Chapter One

1

T H E A L C H E M I S T ' S D A U G H T E R

True it is, without falsehood, certain and most true 1st Precept of the Emerald Tablet

In one of my earliest memories I walk behind my father to the furnace shed. He wears a long black coat that gathers up fallen leaves and his staff makes a little crunch when he stabs it into the path. My apron is so thick that my knees bang against it and the autumn air is smoky on my face. Suddenly I trip over the hem of his coat. My nose hits ancient wool. He stops dead. My heart pounds but I recover my balance and we walk on.

When we reach the shed I take a gasp of fresh air before being swallowed up. Gill is inside, shovelling coal into the arch of the furnace mouth, which roars orange.

My father's finger emerges from his sleeve and points to a metal screen Gill made for me. There is a little stool behind it and at just the right height a couple of peep holes covered with mesh are cut into the metal. I must not move from this stool in case something spills or explodes. We are boiling up vatfuls of urine to make a thick syrup which eventually will become phosphorus. After a while the stench of sulphur and ammonia is so strong that it almost knocks me off my stool. I can't breathe properly and my throat is hot but I hold firm and don't let my back slump. Gill is like a black shadow moving back and forth; a twist of his upper body, a jerk of the shovel, a stooping out of sight, another turn, the racket of falling coal, then the flames roar fiercer until I think the furnace will blow apart and the shed, Selden, the woods, the world will all fly away in pieces.

But my father isn't worried so I feel safe too. He stands at his high desk by the door and puts his left hand to his forehead as he writes. The only bit of his face I can see under his wig is his beaky nose. This black and orange world is crammed with a million things that he knows and I don't. I want to be like him. I will be soon, if I can only pay attention and learn fast enough.

2

have no memories of my mother because she is a skeleton under the earth all the time I am a child. When I was born she died and though I appreciate the symmetry of this I'm not satisfied. It's hard finding out more about her because I'm not allowed to ask my father and Mrs Gill, who looks after me, is a woman of few words.

However, on my sixth birthday, 30 May 1712, I ask Mrs Gill the usual questions about what my mother was like and she suddenly sighs deeply, puts down the great pot she is carrying – it is the week for brewing up the elderflowers – and takes me on a long journey through the house past the Queen's Room, through a series of little doors and up a flight of narrow stairs until we come to a low room with a high lattice window and a sloping floor. She says, 'That's where you were born.'

The only furniture is a rough-looking chest and a high bed shrouded in linen, which I look at with wonder. The bed is surely too small and clean for such an untidy event as a birth. 'Why?' I say.

'Because everyone has to be born somewhere.'

'Why this room and not a bigger one?'

'Because it's quiet and ideal.' She leans over the chest in that Mrs Gill way of not bending her back or knees but just lowering her upper body. I go closer as she brings up the lid and I see that the inside is lined with white paper but otherwise nearly empty. It smells like nothing else on earth, a dusty sweetness of folded-away things. And out comes a cream-coloured shawl like a spider's web, a tiny bonnet, a baby's tucked nightgown and a coil of pink ribbon with a pin in one end to keep it rolled up. 'These were your things that I made you,' she says, patting the clothes, 'and this was your mother's.' She hands me the ribbon, which I rub and sniff. 'You can have that if you like. And now those elderflowers will be boiled half dry so down we go.'

Later she tells me the story of my parents' marriage. My mother, Emilie De Lery, was from a family of Huguenot silk weavers who had been driven out of France in 1685 and settled in a district of London called Spital Fields. Competition in the silk market was fierce but my grandfather De Lery decided that fashionable London wanted colour so he went to the Royal Society to see if he could find someone who knew about dyes.

When Grandpe`re De Lery knocked at the Royal Society's door my father, Sir John Selden, was giving a paper about the green mineral, malachite. Grandpe`re De Lery listened rapturously, collared my father afterwards and insisted he dine en famille in Spital Fields. There John Selden met the daughter Emilie, twenty-two years old to his forty-nine, and his old bachelor heart was won by her dark eyes and shy smile. Within six months a new shade, De Lery green, had swamped the silk market; within a year my father had abandoned his fellowship at Trinity College Cambridge and carried Emilie off to his home, Selden Manor, in Buckinghamshire.

Of course, all that happiness didn't last long. My mother died nine months later on a May morning crowded with blossom and birdsong. She, Emilie the elder, was buried under a stone in the churchyard of St Mary and St Edelburga, while I, Emilie the younger, was wrapped in the cobwebby shawl and committed to the care of Mrs Gill, housekeeper.

My father never went back to Cambridge but devoted himself to his own researches and my education. Mrs Gill said he was so sad when my mother died he burnt all her things. The pink ribbon was saved because Mrs Gill thought I should have something as a keepsake.

3

Until the age of nineteen I never left our estates, which included acres of woodland, a sprinkling of neglected farms and the two villages of Selden Wick and Lower Selden. Seldens had lived in Buckinghamshire at least since the eleventh century when the first Sir John Selden was buried in the north transept of the new church of St M. and St E. Selden Manor was a long, low patchwork of a house, part stone, part brick, part timber-framed with

wings and roofs and chimneys tacked on here and there whenever a new generation could afford to make a mark.

As an infant I met the scuffed chair legs which had supported centuries of restless Selden backsides, and door panels pitted by the spurs of passing boots. My fingers clutched the fat balusters on the staircase and traced the grooves in the carving of the family motto round the newel post: Vide Mira Domini, my first Latin, 'Behold the wonderful works of the Lord'. By the age of five I was eye level with the battered cuisses of a suit of armour worn by a John Selden at Bosworth – Seldens were not politicians, said my father, they always picked the losing side in a war. The groan of joints when I shook the rusty gauntlet had me squirming with pleasure and I sucked my fingers to taste the metal. The rest of my Selden ancestry, each frozen in a portrait, had only two dimensions. Selden women were hung in the alcoves of upstairs passageways. They had oval faces with semicircles instead of eyebrows.

'Where's my mother?' I asked Mrs Gill.

'There was no time to have her painted.'

'How long does it take to paint a portrait?'

'Too long.'

'More than nine months?'

'Most like.'

'If there had been a portrait what would she have looked like?'

'Like you, of course.'

Mirrors were in short supply at Selden. My father had given me a piece of polished obsidian and if I peered in a good light I could see the shadow of my face, and there was an ancient looking-glass in a disused bedchamber where I climbed on a chair and saw distorted little features: thin nose, slanted black eyes under thick brows, hair that didn't lie flat. I translated these into one of the upstairs portraits and gave my mother a long neck, white bosom and jewels in her ears like the other Lady Seldens. I dressed her in silk, of course; there was a farmer's wife in church who sometimes wore black silk and it went hush-hush like wind in the leaves, but my mother didn't wear black, oh no, she wore green, lovely shifting green, De Lery green to match the emeralds on her throat.

Selden men were lined up in the great hall. I liked the detail of their pleated ruffs and spindly thighs, and even better I liked the fact that they were part of me. Their eyes were elliptical and full of mystery and learning. Mrs Gill taught me to look for a symbol inside each picture. One Selden had a globe, another a set of compasses, a third an exotic plant, and these were clues to the fact that Seldens were driven by the pursuit of knowledge. Some had been explorers, others astronomers, astrologers, scholars or plant collectors. But all Seldens had one thing in common which didn't show up in their portraits. They were puffers, or as my French mother would have said, souffleurs, dabblers in alchemy. My father was no dabbler but a true alchemist though he had received an orthodox education at Trinity and was fascinated by all branches of natural philosophy. He had become a fellow of the Royal

Society on the strength of his expertise in minerals and investigations into the nature of fire but still his vocation remained alchemy. Like most alchemists he was largely self-taught though he was in secret correspondence with other practitioners, notably his former teacher at Cambridge, Isaac Newton, now president of the Royal Society.

As he had no male heir, my father passed on every speck of knowledge to me. Very few girls in the history of the world had been given the chances I had, he said. ‘You are an empty flask and I am filling you up as fast as I can. You are my daughter and I will make you into me, just as if you were my son. And at the end of each day I will write down your progress so that when you become a great alchemist, greater perhaps than Mary the Jewess, people will see how I did it. And when you lapse I will write that down too and try to discover what has caused the weakness.’ This Emilie Notebook of his was a source of great anxiety to me. At Selden the written word was sacred. Ink was measured drop by drop and paper was kept in a locked drawer. A word committed to paper was regarded as a little explosion of energy. I had access to the notebooks on plants, minerals and alchemy but not to the Emilie Notebooks, which he wrote after I had gone to bed and were kept locked away in a hiding place I never saw and therefore haunted me with their ghostly authority.

4

To the world beyond Selden, say to the blacksmith’s daughter brought up on the other side of the gates separating our manor house from the village, our life must have seemed very strange. Had the girl poked her head through the bars to take a closer look she would have seen a quiet house unchanging from season to season except for varying quantities of smoke coming from the chimneys. I know we were talked about in the village because when Mrs Gill took me to church or visiting in the cottages people stared.

The church was named after St Edelburga, a saint so fond of books that she’d built an entire abbey so that her niece could be educated in it. A window in the side chapel had a stained-glass picture of Edelburga who had black brows like my own and therefore, I assumed, my mother’s. The Selden pew was at the front under the pulpit so I had an excellent view of Reverend Gilbert’s chin and nostrils, and was expert at dodging a spray of spittle. After the service his damp fingers clung to my hand as I argued some point in his sermon. My father and I did not believe in the Trinity. Only God was God, not Jesus and not the Holy Spirit, whereas Gilbert preached the ‘three in one’. Meanwhile everyone else hung about and listened. At the time I thought it was because they were amazed at how much I knew. Actually I must have been an odd little black-haired, pale-faced thing, full of long words but no girlish charm.

Sometimes church saddened me because I couldn’t help but notice that most other children had mothers. The blacksmith’s wife held a baby against her shoulder and another on her hip as he thrust her way down the aisle with the rest of her brood tagging on to her skirts. What was it like, I wondered, to have a mother who let you plait her hair, kept crusts in her pocket in case you were peckish, hauled you off the gritty floor if you fell, kissed your tearful face and let you play with her string of blue beads?

My own mother was in a corner of the churchyard. Sometimes Mrs Gill and I went and had a look at her grave. My anatomical education was such that I could picture the arrangement of her bones and the hollow of her pelvis, wide enough for my baby head to slide through, but there was no reaching her. I was very critical of my mother’s grave. All the other Seldens

were under slabs in the church or had grand memorials in the wall. The Bosworth Selden even had a tomb on which his stone replica lay with a sword at his side and a book in his hand. Some Selden women had little oval plaques like afterthoughts but at least they were inside out of the rain. 'So why is she out here?' I asked Mrs Gill.

'Lord knows. I suppose because she loved the fresh air.' But I knew there was no fresh air under the ground. I had scooped up handfuls of earth and discovered that it smelt of cellars and tasted of coal. I had watched a fat worm writhe across my palm. 'Was she wearing a silk dress when you buried her?' I asked Mrs Gill.

'What a waste that would have been,' she said. As we left to go home we passed villagers huddled in groups, nodding and smiling. I thought they envied me. I thought every girl in the village must want to be me and spend her days as I did, distilling and calcifying and learning the myriad qualities of sulphur, the works of Maier and Paracelsus and the Twelve Keys of Basil Valentine. Anyway, usually I was too busy, too fascinated by the dramas of our investigations to pay much attention to the world beyond. My vision was so filled with books and fermentations and hypotheses that I had no time for the study of human beings other than of their anatomy and the circulation of their blood.

Selden Manor was the crucible in which my father, the Gills and I lived together. I peer into it now with the respectful caution with which I was taught to approach any volatile experiment. I am searching for a day to illustrate our life before 1725, the year when everything changed. And, unlike the blacksmith's daughter, I am an expert in observation. I know what I am looking for – bubbles of gas, a rise in temperature, an alteration in texture – small indications of chemical change that mean something significant is happening.

5

It is October 1721. I am fifteen and my father and I are at the very beginning of our phlogiston phase. I wake at dawn and the room smells of the spicy woods outside. The clock in the church tower is striking six, which means I am late. I leap out of bed and crouch over the chamber pot. We are still very interested in urine at Selden. Gill uses it to fertilise his wife's herbal beds and as a moistening agent in the making of cement linings for alchemical vessels which have to withstand intense heat. Next I examine my body for smallpox symptoms. A week ago my father told me that he had discovered a method that would protect me from ever having the disease. 'I shall engraft you with the pus taken from the pox of a child with a very mild form of the smallpox. You will probably feel unwell, but that's all. Afterwards you will be safe for ever from the infection. This is a method that I saw tried last year on six condemned convicts. Each was inoculated with the disease, recovered and pardoned. I shall offer the same treatment to anyone in the village who wishes to accept.' He made me roll up my sleeve, scratched my skin with a needle and dropped a yellowish liquid from a phial on to the wound. My arm felt sore afterwards but nothing worse has happened yet.

Once I've established that I don't have the smallpox I put on a bunchy woollen dress sewn by Mrs Gill, then a canvas apron. When I have stuffed my hair into a cap I am ready to make the journey to the kitchen where my breakfast is on the table. Mrs Gill and I grunt to each other. She has staring eyes, a lumpy nose and thin pink skin stretched tight over her cheeks and forehead. She smells of cotton, pastry, sweat and above all her own cottage tang of fermenting herbs and dried flower heads. She is not only housekeeper at Selden but the local

midwife and herbalist. I wasn't very pleased when I first realised this. I thought she was mine, that her hands existed only for my needs, to force my face down into the wash bowl, to cook my dinners, to empty my chamber pot, and that the reason for her cottage was so I could go there when my father was angry or away. But I am old enough now to be reconciled to her dual life. Besides, I don't need her much any more.

The household is running to its autumn timetable and I have to be in the laboratory by half past six so I set off again in my lisping felt slippers back along the flagged passageway to the quiet chambers at the front of the house: the screens passage, the hall and the library, which is an ante-room to the laboratory. On the far side a brocade curtain, double thickness, hangs over a door. Inside is a little cavity, then yet another door which opens inwards to the laboratory.

I close it softly behind me. Sunlight streams through the lattices of a two-storey bay window and the air is dancing with gold dust. Now I am back it feels as if the hours I have spent away have been wasted time. I am at the hub of the world and am filled up with excitement and dread.

My father is at his desk, and his wig, a vast, fuzzy affair, already hangs on the back of his chair. It helps him think and is worn so that it can be snatched off when he gets excited. He is sixty-four but he still has lots of silver hair, which he strokes from time to time with his left hand. He takes up very little space but burns so fiercely that he has only to lift a finger for everything to change. I think of him as the sun and me as a little planet held in place by the force of his intellect.

He is writing a paper for the Royal Society entitled 'The Nature of Fire'. Nobody on earth knows what fire is or even whether it is a state or a substance. My father has been in correspondence with Sir Isaac Newton, who suggests that fire is caused by a vibration of the ethereal medium in hot bodies, but we don't like this explanation because we can't prove it.

I sit at my desk, which is pushed up close under my father's, and open the tract he has given me to read: Robert Boyle's 'New Experiments Physico-mechanical, touching the Spring of the Air, and Its Effects'. I already know about Boyle's investigations into the vacuum and his analysis of air but I don't mind the repetition because I am fascinated by anything to do with air and fire. As I read I am alert to what else is happening in the laboratory. I hear the tick of our three clocks – we measure everything accurately, including time – and the scuffles of mice in their cages. My father is breathing heavily, particularly when he inhales, and his pen squeaks. I can smell ancient wool and tobacco. Beyond him the room flies away filled with things I know as intimately as my own hands.

A late fifteenth-century Selden who loved praying – very unusual for our family – built this room as a chapel but his son had other ideas and knocked out the walls and ceilings to make a laboratory. There's plenty to distract me, large and small furnaces, benches, shelves, barrels, vats, boxes, a globe, barometers, scales, a variety of bellows and receptacles of every shape; retorts, cucurbits, crucibles and alembics. We use some of these things every day, others are too rare and precious except for the most advanced stages of alchemy.

The latest member of our little menagerie is a barn owl that Gill found in the attic. She had hurt her wings by dashing them against the window frame. He thinks she is one of a pair that nests in the church tower. We keep her in the laboratory while she recovers so that we can

study her habits, though the mice aren't happy because we feed them to her one by one. I can just see her from my desk. She seems to be asleep.

I read a bit more about Boyle's corpuscular theory of matter. Boyle used his vacuum pump to test the possibility that there is a substance called aether which fills up the spaces between corpuscles of air, of the type described by M. Descartes . . . The owl has opened her black eyes. She stares at me. I stare back.

'Emilie.' I jump. 'Repeat the line you have just read.'

I can't. I have been lost in the owl's gaze.

'Your concentration is very poor. Why is that?'

'The owl, I suppose.'

'You were a better scholar when you were five. You are slipping.'

'Slipping, Father?'

'I'll make a note in the book.'

The clocks strike the half-hour. He blots his work, takes off his spectacles and puts on his wig, which shrinks his face until he is all nose and glinting eyes. 'Gill tells me we should release the owl,' he says. 'We'll take her up to the roof after supper.' He has taught me that it is wrong to have feelings for any animal so I say nothing. The owl has closed her eyes. 'Phlogiston,' he says. 'New heading, Emilie. Today we will replicate Mayow's experiment with gases as described in the Tractatus Medico-Physico.' His voice, like everything else about him, is worn thin. I spring into action though I am still hurt about the owl.

In the laboratory we are always on the way to somewhere else and I struggle to keep up. My nerves are on edge. Not only must I take in all that my father teaches me about what he already knows but I must keep abreast of our new experiments. I have to anticipate, predict and hypothesise. Alchemy takes up less than six months of the year and in all the rest of our work we follow Sir Isaac Newton's experimental method rigorously. I must not break things. I must not say anything foolish. I must not forget what I have already been taught. I must not ask stupid questions. Above all I mustn't cry. If I do any of these things my father will be angry and then he doesn't speak. Depending on the offence, the silence can last for hours or even days while he sits at his desk with his forehead in the fingertips of his left hand until he is ready to write what I've done in the notebook.

He is just back from his annual visit to London. Each year he spends four weeks there so he can buy the latest books and equipment, and give or listen to papers at the Royal Society where he is thought to be a very great person. At the moment he is full of news, not only about inoculating the smallpox, but about a Bavarian, Georg Stahl, and phlogiston. Thanks to Stahl we now have to rework all our experiments on the nature of fire to see if the phlogiston theory works.

We suspend a little platform holding camphor over a lighted candle placed in a trough of water, and invert a glass bulb over the top. I use a siphon to draw off the air inside the bulb

until the water levels are even inside and outside, then carefully pull out the siphon tube. As we expect, the candle goes on burning for a while, then flickers and dies. The water level inside the flask rises. Stahl says the candle goes out because the air has become phlogisticated, packed with the substance phlogiston – from the Greek phlogizein, to set on fire – released by the burning wax.

Then I take the experiment to the window and try to ignite the camphor by using a magnifying glass to concentrate the rays of the sun. It won't burn because, according to Stahl, the air in the glass is already full of phlogiston. My father grips the workbench. He is excited by this new theory of fire and makes little popping noises with his lips. His hands are covered by the sleeves of his topcoat which is of a thick, dark-grey worsted, shiny at the elbow and rear. It has a deep collar and sags beyond his knees at the front and almost to the floor at the back. Underneath he wears an assortment of waistcoats, shirts and breeches all in colours between brown and grey. His mouth is pulled inwards, the lower lip tucked under the upper – it's got stuck like that because of the thousands of pipes he's smoked – and his eyes are fixed on the candle.

My father says, 'I believe there is something in this phlogiston theory which may shed all kinds of light on the behaviour of metals when heated or burnt. We will next try the same experiment on iron and lead. Make a list.' He pulls off his wig, throws it on the bench, puts it back on his head.

I write what he dictates but I am not happy with the idea of phlogiston. I think that the results of our experiment support Stahl's theory to an extent but don't prove it. I wish we could catch the air inside the glass and do more experiments to see how it really differs in quality from what Stahl would call the dephlogisticated air around us but I say nothing of this to my father. I do as he says and after a while I feel peaceful again. I love the flow of ink from my pen, the smells of sulphur and camphor, dusty wig and tobacco, and the satisfaction of watching an experiment go as predicted. Out of the corner of my eye I notice that my father's hands are trembling more than ever and that after a little while his knees sag and he perches on a stool.

At one o'clock I go back to the kitchen for my dinner. My father eats alone in the dining parlour and then rests while I study.

6

In the late afternoon we go outside to learn about the natural world. My father wears a tricorn hat pressed firmly down on his wig and a trailing cloak that flattens the grass. We both have stout boots sent from Buckingham and I carry a leather satchel and a jar with a cork lid in case we find anything of interest. His staff has a plain brass handle and he waves it in front of him as if he needs to push aside the air. He walks too slowly for me and I rein myself back to keep one step behind.

We have embarked on the collection and classification of tiny organisms – creatures that can only be seen through the lens of our latest microscope, an instrument so precious that I'm afraid even to nudge it with my eyelid. We come to a round pond within a dank circle of trees and I scoop up a sample. A transparent shrimp coils in the muddy water. 'Chirocephalus,' I say. The water shakes when my father holds the jar. 'Tell me, Emilie, what can we expect to see when we place this creature under the lens?'

But suddenly I don't care. I think of the hours I'll have to spend drawing and labelling the wretched little shrimp and I want to smash the jar against a stone. I see the tiny creature cling to the glass and think I can make out its soot-like speck of an eye.

'I'm sorry, Father.' I rub my belly with my hand. 'I believe that I am . . . I must.' He gives me a cold look and turns away. There is an unspoken understanding that my growing female body has functions I may not discuss with him and I know he disapproves. I run, crashing through the trees to the oak which Gill taught me to climb. I hitch my skirts, clamber up as if it were a ladder, straddle a branch and watch the leaves rise and fall above me. Each one is dappled with the shadow of another. A shaft of sunshine warms my wrist and I think about heat. Is it a state or substance? How is it passed from one object, the sun, to another, my arm?

The wind stirs the leaves. There is movement in the air. The air moves. Air is not a state but a substance.

The passage of blood through my veins beats in my ears. I grow calm. I belong in the tree, the greenwoods at Selden, on the twirling planet as it makes its elliptical journey round the sun. I am Emilie, part of the plan. But as I sway in the tree I think about the shrimp and how my father controls my knowledge and every movement of my day. I want to know much more than he will ever tell me. Each year I beg to be taken to London so I can hear more music than the dissonant chords in the church organ and the thin piping of the minstrels at the annual fair. I want to know what people look like in other worlds than mine but he won't show me them. And above all I want to know about that other woman, my mother, who bled and had breasts and soft inner thighs like mine. I'm certain she would understand the yearnings and complications of what it is to be me. The older I get, the more I long to see her. Just one glimpse of her face, brush of her skirts or whisper of her voice would do. I am no longer satisfied with fantasies of her. But if I ask about her my father turns his head away and there's an end to it.

7

In the evening when my father and I eat supper together by the library fire, the torment of the afternoon is forgotten. Afterwards I kneel by his chair to fill his pipe. He takes a leather pouch from his pocket and gives it to me – the leather, still warm, is old and criss-crossed with wrinkles like his skin but the tobacco inside is moist and fragrant. I pinch it up with my finger and thumb and drop a few strands into the bowl of the pipe. 'Well, Emilie.'

'Well, Father, I have been thinking about the phlogiston theory in the light of Boyle's investigations and our own experiments today.'

His eyes go warm. The little breaths he huffs through his nose are the closest he comes to a chuckle. I must not waste a single flake of tobacco so I take my time with the pipe. 'On the one hand Stahl's theory is beautifully simple because it allows us to accept the ancient view that air is a fixed state, a constant. Our experiment supported Stahl's theory. Phlogiston is released from the candle wax during combustion until the air can take no more.

Later, when we tried to ignite a piece of camphor we couldn't, though we know that the camphor would have caught fire outside the flask because camphor is highly combustible, or as Stahl would say, rich in phlogiston.'

He doesn't take his eyes from my face as I light a taper from the fire, hand him his pipe and watch him suck until the tobacco catches.

'But I am still not ready to discount Mayow and Boyle. Mayow says the flame goes out because nitro-aerial particles are used up from the air – what Boyle would call aether – and though plenty of air remains in the flask, it is these particles that are needed for combustion.'

'Sir Isaac also supports this view,' puts in my father. He pats his lips against the stem of his pipe and blows out a perfect smoke ring, a sure sign of contentment.

'I am not satisfied with Stahl's theory for all its simplicity. Surely it can only be true if substances lose the weight of phlogiston during combustion. But we know that metals gain weight when they are burnt.'

He nods and hiccups softly – he loves argument as long as it is well-founded and leads to further experiment.

'And if the air became phlogisticated, why did the water level rise in the flask?' I ask.

'We will make a note of all these questions in the morning, and we will not be content until we have dealt with them.'

The clock strikes nine. It is time to release the owl so I creep into the laboratory and pick up the cage. I am not used to being alone here at night and I sniff old wood, old minerals, old chemicals. Old is the most normal state of things at Selden. The bird is wide awake and its huge eyes are eerie in its white face. Mrs Gill says barn owls are birds of ill omen but my father and I pay no attention to superstitions of that nature.

When I pick up her cage the bird adjusts her claws on the perch. My father and I study her for the last time. 'She is a killing mechanism,' he says, 'ideally suited to her task because she strikes from above, in the dark.'

And yet her feathers look so soft I long to bury my hands in them. I can easily see the hand of God in the owl's perfect symmetry, perfectly hooked beak and claws, perfect heartshaped face.

We carry her up through the house. It is my privilege to hold the cage. My father lights the way and Gill follows at a distance. He never gets too close to me these days. Gill is my father's alchemical assistant and does the heavy tasks like feeding the furnace and lugging crates of minerals. When not needed in the laboratory he is supposed to be steward to the estates but I have never known him go out of earshot. He is ubiquitous. The bird shifts on her perch and swivels her head from side to side. I am afraid that she will suddenly panic and crash against the bars but she seems calm. At the top of the great staircase we turn right on to the landing designed for the reception of Queen Elizabeth, though in the end she never visited Selden. On the other side of the queen's bedroom we pass through a low door to the oldest wing where the boards creak and even my narrow skirts brush the walls. The second floor is reached by a winding staircase and now we are outside the room where my mother died and I was born. My heart beats faster. It always does. Her door is very low and made of oak planks.

My father gives the lantern to Gill and we climb yet another staircase to the roof. A breeze catches my father's coat-tails and hollows the wind funnel we set up last year for our meteorological studies. The night is mild and fine and a segment of moon sits over my oak tree in the woods. The owl's feathers ruffle and her eyes are blacker than ever. Gill comes up behind us and stands with folded arms.

Twelve hooks fasten the cage to its base and I release them gently one by one until she is free. She doesn't move from her perch though there are no longer any bars between her and the night sky.

My father whispers, 'She is letting her eyes adjust to the dark and the distances she must travel. Remember what Georg Bartisch says about the properties of the pupil.' 'I wish we didn't have to let her go,' I say. I expect him to be harsh with me but instead he tucks his hand through my arm and holds my wrist. He's never done this before and I am absolutely still in case he moves away. His touch fills me with joy and makes me feel powerful, with my skirts blown backwards and the woods at my feet rolling away to the river that snakes through our land on its way to London.

The owl lifts her wings suddenly and drops them again. My father's hand trembles against my arm and he holds tight to his staff. And then as the wind blows in a sudden gust over the parapet the bird takes flight. One minute she is still, the next she soars away and her pale, beating wings are like the pages of a great book. For a moment or two I strain to follow her but she is gone.

My father takes his hand away. I kiss his bony knuckles and urge him not to stay too late writing in his notebook, then I light a candle from Gill's lamp and walk down through the quiet house past my mother's room. For once I don't stop at her door because I am too happy.

I go to my bedchamber, take off my outer clothes and climb into bed. Soon Mrs Gill looks in to make sure that I have snuffed the light.

I lie in the dark. My mind at the end of the day is a beehive. I visit various cells putting new facts in order, sorting and tidying away the phlogiston theory. I still haven't developed any symptoms of the smallpox but then it is only eight days since the engrafting. I remember my father's hand on my wrist and I smile.