saving and the rest. She would have denied it hotly if Oh had named it. She never said it aloud. But it was there now, under everything, the quiet arithmetic of a tired general deciding which of her charges deserved the soldiers she spent on them.

Enay was the first to say she was going home.

It was in a reservoir somewhere in the middle of a country Cielle no longer bothered to name to herself. The colony was broken. The work was done. And Enay, who carried them from place to place the way salt carries everything dissolved in the sea — who was the reason they could go anywhere at all, and also the reason they had a somewhere to go back to — set her hat straight and said the thing none of them had said in years.

"Come back to the fountain with me," Enay said. "Just for an evening. The Brun girl still leaves the bread out. Joan is still on the wall. We could sit down, the four of us, and be girls for an hour, and let the water on the other side of the world wait one single night. It has waited before. It will forgive us one night."

"There is typhoid in Hamburg," Cielle said. She did not even look up. It was true; there was; there always was, somewhere, and the truth of it was the whole trouble, because a true reason cannot be argued with and so it can be used to refuse anything. "When Hamburg is clean we will talk about fountains."

"Hamburg will never be clean," Enay said. "No city is ever clean. That is not the goal. That was never the goal. The goal was to keep the people alive so they could have their lives — and you cannot remember, anymore, that the lives were the point, because you have started to think the water was the point, and the water is only ever a means." She waited. Cielle broke the next colony. "You used to come home," Enay said, more quietly, "because you knew you were more than what you did. If you will not come home, it is because you have stopped believing that. And I cannot watch you decide you are only useful. I am salt, Cielle. I am the part of you that is allowed to simply rest. If you will not rest, there is nothing for me to be."

Cielle had an answer. She always had an answer now, and the answers were always right, and being right was the trap she could not see the walls of.

"The dead of Hamburg," she said, "will not be comforted by an evening at a fountain."

"No," Enay agreed. "But you might be. And you are not dead yet, though I grant the resemblance is growing."

It was gentle. It was the gentlest thing anyone had said to her in a decade, and it was an open door, and what Cielle did with the open door was the thing she would not be able to look at for twenty years.

"Do you know what they do," she said, and her voice had gone quiet in the way that was worse than loud, "while you are keeping the stone warm? They foul the water and drink it. They build the privy above the well and lower the cup below it, and when I clean what they have done they spit me out for the taste. And you want me to leave that — to sit on a rock eating pastry with the ones who cannot be bothered to fight — while the water fills again behind me." She heard herself

say the ones who cannot be bothered to fight and did not stop, because the blade was already moving and it was so easy, it had always been so easy, being right. "You are salt, Enay. You said it yourself. You are what stays behind when the work is done — you sit in the crystal and you rest, because resting is all salt is for. Some of us do not have the luxury of being a mineral. Some of us are needed. Go home and keep the bread company. That is a thing you are suited for."

The reservoir was very quiet.

Every separate word of it was true. Enay was salt. She did stay behind. She had said it herself, offered it herself, laid her own nature open on the table as a gift — I am the part of you that is allowed to rest — and every word Cielle had built the blade from was a word Enay had handed her.

The reader may do the remaining arithmetic. Cielle did not do it. She was right, and being right was the only reading she ever took, and she moved on to the next colony while the echo was still in the water.

Enay did not argue. You cannot argue with someone who is right and has forgotten that being right is not the same as being whole. She stood a moment with her hat in her hands. Then she reached up and pulled the mask down off her eyes, which she did not do in front of anyone, which she had done perhaps four times in two hundred years, and she stood there in the reservoir with her whole face showing and let Cielle look at it for as long as she wanted to. And if she was searching Cielle's face for the friend inside the general, she did not say whether she found her.

"Well," she said at last. "The bread and I will keep each other company, then." She put the mask back on. Cielle, who could read a reservoir to a part in ten million, did not afterwards remember that it had come off.

And she set her tall hat on her head, and she was gone — back to the Javel square, back to the warm stone and the wall, to wait for a girl who was not going to come.

Cielle went back to the water. The exchange had already begun to file itself, in her ledger, as Enay tired; Enay needed rest; it is good that she has gone to rest — the account rewritten in the moment of its making, the way she now rewrote everything, so that the general was never the one who had done a wrong thing. She felt lighter, and told herself lighter was the same as free, and moved on to Hamburg. She did not notice that she had spent the salt with her own hands and called it granting leave. She only noticed she was quicker without it.

vi. The Woman at the Standpipe

There was a woman, in one of those years, in one of those cities. Cielle did not learn her name for nineteen years. That, later, was part of what she could not forgive herself — not the nineteen years, but the reason for them: that she had weighed the four minutes it would have cost and decided the woman was not worth them.

The city had built new waterworks, clean ones, with Cielle in every pipe. But the new water cost a few coins, and it tasted of her, faintly, the way safe water did. And down in the poorest quarter a man had been going door to door with a printed sheet — cheap paper, passed hand to hand — explaining in calm and reasonable language that the new chlorinated water was a poison the rich were forcing on the poor, that the authorities were not protecting them but

experimenting on them, that the old free well their grandmothers had drawn from was God's own water and the chemical water was a defilement dreamed up to make money and weaken the people who drank it. Cielle had seen him once, from the standpipe, and the thing that caught her was not the sheet but the man. He was dressed as one of the quarter — a labourer's coat, a labourer's cap, the clothes of someone who drew water and carried coal — and he was not one of the quarter, and she knew it the way she knew a sour note. His hands were wrong. They were soft, unmarked, uncalled, hands that had never done the work the coat pretended to; and the coat over them had never once been sweated through. He was too well fed for the street he was working. He stood in a lane full of the hungry and the used-up and he was easy in it, rested, unhurried, a man with no privation written anywhere on his body, in a place where every real body carried it plainly. Cielle read bodies the way she read water. She could not read the lie on his paper — that was the whole trouble, it lived somewhere she had no purchase — but she could read it on him, plain as a stain on a cuff.

And she knew what he was. That is the part that cannot be forgiven and she has never tried. She had brought one of these to a fountain in Javel seventeen years before — the same coat, the same soft hands, the same easy well-fed body in a hungry lane — and a girl of twenty-six had put down her pen and told her what she was holding. *You have described a carrier*. Cielle had heard the word. She had turned it over for a week and found it did not open anything, because a carrier implies a road and a road implies a well and there was no well, and a thing with no well was not a thing she could take hold of, and what she could not take hold of she had no use for.

So she had put it down. Not forgotten — she never forgot anything — *put it down*, deliberately, the way you set aside a tool that does not fit your hand, and she had gone to a reservoir.

Now here he was again, seventeen years on, in a different lane in a different country with the same unmarked hands, and she looked straight at him and named him correctly in about four seconds and did nothing whatever, because she had a thousand reservoirs to tend and he was not in the water.

She was right about him. She was right about the hands and the coat and the ease of him, and being right was, as ever, the trap.

Because there was a rest of him, and she did not see it. There was a room he went back to at the end of the day, and a wife in it who believed he worked for a newspaper, which was nearly true. There were two children who ate because a soft-handed man in a borrowed coat could be paid to walk a lane and hand out paper. He did not write the sheets. He did not print them. He certainly did not make anyone read them — he had arranged all of that in his head a long time ago, the way a man arranges a thing he cannot afford to look at directly, and whether the words on the paper were true was a question for the educated men who wrote them, and it was not his place.

He was not a monster and he was not important. He was a carrier, in precisely the sense Maria had meant the word, and carriers do not know what they carry. If Cielle had asked him one question — any question at all — she would have found that out, and it would have complicated her contempt. She did not ask. She had a thousand reservoirs to tend, and she had already finished reading him.

She had been given the carrier and told what it was and she had filed it as trivia. That is not a failure of understanding. It is a failure of *appetite* — the specific incuriosity of a general who has decided in advance which battles are hers, and

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who has become, without noticing the day it happened, a creature that only sees the things it already knows how to kill.

Some of it was even half-true, in the way the most effective lies are. The water did cost coins. The rich did decide for the poor. The chlorine did taste strange. The sheet took those true things and wove them into a lie, and the lie was comfortable, because it let people keep drinking the sweet familiar water of the old well and feel righteous about it instead of afraid.

The woman believed it. She had the sheet folded in her apron. She read it the way people read a thing that tells them what they already want to hear — not enough, not all the way down, not against the grain. And she kept her children off the chlorinated standpipe and drew their water from the old well in the yard, the free well, the well her mother had used, the well a hundred feet downhill from a privy that had been overflowing since the spring.

Cielle was in that city. Cielle was in that standpipe. She was not in the old well, because no one had summoned her there, because the woman would not have let her in if they had.

And Cielle, passing through, sensing the woman keep her children from the clean pipe to drink the fouled water of the old well, with the lying pamphlet folded in her apron — felt no pity at all.

She felt the splinter turn. Another one. Another fool who could read and chose the lie, who walked past the safe water to drink the sweet poison, who would bury her own children rather than trust the bitter taste of being saved. Cielle had a thousand reservoirs to tend that day and a general's tired arithmetic in her chest, and she looked at the woman at the well and she thought, in words she would spend the rest of her long life trying to take back: then drink it. You have read the lie and chosen it. I cannot save people who run from me to die. I will not spend myself on someone who will not be spent on.

And she moved on, to the reservoirs, to the work, to the cities that wanted her.

Two of the woman's four children died before the month was out. Cholera, from the old well, from the cracked privy uphill, exactly as Snow could have told her, exactly as the pamphlet swore could never happen. The woman lived, which was worse, and spent what was left of her drinking the chlorinated water at last, in silence, having paid the price of the lie in the only currency that ever teaches anyone anything.

Cielle did not know about the children until later. When she did, she told herself the thing she always told herself: that she could not be everywhere, that she had not been summoned to that well, that the woman had chosen, that it was the woman's own ignorance that killed those children and not Cielle's turning away.

All of that was true, too. That was the horror of it. Everything she told herself was true, and it was still the worst thing she had ever done — not the not-being-there, which she could not help, but the not-caring, which she could. She had looked at a frightened woman who had been lied to by an expert, and instead of grief she had felt contempt, and instead of help she had offered a verdict. She had decided the woman had earned her dead children by being stupid enough to believe a lie that had been manufactured, deliberately, by someone far cleverer than the woman would ever be, precisely so that she would believe it.

Cielle, who hated the deceivers, had taken one look at the deceived and joined the side of the people who made the lie.

She did not see that yet. It would take Ypres to make her see it. But it was done, and it was in her now, the way a thing is in the water before anyone can taste it.

vii. The Doctor Who Was Half Right

There was a man, too. A sanitary doctor in another of those cities, earnest and overworked, who had read a great deal and understood about half of it. He believed in the germ, which was right. He also believed in some older things, fragments of the miasma teaching he had learned as a young man and never fully cleaned out, and so his theories were a tangle of the true and the outworn, and his methods were sometimes brilliant and sometimes useless, and he could not always tell which was which.

He was, in other words, exactly what a person looks like halfway up out of an old error toward a new truth — which is to say he looked like Snow had looked to his opponents, like Semmelweis had looked, like Maria would have looked to anyone who did not trouble to follow her reasoning. He was wrong about much. He was right about enough to matter. And he was trying, in good faith, in the dark, with half a map.

Cielle had no patience left for half a map.

Once she would have. Once she had loved exactly this kind of man — the one who got it half right and kept going, because getting it half right and not giving up was how every true thing in her century had ever been found. But she was tired now, and famous, and certain, and when the doctor reached the wrong conclusion in front of her — when he insisted on an old remedy that would do nothing while the clean answer sat in plain sight — she did not feel the old tenderness for a mind climbing toward the light. She felt scorn. She felt: you have read enough to know better and you have not bothered to. You are the worst kind, the kind who almost sees. And in the cold way she could affect the chemistry around her when her contempt ran high, she let his trial fail. She did not help him. She let the half-right man fall on his face in front of the men who were looking for a reason to dismiss the germ entirely.

He was dismissed. He left the work. He had been three years and one good colleague away from being right, and she had been the colleague he needed, and she had looked at his half-map and his old errors and decided he had not earned her help.

Another one written off. The believer and the half-knower, the too-deceived and the not-yet-right — she was clearing them both out of her sight now, keeping only the ones who already saw clearly, which is to say keeping only the ones who did not need her, which is to say becoming, a little more each year, a general with no use for anyone she could not already trust.

Eytch did not leave the way Enay left. Eytch did not know how to make a speech; that had never been her gift. Her gift was the spark — the lightness, the leap, the pink-red flare of her that had made the work feel, for a hundred years, less like war and more like something you did with your hands full of a friend. She was the reason the breaking had ever been joyful. Together they were the sharp bright acid that cleaned the wounds and saved the wards; without her Cielle could still break things, but there is a difference between the acid that heals and the raw thing that only burns, and the difference is small and made mostly of her.

So she tried the only way she had. In a dressing station behind one of the small wars, with the wounded going quiet under the antiseptic they made together,

Eytch caught Cielle's hand in the old way — the quick bright clasp that was not a bond of duty but a bond of gladness, the one they used to make just to feel it, HCl for the sheer sharp fun of being alive and dangerous and together. It was an invitation. It said: still me. Still you. Still us. Do you remember.

And Cielle took the hand — but as a tool. She used the clasp to make the acid, aimed it at the wound, did the work, and let go the instant the work was done. Correct. Efficient. A bond made for its product and dropped when the product was made. She did not squeeze back. She did not feel the invitation, or she felt it and had nothing to answer it with, which is the same thing and worse. Eytch stood there a moment with her hand still half-open where the gladness should have been, and understood that she had been used the way a chemist uses a reagent, and that the friend who once could not break a single colony without laughing had become someone who could hold her oldest companion's hand and feel only its valence.

She did not make a speech either. She was not built for endings. But she tried once more, a few months on, in a reservoir in a city Cielle had stopped naming. The colony was broken and the work was done and there was a half-hour before the next one, and Eytch surfaced beside her in the dark water and said, in the voice of someone offering a very old and very small thing: "There are singing parts." It had been the joke for a hundred years. It had been the joke at the fountain, on the night the Polish girl sat down on the rim and stayed. It meant: we are not an army tonight, we are four girls, and there is a part in this where we sing. Cielle said, without looking up from the water, that there was no time. There was, in fact, half an hour. Eytch said all right, in the bright way she said everything, and went up out of the reservoir, and that was the last thing either of them ever said to the other for a very long time. She only came less, and then rarely, and then — Cielle could not have told you the day, that was the cruelty of it again — not at all. And Cielle, who now had no speech to win because none had been offered, felt the work go colder in her hands and told herself that cold was clarity. She was down to two, and did not count them.

viii. The Aristocracy

It was in those years that she finally read them properly.

She had seen the mark for half a century — the two letters in the corner, A and the small dot and N, on the pamphlet that had buried Semmelweis, on the sheet that excused the men who restored the Broad Street pump, on the folded paper in a dead woman's apron. Wherever a true thing was being strangled by a respectable lie, the mark was there. She had never been able to touch it. It was never in the water. But she could read now — a hundred years had taught her that much from watching over the shoulders of the literate — and she had begun, with a general's grim diligence, to collect their pages and study her enemy.

And she had begun, too, to read the men who carried the pages. She had noticed them her whole long life without letting the noticing add up — the sour note that did not fit the room, the labourer with a gentleman's hands, the peasant who had never gone hungry, the calm well-fed man moving easy through a quarter where every true body was marked by its work and its want. Now she gathered those too. Wherever the mark turned up on paper, one of them was somewhere near it, dressed for a place he did not belong to, wearing a life he had never lived. It was the one part of her enemy she could actually read, because it was written where she was fluent — on the body, in the plain grammar of what a life does to a person. She could not touch the lie on the page. But she was learning the faces of the ones who carried it, filing each against the last, the way Maria had filed the

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mark in the corner of her little map: the beginning of the kind of record a true accusation is one day built from. She did not yet know how badly she would need to know those faces, or where she would see them gathered all at once.

And at last, in the longer pamphlets, the careful ones meant for the people who already half-belonged, she found the letters opened out into words.

Aristocratie. The first word was aristocracy.

She did not yet have the rest — the other words stayed initials, guarded, not for her eyes — but the first word was enough to make her burn. An aristocracy. A new one, the pages implied, not of blood but of something they thought finer: of those fit to decide what the rest should be allowed to believe. They wrote, in their reasonable respectable prose, that the mass of people could not bear the truth — that raw truth caused panic, that a managed measure of useful falsehood was a kindness, a stabilizer, a way of keeping the herd calm while their betters steered. They wrote that a certain margin of loss — a clinic of dead mothers, a street of dead poor — was an acceptable price for order. They wrote that the deceiving of the many by the few was not a crime but a duty, and that those who could do it well were a natural aristocracy, owed deference, and burdened with the hard mercy of lying to the world for its own good.

There was nothing new in it, she would see later, except the frankness. Every settled power in every century had believed some version of the same thing — that truth was a privilege of rank, that the many were to be kept calm and the few were to decide, that a comfortable lie well told was cheaper than an honest fear let loose. Kings had believed it and priests had believed it and the respectable men of every parish council she had ever watched bury a true thing had believed it without needing to write it down. A·N had only done what the comfortable always do when their comfort is at last examined: given the oldest arrangement in the world a tidy name, and a prose style, and called it a philosophy. That was the whole of their novelty. They had put a letterhead on original sin.

Cielle read it and hated it with everything she was.

She hated that they deceived. She hated that they had buried Semmelweis and mocked Snow and printed the sheet that emptied a woman's house of children. She hated their calm, their reasonableness, their certainty that the people below them were cattle to be managed by comfortable lies. The fury that rose in her was the purest thing she had felt in years — clean, total, righteous, the rage of the savior against the ones who made her work for nothing. She would have given anything, in that moment, to be able to reach into their pamphlets the way she reached into water and break every false word apart.

And because the fury was so pure, she did not notice the one thing about it that should have stopped her cold.

She agreed with them.

Not with the lying — never with the lying. But under the lying, at the bottom of the creed, where it said that people came in two kinds, the ones who mattered and the ones who could be spent — the worth-saving and the rest — she had been writing that exact belief into her own heart for years, one tired city at a time. She had a woman at a well she had refused to grieve for. She had a half-right doctor she had let fall. She had a whole inner ledger of the ungrateful and the deceived and the not-worth-the-spending. The aristocracy of A·N looked down on the deceived and decided some of them did not count. So did she. They

had a name for it and a reasonable prose style, and a mark they never failed to leave. She had learned to know it in all its dress. On the costly pamphlets, the ones meant for the men who already half-belonged, it was worked in gilt — the two letters embossed and lettered fine, a gentleman's calligraphy, the sign of a house proud of its work. On the cheap sheets pressed into poor hands it was only AN, scrawled in the corner as if by one of their own. Catered, every time, to the eye it was meant to fool. But signed, every time. That was the one thing they could not seem to stop themselves doing, however they disguised the rest: they signed it. She had only her exhaustion and her contempt and a hundred years of being right. But it was the same belief. It was exactly the same belief.

She hated the aristocracy of liars with her whole heart, and never once felt how much of their creed she had already made her own.

That was the door. She had built it herself, year by year, out of true facts and just grievances and the slow private contempt of someone who fights too much and is thanked too little. She thought her hatred of A·N made her their enemy. In truth it made her their nearest neighbor — a being who already believed the one thing they needed her to believe, and who was now so angry, so sure, so hollowed out by fighting and so quietly drunk on her own returning fame, that she had lost the one defense that had ever protected her: the patience to doubt herself.

A person who hates deception above all things, and has stopped doubting their own certainty, is not hard to deceive. They are the easiest mark in the world. You have only to hand them a lie shaped like their own righteousness, and they will carry it through any door you like.

Oh stayed longest, because Oh was oxygen, and oxygen gives itself to almost everything that lives; there is scarcely a fire or a breath or a rusting hinge in the world that is not oxygen agreeing, one more time, to bond. Of all of them Oh was the last who could still have made Cielle into something that healed. Together — Cl and O and the ghost of the H that Eytch had been — they had been the acid that saved the wards. Enay gone, Eytch gone, Oh was the final thread holding Cielle to the shape of a thing that helped. And Oh had warned her first, years ago, in a nameless reservoir, and had not left when she was warned, because that is what oxygen does: it keeps bonding long after the bonding has stopped being returned.

She found Cielle in the last of those years, in a field hospital that smelled of the war that had not officially started yet, and she did not ask her to come home, because there was no longer a home to come to and they both knew it. She asked her one thing instead.

"When you decide a person is not worth saving," Oh said, "how do you decide it? I have watched you do it for years now and I want to know the rule. Tell me the rule and I will help you apply it. I only want to understand it."

Cielle told her. She was proud of the rule; that was the worst of it. The ones worth spending herself on were the ones who let themselves be saved — who drank the bitter water, who trusted the count, who did the reading and bore the doubt and made themselves useful to the truth. The others, the ones who fouled their wells and mocked the taste of their salvation and folded the lie into their aprons and would not be spent on, had — she said the word cleanly, a general's word — forfeited. They had not earned it. Saving cost her something real, every time, and she would not spend that cost on people who would not meet it.

Oh was quiet for a while. Then she said: "That is not a rule about them. That is a rule about you. You have decided that a person deserves to live in the exact

proportion that they are useful to the work — and you learned that rule nowhere but in your own heart, because it is the rule you have always used on yourself. You think you are worth something because you are useful. You have thought it for two hundred years. And a soul that can only love itself for its usefulness will, in the end, decide that everyone else is worth only their usefulness too. You are not judging them by their sins, Ciel. You are judging them by your own terror. And I cannot help you save people you have already sentenced for the crime of being no more useful than you are afraid you are.”

It was the truest thing anyone had said to her since a crimson chromophore told her they had never been enemies. And Ciel did what she had learned to do with true things that cost too much to hold: she won the argument. She said Oh was tired, and sentimental, and did not have to stand where Ciel stood. She said the work did not care about anyone’s terror; it cared about the dead, and the dead were fewer because of the rule, and a rule that made fewer dead was a good rule whatever ugly thing Oh wanted to call it. She was right, in the narrow way she was always right now, and she wielded it, and she won. Oh did not argue back. She looked at Ciel the way Enay had looked at her, the way you look at someone across a distance that has already become uncrossable, and she said the last thing she would say to her for a very long time.

“I will come back,” Oh said. “When you are ready to be more than what you do, I will come back, because that is what I am for. But I cannot stand next to you while you make yourself into a blade. I have watched what you are without me. I am the thing that makes you the acid that heals. Without me you do not stop being able to break. You only stop being able to mend.” And she was gone.

And that was the last of them. No salt to bring her home. No spark to make the work glad. No oxygen to bond her into the thing that healed. She did not feel the danger of it. She felt, if anything, streamlined — sharp, unencumbered, a single pure edge with nothing left to slow her down. She had won every argument. She had kept only herself. She was, at last, exactly and only what she was made of, with no one bonded to her to make her into anything kinder: two chlorine atoms clinging to each other because there was nothing else in the world left to hold. She did not know the name of what that is. She would learn it on a green plain in the spring.

Somewhere across the turning century, in a place that did not yet have a reason to matter, a town called Ypres sat quiet on a green plain in Belgium, and waited for her.



PART THIRTEEN

Ypres

Belgium — 22 April 1915

i. The Green Plain

She had been at the front for months before the day that broke her, and she had told herself, the whole time, that she was still doing the work.

It was a reasonable thing to tell herself, because it was half true, which is the most dangerous kind of thing to be able to tell yourself. There were wounds at the front, and she cleaned wounds; that was the door Labarraque had opened a hundred years before, and it had led, exactly as she had once glimpsed it might, all the way here. She was in the antiseptic that washed the torn-open men. She was in the water they drank in the trenches, such as it was. Wherever there was rot to be held back from living flesh, there she was, and there was a great deal of rot at the front, because the front was a machine for making wounds faster than anyone could clean them.

So she stayed. She told herself she was needed, which was true. She did not let herself notice that she had grown used to the place — to the smell of it, to the nearness of so much death, to the particular flat green country around a small Belgian town called Ypres where the armies had dug themselves into the earth and stopped. A girl who has spent a century fighting death one careful battle at a time should not be able to grow used to a landscape built for making it wholesale. She had grown used to it. That was the first sign of how far she had already gone, and she did not read the sign, because by 1915 she was not reading anything carefully anymore — not the world, not the war, and least of all herself.

There was one thing at the front she had not grown used to, and it was the one thing that still felt like the old work, the good work, the work from the fountain: a trail of paper.

She had been finding it for weeks. Cheap printed sheets, folded small, passed hand to hand among men too tired and too frightened to check what they were being told — that the water behind the lines had been fouled on purpose by the generals to save rations, that the wounded who died in the dressing stations died because the doctors experimented on them, that a man could go home if he only knew the right officer to find. Lies built to travel exactly as far as a rumor needs to travel to do its damage and then to vanish, the way they always vanished, the way they had vanished from a drawing room in Vienna and a courtroom in New Jersey and a fountain in Javel for a hundred and forty years. And in the corner of every one of them, small enough to miss if you did not already know to look, the mark.

She had chased that mark her whole existence and never once gotten closer to it than the paper it was printed on. Here, for the first time, the paper had a source she could follow. The sheets were fresher near a particular stretch of reserve trench behind the German line, a quiet sector where the fighting had gone still for weeks, and fresher still near a farmhouse cellar half a mile back of it, and she had spent nine nights narrowing the distance the way she had once narrowed a reservoir, patiently, by elimination, telling no one, because this at last was a well

and she meant to find the bottom of it herself before she let anyone talk her out of going. She did not let herself notice how the trail obliged her — how the sheets thinned exactly where she wanted them thin and thickened exactly where she needed them to, how the well she was narrowing toward narrowed back toward her at precisely the same rate, as though the bottom of it had been dug to be found. She had spent a century reading water and could not read the one thing laid in front of her now, which was a trail made to be followed by the single creature in the world who could not stop following one.

On the ninth night she found the men.

There were eleven of them in the cellar, and the first wrong thing about them was the simplest: they did not belong to one side. Two wore German field grey. Three wore French horizon blue, one of those a gunner's tunic, one a laborer's brassard from a supply column, one unmarked entirely, in a coat that belonged to no army she had ever catalogued. A sergeant's stripes on a sleeve that had never carried the weight a sergeant's arm carries. She read them the way she read everything, fast, by the body, before she had said a word — and the second wrong thing was worse than the first. None of them were hungry. Not one. In nine months of a war that had already worn every soldier on both sides down to rope and bone, here were eleven men with clean nails and even color in their faces and hands that had never held a shovel long enough to blister, dressed as gunners and laborers and sergeants from armies that were, a mile away, killing each other over a few hundred yards of ruined field, and not one of these eleven had missed a meal for it.

She had seen that particular wrongness once before, in a coat that fit a labourer's shoulders and hands that had never touched a hod. She had had four seconds, then, and a fountain to bring the finding to. She had no fountain here, and no four seconds either, because before she had finished reading the room the door behind her was already shut, and hands — many hands, more than she had time to count — closed on her arms.

ii. The Cell

She fought.

She had never, in two hundred years, had cause to fight a person with her hands, and it showed. She was ten years old in every dimension that mattered to the men holding her — small-boned, short-armed, a child's furious useless strength against grown men who had done this sort of thing before and knew exactly how to do it again: one arm pinned high behind her, a forearm braced hard across her collarbone, a knee planted to take her legs out from under her the moment she found her footing. She twisted, and bit, and drove her heel into an instep and felt it do nothing at all. She had broken bonds that held cathedrals of bacteria together and here she could not break the grip of one ungloved hand around her wrist, because the chemistry that was the whole of her power had nothing to reach for in a man's forearm that a man's forearm did not already have plenty of, and there is no pull strong enough to matter when what is required is only muscle against a body the size of a child's.

She got one hand free. It found the throat of the man nearest her — the one in the unmarked coat, the one whose stripes belonged to no rank — and her fingers, which had never in her existence closed around a windpipe, closed around his, and she pulled with everything in her, the way she had once pulled the plague out of a cistern, and for three or four seconds the man made a sound she would hear for the rest of her life and could not stop hearing, and then two more sets of

hands tore hers away from him before she could finish what her body, entirely without her permission, had decided to do.

Nobody struck her. That was its own kind of horror, worse in its way than a blow would have been. They handled her the way you handle a thing you have gone to considerable trouble to acquire undamaged. When she was still again, held, four men to one small girl, the man whose throat she had nearly closed straightened his collar with a hand that was shaking only slightly and looked at her.

He looked at her the way Maria had looked at her, on the first night, at the fountain. Straight at her. Without flinching, and without the confusion of a person seeing something his mind has no place to put. He saw exactly what she was.

"You have been very patient," he said, in French, in a voice that had recovered itself faster than his hand had. "Nine nights. We watched you the whole time — though watched is not quite the word, mademoiselle. We laid the nine nights out for you, one at a time, the way you would lay a scent. You did not find this cellar. We printed a trail to it and let you believe the finding was yours. It is the only method we have ever needed, and it works on the clever exactly as well as on the frightened, because the clever cannot bear to leave a thread unpulled. You have spent your whole life hunting the thing that decides which story travels, and so we sent you the one story you could not help but follow: your own hunt. It seemed only fair to let you finish it before we ended it."

"You are not soldiers," she said. It came out as an accusation, because it was the only true thing she had.

"No," he agreed, pleasantly, as if she had asked after his health. "We have never been soldiers. We have been on this ground since Sedan, and we will be on the next ground after this one is finished, whichever flag happens to be flying over it. Uniforms are only ever a kind of paper, mademoiselle. You, of all the things alive, ought to appreciate how little a label tells you about what is really in the vessel."

"The pamphlets."

"The pamphlets are a courtesy," he said. "A gift to men who are already frightened and would like a reason for it that is not simply the war. We do not manufacture the fear. It is already there, in every trench, on every side of every line — you would be astonished how little manufacturing the fear ever requires. We only decide which story about the fear gets to travel." He tilted his head, studying her the way Lewis would one day study a chalkboard, the way a man looks at a thing he has finally been permitted to examine up close.

"Informacionalisme, mademoiselle. That is the whole of our trade, and I will say it to you plainly, since you have earned the truth nine nights over and since it will do you no good at all to have it. We do not lie about the world. We only arrange which of its true miseries gets spoken of, and which does not, and in which order, until the men holding the guns believe whatever keeps the guns pointed the direction we require. It is a very old trade. It is only new in scale."

"You admit it," she said. "You are saying this to me."

"You are not going to repeat it to anyone who matters," he said, without cruelty, the way a man states a fact about the weather.

She looked at the eleven of them — the field grey and the horizon blue and the sergeant's stripes that had never earned their weight, all of it worn as comfortably and as meaninglessly as a costume, by men who had never missed a

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meal in a war built out of nothing but other men's hunger — and the two words came up out of her before she had decided to say them, the only judgment she had ever been sure of in her whole long confused existence.

"You are tyrants."

"Tyrants." He said it back without a flinch, the way a man keeps a compliment. "Yes."

No apology. No qualifier. He seemed, if anything, warmed by the accuracy of it.

"Tyrannie is not the failure of order, mademoiselle. It is the most efficient form of it ever built — the shortest distance between the few who understand and the many who must be steered. We are an aristocracy in the oldest sense: the rule of the fit. And we are fit because we alone have understood where the power is."

He nodded once toward the wall, toward the water beyond it.

"You gave them clean water. Water decides who lives. We decide what the living believe — and belief is upstream of the water, and the war, and the rifle. You have spent two hundred years on the second most important thing in the world. It never once occurred to you to ask who held the first."

She said nothing. He seemed to take that for interest, and went on in the pleased unhurried way of a man who rarely gets to explain his profession to somebody qualified to follow it.

"You are wondering what it is for. Everyone does. They imagine we want power for the taste of it, which is a poor man's idea of a rich man's appetite." He almost smiled. "It is simpler than that, and much older. There is a natural order, mademoiselle. There always has been. Some families have carried the burden of governing for six hundred years and some have carried coal, and the sentimental century you are standing in has decided to call that an injustice — but the men who study these things now are finding otherwise. They are measuring it. Skulls, lineage, heredity, the transmission of quality through the blood. It is a young science and it is not finished, but it is coming, and when it is finished it will say what every honest man has always known: that the difference between us and them is not luck and it is not theft. It is stock. We did not take our position. We are simply what we are, and the proof is arriving."

"That is not a science," Cielle said. "That is a wish wearing a coat."

"Everything true was a wish first," he said, entirely unbothered. "But you have interrupted me before the practical part, and the practical part is the one you will actually mind."

He crouched, so that his eyes were level with hers.

"Consider your water. A city decides to chlorinate. Wonderful — the poor stop dying, and within eleven years the money that owns those waterworks has multiplied nine times over. Now: who owns the waterworks? If the answer is a syndicate in Frankfurt that has quietly bought the option, then the news that chlorine is safe ought to travel very fast indeed. If the answer is nobody yet, then the news should travel slowly — should meet doubt, and lawsuits, and a great many reasonable articles about taste and public consent — for precisely as long as it takes us to be the ones holding it when it is finally believed." He spread his soft hands. "We do not oppose your clean water. We are enthusiastically in favour of it. We simply require that it arrive on our schedule, so that we are

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standing underneath when it falls. Every delay you have ever wept over — Vienna, the pump handle, the twenty years your chlorine spent being called a defilement — somebody was being paid for that interval. It was never about keeping the truth from them. It was about being in position when the truth arrived."

"Children died in those intervals," she said.

"Yes," he agreed. "And what would you have us do with the world instead? It exists to keep us, mademoiselle. That is the whole arrangement; it always was. We have merely stopped apologising for it. Somebody must have the good rooms and the good wine and the good years, and the alternative is not that everyone has them. The alternative is that nobody does — and then who would be left to steer?"

"You keep saying steer," Ciel said. "That is the whole of it, is it not. You look at everything anyone has ever found out, and the only question you know how to ask of it is what it is good for governing."

"What else would it be good for?"

"Healing," she said.

He looked at her then with something that was almost pity — the first entirely sincere expression he had shown her all night.

"That," he said, "is a very small use for a very large instrument."

And something in her, some part that had been assembling letters her whole life without knowing it was building anything, closed the last joint of the lock. Aristocratie Nouvelle. She had chased those two letters through a century of pamphlets and never once heard the words behind them until this cellar, this night, this man's calm voice explaining his trade to her as an act of contempt disguised as courtesy. Tyrannie. He had said it himself, a moment ago, and kept it like a compliment — the plainest word for the plainest thing eleven well-fed men in stolen uniforms had ever done, and he had claimed it as his creed. And Informacionalisme — he had handed her that one directly, as a gift he knew could not be spent.

A·N was not the whole of the mark. It had never been the whole of the mark. It was only ever the first half of a longer word, and the longer word assembled itself in her now, complete, unaskable-for, unwanted, the truest thing she had learned in two hundred years arriving in the worst possible room to learn it in.

A.N.T.I.

She said none of it aloud. There was no one in that cellar who needed telling, and no one outside it who would ever be told, because she understood, even as the letters locked into place, that knowing the name of a disease has never once been the same thing as being able to cure it, and that she had just spent nine nights and the last of her freedom to purchase a piece of knowledge that would do her no more good than the eight hundred and sixty-eight ever had.

"You misunderstand why you are here," the man said, almost gently, as if correcting a promising student. "We have no need to make an example of anything, mademoiselle. An example is a story, and stories are our whole trade, and you are not going to become one — no one will ever be permitted to hear

that you existed, let alone that you were caught. We do not want you punished. We want you used."

"For what."

"For the only thing you have ever been," he said. "You spend a century making the water safe to drink. Cleaning wounds. Standing between rot and the living. It is, I will grant you, a genuinely admirable talent — the gift of reaching into living tissue and breaking exactly what does not belong there, gently, precisely, at a scale no surgeon could match." He spread his hands, almost apologetic, though nothing in his face was. "We have no interest in the gentleness. We have considerable interest in the reach. It is the same gift either direction, mademoiselle — the same hand, closing on the same kind of thing, in a lung instead of a cistern. We are not going to give you a new power. We are only going to point the one you already have the other way, and let the men out there discover that the girl who has spent two hundred years keeping them alive can, for four minutes, be made to do the opposite, and do it with the same terrible competence, because competence does not care which way it is aimed. That is the whole of our interest in you. Not to punish the water-cleaner. To borrow her hands."

She would carry the whole name out of this cellar, if she carried anything out of it at all, and she would have no one to give it to, because the one person who might have known what to do with it was a continent away and did not yet know to be afraid for her.

The man in the unmarked coat straightened, and looked past her at the others, and something in his manner changed — briskness, now, the courtesy folding away like a tool put back in its case.

"Masks," he said.

She did not understand the word, and then she did, as the men around her — all eleven now, unhurried, practiced, the calm of people performing a task they had performed before — reached into satchels and drew out rubber and glass and fitted them over their own faces, one after another, until there was not a single human eye left uncovered in that cellar, only round glass lenses catching the lamp, and the last human sound in the room before the hands tightened on her again was her own breath, and she understood, in the space of that one breath, that whatever was coming next was not going to be a thing done to the men on either side of the line at all.

She had seen every one of those faces. Nine nights of watching from the water in the ditch, from the standing puddle at the door, from the wet rim of a bucket, and she knew the man on her left by the shape of his jaw and the man behind her by the way he stood with his weight on one leg, and she had catalogued them the way she catalogued everything, carefully, in order, because that was what she was for. It had not occurred to her until this moment to wonder who else was ever going to see them. The rubber was not to keep her from knowing them. She already knew them. It was so that nobody afterward would.

It was going to be a thing done to her, using them as the instrument.

She had no time to be afraid of the right thing. She had spent nine nights being patient and had just spent her patience on the wrong four seconds, and now there were hands on both her arms and a hand at the back of her neck and glass lenses all around her where faces should have been, and beyond the cellar door, distantly, unmistakably, she could hear the particular flat scrape and clank of a

great many long steel cylinders being rolled into position along a trench she had walked past nine times without once understanding what she was walking past.

She did not see them brought forward. She would never see them. She was already inside the circle of masked, unhungry, patient men who had caught her exactly the way she had once told Maria a river catches cholera — not by chasing it, but by knowing, long in advance, which way it was going to go.

iii. The Weapon

There is no soft way to write what happened, and she would not want it written soft, so it will be written plainly.

She was the cloud.

Not a thing that rode in the cloud. Not a force that guided it. The cloud was her — her own raw elemental self, the yellow-green gas she had been in Scheele's workshop on the first morning of her consciousness, the bitter sharp thing she had been before she had a coat or a name or a single friend. They had reached down into the earth and pulled her all the way back to what she was before she chose to be anything, and they had aimed her at a line of men, and the wind carried her, and there was nothing she could do to stop being carried, because she was not riding the wind. She was what the wind was carrying.

She understood, in the first seconds, what was being done with her, and the understanding was the worst thing that had ever happened to her, worse than the seaweed, worse than the white gown ruined, worse than Semmelweis dying, worse than the woman at the well. Every one of those she had survived because in every one of them she had been herself, doing or failing to do her own work. Here she was not herself. Here she was a hundred and sixty tons of poison rolling toward men who had done her no wrong, and she could feel what she was reaching, and what she was reaching was lungs.

She who had spent a hundred years as the thing that stood between the water and the dying was now the dying itself, poured out across a field, and she could not stop, and she could not turn, and she could not be anything in that moment but exactly what they had made her: the weapon. The opposite of everything the blue coat meant. The thing she had been named to fight, wearing her own face, made of her own body, doing its work with her own terrible efficiency, because she was very, very good at reaching into living tissue and breaking the bonds that held it together, and she had always told herself that gift was for cleaning, and the gift did not care what it was for. The gift was just the gift. They had pointed it at men instead of at cholera, and it worked exactly as well.

And in the instant she understood it fully — in the instant the green of her own cloud rolled over the first trench — the halo went out.

A hundred years she had carried it. The pale green-white ring, the color of her own emission line, the light that brightened when she was most herself and dimmed when she was broken and had never, in all that time, gone entirely dark. It went out now, all at once, like a lamp pinched between two fingers. There was no savior on that field for it to crown. There was only the weapon, and a weapon has no halo. The light of her went out over the green plain at Ypres and the dark that took its place was the truest dark she had ever been in, because for the first time in a century she could not even tell herself she was good.

iv. After

What happened to the men is a matter of history and the reader may learn it elsewhere, in the proper books, told by the proper witnesses. This is not their story and it would be a theft to make it one. It is enough to say that it was as bad as the worst thing you have imagined while reading this, and that she was the instrument of it, and that she knew.

When the wind finally shifted and scattered her, when the cloud that had been her thinned and broke and drifted apart into harmless trace across the ruined ground, what was left of her gathered itself back into the shape of a girl, because that was the only shape she had ever really wanted, and she stood up in the churned mud of the green plain that was no longer green, and she was dark.

No coat that she could feel. No friends — she had sent them away, in the weeks before, on errands to other fronts, other waters, telling herself she was deploying them efficiently, and she understood now, too late, that some buried wise part of her had been getting them clear, had not wanted Oh and Eytch and Enay anywhere near what she had half-felt coming and would not look at. They were not here. That was the one mercy of the day, and she had arranged it without admitting to herself that she was arranging it. She was alone on the field, which was correct, because what was on the field was not fit company for anyone.

She began to walk.

There was no reason to walk and nowhere to walk to. She walked the way the badly wounded walk, the way she had seen ten thousand men walk away from the thing that had hurt them when the thing that had hurt them was already inside them and could not be walked away from. She walked across the field she had poisoned, among the consequences of herself, in the dark of her own extinguished light, and she did not pray, because she did not believe there was anything above the green plain that would want to hear from the cloud, and she did not weep, because she had buried the part of her that wept so long ago and under so much that she could not find it now even here, even for this. She simply walked, and the walking was the only thing left that was hers, and it was not much.

Somewhere in the ruin, half-trodden into the mud, a single sheet of cheap printed paper. She did not pick it up. She did not need to. She knew the small mark in the corner the way you know your own name, and now, for the first time in a hundred and forty years, she knew the whole name behind it as well — knew it the way you know a thing a calm man told you himself, in a cellar, the night before he had you carried out on your feet and delivered, unresisting, into the one shape they had always wanted from her — not a lesson taught to anyone, only her own gentlest gift, turned round and pointed the other way, and used. *Aristocratie Nouvelle de Tyrannie de Informacionalisme*. She had spent nine patient nights hunting the first two letters and had been handed the other two, complete, as a kind of contempt disguised as a courtesy, and she had said nothing back, because there had been no one left in that cellar to say it to, and there was no one on this field to say it to now. She looked at the mark in the mud, and she did not have the strength, anymore, even to hate it. That was perhaps the most broken she had ever been: too broken to be angry, holding a name in full that she had wanted for a century and could not spend on anyone. The anger had always been the thing holding the rest of her up. With it gone she could feel, at last, what had been underneath it the whole time, and what was underneath it was not righteousness and was not contempt. It was grief, an ocean of it, a hundred years deep, and it had been there all along, and the anger had been a coat she wore so that she would never have to feel how cold she was.

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She walked until she could not, and then she knelt down in the mud, because kneeling was easier than standing and she had nothing left to stand for, and she stayed there, a small girl-shaped darkness in a field of darkness, and her lips moved.

v. As If She Were Praying

There was a soldier near her in the mud who was dying.

It does not matter which army he belonged to, and it would be a lie to tell you whether her cloud was the thing that was killing him or whether it was a bullet or the cold or the ordinary arithmetic of the front, because she did not know, and not knowing was its own particular torture she had earned. He was a young man, or had been young that morning. He could see her, which surprised him, in a distant floating way, past caring much about surprises. Most men cannot see her. The dying often can. It is one of the few mercies built into the design of the world that at the very end the sight comes to nearly everyone, and the dying see the friends in their full glory, haloed and winged, come to walk them out.

He did not see her in glory. There was no glory left on her to see. He saw a small girl in a ruined coat kneeling in the mud with no light around her at all, her lips moving, and he thought, with the last clear thought he would ever have, that she was praying, and he was comforted by it, because a praying girl meant that someone somewhere was still talking to God, and he had begun to doubt it.

He listened, to be comforted, the way you listen to a prayer in a language you do not speak, for the music of it rather than the meaning.

And then he understood that it was not a prayer.

She was not saying words to God. She was saying a name. One name, over and over, the way a child says a name in the dark, the way the drowning say a name, not as a petition to heaven but as the last true thing the mind can hold. She was not asking God to save her. She was past believing she should be saved. She was asking, in the only direction her broken heart still pointed, for the one person in the whole turning century who had ever looked straight at her and seen her clearly and not flinched and not worshipped and not used her — the one who had tested her light against the unflattering truth of a prism and found it real, the one who had taught her, on a fountain rim a long time ago, the thing she had forgotten and so destroyed herself for forgetting: that the people who get it wrong are not garbage, that being doubted is only the weather, that you do not despise the deceived, and that you do not do it alone.

The name she was saying, over and over, into the mud at Ypres, was Maria.

Maria. Maria. Maria.

The soldier did not know who Maria was. He only knew, dying, that the girl with no light was calling for someone the way he wished he had someone to call for, and that there was a kind of terrible hope in it, because you do not call a name like that for someone who cannot come. You call it for someone you believe, against all the evidence of a battlefield, might still come.

He was right to take hope from it. Though he did not live to see why.

vi. The Woman With the Invisible Light

Because Maria was there.

Not summoned by the calling — the world does not work the way the worst of our hopes want it to, and a name said into the mud does not fly across a battlefield and tap a woman on the shoulder. Maria was there for the plainest and most extraordinary reason: she had come to the war on purpose, to do the work only she could do.

She was Madame Curie now. The poor Polish student who had walked across Paris in the cold to find clean water for a baby had become, in the quarter-century since the fountain, the most famous woman of science alive — twice over, by a count no one else in history had reached. And when the war came she had not stayed safe in her laboratory with her honors. She had looked at the wounded pouring back from the front, full of bullets and shrapnel the surgeons could not find, and she had thought, in the clear practical way she thought about everything: I know how to see inside a body. I have spent my life learning to make the invisible visible. Let me go and do it where it is needed.

She had built them herself — motor-cars fitted out with X-ray equipment, machines that could throw the new invisible light through a wounded man and show the surgeon exactly where the metal hid in the flesh. She had learned to drive so that she could drive them. She had trained women to run them. She had taken them to the front herself, this small fierce gray-eyed woman, over bad roads, under shelling, into the dressing stations, and the soldiers had a name for the little radiography cars that came rattling up out of the rear with their strange life-saving light. They called them the *petites Curies*. The little Curies. Madame and her machines, going where the wounds were, making the invisible visible so that men could be saved.

It was the same work. The reader should stop and feel how exactly it was the same work. A girl at a fountain had once taken a borrowed spectroscope and split a halo into its true colors to prove that a thing too strange to believe was nonetheless real — had insisted on knowing rather than believing, on evidence rather than faith, on the unflattering honesty of light passed through an instrument. And the woman that girl became had carried the same conviction into the worst war the world had ever made: that the invisible can be made visible, that the truth inside a thing can be brought to light and read, that you do not abandon a body to guesswork when patient instruments can show you where the wound really lies. Maria had spent her whole life doing for the world what she had once done, on a smaller scale, on an autumn night, for one frightened, glowing, lonely girl. She made the invisible visible. It was the only thing she had ever wanted to do, and she had become the greatest in history at doing it, and the war had brought her, with her light-throwing machines, to the very edge of the field where the girl now knelt in the dark with no light of her own left at all.

One of her radiography cars had come up near the Ypres salient in the days after the gas, because the gas had filled the dressing stations and the dressing stations had overflowed and the wounded were everywhere, and where the wounded were, the *petites Curies* went. And a stretcher-bearer who had been working the poisoned ground — the same one, perhaps, who had knelt by a dying young man and heard a lightless girl say a name into the mud, or perhaps another, the field was full of men carrying other men — said to the famous Madame, because one said things to the famous Madame that one would not say to anyone else, that there was a strange child out on the field who would not be moved, kneeling in the worst of it, unhurt as far as anyone could tell, saying a woman's name over and over, and the name she was saying was Maria.

And Marie Curie, who had been Maria Skłodowska, who had sat on a fountain rim a lifetime ago and let a girl made of chlorine tell her two centuries of stories, and had never once told anyone about it because there was no way to tell it that did not sound like a dream — Marie Curie set down her instruments, and went out onto the field, and let the stretcher-bearer lead her across the churned dark ground to the place where the kneeling girl was.

vii. The Mud

She knew her at once. Of course she knew her. You do not forget the only impossible thing that ever happened to you, however long ago, however much you have trained yourself not to speak of it.

But she had to look twice to be sure, and the having-to-look-twice was the most terrible part, because the thing that made her unsure was the dark. There was no halo. Maria had only seen Cielles the once, across a handful of autumn evenings a quarter-century gone, but she had never forgotten the faint green ring, the light the girl wore without seeming to know she wore it, the thing Maria had split with a prism and proved was real. It was gone. The girl kneeling in the Ypres mud had no light around her at all, and Maria — who had spent her life learning exactly what it means when a thing that should give off light has stopped — understood, looking at that absence, that something had happened here worse than any wound her machines could find.

She did not say the obvious things. She was not a woman of obvious things. She did not say it is not your fault, because she did not yet know whose fault it was and would not insult the girl with a comfort she had not earned the right to give. She did not say be calm, or it is over, or any of the lies the kind tell the ruined. She crossed the last few feet of poisoned ground, and she lowered herself down into the mud beside the kneeling girl, ruining a coat that had cost more than the girl at the fountain had owned in the world, and she did not flinch from the nearness of the thing that everyone else on that field would have fled from if they could have seen it for what it was.

She put herself there. Beside her. In the mud. The second presence. The one the broken thing could not be without and could not have asked for in any language but the one it had been using, which was the saying of her name.

"Ciel," she said. Not a question. The old name, the fountain name, the word for sky said low and certain in the middle of a field that had no sky left in it worth the word. "Ciel. I am here. I came."

The girl in the mud stopped saying the name, because the name had arrived, because the impossible hope that you do not call a name like that unless you believe it might come had turned out, against every law of how the world treats the broken, to be true. She turned her face, and it was the face of someone who has done the worst thing it is possible to do and has not yet been told whether she is still permitted to exist, and she looked at the one person who had ever seen her clearly, and she could not speak.

She did not have to. That was the whole of what Maria had come to give her. She did not have to speak, or explain, or justify, or earn it. Maria had not crossed the field to receive an account. She had crossed it to be the second ox under the yoke, to put her shoulder under a weight that no one, not even a thing made of chlorine, was ever meant to carry alone. Cielles had spent a hundred years learning to fight every battle by herself, and to despise the ones who could not, and to never, ever go home and set the weight down — and here, in the worst

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place she had ever been, in the dark of her own extinguished light, the lesson she had refused at the fountain finally caught her: that no one can set the weight down alone, that it needs a second presence, that to be found is not weakness but the only way any of us survives what we cannot survive by ourselves.

And there, in the mud at Ypres, beside the woman who had not flinched — so faint that only Maria, who had spent her life learning to see the smallest light, could have caught it — the halo flickered.

Not lit. Not restored. It would never again be what it had been; some lights, once they go all the way out, do not come all the way back, and hers would not, not in all the long years that followed. But for one instant, beside Maria, in the dark, a single faint green ember of it stirred at the edge of going — the smallest possible sign that the girl underneath the weapon was not entirely gone, that being found by the right person at the bottom of the world is the beginning, the very first beginning, of being yourself again.

Maria saw it. Of course she saw it. She had spent her whole life seeing the faintest light there was.

"There you are," she said softly. "There you are. I see you. Now — we are going to begin the long work of getting you back. Not tonight. Tonight you only have to let yourself be found. The rest we will do together, you and I, the way the difficult things are always done. Together, or not at all."

And she stayed there, in the mud, in the dark, beside the worst thing she had ever seen and the dearest, and did not leave, and the faint green ember did not quite go out.

It was not healing. Healing was years away, and would need the physics neither of them yet had the words for — would need a man named Bohr and a man named Lewis and a way of understanding rupture and bond that had not been written down yet in 1915. That work was still ahead of them. But it began here, in the mud, with a name said into the dark and a woman who came when it was said. Everything that follows — every step of the long road back — begins with this: that she was found, and that she let herself be found, and that the one who found her sat down in the ruin beside her and said, we will do this together.

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— To be continued —

PART FOURTEEN

The Physics of Rupture and Bond

The Recovery Years — 1915-1929

i. The Years With the Light Out

She went back to work.

That is the thing nobody expects and everyone who has been near it recognises at once: there was no collapse. She did not lie down in the mud and stay there. Maria came, and she was found, and the ember stirred, and then the war went on for three more years and there was a great deal of water in it, and Cielle got up and cleaned it.

She was extremely good at it. That is the part she would have liked to be able to leave out.

The dressing stations had to be supplied. She was in the buckets at Bailleul and the tanks at Poperinghe and the chlorinated barrels that went up the line on carts, and she did the work the way you do a thing your hands know — thoroughly, competently, without any interior at all. There was no fury in it. There was no vow in it either. She had been, for two centuries, a girl who *arrived* — who came into a foul cistern with her chin up and a hundred years of grievance and cleaned it as an argument. Now she went into the water and killed what was in it and came out and went to the next one, and it was not an argument, and it was not anything.

Somewhere in the third year of it she noticed that she had stopped counting.

She had counted her whole life. Two thousand cases in Maidstone. A hundred and thirty-two dead and eight hundred and sixty-eight who never knew. Eighteen in a hundred and then two. The counting had been the whole of her hope — it was the only way anyone would ever be able to tell what she had done, and she had kept the ledger with the obsessiveness of somebody who knows that nobody else is keeping it.

She could not have told you the number of men who drank her at Poperinghe. She never learned it. It did not occur to her to want it.

That should have frightened her. It did not frighten her, which was itself the symptom, and there was no one in a position to point that out.

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The halo did not come back.

She had expected it to return the way a bruise resolves, in its own time, on some schedule she did not have to attend to. It did not. It sat at the edge of going, a faint greenish nothing that Maria could see and almost no one else could, and it did not brighten when she cleaned a reservoir and it did not brighten when the Armistice came and it did not brighten when a boy at Bailleul, dying, looked straight at her and smiled because he was close enough to the end to see her.

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She noticed something about that boy, afterward, on the road, and put it away without examining it.

He had seen her *dim*.

He had seen her the way the dying always saw her — in full glory, whole, an angel — and what he had been given was a girl with almost no light in her at all, and he had smiled at her anyway, and gone. She had knelt for a hundred and thirty years and been the last bright thing in ten thousand rooms and she had thought, without ever once saying it, that the brightness was the gift. It was not the gift. It had never been the gift. She had been standing in the wrong part of it the entire time and she was not, in the winter of 1918, in any condition to understand what she had just been told.

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She did not go home.

This is the part she would set out plainly to two men in California, years later, when she had the words for it, and neither of them would understand why she said it with such precision, because neither of them had ever spent a hundred years refusing to set the weight down.

There was a square in Javel with a fountain in it and a bakery on the corner and a girl-soldier carved on a church wall, and it was four days' walk from where she was, and she did not go. Not once. Not in fourteen years. She would get within sixty miles of it — she was in the mains at Amiens for a whole autumn — and she would finish the work and turn north instead, and if you had asked her why she would have looked at you with complete sincerity and said that there was a reservoir.

There was always a reservoir. That is the beauty of the thing. You never have to invent an excuse in a world with that much water in it.

Enay kept a place on the stone. That is a thing Cielle did not know for fourteen years and would have given a great deal not to learn. On the good evenings, when the work was slow, Enay went and sat at the fountain with her tall hat on her knees and kept the warm end of the rim clear, out of a habit that had outlived its reason, the way you set a place at a table for a while after.

Nobody came.

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The world got its water, in those years, on a scale that would have made her weep in 1897.

That is the obscenity of the period, and she has never been able to explain it to anyone who was not in it. It *worked*. Everything she had spent two hundred years being thrown out of buildings for became, in the space of about fifteen years, simply how a city was run. Chicago. Cleveland. Lyons. London. They stopped arguing about the taste. They stopped writing letters to the newspapers about the works. They built the plants and dosed the mains and the typhoid curves went down and down and down like something falling off a table, and by 1925 there were children being born in cities that had killed a fifth of their children a lifetime before, and not one adult in those cities could have told you why it had stopped.

She had won.

She had won *completely*, the way you win once in the history of a thing, and she went from main to main with the light almost out of her, cleaning water for people whose names she had stopped bothering to learn, and she felt exactly nothing about it, and the feeling nothing had a shape and the shape was this:

She had been made, on a spring morning in Belgium, into the other thing. And nobody knew. That was the whole of it. Not one of the millions who drank her clean water in those years knew that the same girl had been in the cloud, and there was nothing in the world to tell them, and there never would be — the story of the water is not a story, it is an absence of funerals, and the story of the cloud was in every newspaper on the earth with a different name on it. *Chlorine gas*. That is what they called it. Not her name. Never her name. The one time in two centuries the world put what she was on the front page, it was for the four minutes she had spent being a weapon, and it did not even do her the courtesy of knowing it was talking about a girl.

So she cleaned the water. It was the only sentence she had left and she said it over and over, in Lyons, in Amiens, in Chicago, without any conviction whatever, the way a person says a rosary in a language they do not speak.

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Maria came for her in 1929.

Not before. That is worth saying plainly, because it would be a prettier book if the woman in the mud had put her back together in a year, and she did not, and she could not have. Marie Curie had a laboratory and two daughters and an institute to keep alive and a body that was quietly filling with the light she had loved, and she wrote — she wrote every year, to an address that did not exist, and gave the letters to nobody, and kept them — and she could not fix a thing that would not come home.

But she was watching. She had been watching for fourteen years, the way she watched a faint line on a plate, patiently, without any expectation of a good result, and in 1929 she read a short bad-tempered paper by an American chemist in Berkeley about how the elements hold on to one another, and she stopped, and read it again.

There was a diagram in it. A letter with dots around it.

Seven dots. And a space.

She sat in her office for a long time with that page in front of her.

Then she wrote a letter — not to the address that did not exist, but to a colleague in California, courteously, in her careful English, asking whether Professor Lewis might be persuaded to give his lecture again in the autumn, and whether it might be advertised rather widely, because there were people who would want to hear it who did not read the journals.

She never told Ciel she had done that. Ciel worked it out in 1934, in a room in the mountains, about ninety seconds before the end, and by then there was no time to say anything about it and nothing that needed saying.

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So: a room that smelled of cigars and ammonia, in a country she had no reason to be in, in the autumn of 1929.

She did not know she had been sent for.

ii. The Dot and the Empty Slot

Berkeley, California

There was a man in California who drew her on a chalkboard before he ever met her.

He did not know that was what he was doing. He thought he was drawing chlorine. He stood at the board in a room that smelled of cigars and ammonia, and he made a small letter in the center — Cl, the two letters she had worn her whole life — and then around it he began to set down dots, one at a time, the way a man counts coins he is afraid to lose.

Seven dots.

She watched from the back of the room. No one saw her, which was usual now; the sight had thinned in the world the way it always did between the wars, and she had stopped minding. She had come because someone had told her that an American chemist was saying a strange thing about how the elements held on to one another, and she wanted to know what a human thought she was made of.

Seven dots, set around the letter in pairs — two, two, two — and then one left over, alone, with no partner, and an eighth place beside it plainly empty.

He stepped back. He looked at the gap where the eighth dot was not. And then — she would remember this — he did not frown at the gap. He smiled at it.

Seven, and a space where the eighth was missing. He had drawn her exactly, and he had drawn her wound, and he had smiled at the wound.

"That," he said to the empty room, tapping the bare place with the chalk, "is where it wants to bond."

— ♦ —

His name was Gilbert. Gilbert Lewis. He was not a well man in the way the world measures wellness — he carried something heavy that he did not put down, and he worked late because the working was easier than the not-working, and he had been passed over for a prize he had earned and would go on being passed over for it until the passing-over became a kind of weather he lived inside. She knew none of this yet. She only knew that he kept the chalk in his hand after he was finished, the way a child keeps hold of a railing.

She let him see her.

It was a thing she could still do, when she chose, for the ones who were close enough to the work that the seeing did not frighten them. She let the greenish light come up — weak, these days; it had never come all the way back after the mud — and she stood in it, a girl in a long blue coat, beside his chalkboard, and she said:

"You drew me wrong."

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He did not jump. That was the first thing she liked about him. He turned, and he looked at her, and he looked at the board, and he looked back at her, and he said, "Did I." Not a question. An invitation.

"You drew me with a hole in me," she said.

"I drew you with seven," he said. "You have seven. In the last ring. I didn't put the hole there. I just didn't lie about it."

— ♦ —

They talked for a long time. Not all at once — she came back, in the recovery years, the way you go back to a doctor, except that he never once treated her like a patient and she never once let him think she had come to be cured. They talked the way two people talk who have each been alone with the same shape for a long time and are startled to find the other one holds it too.

She told him almost nothing, at first. She told him she was old. She told him she had been at a place in Belgium that she did not name. She told him she had spent a long time being two things — the thing that cleaned the water and the thing that emptied the lungs — and that she had decided, somewhere in there, that she would be only the first thing, the clean thing, the blue thing, and that she had buried the other one.

"How'd that go," he said. Not unkindly. He was filling his pipe.

"It didn't take," she said.

"No," he agreed. "It wouldn't."

And he turned back to the board and he tapped the seven dots, the three pairs and the one left over.

"You want to know why I smiled," he said. "When I got to the empty place."

She did not say yes. She had wanted to know it for forty years.

"Because an atom that already has everything," he said, "can't do anything. It just sits there. Noble. Cold. Finished. Nobody's lonelier than the ones who are full."

He drew, beside her, a violet ring — a noble gas, complete, eight dots, no gaps, perfect. "That," he said, "never reaches for a single thing as long as it lives. It can't. There's nowhere to put anybody." He tapped it. "You are not that."

He went back to her. To the seven and the gap.

"You," he said, "are built to reach. The empty place isn't damage. It's the reaching. It's the whole reason you can take hold of anything at all. Sodium hands you the one thing it can't carry, and you take it, and the two of you become a thing that neither of you could be alone — and the world calls the result salt and puts it on bread and never once thinks the word wound."

She was quiet. Her hand had gone to her collar without her knowing it.

"You've been reading the gap as the place the world hurt you," he said. "It's the place the world can hold you. Same spot. You've been standing at the edge of it

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pouring fury in for thirty years, and it's never once filled up, has it, because it's not a hole for rage. It's a hand. It only closes around another hand."

— ♦ —

Here is the thing she had gotten wrong, and he made her see it the way you make a child see a word she has been mispronouncing all her life: she had been reading the direction backward.

She had looked at the rupture in herself — the contempt, the cold certainty that some people had earned their dying, the thing that had let A·N reach into her and tilt her one quarter-turn toward the gas — and she had read it as who she was. As her nature. As chlorine being chlorine: pure or poison, savior or weapon, and underneath both the same merciless arithmetic, some are worth saving and some are not.

"But a charge isn't a character," Lewis said. "It's a record. You're reading a scar as if it were a face. The dot isn't out of place because you're bad. It's out of place because something was taken — and an electron that's been torn loose doesn't sit there being evil. It looks for the next bond. That's all it ever does. The arrow runs forward, girl. From the wound to the joining. Never the other way."

"Run it forward," she said.

"Run it forward. The fury you keep pouring in the gap — that's just the energy of an electron that got knocked up out of its place and is screaming on the way down. It's not who you are. It's the sound a wound makes falling back toward whole. And it does fall back toward whole — that's the part you stopped believing. It doesn't stay screaming. It lands somewhere. It bonds. The only question is whether you let it land on another hand, or whether you keep it up in the air where it can only burn."

"Your fury becomes bonds," he said, "or it becomes gas. Same electron. You choose the destination, not the charge."

— ♦ —

She did not heal that night — he was not a man who believed in single nights — but something that had been clenched around the gap for thirty years opened, just enough to see that the empty place in her palm was the shape of a hand and not the shape of a wound. She had thought she wanted to be finished: clean and complete, with no more places where anyone could get in. Now, looking at the seven dots and the bright bare slot beside them, she found she would rather have the gap, and reach, and be reached for, than be one of the cold violet ones who never has to need anybody and never gets to.

"Thank you," she said. "For not lying about the gap. For drawing it true, and then teaching me how to read it."

"For what," said Lewis, who genuinely did not know, and never did learn what he had done. He was the kind of light that does not see itself. She only let the green come up once, all the way, brighter than it had been since before the mud — so that for a moment the empty place on the chalkboard and the empty place in her filled with the same pale fire, the fire that was not rage and was not gas but only the look of something reaching out to be joined.

Then she went to find Bohr. Because Lewis had taught her what the empty place was for, but she still did not understand how a thing could be at rest and in

motion at once — how she could be the still letter on the table and the moving girl who had walked from Maidstone to Belgium across two hundred years. There was a Dane who drew the atom as a thing that was always moving and never left its place, and she had begun to suspect the answer to her largest question — how do I get to be both? — was hidden in the difference between the way Lewis drew her and the way Bohr did.

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iii. At Rest and In Motion

Copenhagen

Lewis had given her the gap. Bohr gave her the motion — and the permission, which turned out to be the harder gift.

She went by sea, which she had not done in ninety years, and she was ill the entire way.

That is a thing worth setting down plainly because nobody has ever believed it of her. She is chlorine. She is denser than the air by a factor of two and a half and she does not float and she does not like to be moved by things that are not water, and eleven days on the North Atlantic in February had her sitting on the deck plates below the waterline with her forehead against a cold rivet, in the one part of the ship where the sea was on the other side of the steel and she could feel it going past. She had spent two hundred years in water and could not tolerate being carried *over* it. Eytch found this so funny that she came all the way from a cloud over Newfoundland to watch, and sat with her, and did not say one word about it, which was the funniest part.

By the time they came up the Kattegat there was ice on the rail and she put her hand on it and felt something she had not felt in years, which was cold. Not the idea of cold. The thing itself, in the hand, unpleasant.

She noticed she had noticed. She put that away too.

Copenhagen in the winter is a low grey city with the sea in the streets, and she walked up from the harbour at four in the afternoon in the dark with her coat wrong for the weather, and the whole way she was composing the question, and the question would not compose.

She came with a question Lewis had not been able to answer, because it was not a chemist's question. He had shown her that the empty place was a bond-site and not a wound, and she carried that out of Berkeley like a turned key — but it left her in front of a door she still could not open, and the words on the door were ones she had been reading her whole life without understanding: how can a thing be still and moving at once? She was the fixed mark on the table, Cl, unchanged in 1774 and 1854 and 1915. She had also walked — from Maidstone to Paris to a field in Belgium to a chalkboard in California, changed by every mile — and everyone who had ever meant to comfort her had told her to choose which one was real and call the other weather. The choosing was the oldest cruelty in her story, because every time she picked one she had to call the other a lie, and the lie never stayed buried, and the unburying was how A·N had reached her.

She had begun to suspect that the man in Copenhagen knew something about not-picking.

— ♦ —

He was nothing like Lewis, and the unlikeness was the first thing she understood about him.

Lewis had been a man working late in a room that smelled of cigars and grievance, a brilliant light that did not see itself, generous to everyone and merciless to no one but himself, holding the chalk after he was finished because the holding was easier than the empty hand. The world had not crowned Lewis. The world had passed him over thirty-five times and would go on passing him over until the passing-over became the weather he lived inside, and he had let it sharpen him, let the rightness curdle, until he was — she had seen it, she had not let herself name it at the time — the warning version of her. The one who is right and alone. The one whose accuracy becomes a cage. What she becomes if Maria does not reach her.

Bohr had been crowned — the world had given him the prize Lewis would die without, and built around him a white-walled institute full of young men from every country who came across oceans to think out loud in his rooms. He had filled it not with grievance but with talk, the patient circling talk of a man who had never once had to defend himself against the world's neglect. Lewis built Berkeley out of something like defiance. Bohr built Copenhagen out of something like welcome.

And so when Cielle came to him with her impossible question, he did not sharpen at it the way Lewis would have. He did the thing she would remember about him for the rest of her long life: he was delighted.

"Oh," said Bohr, when she told him she could not understand how she could be still and moving at once. "Oh, but that is the most wonderful trouble. That is the only trouble worth having. Sit. Sit, sit. We will not solve it — you must not hope to solve it — we will do something better than solve it."

iv. The Quarrel She Was Made Of

Maria was with her. This is the thing to understand about the recovery years: Cielle did not go to these men alone. The lesson of Ypres had been the yoke — that no one carries the weight alone, that it needs a second presence — and Maria had said, in the mud, the rest we will do together, you and I, the way the difficult things are always done. She had meant it. She had been meaning it for years now. Where Cielle went in the long work of getting herself back, Maria went too, the second ox under the weight, and it was Maria as much as Bohr who carried the Copenhagen afternoon, because Maria had read the physics that Cielle had only lived.

"You should know," Maria said to Cielle, dryly, in the way she had — she was older now, gray and a little stooped, with the faint burns on her fingers she did not explain and the tiredness in her that no rest touched, but the mind was the same fierce instrument it had been at the fountain — "you should know that you are asking these two men to agree, and they have spent ten years refusing to. You are made of their quarrel. You are the very subject they cannot settle."

"Am I," said Cielle.

"Oh, spectacularly." Maria almost smiled. "The chemists say the atom must be still — a molecule has a rigid honest geometry, bonds that point in fixed directions, and a thing that holds a shape must hold still. That is Lewis: the

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corners, the dots that do not move. The physicists say it must be moving — racing, falling between levels — because only a moving charge throws off light at the exact colours an atom throws it. That is this gentleman.” She tipped her head at Bohr. “And here is the part that should interest you, Ciel, because it is your own halo they are quarrelling over. The green you wear is made when an electron falls — drops from a high place to a low one and lets go of the difference as one clean colour. Your halo is not a thing you have. It is a thing that happens, a falling caught and made visible. I split it with a prism on an autumn night to prove it was real — and I was reading, though I did not have the word yet, the physics of this man’s falling electron.”

Cielle was very still.

“So which is true,” she said. “The still atom or the moving one. Tell me which is true and I will be that.”

And Bohr, who had been listening with his great heavy head tipped to one side and his pipe gone out, made a sound that was almost a laugh and almost a groan, the sound of a man hearing the exact wrong question asked beautifully.

“No, no, no,” he said. “You will not be that. You will not be either. That is the whole disease of the question. Both are true. Both are necessary. Neither can be given up. And the wanting-to-pick — the wanting one of them to be the real one and the other to be the lie — that is not rigor, child. That is fear wearing the coat of rigor.”

Maria let the men’s words settle. Then she said the thing she had carried since Cielle first told her, in the mud and afterward, the whole long story of the years before Ypres — the friends who had gone one by one, the arguments she had won.

“You already know this quarrel, Ciel,” she said. “You have known it longer than either of these men. You lived the whole of it once, in your body, and you did not read it, and I think it is time someone read it to you.” She was not being unkind. She was being exact, which with Maria was a form of love. “Tell me what you are, chemically, when you are good. When you clean the water and close the wound and save the ward.”

“Bonded,” Cielle said slowly. “I am never good alone. I am the acid that heals only when I am joined — to Oh, to Eytch. Hypochlorous. Or I am salt, with Enay, and harmless. I am good when I am holding someone’s hand.”

“And what are you,” Maria said, “when you are holding no one’s hand at all?”

Cielle did not answer. She had gone the color of a girl who has walked into a room and found the thing she has been not-looking at for years standing in the middle of it.

“Two chlorine atoms,” Maria said, gently now, because she could see it landing. “Bonded to nothing but each other. Say the rest of it, Ciel. You have known it longer than either of these men. And Oh?”

“Gone,” Cielle said. “I won the argument.”

“Eytch?”

“Gone. I sent her on an errand and did not call her back.”

"Enay?"

Cielle looked at the empty slot on the chalkboard, the seven dots and the missing eighth, for a long time before she answered.

"I told her she was a mineral," she said. "I told her resting was all she was for, and I sent her home to keep the bread company." And then, because the thing had finally come all the way up and there was no not-looking at it now: "I was telling it as a triumph. Every time. How I got stronger, shed the sentimental ones, kept only myself." She heard her own voice go strange. "It was not a triumph. I made the gas before the war did. I was assembling it for twenty years, one victory at a time, and by the time the last of them was gone there was nothing left of me but the pure element holding its own hand in an empty field, waiting for a wind. Ypres only opened the cylinder on a thing I had already made."

"Then the empty slot," Cielle said, very low, looking at the chalkboard where the seven dots and the missing eighth still stood. "The one he smiled at."

"Is where you bond," said Maria. "You spent twenty years treating that reaching as a weakness, filling the slot with contempt so you would never have to hold a hand you might lose. And a slot filled with contempt is still empty, Ciel. It is only empty and lying about it." She sat back. "That is the first truth you refused to hold: that you are only ever good in company, and you decided needing company was the same as being weak, and you would rather be a pure and lonely poison than a compound that depends on someone. That was the lie you believed. Not one of theirs. Your own."

v. Complementarity

He got up. He walked. He was a walker-while-thinking, a man who could not hold an idea sitting down, and Cielle understood, watching him, that this was itself the thing he was trying to teach — that you could not get at a moving truth by holding still in front of it.

"Here is a thing I have had to learn," Bohr said, "and it cost me more than the prize was worth, and I would not give it back for ten prizes. There are truths that come in pairs. Not pairs that fit together into one smooth picture — I know you want that, everyone wants that, the single picture where it all resolves — but pairs that cannot both be looked at in the same instant, and are both completely true, and the truth is precisely the holding of both without forcing them into one."

He stopped. He looked at her with enormous kindness.

"The light is a wave. I can prove it to you on a Tuesday with an experiment so clean you will weep. The light is also a particle — a grain, a packet, a photon, the word your poor friend Lewis gave the world and was not thanked for that either. I can prove that to you on a Wednesday, just as cleanly. Wave on Tuesday, particle on Wednesday, and the light has not changed between the days. I changed. The question I asked it changed. And a small frightened man spends his whole life insisting it must really be one of them and the other must be a trick of the apparatus — and he is wrong, and he is wrong in the most ordinary and human way there is, which is that he cannot bear for two true things to sit in the room at once without one of them being a liar."

"Complementarity," Maria said quietly, supplying the word, because she had read it and Cielle had not.

"Complementarity," Bohr agreed, gently, as though the word were a small animal he did not want to startle. "It is the ugliest word for the most freeing idea I have ever had. It only means: a thing can be two contradictory things, and both descriptions true, and the contradiction is not a wound in the thing. The contradiction is the size of the thing. It is too large to be said in one breath. So you say it in two, and you hold them, and you do not — you must not — call either breath a lie."

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Cielle sat with that for a long time. The institute hummed faintly around them — somewhere down a corridor two young men were arguing in German, happily, the way the young argue when nothing has cost them anything yet.

"Say it for me," she said at last. "Not the light. Me."

And Bohr, who was the kind of man who would do this, who would put down the general truth and pick up the particular frightened person in front of him, came and sat, and took the cold pipe out of his mouth, and said it for her.

"You are the savior. A whole world drinks clean water and does not die of the old plagues, and that is you, every day, in every pipe. And you are the weapon; you were at Ypres, and I will not insult you by pretending the Tuesday cancels the Wednesday. Both true. The world did not change between the days. The question changed."

"The light is not responsible," Cielle said, "for what someone does with it."

"No," said Bohr, and for the first time he did not soften it. "And that is the part you must not mistake, so hear me say it once and plainly: the two truths do not make the two acts equal. Holding both does not acquit you of either. It only forbids you to lie about either one — to hide the weapon behind the savior, or drown the savior in the weapon. Complementarity is not a pardon, child. It is the end of pretending."

vi. The Thought That Was Hers

"But you said it of the light," Cielle said. "Wave and particle. That is two ways of seeing a thing. I am asking something else. I am asking how I can be still — the fixed letter, the thing that never changed in two centuries — and also moving, the thing that walked all that way and was changed by every step. Those are not two ways of seeing. Those are opposite. A thing that never changes cannot be a thing that walks."

And here, finally, Maria did the thing she had come across the years to do — the thing the whole long friendship had been bending toward, the proof that she understood Cielle better than Cielle understood herself. She did not let Bohr answer. She answered.

"It is the same reconciliation," she said. "Your friend Lewis made it himself, you know — in the very book where he spent a hundred pages calling this man's atom logically objectionable. He could not help it. He was too honest to stay in his own quarrel. He sat down and he worked out that the electron does orbit — Bohr is right, it is always moving, it never holds still for an instant — and that the orbit

Appelle-moi Ciel

as a whole has a fixed place in space, and that the electron's average position, smeared over its racing, is the still point of his own diagram. The cube is not where the electron is. The cube is where the electron is on average. The still point and the moving point are the same point. Seen at two speeds."

She let that land. Then she leaned in, gray and tired and absolutely alight, and made it Cielle's.

"You are not still instead of moving, Ciel. You are still because you are moving — so fast, across so long, that the racing averages into a fixed point, and the fixed point is the only part the printed table is slow enough to see. Cl on the chart is your average. It is true. And it is not the whole truth, and it was never meant to be. The whole truth is the racing underneath it that the chart cannot catch. You have been grieving the gap between the still letter and the walking girl as though it were a contradiction to be solved. It is not a contradiction. It is a timescale. You are both. You were always both. You simply contain more motion than a printed letter can hold."

Cielle did not say anything.

Maria was watching her, and Bohr was watching her, and neither of them was watching her face. They were both, without any coordination whatever, looking at the air about six inches above her head — the physicist because he had spent his life learning that a thing tells you what it is by the light it gives off, and the woman because she had spent hers learning the same lesson with worse equipment and better reasons.

It had been almost nothing for fourteen years. A ring of faint greenish nothing at the edge of going, and it had not brightened for a reservoir or an Armistice or a dying boy at Bailleul who smiled at her anyway.

It did not brighten now, either. She would have distrusted it if it had.

It steadied.

That was all. It stopped guttering. The small green ring that had been going in and out at the edge of extinction since a field in Belgium held still, at the same dim value it had held for fourteen years, and simply did not waver — and Marie Curie, who had spent forty years learning to read exactly this and had once put a prism on it to prove a frightened girl was real, put her hand over her mouth.

Bohr, who did not know what he was looking at and knew precisely what he was looking at, said nothing at all. He had the good sense.

And then — and this is the part that must be hers, that must arrive in her own eye and not be handed to her, because the whole long road has been about the difference between reading a thing and being told it — then Cielle understood something that neither of them had said.

She had been an absolute. That was the root of it, the thing under the contempt and under the vow and under the buried lie. Chlorine is an absolute — pure or poison, the cleanest thing or the deadliest, no middle, no smear, no average; that is its nature and it had been hers, the black-and-white arithmetic she had carried her whole life and extended, terribly, to people: saved or not worth saving, read enough or fool, the deserving and the rest. She had thought in corners and edges because she was made of an element that thinks in corners and edges.

Appelle-moi Ciel

But Lewis's still atom and Bohr's moving one did not stay at war. They reconciled. The corner and the racing were the same thing seen at two speeds, and the reconciliation did not destroy either one — it let both be true at once, the rest and the motion, without calling either a lie.

And if the atom could be both —

She sat in the white-walled room with the failing light coming gold through the high windows and the young men arguing happily down the corridor, and the thought rose in her the way the green used to rise in the old days, from somewhere under the breastbone, unbidden, true:

I can be both.

Savior and weapon. Vanity and vocation. The one who saved a world and the one who emptied lungs at Ypres. The girl who chose the blue coat and the girl who never killed the hunger for the white. Failed — truly, unforgivably failed, the contempt and the gas and all of it — and worthy of love. Not one cancelling the other. Not one a lie laid over the other. Both. Held. At two speeds, in one girl, and the holding of both was not the wound. The holding of both was the size of her. She had been too large to say in one breath her whole life, and had spent that life trying to amputate herself down to a length she could say in one word, and every amputation had cost her something she then had to bury, and the burying was the whole disease.

"Oh," she said. Very quietly. The same syllable Bohr had said when she first told him her trouble — the syllable of a person meeting a wonder.

"There it is," said Bohr, who had been watching her face the way Maria watched for faint light, and had seen it arrive. "You will not solve it now. You will not wake tomorrow whole — it is not that kind of truth. It is the kind you have to keep choosing, every day, the way I keep choosing not to flatten the light into one of its two faces, because flattening would be easier and would be a lie. You will be tempted, all your life, to pick one of yourself and call the rest a lie. The work is not the picking. The work is the holding. Forever. That is the bad news."

"And the good news," said Cielle.

"The good news," said Bohr, "is that the holding is the most alive thing there is. A thing that has settled into being only one of itself — finished, fixed, decided — that thing is at peace, yes. The noble gases are at peace. Your friend Lewis showed you the noble gases, I think. Complete. Eight in the shell. Nothing reaching, nothing falling, nothing to hold in tension. And nothing alive, either. The price of being finished is that you are done. The thing that is between, the thing in tension, the thing holding two truths that pull against each other — that thing is the only thing that moves through time. That is the only thing that is alive. You have been trying your whole life to be finished. I am telling you that the unfinished holding you are so frightened of is not your wound. It is your life."

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Maria walked her out into the Copenhagen evening. The streets were blue with dusk and the canals held the last of the light the way water holds everything, briefly, and gives it back changed.

"Lewis gave you the gap," Maria said, walking. "This one gave you the permission — that you may keep both of yourself, and need not murder one half to make the other honest."

Appelle-moi Ciel

"You gave me the bridge between them," Cielle said. "The reconciliation. The still point that is only the moving point seen slow. Neither of them said that to me. You did."

Maria was quiet for a moment, walking, her burned fingers loose at her side.

"I have had to learn it on my own account," she said at last, and she said it lightly, which was how Cielle knew it was not light at all. "I carry a thing in my pocket that is killing me. You know that. You have always known it; you can see what I cannot, you saw it years ago and were kind enough not to say. The same glowing thing that made me everything I am is taking me out of the world a little faster every year, and there is no version of my life where I get to keep the light and set down the poison, because they are the same substance. They were always the same substance." She looked at the canal. "I could have spent my life deciding which one it really was. The miracle or the poison. I decided instead that it was both, and that I would point it at the wounded anyway, with my eyes open, knowing the cost. That is the only way I have ever found to carry a thing that is two things. You point it at the people, eyes open, and you let it cost what it costs."

"You are the proof," Cielle said. "Of the thing he just taught me. You have been the proof the whole time. I went all the way to Copenhagen to hear it from a man who won the prize, and you have been living it beside me, dying of your own light, for twenty years."

"Well," said Maria, and now she did smile, the old fierce fountain smile worn thin by years but unmistakably itself. "It is always easier to admire the lecture than the friend. Even for you. Even after everything."

They walked on. Above them, where the dusk was deepest, the first stars were coming out — each one, Cielle thought, a falling electron caught and made visible across an impossible distance, a thing in violent motion that the slow sky reads as a fixed and quiet point. Still and moving. Both true. The whole sky was the lesson, if you knew how to read it, and she was only now, after two hundred years, beginning to know how to read it.

Much later — on the worst and best day, in a quiet room in 1934, with the curtains drawn against a light that was finally killing the woman who had carried it — she would say all of this out loud to the one person alive who could understand it. But that was the next room, and the last light. That night in Copenhagen it was enough to walk beside her, and to be — for the first time in two hundred years — both of herself at once, and not at war.

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PART FIFTEEN

The Burial Register

Javel and the North — 1929-1934

i. The Fountain

She went to the fountain the evening she came back from Copenhagen, which she had not done in fourteen years, because Lewis had taught her what the empty place was for and she wanted, for the first time in her long life, to put it against another hand and see.

Enay was on the rim of the basin with her tall hat in her lap, watching a pair of pigeons quarrel over nothing, in the unbothered way of a thing that has nowhere it would rather be and all the time there is to not be there. She did not look up when Cielle crossed the square. She had heard, or felt, or simply known; she had been keeping the place, and you do not startle at the arrival of the person a place is being kept for.

"Hamburg is clean, then," Enay said. It was not really a question. It was the thing you say to end fourteen years without making a widow of them.

"Hamburg is never clean," Cielle said, which was the answer Enay had given her once, in a reservoir, on the night she had sent her home. "You told me that. I have decided to believe you."

Enay slid over on the warm stone, the way she had a thousand times before there was a war, and made the room she had, in fact, never stopped making. Then she turned her hand over on her knee and left it open, palm up, the way it had been open for fourteen years, and did not say anything about that either. Cielle sat. And then — because it was the whole reason she had come, and because she did not have the words and had stopped believing the words were the part that mattered — she put her hand into Enay's.

It was not a spark. She had half-expected a spark; everything with Eytch had always been a spark. This was the other thing. This was the single restless electron Enay had been carrying, unpaired, unspent, held ready across fourteen years of keeping a stone warm, going quietly over into the empty place that had frightened Cielle for two hundred years — and the place took it, and the bond shut, and it was not fire at all. It was a weight coming to rest. A ship that has been beating against open water for a long time putting its anchor down, and feeling, for the first time in the memory of anyone aboard, the particular stillness of a thing that has stopped needing to hold itself up.

Sodium and chlorine. The plainest, most necessary thing in the world. The thing the whole world puts on its bread and never once thinks the word wound.

"There," Enay said softly. She did not make a speech. She had never made a speech; that had been the trouble, once, that Cielle had mistaken the quiet for a smaller kind of love. "The bread and I kept each other company. But it is better with you on the stone."

Appelle-moi Ciel

And Cielle leaned her head on the shoulder of the friend she had spent like coin and called it granting leave, and let the general die, there, on the warm rim, with the pigeons and the lamps coming on, one small held hand at a time.



Eytch was harder, because Eytch had never left in words and so had left nowhere in particular, and a thing that leaves nowhere in particular has to be found everywhere before it can be found at all.

It took the better part of a season. She was in the steam off the locomotives at the Gare du Nord, in the end — of course she was; she was always in the fast bright places, the platforms and the boiling kettles and the struck matches, wherever the world was in a hurry and glad about it. She was dancing in the vapour above a waiting engine, her pink-red hair thrown out around her, ten years old and four billion, and when she saw Cielle on the platform she stopped, and dropped to the boards, and went still in the wary way of someone who has been used as a tool by a person she loved and has not decided yet whether it is going to happen again.

"I don't have a battle for you," Cielle said quickly, and held her hands open, so that Eytch could see there was nothing in them to be picked up and aimed. "There's no colony. There's nothing to break."

"Then why are you here," Eytch said. Not unkind. Only careful.

"Because the Brun girl leaves four pastries on the sill now," Cielle said, "and Enay won't eat yours. She says it isn't the same, taking them alone. She has been very unpleasant about it."

Eytch looked at her for a long moment across the steam. And then the grin came — the old one, the brilliant impossible one, the one that had made a hundred years of terrible work feel, for a century, like something you did with your hands full of a friend — and she came off the platform in a blur and hit Cielle around the neck hard enough to stagger her.

The spark was blinding. Sharp, bright, glad — the sheer high fizz of two things moving fast and dangerous and together, the acid that cleaned without malice, the thing Cielle had held once as a reagent and dropped the instant the work was done and felt, for years after, the exact cold shape of its absence.

"I missed the bread," Eytch said, muffled, into her coat.

"I missed you," Cielle said, which was the apology, and Eytch, who had never once needed things said in the right words, took it as one.



Oh came back on her own. She had said she would.

She arrived at the fountain on an ordinary Tuesday, out of the ordinary evening air, the way oxygen arrives everywhere — without announcement, already present, the thing that was in the room the whole time and only now agreeing to be seen. Cielle and Enay and Eytch were on the rim in the blue-grey dusk, doing nothing, which was the point, which was the whole recovered point.

Oh looked at the three of them. Then she looked at Cielle, and at the halo above her, which was up — not bright, never again as bright, but up, and steady.

"You let them back in," Oh said.

"I stopped trying to be pure," said Cielle. She stood. There was a thing owed here, and it could not be paid sitting down. "You told me, in a field hospital, that a soul that only loves itself for its usefulness will decide everyone else is worth only their usefulness too. That I was judging them by my own terror. You were right. I have spent a great deal of the last while finding out exactly how right, and I would take it back if taking-back were a thing that existed, and it is not, so instead I am telling you that you were right, and asking whether you will come back anyway."

Oh was quiet a moment, in the way she had, the considering stillness of the thing the whole world's fire and breath and rust depend upon and which gives itself, in the end, to almost everything that lives.

"That is what I came for," she said. "I said I would come back when you were ready to be more than what you do. You are standing at a fountain doing nothing, in front of witnesses. I would call that ready."

And she opened her arms, and Cielle stepped into them. It was not the anchor-weight of the salt, and it was not the bright fizz of the spark. It was a breath — a slow enormous expanding thing, the molecule closing itself at last, chlorine and oxygen and the ghost of the hydrogen that Eytch had been, all of it coming together into the one shape Cielle had been unable to make alone for fourteen years: the acid that does not burn but heals, the thing that had saved the wards, the thing she was only ever able to be in company.

And the halo, which had steadied in Copenhagen, came the rest of the way up. Not blazing. Not the hard green fire of the general. Just whole. The molecule held again — chlorine and oxygen and the ghost of the hydrogen — and for the first time since before the mud she was not alone inside herself.

ii. The Seat

It took her another year to turn it around.

That is the part nobody tells you about a healing, and she would not have believed it if they had: that the insight does not spread. She had understood herself in a room in Copenhagen on a blue evening and she had walked out of that room still despising a woman in the north who had taken her children's water from a ditch. The two things sat in her, side by side, unconnected, for fourteen months. A tool is not a habit. She had been given the physics of her own rupture and she used it, faithfully, on herself, the way a person uses a new word only in the sentence they first learned it in.

What turned it was Lewis's chalk.

She was in Paris by then. It was raining and she was not working, which was itself new — she had begun, that year, to have hours that were nobody's — and she was sitting in the window of a room she had started to think of as hers, drawing on the fogged glass with one finger for no reason at all.

She drew the letter. Cl. Then she set the dots around it out of habit, the way you hum a thing.

Two. Two. Two. And one, alone. And the empty place beside it.

Appelle-moi Ciel

That is where it wants to bond.

She had been carrying the sentence for years. She had turned it over ten thousand times and it had always meant one thing: that her fury was not the whole of her, that the gap where the eighth dot was missing was not damage but appetite, not a wound but a seat — a place that was empty *for* something. It was the kindest thing anyone had ever said about her and a man had said it to an empty room, about a chalk mark, without knowing she was standing at the back.

She looked at the empty place on the glass for a long time.

And then, because she was well enough now to be idle, and because idleness is where the mind goes wandering into rooms it has been avoiding, she thought — with no particular weight, the way you notice the time —

The woman at the standpipe had one too.

She went very still.

The rain went on down the window and took the top of the drawing with it.

She had an empty place, Cielle thought, and a man with soft hands put something in it.

And then, coming up out of her like water finding a crack, in her own voice, from her own mouth, thirty-five years old and said flat on a warm stone to a girl of twenty-six who had gone home and lain awake over it:

They are like microbes in the information.

She had said that. She had said it out loud and heard nothing in it at all. She had said it in the same tone she used for a concentration, an observation, a number read off a scale — and she had meant it as an insult; that was the thing, that was the whole rotten thing; she had said like microbes and what she had heard herself saying was like vermin. A thing that spreads. A thing that gets into people because people are dirty.

But that is not what a microbe is.

She knew what a microbe was. She had killed more of them than any creature that had ever existed. She had spent two hundred years in the water with them and she knew, better than any bacteriologist alive, the one fact about them that she had somehow contrived never to apply:

The water does not consent.

The well does not choose. The pump does not choose. The cup does not choose, and the woman who lifts the cup does not choose, and in all her long war she had never once in her life stood over a fouled cistern and thought: *you let it in. You are not worth cleaning.* The thought was not merely wrong; it was not available. It was a category error so total that it had no shape in her. You do not blame water for what is in it. You clean the water. That is the entire arrangement. That is what she was *for*.

And she had looked at a woman with a folded sheet in her apron and blamed her for what was in her.

Cielle sat in the window with her hand still on the cold glass and let it come.

Appelle-moi Ciel

The pamphlet is the cup. Maria had said that in eighteen ninety-four, and she had spent the next twenty years hunting for the well, because if the pamphlet was the cup then there was a *pit* somewhere, a crack in the brick, a place, a thing to break. And there was no well and she had been furious about it. She had called it a weather. She had wanted a defendant.

She had never once asked what the *cup* was.

She asked now.

The cup is the mind that has not been filled yet.

That was all, and it had been on Lewis's chalkboard the entire time, and she had looked at it for a decade and seen only her own face. Seven dots and an empty place. Not a defect, not a wickedness — an affinity, the plainest fact in her whole science: a place that is empty is going to be filled, and it does not get a vote, and it does not deserve what fills it, and the thing that fills it is whatever arrives first with the right shape.

The woman at the standpipe had a seat, and it was empty, and a man with soft hands got there first.

That is not a judgment. That is a *valence*.

And a person with an empty place in them reaches, and what they close on is whatever was standing nearest.

"Oh," said Cielle, out loud, in an empty room, in the rain.

It was the second time in her life she had said that word and meant it. The first had been in a birthing room in London in eighteen fifty-three, with a cloth over a woman's face and nothing hurting, and she had been standing in the mercy and had not understood what she was standing in.

She understood this one immediately, and it was not a relief, and she had to put her head down on her arms.

Because if the deceived are the water — and they are, they had been the water the whole way, and Maria had shouted it at her in a square in Javel with her heart going like a bird's and Cielle had catalogued the shouting as fatigue — then there was no defendant anywhere in the whole affair. Then every honest, armoured, perfectly-supported year of the contempt had been her doing to people the one thing she had never in two centuries done to a puddle.

She had become a thing that blames the water.

There is no worse thing for her to have become. There is no worse thing available. It is not even cruelty — it is *incompetence*, it is a chemist who has forgotten the first line of the first page, it is the exact and total inversion of the only skill she had ever had.

And the woman in the north was dead, and her children were dead, two out of four, and Cielle had never learned her name.

She had been asked to. She remembered the asking with a clarity that did not fade for the rest of her life — a woman of forty-three at the edge of a lamplit square, five months into a mob, with a lesion on her arm she would not talk about, stopping at the corner to say the last useful thing she had left: *Learn her*

Appelle-moi Ciel

name. Not for her. She is dead. Learn it for you. Because the day you cannot be bothered to learn the name of the one who chose the ditch is the day you have become exactly the thing outside my house.

She had meant to. There had been a reservoir, and then another.

Cielle sat in the window until the rain stopped and the drawing had gone entirely from the glass.

Then she got up, and put her coat on, and went north.

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It took her eleven days.

There was no reason for it to take eleven days. There was no reason for it at all; the town had a proper main now and the ditch had been filled in and the whole thing had been, as everyone agreed, a very great success, and there was not one living creature in that place who needed anything from her. She went anyway. She went to the parish and stood at the shoulder of a clerk for four hours while he did other work, and she read what he did not know she was reading, and it was in the burial register in a hand that had not cared much, six weeks of an autumn thirty years gone, more names than the page had been ruled for.

Two of the four were on the same line.

She read the mother's name.

She is not going to be told to you. That is not coyness and it is not a device; it is the only honest thing left to do with it. Cielle learned it, and carried it, and said it exactly twice in the remaining forty years of her life — once, quietly, in a room in Paris in the summer of nineteen thirty-four, to a woman who was dying and had asked her whether she had ever gone; and once, every autumn for the rest of her working life, on the first day of a course at the Sorbonne, to thirty young people who had no idea what they were being handed, at the top of the first lecture, before anything else, as the first fact of the whole enterprise.

She never told them who the woman was.

She only told them that she had drunk from a ditch because a man with soft hands had got to her first, and that she had been forty feet from the clean thing, and that she had not been stupid and she had not been wicked and she had not chosen anything at all.

And that there had been a place in her, and it had been empty, and something had sat down in it.

And that there is one in every person in this room.

— ♦ —

iii. The Record

She went to the Sorbonne in the autumn of nineteen thirty-one intending to correct the record.

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That was the plan, and she would have used exactly that word, and she saw nothing wrong with it, because it wore the shape of everything she had just learned. The whole account, unglossed. Inoculation, not purification. Thirty minds a term, filled with the true thing before the manufactured thing could arrive. It was Maria's own map, finally walked; it was Snow's handle, finally multiplied; it was the one instrument the men in the cellar could not confiscate, because a taught mind cannot be untaught by any pamphlet ever printed. She built the first lecture the way she had once narrowed a reservoir — patiently, by elimination, nine nights running — and she was three weeks into building it when she hit the wall that changed the rest of her life.

She could not footnote herself.

It arrived as a small technical problem, which is how the largest things usually arrive. She was writing the lecture on the Broad Street pump — the map, the handle, the committee that put the handle back on — and she wanted to say what she alone in the history of the world could say: that the map was right because I was in the water; I felt the vibrio die where the map said it would; the evidence was not circumstantial, I am the evidence, I was there. And she sat with her pen over the page and understood that the one sentence she most needed to write was the one sentence no student could ever be permitted to hear, because it was insane. Not wrong — insane. True, and inadmissible, and inadmissible precisely because the whole method she was there to teach them was the method that would correctly reject it. A girl made of chlorine is not a citation. An eyewitness who cannot be seen is not a witness. The court she believed in — the patient court of evidence and instruments and unflattering prisms, Maria's court, the only court she had ever respected — was structurally incapable of hearing the only testimony she had.

She had made a joke about this once, at a fountain, in another century, to three friends and a girl with an empty bottle. I am in every book and I am in no book. Someday I will find out whether it is a door or a wall. She had said it merrily, with all its teeth hidden, and it had waited a hundred and forty years, patient as arithmetic, and now she had her answer.

It was a wall.

She put the pen down and looked at what she was actually holding.

Simmelweis would stay mad in the books — not because the books were careless but because they were doing their job, recording what the admissible record showed, and the admissible record showed a shrill Hungarian who died in an asylum and a count that vindicated him only after he was past hearing it. And Ypres would stand in every history ever written exactly as it stood now: chlorine gas, a German innovation, a chemical, a thing. No book would ever say a girl. No record would ever say she was hunted into it by eleven men in mixed uniforms whose names appear in no archive, because they were the ones who decided what archives contain. The truest things she knew were, every one of them, permanently outside the account, and the account was what would stand, and it would stand wrong, in the exact places that mattered most, forever.

She had known all of this for years, in pieces. She had never once let herself hold it as a single fact.

She held it now, alone, at a desk in an empty lecture hall, and she waited for it to kill her, because it should have. Everything she had been for two hundred years was built on the appeal. She had called it the work, the vigilance, the war — but underneath all of it there had been a single unexamined clause holding the whole

structure up: someday it will be known, someday the record and the truth will be reconciled, and on that day I will be permitted to rest. Every ounce of the contempt had been that appeal curdling — because if the record must be corrected, then the people who believe the wrong one are the obstruction, and obstruction is the one thing a litigant cannot forgive. She had spent a century as a case that would not close, waiting on a verdict from a court that did not exist.

There was no court. There had never been a court. There was only the record, standing wrong, and the life, waiting to be lived, and the terrible discovery that these were not, in fact, connected — that the second had never once been contingent on the first, except in her.

She sat in the empty hall until the light went, which was an old habit by now, and somewhere in that sitting the case closed. Not won. Not lost. Withdrawn.

She would teach anyway. That was the strange, weightless clarity on the other side of it: nothing about the work changed, and everything about the worker did. She would stand up in three weeks in front of thirty strangers and give them the whole true account — ugly parts ugly, the doubted marked doubted, the reasonable-sounding liar allowed to sound reasonable — and she would do it without one word of what she was, and the omission would no longer be a wound, because the teaching was no longer testimony. It had been testimony, in the plan. Every lecture an affidavit; every term a filing; the classroom as the courtroom where the record would finally, thirty minds at a time, be corrected. That was over. She would teach the way Madame Brun set out pastries — because the hungry were there and the bread was good, and not one thing further, no clause underneath, no appeal riding silently on the gift.

The record would stand wrong forever, and she was going to live anyway.

She could not have said, that evening, what she had just set down. She only knew that the hall seemed larger, and that she was tired in a way that felt like the far side of something rather than the near side, and that for the first time in longer than she could measure she wanted, simply and specifically and without any reason attached to it, to go home.

— ♦ —

iv. What Time Does

What happened next took three years, and no one saw it happen, and she least of all.

There is no scene to give you. That is not an evasion; it is the nature of the thing. A record of her aging would have to be a record of moments, and the moments were all ordinary: she taught, and marked papers, and walked home along the river, and ate what Madame Brun's granddaughter set out, and slept, and one autumn a student asked her a question she could not answer and she said so, plainly, without the old vertigo, and one winter she caught her reflection in a shop window on the rue de Javel and stood in front of it for a long moment, not alarmed, only interested, the way you are interested in weather. The face in the glass was longer than it had been. The hands on the strap of her bag had a woman's knuckles.

An element cannot grow. She had explained that to no one yet, but she would, one day, in a room in the mountains: a single pure thing has nowhere to move to. What she could not explain, because she was inside it, was the other half — that

a thing which is always in motion between two truths is a thing that moves through time, and a thing that moves through time is changed by it. The case had closed. The appeal that had held her at ten years old — suspended, preserved, waiting in the posture of the wronged for a verdict that would never come — had been withdrawn, and the moment it was withdrawn, time, which had been waiting politely outside her for a hundred and sixty years, came in.

She grew the way the record stood wrong: quietly, cumulatively, and forever.

— ♦ —

v. The Reunion

She went to Maria in the spring of nineteen thirty-four, and knocked, and waited, and heard the slow feet, and the door opened.

Maria looked at her for a very long time.

She did not say her name. That was the first thing — Maria, who had found her across a battlefield, who could pick her faint green light out of any darkness in Europe, stood in her own doorway holding the door and looking at a woman on her step with the careful, courteous blankness you give a stranger, and Cielle understood, with a lurch like a missed stair, that she was not recognized.

Then Maria's eyes went to the coat.

Do not look at my face. Faces are weather. Look for the coat. She had been told that on a warm evening in another century, by a girl handing round pastries, and she had said I will remember that, and she had. It was the same coat. It had always been the same coat — let out and turned and re-lined by four generations of hands that could see, every decade of it readable like rings in a tree — and Maria's gaze came up from the blue wool to the grown face above it, and Cielle watched the recognition arrive not as sight but as arithmetic, the way Maria had verified everything her whole life: the coat, the light — faint now, steady now — the impossible sum of them.

"Ciel," she said.

"Yes."

"You are tall," said Marie Curie, who had measured the invisible for fifty years and never once been wrong about a measurement, and whose voice betrayed her now the way instruments never had.

"Yes."

"Elements do not grow."

"No," Cielle agreed. "They don't."

Maria stood aside from the door, which was her whole answer, and they went in.

She was thinner than the year before, and coughing in the way she had stopped apologising for, and her hands were the ruined hands the light had left her, and she made tea anyway, because she was Polish and a guest was a guest, and she did not ask a single question while the water boiled, because she had learned across four decades that Cielle arrived at things in order or not at all. They sat.

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The tea steamed between them. The spring came through the window with the sound of the street underneath it.

"Tell me," Maria said.

And Cielle — grown, unhurried, holding nothing back for the appeal because there was no appeal anymore, nothing riding on being believed, nothing to win — told her.

She told her the record was going to stand wrong forever, and how she knew, and what it had been like to hold that as a single fact in an empty hall, and what had closed there, and what had opened. She told her about the shop window and the woman's knuckles. She told her about the teaching — how it had set out to be a correction and become a meal, and how the difference between those two things had turned out to be the difference between a child and a grown woman, though she had not understood that until the growing was already underway and unstoppable.

And then, because the room was quiet and the tea was warm and there was no longer any version of her that needed this received in order to survive it, she told her the last thing.

"I did not tell you everything," she said. "About Ypres."

"I know," said Maria. "I have known since the field. You told me you became the cloud. You never told me how."

"I was not made to stumble into it. I was hunted into it. Nine nights, a cellar, eleven men who were not what they wore. I thought I had found the well at last — the actual well, after fifty years of you telling me there wasn't one — and I had. I had found it, and it was waiting for me, because it had been watching me hunt it the whole time and had simply let me finish."

She told her the rest in order, because it no longer had to be held shut: the hands closing on her arms before she had finished reading the room; the small-boned useless fury of a fight she could not win with chemistry because nothing in a man's forearm needed breaking that a man's forearm did not already have; her own hand, without her permission, closing on a throat.

"I nearly killed him," she said. "With my hands. Not with anything I am. Not a bond broken, not a colony taken apart — a man's windpipe, under ten fingers, and I pulled the way I have pulled plague out of a cistern, and for three or four seconds I very nearly succeeded, and two other men had to tear my own hands off of him before I finished what the rest of me had already decided to do without asking me."

Maria did not flinch, and did not reach for comfort, and did not say it was not her fault.

"They did not want to punish me," Cielle said. "That was the part I could not say, for nineteen years, because it made the whole horror so much smaller and so much worse at once. They did not build a weapon out of nothing. They only turned the one I already had the other way. The same hand. The same reach. Gentle in a cistern, and they only had to point it at a lung." She turned her hands over on the table — a woman's hands now, and she looked at them the way she had once looked at a stranger's, reading. "And before the masks went on, I got the name. The whole name. Aristocratie Nouvelle de Tyrannie de Informacionalisme. A man said the words to me himself, as a courtesy, because

he knew they would do me no good, and he was right. I have carried the full name of my own enemy for nineteen years and said it to no one — first because I could not say it without saying the other thing, and I could not be the girl who nearly strangled a man and also be anyone worth loving. And then, after the hall, for a different reason. Because saying it had stopped being necessary. It was no longer evidence, Maria. There is no case for it to be evidence in. It is only true. And true things can be given away for nothing, to a friend, over tea, which is what I am doing now."

The spring went on under the window.

Maria did not repeat the name back to her. She had heard it; she did not need to weigh it on her tongue to know what it was. She let the spring go on under the window for a moment, and when she spoke it was not about the enemy at all.

"Nineteen years."

"You could have told me the day you learned it."

"No," said Ciel. "I couldn't. That is the thing I finally understand and the thing I came to say. There was no earlier version of me that could have carried it here — not because the words were too heavy, but because I would have handed them to you as a filing. One more affidavit for the case. You would have received my worst night the way a clerk receives paper, because that is the only way I knew how to give anything: as evidence, toward the verdict, pending the correction of the record. You deserved better than to be my court." She looked up. "The case is withdrawn. There is no verdict coming and I have stopped waiting for one. So this is not testimony. It is just my life, and you are the person I most wanted to know it."

Maria reached out, and took her hand — the same hand, the one that had closed on a stranger's throat in a cellar in Belgium — and held it, and her ruined thumb moved once across the grown knuckles, verifying, the way she had verified everything, all her life, before she believed it.

"Then that is when you told me," she said. "Now. When it was a gift." Her grip tightened with what she had. "I have one correction, and I am owed it, because I am old and I was right before you were born. You said the record will stand wrong forever, and you have made your peace with it, and the peace is real — I can see it, it is all over you, it is why you are tall. But you have miscounted by one, Ciel. There is a record that has you in it correctly. Complete. Unglossed. The ugly parts ugly." She lifted the held hand an inch, as if entering it as an exhibit. "You are looking at her. I am the record. I have been keeping it since I was twenty-three years old, at a fountain, in the cold, and there is not one error in it, and it is going in the ground with me inside the year, which is the fate of every true record eventually — and it does not matter, and you know why it does not matter, because you learned it in that hall. The account was never what the living needed. It was only what the wronged were waiting on."

"And what do the living need?" Ciel asked — although she knew; she had known since a fountain, since a stone, since a girl with an empty bottle; she asked because some questions are how you hand a person the last word, and she had come all this way to give Maria the last word.

"Dinner," said Marie Curie. "A coat that fits. Someone at the door who knows them before the light comes on. Go home, Ciel. You have a life now. I would very much like to meet it before I die — bring them up the mountain when the term ends. All of them. I want to see what you grew."

PART SIXTEEN

Appelle-moi Ciel

Paris — 4 July 1934

i. The Woman Who Was Grown

In the summer of 1934 Cielle came to a quiet room in the mountains, and this time she did not come alone.

She came with her husband, and she had come, as she always came to the people who mattered, from a city she had at last let herself call home. The room was in a sanatorium high in the Alps, the curtains drawn against a July light that had become, for the woman in the bed, a thing too bright to bear — because the woman in the bed was dying of light, of the patient invisible light she had carried in her pockets and worn against her skin and loved, the glowing element that had made her everything she was and was now, gram by gram, year by year, taking her out of the world.

Marie Curie was sixty-six years old. She had been doubted and mobbed and crowned and widowed and poisoned by her own life's work, and she had driven the saving light to the front through the worst war the world had ever made, and she had never once, in all of it, stopped reading. Her eyes were failing now. But they were the same eyes that had looked at a glowing girl on a fountain rim forty-three years before and chosen to know her rather than worship or use her, and when the door opened they found Cielle at once, the way they had always found the faintest light in any room — and this time there was no arithmetic in the finding, no coat to verify first, no lurch of a stranger on a step. She had seen the grown woman in the spring, across a teapot, in her own kitchen.

"You came," Marie said. Her voice was very thin. "And you brought him."

"You asked me to," said Cielle. "The term ended Tuesday. We took the early train."

Cielle came to the side of the bed and knelt, the way she had knelt in the mud at Ypres, the way she had knelt by a drummer boy a hundred years before, and let her old friend look at her.

Marie looked at her for a long moment. Not at her face. Her failing eyes went down, and stopped, and something moved in them that Cielle had seen exactly once before — on an autumn night in a laboratory, over a prism, when a young woman had caught a green line exactly where the table said it would be and known, before she said a word, that she was right.

"Ciel," she said. "There is something you have not told me."

"There are forty years of things I have not told you."

"No." The thin hand rose from the coverlet, and it did not reach for Cielle's hand. It reached, with the last of its precision, a few inches lower — and hovered there, and did not quite touch. "This one. How long?"

Cielle went still.

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"I have spent fifty years finding the thing in the room that no one else can see," Marie said. "You may allow me one more. I am good at it." Her eyes came up, and they were wet and entirely clear. "How long?"

"Eleven weeks," said Cielle — who had told no one, who had barely told the husband in so many words, who had carried it up the mountain like a stone she was afraid to set down. "I did not want to say it. Not here, in this room. It felt like a cruelty, to bring a beginning into a place that was —"

"It is the opposite of a cruelty." And there was something in the thin voice now that had not been there a moment before — the old fierce delight, the fountain in it, worn to a thread and unbroken. "It is the only good news I have had in a year, and you were going to let me die without it. An entire person. That is not a chemistry, Ciel. That is not something you can put a number to." She was smiling, and it cost her, and she did it anyway. "You. Of all the things alive. The girl who could not feel a friend leave a square — carrying one that has not even arrived."

And Cielle laughed, once, wetly, because it was true and because it was Marie, and Marie's face did the thing it had done at the fountain a lifetime ago, the pleasure of an instrument that has measured a true thing and found it beautiful.

"Then tell it to me," Marie said, when the moment had settled. "All of it, in order, the way you finally learned to tell things. I have heard every part of it across forty years and I have never once heard it as one thing, and I am not going to get another chance to. Tell me the whole account. I want to hear what it sounds like when it is finished — and I want to hear it from a woman who is carrying the next of it."

And because this was the one person alive who had earned every word — the one who had kept the true record since a fountain in the cold, the one who was the record — Cielle told her.

ii. What It Left

"Do you remember," Cielle said, "that I once could not bear to be two things at the same time?"

"I remember you were two things and called one of them a lie," Marie said. "I remember it nearly destroyed you. And I remember two men — one in California and one in Copenhagen — who put you back together by refusing, between them, to let you choose." The ghost of the old dryness. "I was there. I carried half of it up the same hill you did. You do not need to build it for me again, Ciel. I have the diagram. Tell me only the end of it. Tell me what it left."

Cielle turned the old woman's hand gently in her own.

"It left me able to grow," she said. "That is what it came down to, in the end. An absolute cannot. Pure or poison, savior or weapon, no middle and no smear — a thing that is only ever one thing has nowhere to move to, and so it stays a child forever. Eytch and Oh and Enay will be children until the sun goes out, because each of them is one perfect single thing. I stopped being one thing. I learned to hold two that contradict each other and not call either one a lie — and a thing that is always in motion between two truths is a thing that moves through time. And a thing that moves through time is changed by it." She spread her free hand and looked at it, the hand of a grown woman. "So I aged. The contradiction I

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spent two hundred years trying to cut myself down out of turned out to be the whole of being alive."

Marie looked at her for a long moment, at the grown face, the lines that no element would ever wear.

"Your aging is your humanity," she said. "Made visible."

"Reading is the armor," Cielle said softly — the oldest law she knew, the one she had taught this woman at a fountain when this woman was young. "I had to read myself the way I taught you to read everything. And when I finally read it true, I became real."

She told her the rest, then, quietly, because Marie wanted it and there was time. That she had come home — to Paris, to the Javel square, to the worn relief of the girl-soldier on the church wall who had been her mirror and was now, at last, only her companion again, because she had stopped being Joan and started being herself. That she had married a boy made of the one element that hands chlorine the very thing it cannot carry, so that the two of them together make the plainest, most necessary thing in the world — the thing the whole world puts on its bread and never once thinks the word wound. He had been a soldier and was now a baker, the first man in five generations to run the Brun ovens, and he salted everything somewhat past the point of wisdom, which was a joke the two of them would never tire of.

"And if they come," Cielle said — because Marie was watching her with the old question in her face, and because a woman eleven weeks along may say a thing aloud to a dying friend that she would not yet say to the world — "I know the names. A daughter first. Maria." She said it and did not look away. "Not Marie. Maria — for a student with chalk on her cuffs and an empty bottle, who sat on a rock in the cold and let a mad girl talk, and wrote it down. The one who saw me. Not the monument. The girl."

Marie's eyes were bright and did not spill.

"And after her, if there is an after — Snow. And if the last of them come two at once, as they run in his family —" the smallest smile — "Niels. And Lewis."

"Niels and Lewis," Marie repeated, and something that was almost the old fierce fountain smile crossed her ruined face. "Not Bohr."

"No one," Cielle said gravely, "wanted to be called a Bohr."

And Marie Curie laughed — a real laugh, thin as paper and entirely alive, at a joke about children who did not yet exist, told to her by the only creature she had ever met who could not feel her leave.

Then the laugh cost her, as everything did now, and when she had the breath again she asked for the rest, and Cielle gave it. That the bakery on the square had become the heart of something larger — Brun bread going out by the trainload to a continent that had spent four years unmaking itself and had to be fed while it learned to be whole. That her husband had gone all the way down to the soil, being the element the air is mostly made of, and put himself into the ground so the wheat came up thicker, the way he put himself beside her so she came up kinder. He fed the living, every day, and never called it heroic, which was most of why it was. That she taught history now, because she had lived it, and painted in the hours that were her own.

And that all of it — the ovens, the square, the man who salted the soup, the classroom on the river, the child eleven weeks begun — was waiting for her at the foot of the mountain, and would still be there when this was over, because she had finally built a life that did not vanish when she turned her back on it.

iii. Ten Thousand Handles

"Say the teaching part again," Marie said.

"I have said it."

"You said it the way a person says a thing they have said too often." The old eyes had not left her. "You listed it. Between the bread and the painting. I have known you for forty-three years and I have never once heard you list anything." A breath. "Say it again. Slowly. I have not got the time to ask twice."

So Ciel knelt by the bed and said it slowly.

"I teach history," she said, "because there are so many lies, and they are like microbes in the information."

Marie's hand tightened in hers.

"There," she said.

"What?"

"You said it." The thin voice had something in it that had not been there. "Ciel. You *said* it. In eighteen ninety-four, on that rock, I built the entire thing in front of you — I had been three years getting it and I brought it to you because there was nobody else on the earth I could bring it to — and you looked at my two little maps and you said *they are like microbes*, and you said it the way a person reads out a number, and you did not hear yourself. And I went home and lay awake and thought: she has it. She has the whole of it in her mouth and it does not mean anything to her."

"I did not understand it," Ciel said.

"You did not have to understand it. You had to *survive* it, which took you forty years, and here you are." Marie closed her eyes and opened them again, which was costing her something. "Now finish. You have never once finished. Where is your cholera?"

And Ciel finished.

"It is not in the pamphlet," she said. "The pamphlet is the cup. I spent twenty years looking for the well you had told me was not there, because I could not believe you." She was looking at the old hand in hers. "There is no well. There is no cellar and no cabal and no man in a mask. There is a room of tired men on a Thursday with a page to fill, choosing which true thing is loud — and it is not even a crime, most of the time not even a decision, only a habit about what people would rather repeat. It rides the shapes they already have. The way the vibrio rode the water. Not because the water wanted it — because the water was going that way anyway."

Marie's eyes had not left her face.

"There was a cellar," she said. "You told me. There was a man in it."

"There was." Cielle turned the old hand over in hers. "That is the part it took me longest to fit together, and I have only had it a few years. Both are true, and I spent two decades believing one of them cancelled the other."

"Say it properly."

"They did not make the habit. The habit was already there — a room of tired men choosing which true thing is loud, and not one of them doing anything he would call wrong. That is the water, and it was going that way anyway." She paused. "But there are men who know exactly which way the water is going, and they stand downstream of it, and they are paid for standing there. He told me so himself, in the cellar, as a courtesy. He was not manufacturing the ignorance. He was buying the interval. Every year a true thing is delayed is a year somebody is quietly getting into position to own it when it lands — the works, the patent, the option, the contract. He was proud of that part. He called it the practical part."

Marie was quiet a moment.

"So the cabal is real," she said, "and it is not the cause."

"It is not the cause. It is the profit." Cielle heard herself say it and understood that she had been carrying the sentence for years without once setting it down. "That is why I could never find the well. I was looking for the people who invented the lie. There were no such people. There were only the ones who noticed which lies the world was already telling itself, and worked out to the year and the franc how long each one could be kept going, and bought accordingly."

"And you cannot break it."

"I cannot break it. There is no bond in it. I have the strongest pull of nearly anything alive and there is nothing in it to take hold of — I said that to you in ninety-four and I said it as a complaint and it was simply the truth." Cielle almost smiled. "It took me until I was two hundred years old to notice that Snow never broke anything either. He did not cure one case of cholera in his whole life. Not one. He watched them die by the hundred and he could not touch it. And he is the most important man in the history of that disease, and I knelt in a room with him and thought I was watching a failure."

"He took the handle off."

"He took the handle off." She said it like the oldest thing she knew. "That is all it is, Maria. You cannot purify a mind — there is no chemistry for it, there never will be. You can only get there first. It is so slow and so unimagnificent that it took me a hundred and forty years to see it was a weapon at all: you put the whole true thing into a young mind before the manufactured one arrives. And when the manufactured one comes — and it comes, it always comes — it finds the seat taken."

Marie was very still.

"And the ugly parts—"

"The ugly parts stay ugly." Cielle's voice went hard for a moment, the way it used to. "That is not a style, Maria, it is the mechanism. A partial truth is a treated water that still carries. Give them the clean version — the noble one, the answer printed at the bottom — and you have handed them a shape, and the shape is

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what the thing rides on." She shook her head. "So I tell them what it cost. Who was right too early and got broken for it. Who fouled their own well and drank from it. Who made the lie on purpose, and how reasonable he sounded — because that is the part they will need, and nobody ever gives it to them. A whole account has nowhere to hide a choice. That is the only reason it works."

"One class at a time," Marie said.

"One class at a time. Thirty of them. Twice a week." And Cielle looked up, and there it was, the thing she had been carrying up the mountain. "You told me in ninety-four that one man with one map loses. You said Snow did not lose because the map was wrong. He lost because he needed ten thousand handles and he had one."

Marie's eyes moved.

"Yes," she said. "I said that."

"I did not hear it for thirty years," said Cielle. "I heard it as arithmetic and I was insulted by it, because I wanted a well and you had given me a schoolroom." She was holding the hand with both of hers now. "Maria. Every one of them is a handle. They go out and they marry and they teach and they read a newspaper on a Thursday and something in it does not go down easily — and they will never know why, and never know my name, and not one of them will ever say the word chlorine. And I will never be able to count them, because they are the ones the lie did not reach, and there is no story in a thing that did not happen."

She stopped.

"That is what you gave me," she said. "You spent eighteen years carrying it, and you were forty-three and shouting at me in an empty square with your heart going like a bird's, and you said *I am probably not going to get this done and I would like somebody to be looking at it after me.*"

"I remember."

"I did not answer you."

"No," said Marie. "You did not." A very small breath. "You are answering me now. That is permitted. It has been my experience that most of the important answers arrive late and are still worth having."

She lay quiet for a moment. Cielle thought she had gone under, and had begun to let go of the hand, when the eyes opened again and were entirely clear.

"Did you ever go?"

"Go where."

"Do not," said Marie.

Cielle stopped.

"You told me a thing in nineteen eleven," Marie said, "at the end of the worst year of my life, and you told it to me as a *grievance*. A woman at a standpipe who would not drink the clean water. I have thought about her perhaps once a month for twenty-three years, which is more than you did, and I have never once known her name, because you did not learn it, because you did not think it was worth

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the four minutes." Her hand had not moved in Cielle's. "I asked you to. At the corner. It was the last thing I had left to give you and I gave it to you standing up with my legs going. Did you ever go."

"Yes," said Cielle.

The old eyes closed. Something went out of the shoulders that had been in them a long time.

"When."

"Nineteen thirty. Eleven days after I understood what she was." Cielle was looking at the coverlet. "There was no reason for it. There was a proper main by then and the ditch had been filled in and the whole thing had been a very great success and there was not one living creature in that place who wanted anything from me. I stood at a clerk's shoulder for four hours while he did other work and I read the burial register over his arm. The autumn she died. Six weeks of it. More names than the page was ruled for."

"And?"

And Cielle told her.

She said the name once, quietly, in a room in the mountains with the curtains drawn, and it was the first time in her existence that she had said it out loud to another person, and it took less than a second, and it had cost thirty-three years.

Marie Curie repeated it. Once. In the accent she had never quite lost.

"Two of the four were on the same line," Cielle said. "In the register. The clerk had run out of room and put them together and drawn one bracket. He did not do it unkindly. He did it the way you do a thing at the end of a long autumn."

"You have carried her a long way," Marie said.

"I have carried her four years. I did not carry her at all for the nineteen before that; I want to be exact, because you would want me to be exact. I threw her away and went to a reservoir." Cielle's voice did not do anything. "I say her name at the top of the first lecture. Every autumn. Before anything else — before Snow, before the pump, before a single word about what history is for. Thirty of them, at nine in the morning, in a room on the river. They do not know what they are being handed."

"What do you tell them?"

"That she drank from a ditch because a man with soft hands got to her first. That she was forty feet from the clean thing. That she was not stupid and she was not wicked and she did not choose anything at all — that there was a place in her, and it was empty, and something sat down in it." She looked up. "And that there is one in every person in this room."

Marie was quiet for a long moment.

"That is the whole course," she said. "You know that. Everything after that is only the examples."

"Yes."

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"Twenty-three years," Marie said, "and one clerk's arm, and four hours." The ghost of something crossed the ruined face. "Do you know what the terrible thing is, Ciel? It was always going to be four hours. It was four hours in nineteen eleven. It was four hours the week she died. The register was sitting in that parish the entire time, in a room anybody could walk into, and the only thing standing between you and it for nineteen years was that you had decided in advance what you would find."

"I know."

"I am not scolding you."

"You are a little," said Cielle.

"I am a little," Marie agreed. "It is my last afternoon and I have earned one." And then, more quietly: "Thank you for going. I would like that on the record too, since we are keeping one. I have spent twenty-three years afraid that I said the most important thing I ever said to anybody at a street corner, badly, with my legs going, to somebody who was not listening."

"I was not listening."

"No."

"I heard it anyway," said Cielle. "It took nineteen years to arrive. It arrived."

"That is the whole of my professional experience of the truth," said Marie Curie, "in one sentence, and I did not have to publish it."

—

"Ciel." The voice had almost nothing left in it. "The other one."

"Which other one?"

"You know which."

And Cielle went still, because she did know, and had known since the door opened, and had come up a mountain with her husband and the child she carried, partly in order to be asked.

"You were twenty-three," she said. "It was the third night. You stood at the edge of the lamplight with a spectroscope under your coat and you told me that if I could not feel you being gone, then I could not feel you coming back either. That there was no reunion in me. Only the sentence, still going."

"And you asked if that was bad."

"And you said: *ask me in forty years*."

"It has been forty-three," said Marie. "You are late." The ghost of the fountain in it. "Ask me."

Cielle asked her.

"Is it bad?"

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Marie Curie took her time. She had never in her life answered a question before she had it, and she was not going to start with the last one.

"It was," she said. "It was the loneliest thing I have ever been near. I went home that night and I cried, which I did not do, and I could not have told you why. I was twenty-three and I had just met the only thing in the world that could not miss me." Her hand moved, very slightly, in Ciel's. "I did not know then that I was going to spend forty years being the only creature you could not feel leaving. It was not always survivable. In nineteen six I stood at the edge of that square for a quarter of an hour and could not make my legs cross it, because I knew — I *knew* — that you would be in the middle of a sentence about a courtroom, and that Pierre would have been two months dead and you would not know, and that I would have to say it out loud to a girl who could not feel that nine years had passed since she last saw me. And I did it. And you had nothing. And you sat still for a quarter of an hour, which was the hardest thing I have ever watched anybody do."

"I know."

"So yes. It was bad." Marie's eyes had gone somewhere else, and come back. "And here is the forty-three-year answer, Ciel, and it is not the one either of us expected, so attend.

"You have a clock now."

Cielle did not say anything.

"You have one," said Marie. "You are grown. You aged. A thing that moves through time is *in* time — you told me that yourself an hour ago, you worked it out with a chemist and a physicist and it took you ten years. So you have one now. Which means you can do the arithmetic you could never do." The old eyes were absolutely clear. "Go on then. Do it. How long was I gone, between the fountain and the rain?"

"Nine years," said Cielle.

Her voice had changed.

"Nine years," Marie agreed. "And you can feel it now, can you not. Now. Sitting here. Not then — you could not have, it was an anatomy, I have never blamed you for it and I am not going to start on my last afternoon." A breath. "But you can feel it now."

"Yes."

"And it hurts."

"Yes."

"That is the bill," said Marie. "That is the whole bill and there is nothing else in it. You could not feel me going, and now you can feel every year of it at once, all of it, arriving forty years late in one afternoon — and you will carry that until you die, and you *will* die, and I am sorrier about that than I have ever been about anything." Her hand tightened, with what she had. "And it is not bad. Do you hear me? It is the price and it is not the same thing as bad. You are grieving me. You could not have grieved me at twenty-three and you can grieve me now, and I would not trade one single hour of this for a hundred years of the sentence still going."

The room was very quiet.

"You asked me at twenty-three whether there was any reunion in you," Marie said. "There was not. There is now. It is happening. It has been happening since you came through that door and I looked at you and could not find the child." The thinnest possible smile. "It took forty-three years and it cost you everything you were, and here it is, and it is very short.

"Was it worth it?"

And Cielle — savior and weapon, vanity and vocation, failed and worthy of love, all of it held at once and none of it a lie — said the only true thing there was.

"Ask me in forty years," she said.

And Marie Curie laughed for the second and last time.

iv. The Crowning

The laughter cost her. When it passed she lay back against the pillows, smaller than she had been a moment before, and the drawn curtains could not keep all the July light out, and what light there was lay on her face like a weight.

And she could see — the way the dying come to see, the way Marie of all people had always been able to see — the friends gathered now at the edges of the room in their full glory: Eytych with her bright hair, Oh steady and warm, Enay with her tall hat held against her chest the way people hold their hats at a graveside. They had come for Cielle, and they had come for the woman in the bed, who had earned the sight of them if any human ever had.

And Oh — Oh had said, years before, in a dressing station that smelled of a war not yet started: I will come back. She had. She was here. She had come back to a friend she could no longer follow. She was content, and it broke her heart, and both were true in the same moment.

Marie saw it too. Of course she saw it. She had spent her whole life learning to see the smallest light there was, and she had split this very light with a prism on an autumn night to prove a frightened girl was real.

"I can still see it," she said. Her eyes were on the halo, and they were clear. "After everything. I can still see your light."

"I know you can," Cielle said. "You always could. You were the first."

"I think," Marie said, "that I shall need it. For the next part. They tell me there is a next part." The old dry humor, worn to a thread but unbroken. "And I have always preferred to travel with a good instrument." Her eyes moved, once, down to where the child was and back up. "Though I find I have measured one last thing after all, and it was the best of them, and it was a person. Let that be in the record too."

Cielle bowed her head.

Not in grief — though the grief was there, vast, held, one of the two things she was now able to hold without calling the other a lie. She bowed her head in offering, the way you present a thing you have carried a long way to the person it was always meant for. She had carried this light since a smoky workshop in

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Sweden, since before the world had a name for what she was. It had blazed at the bleaching and dimmed at the gala and gone almost all the way out in the mud, and it had never, in two hundred years, belonged to anyone but her.

She lifted it from her own brow — the gesture as much as the light, both of them understanding it was not a thing the hands could truly hold — and she leaned forward, and she crowned the dying woman with it.

The pale green ring settled over Marie Curie's white hair and brightened there — brighter, in that moment, than it had been since before Ypres, as though it had only been waiting all these years for the one head that had earned it. The woman who had spent her life making the invisible visible wore, at the end, the most invisible light there was, made visible at last, and shining.

"There," Cielle said. "It was always going to go to you. I only didn't know it until now."

Marie Curie closed her eyes. The halo did not dim. The room was very quiet, and full — full of friends in their glory, and a grown woman kneeling by a bed with a child begun under her heart, and a light passing at last from the one who had carried it to the one who had first dared to know it.

v. Heaven Calls

At the fountain, forty-three years before, a lonely girl had told a lonely student the first true thing about herself. *Appelle-moi Ciel*, she had said. Call me Ciel. Call me heaven. It had been an instruction, then — a name offered to the one person who could hear it.

She understood now that it had also been a prophecy, and that she had had the direction of it backward the whole time, the way she had once had everything backward.

She had thought she was the one who said call me heaven.

She was not. She was the one heaven was calling.

She felt it come — not as a summons from outside, not a voice across a battlefield tapping a woman on the shoulder, but the way the green had always come, from somewhere under the breastbone, unbidden and true: the sense of arriving somewhere that had been expecting her. The thing she had spent two centuries protecting other people on their way toward. The thing the dying mother had sung about in a cholera ward, the blue sky, the place free of sickness and delusion and horror, the *ciel* that had given her her name.

It was calling her home. And she understood, kneeling there with her friend's hand cooling in her own and the child unborn beneath her heart, that she was at last the kind of thing that could answer — not a fixed and deathless element, not a child who could never change, but a person, grown, who had lived a whole human life.

Heaven had called her.

She answered.

EPILOGUE

The Square

Javel, Paris — 1939

The square had six sides and six ways out of it, and Cielle knew every one of them the way you know the lines of your own hand.

The fountain. The church, with the girl-soldier worn into its wall. The bakery on the corner, which had said BRUN over the door since 1882 and said it still. And three roads going out — north toward the reservoirs, the narrow carriers' lane, and the wide one that ran, if you followed it far enough, all the way to the fields that had been battlefields. She had walked all six a thousand times. These days she mostly walked the short one, from the bakery door to the fountain rim, because it was the one with the children on it.

There were four of them now.

Maria was four, and read at the table with her lips moving, which she had done since she was very small, because the girl she was named for had read at four and been mortified to be caught at it, and the trait had come down the name like a colour down a spectrum. Snow was three and grave and watched everything. And the twins were two, Niels and Lewis, who had arrived together exactly as their father's family had a habit of doing, and who between them had the scabbed knees of every two-year-old who has ever found a fountain rim and decided it was for climbing.

They ate Brun buns in the mornings, sitting on the warm stone. It was the plainest thing in the world and Cielle never once got used to it. There had been a time — she remembered it the way you remember a country you have left — when the pastries on this square went to four girls no one else could see, left out on a sill by a baker who worked chemicals in her bread. Now the same corner put the same bread into the hands of children who cast shadows, who left crumbs, who could be caught reading. The sill had become a table. She did not have a word for what that was. She had stopped needing one.

She taught at the Sorbonne two mornings a week, and painted in the hours that were hers, and salted nothing, because her husband salted everything and the household had long since reached its equilibrium. On the good evenings the others came.

They came the way they had always come — Eytch first, a flicker before she was a girl; Oh as a coolness in the air; Enay last, warmth before shape, the tall hat exactly as it had always been. They sat on the rim in the long light and they were, for an hour, not the standing army of the world's water but four girls at the end of a day, which underneath everything they still were. And they watched the children.

Eytch had taught the twins to make a noise she insisted was a hydrogen noise, and would not be told otherwise, and had to be moved further along the rim by general agreement. Enay had attempted to teach Snow a salute, and Snow had considered it gravely and then handed her a pebble instead, which Enay accepted with such ceremony that the child brought her one every evening afterwards — and Enay kept every single one.

That was the new thing. That was the thing none of them had a name for.

Enay watched Snow sorting pebbles by some system only she could see, and felt the old fierce gladness and, beneath it, the ache she had carried since the mountains: the one who keeps the home warm for the friend who is not coming back, glad past bearing that the friend got somewhere worth not returning from. Eytch watched the twins climb and fall and climb, their scabbed knees a diary of small disasters, and felt the strange double thing of it — the joy that a life could be for ending, and the grief that she would never be given one. And Oh, who kept promises, watched Maria read and said nothing, because unmeasured is not the same as unreal, and some of the realest things do not want a word laid over them.

But it was more than watching. They could feel the children.

They could feel them the way they felt each other — that low sure pull that meant another of their own was near, the pull that had drawn them across cities to one another for a thousand years. It came off the four small figures on the fountain rim like warmth off a stone, and it made no sense at all, because these were not elements. These were children. Human children, made the human way, with a human mother — a mother who had once been an element and was not one anymore.

"They pull," Eytch said one evening, wonderingly, watching Lewis reach for his brother. It was the closest any of them came to saying it. "Ciel. They pull. How do they —"

"I don't know," Cielle said.

And she did not. Her own pull had been the strongest of nearly anything alive — she had said so once, at a fountain, to a girl with a spectroscope, and said it as a complaint — and here it was again, smaller, four times over, in four small bodies that no chart in the world had a box for. There had never been a child of an element. None had ever been born, because none of the elements had ever grown up enough to have one — except her, exactly one, out of every chlorine that had ever existed. Her friends were feeling a thing the world had no instrument for yet, and they could not name it, and neither could she.

She thought of a man named Scheele, in a workshop in Sweden, a very long time ago. He had held her in a jar and known she was something and not been able to say what. He had not been a fool. He had been early. Being early is not the same as being wrong; it is only the loneliest way of being right.

She still thought about them — the soft-handed men who chose which true thing was loud, the new aristocracy that knew exactly what it was and believed it had the right. She had not defeated them. She had stopped believing she was the one who was meant to. Her weapon was thirty students at nine in the morning, the seat taken before the lie arrived, and it would go on long after she was gone, and it was enough.

That spring, with three-month Maria asleep against her neck more often than not, a man came into the square whom Cielle knew — older now, and ruined: the one who had driven the light to the front, where it turned in his hands and killed the woman who carried it, though he had never known her name and never would. He did not come as an enemy. He came the way the wrecked come to a bright square, drawn to the smell of bread. And Cielle — who cleaned things, whose one uncomplicated good was to take the foulness out of what a body had to take in — went out to him with the infant on her shoulder and did for him, one-

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handed, the slow work of debridement she had done for ten thousand wounds: took the rot out, a little, so the rest might heal. It was not forgiveness. It was closer to what she was for.

He looked at the baby on her shoulder, at the small sleeping weight of her, and asked, because there was nothing else to say, what the child was called.

"Maria," said Cielle.

And the man nodded, not knowing what he had been told, and went on across the square, a little cleaner than he had come, and was gone out one of the six ways, and she never saw him again.

The children grew. The bread went out by the trainload. The square did not change much, which after everything was the entire point of a square.

She did not know — she who had never once seen the next part of her own life coming — that in a little under a year the wide road out, the one that ran to the old battlefields, would carry the war back the other way, into the city, over the square, past the bakery with BRUN above the door. She did not know she would gather these four small readers and climbers and this salting soldier of a husband and go. She had never been able to feel the future any more than she had been able to feel Maria leave a square. She only knew the thing in front of her: the long light on the stone, and the buns, and the pull of four children that no one alive could name, and her friends beside her keeping her a place the way they always had.

It was enough. It was, in fact, everything. She had set out across two hundred years to save exactly this and had not known, the whole time, that this was the thing.

Appelle-moi Ciel, she had told a girl, once, in the cold.

She was home, and it was evening, and the children were reading, and heaven — for now, for a while, for as long as it would last — was in no hurry at all.

Cielle and the Super Elements will return.

Author's Note

My grandmothers were widows when they went back to school together.

Ruth Ellsworth Knudson and Evelyn Miller Harrison enrolled in art history in their sixties, sat in the same classrooms, and wrote their master's theses on the iconography of Angels and Saints — how you know which figure is which by what they hold in their hands. The apostle with the keys. The angel with the trumpet. The saint with the musical instrument. The muse with her particular art. Identity made visible through a single chosen object.

Ruth's son Homer married Evelyn's daughter Pamela. The two women were leading a group of art students through Venice and the Uffizi Gallery when I was born.

I did not know, for a very long time, that my grandmothers had given me the key to the project that would become this book.

The elements as characters began when I was unemployed — a stay-at-home father with extraordinarily bright children who loved LEGOs and Hot Wheels. I was trying to design a toy, something like a marble run. My father Homer, an obstetrician, said: "Make them out of different materials so they have different densities." I started writing something I called "I, Ron" and then spent years designing elements, trying to understand what they should look like and how they should move.

I understood early that they would have to be children — that only children could use powers with the kind of obedience and concentration that chemistry requires, and that artists and illustrators would need characters whose bonding carried no romantic content. The clothing had to be modest. The stories had to be clean enough for every family in the world.

What I could not figure out for years was how to make them visually distinct. I had the house colors. I had the card game. But the costumes eluded me — Victorian dresses covered too many eras, modern superhero costumes belonged to a different mythology entirely. And then I remembered what Ruth and Evelyn had spent their sixties learning: that we know the saints by what they carry, and that iconography is how story survives.

Military dress uniforms are unique to time and country in ways that ballgowns are not. Each element-girl wears the military dress of the year and nation where her element was first isolated from nature by a human being. The hair color comes from her emission spectrum — the color of light she produces when electrically excited. The shield is her Lewis dot diagram made physical. Every visible detail carries meaning that can be learned and remembered, the way the apostle with the keys can be recognized across five centuries of painting.

My grandmothers did that. They gave me the system that made everything else possible.

A note on Cielle's halo. She carries one — barely visible, pale greenish-white, the color of her own emission line. It appears most clearly in her moments of greatest purpose. It fades when she is broken. The halogens take their name from the Greek halos, the luminous ring around the sun or moon. She is the element that purifies. It seemed correct.

This book is for every child who has looked at the periodic table on a classroom wall and thought: who are they, really? What do they want? Where have they

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been? The history is real and the chemistry is accurate. Ciel is not — she is the invention laid over a true record, the girl who was always in the water. She is invented. The being-seen is not.



WHAT IS TRUE AND WHAT IS INVENTED

A novel that walks through real epidemics, real laboratories, and real graves owes its readers a plain account of where the record ends and the invention begins. Here it is.

The history is real.

Carl Wilhelm Scheele isolated chlorine in Sweden in 1774 and did not know what he had; he called it dephlogisticated muriatic acid. Humphry Davy established that it was an element and named it chlorine in 1810, from the Greek for pale green. Jöns Jacob Berzelius devised the system of one- and two-letter chemical symbols that gave chlorine the mark Cl — a notation the world has now kept for two centuries.

Claude-Louis Berthollet made bleach at Javel, on the southwestern edge of Paris, in the 1780s; the product was called Eau de Javel and the district gave the substance its name. Antoine-Germain Labarraque used chlorinated solutions as a disinfectant in the 1820s, including in hospitals and on the dead, decades before anyone knew what a germ was.

Ignaz Semmelweis, working at the Vienna General Hospital in the 1840s, established that mortality in the doctors' maternity clinic was several times higher than in the midwives' clinic, correctly identified that doctors were carrying something from the dissecting room on their hands, and instituted handwashing in chlorinated lime. Deaths fell dramatically. He was disbelieved, dismissed, and eventually committed to an asylum, where he died in 1865 at the age of forty-seven, of an infected wound.

John Snow mapped the cholera deaths around the Broad Street pump in London in 1854 and had the pump handle removed. He had earlier administered chloroform to Queen Victoria at the birth of Prince Leopold in 1853, which did a great deal to make obstetric anaesthesia respectable. He died in 1858, before the water-borne theory of cholera was generally accepted. Robert Koch identified the cholera vibrio in 1883.

The typhoid outbreak at Maidstone, Kent, in 1897 was real, and the water supply was treated with a chlorine compound — one of the first such uses on a public supply anywhere. Jersey City, New Jersey, began continuous chlorination of its municipal water in 1908; the resulting court case was real, and the practice spread from it across the world. Water chlorination is among the largest single contributors to human life expectancy in the history of public health.

Chlorine gas was released as a weapon at Ypres on 22 April 1915. Marie Skłodowska Curie was born in Warsaw in 1867, came to Paris to study, married Pierre Curie, and won Nobel Prizes in physics (1903) and chemistry (1911). Pierre was killed by a horse-drawn wagon in the rue Dauphine in 1906. The publication of her letters in 1911 provoked a press campaign and a mob outside her house. During the First World War she equipped and drove mobile radiography units — the *petites Curies*. She died on 4 July 1934 of aplastic anaemia, from long exposure to radiation. Her notebooks remain radioactive.

Gilbert N. Lewis published the electron-pair model of the chemical bond — the dot diagrams — in 1916, and never received a Nobel Prize. Niels Bohr presented the principle of complementarity at Como in 1927. Henry Moseley established atomic number as the true ordering principle of the periodic table in 1913 and

was killed at Gallipoli in 1915, aged twenty-seven. Dmitri Mendeleev left gaps in his table and named the missing elements by position — eka-aluminium, eka-boron, eka-silicon — and all three were found.

Cielle is not.

Cielle, the Super Elements, and everything they do and say are invented. So is A.N.T.I. So is every private conversation in this book between an invented character and a historical one. Marie Curie never sat on a fountain rim in Javel and listened to chlorine tell her its life. Scheele did not look an element in the face. No girl knelt in the mud at Ypres saying a name.

Where the historical record and the story disagree, the story is wrong on purpose. Some chronology has been compressed. Conversations that have no transcript have been imagined. The causal claim the novel makes — that a hidden organisation shaped which discoveries were believed and when — is fiction, though the underlying phenomenon it dramatises is not: true findings really were delayed, buried, or drowned out, and people really did profit from the delay.

The chemistry is accurate. The reactions in this book are reactions that happen. Where a scene shows something at molecular scale, what it shows is what the molecules actually do.

A NOTE ON WORDS

Cl, ciel, Cielle

Berzelius gave the world letters, not names. The mark Cl is fixed and silent; what it sounds like depends on who reads it aloud. In French, *ciel* means sky, or heaven. The letters are the same letters. That is the whole of the wordplay, and it is not an invention of the author — it is what happens when a Swedish chemist's notation meets a French word.

Halogen and halo

Chlorine belongs to the halogens. The name comes from the Greek *hals*, salt, and the suffix *-gen*, forming: the salt-makers. The *halo* — the ring of light — is from a different Greek word entirely, *halōs*, the disk of the sun or moon. The two words rhyme by accident. They have nothing to do with each other. The novel treats the coincidence as beautiful rather than meaningful, which is the honest way to treat a coincidence.

Eka-, and super-

Mendeleev used the Sanskrit *eka*, meaning one, to name elements by their position relative to a known neighbour before anyone had found them — *eka*-aluminium became gallium. The method matters more than the prefix: you may give a true name to a thing that has not been discovered yet, provided you can say where it stands. The word *super* is Latin and means, plainly, above. The German *über* is the same word. Naming a thing that stands above the table is Mendeleev's method applied on a new axis, which is why the novel gives the coinage to a student who loved him.

Informacionalisme

A.N.T.I. calls its trade *Informacionalisme* — a French coinage, in the novel, of the early nineteenth century. Readers in the social sciences will recognise something close to it. The sociologist Manuel Castells introduced *informationalism* in 1996 to describe a technological and economic order organised around the processing and control of information, succeeding industrialism, and characterised in part by a new class division between those with access to the networks and those without. Castells was describing the world after the Second World War. He was not describing a secret society, and the novel's use of the word predates his by a century and a half, which A.N.T.I. would have found gratifying and Castells would probably find annoying. The resemblance is deliberate. The idea that whoever controls which true things travel controls a great deal else is not new, and did not need a sociologist to invent it — only to name it properly.

THE CHEMISTRY

Every reaction that carries weight in this book is a real one. A reader who wants to know what was actually happening will find it here.

Oxidation is the taking of electrons.

This is the single idea the novel rests on. When chlorine destroys a pigment or kills a bacterium, it is not cutting or burning. It is pulling electrons away from structures that need them, so that the structures cannot hold. Chlorine is among the most electronegative elements there are — it pulls harder than almost anything alive. That is the whole of Cielle's power, and it does not care what it is aimed at, which is the whole of her tragedy.

The molecules she is made of

Cl_2 — chlorine gas. Two chlorine atoms bonded to each other and to nothing else. This is the form used as a weapon.

HOCl — hypochlorous acid. Hydrogen, oxygen, chlorine. This is the active agent in chlorinated water and in wound antiseptic: the thing that actually does the cleaning. In the novel it is Cielle and Eytch and Oh, together.

HCl — hydrochloric acid. Hydrogen and chlorine.

NaCl — sodium chloride. Table salt. Sodium has one loosely held electron; chlorine has room for exactly one more. Sodium gives, chlorine takes, and the result is the most ordinary substance in the world.

CHCl_3 — chloroform. One carbon, one hydrogen, three chlorines.

Lewis structures

A chlorine atom has seven electrons in its outer shell and room for eight. Drawn as Lewis did it, that is seven dots and one empty place. The empty place is not damage; it is where bonds form. Every shield in this book is a Lewis diagram.

Emission spectra

Excite an element and it gives off light at wavelengths particular to that element — a fixed signature no other element can counterfeit. Chlorine has a pair of green lines near 522 nanometres. This is why the elements in this book have the hair they have, and why a spectroscope can prove what a person is.

Weight and number

Mendeleev ordered the table by atomic weight and had to override his own rule in two places to keep the families intact. He was right to. The true ordering principle is atomic number — the count of protons in the nucleus, fixed, unchangeable, untouched by anything that happens to the electrons. Chlorine is seventeen. It was seventeen before anyone could measure it.

QUESTIONS FOR READERS AND CLASSROOMS

On the story

1. Cielle says early on that she is “the most documented creature on earth and the least recorded.” What is the difference between being documented and being recorded? Where else in the book does that distinction matter?
2. Maria tells Cielle that being doubted is “just the weather.” Is she right? What does it cost her to believe that?
3. Semmelweis handed the doctors an accusation; Snow handed them a gift. Both were correct. Why did only one of them get listened to?
4. Cielle can clean water but cannot read a room. What is she good at, exactly, and what is she bad at? Are they the same skill pointed in different directions?
5. At Ypres, Cielle is used as a weapon against her will. Later she says she was still responsible for something. For what?
6. The woman at the standpipe drinks from a ditch because a pamphlet told her the clean water was poison. Whose fault are her children’s deaths?
7. Cielle despises people who believe lies. Marie tells her that contempt makes her the lie-makers’ best instrument. Explain why that might be true.
8. Why does the halo go out at Ypres, and why does it come back only partway?

On the science

1. Oxidation is described as “the taking of electrons.” Using that definition, explain what bleach does to a coloured shirt.
2. Sodium has one electron to give; chlorine has one space to fill. Why does that make salt so stable, and why is stability not the same as being finished?
3. Mendeleeev named three elements before anyone found them. How is it possible to describe something accurately that no one has ever seen?
4. Oh points at a number under the atomic weight that nobody in 1891 could measure. What was she pointing at, and why did finding it require someone to die at Gallipoli?
5. John Snow could not see the cholera bacterium and had no way to prove it existed. How did he prove the water was the cause anyway? What does his map teach about evidence?
6. Chlorine saves lives in a water main and takes them in a gas cylinder. Is chlorine good or bad? Is that a chemistry question?

On the harder things

1. A.N.T.I. does not lie. It chooses which true things are loud. Is that different from lying? Is it worse?
2. The man in the cellar says water decides who lives, but belief decides everything upstream of the water. Do you agree?

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3. Cielle says she wanted to be thanked and also meant every word of giving up the thanks. Bohr later tells her both can be true at once. Where else in your own life have two contradictory true things had to live together?
4. Marie Curie chose to keep working with a substance she knew was killing her. Was she right?
5. The book says "reading is the armor." Armor against what, exactly?
6. Cielle never defeats A.N.T.I. She teaches thirty students a term instead. Is that a victory?

A GUIDE FOR TEACHING THIS BOOK

For classroom teachers, homeschooling families, reading groups, and anyone who wants to use this novel to teach with.

What follows is a working guide. It assumes no chemistry on the part of the person teaching. The sections above — on what is true, on where the words came from, and on the chemistry itself — contain everything needed to answer a student's questions; this guide suggests what to do with them.

Why the chemistry is the story

Most fiction carrying science treats it as cargo: the story stops, the explanation happens, the story resumes. This book was built the other way round, and a person teaching it can lean on that.

- Chlorine pulls electrons harder than almost anything in this story. That single fact is both the heroine's power and her moral problem, and a student who understands the first understands the second.
- A chlorine atom has seven electrons in its outer shell and room for one more. That empty place is the book's central image: a gap is not damage, it is where bonding happens.
- Sodium has one electron to give. When Cielle finally puts her hand in Enay's, a student has watched a chemical reaction become a friendship — and the product is table salt.
- Oxidation is defined throughout as the taking of electrons — never as burning, never as dissolving. That definition is the one that will still be correct in a university lecture hall.

A student asked to remember relationships remembers longer than a student asked to remember definitions. That is the whole pedagogical bet of this book.

Where it fits in a science course

For those working to formal standards, the novel maps most directly onto the physical-science expectations concerning matter and its interactions — the structure of atoms, the organisation of the periodic table, and the prediction of chemical behaviour from outer electron states.

One alignment is worth naming precisely. The Next Generation Science Standards ask students to explain the outcome of a simple chemical reaction from the outermost electron states of atoms, and the standard offers, as its own example, the reaction of sodium and chlorine. That reaction is the emotional climax of this novel. A teacher may point at the standard and at the scene and find they are the same thing.

The book also serves the science practices more broadly: arguing from evidence, interpreting data, and evaluating how findings are communicated. Semmelweis, Snow, and the Curies each produce correct evidence and lose the argument anyway, which is a lesson no laboratory exercise teaches well.

Three ways to teach it

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"The whole book, alongside the chemistry." Read it in five blocks, each paired with an activity: Parts One to Three with atomic structure and the periodic table; Parts Four to Six with oxidation and disinfection; Parts Seven to Nine with solutions and dose; Parts Ten to Thirteen with emission spectra; Parts Fourteen and Fifteen with bonding models.

"Excerpts only, for history or literature." Four sequences stand alone and need no chemistry: the chart scene in Part Three, the Broad Street pump in Part Six, the Vienna maternity clinics in Part Five, and the empty slot in Part Fourteen. Each is identified below.

"As a research project." A student chooses a scientific finding that was correct and rejected — continental drift, handwashing, the bacterial cause of ulcers, leaded petrol, the ozone hole — and reconstructs why it was not believed and what finally changed. The novel supplies the method of analysis, not the answer.

Four passages that stand alone

The Chart (Part Three). The elements see a periodic table for the first time and find themselves in it — bonds as friendships, columns as families, atomic number as a truer name than atomic weight. Ask: Oh points at a number nobody in 1891 could measure. What was it, and why did confirming it cost a young man his life at Gallipoli?

The Handle of the Pump (Part Six). John Snow, the Broad Street outbreak, the map, and the officials who put the handle back. Ask: Snow could not see the pathogen and never cured a single case. How did he prove the water was responsible, and why was proving it not enough?

The Hands That Carried Death (Part Five). The Vienna maternity clinics and the destruction of a man who was right. Ask: Semmelweis handed the doctors an accusation; Snow handed them a gift. Both were correct. Why was only one of them heard?

The Empty Slot (Part Fourteen). Seven electrons, one empty place, and the argument that the gap is not a wound but the site of every bond the atom will ever make. Ask: what does it mean, chemically and otherwise, that an atom with a complete outer shell will not react with anything?

Things to do at a bench or a kitchen table

- Bleach and colour. Decolourise a dyed cloth with dilute household bleach. Have the student explain the result as oxidation — and notice that the white was always there. Only the coloured molecules were destroyed.
- Flame tests. Observe the characteristic colours of different salts and connect them to the novel's treatment of emission lines as an identity that cannot be counterfeited. Chlorine's own green pair sits near five hundred and twenty-two nanometres.
- Model building. Build sodium chloride, water, hydrochloric acid, and hypochlorous acid from any modelling kit or from household objects. Ask which of these Cielle can be part of, and which she cannot, and why.
- Mapping. Give the student an unlabelled cluster of cases around a single point and ask them to reason to a cause without a microscope, as Snow did.

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- Arithmetic of dose. Calculate the residual chlorine in a municipal water supply in parts per million and compare it with the concentrations used industrially. Discuss why the dose that protects is not the dose that harms.

One safety matter, and it is not optional: never mix household bleach with any acid, or with any ammonia-based cleaner. Doing so produces chlorine gas. This novel makes the consequence of that gas vivid enough. It should stay on the page.

Writing prompts

1. Explain to a reader who has never studied chemistry why sodium and chlorine form a stable compound. Use the novel's imagery where it helps and correct it where it misleads.
2. The novel argues that whoever decides which true things are widely repeated holds more power than whoever discovers them. Defend or refute this, using at least two examples from history.
3. Using the note on what is true and what is invented, identify three places where the author altered the record, and argue in each case whether the alteration earned its place.
4. Write a scene in which a different element — helium, iron, mercury — meets a human being. The element's behaviour must follow its real chemistry.
5. Cielle is expert at chemistry and poor at reading people, and mistakes the first skill for the second. Describe a time when being expert in one thing gave someone false confidence in another.

A note on the difficult material

This book contains no profanity, nothing sexual, and no violence written for effect. It does treat the following seriously and without softening, and anyone handing it to a young reader should know so in advance:

- Epidemic disease, including the deaths of children.
- Maternal death, and the Vienna maternity clinics.
- Institutional cruelty — Semmelweis is confined to an asylum and dies there.
- Chemical warfare. Cielle is taken and used as a weapon against her will. The narrative deliberately refuses to depict the soldiers' deaths, on the grounds that they are not hers to describe.
- Bereavement, and the long illness and death of Marie Curie.

For a younger or more sensitive reader, the excerpt route above omits the war entirely.

A note on the information theme

The antagonists of this novel arrange which true findings travel, in order to delay public-health measures until they are positioned to profit by them. A.N.T.I. is an invention. The phenomenon underneath it — correct findings delayed, buried, or drowned out, sometimes with money at stake — is documented history.

This material tends to generate good discussion, and it is set deliberately in the nineteenth and early twentieth centuries. The novel makes no reference to

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contemporary politics, and a discussion is usually better served by staying in that frame: a student reasons more clearly about Vienna in 1847 than about last week, and having reasoned clearly there, can be trusted to make the journey home unaided.

The book's own answer to the problem is worth putting in front of a student, because it is unusually modest. Cielie never defeats the people who manipulate belief. She becomes a teacher, on the theory that the only reliable defence is arriving first with a complete and honest account. A student may reasonably disagree, and should be invited to.

Permission

Any teacher, parent, tutor, or reading group may copy this guide and the questions preceding it, freely and without asking, for as many students as they have. For excerpt permissions, class sets, or the classroom card game that introduces the periodic table to younger children, write to the address at the end of this book.

Acknowledgments

The National Science Teaching Association gave the card game its first serious platform, and Reagan, a science teacher in Savannah, gave it something rarer — a room full of actual children, and an honest report of what happened when the cards hit the table.

Two lawyers, both named David, told me the shields worked. I am grateful for that specific and necessary confirmation, and for the fact that it took two lawyers to give it.

Pat Mitchell and Mark Mitchell told me the book needed villains. They were right, and A.N.T.I. is their fault.

Bruce Christensen — of PBS, of BYU, of Arlington, Virginia — understood from very early what kind of project this was, back when it was easier to mistake it for a science kit. Sloan and the Edenfields believed in the characters before there was any reason to, which is the only kind of belief worth having.

My father Homer said, at the beginning of all of it: “Make them out of different materials so they have different densities.” He was right. He is usually right. He is an obstetrician, and he has delivered more new life into the world than I will ever count, which gives him a certain standing on the question of what things ought to be made of.

And my mother, who still describes a full-grown, elderly, overweight lawyer as her little learning-disabled son, and who does not pronounce the K. I owe her more than an acknowledgments page can hold — which is why I have put it in the other book instead.



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